July 3, 1928. 1,675,607

F. M. HENRY

SELF DUMPING BARGE

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Fig. 1

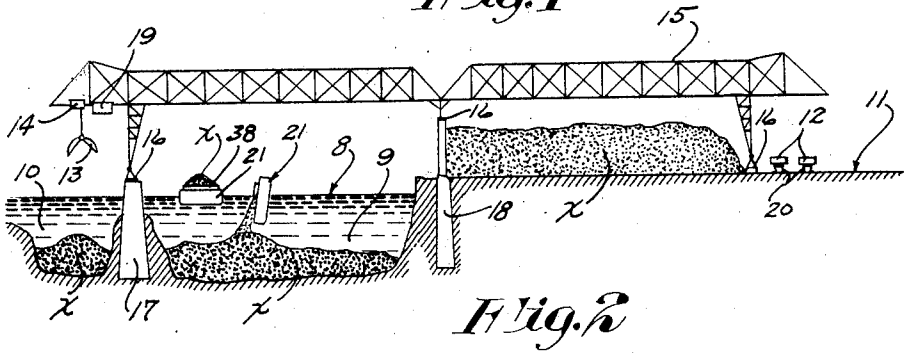


Fig. 2

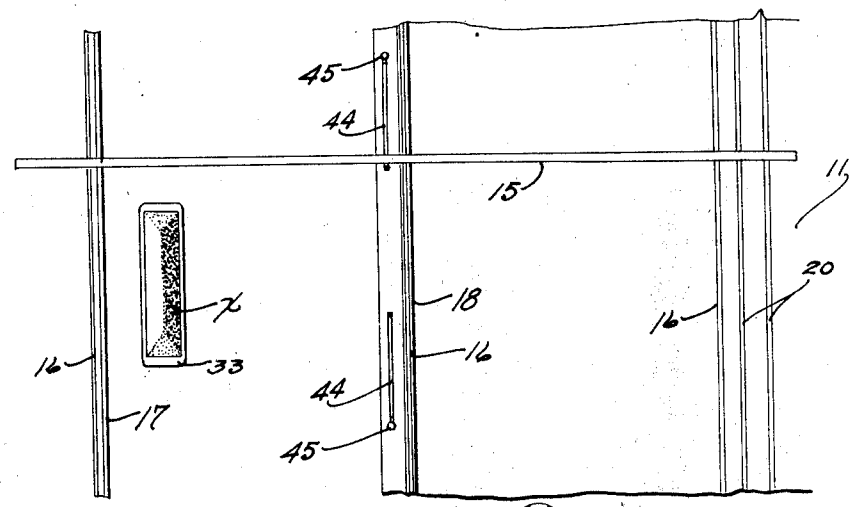
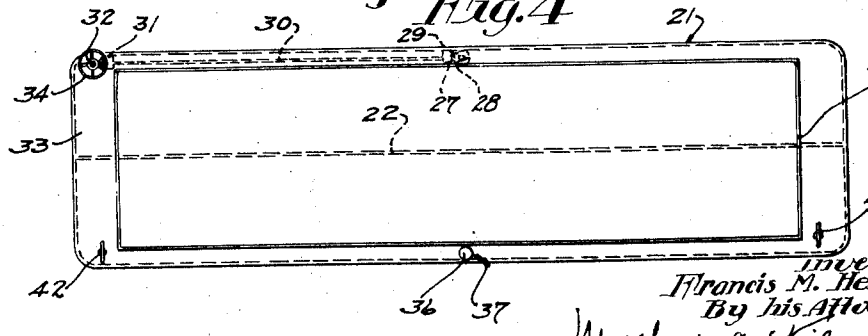


Fig. 3



Fig. 4



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Fig. 5

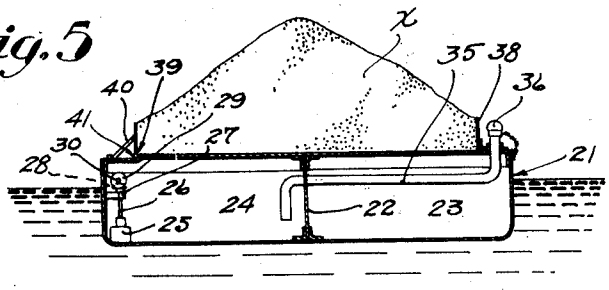


Fig. 6

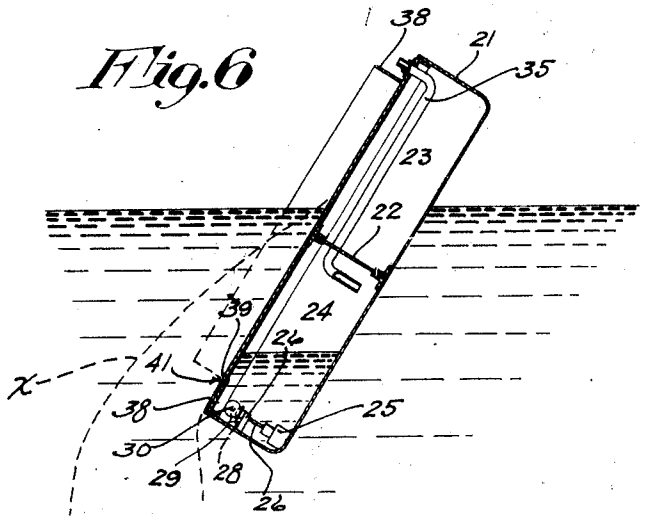
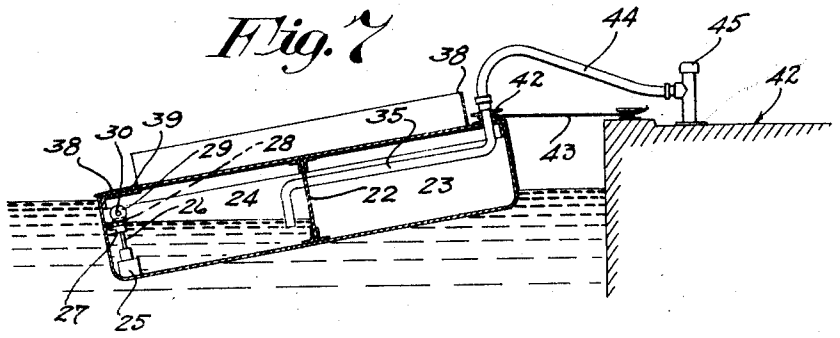


Fig. 7



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Patented July 3, 1928. 1,675,607

UNITED STATES PATENT OFFICE.

FRANCIS M. HENRY, OF MINNEAPOLIS, MINNESOTA.

SELF-DUMPING BARGE.

Application filed February 3, 1927. Serial No. 165,556.

My present invention has for its object to provide an extremely simple and highly efficient self-dumping barge, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The improved barge is especially well adapted for handling materials for wet storage such as coal and iron ore. In this use of the barge the materials will be hauled from mines or docks and dumped into deep channels or ponds where they may be readily removed by, for instance, clam shell buckets mounted on bridge cranes or otherwise, when needed. Said barge is also well adapted for use in connection with a dredging outfit to carry excavated materials to a distant point and dump the same into a body of water for the purpose of making a fill or to simply waste the material. The barge may also be used for various other different purposes such as hauling refuse from cities and dumping the same in deep water.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a view partly in elevation and partly in section showing two of the improved barges and apparatus for removing the coal from wet storage and delivering the same to a pile or into cars;

Fig. 2 is a fragmentary plan view, with certain of the parts shown in Fig. 1;

Fig. 3 is a side elevation of the improved barge loaded with coal;

Fig. 4 is a plan view of the same with the coal removed;

Fig. 5 is a transverse vertical section taken on the line 5—5 of Fig. 3;

Fig. 6 is a view corresponding to Fig. 5 with the exception that the barge has been dumped and the coal discharged therefrom into the water, as indicated by broken lines; and

Fig. 7 is a view corresponding to Fig. 6 with the exception that the barge has been floated to a dock and its air conduit connected to a compressor hose for expelling the water from the barge.

For the purpose of showing one of the many uses for which the improved barge may be used, to wit: the transportation of coal from a mine or dock and deposit of the same in a channel, pond or the like, there is illustrated in the drawings a body of water 8 which may be a lake, river, stream or pond and that is excavated to such a depth as to afford a relatively large basin 9 and a relatively small basin 10. On the land side of the basin 9 is a coal yard or dock 11.

For removing the coal x from the basins 9 and 10 and depositing the same in a pile on the dock 11 or in cars 12, there is provided a clam shell bucket 13 carried by a carriage 14 mounted to travel on the bridge crane 15. This bridge crane 15 is mounted to run on three parallel tracks 16, the outer of which is on piers 17 and the intermediate track 16 is on a wall or piers 18 at the outer end of the dock or yard 11. A house 19 for the operator of the clam shell bucket 13 and crane 15 is mounted on the bridge crane 15. The cars 12 are arranged to run on a pair of double tracks 20 which extend parallel to the outer track 16 and transversely under the projecting inner end portion of the bridge crane 15.

Referring now in detail to the improved barge, the numeral 21 indicates the hull thereof constructed of sheet steel, the plates of which are preferably connected by welding. Extending longitudinally through the hull 21 at the transverse center thereof is a vertical partition 22 which divides said hull into two equal air-tight compartments 23 and 24. These compartments 23 and 24 give the barge the required buoyancy so that said barge will return to the surface of the water after the dumping action thereof has taken place.

Within the compartment 24 at the outer side of the hull 21, and at the longitudinal center thereof is a scuttle valve 25 which normally closes a port in the bottom of the hull 21. The upright stem 26 of the scuttle valve 25 is mounted in a bearing 27 on the adjacent side of the hull 21, and keyed to the upper end of said stem is a bevel gear 28. A bevel gear 29 meshing with the bevel gear 28 is keyed to a horizontal shaft 30 which extends longitudinally through the compartment 24 and is connected by a pair of bevel gears 31 to the lower end of an upright staff 32 journaled in suitable bearings at one end of the hull 21 and extended through the deck 33 of the barge and is provided with a hand wheel 34. By the

use of this hand wheel 34 the scuttle valve 25 may be opened or closed, at will, through the connections just described.

Extending transversely through the compartment 23, in alignment with the scuttle valve 25 is an air conduit 35, the outer end portion of which is bent upright and projected through the deck 33 and thereabove. A screw cap 36 is applied to the upper end of the air conduit 35 and normally closes the same. This cap 36 is secured to the hull 21 by a chain 37 to prevent said cap from being dropped overboard. The inner end portion of the air conduit 35 extends into the compartment 24 through the partition 22 and is bent vertically downward and terminates considerably above the bottom of the hull 21. The top of the deck 33 is flat and secured thereto in rectangular arrangement are side and end boards 38. One of the side boards 38, to wit: the one on the same side of the barge as the scuttle valve 25, has its lower longitudinal edge hinged at 39 to the deck 33 for outward swinging movement onto said deck. This hinged side board 38 is held upright by a plurality of oblique stakes 40. The deck 33 outward of the hinged side portion, is countersunk at 41 to receive said side board and hold the same with its upper face flush with the top of the deck 33.

Secured to the deck at each end of the barge is a pair of cleats 42 for use in tying the barge to another barge or to a dock.

To dump the load of coal x from the barge, said barge is towed to the place where the coal is to be stored in the body of water 8. The operator first removes the stakes 40 to let down the hinged side board 24. Next, he removes the cap 36 from the air conduit 35 and then operates the hand wheel 34 to open the scuttle valve 25. After these operations, the operator steps onto an adjacent barge or tow-boat so as to be out of the way during the dumping action of the barge.

As the water enters the compartment 24 through the scuttle valve 25, the air in said compartment escapes through the air conduit 35 to the atmosphere. Under the weight of the water in the compartment 24, the respective side of the barge is overbalanced and settles into the water and thus starts the sliding of the coal x from the deck 33. This shifting of the load of coal on the deck 33 greatly accelerates the dumping or tilting action of the barge. As the inclination of the barge increases, the water in the compartment 24 is shifted outward and the added weight thereof further assists in tilting the barge until the inclination thereof is such that the coal will slide therefrom, as shown in Figs. 1 and 6. After the coal x has been discharged from the barge, the bouyancy of said barge will cause the same to shoot to the surface of the water and resume a slightly inclined position, as shown in Fig. 7. This arighting action of the barge will cause the water in the compartment 24 to flow toward the transverse center of the barge and cover the lower end of the air conduit 35 and thereby seal the same to prevent further escaping of air from the compartment 24. This sealing of the air conduit 35 to prevent further escaping of air from the compartment 34 automatically prevents further intake of water through the scuttle valve 25. It will thus be seen that only enough water is taken into the compartment 24 to produce the necessary dumping action.

The empty barge is then towed to a dock 42, or in some instances a tow-boat, and secured by a cable 43. The upper end of the air conduit 35 is then connected by a hose 44 to the hydrant 45 of an air compressor, not shown. Air is then forced into the compartment 24 to expel the water therefrom through the scuttle valve 25. After the water has been expelled from the compartment 24 the scuttle valve 25 is closed and the cap 36 applied to the air conduit 35.

While the improved barge is shown constructed of steel, it may be made from wood or other suitable material. It is also understood that the barge may have a multiplicity of air compartments. In the drawings, a hydrant for an air compressor is shown on a dock, but in all probability the most convenient place for the same together with an air compressor or compression tank will be on a tow-boat handling the barges.

What I claim is:

1. A self-dumping barge having a flat deck with side boards, one of which is hinged to the deck at its lower longitudinal edge for outward swinging movement onto the deck, said deck outward of its hinged side board being countersunk to receive said side board with its upper face substantially flush with the top of the deck.

2. A self-dumping barge having a closed hull, a scuttle valve for the hull, and a normally closed air conduit leading from the hull, said barge having means for confining water taken into its hull through the scuttle valve to overbalance and tilt said barge, said conduit, when open, permitting the escape of air from the hull during the intake of water through the scuttle valve, said conduit being arranged to be sealed by the water in the hull after a predetermined intake thereof to prevent further escape of air from the hull and automatically stop further intake of water through the scuttle valve, means for discharging the water from the hull through the scuttle valve, and means for closing the scuttle valve.

3. A self-dumping barge having a closed hull, a scuttle valve for the hull, a normally closed air conduit leading from the hull, said

barge having means for confining water taken into its hull through the scuttle valve to overbalance and tilt said barge, said conduit, when open, permitting the escape of air from the hull during the intake of water through the scuttle valve, said conduit being arranged to be sealed by the water in the hull after a predetermined intake thereof to prevent further escape of air from the hull and automatically stop further intake of water through the scuttle valve, and means for forcing air into the hull through the air conduit to expel the water from the hull through the scuttle valve.

4. A self-dumping barge having two closed air compartments, a scuttle valve for one of the air compartments, a normally closed air conduit leading from the compartment having the scuttle valve, said conduit, when open, permitting the escape of air through said connected compartment during the intake of water through the scuttle valve, and means for forcing air into said compartment to expel the water therefrom through the scuttle valve.

5. A self-dumping barge having two closed air compartments, a scuttle valve for one of the air compartments, a normally closed air conduit leading from the compartment having the scuttle valve, said conduit, when open, permitting the escape of air from said connected compartment during the intake of water through the scuttle valve, said conduit being arranged to be sealed by water in said compartment after a predetermined intake thereof to prevent further escape of air from said compartment and automatically stop further intake of water through the scuttle valve, and means for forcing air into said compartment through said conduit to expel the water from said compartment through the scuttle valve.

In testimony whereof I affix my signature.

FRANCIS M. HENRY.