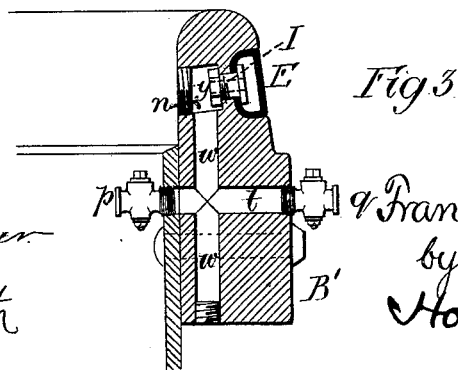
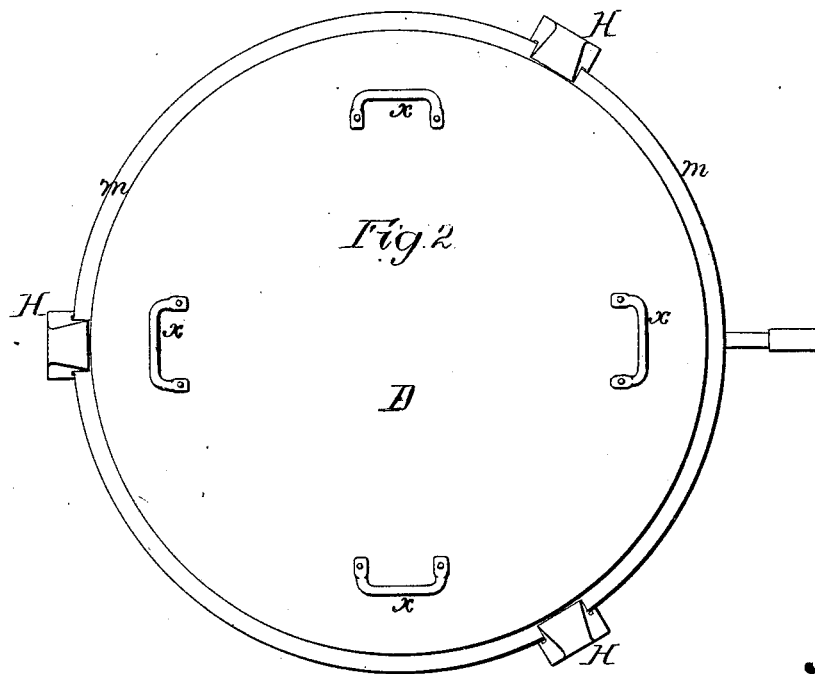
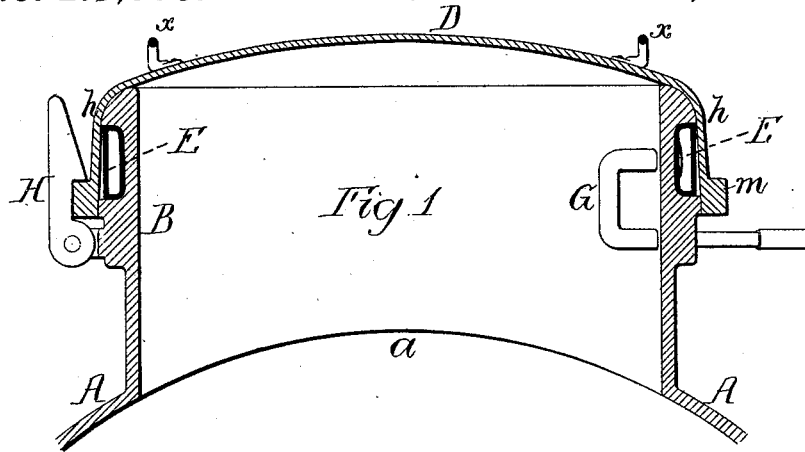


F. C. PRINDLE.

Detachable Cover for Air-Tight Vessel.

No. 213,688.

Patented Mar. 25, 1879.



Witnesses
John G. Hamer
Harry Smith

Inventor
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UNITED STATES PATENT OFFICE.

FRANKLIN C. PRINDLE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN DETACHABLE COVERS FOR AIR-TIGHT VESSELS.

Specification forming part of Letters Patent No. **213,688**, dated March 25, 1879; application filed October 24, 1877.

To all whom it may concern:

Be it known that I, FRANKLIN C. PRINDLE, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Detachable Covers for Air-Tight Vessels, of which the following is a specification:

My invention relates to certain improvements in that class of detachable covers for vessels which are rendered air-tight by the distension of a hollow ring of rubber or other flexible material, from which the pressure may be withdrawn when the covers have to be removed, the main object of my invention being to adapt such covers to the "spoil"-tanks of dredging-machines, or to other vessels the contents of which have to be subjected to pressure.

In the accompanying drawings, Figure 1 is a vertical section illustrating my invention; Fig. 2, a plan view; and Fig. 3, an enlarged sectional view, showing a modification of my invention.

A represents part of a tank, and *a* the opening, through which any material may be introduced into the said tank, the said opening being surrounded by a cylindrical mouth-piece, B, which is secured to or forms a part of the tank, and of which D is the cover.

In the exterior of the mouth-piece is formed a recess for the reception of a hollow ring, E, of rubber or other flexible or elastic material, with the interior of which communicates one end of a pipe, G, the other end of the latter communicating with an air-pump or other device for compressing air, or with a supply of water under pressure.

The flange *h* of the cover fits freely on the exterior of the mouth-piece and the ring E. As soon as air or water under pressure is forced through the pipe G, the rubber ring will be distended and forced against the interior of the flange, thus making a perfectly air-tight joint. When the pressure of air or water is discontinued, however, the tube will collapse to its normal condition, and the cover will be at liberty to be removed.

Although my invention is applicable to the closing of mouth-pieces generally, or any opening surrounded by a rib, it has been designed more especially for use in connection with float-

ing tanks for containing the spoil excavated by dredging-machines. These tanks, as I construct them, have several openings or mouth-pieces, through any one of which the contents of the dredging-buckets may be discharged into the tank. The mouth-pieces of these tanks are necessarily large, and the covers consequently heavy; hence I provide each cover with any desired number of handles or eyes, *x*, for facilitating its adjustment to and removal from the mouth-piece. As the contents of the tank are forced therefrom by compressed air, the cover is subjected to considerable internal pressure; hence I retain it in place by catches H, hinged to the mouth-piece, and having projections bearing on a ledge, *m*, on the flange of the cover, as best observed in Fig. 1, these catches being readily turned down when the cover has to be removed.

In Fig. 3 the mouth-piece consists of a cast-iron ring, B', secured to a rib on the edge of an opening in the tank. A hole, *n*, is bored into this ring from the inside of the same for the introduction of a suitable screw-key for turning a nut, *y*, on the end of a tubular bolt, I, the head of which has been previously thrust through an orifice in the rubber ring E. When the nut has been tightened, the head of the bolt will have so compressed the rubber that the latter will prevent all communication with the interior of the ring, excepting through the said hollow bolt. When the nut has been screwed tight a screw-plug is fitted to the exterior of the hole *n*, which is thus converted into a chamber.

Passages *w* and *t*, communicating with the chamber *n*, and, through the hollow bolt, with the ring, are bored in the mouth-piece, and these passages may be made to communicate either with the interior of the tank through a cock, *p*, or with a supply of air or water under pressure through a cock, *q*, the passage *w* being permanently closed at the bottom.

If the pressure within the vessel be sufficient to distend the rubber ring, the cock *p* may be opened and the cock *q* closed, the ring collapsing when the pressure in the tank ceases.

The pressure within the tank may be indirectly exerted on the interior of the ring. For instance, a diaphragm of large diameter may

be subjected to the tank-pressure, and the pressure of a portion of this diaphragm exerted on water communicating with the interior of the ring, so that the pressure in the latter would be as much greater than the pressure in the tank as the area of the diaphragm exposed to the tank proper is greater than the area of that portion of the diaphragm which acts on the water. This device, however, will form the subject of a separate application for a patent, and hence need not be minutely described here.

It is not essential that the mouth-piece should be cylindrical. It may, for instance, be oval or of some other form.

My invention may be applied to the air-tight closing of the ends of vessels or the discharge-openings of vessels generally.

I am aware that a hollow ring to be distended by internal pressure has been applied to the packing of pistons and stuffing-boxes of piston-rods. This I do not claim; but

I claim as my invention—

1. The mouth-piece, its hollow ring E, and pipe or passage communicating therewith, in combination with the cover D and retaining-catches H, hinged to the mouth-piece.

2. The mouth-piece B of a vessel, the hollow ring E, and a passage or passages in the said mouth-piece, in combination with the tubular bolt, I, forming a communication between the said passage or passages and the ring, and having a head contained within the same, all as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANKLIN C. PRINDLE.

Witnesses:

RICHARD L. GARDINER,
HARRY SMITH.