

(No Model.)

J. OLD.
STOP VALVE.

No. 286,479.

Patented Oct. 9, 1883.

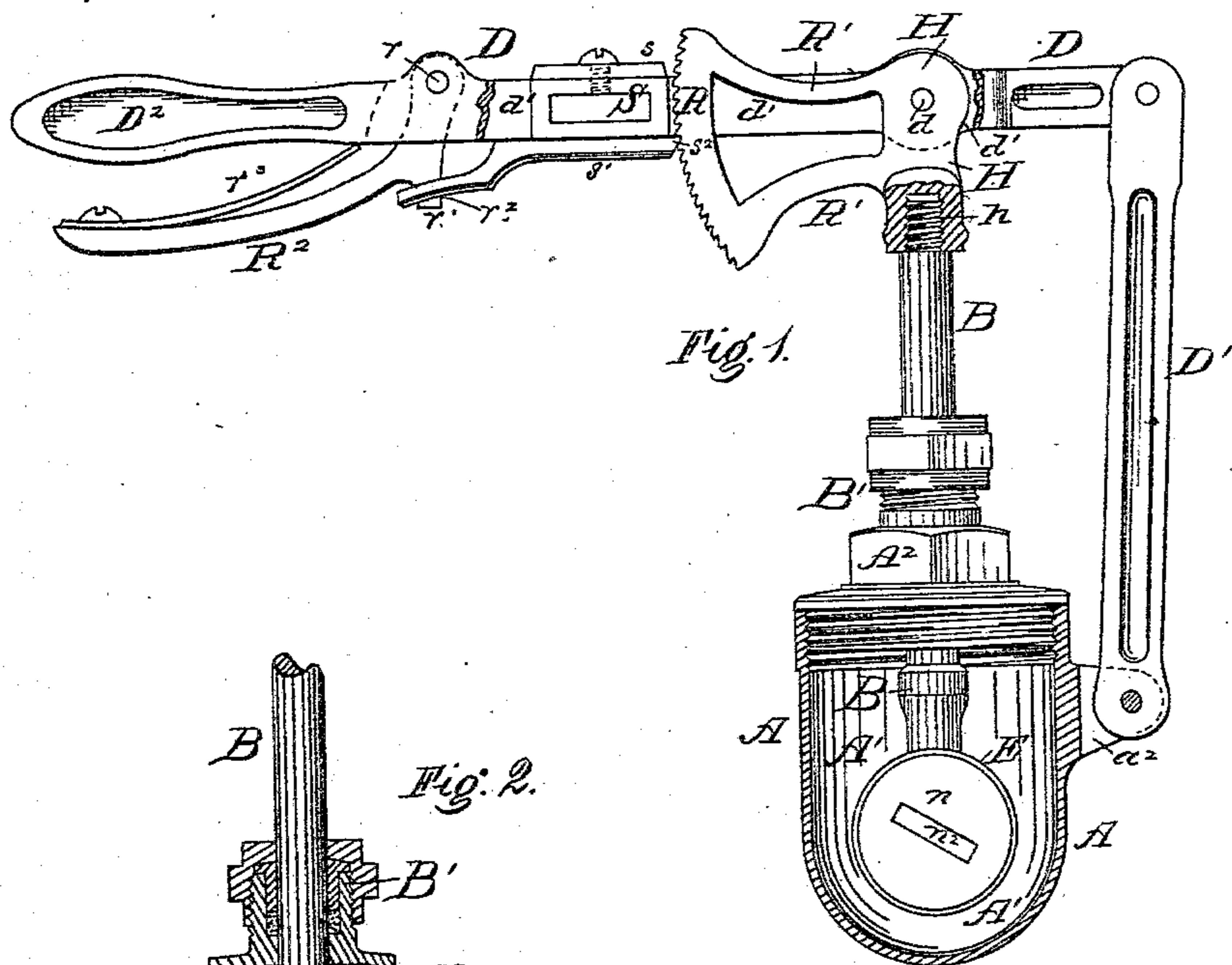


Fig. 1.

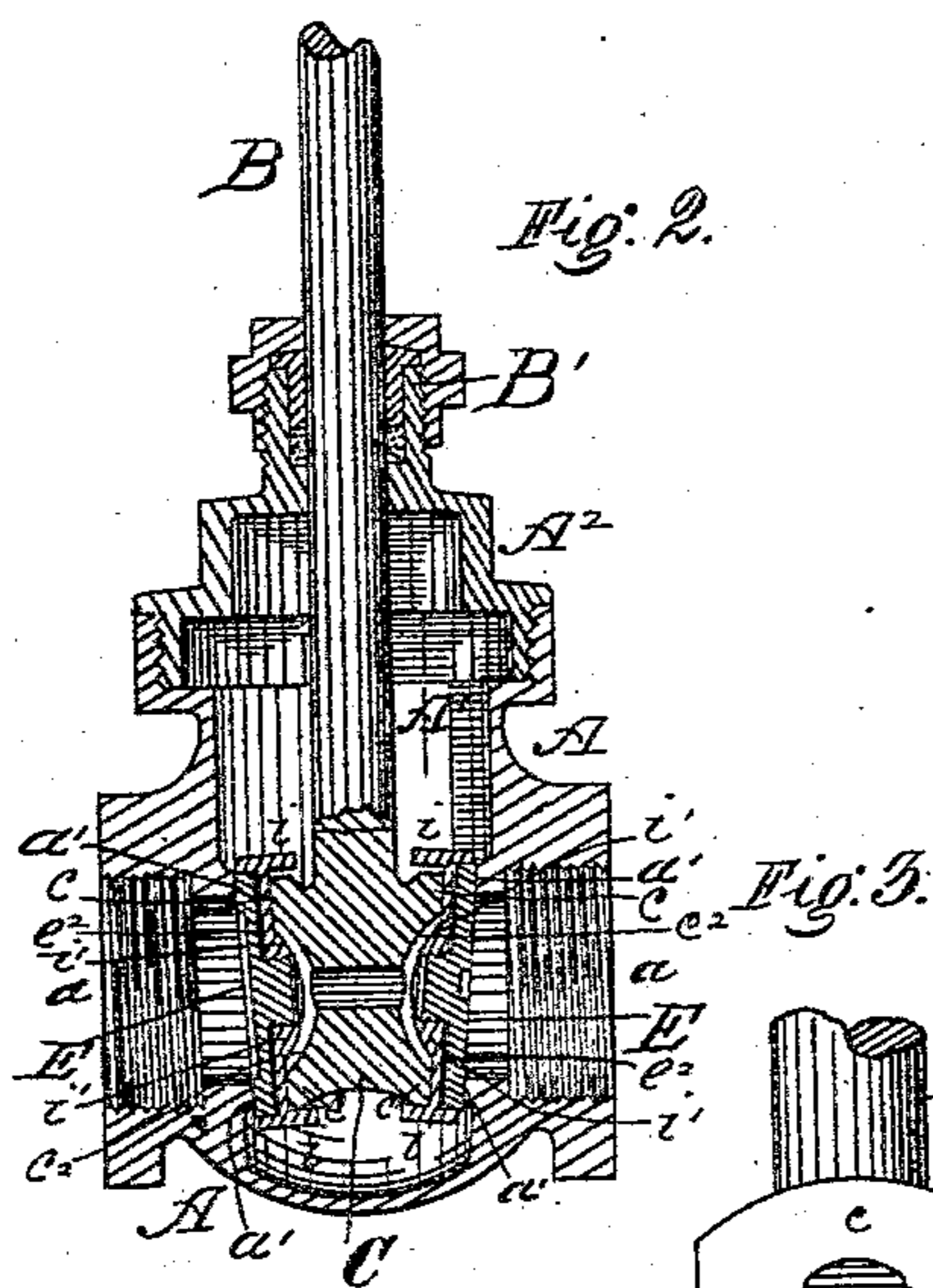


Fig. 2.

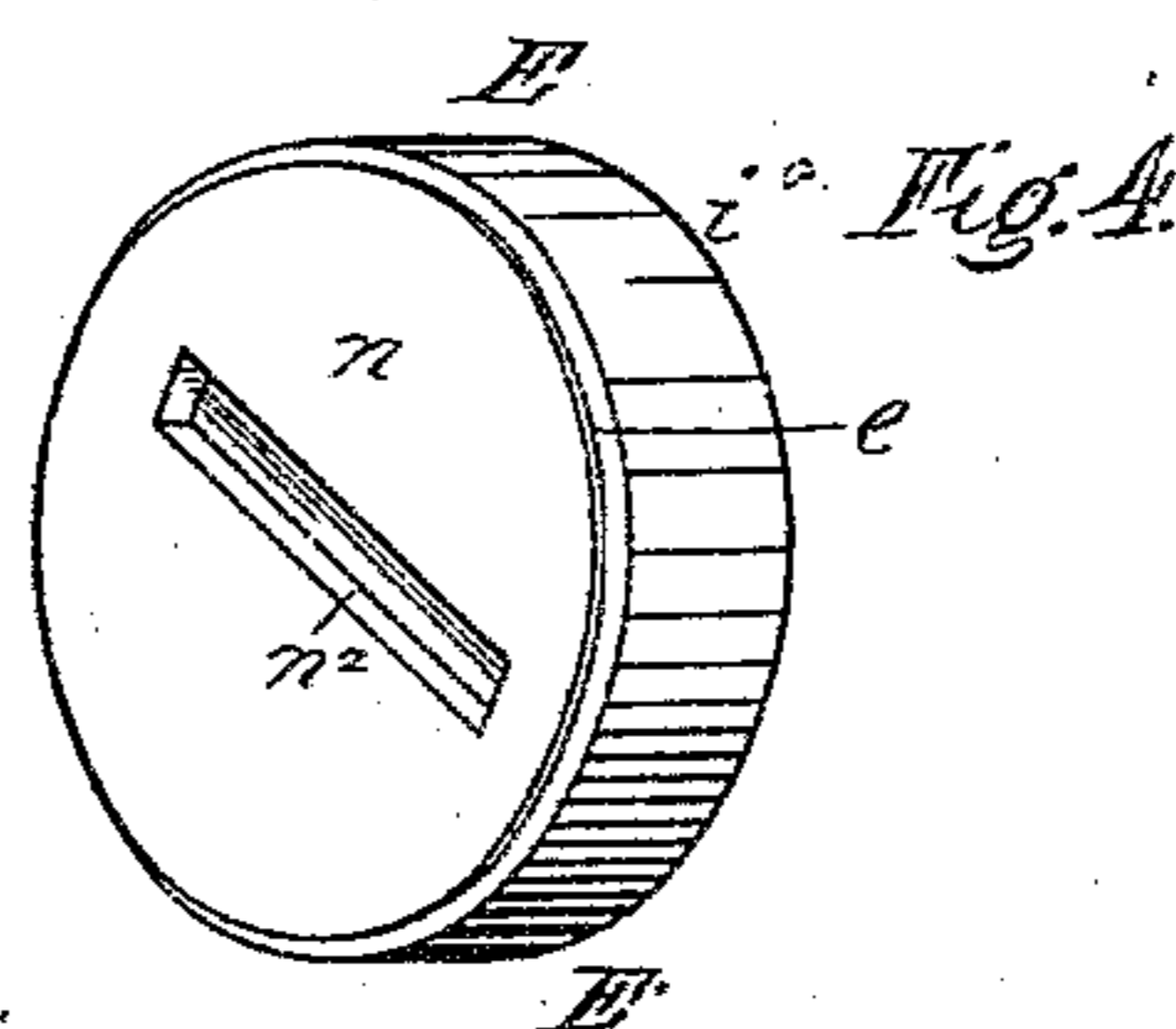


Fig. 3.

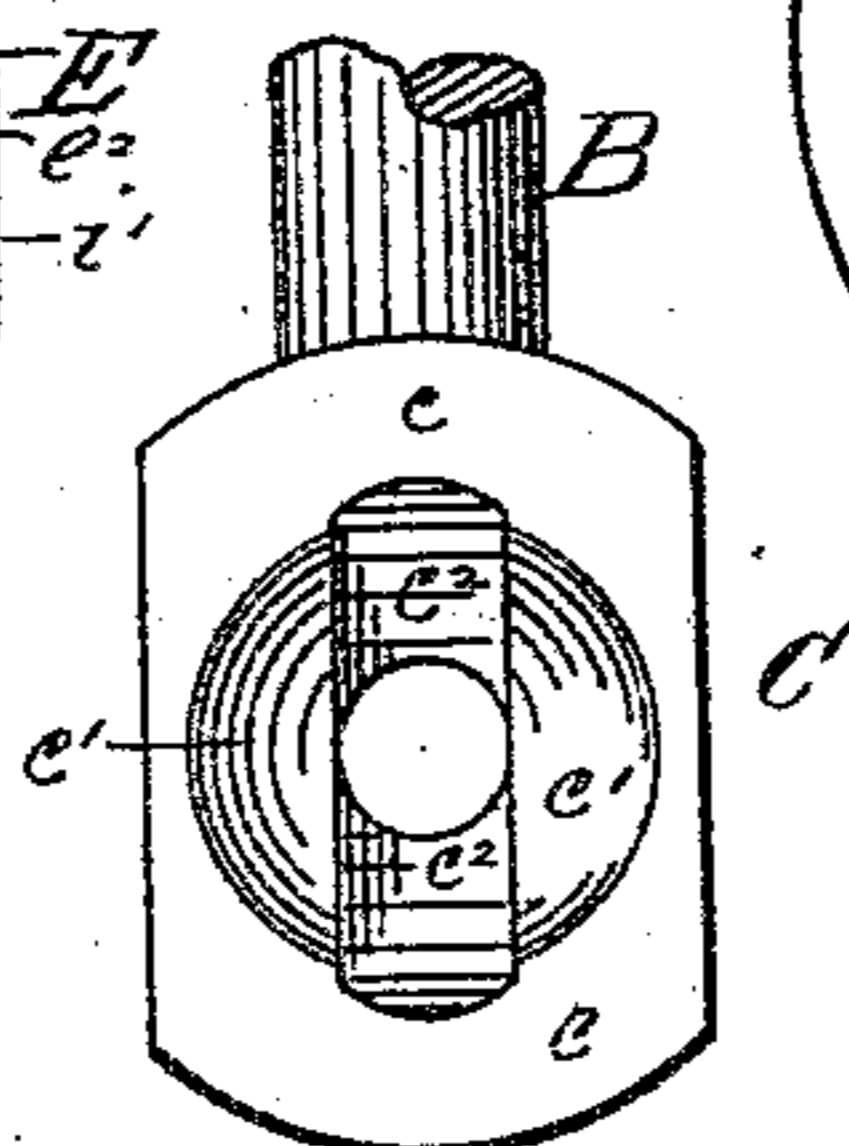


Fig. 4.

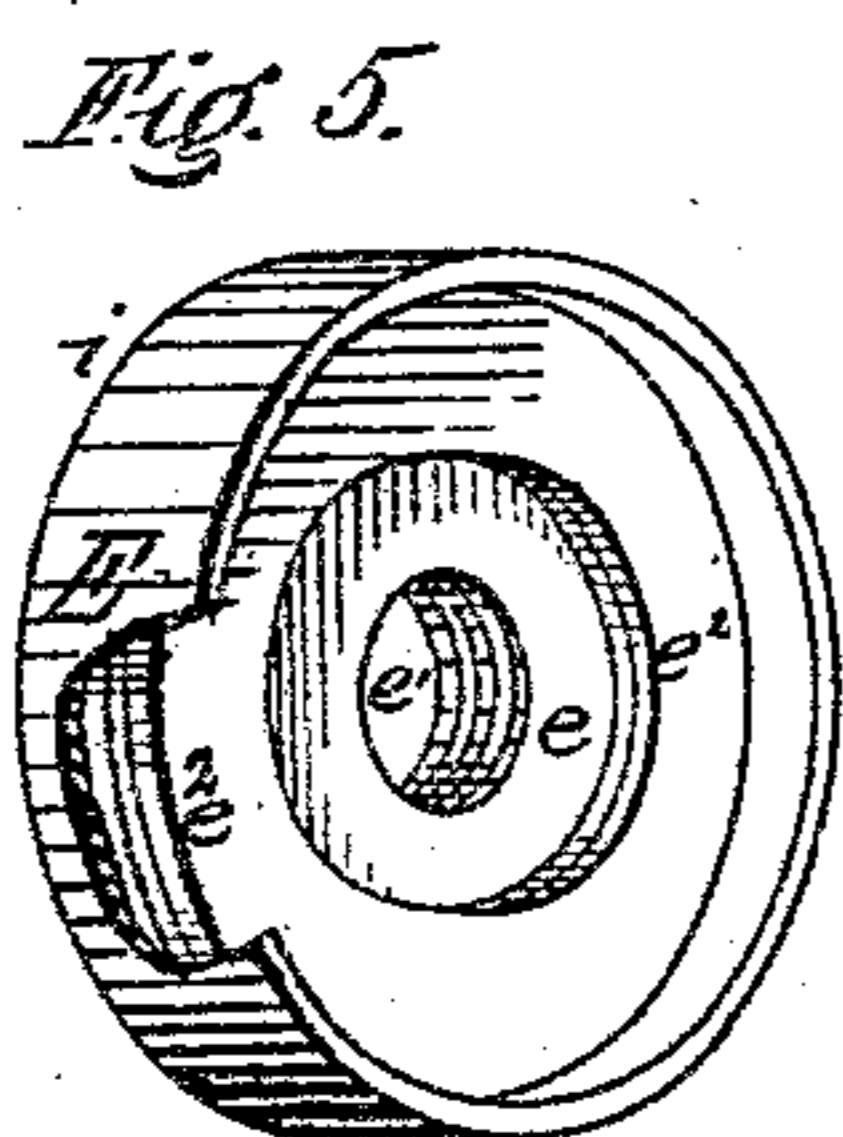


Fig. 5.

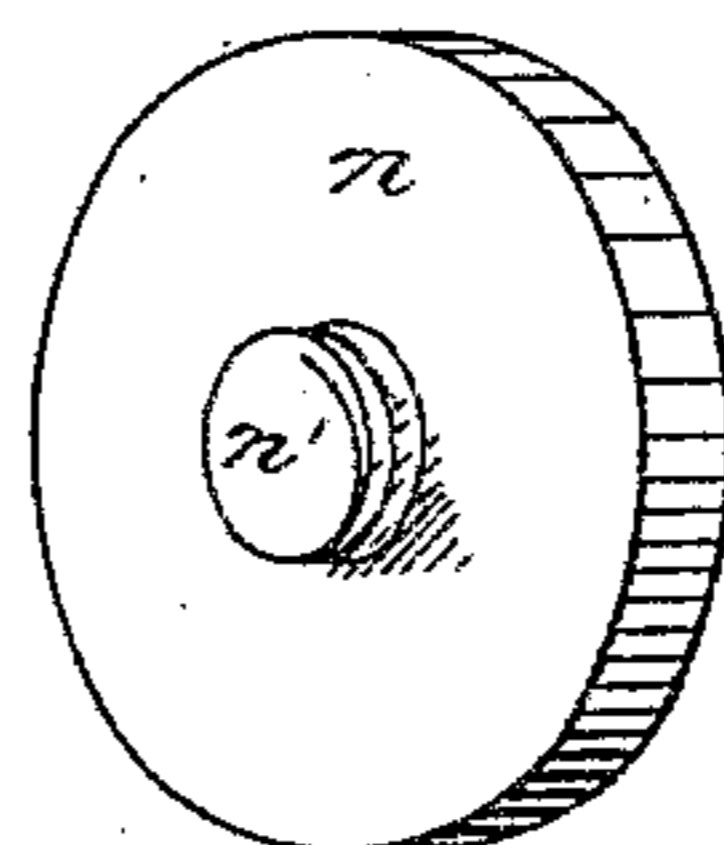


Fig. 6.

Witnesses
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UNITED STATES PATENT OFFICE.

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STOP-VALVE.

SPECIFICATION forming part of Letters Patent No. 286,479, dated October 9, 1883.

Application filed January 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES OLD, a citizen of the United States, residing at Allegheny City, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Stop-Valves; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—
like letters indicating like parts—

Figure 1 is a view in sectional elevation of my improved stop-valve. Fig. 2 shows a vertical central section of the same. Fig. 3 is a view in elevation of a portion of the hanger. Fig. 4 is a perspective view of the face of the valve proper, showing the removable soft-metal bearing, and Figs. 5 and 6 are similar views of separate parts of such valve, illustrative of the means employed in connecting them, Figs. 3, 4, 5, and 6 being drawn to a larger scale than Figs. 1 and 2.

My invention relates to certain improvements in stop-valves; and in general terms it consists of two circular valves, having soft-metal faces of improved construction, with rear flanges around the periphery and spherical projections at or near the center, in combination with a hanger having two opposite faces of less diameter than the flange of the valve, and having central recesses adapted to form socket-bearings for the spherical projections of the valves, a stem for operating the valves within the chamber, and lever and locking mechanism for moving and setting the valves, as hereinafter more fully described and claimed.

In the drawings, A represents a valve-case of the form usually employed for straightway stop-valves, having ports *a a*, valve-seats *a' a'* on the inner ends of such ports, and a valve-chamber, A', included between the valve-seats and within the neck of the case. A valve-stem, B, enters this chamber through screw-cap A² and stuffing-box B', which may be of the usual or any suitable construction with reference to securing a tight packing around the stem. On the inner end of the stem is cast or otherwise secured in any convenient way a two-faced hanger, C, the faces *c c* being opposite, and, by preference, in planes paral-

lel with the adjacent valve-seats—that is, converging downward somewhat. They are of curved outline on their upper and lower sides, forming central segments of circles, in the centers of which are recessed surfaces *c' c'*, of spherical form, adapted to form socket-bearings for the spherical projections *i'* in the centers of the backs of valves E. In order to reduce frictional surface of this bearing and increase facility of adjustment thereon, recesses *c²* are sunk across the face of the bearings *c'*, so as to cut out the central band of the bearing, leaving comparatively small bearing-surfaces on either side such cut or depression, as illustrated in Figs 2 and 3. One purpose of these depressed bands *c²* is to leave the valves without obstruction to rocking movement on the curved sides *c' c'*, to adjust them to the inclinations of the valve-seats. In order to relieve the bearings *c' c'* in moving the valves across their seats, rear flanges, *i*, are made around the periphery of the valve-bodies E, which flanges fit loosely over the rims of hanger-faces *c c*, such hanger-rims being of less diameter than the inner surface of the flanges, with sufficient space between to afford the valves a considerable range of adjustment on the central socket-bearing to fit them to their seats. In order to facilitate this adjustment, and also the fitting of the valves, the inner faces of the flanges are made plain and at right angles to the plane of the valve-face, and in order to insure the desired engagement between these flanges and the rims of the hanger-faces, they are made of sufficient depth to overreach the rims through the whole range of rocking adjustment of the valves on their central bearings. In Patent No. 237,769, granted to me February 15, 1881, peripheral flanges are shown and described which incline inward, forming V-grooves, into which the rims of the hanger-faces enter and fit closely. One purpose of the form of flange herein shown and described is to secure a freer and wider range of valve adjustment, and also the desired connection between the hanger and flanges to move the valves thereby across their seats.

On the front or seating faces of the valves I have also introduced certain features of improvement, with reference to securing a removable body of soft metal thereon to fit upon

the valve-seat. To this end a cylindrical recess, e , is made in the face of the valve-body, with a tapped hole or socket, e' , in the center of the recess, which, for convenience, is made through the valve-plate. Into this recess is fitted a soft-metal disk, n , having a threaded-pin projection, n' , thereon, adapted to run in the threaded socket or hole e' , and also having a recess or nick, n^2 , in or near the center, in which a tool may be inserted for screwing the disk into and out of its seat. Instead, however, of employing a threaded pin and socket to connect the body E and disk n , equivalent screw-threads may be cut in the peripheries of recess e and disk n . I prefer, however, the construction shown, as affording a smoother valve-face and less trouble in fitting. By this method of connecting the parts of the valve an unobstructed valve-face is secured, adapted to slide on the seats a' smoothly, and without hinderance. Provision is also made for removing the soft-metal part conveniently and quickly for the purpose of inserting or removing liner e^2 or equivalent packing, and thereby to adjust the face of the soft metal with reference to the face of the body part E as the former is worn by use. When the soft-metal part of the valves is worn out, it can be removed and a new one inserted with very small expense. In these features of construction and advantage the valve is a material improvement over others of like class of which I have knowledge. Owing to the inclination of the valve-seats a' , the valves are pressed upon them by the hanger in seating with something of a wedge action. In unseating, however, the valves will hang loosely upon the rims of faces $c c$ by their rear flanges, i , and will be raised thereby, as before described, the valve-chamber A' being of proper size to admit of such loose suspension, but not so large as to permit the valves to become disengaged from the hanger.

The seating and unseating movement of the hanger and valves is imparted through the valve-stem B by means of a hand-lever, D , pivoted at one end by a link, D' , to projecting lugs a^2 on the outer surface of the valve-case, and connected by a pivot-pin, d , and mortise d' , to a head or cap, H , which has a threaded socket, h , in its lower end, into which the upper end of a stem, B , is screwed.

In order to lock the valve in any desired position within its range of motion, the mortise d' is extended toward the handle D^2 of the lever, inclosing or surrounding the toothed-sector R , which is supported by radius-arms R' upon the head H , being, by preference, cast solid with or rigidly secured to the head. A slide, S , having top and bottom guide-plates, $s s'$, is fitted to move longitudinally within the mortise to and away from the toothed periphery of the sector, so as to engage the same by the beveled end s^2 of the guide-plate s' , and thereby lock the hand-lever and valve-stem in fixed relationship, or by drawing back to release the lever and permit movement of the

same to operate the valve. These locking and unlocking movements are given to the slide by means of a bent lever, R^2 , secured beneath and within hand-reach of the handle D^2 . This lever R^2 is pivoted at its inner and upwardly-bent end in mortise d' , as at r , and from its under side a downwardly-projecting pin, r' , enters a hole, r^2 , in the outer prolonged end of guide-plate s' . A spring, r^3 , secured to lever R^2 and adjusted to bear upon the under edge of lever D , moves lever R^2 and slide S into locking engagement, and pressure of the hand upon lever R^2 , drawing it toward handle D^2 , will draw the slide away from the sector and unlock the lever D , as before described. This valve shifting and locking mechanism is simple and inexpensive in construction. It provides for rapid movement of the valve, with sufficient leverage to move the same with efficient force, and also enables the valve to be set securely at any desired point on its seat for full or reduced passage, and to effectually lock in such position, so as to prevent possibility of shifting by the tremor or shaking to which it may be subjected.

I claim herein as my invention—

1. The valves E , having raised spherical surfaces i' and flanges i on the back face, the inner surface of the flanges being at right angles to the valve-face, in combination with hanger C , having opposite segment-faces, $c c$, with central socket-bearings, $c' c'$, the diameter of faces c being less than that of the inner circle of the valve-flanges, substantially as and for the purposes set forth.

2. The hanger C , having faces c , with two socket-bearings, $c' c'$, and depressed central band, c^2 , in the face between such bearings, in combination with valves E , having raised spherical surfaces i' and flanges i on their rear faces, substantially as and for the purposes set forth.

3. A stop-valve having, in combination, a face-recessed body, a soft-metal disk or face-plate secured in such recess, and packing-liners between such disk and the base of the recesses, substantially as set forth.

4. A stop-valve having, in combination, a body, E , with a screw-threaded socket in its face, and a soft-metal disk, n , having a screw-thread thereon adapted to run in the thread of the socket, substantially as and for the purposes set forth.

5. The valve-body E , having a cylindrical face-recess, e , and threaded-pin socket e' therein, in combination with a cylindrical soft-metal disk, n , having a threaded pin, n' , on its inner face adapted to screw into the socket e' , substantially as set forth.

6. The soft-metal disk n , having nick n^2 in its face, and a threaded pin, n' , at the center of its back, in combination with valve-body E , having recesses e , and threaded socket e' therein, substantially as set forth.

7. In combination with a stop-valve, stem, and case, a hand-lever, D , pivoted to the stem and case, a toothed sector, R , rigidly secured,

to the stem in the plane of lever motion, a slide, S, for locking the lever and sector, and mechanism, substantially as described, for moving the slide on the lever into and out of
5 locking engagement with the sector.

8. In combination with a stop-valve, case, and stem, a mortised lever, D, pivoted to the case and stem, a toothed sector, R, rigidly secured to the stem in the plane of the lever-
10 mortise, a locking-slide, S, movably mount-

ed in the lever-mortise, lever R², having pivot-connections with lever D and with the slide and spring 1³, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my 15 hand.

JAMES OLD.

Witnesses:

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C. L. PARKER.