

REPORT
OF THE
SECRETARY OF THE NAVY,
COMMUNICATING

Information, in compliance with a resolution of the Senate, in relation to the dock, basin, and railway at Pensacola.

MAY 10, 1854.—Ordered to lie on the table and be printed.

NAVY DEPARTMENT,
May 9, 1854.

SIR: In compliance with the resolution of the Senate, passed on the 3d ultimo, I have the honor to furnish the information therein called for, embraced in a communication from the chief of the Bureau of Navy Yards and Docks of this date, and papers marked A, B, and C, touching "the floating balance dock, basin, and railways at the navy yard, Pensacola."

I have the honor to be, with great respect, your obedient servant,
J. C. DOBBIN.

Hon. DAVID R. ATCHISON,
President of the Senate.

BUREAU OF YARDS AND DOCKS,
May 9, 1854.

SIR: I have the honor to acknowledge the reference to this bureau, for information, of a resolution of the Senate of the United States, dated the 3d instant, calling for answers to the following interrogatories, viz:

1st. "What amount has been paid to the contractors, Gilbert & Secor, and what amount is yet due said contractors, on account of the floating balance dock, basin, and railways at the navy yard, Pensacola?"

In reply to this inquiry, I have to say that there has been paid to said contractors, on account of said works, including the deduction for cancelling the provision for the camel properties.....\$919,437
And there has been retained, to cover contingencies..... 2,500

Making, (amount of the contract)..... 921,937

2d. "Whether the said dock, basin, and railways have been completed according to contract, and accepted by the United States?"

To this inquiry I have to reply that the said structures have been completed. The tests of their capabilities thus far not having proved satisfactory, they have not yet been accepted.

3d. "What is the present condition of said dock, basin, and railways?"

In reply to this inquiry, the bureau respectfully states that immediately on the receipt of the Senate's resolution, the commandant of the Pensacola navy yard was called on for a report upon the dock, basin, and railways, and more especially with reference to their present condition. This report, however, has not yet been received. To avoid further delay, therefore, the bureau transmits herewith paper marked C, which is from the agent of the contractors, and furnishes the last information received at this office showing "the present condition of the dock, basin, and railways."

4th. "Whether any of the stipulations of the contract have been dispensed with; and if so, what were the stipulations so dispensed with, and the reasons therefor?"

In reply to this question, I respectfully state that the only stipulations in said contract *dispensed with* are those for the floating gate, proposed in the specifications to be fitted for the purpose of forming a partition in the dock, and that for cancelling the stipulation which provides for testing the dock as a camel for transporting ships over the bar at Pensacola.

The reasons for dispensing with the former are that this gate was considered entirely useless, and even an incumbrance, and therefore, for a reasonable consideration it was agreed to be dispensed with by the department. The reasons for cancelling the camel properties of the dock were, that, upon the representations of this bureau to the department that in its opinion the experiment of sinking the dock outside of and carrying ships over the bar would be hazardous to the vessel as well as to the dock; that, as the government was bound to furnish the steam power to tow and manage said dock when so used, and as the side of the dock would present as much surface to oppose the wind as all the square sails of a large ship, it would require immense power—which the government had not at command, and could not procure except at an enormous expense—to move and control the dock when passing over the bar to sea; that, provided the dock should be sunk under the bottom of a ship at anchor outside the bar, after pumping the whole or a portion of the water from the chambers, should there be an undulating motion of the water, as there generally is at that place, the ship *a tanto*, with battery on decks, as she could not there be securely shored, would be likely to fall over upon one side or the other, and seriously injure, if not render utterly useless, both the ship and the dock. In consideration, therefore, of the great power required to move such a mass, the impossibility of procuring it at times when it might be wanted, and its great cost, together with the danger attending the several necessary operations, the Secretary of the Navy, after consulting persons of experience and good judgment, came to the conclusion that the dock could never be used as a camel in practice; that it

would not be safe or proper to venture the experiment, and therefore directed propositions to be made to the contractors to dispense with that part of the contract for a fair consideration; and, after consultation, the Secretary (Mr. Kennedy) proposed to cancel that provision of the contract, deducting from the amount of payments under the contract \$12,000, which proposition was accepted, and that sum has accordingly been deducted.

5th. "That the Secretary be requested to communicate to the Senate copies of all reports of the commissions that have been appointed to examine the said dock, basin, and railways, and also a copy of the contract entered into by the Navy Department with the said Gilbert & Secor for the construction of the said dock, basin, and railways."

In answer to this request, I have the honor to annex a copy of the reports made by the commission ordered to examine and test the said works, marked A, and beg leave to add, in explanation, that when the works were reported complete and ready for testing, the same question arose at Pensacola which was agitated with the contractors of the sectional dock at Philadelphia, in regard to the want of a sufficient depth of water at or near the basin to sink the dock sufficiently deep to receive vessels upon the blocks and cradle.

As there was not depth of water near the basin at Philadelphia or Pensacola to sink the dock, the question at issue was whether the United States or the contractors were bound to find the water, in other words, to deepen it by excavation or dredging—the United States contending that it should be done by the contractors, and they that the United States should do it. The Secretary of the Navy, Mr. Graham, submitted the case to the Attorney General, who gave it as his opinion that the government was bound to deepen the water for the operation of the dock, and the structures having otherwise been completed, the contractors were entitled to receive the per centage which had been reserved from each payment, but that the contractors be held responsible that the work should perform as stipulated, whenever the government should sufficiently deepen the water therefor; the reserved per centage was accordingly paid by direction of the Secretary of the Navy in both cases, and a bond taken to ensure that the works, when the proper and necessary excavation should be made, would be equal to the test the government should direct to be applied under the contract. The first commission ordered to examine and test the dock at *Philadelphia* could not agree with the contractors as to the manner of making the test, for want of depth of water near the wharf and basin, and consequently, no actual test was made until after excavation had, by dredging, been made by the United States, under the decision of the Attorney General, when another commission was ordered, the test made, and the dock accepted.

The first test at Pensacola was not satisfactory, as appears by the report of the commission, and upon the representation of the contractors in person, that the dock was taken too far from the wharf without steam power to control it and dock a ship with all her battery and stores on board *a tanto* and that some defects were discovered which they wished an opportunity to remedy, the Secretary decided that he would afford them another opportunity to test the structures, provided they

would furnish a vessel at their own expense, if the government should not have one at the port to use for the purpose. The department not having a suitable vessel available, the contractors proposed several for the test, which, however, the department did not accept, because they were not considered of sufficient displacement to make a satisfactory or adequate experiment.

The works, as appears by the statement annexed, marked C, are now ready for the final trial, but the contractors not having yet offered a vessel of sufficient displacement, which the department required should be equal to that of either of the vessels that were used for the test of the docks, basins, and railways at Philadelphia and Portsmouth, New Hampshire, and no United States vessel of sufficient weight being as yet at its disposal, the final test has not yet been made, nor will it be made until a suitable vessel is provided either by the contractors or the United States.

A copy of the contract is herewith enclosed, marked B.

I return the resolution of the Senate, and have the honor to be, very respectfully, your obedient servant,

JOS. SMITH.

HON. JAMES C. DOBBIN,
Secretary of the Navy.

A.

COLUMBUS, GEORGIA, June 11, 1853.

SIR: I remained with the board of officers at the navy yard, Pensacola, until it had formed its opinion and written its report in relation to the test of the dock, basin, and railway. Some additional matter being afterwards suggested to the board, the report was revised and forwarded to me for my approval and signature.

Having been, previously to the test, impressed with the advantages believed to be possessed by the said dock, basin, and railway, as compared with other plans, I think it necessary to append a note to the report explaining the reasons for my change of opinion in the premises.

I have the honor to enclose herewith the report of the board, and to be, very respectfully, your obedient servant,

WM. H. CHASE,
Major Engineers.

To Commodore Jos. SMITH,
*Chief of the Bureau of Yards and Docks,
Navy Department, Washington.*

COMMANDANT'S OFFICE,
Navy Yard, Pensacola, May 28, 1853.

SIR: The board of officers appointed by your letter of the 12th February, 1853, "to examine and report the result of the test to be made of the balance floating dock, basin, and railway, constructed at the navy

yard, at Pensacola, by the contractors, Messrs. Gilbert & Secor," and acting under your instructions of the same date, and subsequently under the instructions contained in your letters of the 12th, 13th, 15th, and 22d April, and of the 3d of May, has the honor to report, that it has completed the duties assigned to it, so far as its recently limited instructions have permitted.

In relation to the manner in which the board has performed its duties, reference is made to its journal and the accompanying documents, all of which have been verified by the members of the board, as being correct copies from the originals.

The board was directed by exact and carefully worded instructions, with ample latitude allowed to supply any notable deficiencies therein, to make a close, critical, and comprehensive examination of the apparatus named in the contract with Gilbert & Secor, as a balance floating dock, basin, and railway; looking to its parts in detail; to its separate uses as a dock, a basin, and a railway, and to its completeness as a whole, in order to test the principle, conveniency, power, and faithful construction claimed for it by the contractors; and to form an opinion as to the performance or non-performance of the stipulations of the contract. Under this view of its instructions, the board duly notified the authorized agents of Messrs. Gilbert & Secor that the frigate "Columbia" was at their disposal, in order to be placed in the dock, carried into the basin, and hauled on and off the railway, in the manner prescribed by the board. A correspondence ensued between the agents and the board, arising from objections made by the contractors to certain parts of the prescribed operations.

The board adhering without material change to its first determination, it was finally arranged with the agents of the contractors that the frigate "Columbia" should be placed on the cradle in the dock, and the whole carried into the basin, in readiness for the frigate to be hauled on and off the railway, the board reserving the right to haul the ship on to the railway, with her entire armament on board or not, and assuming the entire responsibility of her safety.

The board designed to make the several tests of the dock, railway, and basin with as much weight as possible, seeing that all that could be commanded would fall short more than one-half of that required by the contract to be used.

The naval constructor at this yard, one of the members of the board, was deputed to place shores and braces in the frigate, and also to remove the guns and stores to such a position as would bring the centre of gravity as nearly as possible within certain lines.

On the same day that this agreement with the agents was made, these persons refused to execute it, and one of their number proceeded directly to the north, in order to confer with his principals. It was deemed important that the senior officer of the board should proceed at once to Washington in order to explain the proceedings of the board, and to meet and refute the objections made by the contractors to the fair and proper test prescribed by the board.

The proceedings of the board were not disapproved of. But representations having been made to the Navy Department that there was not sufficient depth of water off and near the permanent wharf of the

navy yard to sink the dock to the depth necessary to receive the frigate "Columbia," with her arms and stores on board, it was deemed important to obtain the opinion of the Attorney General in the premises.

This opinion was decidedly given as to the obligation of the government to furnish the requisite depth of water. Under this consideration, and of that of the time and expense deemed necessary to excavate the required depth, the test of placing the ship on the cradle was dispensed with, and the operation confined to the simple one of taking the ship into the dock, with the removal of all or any part of the armament and stores, in order to reduce the draught of the ship, and consequently that of the dock when sunk to the lack of water complained of. But it was required after the ship had been raised, to place in the dock a weight equal to that removed from the ship.

The board was instructed accordingly. As these instructions were founded in error of fact, the board deemed it its duty to report the same to the Navy Department, affirming that there was water enough to afford an adequate test as prescribed by the board; that no excavations were necessary to procure additional depth of water, and that no obstacle existed known to the board that would prevent every proper test being made with any ship that could pass the bar at the mouth of the harbor.

In answer to the letter of the board, it was stated that the Navy Department adhered to its instructions, but that it was left optional with the board to remove the armament and stores or not; at the same time doubts were expressed as to the sufficiency of water claimed in the premises. It is due to the board in this place to state that the tests required to be made were, in its judgment, perfectly consistent with the first instructions received from the Navy Department and with the stipulations of the contract.

That before such tests were arranged the board made itself acquainted with all the local circumstances existing in the premises, a knowledge of which was indispensable to the exact performance of its duties. That it required nothing at the hands of the contractors but what was considered a fair illustration of the principle, conveniency, and power of the apparatus, generally styled the floating balance dock, basin, and railway, offered at a great cost as a whole by its designers and the contractors confidently to the government, as being superior to and in substitution of the permanent dry dock.

The contractors were notified of the final instructions from the Navy Department, and of the readiness of the board to witness the operation of placing the "Columbia" in the dock.

The journal will show the time taken to prepare and sink the dock for the reception of the ship, with all the attendant circumstances, up to the time that the dock was raised and pumped out. The journal will also show the draught of the dock at various points, and the exact amount of depression from right lines, extending along the keelson, and the ends and sides, whilst the ship was in the dock; also the several draughts of water when the ship was removed.

After the dock, with the frigate Columbia on board, was in readiness to be carried into the basin, the agents of Messrs. Gilbert & Secor made a verbal request to the board, that her removal from the moor-

ings to the basin might be dispensed with. In answer thereto the board stated, that its instructions left it no discretion on this point, and that it otherwise desired that the dock should be hauled into the basin.

In reply to this requisition a letter was received from the agents, declining "to take the floating dock into the basin, with the present loaded vessel in the dock, for two reasons, viz: first, that there is not ten feet water in the basin; and secondly, that the contractors have never proposed to put the dock in the basin, bearing a ship with all her armament on board."

The board in reply stated, that if the agents persisted in their refusal to take the dock into the basin, it would be necessary that the ship should be released from the dock, as soon as the injuries which she had sustained by the docking operation have been repaired by the agents.

At the time of refusal of the agents it was high water for the day, at which time there were nine feet six and a half inches over the gate sill of the basin.

The greater draught of the dock was near the centre of her bottom.

It was nine feet six inches, and accurately obtained under the immediate supervision of the board.

The board arrives at the conclusion, that the contractors have signally failed to exhibit fully and to its satisfaction the conveniency, power, and faithful construction of their floating dock, basin, and railway, and for the following reasons:

1. That it weighs about 2,300 tons more than estimated, which consequently increases the draught of water two feet, thereby interfering with its passage into the basin.

2. That by settling under the Columbia, when docked, 19½ inches, (that ship weighing but 2,185 tons,) it proved that it was of inadequate strength, and altogether incapable of raising a ship of 5,300 tons weight, as contracted for; this great settling also, by increasing the draught of water, augmenting the difficulty of a passage into the basin.

3. That when the dock was sunk to 23 feet above the working platform, (the Columbia being just on the point of entering it,) it rose on one side 3 feet in ten minutes, by a sudden and great loss of water in the chambers, although the pumps supplying the water were still in operation, thereby showing a very great leakage of the tanks or pumps, or probably both, and consequently an improper construction.

4. That 60 tons additional ballast were necessary to sink the dock, (the engines being worked to their highest gauge,) it being evident at the same time that the engines were unequal to sinking it to a greater depth than that required to take in the Columbia, a ship of less than one-half of the weight contracted for.

5. That it was found very difficult, with the highest gauge of steam, to lift the Columbia, owing to the leakage already referred to, showing that the dock was incapable of raising a ship of 5,300 tons weight, as contracted for.

6. That the contractors declined the test of taking the dock into the basin, on the ground that there was a deficiency of water in the basin, and that the contract did not require it. The water at high tide was nine feet six and a half inches above the granite courses at the bottom of the basin, which would have been sufficient to have admitted the

dock, had its draught of water not been increased three feet by the causes referred to.

The board cannot, therefore, recommend that the whole apparatus, or any part of it, whether it be the balance floating-dock, basin, or railway, be received by the United States. The board having been also ordered to consider the "advantage or disadvantage of that plan of docking ships of the navy," as compared with others, is of the opinion that the balance floating-dock is far inferior to the ordinary stone dock, whether as regards economy, safety, or facility of operation.

The "estimate of the probable expense of working, and cost per annum of repairing and taking care of the dock," and a report on the floating gate, the board will make the subject of a separate and future communication.

We are, sir, respectfully, your obedient servants,

JOSIAH TATNALL,

Captain U. S. Navy.

WM. H. CHASE,

Major U. S. Engineers.

S. T. HARTT,

Naval Constructor.

JAS. HERRON,

Civil Engineer, Navy Yard.

Commodore JOSEPH SMITH,

Chief of the Bureau of Yards and Docks.

NOTE.—The undersigned entertained the opinion that the balance floating-dock, basin, and railway, combined advantages for repairing vessels not possessed by the ordinary stone dock, for the reason that two or more ships could be repaired at the same time by the former apparatus, whilst the stone dock afforded facility for the repair of only one ship at a time; and it was believed that equal economy, safety, and facility of operation would be obtained by either mode. The undersigned has changed his opinion; this change is not due solely to the signal failure, on the part of the contractors, to perform what they promised in their contract, which failure was principally due to error in calculation for displacement of the dock; to the want of strength in the dock; and to the lack of sufficient depth of water in the basin—but it was produced by ample evidence afforded to the board, in the course of the operation of taking up the frigate *Columbia*, that, on the score of economy, safety, and facility, the ordinary stone dock possesses superior advantages.

Taking this in connection with the time and expense of placing the dock in the basin, and hauling the ship on and off the railway, as well as considering the destructibility of the material of which the dock and a portion of the railway are composed, leaves no doubt in the mind of the undersigned as to the correctness of the opinion unanimously expressed by the board in the premises.

WM. H. CHASE,

Major Engineers.

COLUMBUS, GEO., June 11, 1853.

COMMANDANT'S OFFICE,
Navy Yard, Pensacola, July 18, 1853.

SIR: The board for testing the floating dock, basin and railway, in their report of May 28, 1853, referred to a future report on the subject of the floating gate, and of the probable expense of working and cost per annum of repairing and taking care of the dock, which they now have the honor to submit.

The test of shipping the floating gate was made on the 30th of May.

The time occupied in getting it from its moorings at the side of the basin to the position of shipping was one hour and fifteen minutes. There were eight men employed in the operation, the weather being unfavorable and water rough. The gate proved to be very crank, and required a lever across its gunwales, and considerable time and management to get it into the grooves.

It could not be sunk into its proper place, owing to the sand having washed into the keel groove, and a little above it on each side.

In regard to the cost of working the dock, the board cannot offer a correct estimate. All the circumstances attending the docking of the "Columbia," being different from and very unfavorable, when compared with the contemplated mode of working the dock, when the deep basin shall be finished.

In view of the rapid decay of wood in this climate, and that the dock is now about three years old, the board are of opinion that it will require twenty per cent. of the original cost to keep it in order, equivalent to a renewal in five years from the present time.

It now requires re-caulking and painting.

We are, sir, respectfully, your obedient servants,

JOSIAH TATTNALL, *Captain.*

WM. H. CHASE, *Major Engineers.*

S. T. HARTT, *Naval Constructor.*

JAMES HERRON, *Civil Engineer.*

Commodore JOSEPH SMITH,

Chief of the Bureau of Yards and Docks, Washington, D. C.

BUREAU OF YARDS AND DOCKS,
February 12, 1853.

CAPTAIN: Herewith you will receive instructions for testing the floating dock, basin, and railway, at the yard under your command, addressed to yourself and others as a commission to examine and superintend the test.

You will be pleased to confer with Major Chase upon the subject, and when the Columbia shall arrive be prepared for the test, and the dock is reported by the contractors as in readiness to receive the ship, &c., &c., you will call the commission together and proceed with the test, in conformity with instructions enclosed.

Respectfully, your obedient servant,

JOS. SMITH.

Captain JOSIAH TATTNALL,

Commanding Navy Yard, Pensacola.

BUREAU OF YARDS AND DOCKS,
February 12, 1853.

GENTLEMEN: By the direction of the Secretary of the Navy, you are appointed a board to examine and report the result of the test to be made of the balance floating dock, basin, and railway, constructed at the Pensacola navy yard, by the contractors, Messrs. Gilbert and Secor.

A copy of the contract with Gilbert and Secor will be furnished to the board by the commandant of the yard for their inspection, from which it will be seen that the works are to successfully dock, and haul on and off the ways, vessels of either class mentioned in the contract. The frigate Columbia is the ship designated for the test, and all facilities which the yard can afford will be furnished to expedite the operations.

It is left discretionary with the board to remove the whole or any part of the guns, stores, or ballast from the ship; the department, however, desires the test to be made with as great weight as practicable, consistently with the *strength and safety of the ship*, and the stipulations of the contract.

Before the ship is placed in the dock, you will ascertain, as nearly as practicable, how much, if any, she is hogged, and place sight ranges, at least five in number, on the spar deck, that the changes of lines, if any, may be carefully noted during the several operations of docking and hauling on and off the ways. Similar ranges must be placed on the dock, and all changes, if any, which occur during the process, must be noted carefully.

You will in your report give a detailed statement of observations made during the operations, such as the draught of water forward and aft when docked, with the principal dimensions of the ship; the weight or displacement of the vessel when taken up, the draught of water of the dock when light, also when sunk and the ship is moved into it; the depth of water where the dock is sunk to receive the ship; the draught of water of the dock when pumped out with the ship in it; amount of spreading or settling, if any, of the ship on the dock and on the ways, the amount of leakage, if any, in the chambers of the dock; the time occupied in the several stages of the operations of sinking the dock; docking the ship; pumping out; hauling the dock with the vessel into the basin; shipping the gate at the entrance of the basin; grounding the dock; placing the cradle under the ship; hauling on shore; returning the ship to the dock; the amount of traction and the time required in placing the ship afloat; also the number of men employed in the different operations above named, and estimate of the probable expense of working, and the cost per annum of repairing and taking care of the dock hereafter. You will also state any other matters which may occur to the board connected with the safety, efficiency, and completeness of the dock, &c., whether to the advantage or disadvantage of that plan of docking ships of the navy.

When the Columbia shall have arrived and been made ready for testing the dock, &c., of which you will be duly advised by the comman-

dant, you will be pleased to assemble at the navy yard in the discharge of the duty hereby assigned to you.

Respectfully, your obedient servant,

JOS. SMITH.

MESSRS. JOSIAH TATTNALL, *Captain United States Army.*

W. H. CHASE, *Major United States Army.*

S. T. HARTT, *Naval Constructor.*

JAMES HERRON, *Civil Engineer.*

COMMANDANT'S OFFICE,

U. S. Navy Yard, Pensacola, March 16, 1853.

The commissioners appointed to test the floating dock, basin, and railway, convened as a board in the commandant's office at meridian this day, being called together by Captain Tattnall, commandant of the navy yard.

Present: Messrs. Josiah Tattnall, Captain U. S. N.; Wm. H. Chase, Major U. S. A.; Sam'l T. Hartt, naval constructor; and James Herron, civil engineer.

Captain Tattnall, as senior officer and president of the board, communicated a letter (No. 5) from Commodore Newton, in reply to one (No. 3) previously addressed him by Captain Tattnall as commandant of the navy yard, stating that the frigate Columbia was now at the disposal of the commissioners.

It was unanimously resolved by the board that the contractors' agents be notified that the ship was ready for the test, and that the draught of water will be made the same as when she last sailed from Norfolk to this port, (No. 4.)

On motion of Major Chase it was resolved that a regular journal of the proceedings of this commission be kept.

The senior officer assigned the duty of keeping the journal to Mr. Herron, C. E.

Resolved, That a committee of the commission, consisting of Messrs. Hartt and Herron, be appointed to take an accurate measurement of the dock for the purpose of ascertaining its displacement, and that they also compare the actual depth or level of the water on the gate sill of the basin with the tide gauge on the centre wharf.

The board then adjourned, subject to call of senior officer.

March 17.—It was blowing fresh, with rain squalls, and the water in the harbor too rough to do anything.

March 18.—An informal meeting of the board was held at an early hour in the commandant's office this morning.

Present: Messrs. Josiah Tattnall, Captain U. S. N.; S. T. Hartt, U. S. naval constructor; and James Herron, civil engineer.

A communication (No. 6) was read from Messrs. Dow and Hanscom, agents of the contractors, Gilbert and Secor, objecting to the armament, powder, stores, and outfits being left on board the frigate, as in their opinion in an unusual condition for hauling on the railway.

Nevertheless, they accept the ship as she is, but do not consider the contractors responsible for any damage which may occur to the ship, the dock, the basin, or the railway, in consequence of any weight of articles on board the ship, excepting what the contract requires.

Without any discussion, consent was given to Mr. Hartt, Naval Constructor, to go on board the frigate *Columbia*, to put the ship in trim, as he thought fit, for going into the dock, and also to remove such water and stores as he deemed necessary to the safety of the ship, running the guns in and stowing them within the line of the bilge blocks. The water and stores referred to, being understood to be without the line of the bilge blocks.

On the arrival of Major W. H. Chase at the yard, the board reconvened.

Present: Captain Tattnall, U. S. N., senior officer; Major Chase, U. S. A.; and Mr. James Herron, civil engineer.

The letter (No. 6) of Messrs. Dow and Hanscom was fully considered, and, after a full discussion, with the aid of a cross section of the ship, and by computation, it was unanimously resolved by the majority of the board, or all present, that no water or stores should be removed from the ship, as her displacement was computed by Constructor Hartt at but 2,310 tons gross, 2,240 pounds, whereas the contract specifies 5,300 tons, or very nearly 3,000 tons more. And it being the opinion of Captain Tattnall, Major Chase, and C. E. Herron, that no injury would in consequence result to the ship, Mr. Hartt was instructed not to remove any water or stores, but to have everything possible removed within the line of the bilge blocks. A communication (No. 7) was drawn up by the board, addressed to Messrs. Dow and Hanscom, in reply to their letter of the 17th instant, (No. 6,) citing the terms of the contract and informing them that the board cannot admit that the *Columbia* exceeds in any respect the stipulations of the contract. The board then adjourned.

Saturday 19.—Mr. Hartt fully concurs in all respects to letter (No. 7) addressed by the board to Messrs. Dow and Hanscom; but he, Mr. Hartt, dissents from the majority of the board, and desires to remove 260 tons from the ship.

The majority of the board by vote adhere to their resolution to have the ship taken up as she is, as much of the weight as possible being removed from the wings and placed along the midship line of the ship.

A letter (No. 8) was received from Messrs. Dow and Hanscom, reminding the board of their responsibility in hauling a ship on the railway, in an unusual condition, with armament, &c.

The majority of the board made reply (No. 9) that they were fully aware of their responsibility. "It is sufficient that they have directed the *Columbia* to be prepared with the entire burden as she arrived in this harbor, and taken into the floating dock and basin. The board repeats that she is ready for the operation."

"After the ship shall have been placed in the dock, and the dock taken into the basin, the commission will determine whether she shall be hauled on the railway, with armament and stores on board, or not;

reminding the contractor that the displacement of the ship is nearly 3,000 tons less than the stipulations of the contract."

The board also remarked, that the clause in the contract referred to speaks only of armament on board, and not of any et ceteras ; Mr. Hartt dissenting throughout.

Board adjourns, subject to call of senior officer.

MONDAY, MARCH 21, 1853.

Commission met in commandant's office at about 11 o'clock, a. m.

Present : Captain Tattnall, U. S. N., senior officer ; Major William H. Chase, U. S. A. ; Mr. Hartt, naval constructor ; Mr. Herron, civil engineer.

Messrs. Dow and Hanscom requested a conference with the commission, which was granted ; but, on motion of Major Chase, it was—

Resolved, That while the commission was ready to hear any explanations or propositions the agents might have to offer, that such propositions, &c., could only be entertained and acted upon by the commission when made in writing.

Messrs. Dow and Hanscom stated before the board that, in their understanding of the contract, that though a ship of the line of the first class, of 5,300 tons displacement, was specified to be received and raised by the dock, the said ship or any other was to be entirely empty when taken into the basin. The president of the board requested the agents to state their views in writing, which terminated the interview.

The board subsequently received a (No. 10) communication from Messrs. Dow and Hanscom, which was answered by letter, (No. 11,) adhering to letter of the 19th instant, (No. 9,) Captain Tattnall, Major Chase, and Mr. Herron, voting in the affirmative, and Mr. Hartt in the negative.

The board requested a return of their letter of the 19th instant, for the purpose of making unity of expression by substituting the pronoun *it* for *we*. The agents requested the correction to be made on the original letter.

March 22, 1853.—The commission met in commandant's office.

Present: Captain Tattnall, U. S. N., senior officer ; Major Chase, U. S. A. ; Mr. Hartt, naval constructor ; Mr. Herron, civil engineer.

A communication (No. 12) was received from Messrs. Dow and Hanscom, making propositions which were duly considered by the commission, which the board answered by letter, (No. 13.)

The board adjourned.

March 24, 1853.—The commission met at an early hour in the commandant's office.

Present: Captain Tattnall, U. S. N., senior officer ; Major William H. Chase, U. S. A. ; Mr. Hartt, naval constructor ; Mr. Herron, civil engineer.

Messrs. Dow and Hanscom requested a personal interview with the

board. After discussing the various requirements, and construction of language of the contract, and desiring 260 tons to be taken out of the ship, the agents stated that they would agree to take the ship in dock as she is, provided the spar-deck guns were placed at or near the mid-ship line of the berth-deck.

The commission next proceeded on board the Columbia with the agents, and made an examination of the hold of the ship, and fully satisfied themselves as to the strength of the ship; but with the view of satisfying the agents, agreed to have the hold broke out, section by section, and shores put in by the naval constructor corresponding with the bilge blocks, and lowering the spar-deck guns to or near the centre line of the berth-deck.

The commission then returned to the commandant's office, and addressed a written (No. 14) communication to the agents to the above effect, Mr. Hartt dissenting throughout. It was distinctly and emphatically stated to Messrs. Dow and Hanscom, on board the Columbia, by Captain Tattnall, president of the board, that it would take up considerable time to put in those shores, and that the board were satisfied to take up the ship as she was; Mr. Dow made reply that time was no object to them; they did not value any delay in consequence.

It was estimated by Mr. Hartt that it would take ten days to make the proposed alterations in the ship.

Major Chase asked leave to be absent for the time, which was agreed to.

The board then adjourned, and Mr. Hartt went on board to make arrangements.

March 25, 1853.—The commission met in commandant's office.

Present: Captain Josiah Tattnall, U. S. N.; Mr. Samuel T. Hartt, naval constructor; Mr. James Herron, civil engineer.

A communication (No. 15) was received from Messrs. Dow and Hanscom, asking that 260 tons, which they state to be above the berth-deck, may be removed down to or under it.

The board replied by letter (No. 16) stating that all on the decks above will be about 100 tons less than they propose to remove to the berth-deck, or below it, and that their proposition is inadmissible and impracticable.

The board adjourned.

March 26, 1853.—The commission met in commandant's office at meridian.

Present: Captain Josiah Tattnall, U. S. N., senior officer; Mr. Hartt, U. S. naval constructor; Mr. Herron, U. S. civil engineer.

Mr. Herron offered the following resolutions, which were adopted.

On reviewing the correspondence with the contractor's agents, and a full consideration of the personal interviews that had taken place by request of the agents, and learning that one of said agents had telegraphed his principals, Messrs. Gilbert and Secor, to meet him in Washington, the commission unanimously resolved, that it was due to the interest of the government that the senior officer of this commission should proceed forthwith to Washington, taking with him the original

correspondence, for the purpose of laying the same before the Navy Department, and affording such other information as might be necessary.

Resolved, That a letter (No. 17) be addressed to the chief of the Bureau of Yards and Docks, forwarding him a copy of the whole correspondence by mail.

April 23, 1853.—The commission convened in the commandant's office at 11 o'clock, a. m.

Present: Major William H. Chase, U. S. A., senior officer; Mr. Samuel T. Hartt, naval constructor; Mr. James Herron, civil engineer.

Commander V. M. Randolph, commandant *pro tempore* of the navy yard, communicated to the commission letters from Commodore Joseph Smith, chief of the Bureau of Yards and Docks, of the 12th 13th, and 15th instants; the letter of the 12th, dispenses with the railway test, and contains a paper marked A, prescribing the manner in which the test was to be made, based on an opinion of the Attorney General, which assumed that there was not a sufficient depth of water at or near the permanent wharf to dock the ship with the cradle in the dock.

The letter of the 13th (——) desires the commission to consult the naval constructor as to the strength of the Columbia to bear the weight of her batteries in the dock, should the board wish to keep her guns on the decks.

The letter of the 15th (——) states the desire of the Secretary of the Navy, that the test of the dock be made at as early a day as practicable. And in the absence of the senior officer, (Captain Tattnall,) Commander Randolph is joined to the commission.

The commission proceeded to business.

Present: Major W. H. Chase, U. S. A., senior officer; Commander V. M. Randolph, U. S. N.; Samuel T. Hartt, naval constructor; James Herron, civil engineer.

After reading and considering the correspondence, a letter (No. 19) was addressed by the board to Messrs. Dow and Hanscom, to know what depth of water off and near the permanent wharf would be required to make an adequate test, according to contract, with the balance dock, basin, and railway.

The board would also request to be informed to what depth it would be necessary to sink the floating dock, with her cradle in, in order to receive thereon the frigate Columbia, drawing 21 feet 8 inches water.

Mr. Herron submitted the following, which was unanimously adopted:

Resolved, In accordance with the instructions of the bureau of yards and docks of the 13th instant, that the commission request the naval constructor to give his opinion to the commission in writing, as to the strength of the Columbia to bear the weight of her batteries on the dock, the guns being run in on the gun-deck, to or near the centre line of the ship, and those on the spar deck being lowered and suitably stored on the berth-deck.

The commission, by their senior officer, Major Chase, addressed a communication (No. 18) to Commodore Smith, for the information of the honorable Secretary of the Navy, and the Bureau of Yards and Docks, stating in substance, that there was sufficient depth of water off

and near the permanent wharf, without expensive or other dredging, to make the test required by the contract, and asking further instructions.

The journal was read and approved,

The board adjourned to meet again on Monday, 10 o'clock.

April 25, 1853.—Commission met in commandant's office at 11 o'clock, a. m.

Present: Major William H. Chase, U. S. A., senior officer; Commander V. M. Randolph, U. S. N.; Samuel Hartt, U. S. naval constructor; James Herron, U. S. civil engineer.

Communications were received and read from Messrs. Dow and Hanscom, agents for Messrs. Gilbert and Secor, and from Mr. Hartt, naval constructor.

Messrs. Dow and Hanscom's letter, (No. 20,) states, in reply to the letter of Saturday, (No. 19,) as to the depth of water, "we respectfully answer, that about *thirty-five feet* would be required in both cases."

The letter of Mr. Hartt, (No. 22,) naval constructor, states that he "considers the frigate *Columbia* strong enough to sustain the weight now on board while being docked, provided the dock is not grounded in the basin, the only disposition required to be made of the guns would be to run them into a taut breeching."

Mr. Hartt offered the following resolution:

That the board proceed to test the floating balance dock basin, under the instructions of the Navy Department, conveyed to the board in the letters of the 12th, 13th, and 15th of April.

The question being put by the chairman, Mr. Hartt voted in the affirmative; Major Chase, Captain Randolph, and Mr. Herron voted in the negative.

The board adjourned until called together.

April 26, 1853.—The commission met in the commandant's office.

Present: Major W. H. Chase, U. S. A., in the chair; Commander V. M. Randolph, U. S. N.; Samuel T. Hartt, naval constructor; James Herron, civil engineer.

A telegraphic communication from Captain Tattnall, dated Savannah, 9 o'clock 3 minutes a. m., April 23, 1853, addressed to Captain Randolph, which he laid before the board. It was as follows:

"Request Commodore Newton to permit upper deck guns of *Columbia* to be put on shore without delay."

The commission unanimously decided that the *Columbia* was in the hands of the commission, and that there was no necessity for any action in the case.

This record was read and approved.

The board adjourned until called together.

April 27, 1853.—The commission met in the commandant's office.

Present: Major W. H. Chase, U. S. A., in the chair; Captain V. M. Randolph, U. S. N.; Samuel T. Hartt, naval constructor; James Herron, civil engineer.

Mr. Herron asked leave to correct the journal of yesterday, so as to

give a fuller account of the proceedings, as follows; which was unanimously agreed to, viz:

Major Chase, as president of the board, stated the first question before the commission was,

“Is the frigate *Columbia* in the hands of this commission?”

Commodore Newton, commander in chief of the home squadron, being present, was interrogated as to his views on this question, and said, in reply, that the *Columbia* was entirely in the hands of the commission, and, by his desire, reference was made to his letter of March 16, 1853, (No. 5,) to Captain Tattnall, stating that the *Columbia* was placed at the disposal of the commission by order of the honorable Secretary of the Navy.

This question was unanimously decided in the affirmative.

It was also unanimously decided, that, in view of the communication made by this board to the department on the 23d instant, (No. 18,) for the purpose of correcting an error of fact, no further action in the premises was necessary at present.

On motion of Mr. Herron, it was

Resolved, That the senior officer of the board transmit a copy of the letter (No. 22) received from the naval constructor on the 25th instant, to the chief of the Bureau of Yards and Docks. The copy of No. 22 was enclosed in No. 21.

Major Chase asked leave to be absent, stating that he would be found at Mobile if urgently required; which was agreed to.

The board adjourned until called together.

May 6, 1853.—Commission met in the commandant's office at 10 a. m.

Present: Captain Josiah Tattnall, in the chair; Major W. H. Chase, U. S. A.; Samuel T. Hartt, naval constructor; James Herron, civil engineer.

The senior officer, Captain Tattnall, having returned on Friday, 29th ultimo, commander Randolph, under the order, retired from the board.

Captain Tattnall having had the journal of the commission convened in his absence read to him, and having also read the correspondence, desired that his full concurrence to the proceedings of the commission had in his absence should be entered at large on the journal.

Captain Tattnall laid before the board the copy of a letter dated at Washington, (No. 22½,) April 6, 1853, addressed by him, as senior officer of the commission, to the Hon. James C. Dobbin, Secretary of the Navy.

This letter submits the correspondence of the board with the agents of the contractors to the department, they having declined the test required by the board, and referred the subject to their employers.

“The board, seeing no reason to recede from its requirements, by which alone, in their opinion, a fair test can be had, and believing that the contractors are endeavoring to avoid one, have no alternative but to refer the whole subject to your consideration, and to ask for instructions.”

This question being put by the chairman: Does the board accept and agree to this letter?

It was declared to meet the full approbation of the board.

The commission having learned, unofficially, the return of Mr. Hanscom, addressed a letter (No. 23) to the contractors, stating that the commission was ready to receive any communication they might desire to make.

The board adjourned.

A communication (No. 24) having been received from the agents, the board re-convened at 1 o'clock p. m., and read the letter of the agents.

It was decided to defer giving an answer until soundings were made under direction of the board, off and near the permanent wharf—Mr. Hartt and sailing-master Pierson having been directed by the commandant of the yard, at the request of the board, to take soundings off the permanent wharf.

At a meeting of the board in the morning, the commandant laid a letter of the Bureau of Yards and Docks of the 22d April, making suggestions and giving further instructions.

May 7, 1853.—Commission met in commandant's office, at 11 o'clock a. m.

Present: Captain Josiah Tattnall, U. S. N., in the chair; Major W. H. Chase, U. S. A.; Samuel T. Hartt, naval constructor; James Herron, civil engineer.

A sketch of soundings taken off and near the permanent wharf by Mr. Hartt and sailing-master Pierson, was laid before the board by Mr. Hartt.

The following resolutions were offered by Major Chase; which were unanimously agreed to by the board, with the exception of the following words in the third resolution, "That sundry tests consistent with the contract;" which words were objected to by Mr. Hartt, as not being in accordance with the contract.

Resolutions of Major Chase, considered on the 7th instant, and passed unanimously, with the exception of Mr. Hartt, but passed by the majority of the board.

Resolved, 1st. That this commission was appointed by the Navy Department to make a critical examination of the balance floating dock, basin, and railway constructed by Messrs. Gilbert & Secor, at the navy yard near Pensacola, under contract with the United States by the said Navy Department.

2d. That the commission was instructed to make such tests as would fully illustrate the value of said dock, basin, and railway for docking ships of war, connected with the safety, efficiency, and completeness of such docking operations, as well also as to ascertain if the contract had been fully complied with in all its conditions by the said Gilbert & Secor.

3d. That sundry tests consistent with the contract and with the instructions given to the commission, offered by the commission to Messrs. Dow & Hanscom, agents for Gilbert & Secor, were finally rejected by said agents, who referred the whole matter to their principals.

4th. That the refusal of the contractors by their agents, Dow &

Hanscom, to accept the test agreed upon was communicated by the senior officer of this commission to the Navy Department in person.

5th. That after these several communications had been made to the Navy Department, and to Messrs. Gilbert & Secor, other instructions from the Navy Department were communicated to the commission in letters of the 12th, 13th, and 22d April.

6th. That these instructions were at variance with the original instructions to the commission.

7th. That the commission deemed it necessary to postpone compliance with the new instructions until it could communicate with the Navy Department, and receive an answer from it. The communication made accordingly to the department was dated April 23, 1853.

That it is the opinion of this board that full tests, according to the letter and spirit of the contract with Gilbert & Secor, and by which alone the value of the dock, basin, and railway, connected with safety, efficiency, and completeness of docking operations *can be made*, provided that the dock, basin, and railway have been constructed on the principle, with the conveniences and power claimed for them by the said Gilbert & Secor, which principles, conveniences, and power again can only be ascertained accurately but by actual tests.

That, therefore, no tests short of those agreed upon between the commission and Messrs. Dow & Hanscom should be submitted to, unless the commission shall be expressly ordered otherwise by the Navy Department after it has replied to the communication of the commission dated April 23, 1853.

Major Chase offered the following resolution :

Resolved, That the answer of Messrs. Dow & Hanscom to the communication of the commission, dated 6th of May, 1853, addressed to these gentlemen, is not satisfactory, and that the senior officer again address himself to Messrs. Dow and Hanscom in order to ascertain exactly what they are prepared to do in relation to the test necessary to ascertain the safety, efficiency, and completeness of the dock, basin, and railway for docking and hauling up ships-of-war of the United States, as contracted for by parties Gilbert & Secor.

The commission having discussed the above resolution, Major Chase withdrew it, and consented to the following resolution, offered by Colonel Tattnall, as a substitute :

Resolved, That the commission is satisfied with the spot selected by Dow & Hanscom and designated in the letter to the commandant of the navy yard of the date of the 14th March, 1853. That the board, without further instructions from the department, which they are in daily expectation of receiving, cannot abandon the full test with the cradle, &c., but, in the mean time, the test without the cradle can be made so as to occasion no inconveniences to all parties concerned.

The resolution was unanimously adopted, and the senior officer requested to communicate with Messrs. Dow & Hanscom in relation thereto.

A letter (No. 25) was addressed to Messrs. Dow & Hanscom by the senior officer of the commission in accordance with the above resolution.

The board adjourned until called together.

May 9, 1853.—The commission met in the commandant's office, at 10 o'clock a m.

Present: Captain Josiah Tattnall, U. S. N., in the chair; Major William H. Chase, U. S. A.; Samuel T. Hartt, naval constructor; James Herron, civil engineer.

The journal of the 7th instant was read.

There being no business before the board, on motion, the commission adjourned until 5 p. m.

May 10, 1853.—The commission met in the commandant's office, at 10 o'clock a. m.

Present: Captain Josiah Tattnall, U. S. N., in the chair; Major William H. Chase, U. S. A.; Samuel T. Hartt, naval constructor; James Herron, civil engineer.

A communication dated the 9th instant, (No. 26,) from Messrs. Dow & Hanscom, asking the commission to designate the place where the dock should be sunk, was read.

Also, a letter of the 3d instant, (—) from the chief of the Bureau of Yards and Docks, addressed to Major Chase, as senior officer of the commission, in reply to his letter of the 23d ultimo, (No. 18.)

A letter (No. 27) was addressed by the board to Messrs. Dow & Hanscom, stating that Messrs. Hartt and Herron would attend and designate the place, off and near the permanent wharf, to sink the dock, not exceeding 150 feet.

On motion, it was decided by the board to remove the powder from the *Columbia*, computed to weigh fifteen tons, and orders were accordingly given by the commandant of the yard to Commander Randolph to have it done.

A letter (No. 28) was drawn up in reply, acknowledging the receipt of the bureau's letter of the 3d instant, and expressing the readiness of the commission to witness the limited test as therein directed by the department.

On motion, the letter addressed to Commodore Smith, chief of the Bureau of Yards and Docks, in answer to his letter of the 3d of May, 1853, was unanimously adopted.

The motion of Major Chase, to add to the letter the following paragraph—

“And that an adequate test, so far as vessels that can pass the bar of Pensacola are concerned, could be made of the floating balance dock, basin, and railway, provided said dock, basin, and railway have been constructed on the principles and with the conveniences and power claimed by Messrs. Gilbert & Secor”—

Was considered and rejected by the following vote:

Nays: Captain Josiah Tattnall, U. S. N.; Sam'l T. Hartt, naval constructor; and James Herron, civil engineer.

Aye: Major Wm. H. Chase, U. S. A.

The majority of the commission objecting on the grounds that it was not the proper time to express an opinion in the premises.

May 11, 1853.—The commission met in the commandant's office.

Present: Captain Josiah Tattnall, U. S. N., senior officer; Major W. H. Chase, U. S. A.; Sam'l T. Hartt, naval constructor; and James Herron, civil engineer.

A letter was received from the Bureau of Yards and Docks, of the 4th instant, in reply to the letter (No. 21) of the commission of the 23d ultimo, forwarding a copy of the naval constructor's report on the strength of the Columbia to bear her armament in dock.

On motion of Mr. Herron, he was authorized to have two piles driven, at the southeast end of the sunk caisson, to designate more accurately its place and prevent injury therefrom to the floating dock, as shown on the accompanying diagram, No. 1.

Messrs. Hartt and Herron made a verbal report to the board, stating that the agents had verbally desired of them to sink the dock about *twenty feet south* of the sunk caisson, and asking instructions in relation to the exact position in which the board desired to have the dock sunk, this being indicated on the diagram showing the soundings taken by Messrs. Hartt and Pierson off permanent wharf.

The board instructed the committee to confer with Messrs. Dow and Hanscom, and point out the position selected on diagram No. 1, and to request said agents to reply in writing to the letter of the board of May 10, (No. 27;) also to state any change which they might desire to make in regard to the place selected by the commission for sinking the dock. The place selected ranges about 300 feet in length of the dock, alongside of the wharf, and extends one end of the dock about fifty feet above the north angle of the wharf, from which it is distant about 140 feet.

A letter was received from Messrs. Dow and Hanscom (No. 29) in reply to the letter of the board of yesterday, and was immediately responded to by the board, (No. 30,) stating that they had no objections, provided there was a sufficient depth of water at the place proposed by the agents for docking the ship as she is.

The journal was read and approved.

The board adjourned.

Thursday, May 12, 1853, was spent in having the two guide piles planted so as to designate the actual position of the sunk caisson and prevent the dock getting on it.

Contractors at work transporting the dock from the basin to the berth selected off and near the permanent wharf, for the purpose of docking the Columbia; about eighty hands employed in the operation.

Friday, May 13, 1853.—Contractors employed mooring the dock; about seventy-five hands employed.

Saturday, May 14, 1853.—Contractors employed putting in the forward gate and sinking the dock to thirteen feet mark above the workmen's platform.

The agents appeared to be well satisfied with the ability of the whole apparatus to dock the ship, and accordingly gave notice to the commission that they would be ready to receive the ship at an early hour Monday morning.

The commission met on the permanent wharf.

Present: Captain Tattnall, U. S. N., senior officer; Major Wm. H. Chase, U. S. A.; Mr. Sam'l T. Hartt, naval constructor; and Mr. James Herron, civil engineer.

The manner in which the ship should be brought in was discussed and arranged with the agents, and the senior officer of the commission, Captain Tattnell, was duly authorized to act in the name of the commission in giving all the needful orders in relation to the movements of the ship, and in the employment of part of the crew in aiding the contractors to secure the dock.

Monday, May 16, 1853.—The ship was moved from her moorings about 5 o'clock, a. m., and took the position assigned her in a direct line immediately below the dock, and was there secured by hawsers, and an anchor laid far out to the southeast.

The furnace fires of the dock engines were in activity at or before daylight in the morning, and the pumps were put in operation at 7½ a. m.

The commission met on board the dock at about 7½ o'clock a. m., all the members being present. The front end of the dock was at that time sunk to about the eighteen feet mark above the workmen's platform, and the aft end to the twenty-three feet mark, when suddenly the starboard side of the dock rose about three feet in ten minutes, while the port side, or that nearest the wharf, was correspondingly depressed, overcoming the power of the pump. Dry "lightwood," rich with turpentine, was freely supplied from that provided for the permanent wharf engines, and the furnaces were urged to the utmost, without gaining on the leaks.

About 1 o'clock, p. m., Mr. Dow informed the commission that it was now too late to dock the ship to-day, that it would require additional ballast, and that they would be ready early on Tuesday morning.

While on the dock this day, Mr. Herron suggested to Captain Tattnell that he, as the senior officer, should waive the right of drawing up the report, and as Major Chase entertained highly favorable opinions of, and had highly advocated the floating dock, basin, and railway, that the contractors should have the benefit of his favorable impression in the tone of this report.

To this Captain Tattnell immediately replied "that he entirely concurred in the views expressed, and was on the point of proposing the same thing, though for other reasons; that as three members of the commission belonged to the navy, and as Major Chase alone belonged to the army, and might be supposed to be more entirely disinterested, he thought of proposing that he should draw the report, subject to the revision and amendments of the board.

During the evening, about 60 tons of additional ballast was put in the dock.

About 75 men employed this day.

Tuesday, May 17, 1853.—The pumps on the dock were in active operation at 45 minutes past 6, A. M., and with the aid of the additional ballasting, the dock was sunk at the aft end to the 23 feet mark, at 7h. 20'.

At 7h. 30', commenced hauling in the ship at which time the dock was well sunk, and at 19 minutes past 8 o'clock, a. m., the figure head

of the *Columbia* entered the dock, and at 21 minutes past 9 o'clock a. m., the stern of the ship passed the gate sill of the dock; and at 9h. 30 minutes a. m., the ship having reached the middle or docking position in the dock, the agents applied the lateral adjusting shores to the side of the ship, and the crooked iron levers to her keel for the purpose of bringing the latter on the centre line of the blocks, when at 14 minutes past ten o'clock, the water was let out of the side chambers. They did not succeed exactly, owing probably to the ship's having a list. It was found on pumping out that the ship rested on the starboard side of the blocks.

There was some little delay in hauling the ship into the dock, owing to the dock's moving some 20 feet towards the ship, under the strain of the ship's warping hawsers which were attached to the dock; this brought the sunk gate of the dock into much shoaler water than was intended. The dock being now about 50 feet below the position assigned it by the commission, the consequence of which was, that the arched bracing of the gate grounded, and that the keel of the ship, at midships, came in contact with the top of the gate; orders were given to run four upper deck guns forward, and the ship passed into the dock, without further difficulty. The pumps of the dock were kept actively at work from the above period, without raising the dock in any perceptible degree, when about one o'clock p. m., the commission was convened in the captain's cabin of the frigate *Columbia*. The agents having expressed doubts of being able to raise the ship with the present leakage.

Present: Captain Josiah Tattnall, U. S. N.; Major Wm. H. Chase, U. S. A.; Mr. Sam'l. T. Hartt, naval constructor; Mr. James Herron, civil engineer.

The subject of the failure of the dock to raise the ship was fully discussed.

Messrs. Dow and Hanscom stated that the leakage in the side chambers was so great that they would not be able to raise the ship in time to take the dock into the basin on the tide of to-day.

At 30 minutes past 7, p. m., they succeeded in raising the ship, all the water being out of the dock.

Wednesday, May 18, 1853.—The commission met on board the dock this morning.

Present: Captain Josiah Tattnall, U. S. N.; Major Wm. H. Chase, U. S. A.; Mr. S. T. Hartt, naval constructor; Mr. James Herron, civil engineer.

Took draught of water of the dock, and ascertained by the sight ranges the shape of the bottom of the dock with the ship in, which is shown by the accompanying sketch. Sight ranges were placed on the ship before going in dock in the following manner—

No. 1, on the stern.

No. 2, 57 feet forward of No. 1.

No. 3, 38 feet 6 inches forward of No. 2.

No. 4, 37 feet 9 inches forward of No. 3.

No. 5, 47 feet 6 inches forward of No. 4.

After the ship was in dock, they were examined, when—

No. 2, sight was $1\frac{1}{8}$ inch low.

No. 3, sight was $1\frac{1}{2}$ inch low.

No. 4, sight was $\frac{3}{8}$ inch low, as compared with Nos. 1 and 5 ranges.

The principal dimensions of the ship :

Length between perpendiculars, 175 feet.

Breadth of beam, 46 feet, 4 inches.

Depth of hold, 14 feet, 4 inches.

Draught of water forward, 18 feet, 9 inches.

Draught of water aft, 21 feet, 3 inches.

Mean, 20 feet, 0 inches.

Displacement in tons, (2,240lbs.) 2,185 tons.

The ship struck on the upper arch of the gate when going into the dock, and injured the copper on the keel, which was repaired.

The agents made a verbal application to the commission to dispense with that part of the test which required the dock to be taken into the basin, with the ship in it.

The senior officer replied, that the orders of the department were imperative on that point, the commission had no discretion to dispense with that part of the test.

The agents then stated that there was not water enough in the basin to take in the dock with the ship in it, and that they declined doing so.

The senior officer of the commission, desired the agents to make that statement in writing to the commission.

The commission instructed Mr. Herron to ascertain the depth of water in the basin at high tide, and compare to it with the tide gauge, and then adjourned to meet again in commandant's office.

The tide was found to be full and at a stand, 20 minutes before 11 o'clock a. m.; the tide gauge standing at 8 feet $6\frac{1}{2}$ inches.

Mr. Herron got Major Chase, of the commission, and Mr. Dow, on the part of the contractors, to accompany him, and witness the depth of water on the gate sill of the basin.

Soundings were made at several points on the granite course at the entrance of the basin, until 8 minutes past 11 o'clock a. m., with one result; the depth of water was found to be 9 feet $6\frac{1}{2}$ inches; the water being very smooth, the depth could be observed with great accuracy. The tide gauge was again examined, and found to stand as before at 8 feet $6\frac{1}{2}$ inches.

Adding the depth of water in the basin, 9 feet $6\frac{1}{2}$ inches, to the number observed at the same time on the gauge at the centre wharf, 8 feet $6\frac{1}{2}$ inches, and we find that the point of reference on the gauge is 18 feet 1 inch above the gate sill of the basin. If, therefore, we take the average of the numbers noted from the gauge at the time of each high tide throughout the year from 18 feet 1 inch, we have the average depth of water at high tide throughout the year in the basin.

Or by taking the number at any time marked by the gauge from 18 feet 1 inch, the remainder shows the depth of water in the basin at the time. When therefore the gauge stands at 8 feet 1 inch, it shows that there is then 10 feet of water in the basin.

The commission re-assembled in commandant's office. All present.

A letter was read from Messrs. Dow and Hanscom, of the present date, (No. 31,) in which they say: "As agents of the contractors, Gil-

bert & Secor, we decline to take the floating dock into the basin with the present loaded vessel in the dock, for two reasons, viz: First, that there is not 10 feet of water in the basin; and secondly, that the contractors have never purposed to put the dock in the basin bearing a ship with all her armament on board."

The commission addressed a letter (No. 32) in reply to Messrs. Gilbert & Secor's agents, desiring them to undock the ship, as soon as they had repaired the injuries sustained in docking her.

The board then discussed the points to be embraced in the report, and adjourned until to-morrow.

THURSDAY, MAY 19, 1853.

The commission met in the commandant's office.

Present: Captain Josiah Tattnall, U. S. N.; Major William H. Chase, U. S. A.; Mr. Samuel T. Hartt, naval constructor; Mr. James Herron, civil engineer.

The contractors commenced sinking the dock to-day at 3 minutes past 8 o'clock a. m., and the ship was afloat at 45 minutes past 10 o'clock a. m.; during which time the cleets over the side shores were taken off, and the copper repaired under them.

The ship went out of dock at 50 minutes past 10 o'clock a. m.

FRIDAY, MAY 20, 1853.

The contractors were employed hauling the dock into the basin; about fifty men employed. The draught of the dock was taken this afternoon by Mr. Hartt, after the water was pumped out, viz:

Starboard, front end, 6 feet.

Port, front end, 6 feet 2 inches.

Starboard, midship, 6 feet 6 inches.

Port, midship, 6 feet 6 inches.

Starboard, aft end, 6 feet 2 inches.

Port, aft end, 6 feet.

COMMANDANT'S OFFICE,
U. S. Navy Yard, Pensacola, June 4, 1853.

We hereby certify that we have individually examined the foregoing journal of twenty-eight pages, and that it is a correct record of the proceedings of the commission appointed to test Messrs. Gilbert & Secor's floating balance dock, basin, and railway, at this yard.

JOSIAH TATTNALL, *Captain U. S. N.*

WM. H. CHASE, *Major U. S. Engineers.*

By JOSIAH TATTNALL.

S. T. HARTT, *Naval Constructor.*

JAMES HERRON, *Civil Engineer.*

B.

This agreement, made this twenty-fifth day of October, in the year of our Lord, one thousand eight hundred and forty-eight, at the city of Washington, in the District of Columbia, between the government of the United States, by the Secretary of the Navy thereof, of the first part, and John S. Gilbert and Zeno Secor of the city of New York, in the State of New York, of the other part, witnesseth: that, whereas by an act of the Congress of the United States, approved August 3, in the year 1848, entitled "An act making appropriations for the naval service for the year ending the thirtieth day of June, in the year eighteen hundred and forty-nine;" in the third section thereof, the Secretary of the Navy is directed, forthwith, to enter into a contract with John S. Gilbert and Zeno Secor, for the complete construction, within a reasonable time from the date of the contract, of a balance floating dry dock, basin, and railways at the navy yard at Pensacola, according to the plan and specifications submitted by them to the Navy Department; the said works to be of the largest dimensions proposed in said plan and specifications, and provided the said contract can be made at a price that shall not exceed by more than ten per cent. the price which has been submitted by the said Gilbert and Secor for a floating dry dock, basin, and railway, at said navy yard, to the said Navy Department; and in the third section of said act, it is further provided, that the Secretary of the Navy shall, also, by further contract with said parties, enlarge the dimensions of said works to a capacity sufficient for docking war steamers of the largest class, of at least three hundred and fifty feet in length, if the dimensions above mentioned should not be found adequate for that purpose.

And whereas the proposals and specifications of the said Gilbert and Secor, parties of the second part referred to in the act aforesaid, specify a dock, basin, and railway, at said navy yard, capable of receiving and raising a ship-of-the-line of the first class, of five thousand three hundred tons displacement, and a steam vessel three hundred feet long, and seventy feet over the guards; and whereas the last proviso in the third section of the act aforesaid makes it the duty of the Secretary of the Navy, by further contract with said parties of the second part, to cause the said dock, basin, and railway, to be enlarged, should the plan and specifications before referred to not be found adequate for that purpose, to a capacity sufficient for docking, and hauling on and off the ways, steamers of the largest class, at least three hundred and fifty feet in length, and, it is understood, of breadth in proportion; and whereas the dimensions described in the said plan and specifications, submitted by said Gilbert and Secor, parties of the second part, and referred to in said act, are not sufficient, and do not furnish such a dock, basin, and railway as would be adequate to receive and raise, and to haul on and off the ways, war steamers of the largest class above mentioned; and, whereas the Secretary of the Navy has, therefore, called upon the said Gilbert and Secor, parties of the second part, to submit a plan and specifications of an enlarged dock, basin, and railway, of a capacity sufficient to dock and haul on and off the ways, war steamers of the class aforesaid, at least three hundred and fifty feet in length, and of

breadth in proportion, and the said Gilbert and Secor, parties of the second part, have accordingly submitted to him such a plan and specifications, which have been duly considered by the said Secretary, and have been signed by the parties hereto, and have been hereto annexed, marked A, B, C, and D, forming a part of this contract. Now, therefore, it is mutually understood and agreed by and between the parties to these presents, that the price to be paid for the enlargement of the said dock, basin, and railway, shall be in proportion to their increased size in area, as compared with the price submitted by the said Gilbert and Secor for said works, in connection with said first mentioned plan and specifications, and that ten per centum on that amount, being allowed by said act, and required by the said Gilbert and Secor, parties of the second part, shall be added to the said price: that is to say, the price submitted by them in connection with the said first mentioned plan and specifications referred to in said act, being the sum of four hundred thousand dollars for the floating dock, if built within one hundred and fifty working days after the date of the contract, or three hundred and seventy thousand dollars, if built within twelve months of said date, and the sum of two hundred and fifty thousand for the basin and railway; and in case a floating gate is made to said basin, the further sum of ten thousand dollars; the price of a dock, basin, and railway, of the enlarged dimensions embraced in the plan and specifications hereto annexed, of a capacity sufficient to dock, and haul on and off the ways, a war steamer of the largest class, at least three hundred and fifty feet in length, and of a breadth in proportion, upon the second basis aforesaid, increased in proportion to the increased area, and by the addition of ten per centum in the amount, shall be for the floating dock, the sum of five hundred and fifty-five thousand seven hundred and twelve dollars; and for the basin and railway, three hundred and fifty-three thousand two hundred and twenty-five dollars; and for the floating gate to the basin, the sum of thirteen thousand dollars: in all for the said dock, basin, railway, and floating gate, complete, according to the plan and specifications hereto annexed, the sum of nine hundred and twenty-one thousand nine hundred and thirty-seven dollars. And the said Gilbert and Secor, parties of the second part, for themselves, their heirs, executors, and assigns, covenant and agree to and with the said party of the first part, to construct and complete the said floating dock, basin and railway, and floating gate, together with all the machinery, fixtures, and apparatus necessary for successfully working the same, and for shoring and securing vessels of each class aforesaid on the ways, according to the plan and specifications hereto annexed, and with the materials specified therein of the best quality, within two years and a half from the first day of November next, to the entire satisfaction of the Secretary of the Navy; the basin to be constructed at such place in the said navy yard as he may select; and the said floating dock to be constructed at or near the said navy yard, and when completed, to be delivered and put in said basin. And the said government of the United States, by the Secretary of the Navy aforesaid, hereby covenants and agrees to and with the said Gilbert and Secor, the said parties of the second part, their heirs, executors, administrators, and assigns, in consideration of the premises and of the covenants and

agreements hereincontained, on their part to be performed, to pay to the said Gilbert and Secor, parties of the second part, their heirs, executors, administrators, and assigns, the said just and full sum of nine hundred and twenty-one thousand nine hundred and thirty-seven dollars, in the manner following, namely: when bills, certified by the superintending agent on the part of the said party of the first part, approved by the commandant of the said navy yard, shall be presented, showing that one-half of the lowest layer of the platform is laid and fastened, the sum of twenty-five thousand dollars.

That when the lowest layer of the platform is entirely laid and fastened, the further sum of twenty-five thousand dollars.

That when the second or middle layer of the platform is half down and fastened, the further sum of twenty-five thousand dollars.

That when the second or middle layer of the platform is entirely laid and fastened, the further sum of twenty-five thousand dollars.

That when one-half of the third or upper layer is fastened, the further sum of twenty-five thousand dollars.

That when the third or upper layer is entirely laid and fastened, the further sum of twenty-five thousand dollars.

That when one-half of the whole under surface and four and a half feet high of the sides and ends are coppered, the further sum of thirty thousand dollars.

That when that portion of the dock is entirely coppered, the further sum of thirty thousand dollars.

That when half of the truss-beams are down and fastened, the further sum of thirty-five thousand dollars.

That when all the truss-beams are down and fastened, the further sum of thirty-five thousand dollars.

That when half of the frames and trusses are up and fastened, the further sum of thirty-five thousand dollars.

That when all the frames and trusses are up and fastened, the further sum of thirty thousand dollars.

That when the dock is launched, the further sum of thirty thousand dollars.

That when half of the planking, inside and out, is on and fastened, the further sum of thirty-five thousand dollars.

That when the planking is entirely on and fastened, the further sum of thirty thousand dollars.

That when the caulking and coppering is finished up to twelve feet, the further sum of thirty thousand dollars.

That when the caulking and painting is entirely finished, the further sum of thirty thousand dollars.

That when the enclosing-gates, engines, and pumps are in and finished, the further sum of thirty thousand dollars.

That when the workmen's platform, bilge-chocks, centering-beams, and whale shores are in, the further sum of thirty thousand dollars.

The payments on the basin and railway to be made as near the end of each month as practicable; but no certificate to be given by the officer of the government for a less amount of work done than twenty thousand dollars. The said payments to be made by the navy agent at New York; excepting and reserving from each of said payments

twenty per centum on the bills so approved, as security for the faithful performance of the work; and after the completion and satisfactory trial, as herein provided, of said works, which said Gilbert & Secor warrant shall successfully dock and haul on and off the ways vessels of either class before named, the said twenty per centum above retained and reserved, together with the balance remaining unpaid, shall be paid over to them in full.

And it is further provided, that if the balance dock, upon trial, fails to perform the camel properties in transporting vessels of the classes heretofore named in and out of the harbor, over the bar at Pensacola, the sum of seventy-five thousand dollars of the amount due shall be forfeited by the said Gilbert & Secor and retained by the government.

And it is further mutually understood and agreed by and between said parties, that no payment shall be made on this contract beyond the appropriations now made for said works until Congress shall have made appropriations for the same.

And it is further agreed, that all such materials as may be purchased by order of the Secretary of the Navy, and delivered or to be delivered at said navy yard for said works, shall be received by said Gilbert & Secor and paid for at the bills of cost thereof, and to be deducted from the payments to be made within the first year of the time herein specified for the completion of the works.

And it is further agreed, that said works shall be constructed under the supervision of a competent person or civil engineer, appointed by the party of the first part, who shall have power to reject and exclude any materials from said works which are not in accordance with said specifications hereto annexed, either in kind or quality; and who shall see that the said works are constructed in conformity to said plan and specifications hereto annexed.

And it is further agreed, that the said works shall progress in their usual stages in the proper ratio of time, in proportion to the time specified for the completion thereof, and shall not depart from the said plan and specifications hereto annexed, without authority from the Secretary of the Navy; but if, in the course of the construction of said works, it shall be evident to the said Gilbert & Secor that advantageous changes and improvements can be made upon the said plan and specifications, in consequence of the enlargement of the structure, the said Gilbert & Secor, on submitting said changes and improvements to the Secretary of the Navy, and receiving his sanction thereof, will be authorized to adopt the said changes and improvements, provided that each and every such change and improvement shall be wholly at their cost and expense.

And it is further agreed, that the said party of the first part shall provide the vessel or vessels necessary for the purpose of testing the capacity of said works to dock vessels of the class aforesaid, and test camel properties to the satisfaction of the Secretary of the Navy, within three months after the completion of said works, certified by the superintendent on the part of the United States.

And the said Gilbert & Secor further agree that, in case they shall fail to execute the work herein agreed to be done on their part, and especially if the said dock, basin, and railway, after completion, shall

prove insufficient to dock successfully vessels of the navy, according to their warranty aforesaid, then the said Gilbert & Secor shall refund to the treasury of the United States the sums of money which may have been paid to them under this contract, and they are to have the privilege of removing the materials which they may have used in the construction of the said dock, basin, and railway; but the said materials are not to be removed, in such case, until the moneys so advanced shall have been refunded; and the said materials are to remain as an additional security for the performance of the contract, and to refund the said money as advanced, in case of failure as aforesaid.

And the said Gilbert & Secor, parties of the second part, do further engage and contract that no member of Congress, officer of the navy, nor any person holding any office or appointment under the Navy Department, shall have any interest, or be in any wise concerned, either directly or indirectly, in any of the issues, profits, or receipts of this contract.

It is further agreed, that the said Gilbert & Secor, parties of the second part, shall, on demand, give to the said party of the first part their bond, with sufficient sureties, in the penalty of one hundred thousand dollars, conditioned for the faithful performance, on their part, of this contract.

In testimony of all which agreements and stipulations, the parties above named have hereunto signed their names and affixed their seals, this twenty-fifth day of October, Anno Domini one thousand eight hundred and forty-eight.

J. Y. MASON, [SEAL.]

Secretary of the Navy.

JOHN S. GILBERT, [SEAL.]

ZENO SECOR. [SEAL.]

Signed, sealed, and delivered in the presence of

WM. G. RIDGELY,

Witness as to signatures of J. Y. Mason and John S. Gilbert.

P. M. WETMORE,

Witness as to Zeno Secor.

A.

SPECIFICATIONS OF A BALANCE FLOATING DRY DOCK, TO BE BUILT OF YELLOW-PINE, FIRST QUALITY, AS IT MAY BE PROCURABLE AT PENSACOLA.

Dimensions.

We propose to increase the outside dimensions to three hundred and fifty feet (350) in length, and to one hundred and five feet four inches in breadth, the depth being thirty-eight feet three inches.

The foundation will be composed of three layers of timbers; the two lower ones will be each one foot square, and each made tight, independent of the other. The courses of timber which form the first or lowest layer of the platform will be made in three lengths; the first

begins with a piece of 45 feet, then one of 40 feet 4 inches, and then one of 30 feet; the second course begins with a piece 35 feet, then another of 35 feet, and then one of 45 feet 4 inches; the third course begins with a piece of 60 feet, and then one of 50 feet 4 inches. These dimensions are repeated throughout the length of the dock.

They have 5-foot vertical lock-scarfs, each scarf having 4 $\frac{7}{8}$ -inch copper butt bolts, 2 feet long. Each course is trenailed laterally with 1 $\frac{3}{8}$ -inch locust, the trenails being 2 feet apart, fox-wedged, and reaching in 2 feet. Every seam in this platform is made about $\frac{3}{8}$ of an inch out of gauge, and then caulked from above with wedges of soft wood, extending down 4 inches into every seam, making it a water-tight platform. The top of this layer is covered with felt, laid in tar. This platform is seen in sheet A, fig. 5, letter *a*.

Fastening.

The letter T throughout the plans and specifications stands for trenails; the letter B stands for blunt iron bolts; the letter C, in black ink, stands for iron clench and iron screw-bolts; the letter C, in red ink, stands for copper bolts.

The next or middle layer runs not transversely, but longitudinally; it is composed of scarf pieces of from 30 to 45 feet in length, the scarfs in this layer being keyed. Each course is trenailed laterally every 2 feet, and down through and through with 1 $\frac{3}{8}$ -inch locust, two feet apart, like the first layer; it is then caulked with wedges of soft wood.

This course, as well as the one below, is of 12-inch square timber, except two of the courses, which are 12 inches broad and 18 inches deep, and the middle course, which is 16 inches broad and 24 deep; they may be termed keelsons. They jog down into the lower layer 3 inches along the whole length of the platform, and also project above 3 inches. (See sheet A, figures 1 and 5, letter B, and sheet C, figures 17 and 18, letter *e*.)

The third or upper layer of timbers are 16 inches deep by 28 inches broad.

They are composed of two courses of timber, side by side, each 14 inches broad and 16 inches deep, locked, scarfed, keyed with live oak, ten keys in each beam, 8 inches square, reaching down through.

They are screw-bolted together with inch iron, one bolt every four feet, and jogged over the said projections of the longitudinal courses; they are placed four feet apart from centres, and bolted through and through with $\frac{7}{8}$ -inch copper bolts, 2 feet apart and clinched. They form the lower parts of the truss-beams, being Gilbert's patent clamp bottom. (See sheet A, figs. 3 and 5, letter—.)

The thick work.

The sides and ends are built up as far as 8 $\frac{1}{2}$ feet high, with thick strakes, the lower course, all round, being 18 inches deep by 12 inches thick, and is coppered, bolted with $\frac{7}{8}$ -inch bolts, one foot apart, down through and through the lower courses of the platform, and clinched. (See figs. 1 and 5, letter *c*.)

The next two courses, all around of this thick work, will be 12 by 12, and one 12 by 15, jogged in as before. Each of these courses will be bolted down to those below it, with inch iron bolts, 3 feet apart, extending down 3 feet. (See sheet A, fig. 5, *g*, *h*, *i*, *j*, and figs. 6 and 13.)

The sides and ends thus far up will be caulked inside and out with wedges of soft wood. The whole under-surface, and the sides and ends, $4\frac{1}{2}$ feet high, is next covered with felt, laid in tar, and sheathed with 32-ounce copper, fastened on with $1\frac{1}{2}$ -inch composition nails; the structure may then be launched and built up in the water.

The trussed floor timbers.

They are made in that form which may be termed double solid truss-beams, the lower truss (see sheet A, figs. 4 and 5, letter *k*) being 16 inches square, the inner ends lying on a cheek (*m*) 14 inches deep; this truss rises above the light platform 4 feet, at the middle line of the dock; the upper one (see sheet A, figs. 4 and 5, letter *h*) is 16 by 18 deep, making the depth of the dock bottom $7\frac{1}{2}$ feet. They are placed 4 feet apart from centres, making 87 in the whole length of the dock. Between each truss-beam, and along the middle of the dock, there will be an iron clamp band, 5 inches wide by $\frac{3}{4}$ of an inch thick, passing over a keelson formed of four pieces, extending from the platform up to the line of the upper truss, running the whole length of the dock, and halved into the said truss. (See sheet A, fig. 7, letter *i*.)

These bands (see sheet A, figs. 10 and 11, letter *j*) pass down to the tight platform, and are bolted through the said keelsons with inch iron screwbolts, one through each course.

Each of the courses which form the keelsons is separately fastened, one upon another, with inch iron bolts, reaching down three feet, except the lower piece, (see sheet A, figure 7, letter *k*,) which is fastened with $\frac{7}{8}$ -copper bolts, down 20 inches into the tight platform, there being two bolts through each truss-beam, and one between.

The several parts of each truss, (*k* and *h*,) and the cheeks below them, (see sheet A, figures 3, 4, 5, *m*,) will be separately fastened down through the parts below, with inch iron bolts, three feet apart, diagonally, the bolts passing through all the parts, down to the tight platform.

Two of the beams, each of them 100 feet from the end of the dock, will be caulked, making a tank of 150 feet long, across the middle of the dock, (see sketch sheet, † letter 5.)

Outer ribs.

The outer ribs of the sides and ends of the dock chambers, 12 by 12-inch timber, except the corner posts which are 24 by 24-inch timber, one foot apart, in the clear, (see sheet A, figures 5 and 6, letter *n*, and sheet B, figure 16, letter *n*.) They are hook-tenoned into the ends of the lower pieces of the truss-beams, (see sheet A, figure 9, letter *o*,) and fastened with two one-inch iron screwbolts, passing through the beam and tenon, and are also fastened through the thick work of the

sides and ends, with $1\frac{3}{8}$ locust trenails, two trenails in each rib. The thick work is also butt-bolted through, and clinched with $\frac{3}{8}$ -inch copper, 4 bolts in each scarf. The ribs are also supported at their heels by stringers, (see sheet A, figure 5 and B, figure 16, letter *l*), 16 inches square, jogged 2 inches into each rib and fastened by two 1-inch copper bolts in each truss-beam, reaching down 21 inches into the tight platform.

This outer wall is also supported by a series of five parallel arches, made in two thicknesses of 8 by 16-inch plank, and jogged into the outer ribs 2 inches, (see sheet A, figure 5, letter *m'*, and sheet B, figure 16, letter *m'*), the lower ends of the arches being jogged into the stringer *l*, and fastened with one iron screwbolt, and two blunt bolts at each end. The arches are also fastened through the outer ribs, with $1\frac{1}{4}$ locust trenails, one in every alternate rib. Each of the outer ribs, which are cut off by the windows and fastened to thick strakes, 12 by 12, (see sheet A, figure 5, letter *p*, and sheet B, figure 16, letter *p*), running along the outside of the dock, with a $\frac{3}{8}$ -inch iron screwbolt; and that part of the arch which crosses the windows is fastened with screwbolts of the same size, and at distances of three feet apart.

One-half of the said outer ribs pass down between the truss-beams to the tight platform, and are dove-tailed into the fore-and-aft stringer, (*l*), to which they are fastened with an inch iron bolt, (see sheet A, figure 9, letter 9.)

Sloping ribs.

The inner ribs that form the frames of sloping sides of the chambers are likewise 12 by 12-inch timber; they start from the tight platform, at a distance of $25\frac{1}{2}$ feet from the middle of the dock, and pass up on an angle of 45 degrees; the upper ends passing between the outer ribs, to which they are fastened with an inch iron screwbolt, (see sheet A, figures 5, 8 and 14, letter *r*.)

Like the latter, they are one foot apart; they are secured at their lower ends to the truss-beams by a hook, dove-tailed, jogged 16 inches into the lower part of the truss-beam, (see sheet A, figure 5 letter *s*;) they have a shoulder of 2 inches that rests upon the tops of the truss-beams, clamping its several parts together; four screw-bolts of inch iron pass through the dovetails, one through each part of the truss-beams; they are backed at their heels by a stringer, (see sheet A, figure 5, letter *t*), 16 inches square, running along on the top of the truss-beams within the chambers, fastened with two iron bolts in each truss-beam, reaching down to the platform.

They are also supported in front by stringers, (see sheet A, figs. 5 and 4, letter *u*), 16 by 24, bolted along the middle compartment of the dock, fastened the same as the other. They are also each backed and supported by a sloping stanchion, 12 by 16, (see sheet A, fig. 5, letter *v*, and sheet D, fig. 19, *v*), tenoned into the top of the truss-beam, and passing up between two of them, supporting them on shoulders of two inches, and fastened by an inch iron screwbolt reaching through and through two ribs. On each side of the heels and shoulders of these stanchions there are 8 by 16-inch clamps, (see sheet A, figs. 5 and 8,

letter *w*, and sheet D, fig. 19, letter *w*,) bolted upon the top of the truss-beams with an inch iron bolt in each beam, and with the same above into the sloping ribs. These clamps are in lengths of 30 and 50 feet, and key-scarfed, the scarf being screw-bolted; they are also fastened to the stanchions by screwbolts of $\frac{7}{8}$ inch iron, passing through and through each of them.

There is a system of truss-work connected with these stanchions and stringers, running the whole length of the dock; it is composed of scantling, 6 by 16, jogged into the stanchions two inches, and bolted together with iron screw-bolts $\frac{7}{8}$ inch, framing passing through and through the trusses and stanchions where they cross. The trusses are keyed up with white oak wedges upon an oak chock. (See sheet D, fig. 19, letter *x*.)

Upper chambers.

The upper chambers (see sheet A, figs. 5 and 6, letter *y*) are seven feet four inches wide at the top; their frames consist of the outer ribs of the dock, as already described; the inner frame is formed of upright stanchions 12 by 12, (see sheet A, fig. 5, letter *z*, and sheet C, fig. 17, letter *z*;) these stanchions pass up between every alternate sloping rib of the lower chamber; they are tenoned into the trussed beam, the tenon being 8 by 12, and fastened by a screwbolt, inch iron, reaching through the beam. (See sheet A, fig. 5, letter *a'*.) They are also supported on both sides, where they pass between the sloping ribs, by clamps 9 by 16, (see sheet A, fig. 5, letter *a''*, and sheet C, fig. 17, letter *a''*,) and also by clamps at their heels of 12 by 16, (see sheet A, fig. 5, letter *b'*, and sheet C, fig. 17, letter *b'*;) the clamps are in lengths of 30 to 60 feet and key scarfed, the scarfs being fastened with inch iron screwbolts.

These clamps are jogged into the stanchions two inches, and fastened by inch iron screwbolts passing through each stanchion. The lower clamps (*b'*) are fastened to the truss-beam by two one-inch iron bolts in each beam, reaching down to the platform. Between these upper and lower clamps, and connected with the stanchions, there is a system of truss-work of 8 by 16 scantling jogged into the stanchions two inches, and fastened by inch iron screwbolts passing through where the trusses cross the stanchions; it is keyed up at the ends against oak chocks, (see sheet A, fig. 5, letter *d'*, and sheet C, fig. 17, letter *d'*;) there is a 12 by 12 plate tenoned along the top ends of the stanchions (see sheet A, fig. 12, letter *c'*) fastened by two $1\frac{1}{4}$ -inch locust trenails passing through each tenon.

There is also a clamp 10 by 16 on the back of these stanchions running along under the sloping ribs; it is screw-bolted through stanchions, and bolted to the sloping ribs with inch iron; one bolt in each stanchion rib. (See sheet A, fig. 5, *f'*.) Between each of these 12 by 12 stanchions there is a stanchion 6 by 12 (see sheet C, fig. 17, letter *f''*) extending from between the clamps *a''* up to the plate *e* of the chamber; it is fastened at its heel with $\frac{7}{8}$ inch screwbolts, and is tenoned into the under side of the plate, and fastened with a trenail. Each cross frame of the side chambers being thus composed of the outer ribs *n*, the

sloping ribs *r*, and the stanchions of the upper chamber *z*, is supported by a 12 by 12 inclined stanchion (see sheet A, fig. 5, letter *g'*) halved on the side of the truss-beam, near its end, and passing up under the sloping rib, midway between the two lines of trussing is fastened with two bolts of inch iron at both ends.

There are two 12 by 12 horizontal beams (see sheet A, fig. 5, letter *h''*) across each frame, and fastened to the outer rib and to the stanchions of the upper chambers with iron inch bolts, and extending across the chambers to the inclined stanchions *g'*, bracing the lower chambers in two places every four feet along its whole length, as equally distant as the arches and truss work will permit.

There will be a 12 by 12 beam across the upper chambers five feet below the deck, fastened with $\frac{3}{4}$ -inch iron screwbolts. (See sheet A, fig. 5, letter *i'*.)

There will be eighty-seven of these frames in each of the side chambers.

Transverse bulkheads in chambers.

Across each of the side chambers there are ten tight bulkheads; three of these at each end are thirty-eight feet apart.

The main pump well, in the middle of the chamber, is forty-six feet, and the two smaller pump wells in each chamber about six feet.

These bulkheads are made of six-inch plank as far up as the lower chambers, and above that height, reaching up to the top of the chambers, (see sketch sheet X, 13,) of four-inch plank, fastened to the frames of the lower chambers with $\frac{3}{4}$ -inch iron bolts, and above with 10-inch iron spikes.

The level of the dock longitudinally is secured by means of these bulkheads by pumping more or less water from one end of the dock than from the other while the dock is being raised or lowered.

No use is made of them generally after it is pumped out.

There are openings at the bottoms of the bulkheads, furnished with gates or valves for the passage of water to and from the pump well.

The general arrangement of the bulkheads, valves, and pumps in the chambers, and the number of gates in the side chambers, are shown in the sketch sheet X.

All the valves that open outside to admit water into the dock will be of composition; those for the passage of water through the bulkheads to the pump well will be of mahogany.

There will be eight windows through the upper chambers, 12 feet long and 7 feet high, their sills being 22 feet above the upper side of the dock bottom.

The plank on the bottom of the windows will be 6 inches, fastened with $\frac{3}{4}$ -inch iron bolts to beams 8 by 12, tenoned into the outside ribs and into the stanchions of the upper chamber, and fastened with inch iron screwbolts.

The tops of the windows will be planked with 4-inch plank, fastened on to 6 by 8 beams, tenoned into the outside ribs and stanchions of the upper chamber.

The sides will be planked with the same thickness, and fastened

with 9-inch spikes. (See sheet C, fig. 16, letter *h''*, and sketch sheet X, 8.)

Deck of chambers.

The tops of the chambers are decked over with 3-inch plank, the deck beams being 5 by 8 scantling halved together, and laid so as to cross diagonally, forming lattice bracing; the deck beams are fastened with $\frac{3}{4}$ -inch bolts, and the deck with 8-inch iron spikes. (See sheet A, fig. 12, letter *h''*.)

Planking of the dock.

The outside ribs are planked up above the thick work with 4-inch plank, and fastened with $1\frac{1}{4}$ trenails—two trenails through each rib; the trenails are caulked or wedged on the outside.

There will be three thick strakes, 12 by 12, running the whole length of the dock, one at the bottom and one at the top of the windows, one along the upper ends of the windows, and one along the upper ends of the ribs, fastened with $\frac{7}{8}$ -inch iron screwbolts through the ribs, one on each rib. (See sheet A, figs. 5 and 13, letter *p'*.)

Every butt in the planking will have two $\frac{3}{4}$ copper bolts, as far up as twelve feet from the bottom of the dock, to which height the whole is to be coppered with 32-ounce copper, as before.

Above that height the butt-bolts will be of iron. (See planking on sheet A, figs. 5 and 13, letter *p''*.)

The insides of the upper chambers will be planked with 4-inch plank, and fastened in the same manner as above. (See sheet A, fig. 5, letter *r'*.)

The ends of the chambers will be planked up with 6-inch plank, and fastened with trenails the same on the sides, copper butt bolted up to 12 feet. (See sheet A, fig. 6, and sheet B, fig. 16, letter *r'*.)

The sloping ribs are planked up with 6-inch plank alternately, with a strake of 12 by 12 timber, of such form as to afford a step or altar to place the heels of the shores upon. (See sheet A, figs. 5 and 14, letters *a'''* and *b'''*.)

This planking and the thick strake will be fastened with $1\frac{1}{4}$ trenails, passing through the ribs, and $\frac{7}{8}$ iron butt bolts; two trenails in each sloping rib. In the planking the thick strakes will have one $\frac{7}{8}$ iron bolt, and one trenail in each rib. All the planking above the thick work will be caulked with new oakum, in the ordinary way of caulking new ships of the largest class. The platform for the workmen to stand upon will be of $2\frac{1}{2}$ -inch plank, laid on the fore-and-aft beams. (See sheet A, fig. 4, letter *h'''*.)

The platform finished is seen at fig. 15, letter *k'''*; it will be fastened down with 5-inch spikes.

The dock will be furnished with a floating gate. It may be necessary to shorten the dock with such a gate when a ship-of-the-line, with all her armament on board, is to be taken up; it will be placed forward of the ship, in grooves across the bottom and up the sides of the chambers. It will be 8 feet deep from the keel to the deck, and will be of the same form and proportions as that described for the basin. The fastening for this gate will be of iron.

The time which would be required for us to make and present, in proper form, a detailed estimate of the weight of the various materials to be used in the construction of the balance dock would be very great—more, perhaps, than can be allowed us. We therefore give the result of our calculations, without the details. The dock, when ready for use, will weigh 5,000 tons net, of 2,000 pounds each.

As we do not understand it to be the intention of the department to haul ships ashore with their armaments on board, we think the depth of the basin, as now presented to us, will be ample.

Gates.

There is to be a gate at each end of the dock, made of wood, and so arranged as to open and shut on a hinge extending across the entire length of the gate. (See sheet E, figs. 21, 22, and 25, letter *a*.)

This bottom timber of the gate is 18 by 24 inches; the lower edge is half round, with the ends entirely rounded, so as to pass through a bitt two feet on its face. (See same sheet, fig. 21, letter *b*, and figs. 23 and 27, fig. 6, letter *c*.)

The sill piece upon which the gate rests is 18 by 18 inches, the upper edge being hollowed so as to receive the bottom timber of the gate. (See same sheet, figs. 24 and 26.)

Both this sill piece and the bitts are fastened to the end of the dock by 1-inch copper screwbolts, eleven bolts in each bitt, and three feet apart in the sill piece. The frame of the gate will be of stanchions 8 by 12, (see same sheet, figs. 20, 22, and 25, letter *d*,) placed fifteen inches apart, reaching up to a line with the lower line of the side windows, 22 feet above the bottom of the dock.

The ends of the gates will be on an angle of about forty-five degrees; the end pieces (see same sheet, figs. 20 and 22, letter *e*) are 18 by 24 inches; the stanchions are mortised into the lower piece of the gate, and into the slanting end pieces, the tenons being 8 by 8 square, and each fastened with copper-clinched bolts of $\frac{3}{4}$ -inch. (See bottom of fig. 25.)

The frame is supported by two trusses, one at the top and one midway down. (See same sheet, figs. 20, 21, and 25, letter *g*.) Each truss is supported by five iron key bands, five inches wide and three-quarters of an inch thick, passing around the cord and arch of the truss. (See same sheet, fig. 20, letter *k*.) The ends of the arches and cords are screw-bolted together (see same sheet, fig. 20, letter *k*) with three iron bolts one inch thick.

These trusses are supported in their horizontal position by iron braces $1\frac{1}{2}$ inch thick. (See same sheet, fig. 25, letter *k*.)

The gates are planked up with 4 by 12-inch plank, and fastened as far up as twelve feet from the bottom of the dock, with 9-inch composition spikes, two through each plank in every rib, and above with iron spikes, the like number of spikes in each rib.

The gate at the forward end of the ship is made to unship by means of a sloat in the bitt. (See same sheet, fig. 27, letter *l*.)

There will be two wicket gates in each, 18 inches square. (See same sheet, figures 21 and 22, letter *m*.) The timber which forms the

frames of the end of the deck, against which the gates close, is two feet square; the corner post (see sheet A, figure 6, letter *n*) is rebated to receive the end planking (*v'*) of the deck.

The slanting post is also two feet square, (see same sheet A, figure 6, letter *r''*;) it is tenoned into the post, (*p''*;) the tenon being 6 by 8 inches, and reaching in 6 inches; this post (*r''*) extends down to the truss-beam, half of its thickness being cut away, leaving a shoulder of one foot resting on the top of the thick work, (*q'*;) to it is fastened with $1\frac{3}{8}$ -inch trenails, two through each thick strake, and one-inch copper bolt is also driven in through each thick strake two feet long, as it passes down to the truss beam below.

The corners are fastened by oak-knees, side 12 inches, 12 inches on the face at the ends, and 20 through the throat, each arm being $5\frac{1}{2}$ feet long, and bolted with $1\frac{1}{2}$ -iron bolts, 12 in each knee, reaching into the posts and thick work 22 inches.

The knees are seen on sheet A, figure 6, letter *r'''*. The thick work is dovetailed at the corners of the dock, and each dovetail has a 1-inch copper bolt reaching through the post and clinched. (See sheet A, figure 6, letter *q''*.)

J. Y. MASON,

Secretary of the Navy.

JOHN S. GILBERT,

ZENO SECOR.

Witness: WM. G. RIDGELEY.

B.

Specifications for basin.

The stone basin will be 120 feet wide and 365 feet long, having on three sides walls of granite masonry 13 feet high, 6 feet thick at bottom, and 3 at top, battering 3 feet in the whole height.

The walls will be built up to low-water mark with split granite, above that height with granite well cut. The depth of water in this basin at high water will be 10 feet over the projecting courses of stone on which the dock is to rest.

The foundation of the basin will be formed of round 12-inch piles, driven 4 feet apart, and capped with 12 by 12 timber and 5-inch planking, (see sheet G, figures 40 and 41, letter *a*;) secured to them in the firmest manner; the said piles will be driven until a ram of 2,200 pounds falling 30 feet will not move them more than half an inch.

There will be double this number of piles under the courses of granite projection. (See sheet G, figure 41, letter *b*.)

The platform will be caulked with wedges of soft wood; four courses of hewn granite, 12 by 12, will be laid in cement upon the platform, along the middle of the basin, in the direction of its length. (See sheet G, figure 39, letter *d*.)

Two other courses, 12 by 18 wide, (see same sheet and figure, letter *e*;) will be laid in the same direction on each side 20 feet from the

central courses, forming level projections of granite stringers on which to rest the dock.

The spaces between the courses of granite and the spaces out to the side walls are filled with concrete 6 inches deep. There will be three courses of stone across the bottom at the outer end of the basin; the inner courses (see same sheet, and fig. *d'*) will be 12 inches thick, and form a shoulder for the gate to bear against. The two outer courses (see same sheet and figure, letter *f*) will be 6 inches thick.

All these courses will be fastened with $\frac{3}{8}$ copper bolts, two in each stone, (see same sheet and figure, letter *f'*,) driven down into the timber below. There will be grooves in the outer end of the side walls of the basin, 2 feet broad and 1 foot deep, to receive the boat gate. (See same sheet, fig. 39, letter *g*.) The basin will be enclosed with the boat gate. This gate is represented in figs. 36, 37, and 38, sheet G. Its depth from the under side of the keel will be 13 feet, its breadth on deck 12 feet, and its length 128 feet, reaching across the mouth of the basin, its ends fitting into the grooves *g*, fig. 39, in the side walls of the basin.

A cross section of this gate is seen at fig. 38, letter *h*, sheet G. The keel will be 2 feet broad by 16 inches deep; the ends or stern pieces will be 2 feet square, with an apron to back them 18 by 18 inches; the keelson will be 2 feet broad and 18 inches deep; the ribs will be 12 inches deep and 8 inches broad, placed 2 feet apart, and jogged into the keelson.

It will be planked up with 4 by 12 plank; the upper course, or gunwale, will be 12 by 12 deep, and, in connection with the deck beams, will form the deck frame.

The ribs will be fastened at their upper ends to this gunwale by inch iron screwbolts; the deck frame is seen at fig. 37, letter *i*.

The deck beams will be 8 inches wide and 10 inches deep; they will be placed 4 feet apart from centres, and cross diagonally—one set of beams crossing another, halved where they cross, the ends being let down flush into the thick gunwale; the deck plank will be 3 inches by 12.

Half way between the deck beams and the keel there will be beams across of 8 by 8 scantling, resting on clamps running the whole length. (See fig. 38, letter *j*.)

There will be a wicket gate of two feet square, so arranged that one man can open and close it; the boat will be trenailed and copper-fastened as fully as the best merchant vessels of like tonnage.

It will be coppered with 24-ounce copper up to 11 feet, and have all the necessary machinery and rigging for using it.

J. Y. MASON,

Secretary of the Navy.

JOHN S. GILBERT,

ZENO SECOR.

WM. G. RIDGELY,

Witness to the signatures of J. Y. Mason and John S. Gilbert.

P. M. WETMORE,

Witness to the signature of Zeno Secor.

C.

Railway.

The middle bedway is formed of two courses of timber of 45 and 50 feet lengths, each course being 17 inches wide and 18 inches deep, scarfed and screw-bolted together, so as to form a surface of 34 inches, the depth being 18 inches. (See sheet F, figs. 1 and 5, letter *a*.) The side bedways are formed of two courses of timber, 45 and 50 feet lengths, each course being 14 inches wide and 18 inches deep, scarfed and screw-bolted together. They are grubbed out so as to form a surface of 2 feet on their faces, with 4-inch flanges above on each side, to form guides for the upper ways. (See sheet F, figs. 1, 2, and 5, letters *b b b*.)

The foundation of the bedways on the shore is made by driving two rows of piles, 14 inches diameter and 3 feet apart, in the direction of the length of the ways, and capping them with cross-ties 16 by 16 inches, the ties 12 feet apart, and extending across the top of every third set of foundation-piles, which are tenoned into them three inches, (figs. 1, 2, and 5, letter *d*.)

Two courses of timber, 15 inches deep by 17 broad, jogged down into the cross-ties 4 inches, and extending the whole length of the bedways, are next laid to receive the stone wall. (See figs. 2 and 5, letter *e*.) The stone wall will consist of two or three courses of granite, each block being 34 inches wide on its face, and not less than 6 feet long; the upper and lower sides to be partially levelled or rough-hammered, so as to lie firm in cement. (See figs. 2 and 5, letter *f*.)

The bedways will be cut into the back wall of the basin, so that their upper surfaces will be flush with the said wall; they will pass up into the yard on an inclined plane of 1 foot 3 inches to 100 feet.

The bedways on the floating dock are of the same dimensions as those on the land will be, laid down upon the truss-beams at the outer end of the dock, and will be fastened to a permanent bedding on an inclined plane rising towards the inner end of the dock, 1 foot 3 inches to 100 feet, so as to bring them on a line with those on shore, when the dock is made to rest on the bottom of the basin:

When the bedways of the dock are not under a ship, they will be hauled off, with the cradle upon them, on the shore bedways, the docks being raised so that the lower edge of the bedding under the ways will be on a line with the bedway on shore. (See fig. 7, letter *f*.)

The middle bedway will be fastened down to the timbers (fig. 5, sheet F) with iron bars $\frac{3}{4}$ of an inch thick by 5 inches wide, fastened at their upper ends to the middle bedway, and at their lower ends to the timber *e* of the foundation. These bars will pass between the two thicknesses of the middle bedway down through the stone foundation, and through the middle of the timbers *e*, and fastened with iron keys 1 inch thick and 3 inches wide.

The middle upper ways of the cradle on which the ship is moved to the shore, are made of two courses of timber, 16 by 17 inches broad; they are screw-bolted together, forming a surface of 34 inches. (See figs. 3 and 5, letter *g*.)

The sideways are made of two courses, 12 by 16 inches, screw-bolted together, forming a surface of 24 inches. (See figs. 3 and 4, letter *h*.)

Both of the middle and sideways of the cradle are made of sections of about 32 feet in length; the sections of the cradle are fastened together by plates of iron, 2 inches thick and 6 inches wide, by about 12 feet long, passing over the joints, (in fig. 3, joints marked JOINTS,) the plates on one part lapping over those on the other; they are screw-bolted to the ways, being keyed together with iron keys $\frac{3}{4}$ of an inch thick by 4 inches wide. (See figs. 3 and 4, letter *i*.)

The joints in the middle upper way (see fig. 3, letter *j*) are supported by plates 10 inches wide by 2 inches thick, and keyed with iron $1\frac{1}{2}$ inch thick by 6 inches wide.

Across the top of the cradleways are ties (sheet K, figs. 3, 4, and 6) of wood, 16 by 16 inches, placed 8 feet apart, locked down over them 4 inches, and fastened with screwbolts.

Between each of these ties there is one keel-block, 16 inches broad by 12 inches deep, placed upon the middle way of the cradle.

On every alternate tie there is placed an ordinary solid bilge-block, made to slide up to the vessel's bottom, where it is held by a pall working in a cast-iron rack.

These bilge-blocks are also to be used in the floating docks when the cradle is not in use. (See fig. 6, letter *k*.) There are also braces of wood 12 by 12 inches (*m*, fig. 3) jogged into the side and middle ways, where they are supported by chocks; these braces are jogged up 4 inches into the ties, as they pass diagonally across from one way to the other.

The cradle is also strengthened with iron rods $1\frac{1}{4}$ inch diameter, (*n*, fig. 3,) passing from the middle to the sideways, diagonally, and made to tighten with connecting screw-swivels; where the iron rods are attached to the ways, there are, in the plates of iron which fasten the section of the ways together, projections, into which the ends of the rods are screwed. (See fig. 3, letter *l*.)

The foundation of the basin and railway will be of the most solid construction, according to the nature of the soil. The cradle is to be so arranged that it can be removed from under the ship and replaced without difficulty.

Engine pumps and other fixtures.

The engines, one on each side, (see *a*, sheet H,) will be horizontal and of twenty horse-power, and placed on the guard, (*w*, fig. 5, sheet A;) a plan of half of which is shown by fig. 16, same sheet.

The boiler (*b*, sheet H) is of the locomotive kind, and placed at one end of the engine, with the furnace on one side.

The pumps (*c*, sheet H) are 20 in number on each side; they are made of plank 5 inches thick, and fastened with inch iron screwbolts, passing through and through all the parts; they are 10 feet long, with 18 by 18 inches square chambers, and 3 feet stroke; 16 of the pumps will be placed in the main pump well, directly under the engine, and 2 of them will be placed in smaller wells, adjoining the main well.

(See *a'*, sheet H, for these pumps and small well.) The upper and lower boxes (*e*, sheet H) are to be of composition; the lower one is made to fit the chamber by cork placed in groove (*f*,) and the upper one is leathered, the ring (*g*) screwing down upon it.

The valves are of the kind called butterfly valves; they are also of composition; their form is seen at (*h*.) The guide-rod (*i*) is of iron, and the connecting (*j*) is also of iron.

The gearing and shafting by which the pumps are driven is shown at *k*, the bevelled wheels *l*, the crank wheels *m*, the pinion wheels *n*, the shaft, running the whole length, *o*, the clutches, by which the pumps may be thrown out of gear, *p*, section of clutch.

An elevation of one of the crank wheels and pinions is seen at *q*. At the end of the shaft *n*, is seen the windlass *r*, by which the gates at each end of the dock are opened.

The chains by which the gates are opened will be $\frac{5}{8}$. The forward gate will be hoisted perpendicularly out of the bitts by means of this chain and windlass, and then lowered down into the water when a vessel is to be hoisted out of the dock, and again hoisted in its place when the dock is sunk to float the vessel. The pumps will be so arranged as to pump out the dock, in raising a vessel, with one engine, by means of the conductor, (12,) sketch sheet.

The engines and boilers, and machinery attached to them, will be enclosed with good houses, extending out to the guard, (*u*, fig. 5, sheet A.) A section of the outline of the frame of the house is seen at *o*, fig. 5, sheet A; the combings (*c'*) will be 6 by 12 deep, and the stanchions (*d''*) will be 4 by 6 scantling, placed two feet apart; the carlines will be 4 by 4, and the plank of the sides and top will be $1\frac{1}{2}$ white pine. The guard (*e'*) will be of timber 12 by 12, and the beams (*a'*) of the guard-deck will be 6 by 12; the deck of the guard will be 3 inches.

The beams of the guard-deck will be tenoned into the thick strake (*p*) of the dock and into the guard, the tenon being 4 inches and fastened by $1\frac{1}{4}$ trenails. The braces are to be tenoned into the thick strake, (*p*,) and also bolted through the ribs of the dock. There will be a rail on each side of the dock five feet high. The whole surface of the dock, inside and out, above the lower parts of the windows, will be planed and painted with two coats of lead color. The dock will be furnished with centring beams. (Letter *d'*, fig. 5, sheet A.) It will also be furnished with solid bilge-blocks. (Letter *k*, fig. 6, sheet F.) The wall shoring against the altars will be furnished in accordance with the plans now in use in the stone docks at Norfolk or Boston.

All the gates or valves for the passage of water will be geared so that one man can open or close them. The dock will be constructed in a workmanlike manner, and furnished with machinery for its successful operation.

J. Y. MASON,
Secretary of the Navy.
 JOHN S. GILBERT,
 ZENO SECOR.

Witness: WM. G. RIDGELY.

D.

Specifications of the hauling apparatus for moving vessels from the dock to the bed-ways on shore, and back again to the dock, and also of the engine house.

The central bed-ways are to be extended 40 (forty) feet from the end of the main ways, or 390 feet from the rear of the basin into the house hereinafter mentioned, built to protect the cylinder and boiler. The extension will be constructed in the same manner as the main way, except that the piles will be driven five feet from centre to centre, and the walls will be laid up with split granite in hydraulic cement. On the bed-ways will be placed a hydraulic cylinder of cast iron, (see plan No. 9, at A,) the piston of which is 15 inches in diameter, and the stroke 8 feet, placed near each end of the top of the cylinder, and consists of two vertical cylinders 16 inches diameter and 15 inches stroke, with starting bars and eccentrics, the cross-heads on a slide at right angles, and turning a shaft on which are the eccentrics that work the force-pumps. There are four force-pumps, (C C,) of $1\frac{1}{2}$ inch diameter and 6 inches stroke.

The connections between the pumps and hydraulic cylinder will be by means of pipes and valves of suitable size and strength.

The boiler (EE) to supply steam to the engine, is to be a locomotive boiler, having eighty-five tubes of 2 inches diameter, and 9 feet long, giving a fire surface of 821.89 feet.

The boiler is to be supported by a suitable bed plate of cast iron, resting on a bed-way, and connected by suitable rods of iron with the hydraulic cylinder. Under the boiler and on top of the bed-ways (FF) is placed a reservoir to furnish water to the boiler and the pumps of the hydraulic press.

The cross-head (G) of the hydraulic press is to be of cast iron, 57 inches long, 30 inches wide, and 18 inches deep. Two side rods, (H) 4 by 12, of wrought iron, are to connect the cross-heads with the centre timbers of the cradle on which the ship is to rest when to be drawn ashore.

The side rods are to be attached to the centre beams by two cast iron keys, 20 inches wide, 48 inches long, and 4 inches thick.

The ends of the side rods and the centre timbers are to have a mortise, 20 inches long and 4 inches wide, to receive the key.

The keys are to be 386 feet from the ends of the centre timbers, Lugs to connect the hydraulic cylinder with the bed-way's lugs of suitable size, are to be cast on the hydraulic cylinder, (K,) and mortises eight feet apart are to be mortised through the bed-ways, (LL.) The mortises are to be 24 inches long and six inches wide; cast iron keys, 24 inches wide, 6 inches thick, and 44 inches long, are to be placed in the mortises. Wrought iron rods, 6 by 6 inches, and suitably formed to connect with the lugs on the cylinder and the cast iron keys of the bed-ways, are to make the connection between the cylinder and the bed-ways, (MM.) The power of the hydraulic press, and the strength of the machinery above described, would be adequate to draw a ship of 5,300 tons.

In case it should not be required to move a ship of that weight, the power and strength aforesaid are to be diminished in proportion.

One turn-table is to be constructed near the end of the centre bed-way, for the purpose of turning the cylinder around on the ways, (see plan N,) to be built in the following manner, viz: piles 12 inches in diameter are to be driven for the foundation, (see plan FF,) which are cut off 3 feet below mean high tide and capped with timber 12 inches in thickness, (CT,) and a wall of stone is built up thereon to the same height as the wall of the ways, (G.)

The circle of the table (HH) is to be 10 feet in diameter, and an iron bar, $\frac{3}{4}$ by 3 inches, is to be laid in a circle on the stone wall, 6 inches from the edges, and crossing the centre-way wall.

A cast iron plate is let in the centre of the table, 1 inch thick, and 10 inches in diameter, and a journal two inches in diameter inserted through the plate into the stone.

The main ways are not laid over the space occupied by the table. Two pieces of oak timber, corresponding in size to the ways, are bolted together, and an iron plate let in and secured in the centre and at each end at the crossing of the circle.

This timber, or short way, is placed on the table, and the journal on the table passes up through the centre of the plate and confines it in its position, and allows it to move around the journal on the centre plate.

When it is required to turn the cylinder around to shift its ends, to push a vessel off from the bedway upon the floating dock, it is slid on the table and turned around, as shown in the plan. A house is to be built for the protection of the cylinder and engines over the end of the centre bedway, 30 feet wide, 46 feet long, and 12 feet high. (See ground plan LL.) The foundation is to be of cross foundation timber, 4 feet long and 5 inches thick, laid in a trench dug 3 feet below the surface of the yard.

On the cross foundation timber, ranging timber, 12 by 20, is laid, and a stone wall is built thereon one foot above the level of the ground. A brick wall 8 inches thick is then built up 12 feet in height.

The roof is laid to pitch both ways, planked, and covered with XX tin.

Two windows are to be placed on each side, and a door in front and one on the side, of sufficient size to admit the passage of the engine and boilers.

Rods of suitable size will be attached to the cradle-ways at the upper end, (M,) so arranged as to receive keys through the mortises in the bedway, to prevent the ship from slipping back when the hydraulic press is floated.

J. Y. MASON,
Secretary of the Navy.
JOHN S. GILBERT,
ZENO SECOR.

Witness: WM. G. RIDGELY.

Bond.

Know all men by these presents, that we, John S. Gilbert and Zeno Secor, as principals, both of the city and State of New York, and Francis Secor and Charles A. Secor, as sureties, of the city and State of New York, are held and firmly bound unto the United States of America in the full and just sum of one hundred thousand dollars, lawful money of the United States, to be paid to the said United States, or to any person or persons, agent or agents, that may be duly authorized by the Comptroller of the Treasury of the United States for the time being to receive the same; to which payment, well and truly to be made and done, we bind ourselves and every of us, our and every of our heirs, executors, and administrators, in the whole and for the whole, jointly and severally firmly by these presents.

Sealed with our seals, and dated the seventh day of November, Anno Domini one thousand eight hundred and forty-eight.

The condition of this obligation is such, that if the above bounden John S. Gilbert, Zeno Secor, Francis Secor, and Charles A. Secor, or either of them, their or either of their heirs, executors, and administrators, do and shall well and truly execute and fulfil, in all its stipulations, a contract which the said John S. Gilbert and Zeno Secor have entered into with John Y. Mason, Secretary of the Navy, acting for and in behalf of the United States, for the complete construction of a balance floating dry-dock, with basin and railways and floating gate, at the navy yard at Pensacola, agreeably to their contract, dated 25th October, 1848, for the use of the United States navy, then the above obligation to be void and of none effect; otherwise to remain in full force and virtue in law.

JOHN S. GILBERT,	[L. S.]
ZENO SECOR,	[L. S.]
FRANCIS SECOR,	[L. S.]
CHAS. A. SECOR,	[L. S.]

Signed, sealed, and delivered in presence of—

ELIJAH F. PURDY,
C. S. BOGARDUS.

To the best of my knowledge and belief, the sureties named in this bond are good and sufficient.

CHARLES McVEAN,
United States Attorney.

NAVY YARD, WARRINGTON, FLORIDA,
February 24, 1854.

SIR: Having an opportunity, I pen a few suggestions in relation to the floating balance docks at Kittery and this navy yard, agreeably to an intimation I made while in Washington. My connection with these docks and the experience of a number of years in docking vessels, both government and merchant, will allow me to claim, without egotism, some knowledge in the construction of their several parts, their capacities, and operations.

I have made such improvements as I deemed necessary to put this dock in the best possible order for its successful operation, regardless of cost. Having been repeatedly urged by Messrs. Gilbert & Secor to spare no labor or cost in having every part in perfect order, I have carried out my instructions according to my best ability.

I have examined every part of the dock, and notwithstanding the opinion has been held by men of good judgment that the materials used in the construction of these docks would deteriorate much sooner here than in a northern climate, I am satisfied that with proper care and attention this dock will last as long as the dock at Kittery; for in recaulking it, which I have done in a thorough manner, I found the timber and plank (with the exception of two short pieces in the windows, which rotted on account of having sap on their exposed sides) as sound, and the seams smaller on the inside than in that dock.

By special direction I have attached two composition pumps to the engines, by the use of which some four or five hundred tons of water can be drawn off the bottom of the dock, which would otherwise remain on account of the large size of the wooden pumps causing them to "suck" when there is some sixteen inches of water on the bottom. The same kind of pumps, I think, should be put in the Kittery dock.

I have added strength wherever I thought it necessary, and improvements of which I will forward a sketch if desirable.

I have everything ready for a fair and successful test, and if there was a sufficient depth of water in front of the basin, the contemplated location for working the dock, I would rather take up the "Pennsylvania" in a proper condition for making repairs than any other ship.

I have not learned what ship will be employed for the test, but hope that one will arrive soon that there may not be much delay.

Very respectfully, I am, sir, your obedient servant.

ISAIAH HANSCOM.

Com. J. SMITH, *Washington, D. C.*

