

(No Model.)

J. J. COUSINS. FLOATING DOCK.

No. 601,431.

Patented Mar. 29, 1898.

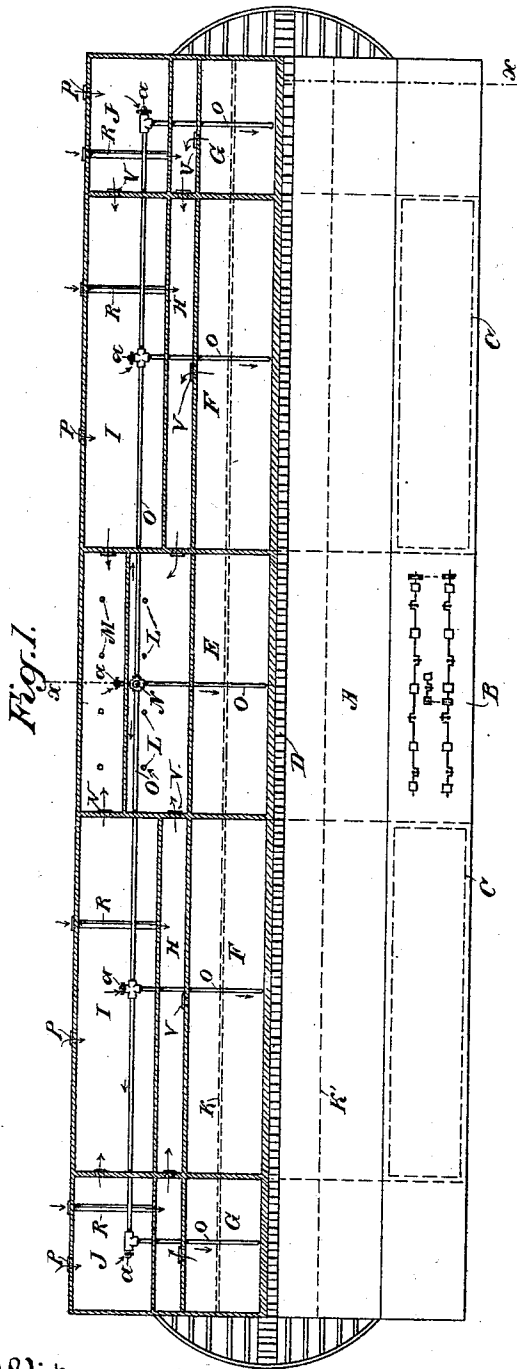


Fig. 1.

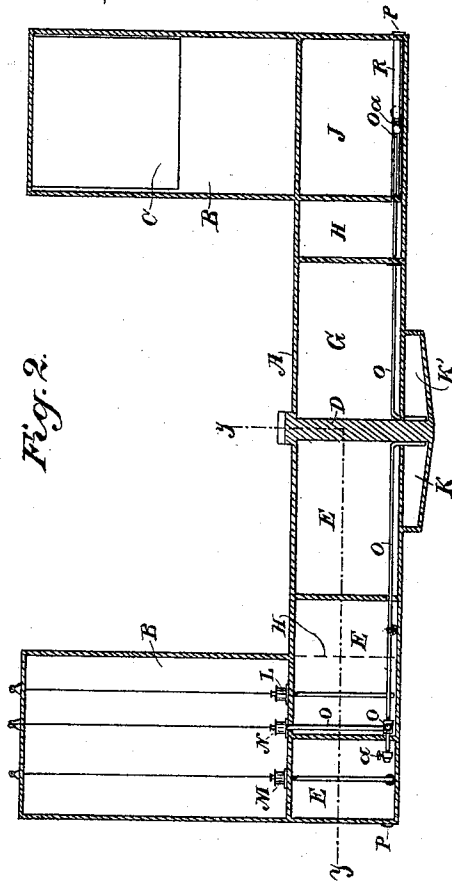


Fig. 2.

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FLOATING DOCK.

SPECIFICATION forming part of Letters Patent No. 601,431, dated March 29, 1898.

Application filed September 1, 1897. Serial No. 650,219. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. COUSINS, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Floating Docks; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in the construction of floating docks, such as are employed for docking vessels.

It consists in the novel construction and arrangement of compartments whereby the dock is more perfectly balanced, lifting pressure is applied directly to points in the vessel where the greatest weight lies, and strains upon both dock and vessel are avoided, an arrangement and connection of the compartments and the pumps by which they are emptied and a portion of the compartments may be emptied by pumping and another portion by the flow of the water therefrom by gravitation to reduce the cost and time, and whereby only as many compartments need be exhausted as are necessary to raise the particular size of vessel which may be upon the dock, thus enabling a dock which is capable of handling the largest vessels to be economically employed for the handling of small vessels.

It also consists in details of construction, all of which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a plan view of my dock, one-half being shown in horizontal section on line *yy* of Fig. 2. Fig. 2 is a vertical section on line *xx* of Fig. 1.

A is the floor or deck of the dock.

B B are the vertical sides, and C are water-ballast chambers situated within these sides above the level of the deck A.

Centrally beneath the deck and extending longitudinally from one end to the other is a keelson D, and upon each side of this keelson, extending outward to each side beneath the ballast-compartments, are the various compartments which, being emptied of water, will produce such buoyancy as will raise the dock and the load upon it.

Approximately in the center of the dock and extending across from one side to the

other is the compartment E, which forms the pump-well. In line with this well, extending toward the end of the dock, are the compartments F, in pairs upon each side of the keelson, and beyond these compartments and approximately at the ends of the dock are the compartments G. Exterior to these compartments, toward the sides of the dock, are the intermediate compartments H, which lie parallel, extending from the outer ends to the pump-well. Exterior to the intermediate compartments H are the central side compartments I, and beyond these, in the direction of the length of the dock, are the outermost side compartments J. Beneath the floor of these various compartments and extending along upon each side of the center are the lower supplemental compartments K K', which are subdivided by transverse partitions corresponding with those which separate the compartments G and F.

The group of pumps L are disposed near the center of the dock upon each side, and are designed to draw the water from the pump-well, from the compartments G and F, and the intermediate side compartments or passages H.

The group of pumps marked M operate independently from the pumps L and are adapted to exhaust or withdraw the water from the compartments I and J, which form the extreme outer side compartments of the dock.

The pump N is connected by pipes or passages O, so as to empty the compartments K K'.

Suitable controlling gates or valves V are arranged to open or cut off communication with the various compartments at will. The outer compartments I J may be flooded directly from the outside through gated openings at P. The central compartments F and G are flooded by independent passages R, extending from the outside through the outer compartments and discharging into the intermediate compartments H, and thence into the connecting interior compartments.

In the operation of floating docks it is found extremely difficult to balance the dock during the operation of lifting a vessel out of the water and in so disposing the buoyancy and lifting power of the dock as to make it corre-

spond with and act upon the heavier portions of the vessel. The ordinary constructions also make it unnecessarily expensive to dock vessels which are much smaller than the capacity of the dock, because of the necessity of pumping out the whole dock in any case.

In my invention I have so connected the various compartments that I can make any desired combination of compartments which are to be emptied, and I can apply the greater buoyancy to the points where the lifting power is most needed, and thus prevent the strains which are liable to occur either to the dock or the vessel which is being lifted.

The operation will then be as follows: Where the load is light, the exterior valves or gates of the compartments I and J may be opened and the water will run through these by gravitation, and thus discharge these chambers without the employment of the pumps. If further buoyancy is needed to raise the load, a portion of the water may be pumped from such other compartments as will produce the necessary buoyancy, the greater part, however, flowing out by gravitation.

The pumps of the supplemental bottom compartments K and K' and those of the exterior side compartments I may be used in the operation and these compartments only emptied. The buoyancy of the dock in such a case would be sufficient to raise the vessel without pumping from the central compartments, and the water from these compartments would then flow through the passages R by gravitation as the dock rises.

An important feature in the construction of this dock is the ability to make combinations of the various compartments as necessity arises.

In the docking of large heavy vessels, especially such as battle-ships or loaded vessels, where a great portion of the weight of the vessel is liable to be concentrated at some one or more points, I am enabled by the employment of the independent compartments K and K' beneath the dock to exhaust such compartments as are situated most nearly beneath the greater load, and by taking advantage of this greater buoyancy I can effectively apply this buoyancy to resist any tendency of the dock to get out of line at that particular point, thus preventing strains to the dock or a vessel which might otherwise occur. When the dock is to be again flooded for the purpose of floating the vessel, the various compartments F, G, H, I, J, and K may be flooded by opening the gates or passages, which will admit the exterior water, the flow being controlled so that only such compartments will be flooded and in such order as may be desired.

In order to change the buoyancy or balance of the dock without altering its lifting capacity, any one or more of the compartments K K' may be flooded from the compartments I J through valves *a* in the pipes or passages

O, the water being thus transferred without any addition from the outside.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a floating dock, main centrally-disposed compartments, exterior compartments parallel therewith, an intermediate compartment with valve-controlled passages between it and the central compartments whereby the latter discharge into said intermediate compartment, a pump-well and pumps connecting with said intermediate compartment independently of the exterior compartments.

2. In a floating dock, centrally-disposed main compartments, exterior compartments parallel with the central compartments, compartments extending longitudinally and intermediate between the main inner and outer compartments, valve-controlled passages connecting the main interior compartments with the intermediate compartment, a pump-well and pumps whereby said compartments may be emptied, independent valve-controlled passages between the exterior compartments and an independent pump-well and pumps whereby said compartments may be emptied independently of the interior or intermediate ones.

3. In a floating dock, a hull having longitudinally-disposed central unconnected compartments, longitudinal compartments or passages exterior to said central compartments, and valve-controlled openings connecting said passages or compartments with the interior compartments, other compartments exterior to the above named having valve-controlled connections, independent pump-wells and pumps whereby the outer and the inner and intermediate compartments may be independently emptied, and supplemental compartments extending longitudinally beneath the central portion of the hull and the main compartments and means for independently emptying said compartments.

4. In a floating dock, a hull having centrally-disposed main compartments extending from end to end, exterior compartments parallel therewith, said exterior compartments communicating with each other and with suitably-disposed pumping apparatus, intermediate compartments or passages lying between the central and exterior ones, valve-controlled openings by which the central compartments are independently connected with the intermediate compartment and with the pumping mechanism, valve-controlled passages opening through the sides directly into the exterior compartments and other valve-controlled passages passing through the exterior compartments and opening directly and independently into the intermediate compartments and communicating through said intermediate compartments with the main central compartments whereby the latter may be flooded independently of the exterior compartments.

5. In a floating dock, a hull having the main, exterior, and intermediate compartments, with valve-controlled passages and independent pumping mechanism and connections, in combination with supplemental centrally-disposed compartments lying beneath the main hull and compartments, pipes or passages connecting said supplemental compartments with independent pumping mechanism, valve-controlled openings where-

by either of the supplemental compartments may be emptied independent of the others and passages whereby said compartments may be independently filled by gravitation.

In witness whereof I have hereunto set my hand.

JAMES J. COUSINS.

Witnesses:

CHAS. E. KELLY,
S. H. NOURSE.