

(No Model.)

2 Sheets—Sheet 1.

N. McE. S. DOUGLAS.
LEAK STOPPER FOR SHIPS OR BOATS.

No. 533,280.

Patented Jan. 29, 1895.

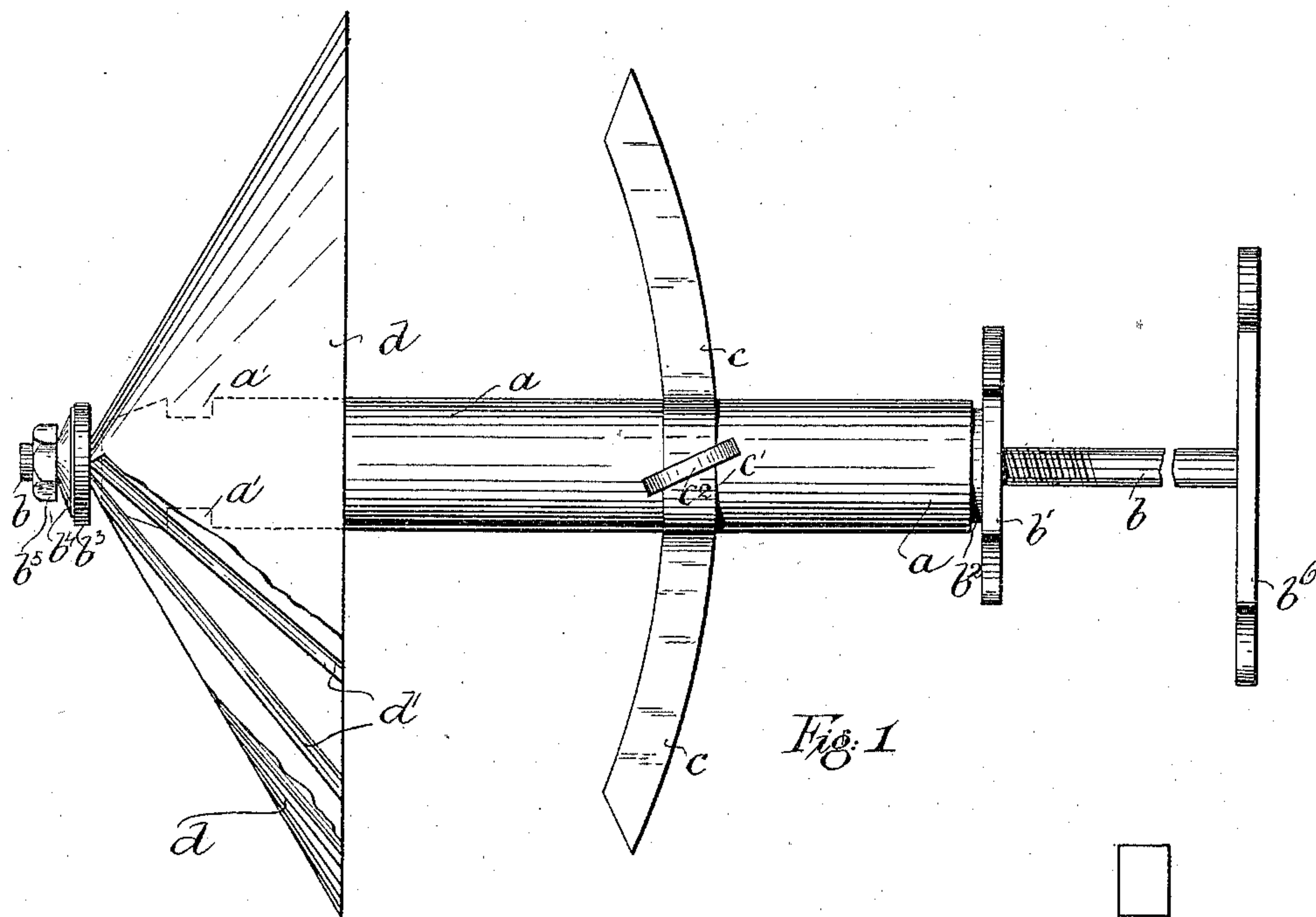


Fig. 1

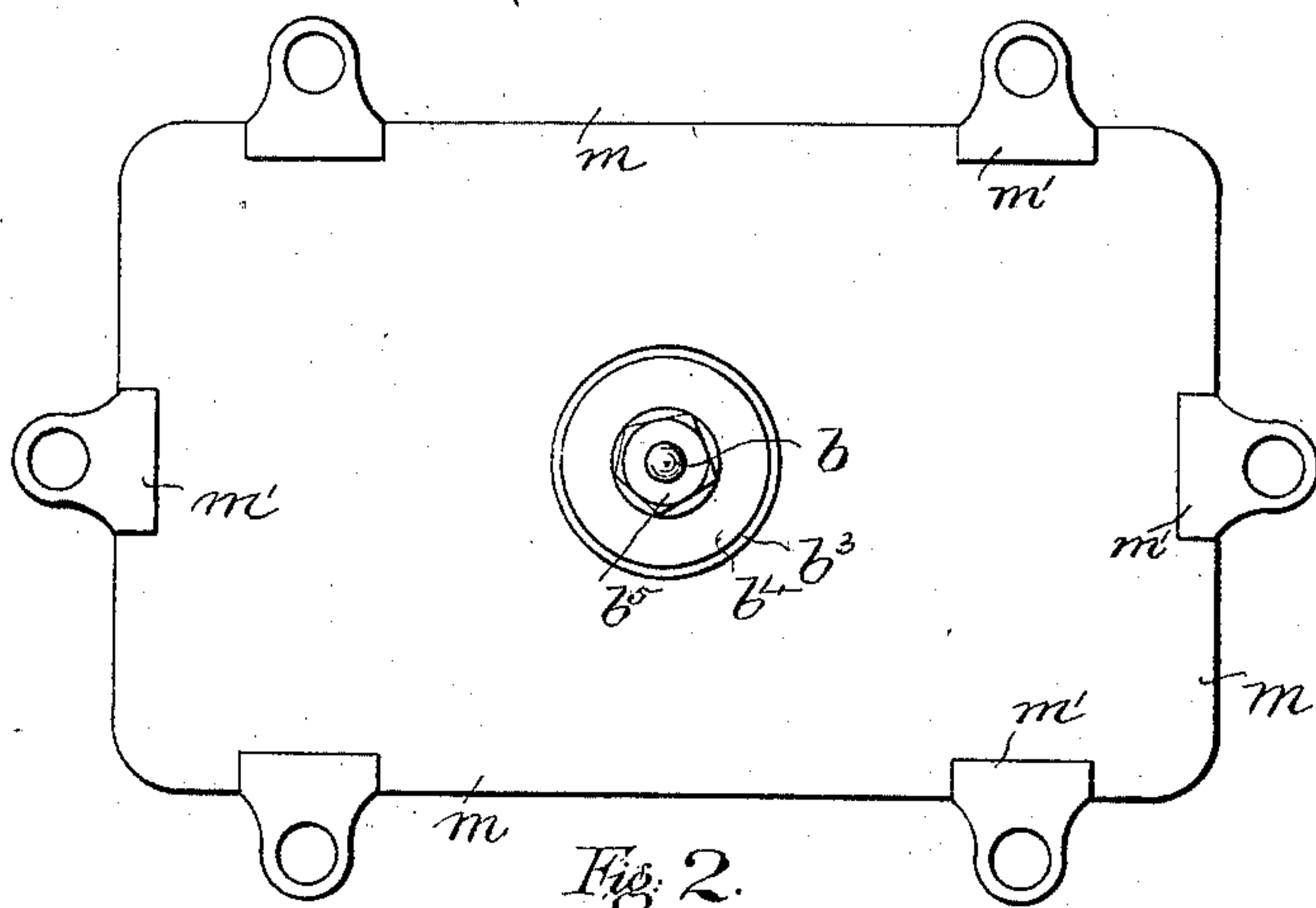


Fig. 2.

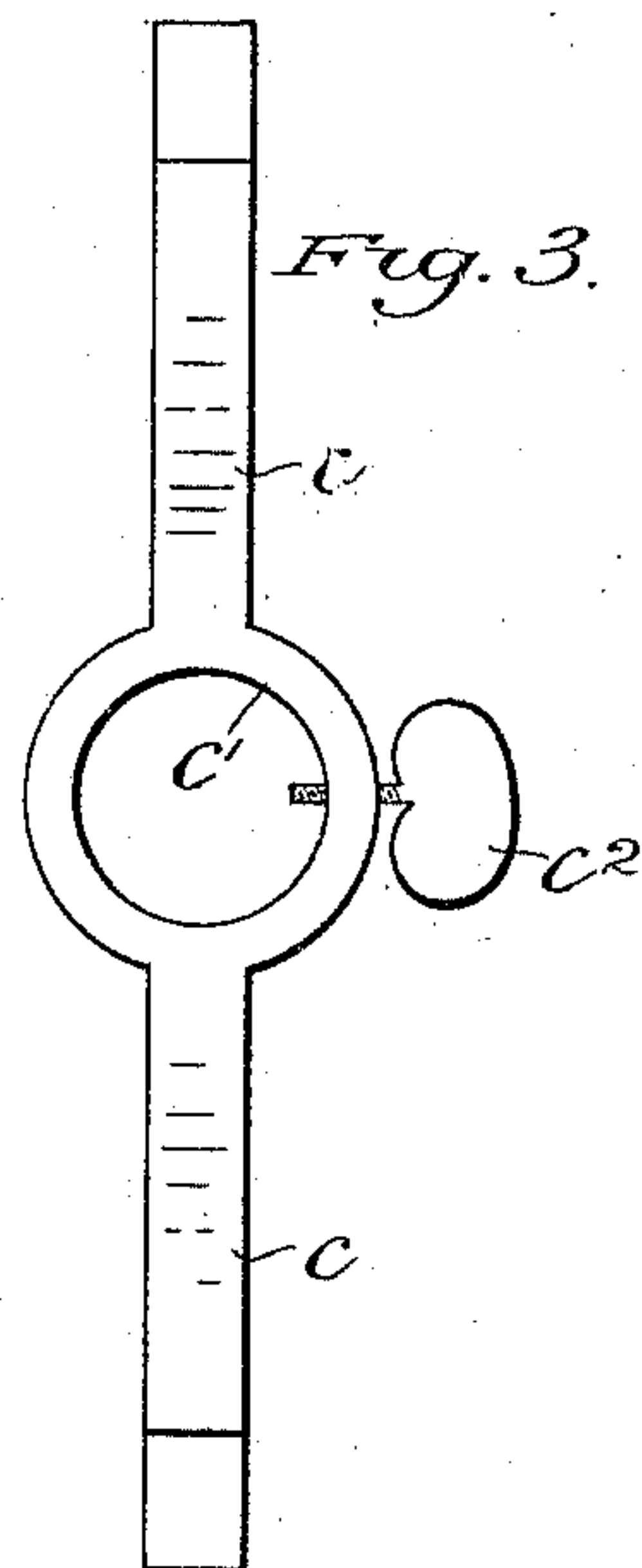


Fig. 3.

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(No Model.)

2 Sheets—Sheet 2.

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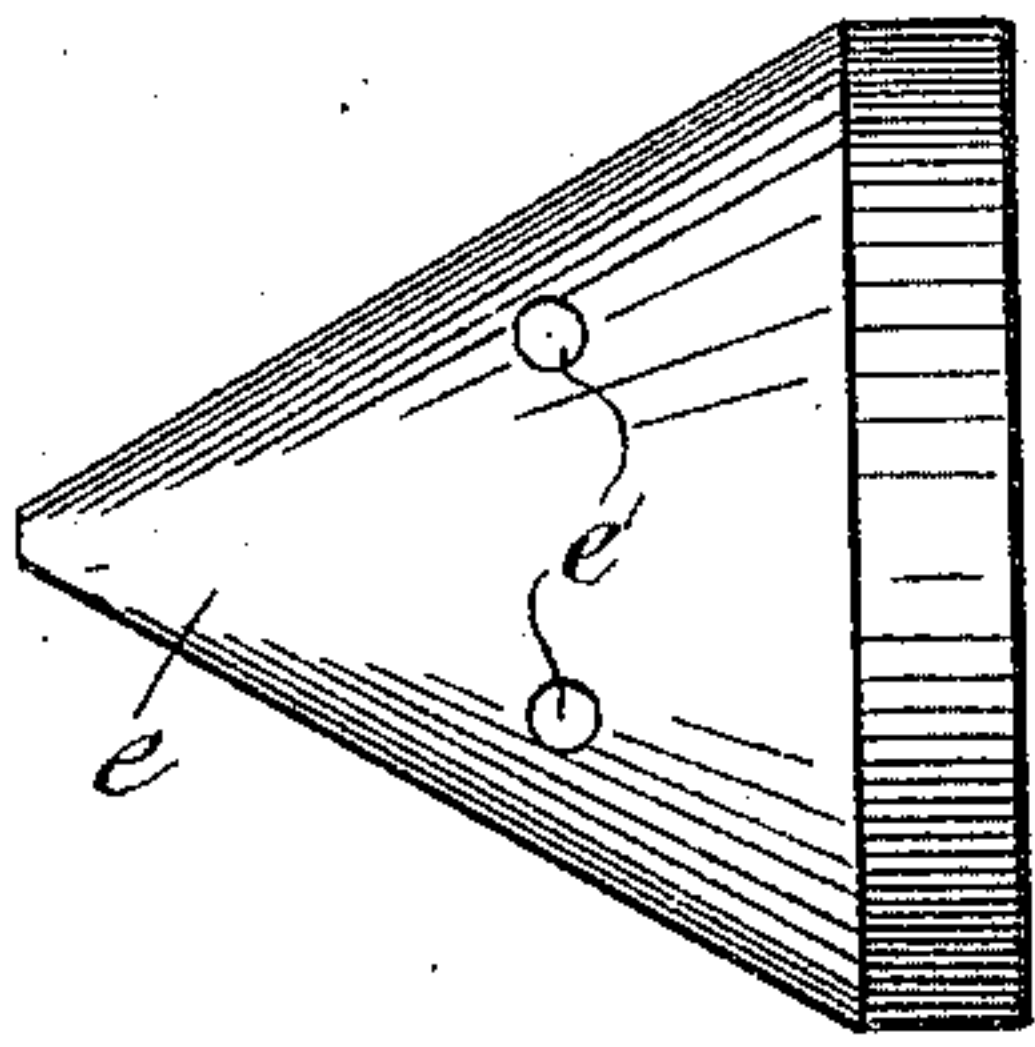


Fig. 4

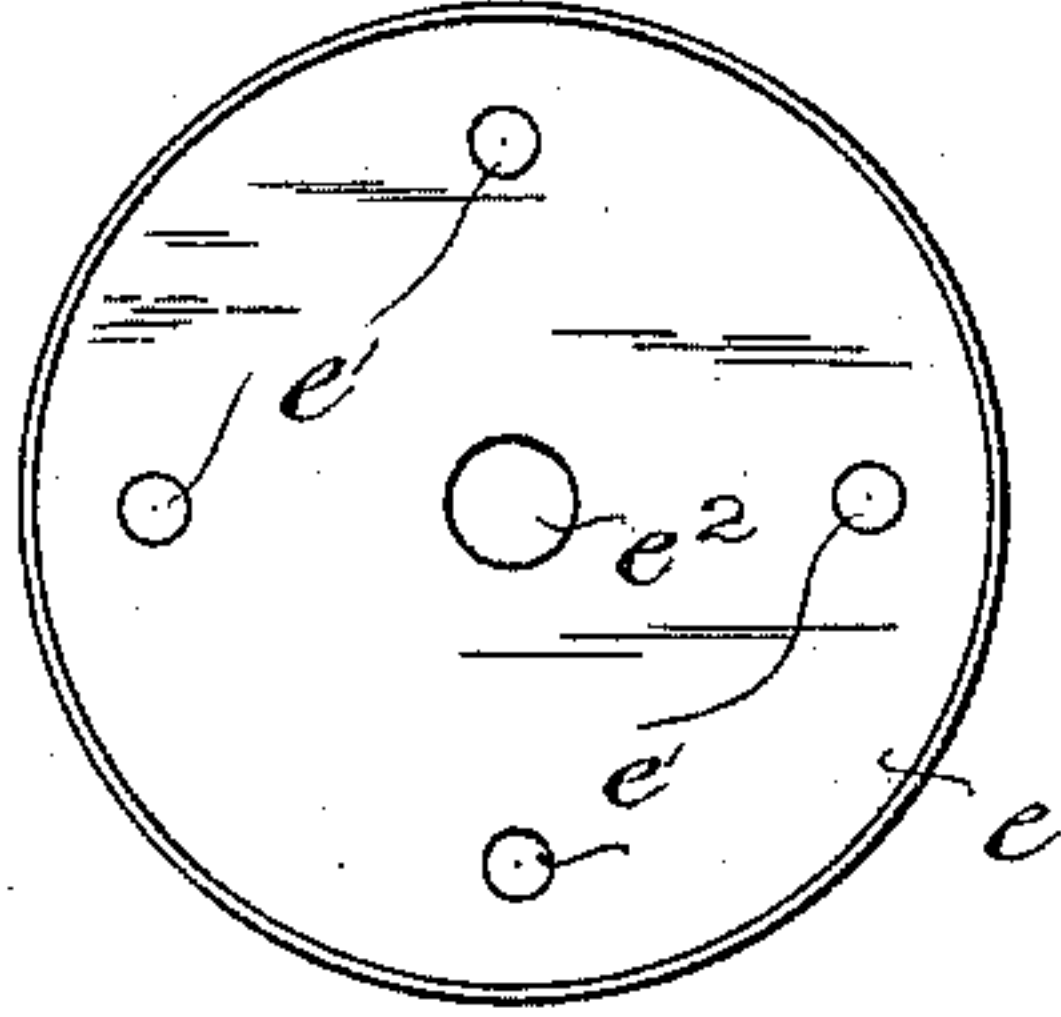


Fig. 5

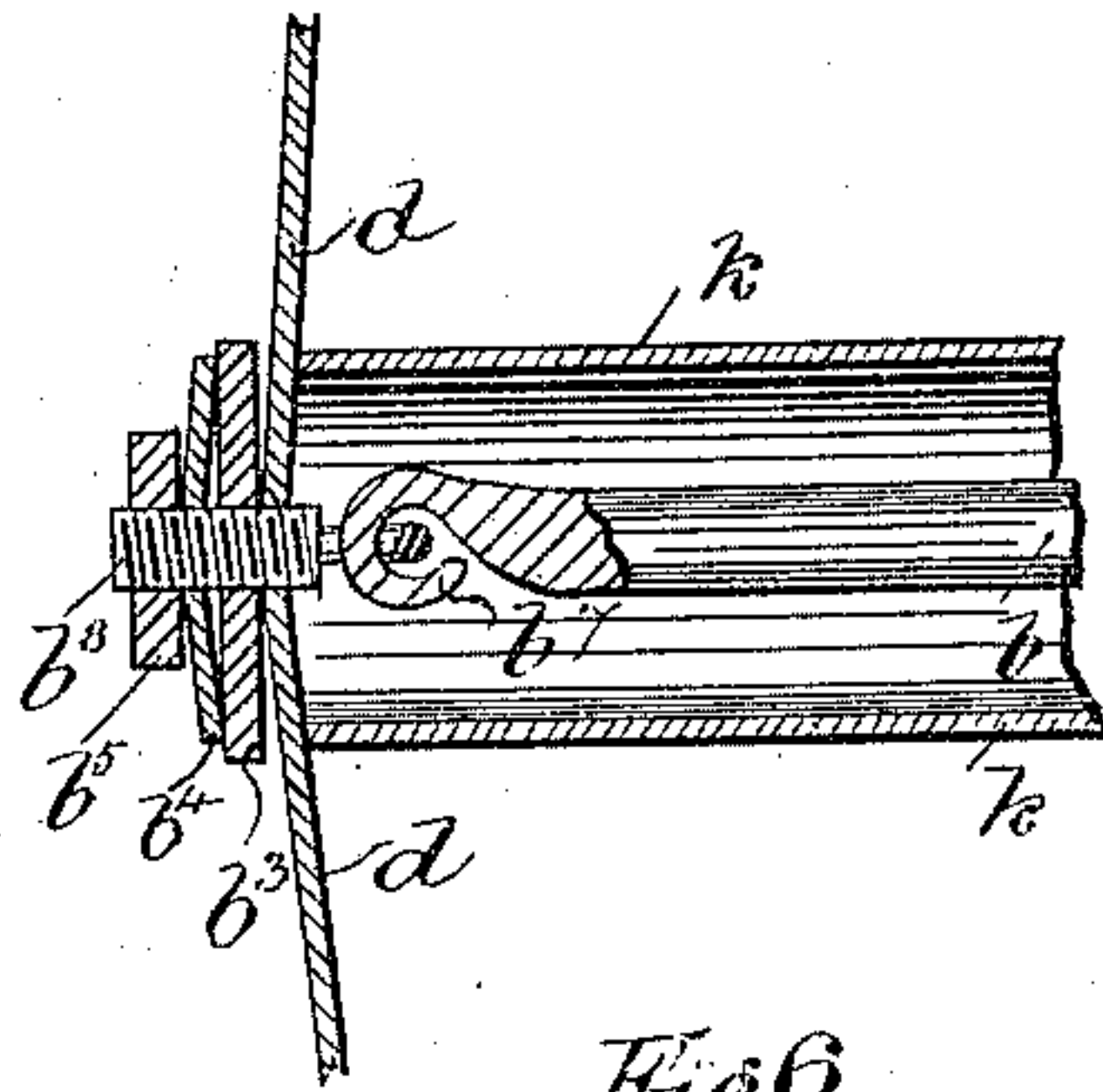


Fig. 6

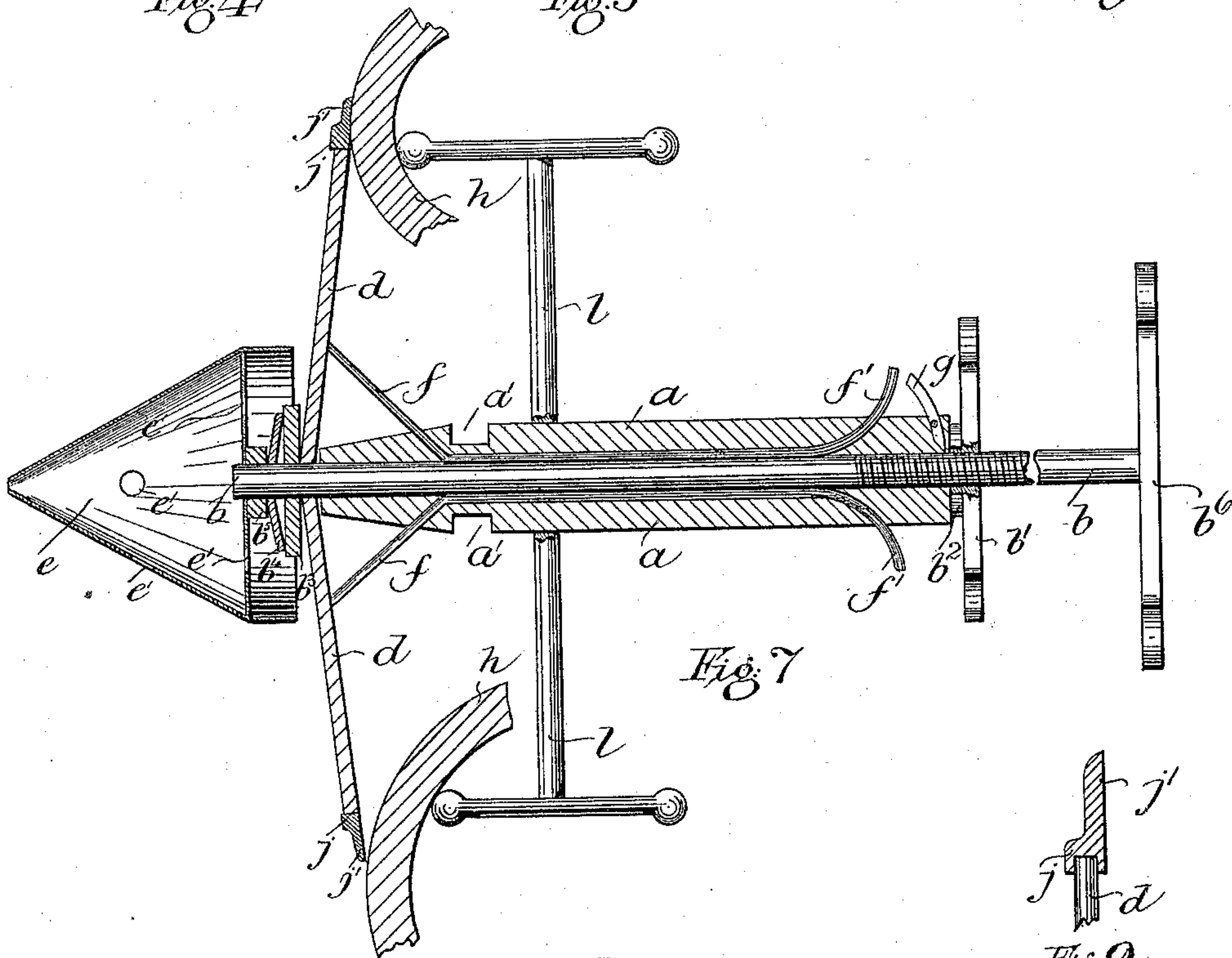


Fig. 7

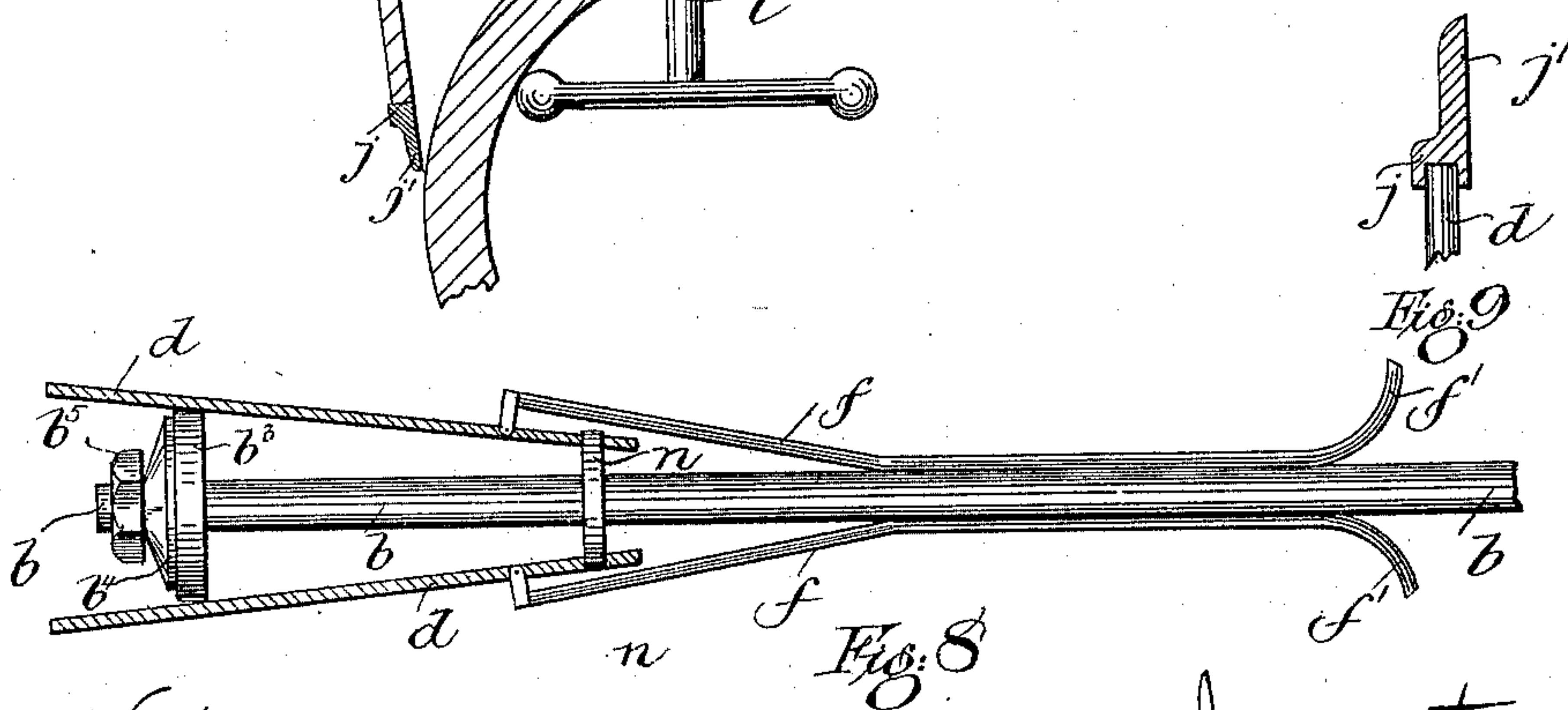


Fig. 8

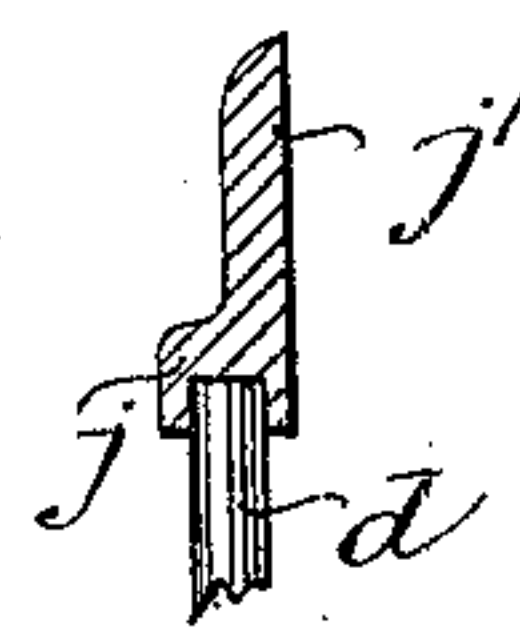


Fig. 9

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UNITED STATES PATENT OFFICE.

NEIL MCEACHRAN STEVENSON DOUGLAS, OF UPPER PAZND'N, RANGOON,
INDIA.

LEAK-STOPPER FOR SHIPS OR BOATS.

SPECIFICATION forming part of Letters Patent No. 533,280, dated January 29, 1895.

Application filed March 21, 1893. Serial No. 467,080. (No model.) Patented in England April 21, 1892, No. 7,592; in Belgium May 6, 1893, No. 229,890; in France May 6, 1893, No. 229,890; in Canada May 22, 1893, No. 63,391; in Italy August 3, 1893, No. 34,586, and in Spain September 4, 1893, No. 14,718.

To all whom it may concern:

Be it known that I, NEIL MCEACHRAN STEVENSON DOUGLAS, engineer, a subject of the Queen of Great Britain and Ireland, and a resident of Mango Grove, Upper Paznd'n, Rangoon, State of Burmah, India, have invented certain new and useful Improvements in Apparatus for Stopping Leaks in Ships or Boats, (for which I have received Letters Patent in Great Britain, No. 7,592, dated April 21, 1892; in Belgium, No. 229,890, dated May 6, 1893; in Canada, No. 63,391, dated May 22, 1893; in France, No. 229,890, dated May 6, 1893; in Spain, No. 14,718, dated September 4, 1893, and in Italy, No. 34,586, dated August 3, 1893,) of which the following is a specification.

This invention is designed to provide a handy and effective contrivance for stopping holes or rents in the bottom or side of a ship or boat.

It consists of a folding waterproof cover strengthened with steel ribs, and folding, umbrella fashion, or if preferred, folding outward like an inverted umbrella. Through the center of this cover passes a metal rod fitted with conical metal washers and india rubber disk or disks, and secured outside by a nut so as to insure a strong water-tight joint. This cover may be of any preferred outline or dimensions, and can thus be adapted to cover round holes or long rents.

I will now describe my improved leak stoppers with reference to the accompanying drawings, in which—

Figure 1 shows a side elevation of my mushroom leak stopper opened ready for use with part of the waterproof cover broken away so as to show the ribs and also showing a wooden casing for the rod *b*. Fig. 2 is an end view of my rectangular long rent leak stopper, *m*, which is provided with ribs similar to those in Fig. 1. Fig. 3 is a front elevation of the sliding arm or crossbar *c*. Fig. 4 is a side elevation of the conical cap *e*, which is fitted on to the outer end of the rod *b* as shown in section Fig. 7, and is used for partly resisting the rush of water, when my apparatus is first put through the hole in the ship or boat. Fig. 5 is an end elevation of the conical cap *e*, showing holes

e' by which the water escapes from the hollow chamber inside, and hole *e*², into which is fitted the end of the rod *b*. Fig. 6 is a cross section showing an improved method of fastening the rod *b* to the cover *d* and showing a metal casing *k* for the rod *b*. Fig. 7 is a longitudinal cross section of my apparatus, as applied to a hole in the side of a ship or boat and also shows an alternative method of opening and closing the cover *d* by means of wire rods or compressors *f* and also shows a different form of sliding arm or cross-bar *l*. Fig. 8 is a side elevation, showing the cover *d* in section, of my apparatus, with casing *a* removed, and showing wire compressors closed, and another method of opening and closing the cover by means of the sliding collar *n*. Fig. 9 is a cross section showing a ring and flange of india rubber, or other suitable material *j, j'*, applied to the ends of the ribs *d'* thus forming what is called a sucker.

a is a wooden barrel or casing sliding to and fro on the rod *b* and helping to keep the cover *d* open and may be formed with or without a slightly tapering end shown. *a'*, is a slot formed round the casing *a*, into which the small thumbscrew *c*², on the sliding arm or crossbar *c*, can be screwed and so fasten the arm *c*.

b, is a rod, made of metal or other suitable material, running through the center of the barrel *a*.

b' is a lever nut on the rod *b* which serves to keep the casing *a* in position.

*b*² is a small washer.

*b*³ is a disk or washer formed of india rubber or other suitable material.

*b*⁴ is a conical metal washer on the rod *b* which serves as an abutment when the casing *a* is screwed up tight by the lever nut *b'*, and so helps to hold the cover in position.

*b*⁵ is a nut for screwing up tight the conical and india rubber washers.

*b*⁶ is a handle formed at the end of the rod *b*.

*b*⁷ is a hook, which would be formed at the end of the rod *b* in the case of a metal barrel *k* being used, Fig. 6.

*b*⁸ is an eyed bolt, and is used for holding the hook *b*⁷.

c, is a sliding arm or crossbar, which assists in keeping the waterproof cover open and may be of either shape *c* or *l* as shown.

c', is an eye formed in the middle of the length of arm *c*, by means of which the arm *c* slides to and fro along casing *a*.

*c*² is a thumbscrew which adjusts the arm *c* at any spot or the slot *a'* on the casing *a*, Fig. 3.

d is the folding waterproof cover, which can be attached to casing *a* in any suitable manner.

d' are the ribs for supporting the cover *d*.

e, shown in Figs. 4, 5, and 7 is a conical cap which is loosely fastened on to the outer end of the rod *b* for partly resisting the rush of water.

e' are holes formed in the end of the conical cap *e*.

*e*² is the hole through which the rod *b* passes.

f, shown in Fig. 7, is an alternative arrangement of wire rods or compressors by which the cover *d* can be opened and closed, and which work in slots in the casing.

f' are handles for operating the rods *f*.

g is a small pawl, which when the hole in the side of a ship is in a downward direction, and the handle of my apparatus is pulled upward, this pawl *g* slips into the thread of the screw and holds the rod *b* in position till the lever nut *b'* is screwed up tight.

h is the side of the ship or boat.

j is a rim or ring of india rubber or other suitable material which gradually extends outward and forms a flange *j'* (Fig. 9), and is placed on the outer ends of the ribs *d'*, thus forming a sucker.

k, shown in Fig. 6 is a metal casing. The rod *b* works in same.

l, shown in Fig. 7, is a different form of sliding arm or crossbar.

m, Fig. 2 is a different form of waterproof cover, and is of rectangular shape.

m' are metal tags which may be fastened on the cover *m*, so as to fasten same to vessel's side if required by bolts or otherwise.

n, Fig. 8, is an alternative arrangement of sliding collar.

The action of my apparatus is as follows:—

The cover *d* is folded outward like an inverted umbrella, or may if preferred, be folded the opposite way. The conical cap *e* is then placed on the outer end of rod *b*, as shown in Fig. 7; and the apparatus is pushed through the leak in the ship, and the cap *e* knocked off. The rush of water at once opens the cover *d* and sucks it flat to the side of the vessel. The sliding arm or crossbar then slides up the casing *a* till it reaches slot *a'*, and is then secured by screw *c*², and the whole tightened up by means of lever nut *b'*.

In the case of a long rent being made in the vessel I preferably use the shape shown in Fig. 2. The cover *m* is turned so as to lie flat with the casing *k* by means of the hook, shown in Fig. 6, and is pushed through the rent.

If one stopper is not large enough, two or more may be used, and overlap each other.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a leak stopper for vessels, the combination of the rod, the folding cover attached to the end of the same, the sleeve adjustably mounted on said rod and adapted to be forced against said cover to brace and hold the same in an open position, and means adapted to hold said sleeve to its adjusted position, substantially as described.

2. In a leak stopper for vessels, the combination of the rod, the folding cover attached to the end of the same, the sleeve adjustably mounted on the said rod and adapted to be forced against and to hold open the said cover, and the lever nut engaging with the said rod to adjustably hold the sleeve in place against the folding cover, substantially as described.

3. In a leak stopper for vessels, the combination of the rod, the folding cover attached to the end thereof, the sleeve adjustably mounted on the said rod adapted to force and to hold open the said cover, means for holding said sleeve to its adjusted position and the cross bar adjustably mounted on the sleeve, substantially as described.

4. In a leak stopper for vessels, the combination of the rod, the folding cover mounted on the same near the end thereof, the nut mounted on the rod outside of the cover, and the rubber disk interposed between the nut and cover, substantially as described.

5. In a leak stopper for vessels, the combination of the rod, the folding cover mounted on the same, and the detachable conical cap loosely mounted on the entering end of the rod, substantially as described.

6. In a leak stopper for vessels, the combination of the rod, the folding cover attached to the end thereof, the adjustable sleeve mounted on the said rod and having longitudinal slots formed therein, and the sliding rods mounted in the said longitudinal slots of the sleeve and connecting at their ends with the folding cover, substantially as described.

7. In a leak stopper for vessels, the combination of the rod, the folding cover mounted on the end thereof, the sleeve adjustably mounted on the said rod, and the cross bar adjustably mounted on the sleeve and having arms attached to the ends thereof, substantially as described.

8. In a leak stopper for vessels, the combination of the flexible folding cover, and the rubber flange secured to the periphery of the said cover, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

NEIL McEACHRAN STEVENSON DOUGLAS.

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