No. 612,710. Patented Oct. 18, 1898.

H. F. DETERDING.

MEANS FOR RELEASING VESSELS FROM SAND BARS.

(Application filed Jan. 24, 1898.)

(No Model.) 3 Sheets—Sheet 1.

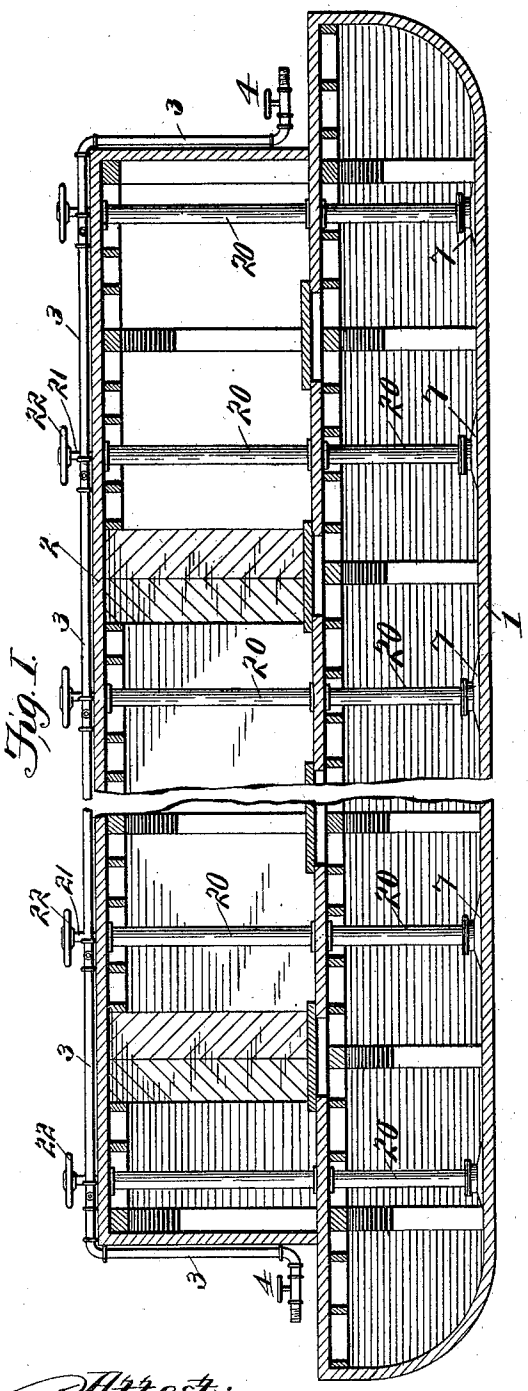


Fig. I.

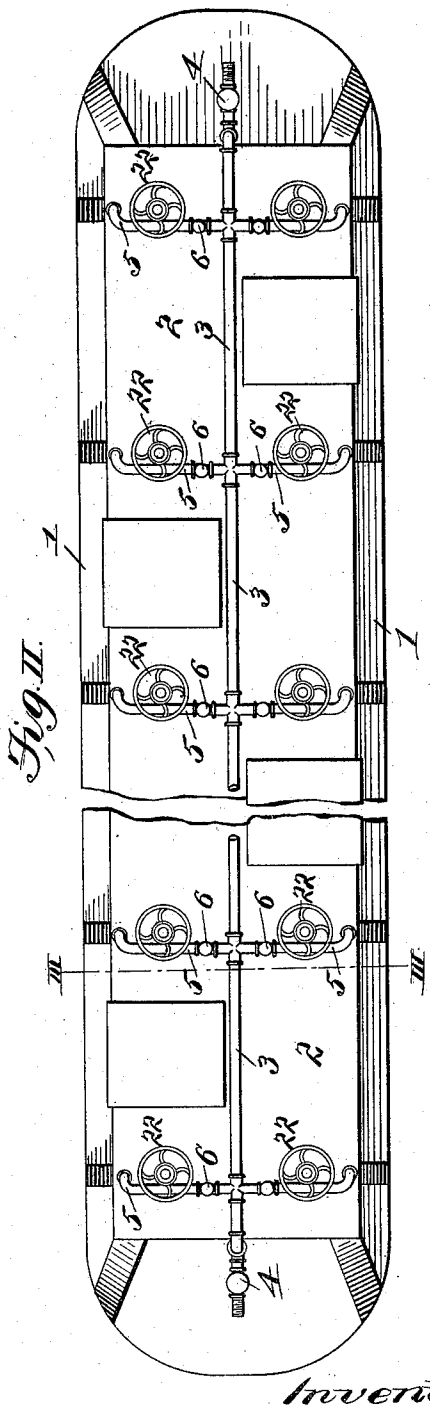


Fig. II.

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Fig. III.

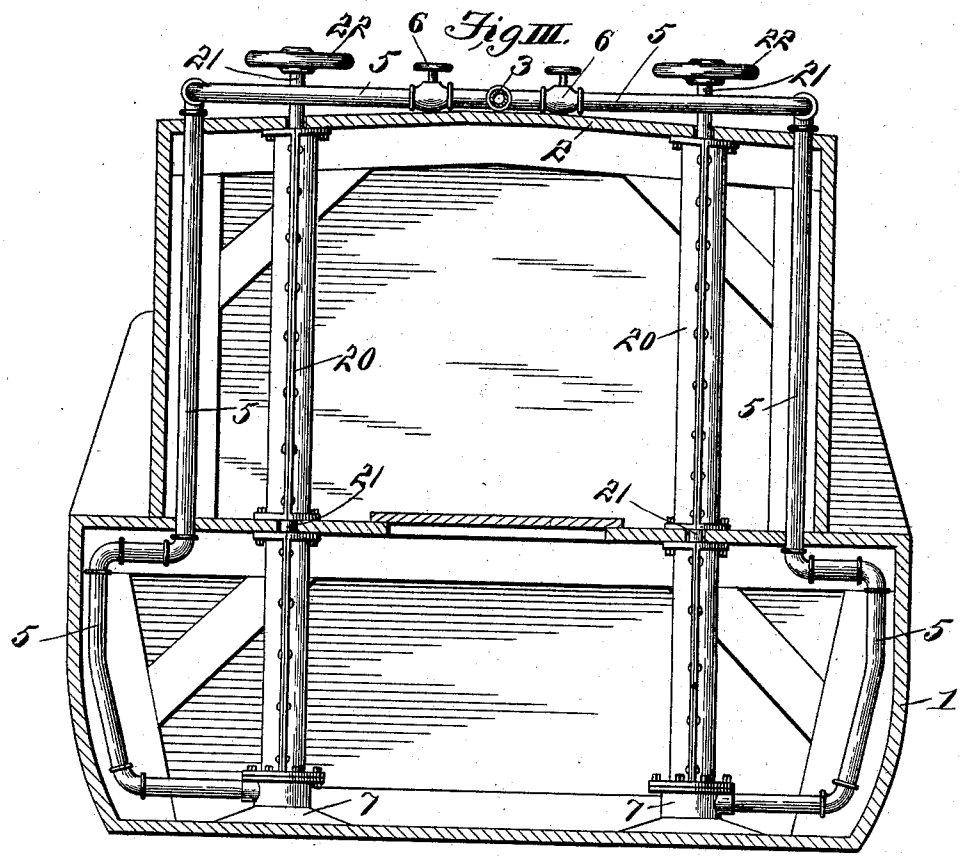


Fig. IV.

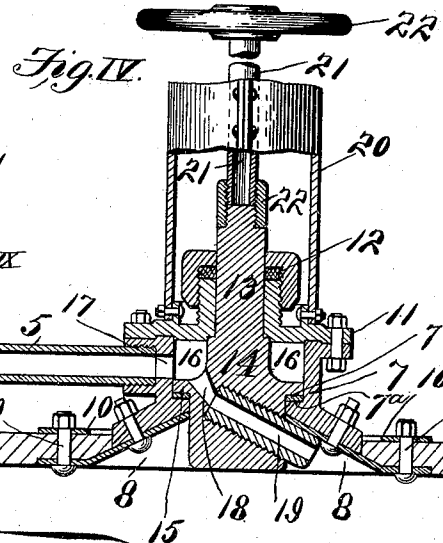


Fig. VIII.

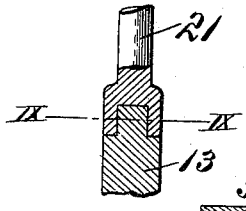
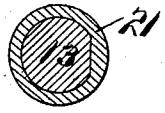


Fig. IX.



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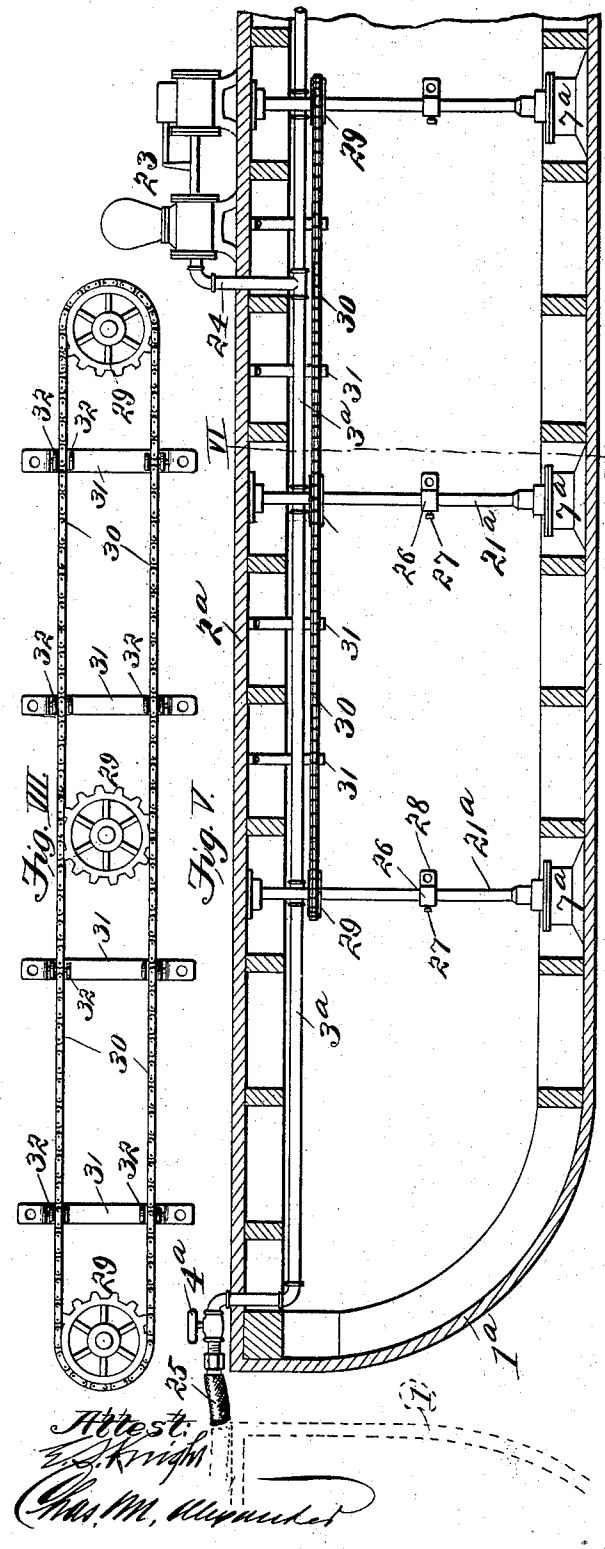
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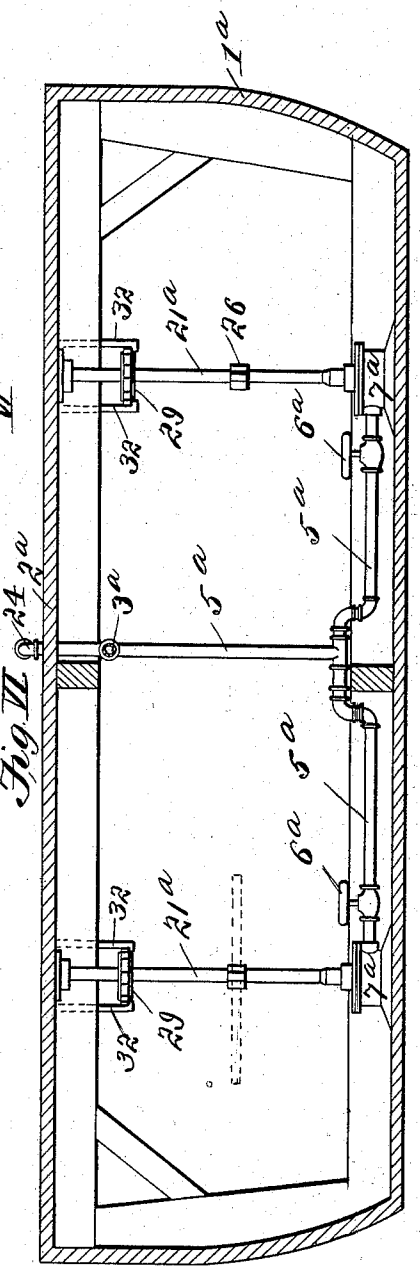
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MEANS FOR RELEASING VESSELS FROM SAND BARS.

(Application filed Jan. 24, 1898.)

(No Model.) 3 Sheets—Sheet 3.





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UNITED STATES PATENT OFFICE.

HENRY F. DETERDING, OF COMMERCE, MISSOURI.

MEANS FOR RELEASING VESSELS FROM SAND-BARS.

SPECIFICATION forming part of Letters Patent No. 612,710, dated October 18, 1898.

Application filed January 24, 1898. Serial No. 667,688. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. DETERDING, a citizen of the United States, residing at Commerce, in the county of Scott and State of Missouri, have invented a certain new and useful Improvement in Means for Releasing Vessels from Sand-Bars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to means for displacing the sand or dirt from beneath vessels, such as steamboats and barges, when such vessels become grounded on sand-bars lying in the beds of rivers, while incidentally said means may be employed in connection with the steamboat by which it is towed to assist in propelling the barge or other vessel.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a longitudinal vertical sectional view taken through a barge equipped with my apparatus, the central portion of the barge being broken out. Fig. II is a top or plan view of the barge as shown in Fig. I. Fig. III is a cross-sectional view taken on line III III, Fig. II. Fig. IV is an enlarged sectional view of one of the ejectors, the nozzle therein, and the adjacent parts, portions of one of the operating-rods and incasing tubing, the operating-rod and operating-wheel being shown in elevation. Fig. V is a longitudinal sectional view of the hull of a steamboat equipped with my apparatus. Fig. VI is a cross-sectional view taken on the line VI VI, Fig. V. Fig. VII is a detail bottom view of the driving-wheels, driving-chains, and guides employed in manipulating the operating-rods of the apparatus. Fig. VIII is a detail view, partly in section and partly in elevation, of the meeting ends of the valve-stem and operating-rod and their socket connection. Fig. IX is a cross-sectional view taken on the line IX IX, Fig. VIII.

1 designates the hull of a barge, and 2 the deck of such barge.

1^a is the hull of a steamboat, and 2^a is the lower deck thereof.

Referring first to the barge and its equipment with my apparatus, 3 designates a main water-conveying pipe that extends over the deck of the barge and from end to end thereof and is provided at each end of the barge with shut-off valves 4.

5 are distributing branch pipes that are connected to the main pipe 3 at suitable distances apart by means of suitable couplings, and in each of these distributing-pipes 5 is a controlling-valve 6. The distributing-pipes 5 pass from the deck of the barge downwardly through the hold and the hull thereof.

7 are ejector-heads seated in openings in the hull of the vessel, such ejector-heads being supported in such openings by means of funnel-shaped disk rings 8, firmly secured to the hull of the vessel by bolts 9, passing through such disk rings and through rings 10 on the inner side of the hull. The upper side of the ejector-head is closed by a cap-plate 11, provided with a stuffing-box 12.

13 is an ejector-stem the upper end of which extends through the cap-plate 11 and stuffing-box 12.

14 designates the rotary body of the ejector, which is provided with an annular flange 15, resting on a gasket or packing-ring 7^b, located on a shoulder-seat 7^a within the chamber of the ejector-head, and around the upper portion of the body of the ejector is an annular channel 16, that communicates with the distributing-pipes through means of an inlet-opening 17. The body of the ejector extends beneath the ejector-head through the disk ring to the exterior of the hull of the vessel, and it is provided with a duct 18, leading in a downward direction.

19 is an ejector-nozzle seated in the ejector-body 14 in communication with the duct 18 and arranged obliquely to the hull of the vessel, so that a stream of water ejected through this nozzle is directed obliquely to the hull of the vessel.

20 designates incasing-tubes that extend upwardly from the cap-plates of the ejector-heads to the deck of the barge, and in these tubes are the operating-rods 21, through means of which the ejector-stem 13 is turned to direct the nozzle 19 into varying positions within the disk rings beneath the hull of the vessel. In Figs. I to IV, inclusive, I have shown these operating-rods provided with hand-wheels 22, through means of which they may be individually manipulated; but other means for

manipulating them may be employed, and they may (a number of them) be manipulated simultaneously by the employment of means to be hereinafter described. The rods 21 may be of solid form, or a tube may be employed, as shown in Fig. IV, and the connection between the rods and the ejector-stems 13 may be effected by a screw-collar 22, as shown in Fig. IV, or a slip-socket connection, such as shown in Figs VIII and IX, may be used. The socket connection shown in Figs. VIII and IX is formed by flattening the reduced upper end of the stem 13 at one point and forming the meeting end of the operating-rods 21 on its interior with a socket having a flattened surface.

The tubes 20 are used to inclose the operating-rods 21, for the reason that where a barge is filled with grain or other granular material such material would be liable to pack around the operating-rods and render the operation of them difficult.

The main pipe 3 is connected to a means of water-supply leading from a pump adapted to force water through the pipe 3, such pump being preferably located on the steamboat by which the barge 1 is towed.

Referring now to the apparatus as shown in Figs. V, VI, and VII, in which its application is shown to a steamboat, 7^a designates the ejector-heads, of the same construction as those (7) described in connection with the barge and containing a similar ejector and ejector-nozzle.

3^a designates the main pipe, which is provided with a valve 4^a. This pipe 3^a is provided with branch distributing-pipes 5^a, leading to the ejector-heads, and provided with valves 6^a, preferably located in proximity to the ejector-heads.

23 designates a pump that may be actuated by any suitable means. This pump is connected with the main pipe 3^a through means of a pipe 24, and the pump is adapted to draw water from the river and force it through the pipe 24 into the pipe 3^a and thence through the distributing-pipes 5^a to the ejector-heads 7^a. A flexible tube connection 25 is provided between the pipe 3^a on the steamboat and the pipe 3 on the barge, and the water drawn by the pump 23 is forced from the pipe 3^a through the flexible tube 25 into the pipe 3 on the barge and flows therefrom through the distributing-pipes 5 to the ejector-heads 7.

21^a designates the operating-rods of the appliance as employed on the steamboat. These operating-rods are connected to the ejector-stems 13 in a similar manner to that described in connection with the operating-rods 21, and the upper ends of these rods are suitably supported beneath the lower deck of the steamboat. On the rods 21^a are collars 26, that are secured to the rods by set-screws 27 or other suitable means of fastening, and on each collar is an apertured arm 28, that is adapted to receive a lever, through means of which the operating-rods may be turned. On the operating-rods, near the upper ends, are toothed wheels 29, that receive an endless chain 30, the links of which engage the teeth of the wheels 29, and by turning one of the operating-rods 21^a all of the rods connected by the chain 30 may be simultaneously turned. In Fig. V, I have shown three of the operating-rods connected by chain 30; but it is evident that any number of the rods may be connected in a series, as any two or more of the rods can be so connected in order to operate two or more of the ejectors simultaneously.

31 designates hangers having pendent arms 32, that guide the chain 30 in its travel in engagement with the toothed wheels 29.

The toothed wheels 29 and the chain 30 are only shown in connection with the operating-rods 21^a in the equipment of a steamboat; but it is evident that they may be applied in a like manner to the operating-rods 21 in the barge equipment.

In the practical operation of my improved apparatus when a vessel becomes stranded on a sand-bar in the bed of a river any one or more of the ejectors located in proximity to the sand or dirt on which the vessel is grounded may be operated to discharge a stream or streams of water against the sand or dirt for the purpose of loosening the sand or dirt and driving it away from the hull of the vessel. In the operation the valves controlling the main conveying-pipe 3 or 3^a are opened, and the pump 23 being set in motion water is drawn from the river and forced through the pipe 3 or 3^a. The valves 6 in any of the distributing-pipes 5, through which it is desired to convey water to the ejectors, are also opened, and the water under pressure from the pump is forced to the ejectors into the channels 16, and thence through the nozzles 19 against the sand or dirt on which the vessel is grounded. Then by operating the ejectors 14 through means of the operating-rods 21 or 21^a the nozzles 19 are turned or rotated in such manner as to direct a stream of water from the nozzle 19 in varying directions, so as to cause such streams of water to be directed against all of the sand or dirt adjacent to the location of the ejector and remove the sand or dirt, so as to free the hull of the vessel therefrom.

It will be understood that the stem turns in the cap-plate 11 and the ejector-body 14 turns in the head 7, while its nozzle-carrying end is free to be rotated to carry the nozzle 19 around in the funnel-shaped disk ring, so as to direct a stream of water therefrom in any desired direction.

I claim as my invention—

1. A vessel comprising a hull having a funnel-shaped disk ring secured to the bottom thereof, an ejector-head, fitting over the disk ring having a cap-plate, a rotary stem having a body formed with an annular channel and provided with an inclined nozzle and a duct leading thereto and rotatable in the ejector-

head, the main pipe, the distributing branch pipe connecting the main pipe with the annular channel, and means for rotating the ejector-stem; substantially as described.

2. The combination of the ejectors having stems and rods connected with the stems, the toothed wheels secured to the rods, the chains connecting the toothed wheels, and the lever-collars secured to the rods; substantially as described.

HENRY F. DETERDING.

In presence of—
CHAS. M. ALEXANDER,
H. S. KNIGHT.