

(No Model.)

R. S. GILLESPIE.
AIR LOCK FOR CAISSONS, &c.

No. 574,321.

Patented Dec. 29, 1896.

Fig. 1.

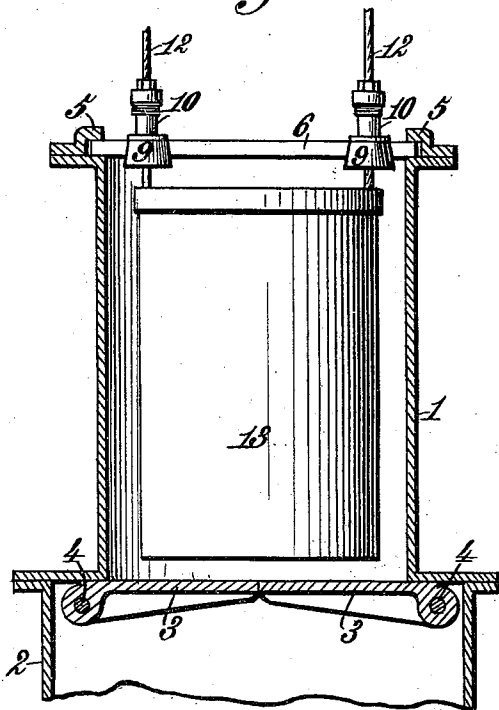


Fig. 2.

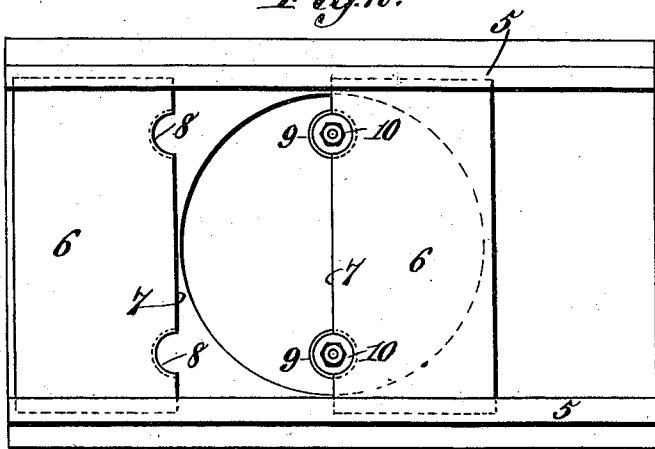
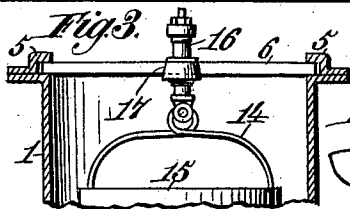


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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AIR-LOCK FOR CAISSONS, &c.

SPECIFICATION forming part of Letters Patent No. 574,321, dated December 29, 1896.

Application filed July 27, 1896. Serial No. 600,695. (No model.)

To all whom it may concern:

Be it known that I, RICHARD S. GILLESPIE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Air-Locks for Caissons, &c., of which the following is a specification.

This invention has for its object to provide new and improved means for opening and closing the outer or upper ends of air-locks which are mounted on caissons designed for constructing subaqueous and other foundations or of apparatus employed for tunneling purposes.

The invention also has for its object to provide a novel construction whereby the stuffing-boxes of the bucket-hoisting cables are seated air-tight in operative connection with the top doors of the upper air-lock when they are closed.

To accomplish these objects, the invention consists, essentially, in the combination, with an air-lock casing, of sliding doors having inclined or sloping semicircular recesses in their edges, a stuffing-box having a conoidal-shaped or tapering portion adapted to seat in said recesses when the doors are closed, and a bucket-hoisting cable extending through the stuffing-box.

The invention is illustrated by the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of an air-lock embodying my invention. Fig. 2 is a top plan view of the same; and Fig. 3 is a detail sectional view on a reduced scale, showing a modification of the invention.

In order to enable others skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates the casing of an air-lock, which is preferably in the form of a cylinder, but which may be of any form or shape in cross-section suitable for the purpose in hand. The casing is provided with a chambered base portion 2, adapted to be connected with the outer or upper end of the caisson or an apparatus designed for tunneling purposes. The lower end of the air-lock casing is provided with opening and closing doors or valves 3, which, as here shown, are mounted on rock-shafts 4, adapted to be op-

erated in any suitable manner, so that the doors can be opened and closed whenever required. As regards the lower doors or valves 3, I wish it understood that they may be of any desired construction and be arranged and closed through the medium of any suitable devices or mechanism, and that instead of two lower doors or valves 3 a single one may be employed.

The upper end of the air-lock casing is provided with parallel overhanging guide-flanges 5 to receive the ends of two horizontally-sliding doors 6, by which the outer or upper end of the air-lock is adapted to be closed air-tight. The ends of the doors 6 lie under the overhanging guide-flanges 5 and are susceptible of sliding back and forth, so that they can be made to open or close the air-lock. The sliding doors may be operated through the medium of any mechanism ordinarily employed for opening and closing the top doors of an air-lock, and, inasmuch as my present invention is not confined to any particular devices for operating the doors, I do not deem it necessary to illustrate the door-operating devices or mechanism in the drawings.

The inner edges 7 of the sliding doors 6, which lie contiguous when the doors are closed, are each provided with two semicircular recesses 8, which incline or slope in such manner that they will fit directly against the conoidal-shaped or tapering bodies 9 of stuffing-boxes 10. These stuffing-boxes are constructed interiorly in any suitable manner to closely hug and fit the two bucket-hoisting cables 12, which cables are susceptible of moving through the stuffing-boxes and are connected at their lower ends in any suitable manner with the bucket 13 of the air-lock.

The incline or sloping construction of the edges of the semicircular recesses 8 and the tapering form of the bodies 9 of the stuffing-boxes are such that when the doors 6 are closed against the stuffing-boxes the internal air-pressure in the air-lock, which tends to force the stuffing-boxes upwardly, will hold these stuffing-boxes tightly in the seats formed by the semicircular recesses, so that the upper end of the air-lock will be closed air-tight when the sliding doors are slid into engagement with the stuffing-boxes.

I prefer to employ two stuffing-boxes and

two bucket-hoisting cables, because this construction enables the cables to be secured directly to the bucket, and thereby avoids the use of the ordinary bucket-bail, which occupies considerable space and renders it necessary to proportionately increase the height of the air-lock casing. The two cables connected directly to the bucket render it possible to materially reduce the height of the air-lock casing and also prevent tipping or tilting of the bucket. I do not, however, limit myself to the employment of two stuffing-boxes and two bucket-hoisting cables, as a single cable and a single stuffing-box may be employed, as shown in the modification Fig. 3, in which event it is desirable to employ a bail 14 on the upper end of the bucket 15. The single stuffing-box 16, Fig. 3, is constructed in all essential respects the same as the stuffing-boxes described with reference to Figs. 1 and 2, and likewise the sliding doors are constructed and adapted to be operated in the same manner as the doors 6, (illustrated in Figs. 1 and 2,) the only difference being that in the modification the sliding doors are

each provided with a single inclined or sloping semicircular recess 17, so that when the two doors are slid to their closed position the stuffing-box will be seated in the semicircular recesses at the center of the apparatus. 30

I do not wish to be understood as confining myself to sliding the doors 6 to their opened and closed positions.

Having thus described my invention, what I claim is— 35

The combination with an air-lock casing, of the top sliding doors having inclined or sloping semicircular recesses in their inner edges, a stuffing-box having a conoidal-shaped or tapering portion adapted to seat in said recesses when the doors are closed, and a bucket-hoisting cable extending through the stuffing-box, substantially as described. 40

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 45

RICHARD S. GILLESPIE.

Witnesses:

ALBERT H. NORRIS,

THOS. A. GREEN.