No. 896,744. PATENTED AUG. 25, 1908.

T. S. MILLER.

CONVEYING APPARATUS.

APPLICATION FILED JAN. 16, 1904.

3 SHEETS—SHEET 1.

Fig. 1

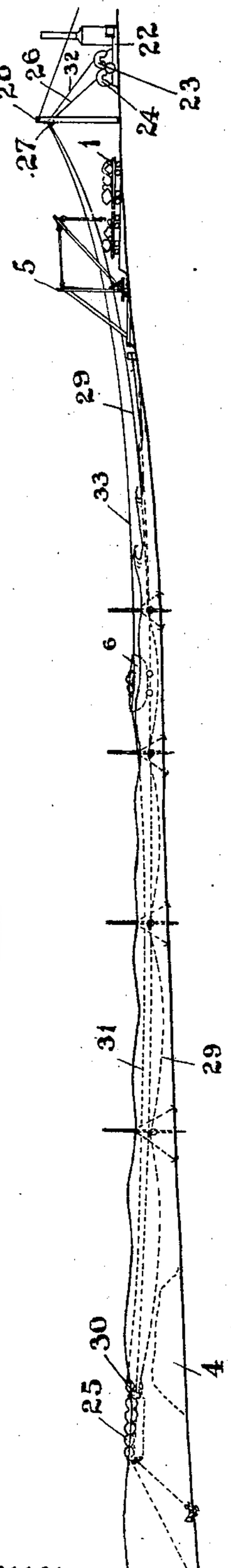
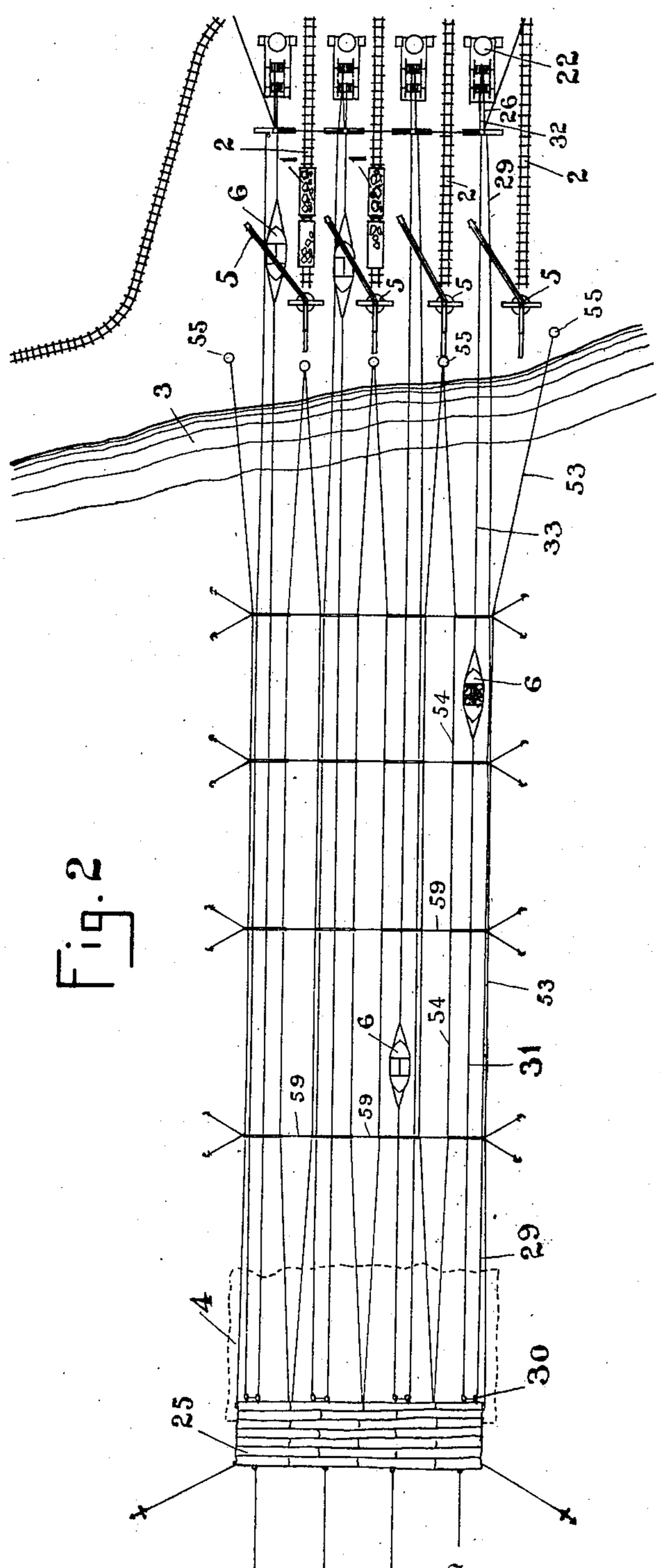


Fig. 2



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3 SHEETS—SHEET 2.

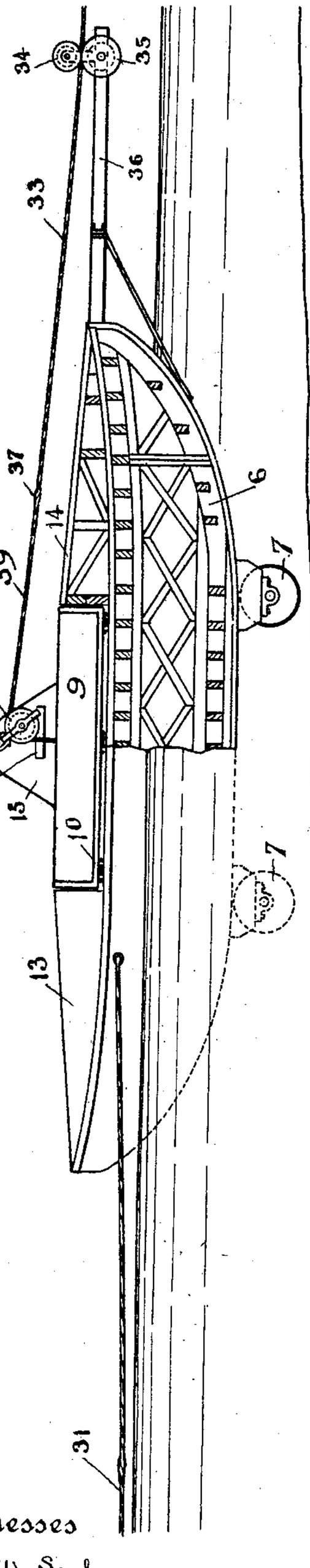

Fig. 3

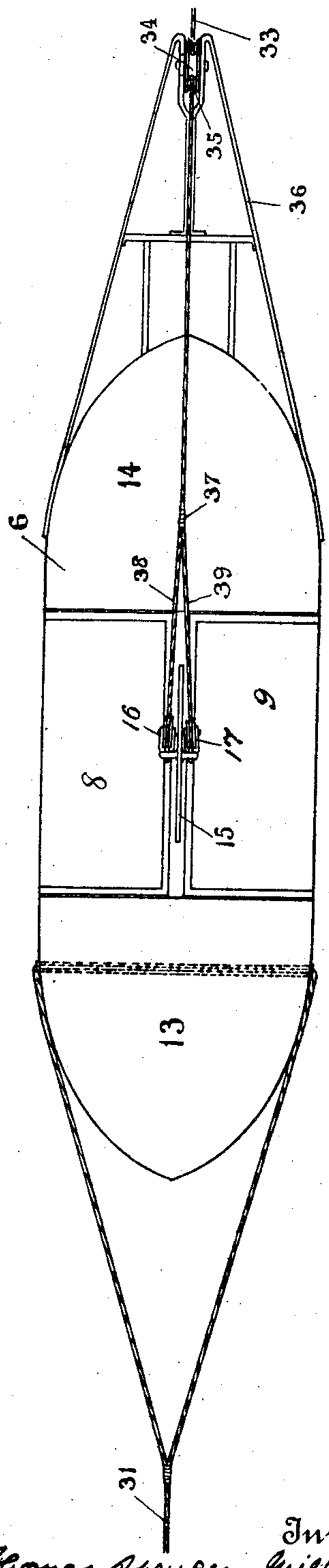

Fig. 4

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3 SHEETS—SHEET 3.

Fig. 6

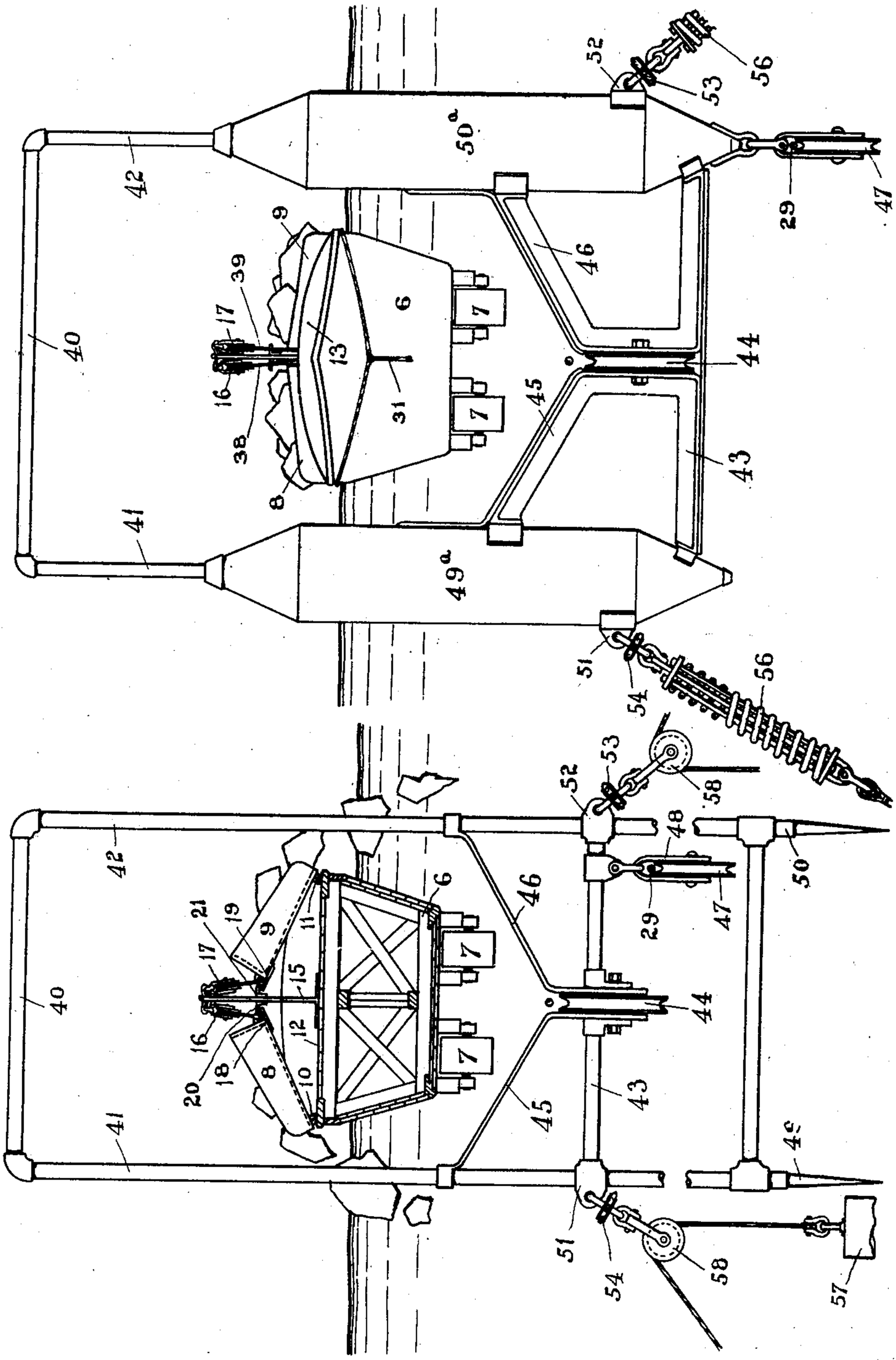

Fig. 5

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UNITED STATES PATENT OFFICE.

THOMAS SPENCER MILLER, OF SOUTH ORANGE, NEW JERSEY.

CONVEYING APPARATUS.

No. 896,744. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed January 16, 1904. Serial No. 189,279.

To all whom it may concern:

Be it known that I, THOMAS SPENCER MILLER, a citizen of the United States, and a resident of South Orange, county of Essex and State of New Jersey, have invented a new and useful Improvement in Conveying Apparatus, of which the following is a specification.

The primary object of my invention is to provide means whereby the material may be transported from the land to the point of construction of a breakwater, but it possesses, also, capability for useful application for other purposes.

In the accompanying drawings, Figure 1 represents an apparatus containing my invention rigged for the construction of a breakwater. Fig. 2 is a plan view of the same. Figs. 3 and 4 are side and plan views of the boat. Figs. 5 and 6 show two forms of the marine rope-carriers with a bow end view of the boat.

In the drawings, Figs. 1 and 2, the material is being transported from cars 1 on the railway tracks 2 on land, to the water line 3 and thence across the water to a dumping point above the foundation 4 which is being built for a breakwater.

A derrick 5 is employed for transferring the material from the cars on each track to a boat in which the transportation is effected.

Each of the boats is preferably of the form shown in Figs. 3 and 4 consisting of a hull 6 so decked over as to form a water-tight air compartment which, by reason of strength of exterior construction and internal bracing, is capable of standing all of the shocks to which it may be subjected by the waves. The bottom of this boat is provided with the rollers 7 capable of supporting the boat and its load and acting as wheels for the same during its passage over the ground to the water line. 8 and 9 are two boxes or trays which are hinged, respectively, at 10 and 11, to the gunwales of the boat and which, in carrying position, rest in what is substantially a cock-pit in the deck above the air-tight deck 12 and between the fore and aft air-tight decks 13 and 14. A stand 15 projects upward from the deck 12 between the trays 8 and 9. On opposite sides of such stand at the top, are secured the sheave-blocks 16 and 17. Fingers 18 and 19 are fixed to the rear of the trays, respectively, and in coöperation with the stops 20 and 21 limit the extent to which the rear of the trays may be raised to the dumping position shown in Fig. 5.

The rope mechanism by which the boats are propelled may, for each boat, be described as follows: 22 is a rope-drum engine containing the friction-rope-drums 23 and 24. 25 is a raft anchored beyond the dumping point. A rope extends substantially from the drum 23 out to the raft and back again to the drum 24, so that by the operation of the two drums the rope can be caused to travel in either direction, or be held stationary, and can be drawn tight or be permitted to slack. The various runs of this rope may be described as follows: Run 26 extends from drum 24 to a sheave at 27 at the head of mast 28. Run 29 extends thence to the sheaves 30 on the raft. Run 31 extends thence to the boat where it is made fast on both sides the bow thereof, as shown in Figs. 3 and 4. Run 32 extends from the drum 23 to a sheave at 27 at the head of the mast 28. Run 33 extends thence between the guide-sheaves 34, 35, on the out-rigger 36 projecting from the stern of the boat to the splice 37. Run 38 extends thence over the sheave 16 to the rear of the tray 8 where it is made fast. Run 39 extends from the splice 37 over the sheave 17 to the rear of the tray 9 where it is made fast.

In Fig. 2, there are 16 marine rope-carriers shown, four for each rope. Each of these rope-carriers may be either of the form shown in Fig. 5 or that shown in Fig. 6, which are essentially the same excepting that one is supported by the bottom and the other by floats. Each of these rope-carriers contains an iron frame 40, 41, 42 and 43, through which the boat is adapted to pass. Each also carries a submerged sheave 44 to serve as a rest for either rope-run 31 or 33, depending upon the position of the boat. The inclined braces 45 and 46 serve to direct the rope into the groove of the sheave 44. 47 is a submerged sheave on which the rope-run 29 is retained by the clevis 48. The rope-carrier shown in Fig. 5 is supported by the legs or spiles 49 and 50 which are driven into the bottom. The rope-carrier shown in Fig. 6, is supported by the floats 49^a and 50^a. At the eyes 51 and 52, the rope-carriers are connected with each other by the longitudinal guys 53 and 54, each of which guys has one end connected with the raft and the other with an anchorage 55. Each rope-carrier also has an anchorage of its own se-

cured to the eyes 51 and 52 preferably by a yielding connection, such as the spring 56 or the counterweight 57, and sheave 58. Where several rope-carriers are used abreast, as shown in Fig. 2, the two outside ones only need have separate anchorages; their adjacent sides being connected by the connecting guys 59.

The operation is as follows: A boat resting upon its wheels on the shore is loaded from the cars by means of the derrick. The clutch of drum 24 is thereupon set while drum 23 is permitted to pay out under its brake. The boat is thus towed on its wheels by rope-run 31 down to the shore line 3 and thence floated by the water it is towed through the successive rope-carriers to the point of dumping. Thereupon the brake is set on drum 23 so as to hold back on rope-run 33 with sufficient power to lift the inner ends of both the trays and cause them to dump, as shown in Fig. 5.

In order that the trays shall not be prematurely dumped, the strain upon the ropes required for dumping must be in excess of the maximum strain incident to the out-hauling of the rope 33 by the out-hauling of the boat, which required strain is reduced to a minimum by the rolling support afforded by the sheaves of the marine rope-carriers. The distribution of these marine rope-carriers will, therefore, be dependent upon the depth of water; it being required that they should be nearer together in shallower water in order to prevent the rope from contacting with the bottom.

Although I have shown this apparatus as applied to the construction of an off shore breakwater, I do not wish to be understood as so limiting myself, because I am aware that it may be used between two floating objects at sea or for carrying material from a floating object off shore to the shore. Nor do I limit myself to a single boat nor to the reciprocating movement of the rope as distinguished from a continuous movement in the same direction of the rope to which the boat is attached.

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

1. A marine rope-carrier containing, in combination, a submerged rope support 44, a frame admitting of the passage of the boat whereby the rope is returned to engagement with the said support and a submerged rope support 47 provided with means for retaining engagement with its rope.

2. The combination of the boat, a rope for drawing said boat in one direction, a second rope for drawing the boat in the opposite direction, actuators for each of the ropes, and pulleys for supporting said ropes along the line of the run thereof comprising a frame entirely surrounding the rope and permitting the boat to pass over the pulley between and below said frame work.

3. In combination, a rope drum engine, an anchored sheave, a rope extending from said engine to said sheave and back, a boat connected with said rope, a series of frames through which said boat may pass anchored intermediate said sheaves and engine, and submerged rope-supporting sheaves carried by said frames.

4. In combination, a rope-drum engine, an anchored sheave, a rope extending from said engine to said sheave and back, a submerged support for said rope, a boat connected with said rope and wheels whereby said boat is carried.

5. A combined wheeled vehicle and boat provided with a dumping load receptacle, in combination with means for propelling the same to and on the water and means for operating its dumping mechanism.

6. A combined wheeled vehicle and boat, a rope whereby it is towed to and on the water, a series of anchored frames, a plurality of rope-supporting sheaves carried by each of said frames, and a rope drum engine whereby said rope is controlled.

7. A boat provided with dumping mechanism, a tow-rope, an engine and a connection whereby said dumping mechanism is operated by said engine.

8. A boat provided with dumping mechanism, an engine and connections whereby said engine both tows and dumps the load.

9. A boat provided with dumping mechanism, bow and stern ropes, two rope drums respectively operating said ropes and a connection whereby said dumping mechanism is operated by the opposite pull of said drums.

10. In combination, a boat, a dumping mechanism on said boat, and an engine operating said boat and dumping mechanism.

11. In a boat, in combination, the hull, a dumping load receptacle thereon and wheels thereunder, and means for both propelling said boat and operating said dumping mechanism.

12. In combination, the hull of a boat, a dumping load receptacle thereon, an engine located off the boat and a rope whereby said load receptacle is dumped from said engine.

13. In combination, the hull of a boat, two load receptacles pivoted at opposite sides of said hull and mechanism amidships whereby said receptacles may be tilted, an engine located off of said boat whereby said tilting mechanism is operated.

14. In a conveying device, in combination, a boat, a rope-run to tow said boat one way, an actuator for the same, a rope-run to tow said boat the opposite way, an actuator for the same, an anchored frame through which said boat may pass and intermediate carriers for said rope-runs, carried by said frame.

15. In a conveying device, in combination,

a boat, a tow-rope, a series of submerged guides whereby the course of said tow-rope is controlled, and a frame permitting the passage of the boat whereby the rope is returned to engagement with the guides.

16. A boat provided with dumping mechanism, a plurality of ropes, a rope-drum for each of said ropes, and means for exerting a relatively greater force upon one rope than upon another, to operate said dumping mechanism.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS SPENCER MILLER.

Witnesses:

W. A. PAULING,

CHAS. J. RATHJEN.