

(No Model.)

S. MATTSON.
AIR LOCK FOR CAISSONS.

No. 602,263.

Patented Apr. 12, 1898.

Fig. 1.

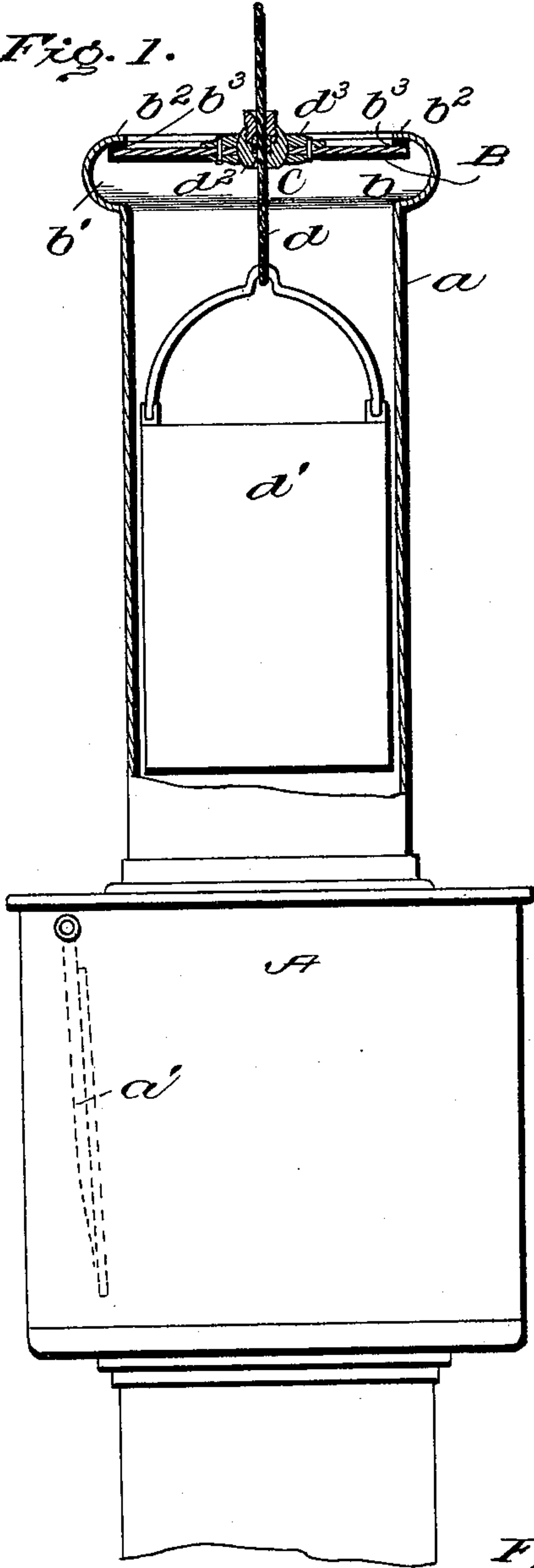


Fig. 2.

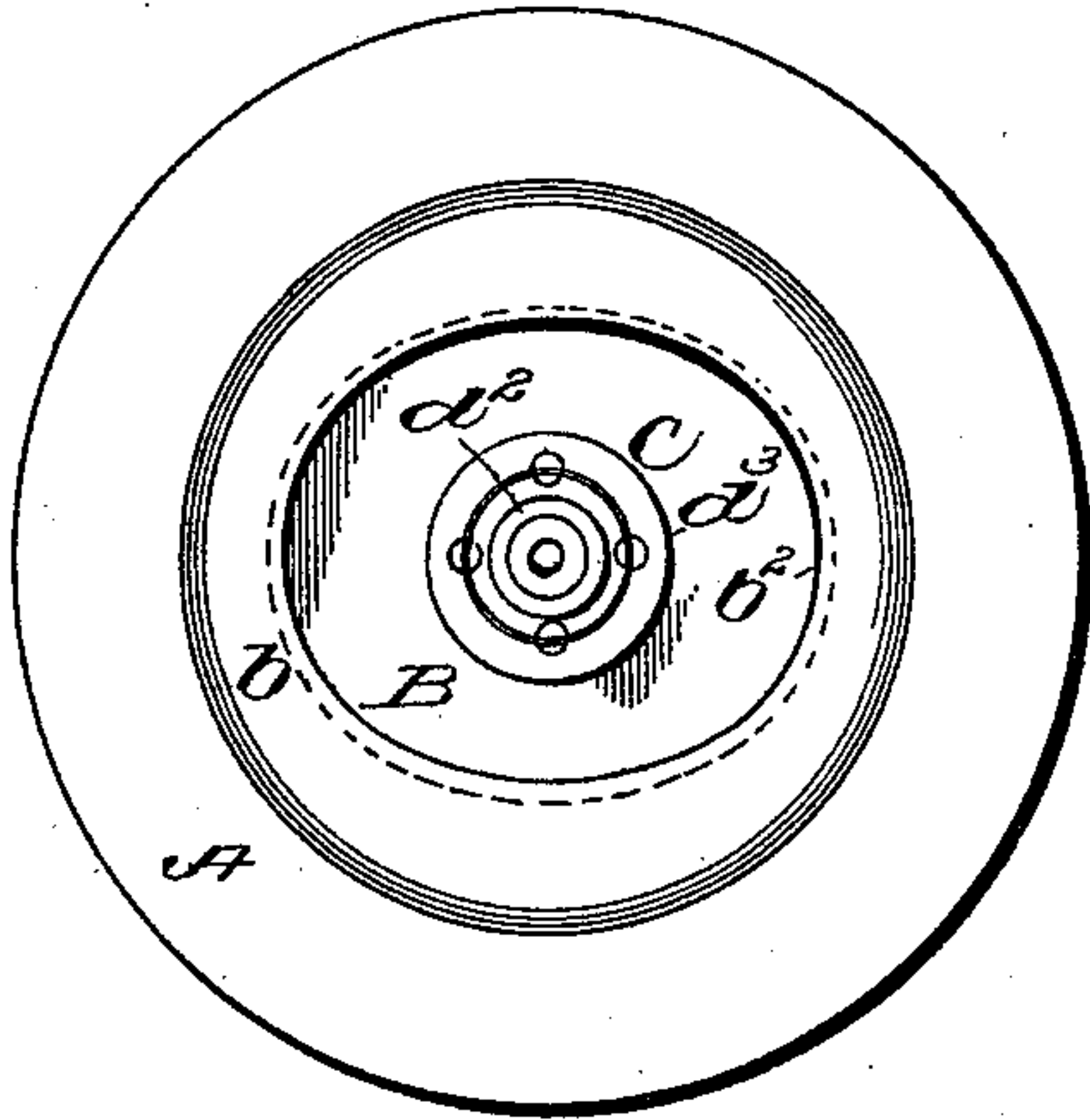


Fig. 3.

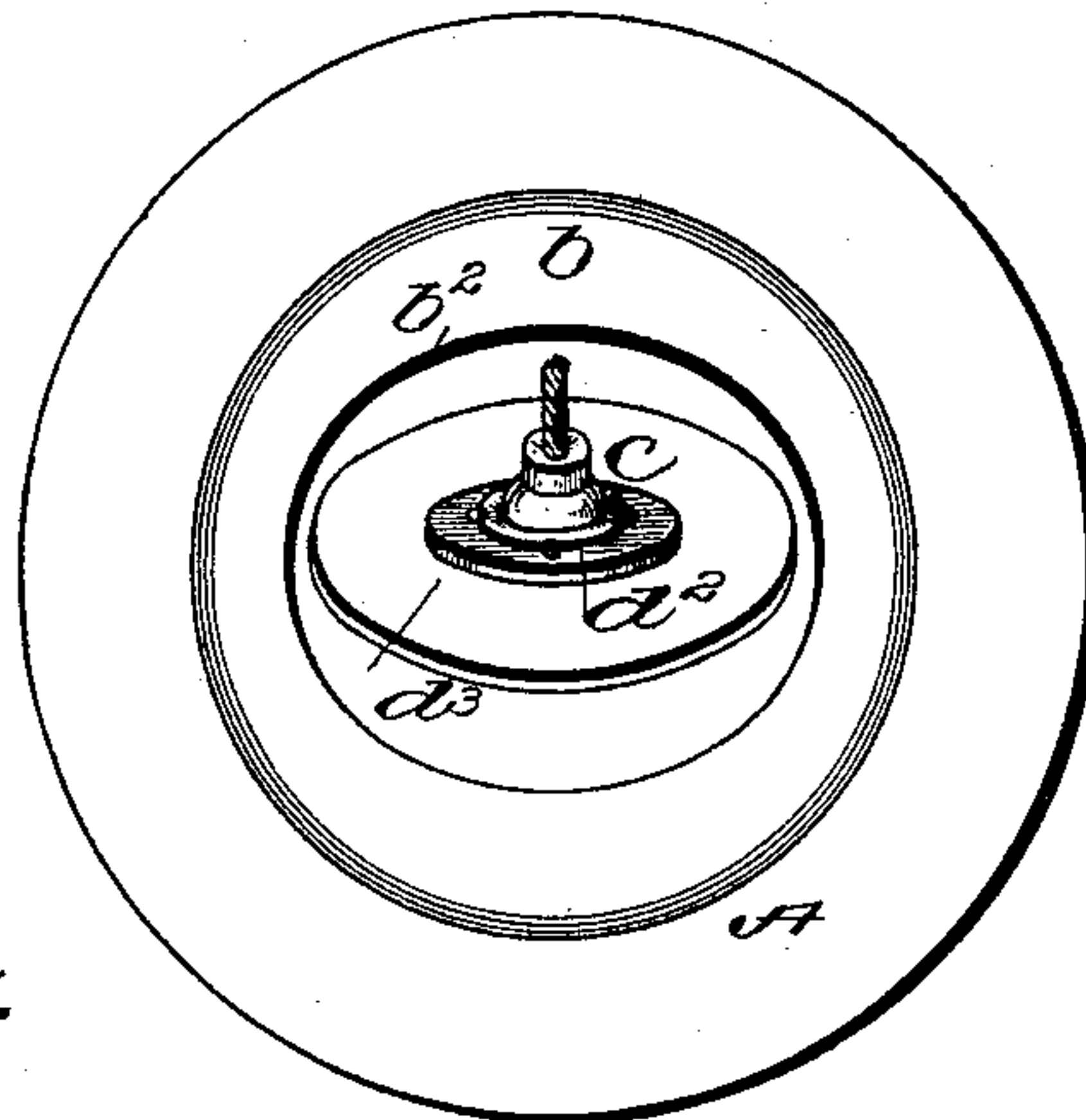
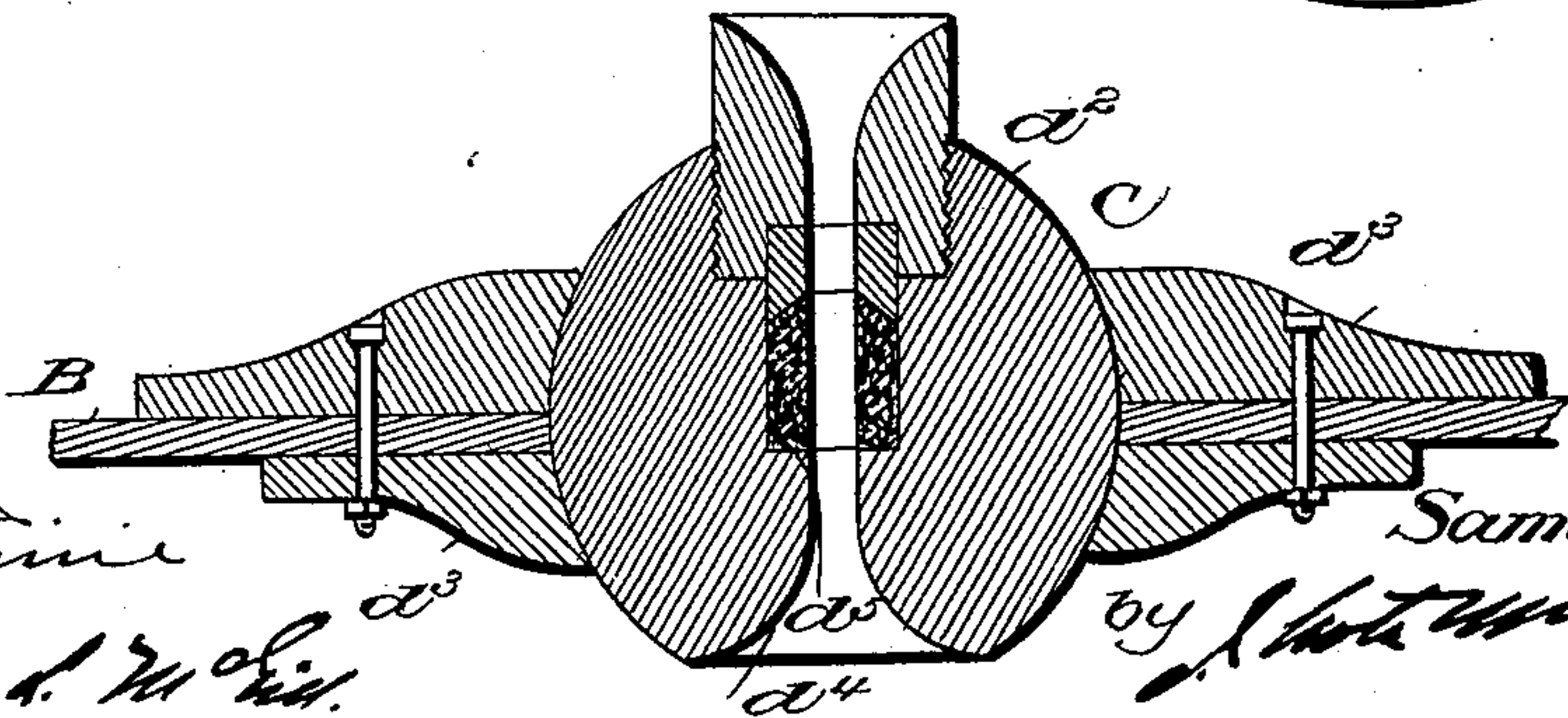


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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AIR-LOCK FOR CAISSONS.

SPECIFICATION forming part of Letters Patent No. 602,263, dated April 12, 1898.

Application filed September 11, 1897. Serial No. 651,284. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL MATTSON, of Brooklyn, in the county of Kings and State of New York, 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, having reference to that class employing an upper removable gate or cover, and especially to those in which such upper cover is raised with and by the bucket.

The object of the invention is to provide a gate or cover of this character which will be securely seated by air-pressure without the aid of any other securing means.

A further object is to provide for readily releasing the gate or cover, so that it can be hoisted with the bucket.

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 a caisson air-lock provided with my improvement. Fig. 2 is a top plan view with the cover seated. Fig. 3 is a similar view showing the position occupied by the cover when about to be removed. Fig. 4 is an enlarged detail sectional view.

Referring to the drawings, A designates the casing of an air-lock, the same comprising an upper cylindrical portion *a*, over the lower end of which is designed to fit a gate *a'*, of any preferred form, the same being seated when the upper end of the casing is open. The upper end *b* is bulged to form a circular space *b'*. The end of the body portion of the casing is bent outward and curved upward and then bent inward. The extreme edge *b²* of this bent portion forms a seat, which is preferably faced on the under side with a gasket *b³*. The opening thus formed is preferably oval in plan view.

B is a gate or cover for closing the upper end of the casing. This cover is usually made oval, but of greater diameter than the opening at the top of the casing—that is, when

placed in a position corresponding thereto it will extend entirely over said opening at every point. It is designed to be seated against the overhanging end of the casing, against which it is held firm by the inner air-pressure. The upper gate or cover being greater in diameter than the opening it is designed to close, the escape of air is absolutely impossible; but when pressure is relieved the cover may be turned so as bring its narrowest portion in parallel line with the widest portion of the opening, whereupon the said cover may be easily removed, it being first tilted so that one end will project out through the open end of the casing, and in the same manner it can be reinserted into the casing. In the center of the cover is an opening to accommodate a stuffing-box C, through which is passed a hoisting-rope *d*, attached to the bail of a bucket *d'*. To provide against bending the rope over any sharp edge when the cover is tilted at an angle, I mount the stuffing-box C in a spherical body *d²*, which is held in place by inner and outer plates *d³*, attached to the cover. The inner ends of these plates are concaved, so as form snug-fitting bearings for the spherical body. The outer end of the hole in the stuffing-box is flared, as is the inner end of the hole *d⁴* formed in the spherical body. The packing is indicated at *d⁵*.

Thus it will be seen that by flaring the ends of the hole or rope-opening and loosely mounting the support for the stuffing-box all danger of injury to the rope by the angular positions of the cover is avoided.

In practice when the bucket is lowered into the shaft of the caisson the lower gate is unseated and the upper gate or cover is held firm up against its seat by the air-pressure within the casing. When the bucket is to be emptied, it is raised into the upper cylindrical portion of the casing and the lower gate is closed against its seat, after which, the pressure being removed from above said gate, the upper gate or cover will drop from its seat. Thereupon an attendant will turn said cover horizontally at right angles to its normal position, permitting it to be bodily removed by the bucket when the latter is raised from the casing. The cover is placed in the same position preparatory to the lowering of

the bucket. The latter is first lowered into the extension of the casing, and after the cover is positioned lengthwise of the oval-shape opening air is admitted beneath said
5 cover, forcing it to its seat, and the lower gate is then unseated, permitting the bucket to pass down into the shaft.

The advantages of my invention are apparent to those skilled in the art. It will be
10 seen that I have provided extremely simple and inexpensive means for closing the upper end of the casing of a caisson.

I claim as my invention—

1. An air-lock for caissons having an upper opening of substantially oval form, and a correspondingly-shaped gate or cover centrally pivoted, whereby when it is turned on its pivot-bearing it can be projected through
15 said opening, substantially as set forth.

2. An air-lock for caissons having the upper end of its casing bent to form an upper oval opening, a gate or cover also of oval shape but of greater corresponding diameter than said opening, said cover having a central opening, and a bucket having a rope
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which is passed through said opening, substantially as set forth.

3. An air-lock for caissons having an opening not of uniform diameter, a correspondingly-shaped gate or cover of slightly-increased diameter having a central opening, a
30 spherical body fitted in said opening and having a central hole flared at one end, and a stuffing-box having a hole in line with said former hole, and also flared at its outer end, substantially as set forth.

4. The cover having an opening, a spherical body fitted in said opening, plates attached to said cover having concaved ends for holding said body, which latter has a hole flared
40 at one end, and a stuffing-box in line with said hole having its outer end flared, substantially as set forth.

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

Witnesses:

W. H. GAHAGAN,
CY. LINDSKOG.