

No. 869,327.

PATENTED OCT. 29, 1907.

K. PARK.
HAND HOLE COVER.
APPLICATION FILED JUNE 8, 1907.

Fig. 1.

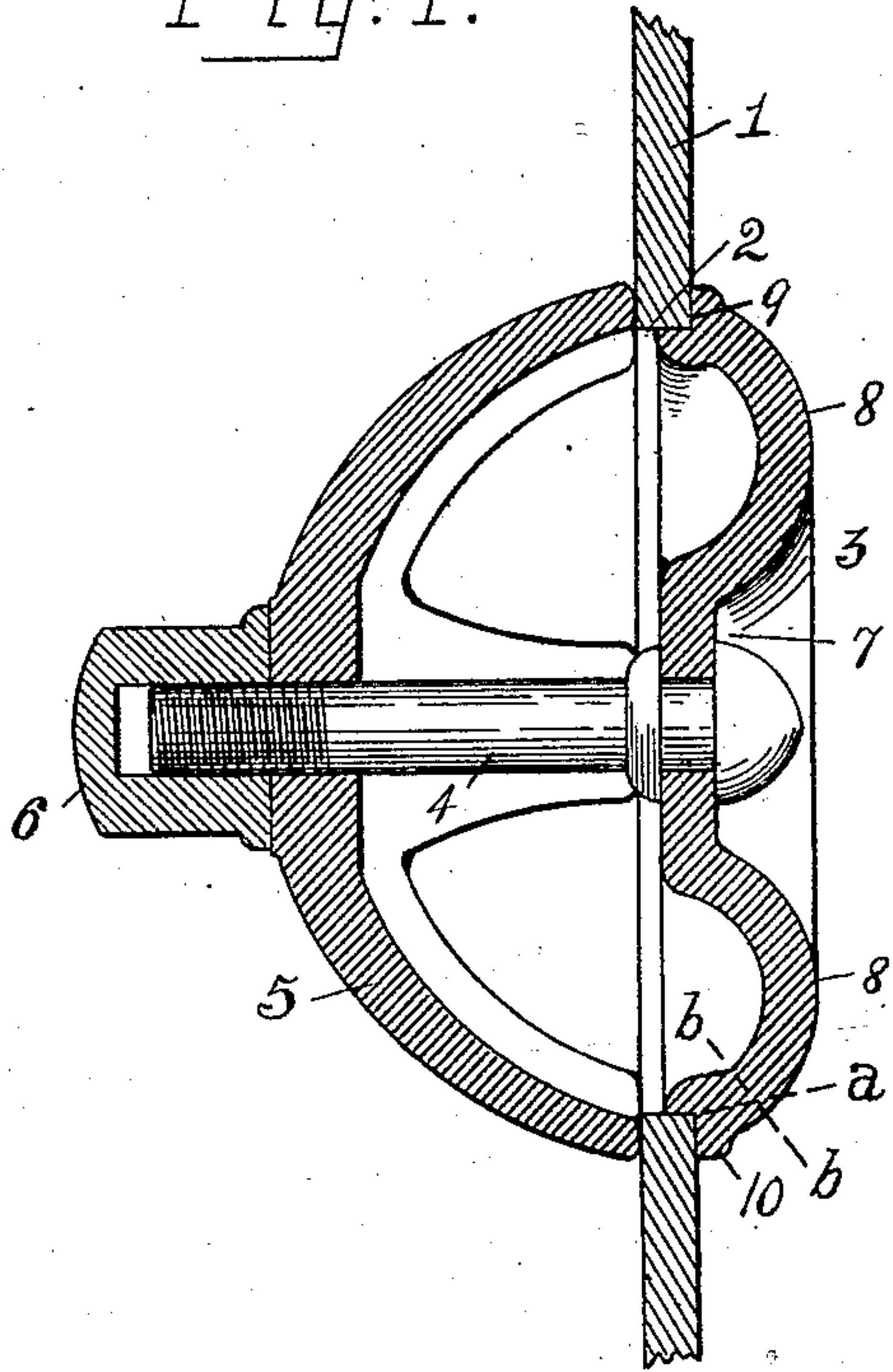


Fig. 2.

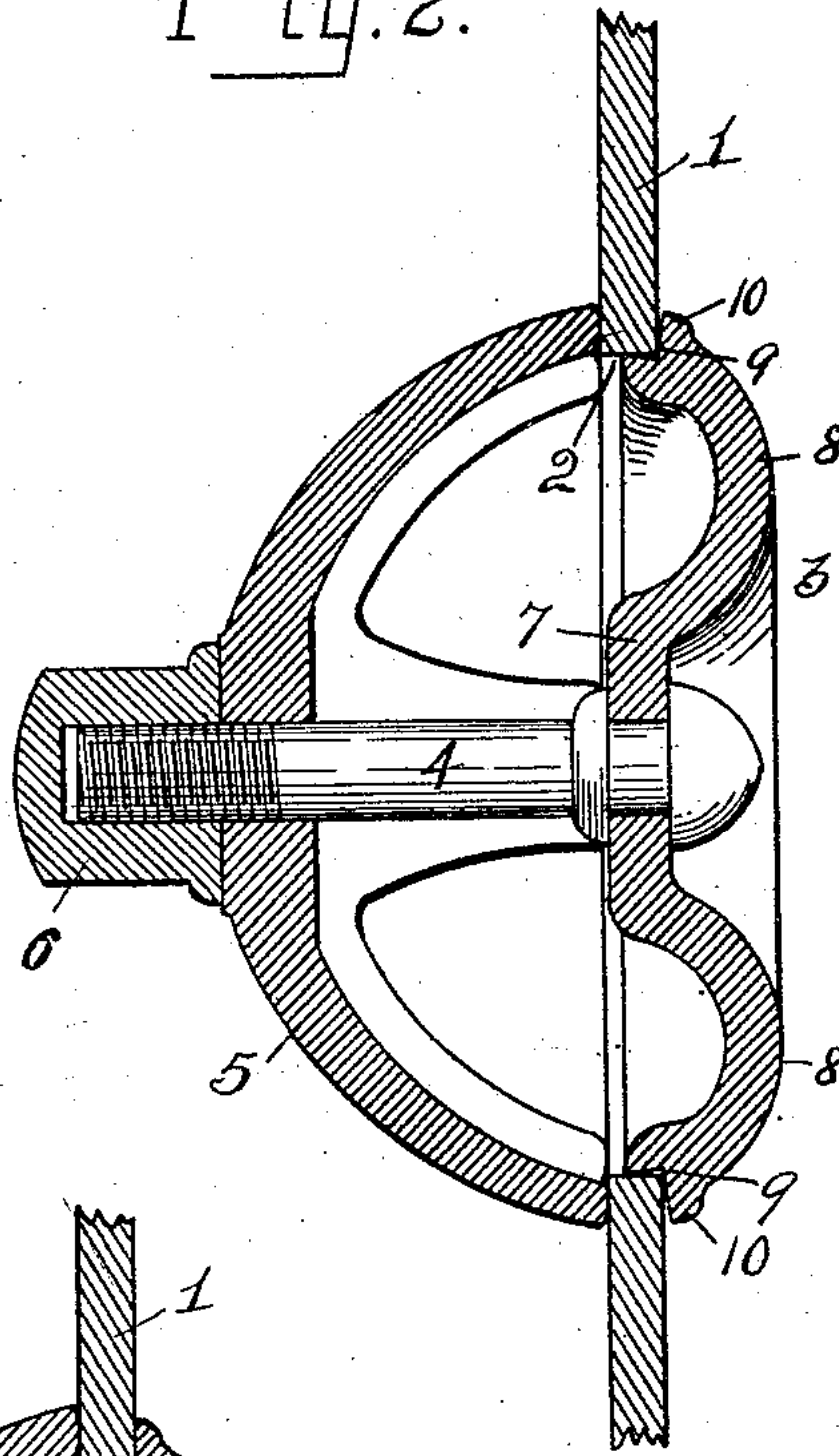
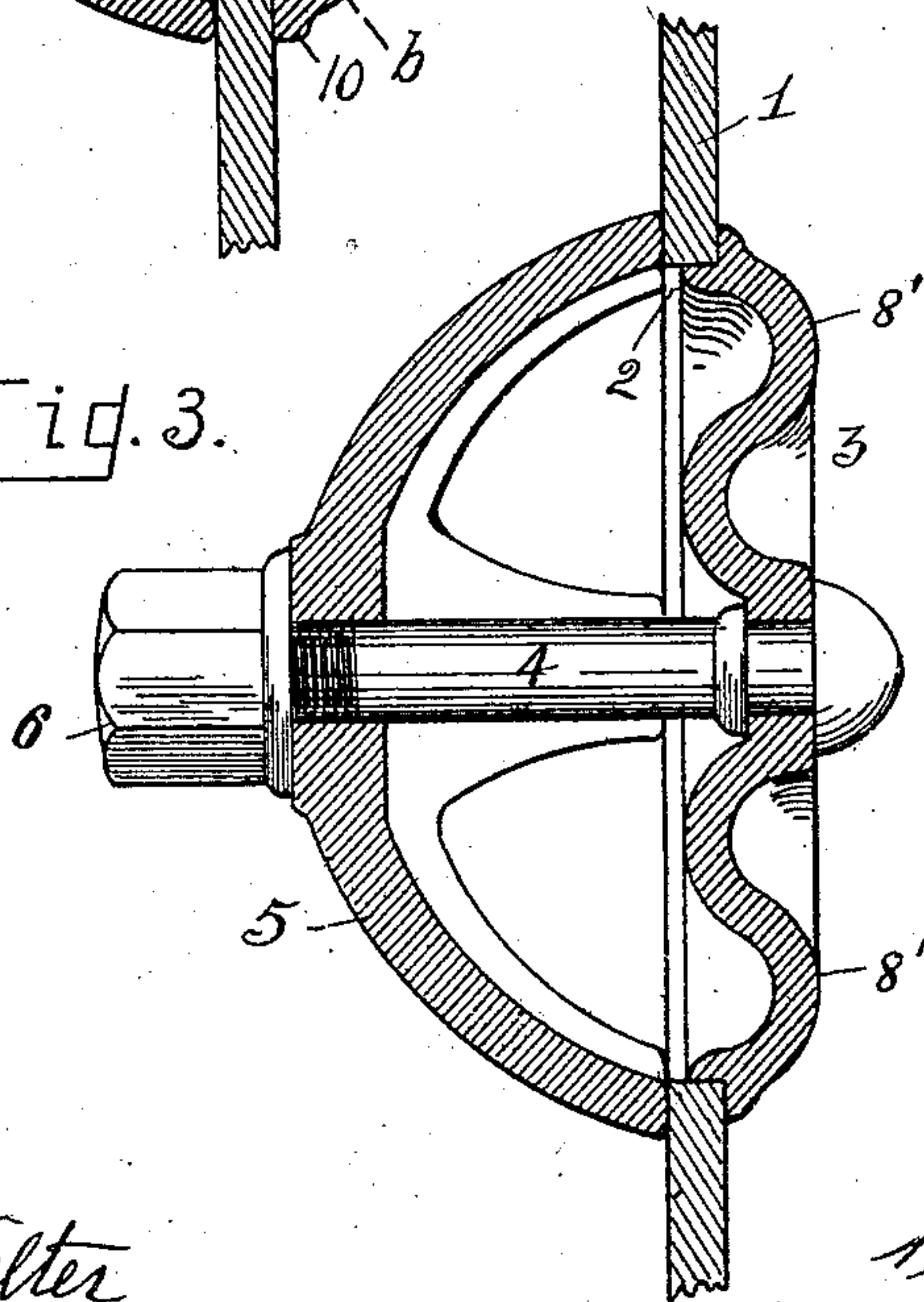


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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HAND-HOLE COVER.

No. 869,327.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed June 8, 1907. Serial No. 377,907.

To all whom it may concern:

Be it known that I, KENNEDY PARK, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Hand-Hole Cover; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to hand or man-hole covers for steam-boilers, steam-headers or other vessels to hold steam under pressure.

In the construction of this class of caps or covers it has been customary to make the same of sinuous formation in cross-section with the curve nearest the rim thereof extending outwardly or in the direction of stress of the retaining bolt when tightened. With this form of cover it has been found in practice that when a bowing stress is applied to the cover by a tightening of the bolt the rim of the cover frequently breaks and allows the cover to be drawn through the hole.

The object of my invention, among others, is to so construct and apply the covers to their receiving holes as to obviate the above objections and to materially enhance the strength, efficiency and commercial value thereof.

A preferred embodiment of the invention is fully described in the following specification and illustrated in the accompanying drawing, in which,—

Figure 1 is a sectional view showing my improved cover-plate in position with the bolt and spider attached. Fig. 2 is a similar view showing the relative positions of the cover and boiler-sheet when the cover is bowed by a tightening of the bolt, and Fig. 3 is a sectional view of a slightly different form of cover embodying my invention.

Referring to the drawing, 1 designates a boiler or header sheet or casing, in which is a man or hand-hole opening 2. The cover or cap 3, which comprises the features of my invention and is of suitable shape to close the opening 2, is provided with a central bolt or stem 4, which projects through the outer spider 5 and receives the nut 6 at its outer end to draw the cap tightly to its seat. This cover has its central or bolt-receiving portion outwardly depressed or bulged, as at 7, and its surrounding portion extending inwardly and then outwardly in a radially curved line, as at 8, with its rim or edge formed with an angled or L-shaped seat 9, which is intended to embrace the contiguous

rim and wall of the opening. The inner or rim engaging face of the seat 9 is slightly prolonged by the formation of a surrounding lip 10 on the edge of the cover. With this formation of cover it will be apparent that the resistance offered by the rim of the opening to a tightening of the bolt 5 will be felt by the cover approximately along the dotted lines *a*, so that instead of the strain being applied to the thickness or transversely of the metal of the cover, as along the line *b b*, as is the case with the formations of covers heretofore used, it is applied approximately longitudinally of its cross-sectional area, thus materially strengthening it and obviating liability of breaking the rim at the point *b b*. It is also apparent that when a bowing stress is applied to the cover by a tightening of the bolt the part 11 of the angled seat 9 presses outwardly on the wall of the opening and tends to resist such stress, and also that the L-shaped formation of seat materially lessens the liability of leakage around the joint, as the cover, instead of having a single point of contact with the casing, as with the old constructions, has double contact therewith, namely the points of contact of both faces of the seat, as shown in Fig. 2.

The forming of the cap or cover as above described also facilitates the holding of the bolt when the parts are being assembled, as the disposing of the channel formed by a bulged portion 8 of the cover toward the spider provides a greater space for the insertion of the fingers within the spider openings for the purpose of holding the bolt.

While I have shown the cover 3 as forming a single bulged portion 8, it is apparent that for large holes, such as man-holes, the wavy or sinuous nature thereof may be carried out or extended as the size of the hole to which it is to be applied may require. It is understood, however, that the outer of such bulged portions should always be disposed in opposition to the stress applied to the cover by the bolt, as shown at 8' in Fig. 3.

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

1. A hand-hole cover of sinuous formation in cross-section having its outer bulge or convexity disposed in the opposite direction to the cover-retaining force and having its rim terminating in a seat.

2. A hand-hole cover of sinuous formation in cross-section having its outer bulge 8 disposed in the opposite direction to the applied retaining force to receive the strain approximately longitudinally of its cross-sectional area and having its edge terminating in a seat.

3. The combination with a bolt and its spider, of a man or hand-hole cover having a central bolt engaging portion and a surrounding portion sinuous in cross-section, said surrounding portion forming a single bulge 8, the con-

cavity of which is disposed on the same side of the cover as that from which the bolt projects and having its outer leg terminating in an L-shaped seat.

4. A hand-hole cover having a central bolt-receiving
5 portion and a surrounding sinuous portion extending inwardly from said portion in opposition to the applied retaining force and then outwardly in a curved line and having its edge terminating in an L-shaped seat and
10 formed with a seat broadening lip, the resisting strain applied to the cover when it is drawn to its seat being ap-

proximately longitudinally of the cross-sectional area of the cover.

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

KENNEDY PARK.

Witnesses:

C. W. OWEN,
HAZEL B. HIETT.