H. F. KNAPP.

MEANS FOR RELIEVING STRANDED VESSELS.

No. 189,233. Patented April 3, 1877.

*Fig. 1.*

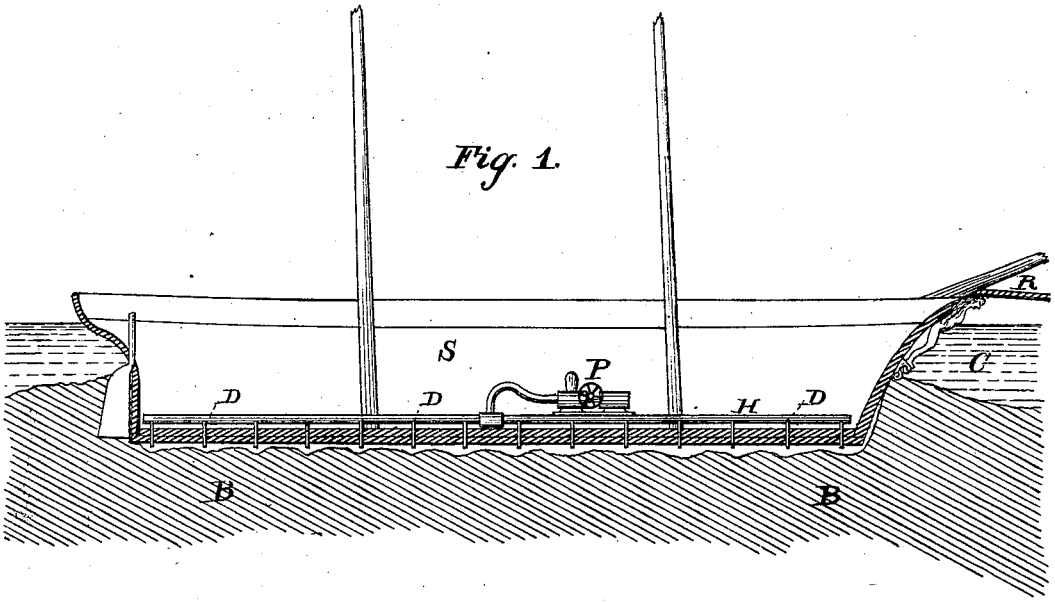
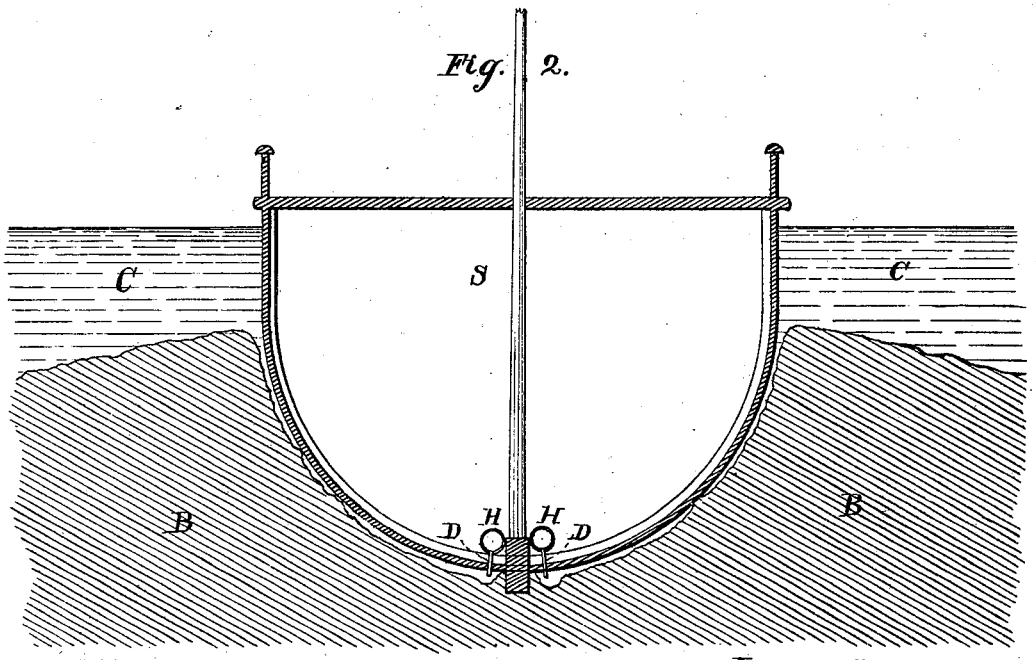



*Fig. 2.*




Witnesses.

James Ledger

W. H. Burrell.

Inventor:

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# UNITED STATES PATENT OFFICE.

HENRY F. KNAPP, OF NEW YORK, N. Y.

## IMPROVEMENT IN MEANS OF RELIEVING STRANDED VESSELS.

Specification forming part of Letters Patent No. **189,233**, dated April 3, 1877; application filed October 26, 1875.

*To all whom it may concern:*

Be it known that I, HENRY F. KNAPP, of the city, county, and State of New York, have invented certain improved process and means for getting stranded vessels off of shoals, bars, &c., of which the following is a specification:

This invention consists in certain novel means of manipulating a stranded vessel, so that she may be relieved with facility; and consists in introducing within her hold one or more main tubes, which are tapped at intervals by small pipes, that are made to pass out through small apertures in the bottom of the vessel on either or both sides of the keel, and are fitted air or water tight for the purpose of forcing water through the entire arrangement of pipes, so as to soften the sand, as well as to lubricate the contact or friction of the sand or mud against the outside skin of the vessel, and thus enable her to move more readily by means of warping-lines.

As vessels that run ashore on sandy coasts are rapidly "banked up" with sand by reason of the peculiar action of the sea, it is an important feature of this invention that such banking up can be largely avoided, as well as reduced, by the means herein described; also, the running action of the sea will, at times, cut away the sand, &c., from under a portion of a stranded vessel, leaving her rest on an uneven foundation, which causes her to not only strain badly, but to frequently be the cause of her breaking to pieces. This result I propose to avoid by softening and washing or blowing away the sand from under that part of the vessel that is not already cut away by the action of the sea, so as to secure an even foundation and bottom for her along her whole length.

Again, vessels that go ashore on sandy beaches most frequently take a position broadside to the sea, and, as their flotation is facilitated by getting them end to the sea, this may be accomplished by ejecting the fluid into the sand under the starboard side forward and port side aft, or vice versa, according to the circumstances of her position, all in order that she may be gradually slewed around, as desired.

Air or water forced under the bottom of a ship buried in the sand is sure to make its way upward in the most direct course, which course is always directly in contact and along the outside skin of the ship, thus cushioning the entire body of a ship in a film of water, and, by the constant commotion given the water of the sea surrounding the ship, by reason of the upward currents from beneath the ship, the sea is prevented from not only depositing or washing up sand, but is useful in carrying off that already deposited. Such means, in connection with a constantly-taut warping-line, will quickly facilitate the flotation of a ship.

In the accompanying drawings, Figure 1 represents the longitudinal section of a ship buried in the mud or sand, with the arrangement of main tubes, tap-pipes, force-pump, hose, &c., inside of her, also a warping-line to keep up a constant pull on her. Fig. 2 is a cross-section view of the same.

Similar letters refer to like parts in all the figures.

For a detailed description, S will represent a ship buried in the sand B, over which is a slight depth of water, C, around the ship. H represents the main longitudinal tubes, which are of considerable size, and are tapped every few feet by projecting pipes D, passing out through the bottom of the ship, and are fitted perfectly air or water tight in her bottom, so as to prevent the sea-water passing into the ship's hold. They are also made to pass through the bottom on both sides of the ship, at a distance of one or more feet away from the keel, as in most cases it is desirable to avoid softening the sand directly under the ship, for the reason that she would sink deeper into it, which is to be avoided.

The air or water to the force-pump is led in by suction-hose from the sea-water C, over her side and down the hatchway, and so on through the pump P, tubes, and out through small pipes D, to the outside of the vessel.

As it is simply an affair of power to force the air or water through the pipes, and as the water, after passing out of the pipes, will take the shortest cut upward, which is invariably alongside the skin of the ship, it is readily seen that not only is the friction of the sand against the ship reduced, but that the sand is also somewhat liquefied, which conditions,

in connection with a warping-line, and the ordinary wave-motion of the sea to work or give motion to the ship, will be found effectual to gradually work the ship through the sand and off into deep water.

Valves will be placed in tubes H to shut off the air or water from either end, as one part of the ship may be afloat while the other part may be grounded.

What I claim, and desire to secure by Letters Patent, is—

1. The process herein described of relieving stranded vessels by causing them to float in a fluid or semi-fluid, by means of forcing continuous streams of fluid immediately around its bottom into the sand or mud in which the vessel is embedded or lies, for the purpose of washing away and softening the sand, while at the same time a lateral movement or strain is imparted to the vessel by means of warping-lines or equivalent means, whereby it may be moved into deeper water, substantially as and for the purpose set forth.

2. As a means for relieving stranded vessels, the tube H, located on the side of the keel, and provided with exit-tubes D, passing in a water-tight manner through the bottom of the vessel, in combination with the force-pump P, substantially as and for the purpose described.

HENRY F. KNAPP.

Witnesses:

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W. H. BURRELL.