

No. 677,116.

Patented June 25, 1901.

C. F. BURROUGHS.
HYDRAULIC PRESS.

(Application filed Oct. 1, 1900.)

(No Model.)

Fig. 4.

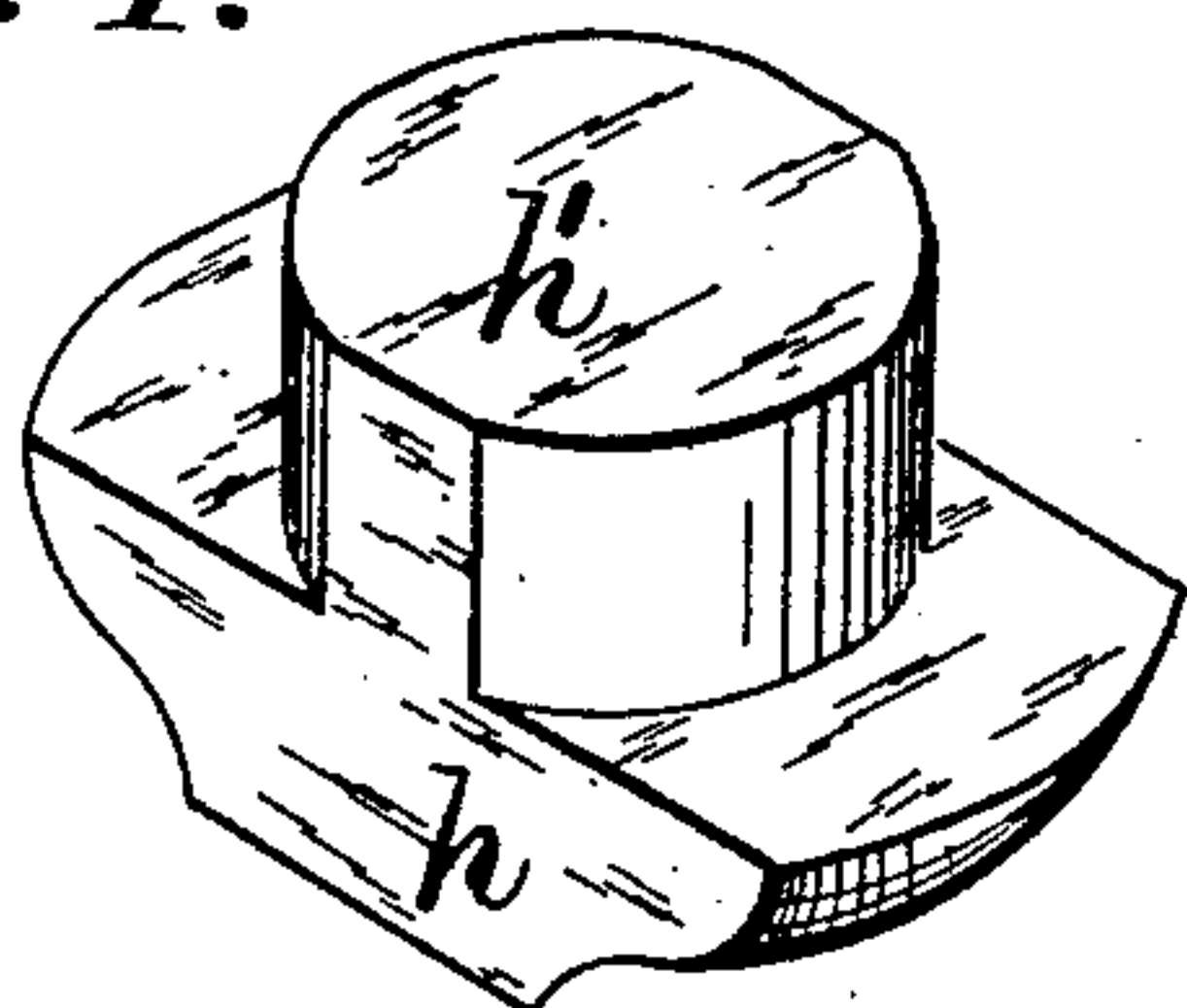


Fig. 1.

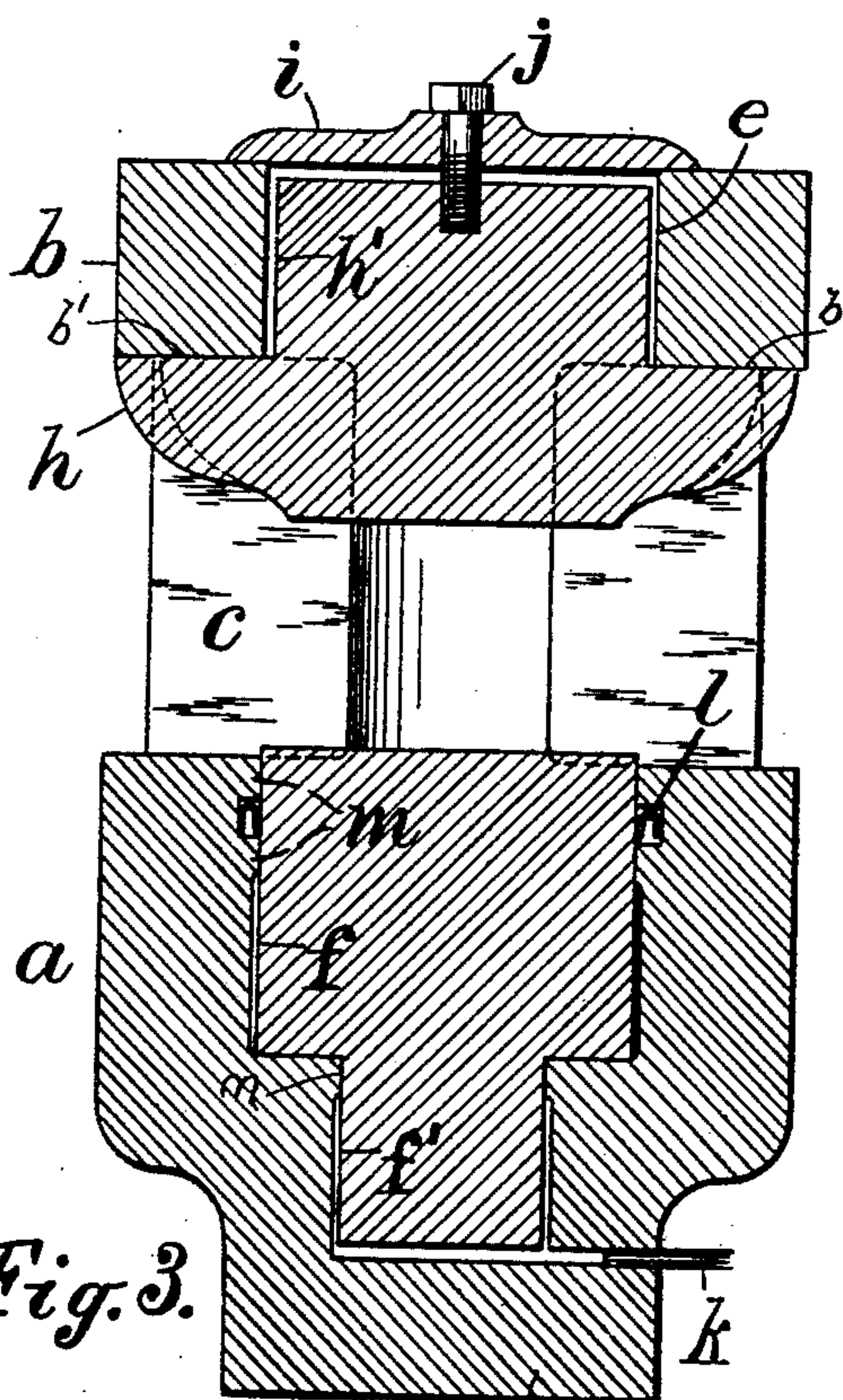
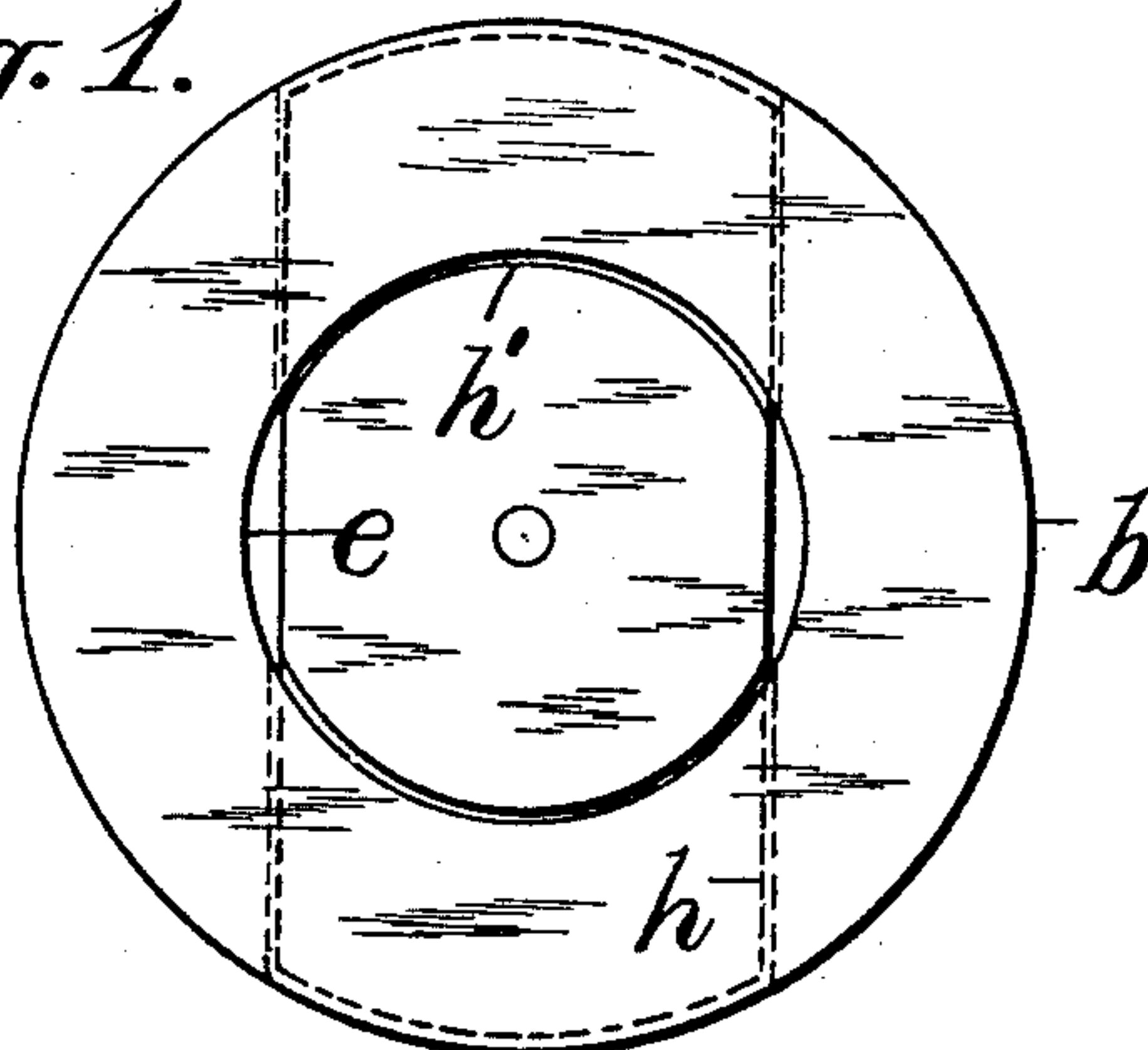


Fig. 3.

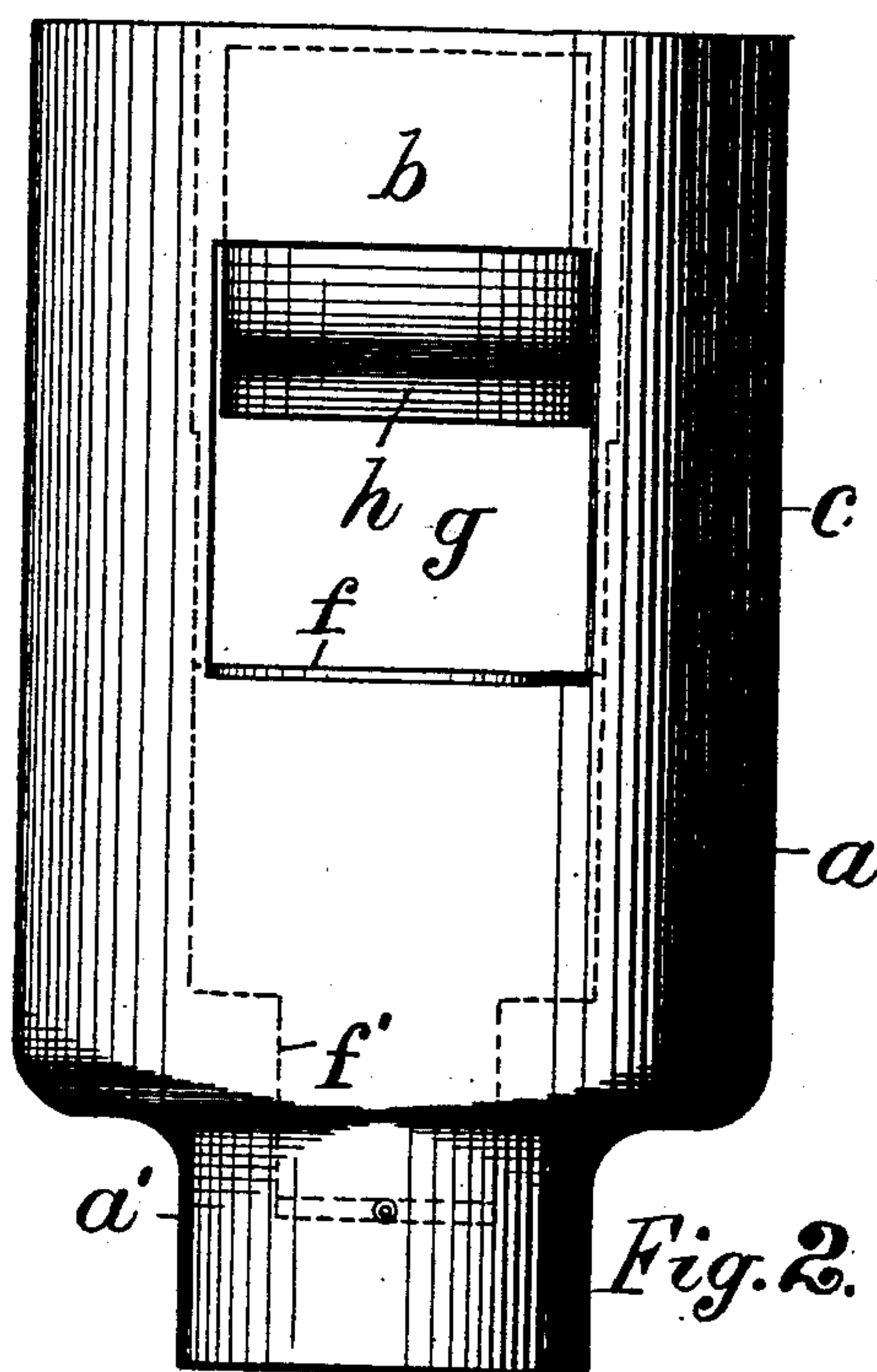
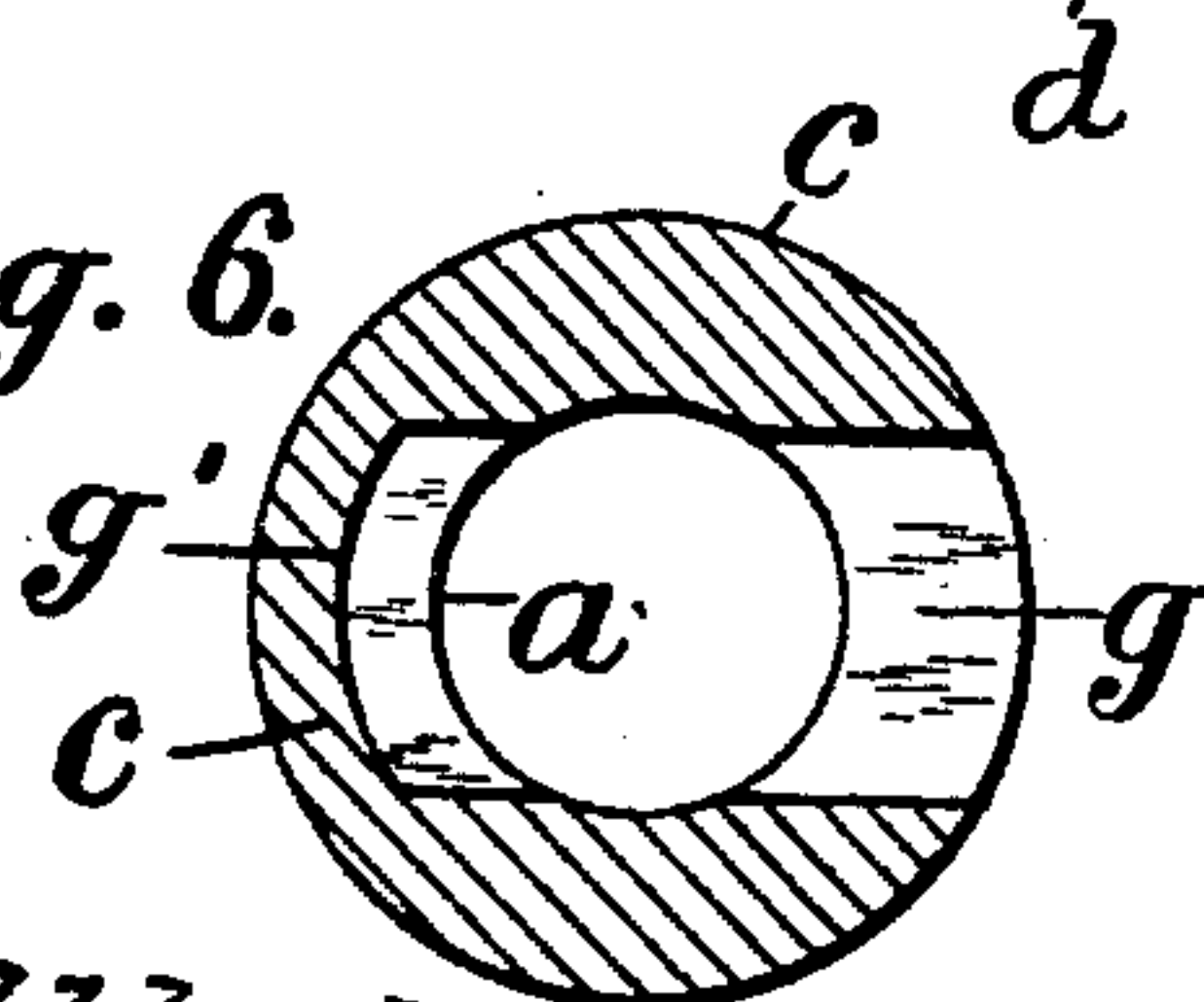


Fig. 2.

Fig. 6.



Attest:

L. Lee.

Walter H. Talmage.

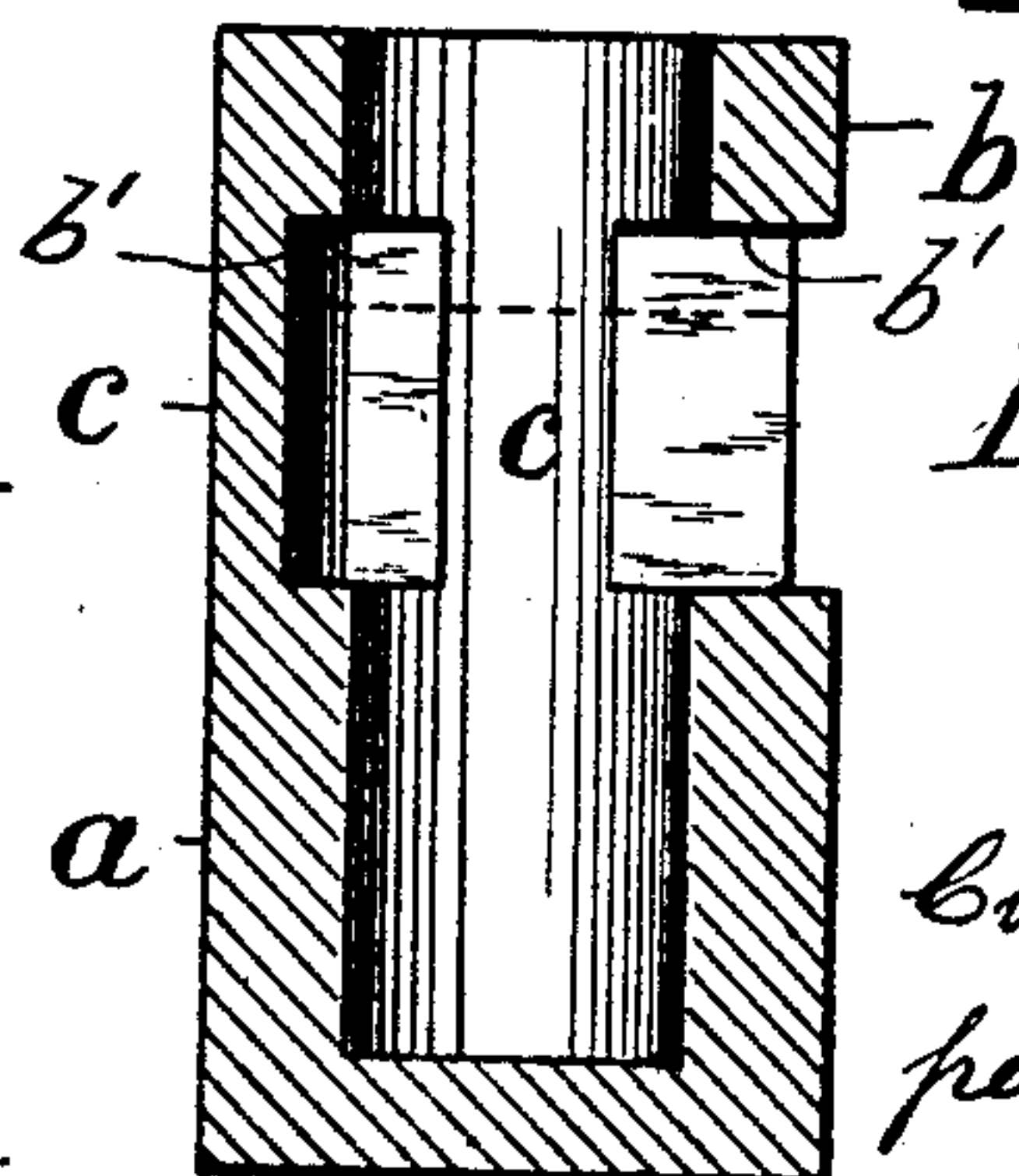


Fig. 5.

Inventor.
Charles F. Burroughs
per Thos. S. Crane, Atty.

UNITED STATES PATENT OFFICE.

CHARLES F. BURROUGHS, OF NEWARK, NEW JERSEY.

HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 677,116, dated June 25, 1901.

Application filed October 1, 1900. Serial No. 31,599. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. BURROUGHS, a citizen of the United States, residing at 141 Commerce street, Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Hydraulic Presses, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The object of the present invention is to furnish a more economical construction for that class of hydraulic presses in which the head is formed integral with the cylinder and sustains the thrust of the plunger.

15 In my invention the integral extension which connects the cylinder with the head is made of cylindrical form internally, so as to connect the cylinder and head more directly than heretofore, and the opening formed for the door to insert the objects to be pressed is preferably made of less diameter than the plunger to avoid weakening such extension. With such proportions it is obvious that the plunger cannot be inserted in the cylinder through the door, and I therefore form an aperture through the head in line with the bore of the cylinder and corresponding to the same in dimensions. Through such aperture I introduce the boring-tool to bore out the cylinder, and when the press is ready for erection I insert the plunger through the same aperture and close the aperture by a suitable bridge. Shoulders are formed at the bottom of the aperture, and the bridge is inserted through the door and pressed against such shoulders, and the thrust of the plunger is thus transmitted to the head in the desired manner.

My construction is exceedingly simple, as the press may be constituted merely of the cylinder-casting, the plunger, and the bridge. By forming the central aperture in the head to insert the plunger I avoid the necessity of making the cylinder-bottom removable, and I therefore secure a cheaper and more solid construction and one much less liable to leakage or disorder. The extension may be formed with two opposite openings, one of which serves to illuminate the space between the plunger and the cross-bar, while the other furnishes a door to introduce the objects to be pressed. The openings necessarily cut through the extension and diminish its strength, thus necessi-

tating the employment of suitable thickness in the remaining portions to adequately sustain the head; but if it be desired to diminish the thickness of the extension it may be provided with a single opening only to serve as the door. The plunger may be made of uniform diameter throughout or with a reduced stem at the bottom, by which I am enabled to get an efficient guide derived from a suitable length of piston without employing so long a cylinder.

Both constructions are shown in the annexed drawings, in which—

Figure 1 is a plan of the press with two openings in the extension. Fig. 2 is a front elevation of the press with the piston and cylinder reduced in size at the lower end. Fig. 3 is a vertical section on the central line of Fig. 2. Fig. 4 is a perspective view of the bridge or abutment. Fig. 5 is a vertical section of a cylinder having only one opening in the extension and having the bore of uniform diameter throughout, and Fig. 6 is a cross-section of the same through the lateral opening.

In Figs. 1 to 3, *a* designates the cylinder portion of the press, *b* the head portion, and *c* the extension connecting the two and formed in one piece with both. The cylinder is shown with closed bottom *d*, and the head is shown with aperture *e* a little larger than the bore of the cylinder, so as to pass the piston *f* through such aperture into the cylinder. The head is formed with shoulders *b'* at the bottom of the aperture.

In Figs. 1 to 3, inclusive, opposite openings *g* are shown formed through the extension between the cylinder portion and the head portion, and a bridge or abutment *h* is shown inserted through the aperture and fitted to the shoulders *b'* to resist the thrust of the plunger. The bridge is shown formed with a central boss *h'*, adapted to nearly fill the aperture *e*, and the bridge is sustained in place by a cap *i* upon the top of the head, through which a bolt *j* is extended into the boss. The extension of a boss into the aperture *e* is not material to the invention, the boss being formed upon the bridge merely to strengthen its middle portion, which avoids increasing the depth of the bridge below the tops of the openings *g*. The cylinder is shown

with a reduced portion a' at the bottom, and the lower end of the piston is shown formed with a stem f' to fit the same, and a pipe k introduces fluid to the reduced portion of the cylinder where it presses upon the lower end of the piston and gains access to the larger portion of the cylinder above.

In Fig. 3 a packing l is shown inserted in a groove between two collars m , formed near the upper part of the cylinder-body a to guide the plunger f , and a collar n is formed at the upper part of the contracted cylinder portion a' to guide the stem f' . A vertical notch may be made in the collar n to permit the fluid free passage to the larger part of the cylinder. All such details are immaterial to the invention, and I have therefore illustrated in Figs. 5 and 6 a construction with straight piston and a single opening formed through the extension to insert the abutment. In this construction a recess g' is shown formed upon the inner wall of the extension opposite the opening g to form a shoulder b' for the inner end of the abutment, which is represented in dotted lines in Fig. 5. The abutment is thus sustained at both ends, while the extension is maintained unbroken in its connection with the head b throughout fully three-fourths of its periphery.

It will be observed by reference to Figs. 1 and 6 that the door-opening g is less in its width or height than the thickness and length of the plunger, so that the plunger can only be introduced to the cylinder by means of an aperture in the head. By making the head with such aperture I am enabled to make the door narrower than the bore of the cylinder and am enabled to avoid weakening the extension c in an unnecessary degree. Where the arch of a hydraulic press which carries the head is of sufficient height, the plunger may be inserted in the cylinder by introducing it laterally under the arch; but such construction involves an opening under the arch equal to the length of the plunger, and an opening of such height is unnecessary in many presses where the objects to be pressed are small.

In presses where small objects are to be inserted the door may often be made quite low, and by introducing the plunger through the head I am enabled to avoid unnecessary height in the door and extension, and thus greatly diminish the magnitude and weight of the press. The essential part of my invention is the aperture e in the head b , corresponding to the bore of the cylinder a , and the bridge extended across the bottom of such aperture to form an abutment for resisting the thrust of the plunger.

Having thus set forth the nature of the invention, what is claimed herein is—

1. A hydraulic press having the cylinder a with bore for the plunger and plunger mov-

able therein, the opposed head connected integrally with the cylinder by extension c and provided with central aperture adapted to introduce the plunger, and a detachable bridge fitted across the inner end of such aperture to form an abutment, substantially as herein set forth.

2. A hydraulic press having the cylinder a with bore for the plunger and plunger movable therein, the opposed head connected integrally with the cylinder by extension c and provided with central aperture corresponding in its axis and diameter with the bore of the cylinder and having shoulders b' at the bottom of such aperture, and the bridge h fitted to the shoulders and means for sustaining the bridge upon the head, substantially as herein set forth.

3. A hydraulic press having the cylinder a with bore for the plunger and plunger movable therein, the opposed head connected integrally with the cylinder by extension c and provided with central aperture corresponding in its axis and diameter with the bore of the cylinder and having shoulders b' at the bottom of such aperture, and the bridge h fitted to the shoulders and having the boss h' extended into the aperture, and means for sustaining the bridge upon the head, substantially as herein set forth.

4. A hydraulic press having the cylinder with bore for the plunger and plunger fitted movably therein, the opposed head connected integrally with the cylinder by extension c and provided with central aperture corresponding in its axis and diameter to the bore of the cylinder, the extension having the door-opening g of less width than the diameter of the plunger, and the head having shoulders at the bottom of the aperture with the bridge h fitted to such shoulders to form an abutment, substantially as herein set forth.

5. A hydraulic press having the cylinder with bore for the plunger and plunger fitted movably therein, the opposed head b connected integrally with the cylinder by extension c , and provided with central aperture corresponding in its axis and diameter to the bore of the cylinder, the extension having door-openings g upon opposite sides of less width and height than the diameter and length of the plunger, and the said openings forming shoulders b' at the bottom of the aperture, with the bridge h fitted thereon to form an abutment, substantially as herein set forth.

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

CHARLES F. BURROUGHS.

Witnesses:

W. H. BURROUGHS,
THOMAS S. CRANE.