

No. 713,145.

Patented Nov. 11, 1902.

J. POWELL.  
GLOBE VALVE.

(Application filed Mar. 16, 1901.)

(No Model.)

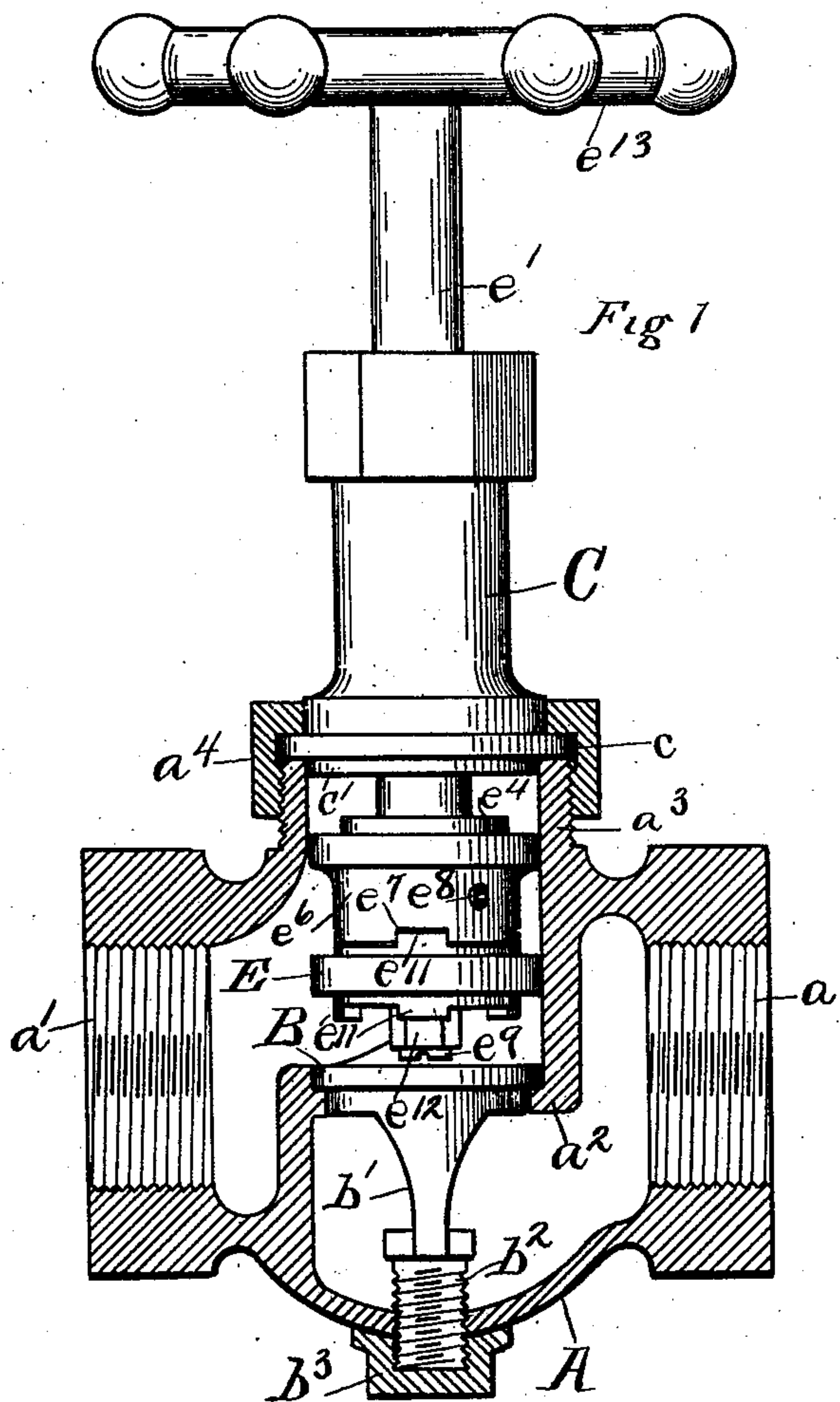


Fig 2

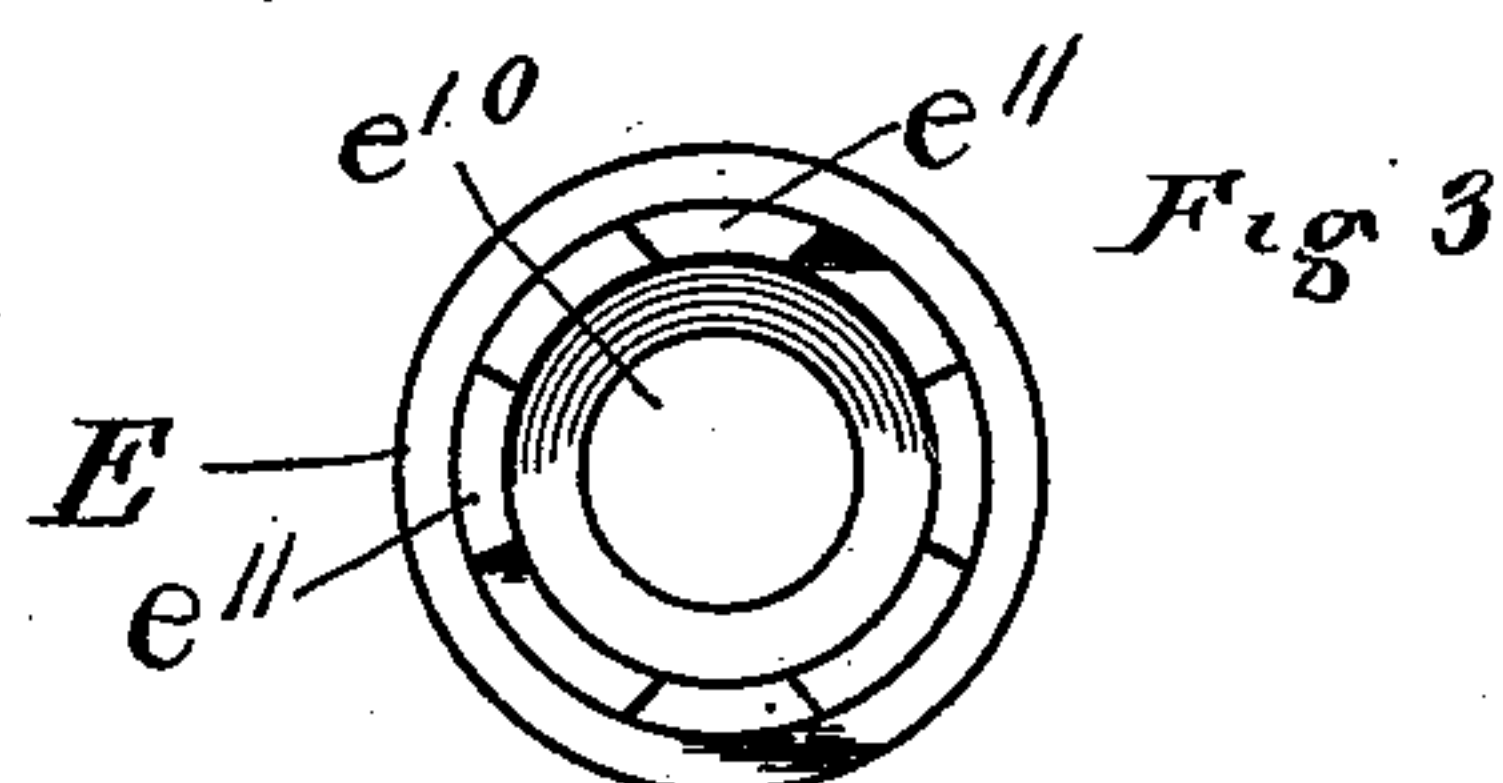
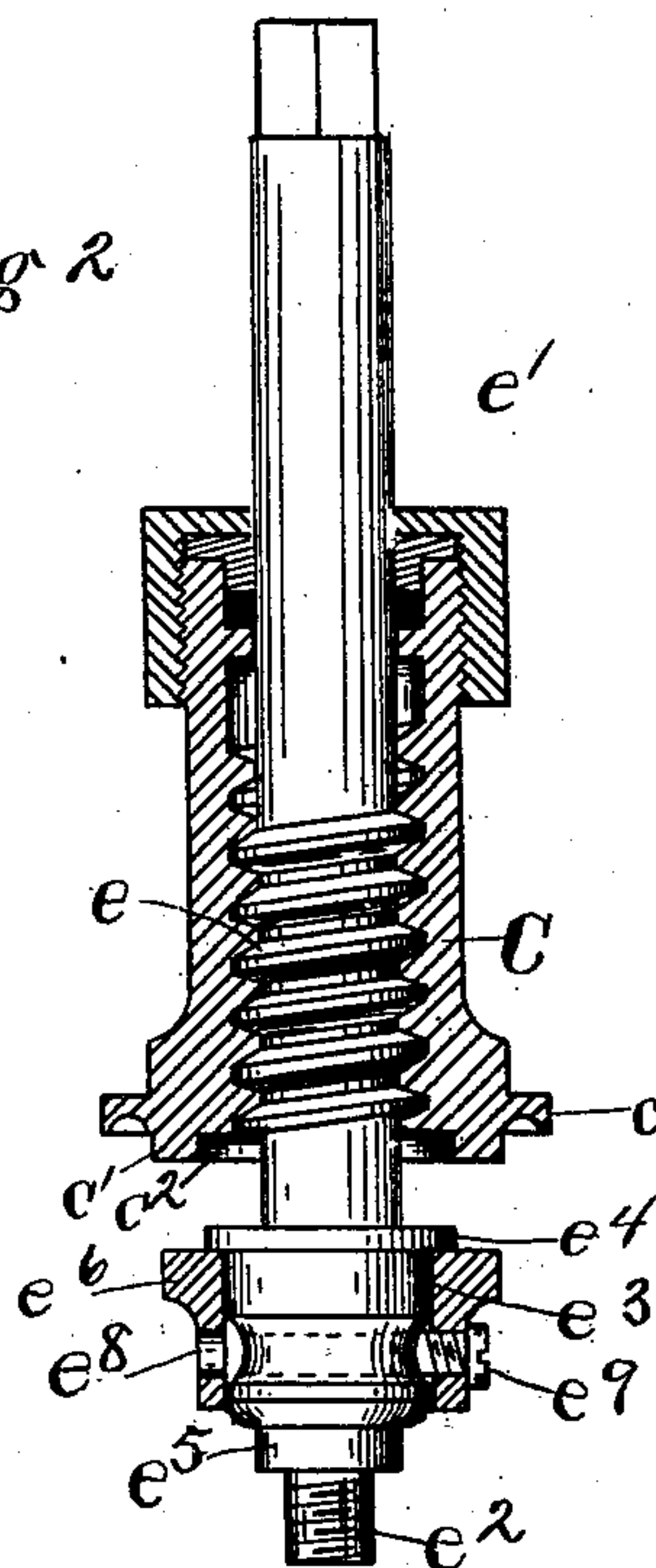


Fig 4

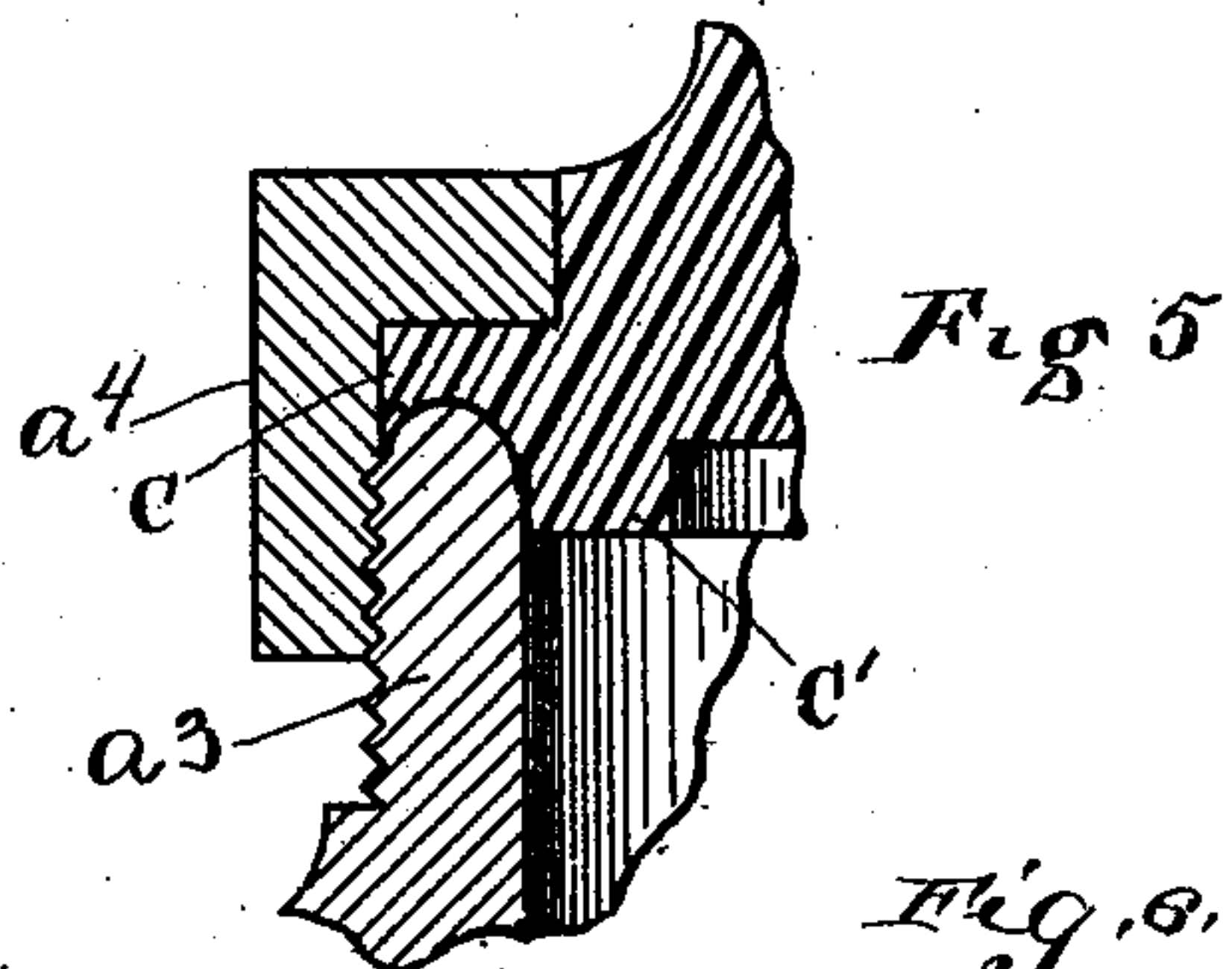
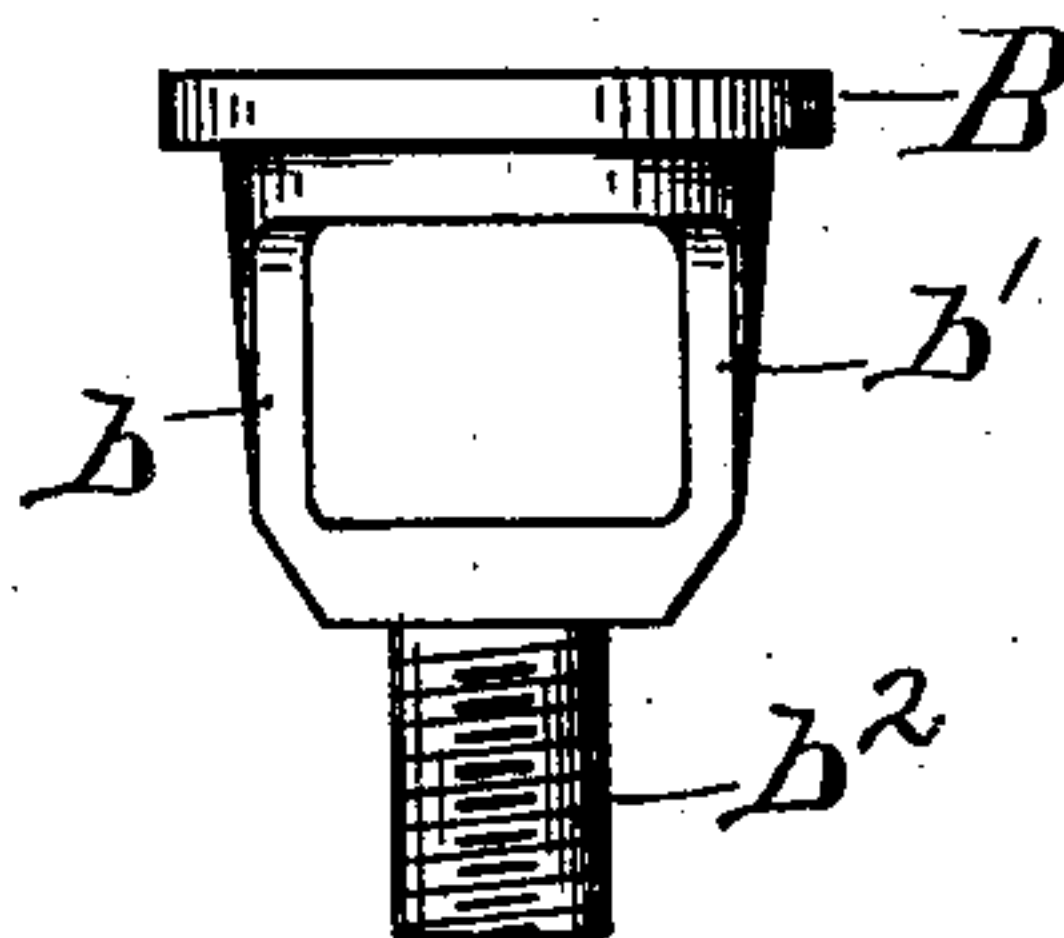
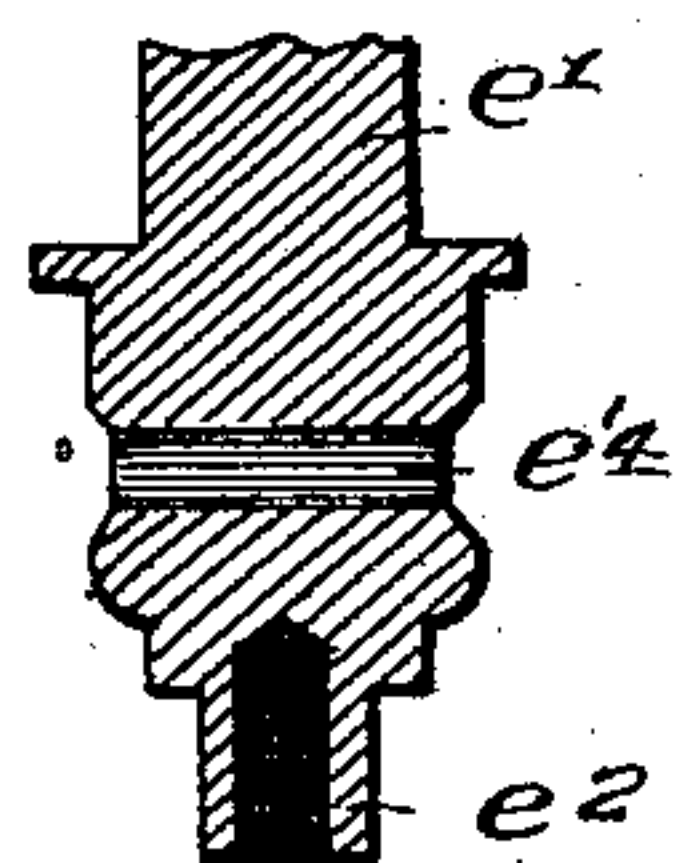


Fig 6



Witnesses  
Emma Lyford  
F. F. Oldham

Inventor  
James Powell  
By Murray & Murray  
Attys.



# UNITED STATES PATENT OFFICE.

JAMES POWELL, OF CINCINNATI, OHIO.

## GLOBE-VALVE.

SPECIFICATION forming part of Letters Patent No. 713,145, dated November 11, 1902.

Application filed March 16, 1901. Serial No. 51,487. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES POWELL, a citizen of the United States of America, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Globe-Valves, of which the following is a specification.

The object of my invention is a globe-valve of the type that has a valve-stem which is screw-threaded and axially guided in relation to the valve-seat and has a rotation independent of the valve-disk, in which the parts that are subject to wear when worn may be reground easily to insure a snug fit between the valve and its seat, or when too much worn to be so remedied may either be changed in position, so as to present an unworn surface or be replaced at little expense by a new part. This object is attained by the means described in the annexed specification and illustrated in the accompanying drawings, in which—

Figure 1 is a view in central vertical longitudinal section of the valve-case and in elevation of the bonnet of the case, the valve-seat, valve, and valve-stem. Fig. 2 is a detail view in elevation of the valve-stem and in central section of the guide-ring and the bonnet. Fig. 3 is a detail plan view of the valve. Fig. 4 is a detail view in elevation of the removable valve-seat at right angles to the position shown in Fig. 1. Fig. 5 is a detail view, upon an enlarged scale, of the joint between the neck of the valve-case, the bonnet, and their coupling-nut. Fig. 6 is a central vertical sectional detail view of the lower end of the valve-stem.

Referring to the parts between admission-opening  $a$  and discharge-opening  $a'$ , valve-case A has a horizontal diaphragm  $a^2$ , which has a central perforation which seats a removable valve-seat, which consists of a ring B, having two downwardly-projecting lugs  $b b'$ , which terminate in a screw-stem  $b^2$ , which projects through a perforation in the bottom of the valve-case and upon the exterior of the case receives a screw-nut  $b^3$  to hold the valve-seat securely in place.

Valve-case A has an upwardly-projecting exteriorly-screw-threaded neck  $a^3$  to receive

a screw-threaded nut  $a^4$  which bears down upon flange  $c$  of bonnet C and holds said flange snugly down upon the top of the neck. Below flange  $c$  the bonnet has a short annular lug  $c'$ , which fits snugly against the smooth interior walls of neck  $a^3$ . The edges and the top of neck  $a^3$  are beveled or rounded off, the inner edge more so than the outer, and the under side of flange  $c$  is grooved out to fit the neck, so that when nut  $a^4$  is screwed down tight lug  $c'$  forces the neck outwardly to tighten the threads of the neck and of the nut together and presses the top of the neck and flange  $c$  tightly together, forming a tight joint and one that is not loosened by excessive fluid pressure.

Bonnet C is interiorly screw-threaded to engage the screw-threaded portion  $e$  of valve-stem  $e'$ , which terminates at its lower end in a reduced screw-threaded portion  $e^2$ , above which is an enlarged portion  $e^3$  and a collar  $e^4$ , which enters a circular depression  $c^2$  in the lower end of the bonnet when the valve-stem is in its raised position. Between reduced portion  $e^2$  and enlarged portion  $e^3$  is a portion  $e^5$  intermediate in size between said portions. Around portion  $e^3$  and against the under side of collar  $e^4$  fits a guide-ring  $e^6$ , whose upper end bears against the inner walls of neck  $a^3$  to guide the valve-stem to and from its seat. Guide-ring  $e^6$  has at its lower end a series of notches  $e^7$  and is normally free to rotate upon the valve-stem, but has in its side a hole  $e^8$ , through which a screw-pin  $e^9$  may be passed into a bore  $e^{14}$  in the stem to lock the guide-ring from rotation thereon. Screw-pin  $e^9$  when not so engaged is retained in an axial vertical screw-threaded bore in the lower end of the valve-stem, as shown in Fig. 1.

Valve E consists of an annular disk having a central perforation  $e^{10}$  of the same size as portion  $e^5$  of the valve-stem. Around portion  $e^{10}$  the disk is beveled annularly upon each side, and around the beveled portions upon each side are annular lugs of the same circumference as both the lower end of guide-ring  $e^6$  and the interior diameter of the valve-seat. Each of said annular lugs has a series of teeth  $e^{11}$ , similar to and adapted to fit into the notches upon the guide-ring. Guide-ring



$e^6$  and valve E are held upon the valve-stem loosely between collar  $e^4$  and a nut  $e^{12}$ , which is screwed upon the end  $e^2$  of the valve-stem. Upon the upper end of the valve-stem is a hand-wheel  $e^{13}$ , the turning of which carries the valve to and from its seat.

As is seen, the valve-stem may rotate free of the guide-ring and valve-disk, and the valve-disk has enough play upon its stem to allow it to fit its seat snugly.

When the valve or its seat or both become worn, they may be ground in the following manner: Nut  $a^4$  is disengaged from neck  $a^3$ , and the bonnet, the valve-stem, guide-ring, and valve are lifted out of the valve-case. Screw-pin  $e^9$  is then removed from the end of the valve-stem and is passed through hole  $e^8$  of the guide-ring into the valve-stem. Any suitable abradant is then applied to the valve-disk and the parts are again placed in the case, so that the valve bears upon its seat. Keeping nut  $a^4$  disengaged from neck  $a^3$ , the valve-disk is rotated upon its seat with downward pressure until a proper bearing is obtained.

When the valve-disk becomes too much worn upon one side to be remedied by regrinding, nut  $e^{12}$  is removed, the valve-disk is reversed upon the stem, and the nut is replaced.

Should a valve-seat become too much worn, by removing nut  $b^3$  it may be removed, and a new valve-seat may be substituted in its place at little expense.

What I claim is—

1. The combination of a valve-case, a valve-seat therein, a valve-stem having near its lower end an enlarged portion rounded on its lower edge and a reduced portion below said enlarged portion, a double-faced valve having a perforation to pass the reduced portion of the stem, and beveled portions upon each face surrounding the perforation to fit against the lower end of the enlarged portion, substantially as shown and described.

2. In combination with a valve-stem, a guide-ring mounted rotatably upon the stem and having in its lower edge a series of notches, and a valve-disk having upon each side a series of teeth to interlock with the

notches in the guide-ring, substantially as shown and described.

3. In combination with a valve-stem having a collar a short distance from its end, a guide-ring having its lower end notched, a valve-disk having teeth interlocking with the notched guide-ring and a nut upon the end of the stem to hold the guide-ring and valve-disk loosely between it and the collar, substantially as shown and described.

4. In combination with a valve-stem an annular guide-ring mounted rotatably upon the stem and having in its end a series of notches, a valve-disk similarly mounted upon the stem and having teeth to interlock with the notches, and means for locking the guide-ring upon the stem, substantially as shown and described.

5. In combination with a valve-stem having a transverse perforation therein, a guide-ring mounted rotatably thereon and having a hole in its side and notches in its end, a valve-disk having teeth to interlock with the notches in the guide-ring and a screw-pin for passing through the hole into the perforation in the valve-stem, substantially as shown and described.

6. The combination of a valve-case having a neck exteriorly screw-threaded and with its upper edges beveled or rounded off, a bonnet having a flange to rest upon the neck whose under side is grooved counter to the rounded edges of the neck and a screw-threaded nut to engage the neck and the flange, substantially as shown and described.

7. In combination with a valve-stem having a transverse perforation in it and an axial bore in its lower end, a guide-ring mounted rotatably thereon and having a hole in its side and notches in its end, a valve-disk having teeth to interlock with the notches in the guide-ring, and a screw-pin to seat normally in the axial bore in the stem and when the valve is to be reground for passing through the hole into the perforation in the valve-stem, substantially as shown and described.

JAMES POWELL.

Witnesses:

W. F. MURRAY,  
GEO. J. MURRAY.