July 15, 1930. J. G. CLAYBOURN ET AL 1,770,840

DECK TROUGH

Filed Nov. 3, 1927

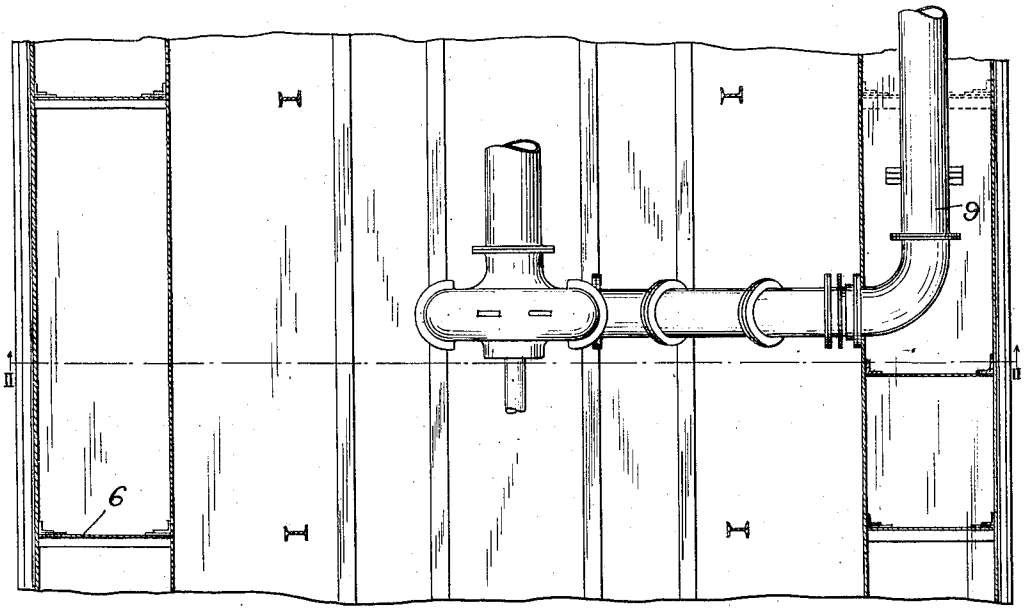


Fig. 1

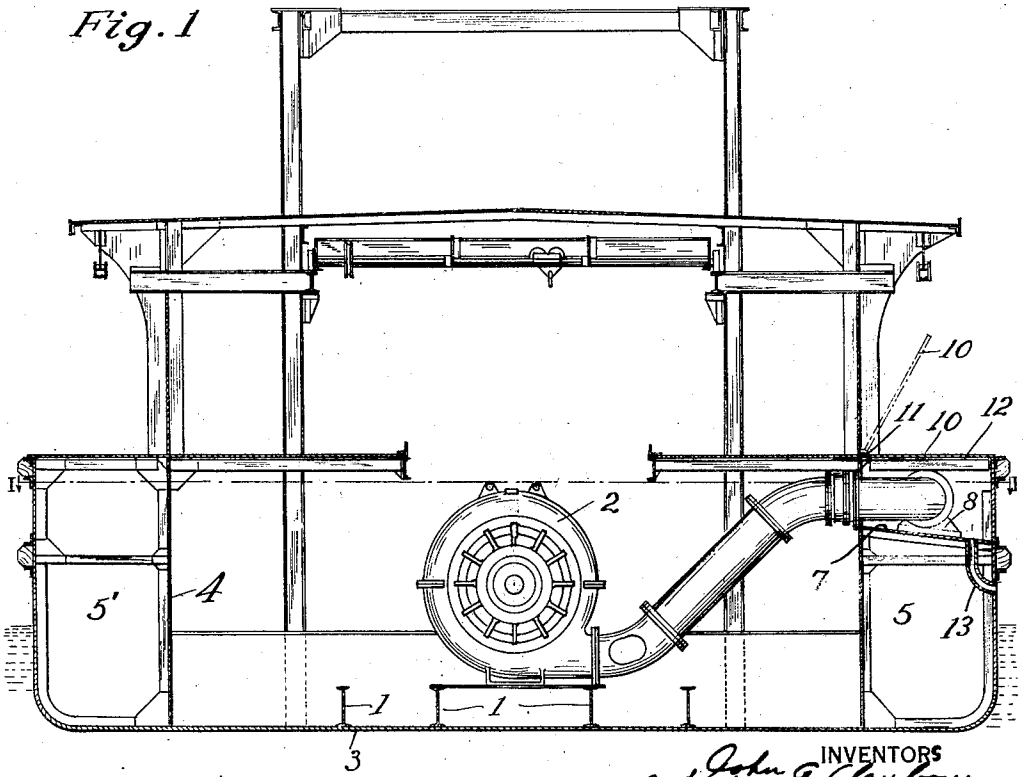


Fig. 2

INVENTORS
John G. Claybourn
and Leonard Foote
BY
Richey & Watts
ATTORNEYS

Patented July 15, 1930 1,770,840

UNITED STATES PATENT OFFICE

JOHN G. CLAYBOURN AND LEONARD FOOTE, OF PEDRO MIGUEL, CANAL ZONE

DECK TROUGH

Application filed November 3, 1927. Serial No. 230,729.

This invention relates to fluid conducting apparatus and is particularly applicable for use on hydraulic dredges and the like where large quantities of fluid or mixtures of fluid and solid material must be conveyed.

Heretofore hydraulic dredges have been constructed in which the discharge line extending through the hull of the dredge from the pump has been situated below decks, sometimes passing through a number of water-tight compartments. Due to the large quantities of abrasive solid material carried by the water through the discharge line, the pipe constituting the line rapidly becomes worn and must frequently be replaced. Moreover, to prolong the life of the pipe, it is advantageous to periodically rotate the same to bring different parts of the interior surface into contact with the abrasive material and so distribute the wear throughout the entire interior of the pipe. Such replacement or turning of the pipe is a very laborious and expensive operation, due to the necessary obstructions consitituting part of the framework of the hull of the dredge. If the hull is divided into water-tight compartments, water-tight joints must be made at each bulkhead where the pipeline passes therethrough, requiring the provision of packed joints, these needing attention even when the pipe is not being changed, and adding greatly to the labor of replacing or moving the pipe. The pipe lines from the dredge are usually very long, sometimes over a mile in length and with considerable terminal elevation. If a break in the line occurs in the dredge there is no means to prevent the material in the whole line from running back into the dredge. When that happens the dredge usually sinks and many dredges have sunk from that cause, entailing great expense to raise the dredge and recondition the apparatus. Dredges have also been constructed in which the discharge line is situated on deck. While this arrangement renders the pipe much more accessible, and eliminates to a great extent the danger from rupture of the line within the interior of the hull, the deck is very much encumbered by the large pipe extending throughout a great portion of its length.

By applications of our invention, we are able to eliminate the disadvantages of both prior types of dredges.

The invention itself will be better understood from the description of one practical embodiment thereof, illustrated in the accompanying drawing, in which—

Fig. 1 is a fragmentary plan section of a dredge embodying the invention, taken on the line I—I of Fig. 2; and

Fig. 2 is a vertical sectional view thereof taken on the line II—II of Fig. 1.

The hull of the dredge is shown as comprising a framework including sister keelsons 1, on some of which is supported centrally of the hull, a centrifugal pump 2. The outer surface of the hull comprises plating 3, and the hull is divided by two longitudinally extending bulkheads 4 into a main central portion or machinery well and two water-tanks 5 and 5′ along the sides. The water tanks are in turn divided into a plurality of compartments by transversely extending bulkheads 6.

The discharge line leading from the pump is brought upwardly into the space between the side plating and one longitudinal bulkhead. The upper part of the tank on this side is provided with transversely extending tank-top 7 below deck level. This tank-top is provided on its upper surface with cradles 8 in which the discharge pipe 9 is supported. The deck above the trough so formed is composed of deck plates or hatches 10, hinged, as at 11, so that they may be raised to afford convenient access to the pipe, the deck plates, when lowered, being supported upon removable strongbacks 12. Suitable scuppers 13 are provided for conducting water from the interior of the trough to the exterior of the hull.

It will be seen that the discharge line is positioned below the surface of the deck and so does not obstruct the same, that any leakage in the line is carried away by the scuppers and cannot reach the interior of the hull, and that ready access to the pipe may be had for replacement, repair, or periodic rotation to distribute the wear over the entire interior surface thereof.

By the described application of this in-

vention, a section of pipe may be used until worn entirely through before replacement is necessary. It should be noted in this connection, that with ordinary installations it is necessary to drill test holes in the pipe periodically, and to renew the pipe long before it is worn out, simply as a precautionary measure.

If the discharge line becomes ruptured, no leakage therefrom reaches the interior of the hull, nor can water from the outside back up through the pipe to flood the hull, as in the case of some prior types of dredges.

While the trough is shown as formed by the side plating, the bulk head, and the tank top, it might be formed in any other desired manner, and is particularly advantageous in hulls which are not divided into compartments by bulkheads, and which would become entirely filled by a leak in the pipe.

All slip-joints and the like which were necessary in installing pipe lines through a plurality of compartments have been eliminated and a continuous cast iron pipe may be used.

While we have described the illustrated embodiment of our invention in some particularity, this embodiment is described by way of illustration only, and not by way of limitation, and we do not, therefore, limit ourselves to the precise details so described, but claim as our invention all the embodiments thereof falling within the scope of the appended claims.

We claim:

1. A hull for dredges comprising an inner frame work and a covering plating, an upwardly extending longitudinal bulkhead adjacent one side thereof, a tank top between said side and bulkhead, and below the upper edges thereof, the tank-top, bulkhead and side forming a water-tight trough for receiving a pipe, a removable covering for the trough, and scuppers leading from said trough to the exterior of said hull.

2. A hull for dredges comprising a frame work and outer plating, an upwardly extending longitudinal bulkhead adjacent one side thereof, a tank top between said side and said bulkhead, and below the deck level of the hull, the side plating, bulkhead and tank top forming a trough, removable hatches covering the trough, removable strong-backs supporting said hatches, and a pipe extending longitudinally within said trough.

3. In a hydraulic dredge, a water tight trough extending longitudinally thereof and open to the deck, a pipe line therein, and means for draining fluid from the trough to the exterior of the dredge hull.

4. In a hydraulic dredge, a water tight trough extending longitudinally thereof above the water line and open to the deck, a pipe line therein, and means for drawing fluid from the trough to the exterior of the dredge hull.

5. A hull having a longitudinally extending water tight trough immediately below the level of the deck, removable hatches covering said trough and forming a continuation of the deck, and scuppers from the trough to the exterior of the hull.

6. A hull having a water tight trough extending longitudinally thereof, and open throughout its top to the deck, the bottom of the trough being above the load water line, scuppers from the trough to the exterior of the hull, and a removable covering for the trough.

7. A hull having a longitudinally extending water tight trough immediately below the level of the deck and above the load water line, a conduit extending along said trough below the level of the deck, removable strong-backs crossing the trough above the conduit, and hatches carried by said strong backs and the deck.

8. A hull having a longitudinally extending water tight trough immediately below the level of the deck and above the load water line, draining means from the trough to the exterior of the hull, and a continuous series of hatches overlying the top of the trough.

In testimony whereof we hereunto affix our signatures this 14th day of October, 1927.

JOHN G. CLAYBOURN.
LEONARD FOOTE.