(No Model.)

2 Sheets—Sheet 1.

J. EDWARDS.

DUMPING SCOW.

No. 409,942. Patented Aug. 27, 1889.

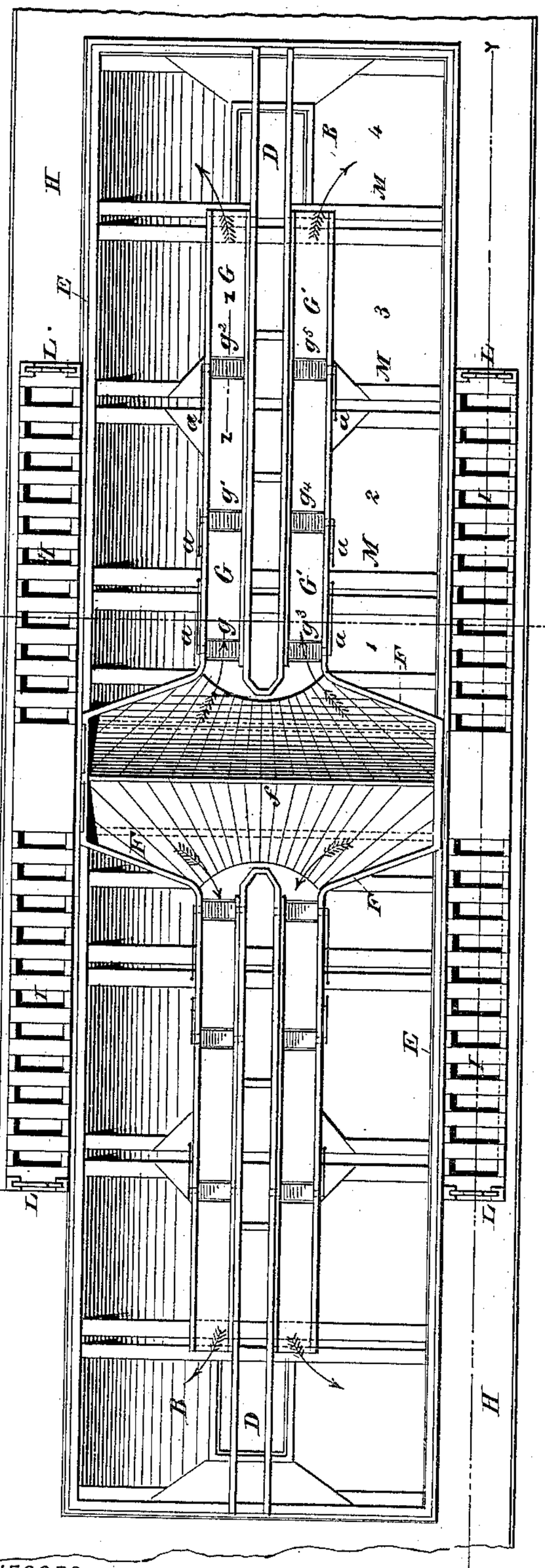

Fig. 1.

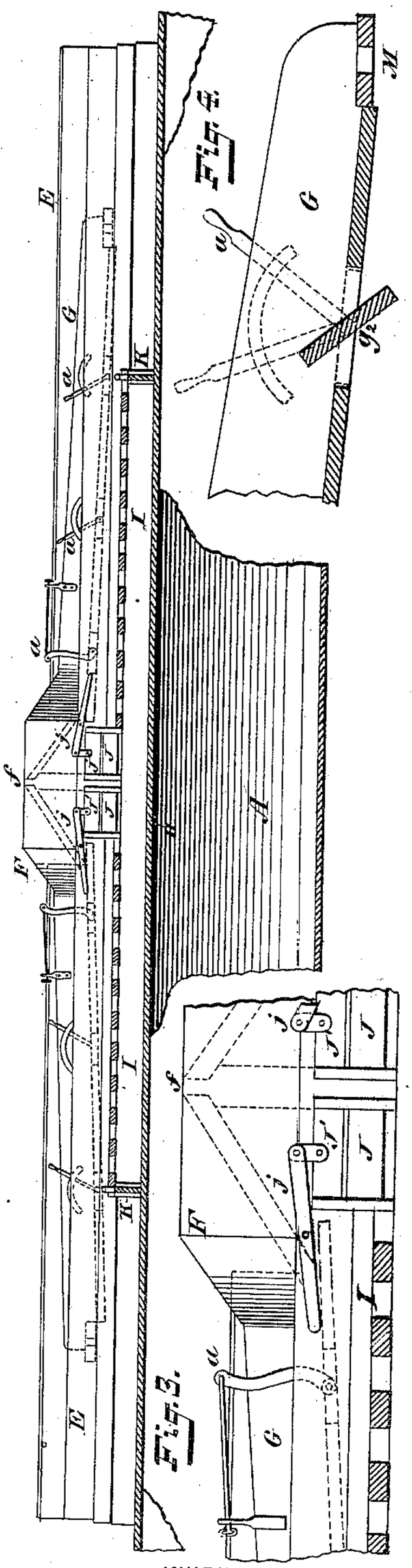

Fig. 2.

Fig. 3.

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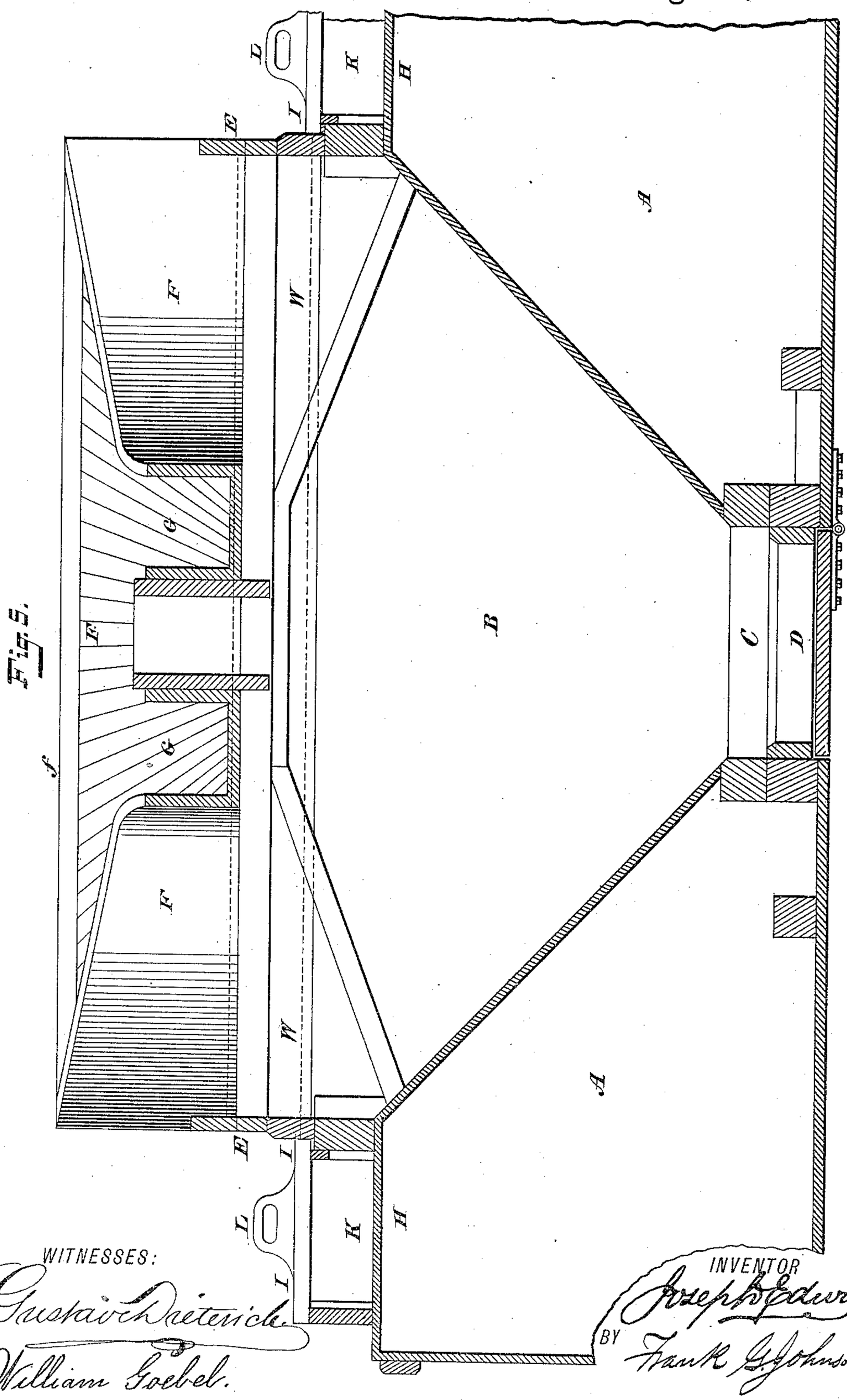

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UNITED STATES PATENT OFFICE.

JOSEPH EDWARDS, OF BROOKLYN, NEW YORK.

DUMPING-SCOW.

SPECIFICATION forming part of Letters Patent No. 409,942, dated August 27, 1889.

Application filed December 21, 1888. Serial No. 294,337. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH EDWARDS, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Dumping-Scows, of which the following is a specification.

My invention relates to improvements in that class of dirt-scows the cargoes of which are discharged through the bottoms thereof by means of ports or trap-doors, and especially to those of such as are freighted with sea sand and mud, which is pumped into them with and by means of a current of water, which while being so freighted are kept full and overflowing with water, until the settling sand and mud, which is mixed with the water, finally fills the same.

It is found in practice to be very difficult to prevent such scows while being thus loaded from careening and lurching, both sidewise and lengthwise, and when so lurched to right them up, which often incapacitates them from carrying more than half or two-thirds of a full load.

One of the objects of my improvements is to provide the means of distributing the cargo as it is being thus pumped aboard in such a manner as to keep the scow practically on an even keel, both longitudinally and transversely; and, further, to provide means for balancing or bringing the scow back to an even keel whenever the misplacement or shifting of any part of the cargo has thrown her off of such keel, whereby the scow can receive and carry a full load.

It is also found in practice that when excavating sand and mud under water by suction through pipes by means of pumps there passes through the pipes a much larger proportion of water than sand and mud, in which the latter are thoroughly agitated and mixed. If this heterogeneous mass, in which the sand and mud are, under these circumstances, as mobile as the water which carries them, were pumped directly into a plain open scow consisting of one common unpartitioned hold, the agitation therein caused by the violent discharge from the pumps would so greatly prevent the settling of the sand and mud that most all of the same would pass overboard with the overflowing water, in which case it would require so much time and working of the pumps as to render this mode of excavating impracticable. To diminish the agitation of this mixture of water, sand, and mud after it is poured into the scow, to cause as great a proportion of the solid element thereof to remain in the scow, constitutes another object of my invention, as well as the distribution of the cargo to keep an even keel on the scow, both of which results I attain by means illustrated in the accompanying drawings, in which—

Figure 1 is a plan view; Fig. 2, a sectional side elevation; Fig. 3, an enlarged partial view on the line *y y* of Fig. 1; Fig. 4, an enlarged partial view on the line *z z* of Fig. 1; and Fig. 5, a transverse vertical view on the line *x x*, Fig. 1.

Similar letters refer to similar parts throughout the several views.

A A represent the air-tight or buoyant portion or compartments of the scow, and B the hold or stowage-space of the same, in which is deposited the cargo of sand or mud, or both, having sloping sides converging to the discharging-ports C, which are closed by the dumping-doors D; H H, the deck, and E E the coamings of the scow; F F, the hopper, into which is pumped the mixture of sand, mud, and water, the bottom of which hopper, on the central transverse line *f*, is much raised, from which it (the bottom of the hopper) longitudinally slopes to cause a rapid flow therefrom in both directions of the materials thrown upon it. As this raised center of the bottom of the hopper F F divides the scow transversely, or, rather, as from this line both parts of the scow are alike, the designating letters are placed on only one half of Figs. 1 and 2.

The hold of the scow is divided by transverse partitions M M M into bins 1 2 3 4, upon the top of which partitions are mounted two distributing-flumes G G and G′ G′, which connect with and receive from the hopper F F the materials pumped therein. These flumes extend from the hopper to the last bin 4 at the end of the scow and pass over all the other bins 1 2 3, and have somewhat of a descent from the hopper to the last bin 4, as shown by the dotted lines in Fig. 2. In the bottom of these flumes G G and G′ G′ is a series of distributing swivel-gates g g' g^2 g^3

g^4 g^5, one over each bin in both of the flumes, except the last bin at the end of the scow. *a a a a* are the handles of these gates, by which they are opened and closed as occasion may require, the function of which will be hereinafter described.

I I are ballast-boxes built on the deck of the scow, one on each side next to the coaming, in length about from two-thirds to three-fifths of the length of the scow and centrally located longitudinally therewith and partially covered over, and at the outer end are provided with vertically-sliding gates K K, with handles L L.

J J are weirs over which the water flows into the ballast-boxes, through which said boxes it flows and passes out therefrom upon the deck outside of the coamings and thence overboard. J′ J′ are weir-gates for checking the flow of the water over the same. These gates are opened and closed by the levers *j j*.

The operation of my invention is explained as follows: The discharge of the pump, consisting of a violent stream of mixed sand, mud, and water, is thrown upon the transverse central elevation *f* of the hopper F F, and flows therefrom to the right and left toward both ends of the scow through the flumes G G and G′ G′; and when the outer bin 4 is filled the mixture (less the sand and mud left in this outer bin) flows to the right and left around the ends of the flumes back toward the center of the scow, as indicated by arrows, over the partition between bins 4 and 3, until bin 3 is filled with the mixture, (less the sand and mud left in bins 4 and 3,) and so on until all the bins are full of water, when it (the water, deprived of what sand and mud may have settled to the bottom of the bins) will now begin to flow (from the water-line W, Fig. 5) over the weirs J J, Figs. 2 and 3, into the ballast-boxes I I, through which it flows under the vertical gates K K out onto the deck of the scow, and thence overboard, leaving a little sand and mud in the bottom of the ballast-boxes. The course of the flow of the discharge from the pump so far described implies that all the distributing flume-gates g g' g^2 in the bottom of the flumes are closed, and the discharge is thrown upon the central transverse line of the hopper, by which the pump discharge will pass equally to both ends of the scow; but the sand and mud will not settle in equal quantity in each of the several bins without the employment of other means, which are the distributing flume-gates g g' g^2 g^3 g^4 g^5. By inspecting the bins with a test-pole while the cargo is being put aboard, if it is found that one or more of the bins are less filled with sand and mud than others, then the flume-gates over the less-filled bins are opened, as shown by Fig. 4, which will allow more of the sediment to fall into these bins and less of it into the more-filled bins; and if it is found that one half the scow (from end to end) is more filled than the other then the mouth of the pump-pipe is turned to one side of the transverse elevated line of the hopper, so as to throw its contents to the less freighted half of the scow. If the cargo should be deposited more on one side of the scow than the other, the scow is then ballasted and kept on an even keel by closing the vertical gates K K at the end of the ballast-boxes on the side less loaded, whereby the water from the weir will fill the said boxes and transversely right the scow, and when the said boxes are filled the overflow takes place between the slats of the cover thereof. If the said boxes do not require to be wholly filled in order to trim or right the scow, then the vertical gates K K at the ends of the said boxes are to be only so far closed as to retain the needed amount of water to put the scow on an even keel.

By the construction and explanation of my invention it will be seen that after the mixture of water, sand, and mud is thrown upon the hopper the water, before it goes overboard, must flow in each half of the scow a distance nearly three times the length thereof, one half on one side of the central longitudinal line and the other half on the other side, whereby the agitation of the water is so far diminished and the distance it must flow before it goes overboard is so great that the principal amount of the sand and mud settles and remains in the bins.

It will also be seen, by means of the distributing-flumes and the series of distributing-flume gates in the bottom of these flumes and the division of the hold of the scow into compartments or bins, that I am enabled to control the placing of the sand and mud in such various parts of the scow as may be required to keep it on an even keel, both laterally and longitudinally, from time to time while the cargo is being put aboard.

It will also be observed that in the event of the scow not being fully kept in trim by the above-described means of distribution the ballasting of the scow is further attained by adding and discharging different weights to and from one or more of the four quarters of the scow by means of more or less filling the different ballast-boxes with the overflow-water, and, when required, by allowing the water to flow out of the same. These ballast-boxes become very essential, and even indispensable, in trimming the scow when it is nearly loaded, as a means of enabling it to take on a load equal to its greatest capacity, for without being kept on even keel it would not be possible for it to carry a full load.

Having given a description of the various parts of my device and the functions which they severally perform, together with a general explanation of the object and operation of my invention, what I claim as new and useful, and desire to secure by Letters Patent, is—

1. In a dumping-scow, the distributing-flumes G G G′ G′, one on each side of the longitudinal center of the scow, having in the bottoms of the said flumes at regular distances

from each other distributing-gates $g\ g'\ g^2\ g^3\ g^4\ g^5$, respectively located over the several bins of the scow, in combination with the receiving-hopper F F, located amidship of the scow and somewhat above and connected with the entrance of the said flumes, having a steep descent from the center toward and into the entrance of the said flumes, whereby the mobile mixture of water, sand, and mud discharged upon and into the said hopper will rapidly descend the sides of the said hopper and flow into and through the said flumes, and the sand and mud thereof will fall through the several said distributing-gates, accordingly as each of them is more or less opened, into the respective bins beneath, and whereby the solid matter of the said mobile mixture can be so controlled in its distribution in the several differently-located compartments of the scow by the said gates as to keep it (the scow) in perfect trim while being freighted, substantially in the manner and for the purpose set forth.

2. In a dumping-scow, the ballast-boxes I I, placed one on each side near the outer margins of and upon and along on the deck of the scow, having the outlet-gates K K at the outer ends thereof, and having partially-open tops, in combination with the weirs J J and the compartments of the scow, the said compartments being connected to the said ballast-boxes, whereby a greater or less quantity of the overflow-water can be respectively retained within or liberated from either of the said ballast-boxes, as the case may require, to keep the scow transversely trimmed, substantially as and for the purpose described.

3. In a dumping-scow, the combination of the hopper F F, situated transversely to and midway of the scow, the distributing-flumes G G G′ G′, connected with and longitudinally extending in both directions from the upper hopper, each having in the bottom a series of controllable distributing-gates $g\ g'\ g^2\ g^3\ g^4\ g^5$, one of each of which is located over each of the several compartments of the scow, the ballast-boxes I I, one on either side of and extending near and along the outer margin of the deck, having the gates K K, the weirs J J, the ballast-boxes connected with the said weirs and the compartments of the scow, whereby the overflow-water from the said compartments in its course overboard will pass into and over the top of the ballast-boxes, or out through the gates K K, as may be required, to keep the scow transversely trimmed, and the solid matter of the mobile mixture of water, sand, and mud is evenly distributed in the different compartments of the scow, and the overflow-water is respectively retained in or discharged from either of the ballast-boxes to further assist in maintaining an even keel to the scow while being loaded, substantially in the manner and for the purposes set forth.

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Witnesses:
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