

No. 661,712.

Patented Nov. 13, 1900.

J. CEDERSTROM.  
VALVE TIGHTENER.

(Application filed Mar. 8, 1900.)

(No Model.)

Fig. 1.

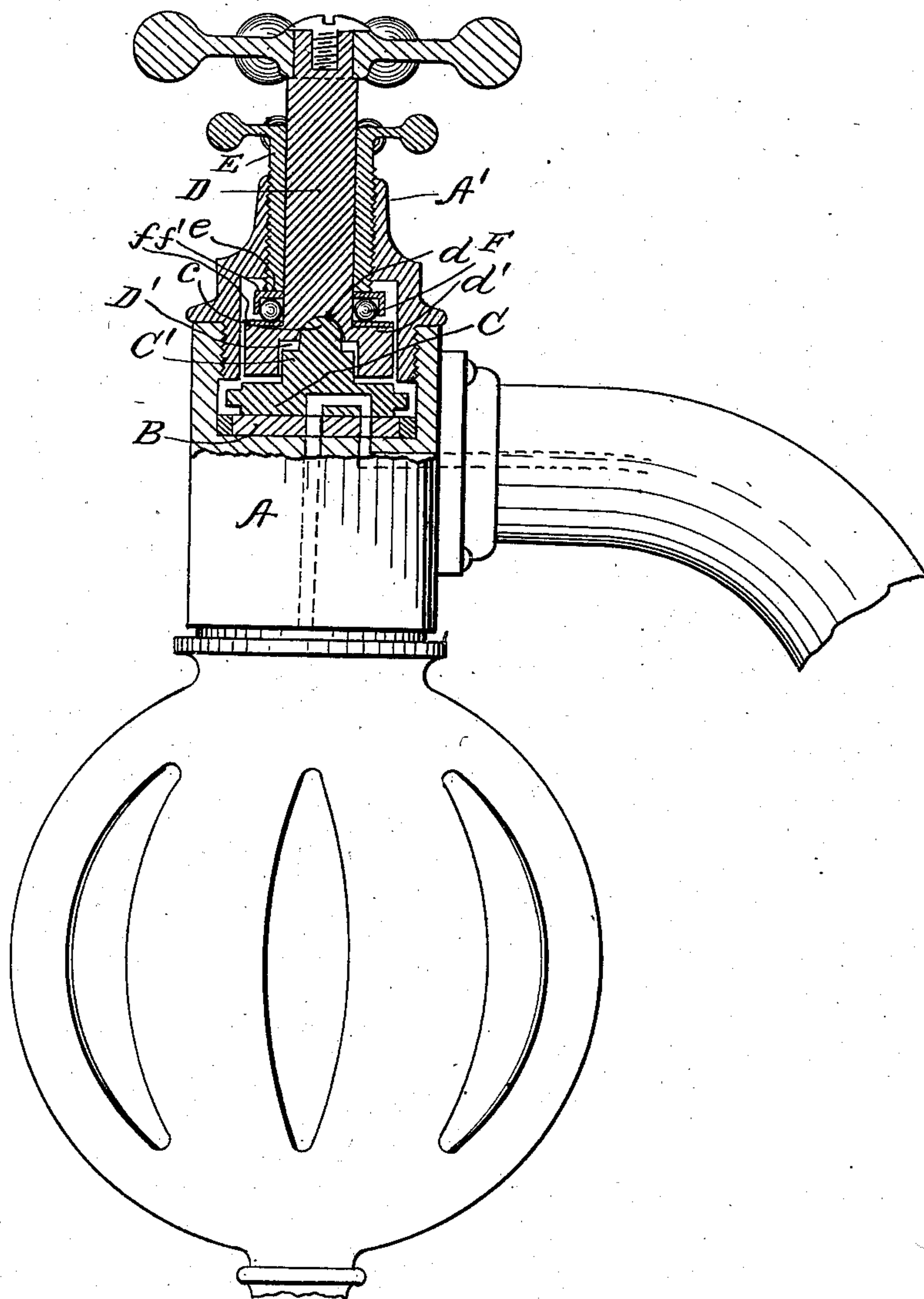
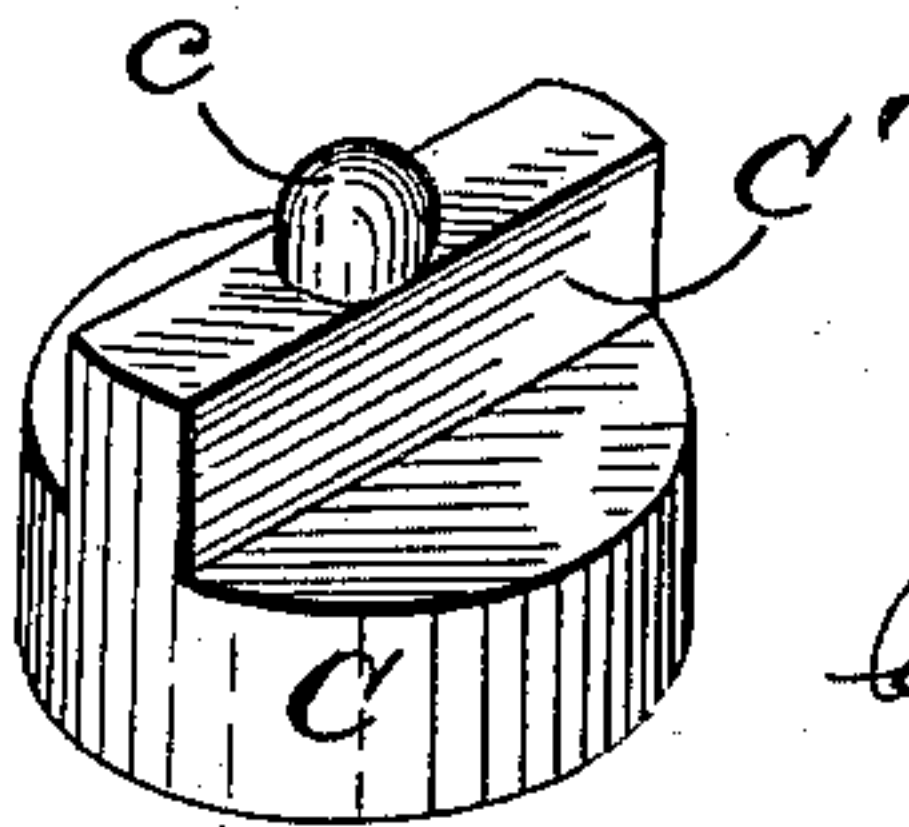


Fig. 2.



Witnesses.  
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Inventor  
John Cederstrom  
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# UNITED STATES PATENT OFFICE.

JOHN CEDERSTROM, OF BUFFALO, NEW YORK, ASSIGNOR TO THE U. S. AERATING FOUNTAIN COMPANY, OF SAME PLACE.

## VALVE-TIGHTENER.

SPECIFICATION forming part of Letters Patent No. 661,712, dated November 13, 1900.

Application filed March 8, 1900. Serial No. 7,937. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN CEDERSTROM, a citizen of the United States, and a resident of Buffalo, New York, have invented a new and useful Valve Tightener and Adjuster, which invention is fully set forth in the following specification.

A rotary valve comprises the valve proper, a plane surface, turning upon the valve-seat, another plane surface. The essentials are, first, that the two surfaces fit truly; second, that the valve be capable of rotating freely on its axis to open or close the passage-way or passage-ways, and, third, that the valve be held closely against its seat to insure a tight joint. It is also desirable, fourth, that the valve be capable of ready adjustment to compensate for wear, especially in case of uneven wear. I effect these various ends by providing an antifriction-bearing for the tightening device and by employing a key for turning the valve separate therefrom and bearing upon it by a universal-joint arrangement to allow slight play of the valve for automatically adjusting itself (when tightened) to compensate for uneven wear.

My invention consists, further, in certain details and improvements to be pointed out.

In the drawings annexed hereto to illustrate my invention, Figure 1 is a vertical section of a complete valve, and Fig. 2 a perspective of the valve proper.

A and A' represent the casing or chest of an ordinary rotary valve.

B is the valve-seat, and C the valve proper, having in them the usual passage-way or passage-ways. Valve C has on its upper face—i. e., on the face away from the valve-seat—the transverse diametric rib C' and the centrally-located boss c.

D is the turn-key, and E the valve-tightening wheel or barrel. Key D has at its lower end—i. e., the end next the valve—an enlargement or head, in the face of which is the transverse diametric groove D' for engaging rib C' and the central seat d for bearing upon boss c to hold the valve in place against its seat. This enlargement or head provides the annular shoulder d'. Barrel E is externally screw-threaded for vertical adjustment in part A' of the casing (as by a hand-wheel)

and surrounds the shank of key D, which turns freely therein. Interposed between shoulder d' and the adjacent face e of the barrel is an antifriction device. (Shown as the balls F and the races f f'.)

When the barrel E is screwed into its seat A', the tightening force is applied upon shoulder d' in a direction parallel with the geometric axis of the parts and is transmitted (in the same direction) to the valve through boss c, thus forcing the valve down closely and crowding it against its seat to effect a tight joint. In case the face of the valve or the face of its seat becomes worn on one side more than on the other, so that the two faces are no longer parallel, the bearing formed by boss c and its seat d permits the valve to rock on its vertical axis sufficiently to accommodate itself to the face of its seat. In other words, screwing down of barrel E insures both tightening of the valve and automatic compensation for uneven wear.

As the valve has to be held against its seat with a certain force, and since the reactionary force is the same, ordinarily a twofold friction would be encountered; but in my improved construction the friction at shoulder d', being at the minimum, may be disregarded. Hence the valve may be turned by the exertion of only half the force hitherto required or may be tightened with double the pressure heretofore employed (and thereby make a secure joint against gases under high pressure) and yet be turned as readily as before.

It is evident that the rib C' and its groove may be transposed, as also may boss c and its seat, that shoulder d' may be merely a flange around the shank of the key, and that other changes in details of construction and arrangement may be made without in any case departing from the spirit of my invention. So, also, certain parts of my invention may be employed without the other parts. For instance, instead of ball-bearings (or some other form of antifriction device) the face e of barrel E may bear directly upon shoulder d', or instead of having the valve and its key separate they may be integral.

Having thus described my invention, I claim—

1. The combination of a rotary valve, a



turn-key therefor that turns it and also holds it in place against its seat by a universal-joint bearing, and means for tightening the same to compensate automatically for uneven wear, 5 substantially as described.

2. A valve-tightening device comprising a rotary valve having on its upper face a transverse rib and a central boss, a turn-key with a transverse groove to engage said rib and a 10 central seat to bear on said boss, said key having an annular shoulder, and a barrel surrounding the shank of said key to force said valve against its seat, substantially as described.

15 3. A valve-tightening device comprising a rotary valve having on its upper face a transverse rib with a central boss, a turn-key with a transverse groove engaging said rib and a central seat bearing on said boss, said key

having an annular shoulder, a tightening- 20 barrel surrounding the shank of said key, and an antifriction device interposed between said wheel and said shoulder, substantially as described.

4. The combination with a rotary valve 25 and the valve-seat upon which it turns, of a head bearing upon said valve by a universal joint, and means for forcing said head against its valve to provide automatic compensation for uneven wear, substantially as described. 30

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

JOHN CEDERSTROM.

Witnesses:

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LUCIAN HAWLEY.