No. 749,171. PATENTED JAN. 12, 1904.

A. C. CUNNINGHAM.

FLOATING DOCK.

APPLICATION FILED APR. 3, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

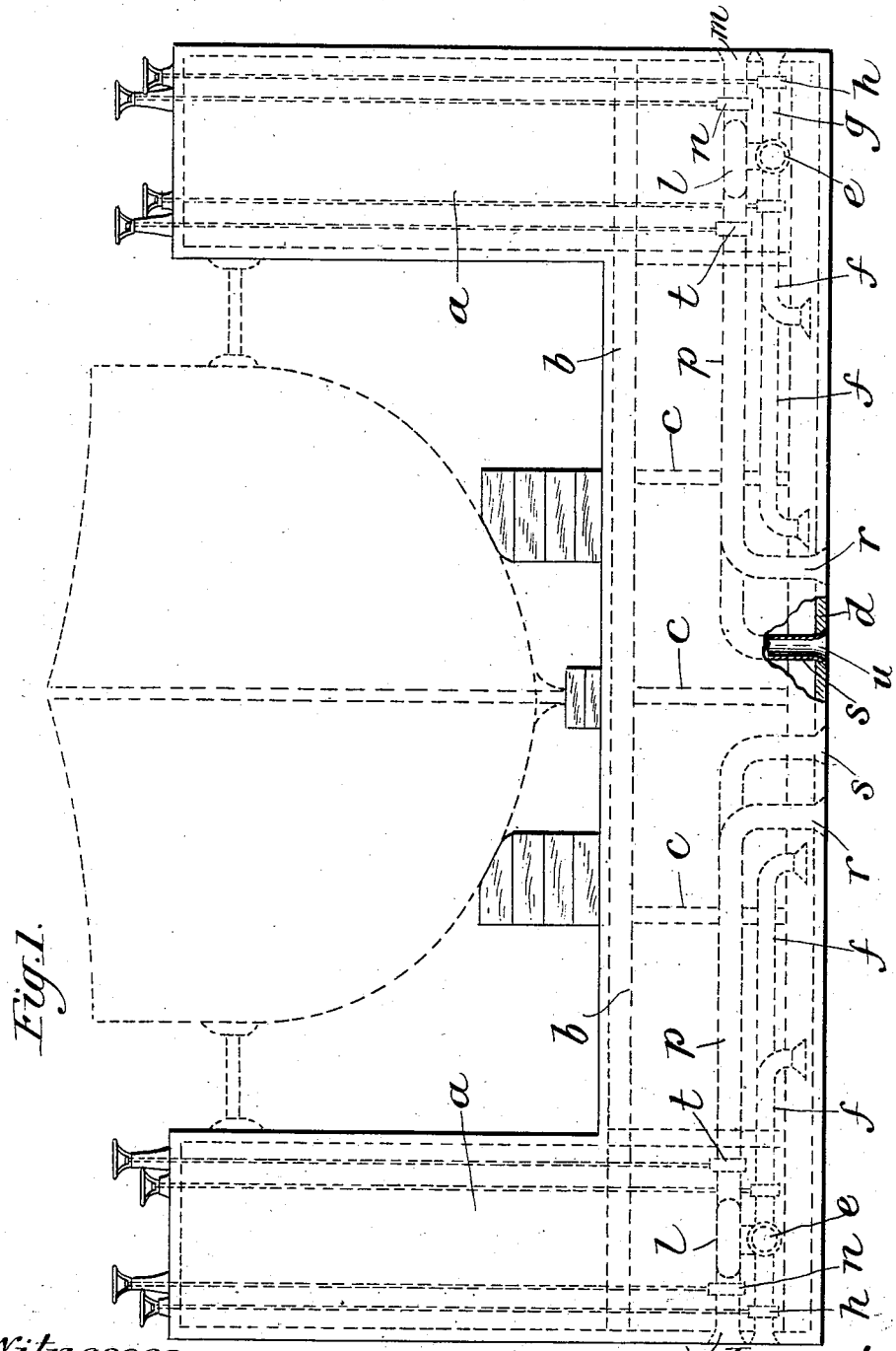


Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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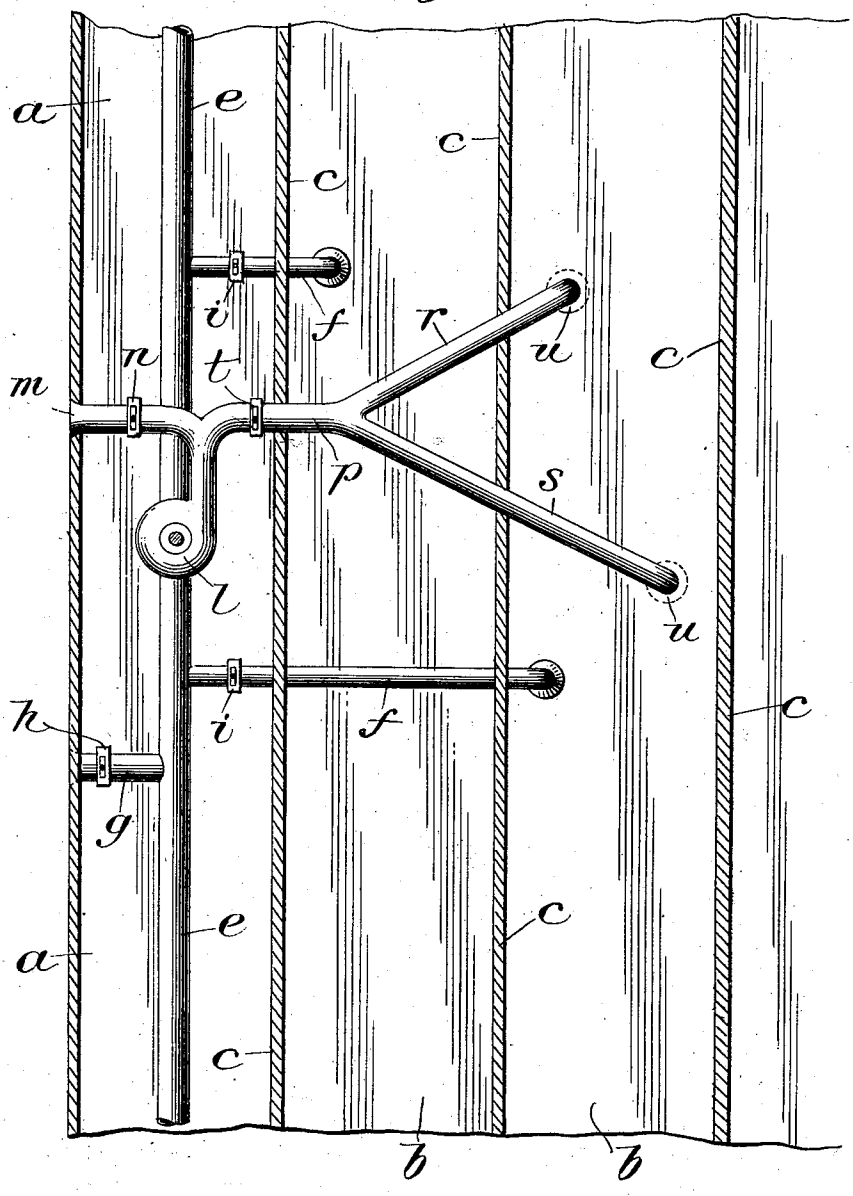
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FLOATING DOCK.

APPLICATION FILED APR. 3, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.



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No. 749,171. Patented January 12, 1904.

UNITED STATES PATENT OFFICE.

ANDREW C. CUNNINGHAM, OF WASHINGTON, DISTRICT OF COLUMBIA.

FLOATING DOCK.

SPECIFICATION forming part of Letters Patent No. 749,171, dated January 12, 1904.

Application filed April 3, 1903. Serial No. 150,996. (No model.)

To all whom it may concern:

Be it known that I, ANDREW C. CUNNINGHAM, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Floating Docks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The floating docks required to accommodate ships of the present day necessitate great depth of water, and frequently the proper depth in a safe and convenient place can only be secured by artificial means. Another difficulty arises from the fact, which is especially true where the required depth is obtained by dredging, that there is constant liability for the bottom of the basins where the docks are moored to fill up, especially as this depth is greater than that required for navigation, and removal of the docks and redredging are frequently required to maintain the original depth.

The object of the present invention is to equip each dock with an apparatus whereby the bottom of its basin may be scoured and kept clean and free from mud, sand, and other accumulations tending to reduce the depth of water and fill up the basin made for the dock.

To this end the invention consists in leading the discharge-pipe of the usual filling and emptying apparatus through the bottom of the dock and connecting up the pumps, so as to discharge the water underneath the dock instead of at the side, as heretofore exclusively practiced.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is an end view of a dock with the equipment of pipes and pumps shown in dotted lines, except that the outlet end of one of my discharge-pipes is shown in full lines where it passes through the bottom. Fig. 2 is a plan view of a portion of the interior of the dock.

Referring to the views, *a a* denote the sides of the dock, and *b* the body or pontoon part, the latter having the usual partitions *c c*, dividing the interior into compartments, and the bottom *d*.

The invention is not particularly concerned with the construction of the dock itself and though the construction here illustrated contemplates a structure that is continuous from end to end and has the pontoon part formed integral with the sides it is to be understood that such construction is not necessary.

The usual main pipe for filling and emptying the compartments is shown at *e*, and *f f* denote the branches leading from this pipe to the compartments. The pipe *e* has its inlet *g* opening at the side of the dock near its lower edge, and this inlet and the branch pipes have valves *h* and *i*, respectively, by means of which the main pipe may be closed against the entrance of water from the outside and the branches may be cut off from communication with the main pipe.

The pump is shown at *l* and is preferably of the centrifugal type, though any other kind may be employed, if desired. It is connected to the pipe *e* in the usual manner and has its discharge-pipe *m* opening at the side a little above the inlet end of the main pipe, a valve *n* being located in the pipe *m* so as to close the outlet side of the pump while water is being taken into the main pipe at the inlet *g* and let into the compartments through the branches *f f*.

As thus far described the construction and arrangement of pipes and the pump is the usual one and operates when the valve *n* is closed and the valve *h* is open to take in water at the inlet *g* and let it into the compartments. When the position of the valves *h* and *n* is reversed, the water from the compartments is exhausted through the branches and is forced out at the side of the dock through the opening *m*. As indicated in Fig. 1 of the drawings, this system of pipes and a pump is usually employed on both sides of the dock; but obviously such an arrangement would be merely a duplication of that just described as applied to one side.

My invention is based on the discovery that the water which has been employed to sink the dock and which must necessarily be pumped out may be further utilized to clean out the bottom of the basin, thereby avoiding the delay and expense of removing the dock and dredging out the basin.

A further advantage of the invention lies in the fact that it may be easily applied to docks already built, very little additional piping being required and no reorganization whatever of the old pipe system being necessary.

To this end the invention consists in adding to the usual pipe arrangement a discharge-pipe *p*, preferably of large capacity and leading the pipe out through the bottom *d* of the dock, as shown at *u* in full lines in Fig 1 and in dotted lines in the other figures. The pipe is connected to the pump at its discharge side, preferably at the point of connection of the pump with the outlet-pipe *m*, and after extending toward the center of the dock is preferably provided with branches *r* and *s*, diverging toward the dock ends, as clearly shown in Fig. 1. The pipe *p* should be provided at some point near the pump with a valve *t*, by means of which it may be cut off from the pump itself and from the pump's direct side discharge *m*. There may of course be any number of these bottom discharge-pipes, and their outlets may be located at any desired points in relation to the length and beam of the dock. So, also, there may be more than one pump, if desired.

Although I have here shown the bottom discharge-pipe as connected to the direct side discharge *m* of the pump, it is to be understood that such arrangement is not necessary; nor is it necessary that there should be any inlet connection between the bottom discharge and the outside of the dock, as the invention would be realized whether it be the water that is contained in the dock that is forced out of the bottom jet or water from outside the dock. The preferred construction herein illustrated provides for taking the jet-water from the compartments or from the outside through the usual flushing-valve *h*. When the valves *h* and *n* are both closed, the water passes to the pump from the compartments through the suction-pipes *f f* and thence goes out through the branches *r* and *s* of the bottom discharge-pipe; but when the valve *h* is open and the valves *n* and *i* are closed the water comes from the outside only, and obviously by properly manipulating all the valves the water may be taken partly from the outside and partly from the compartments. It is also possible to discharge the water partly under the dock and partly at the side through the direct opening *m*, and it may of course be taken partly from the outside and partly from the interior of the dock.

The construction and arrangement being as thus described, it is to be noted that the invention not only provides each dock or section of a dock with automatic means for scouring the bottom of its basin and preventing it from filling up, so as to reduce the depth of water, but that it enables the dock to be held at different degrees of submersion while scouring the basin, thus permitting the jets to be delivered for any length of time that may be desired and with a force dependent largely upon the distance of the bottom of the dock above the bottom of the basin.

I believe myself to be the first to provide a floating dock with any apparatus for the purpose above described, and I do not, therefore, desire or intend my claims to be limited to the particular apparatus here shown, nor are my claims to be understood as requiring that the jet-water should be taken from inside the dock, as it may be taken from any place.

Having thus described my invention, what I claim is—

1. In a floating dock having the usual arrangement of pipes for filling and emptying the dock, the combination with the main pipe having branches leading to the several compartments, of a pump connected to said pipe to take water therefrom, and a pipe connected to the pump to receive water from the pump, said pipe opening through the bottom of the dock to discharge the water forcibly under it.

2. In a floating dock having the usual arrangement of pipes for filling and emptying the dock, the combination with the main pipe having a valved inlet for taking in water from the outside, and branches leading to the several compartments, of a pump connected to the main pipe to take water therefrom, and a discharge-pipe connected to the pump so as to receive water from the pump, said discharge-pipe opening through the bottom of the dock so as to discharge the water under it, and having a valve between the pump and its discharge end.

3. In a floating dock having the usual arrangement of pipes for filling and emptying the dock, the combination with the main pipe having a valve-inlet for taking in water from the outside, and branches leading to the several compartments, of a pump connected to the main pipe to take water therefrom, a valved outlet for discharging the water from the pump outside the dock, and a supplemental discharge-pipe leading from the pump and opening through the bottom of the dock, said supplemental pipe having a valve between the pump and its discharge end.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW C. CUNNINGHAM.

Witnesses:
J. A. GOLDSBOROUGH,
EDWIN S. CLARKSON.