

(No Model.)

W. C. BARR.
AIR LOCK FOR CAISSONS.

No. 568,655.

Patented Sept. 29, 1896.

Fig. 1.

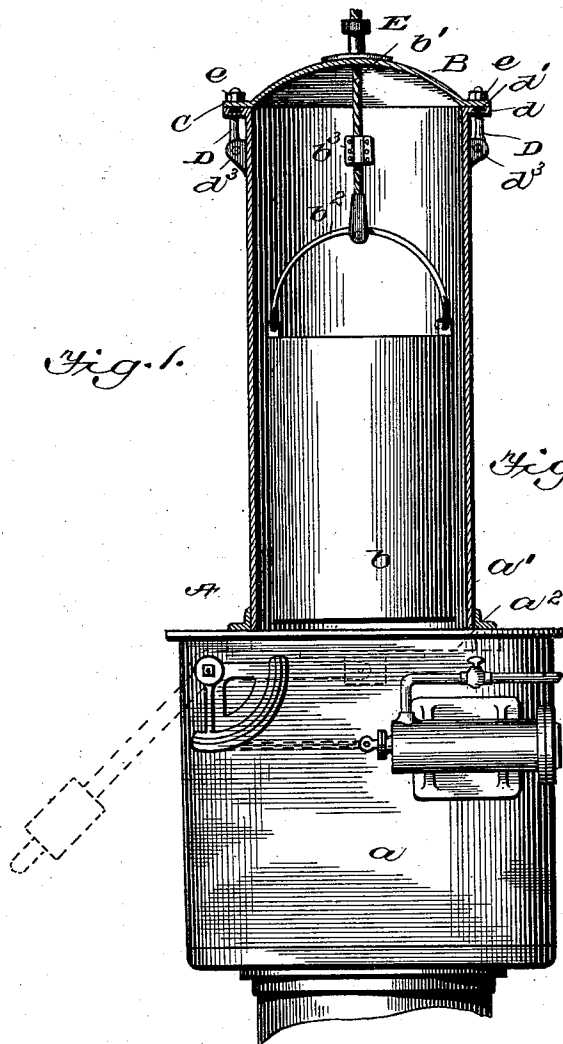


Fig. 2.

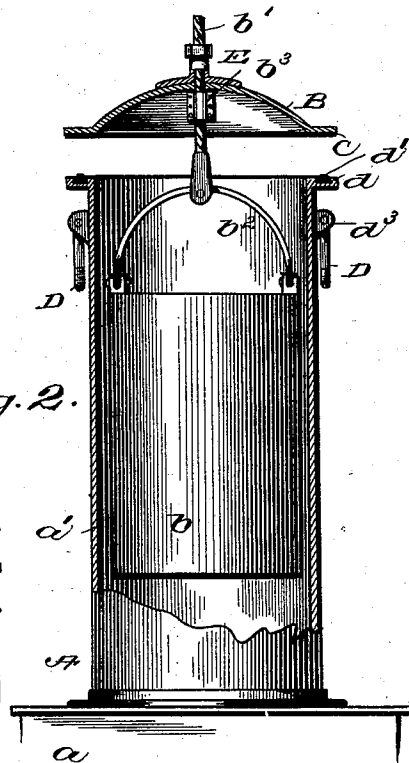
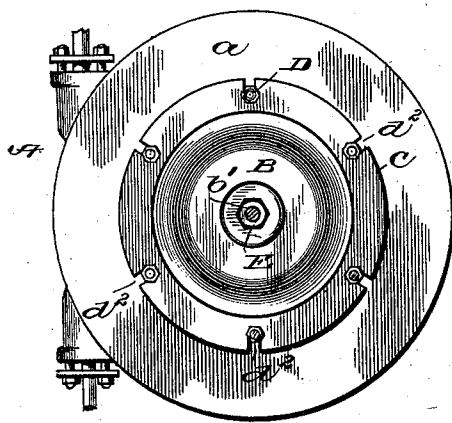


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM C. BARR, OF JERSEY CITY, NEW JERSEY.

AIR-LOCK FOR CAISSONS.

SPECIFICATION forming part of Letters Patent No. 568,655, dated September 29, 1896.

Application filed June 12, 1896. Serial No. 595,309. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. BARR, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Air-Locks for Caissons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in air-locks for caissons. In Letters Patent No. 514,843, granted to me February 13, 1894, I showed and described an air-lock of this class employing upper and lower gates operated by pneumatic pressure, and in a subsequent patent, No. 545,332, issued to me August 27, 1895, I disclosed a new form of lower gate loosely mounted on the outer end of a swinging arm, the latter being carried by a shaft which is rotatable by a piston movable in an air-cylinder. The latter improvement was almost as great an advance in the art as that covered by the first-mentioned patent, and for general purposes a lock constructed in accordance with said patents is eminently satisfactory, yet the expense of construction is necessarily large and more than small contracts warrant. Hence I seek by the present invention to simplify and cheapen the cost of construction by producing an air-lock having all of the advantages of the lock covered by my second patent and yet not materially lessening the advantages of the first-mentioned patent. In the present invention, in lieu of the upper gate, the cylinder is provided with a removable gate or cover which will be securely locked in position and which will be removed when the bucket is raised or elevated, the lower gate being the same as that covered by my patent of August 27, 1895.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of an air-lock constructed in accordance with my present invention. Fig. 2 is a plan view. Fig. 3 is a sectional detail showing the cover or upper gate raised.

Referring to the drawings, A designates the

cylinder of a caisson, (not shown,) having a portion *a* of slightly-increased diameter and an upper extension *a'*.

*a*² is the lower gate, constructed and designed to operate substantially as shown and described in my patent of August 27, 1895. The bucket is designated *b*, and the rope *b'* is connected to the bail *b*² thereof. On this rope, near its point of connection with the bail, is a block or shackle *b*³. The upper extension *a'* of the cylinder is of sufficient length to accommodate the bucket when located above the lower gate.

B is the upper gate or cover for closing the upper end of the cylinder to prevent escape of air when the lower gate is opened. This cover is of concavo-convex form, and its peripheral flange C is designed to fit snugly on a flange *d*, surrounding the upper end of the extension *a'*. This latter flange has a rubber facing *d'*, consisting of a strip of rubber fitted in a groove in said flange. In the flange C of the cover are open-ended slots *d*², designed to accommodate nutted bolts D, pivoted at their lower ends to lugs *d*³ on the exterior of extension *a'*. After these series of pivoted bolts are inserted in their respective slots the nuts *e* on said bolts are screwed down, thus firmly binding the cover in position. To remove the cover, the nuts on the bolts are loosened and the latter are turned downward, swinging on their pivots. In the center of the cover is a hole or opening and a stuffing-box E in line therewith, through which the rope is passed.

In practice, after the loaded bucket has been elevated into the cylindrical extension and the lower gate is closed against its seat, the nutted bolts are all loosened and removed from engagement with the cover, and the bucket being further elevated the block or shackle *b*³, upon coming in contact with the under side of the cover, will completely elevate the same from its position on the cylindrical extension. After the bucket has been emptied of its contents and is replaced within the extension of the cylinder the cover is returned to its seat and then firmly secured by the series of nutted bolts. Thus it will be seen that the upper gate or cover is entirely removed along with the removal of the bucket and is repositioned after the bucket is returned to the cylindrical extension.

The advantages of my invention are apparent. It will be seen that I have provided extremely simple and inexpensive means for closing the upper end of the cylinder of a
 5 caisson when the lower gate is opened, and that said cover, being removable with the bucket, is capable of easy manipulation. The nutted bolts are capable of easy operation, and by means thereof the cover can be quickly
 10 secured or loosened.

I claim as my invention—

1. An air-lock for caissons, comprising a cylinder having an inner or lower gate, and an upper gate or cover removably secured to
 15 the upper end of said cylinder and designed to be raised therefrom by the removal of the receptacle movable within said cylinder, as set forth.

2. An air-lock for caissons, comprising a cylinder having an inner or lower gate, an upper removable gate or cover for closing the upper end of said cylinder, and means for securing said cover to said cylinder, said cover being designed to be elevated by the removal of
 25 the receptacle movable within said cylinder, substantially as set forth.

3. In an air-lock for caissons, the combination with a cylinder having an inner or lower gate, and a bucket and a rope therefor movable in said cylinder, of a removable cover
 30 for the upper end of said cylinder having a hole therein through which said rope is passed, substantially as and for the purpose set forth.

4. In an air-lock for caissons, the combination with the cylinder having an inner or lower gate, and a bucket and a rope therefor movable in said cylinder, of a removable cover for the upper end of said cylinder having a hole through which said rope is passed, and means connected to said cylinder designed to engage said cover for removably securing the latter, substantially as set forth.

5. In an air-lock for caissons, the combination with the cylinder having an inner or lower
 45 gate, a bucket and a rope therefor movable

in said cylinder, and a block or shackle on said rope adjacent to said bucket, of a cover removably secured on the upper end of said cylinder and having a hole therein through which said rope is passed, said block or shackle
 50 being designed to engage said cover in the removal of said bucket, as and for the purpose stated.

6. An air-lock for caissons, comprising a cylinder having an upper extension and an inner or lower gate designed to fit against the lower end of said extension, and a bucket and rope therefor movable in said cylinder, and a cover removably secured to the upper end of said extension and designed to be removed
 60 therefrom by the elevation of said bucket beyond said extension, substantially as set forth.

7. In an air-lock for caissons having a cylindrical extension, and a bucket and rope therefor, a cover designed to close the upper
 65 end of said extension, said cover having a series of peripheral slots, and nutted bolts secured to said extension and designed to be extended through said slots, substantially as set forth.

8. The combination with the cylinder having an upper extension, and an inner or lower gate, and a bucket and rope therefor, of a cover for the upper end of said extension having a peripheral flange provided with a series
 75 of open-ended slots, a seat for said flange surrounding the upper end of said extension, and a series of nutted bolts pivoted to the exterior of said extension and designed to be extended through said slots for holding said
 80 cover against its seat, substantially as set forth.

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

WILLIAM C. BARR.

Witnesses:

DOUGALD B. S. COCKERM,
 WM. H. SEEBECK.