

No. 684,118.

Patented Oct. 8, 1901.

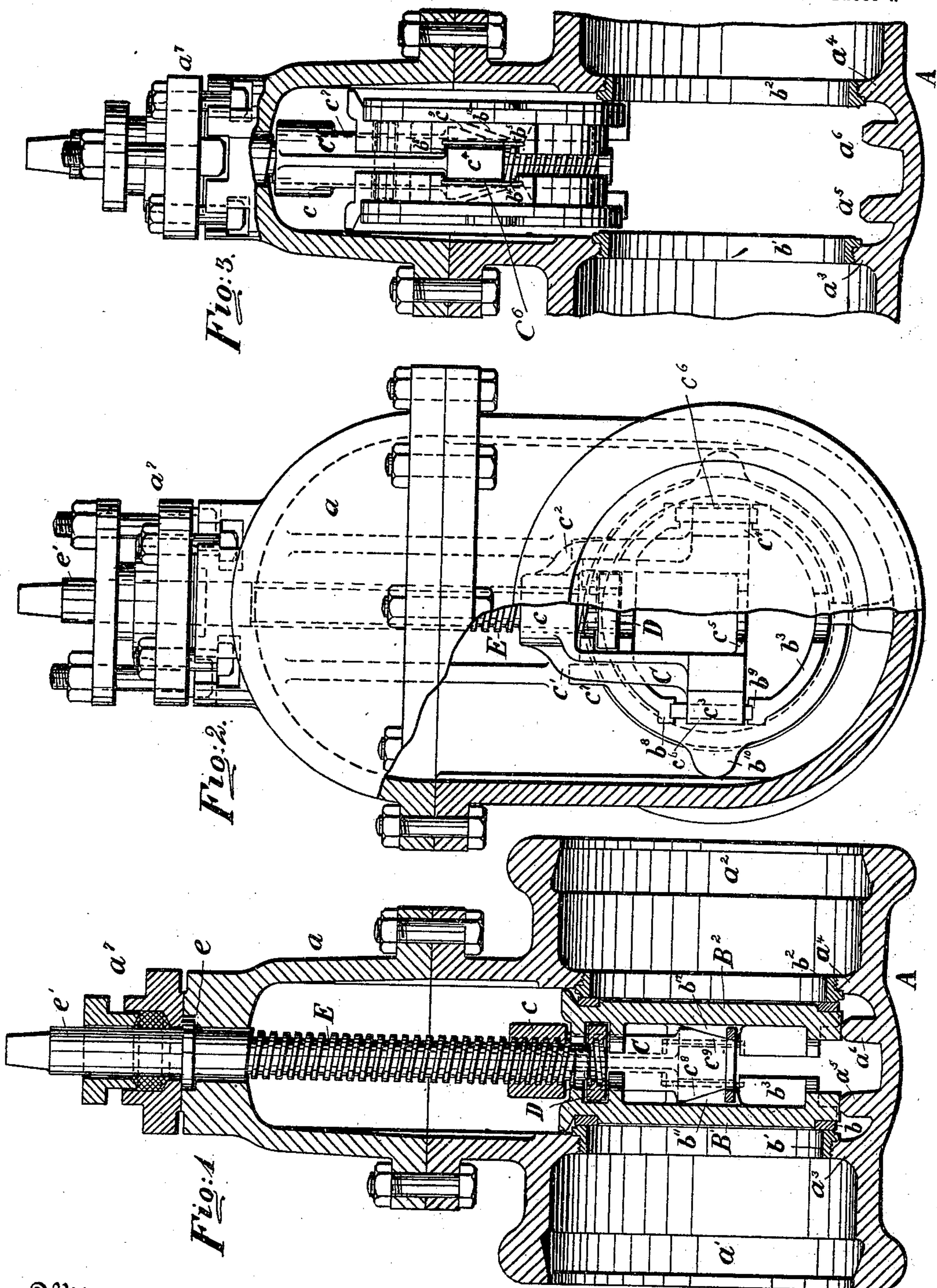
A. P. SMITH.

VALVE.

(Application filed Mar. 9, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
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*Geo. C. Cruise*

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By his Attorney  
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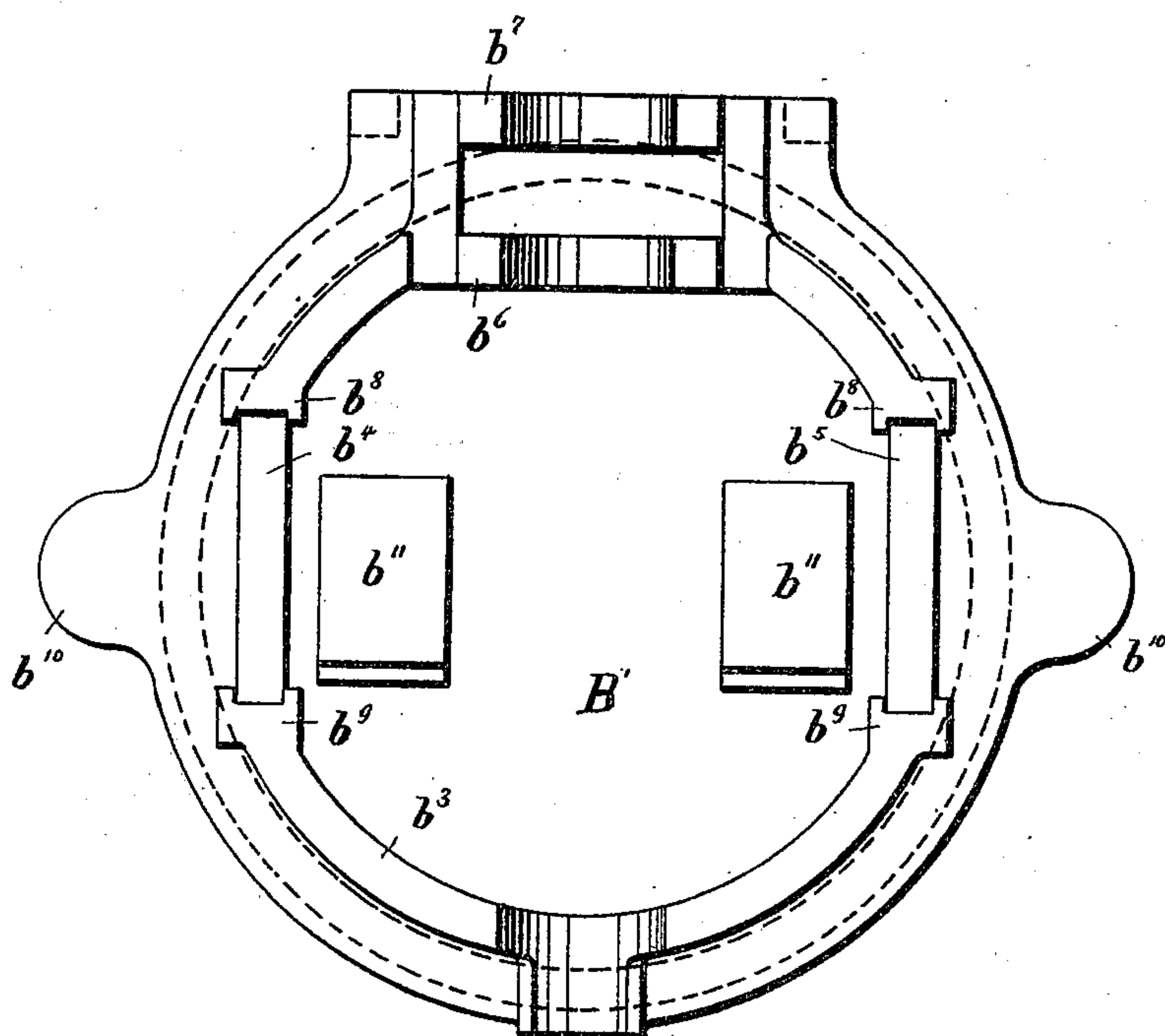
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*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

ANTHONY P. SMITH, OF NEWARK, NEW JERSEY.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 684,118, dated October 8, 1901.

Application filed March 9, 1898. Serial No. 673,230. (No model.)

*To all whom it may concern:*

Be it known that I, ANTHONY P. SMITH, of the city of Newark, county of Essex, and State of New Jersey, have invented a new and useful Improvement in Valves, of which the following is a specification.

I will describe a valve embodying my improvement and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a central longitudinal section of a valve embodying my improvement. Fig. 2 is a partial end view and partial section taken parallel to the ends. Fig. 3 is a view like Fig. 1, but it shows parts in different positions. Fig. 4 is a back view of one of the valves proper.

Similar letters of reference designate corresponding parts in all the figures.

A designates the body of the valve-casing. It will be preferably of cylindric form. Its ends  $a'$   $a^2$  are adapted for coupling in any suitable manner with sections of pipe forming part of a main. Intermediate its ends there are two opposite valve-seats  $b'$   $b^2$ , which, as here shown, are formed of shouldered rings screwed into circular shoulders  $a^3$   $a^4$ , formed in the body of the valve-casing. A bonnet  $a$  is comprised in the valve-casing. It extends transversely from the body of the valve-casing, and, as shown, it is composed of two sections, one of which is integral with the body of the valve-casing and the other of which is removably secured thereto by bolts.

$B'$   $B^2$  designate two valves arranged back to back and adapted to coact with the two valve-seats  $b'$   $b^2$  for closing the passage through the body of the valve-casing. When this passage is to be opened, the valves are moved into the bonnet. As here shown, they are shouldered and provided with face-rings  $b$  for coacting with the valve-seats  $b'$   $b^2$ .

In the body of the valve-casing opposite its bonnet are stops  $a^5$   $a^6$  for limiting the movement of the valves  $B'$   $B^2$  away from the bonnet. Not only do the valves have a movement from the body of the valve-casing into its bonnet and from the latter into the former, but they also have a movement away from each other in order to press them against or

release them from pressure upon the valve-seats.

C designates a yoke comprising a nut  $c$  and two arms  $c'$   $c^2$ , extending therefrom and terminating in two reversely-extending fingers or projections  $c^3$   $c^4$ . There may be a cross-bar  $c^5$  intermediate the lower ends of the arms, and if this is used it will have a circular hole through it.

It will be seen by reference to Fig. 4 that the backs of the valves are provided with ribs  $b^3$ , which are mainly circular, but which comprise two parallel straight portions  $b^4$   $b^5$  and two straight portions  $b^6$   $b^7$ . The fingers or projections  $c^3$   $c^4$  are opposite the straight portions  $b^4$   $b^5$  of the valves  $B'$   $B^2$ . These straight portions  $b^4$   $b^5$  are recessed, so that they have shoulders  $b^8$   $b^9$  at the top and bottom. The fingers or projections  $c^3$   $c^4$  of the yoke C coact with the shoulders  $b^8$ , so as to be free to impart movement to the valves in one direction for drawing them into the bonnet from the body of the valve-casing. Preferably there will be shoulders  $c^6$ , extending transversely to the fingers or projections  $c^3$   $c^4$ , to bear against the sides of the straight portions  $b^4$   $b^5$  on the backs of the valves. As here shown, the arms  $c'$   $c^2$  of the yoke are provided upon opposite sides with ribs  $c^7$ , and these work in recesses extending through the ribs between the curved portion  $b^3$  and the straight portions  $b^6$   $b^7$ . Any rotary motion of the valves relatively to the yoke will be precluded by the engagement of the yoke therewith in the manner just described; but there may be a sliding movement between the valves and the yoke in the direction of the length of the yoke. To prevent any movement of the valves edgewise in a direction transversely to the length of the yoke, they will preferably be provided with lugs  $b^{10}$  for bearing against the sides of the valve-casing. Between the straight rib portions  $b^6$   $b^7$  a nut D is arranged. On opposite sides of the yoke are pairs of inclines  $c^8$   $c^9$ , those of each pair converging away from the nut of the yoke. Opposite these pairs of inclines  $c^8$   $c^9$  the backs of the valves are provided with pairs of inclines  $b^{11}$   $b^{12}$ . When the relative movement between the yoke and the valves occurs, the inclines of the yoke coact with the inclines of the valves to force the



valves farther away from each other or allow them to come nearer together.

With the nut of the yoke C and with the nut D coacts a screw E, having a bearing *e* and a projecting shank *e'*, that passes through a stuffing-box *a'*, with which the end of the bonnet is provided.

In order to make clear the operation of the parts, I will assume them to be in the positions illustrated in Fig. 1, where it will be seen that the screw E is in engagement with the nut of the yoke C, but out of engagement with the nut D. If the valves are to be raised into the bonnet, the first part of the rotation of the screw E in the proper direction will raise the yoke C without raising the valves. Thus the inclines of the yoke will be moved upwardly away from the inclines upon the backs of the valves, so as to relieve the valves of pressure by permitting them to move toward each other. This independent movement of the yoke will bring the tops of its fingers or projections *c*<sup>3</sup> *c*<sup>4</sup> against the shoulders *b*<sup>3</sup> at the tops of the straight portions *b*<sup>4</sup> of the ribs upon the backs of the valves, and afterward the valves will be raised with the yoke, so that they will carry up the nut D, that is engaged directly with them, to a point where it may engage with the screw E. Afterward the nut of the yoke and the nut D will maintain their relative positions upon the screw, and all the parts will move up without changed relations. A reverse movement of the screw E will lower the nut of the yoke C and the nut D correspondingly, thereby preserving the relations of the parts until the nut D is disengaged from the screw and the valves descend upon the stops *a*<sup>5</sup> *a*<sup>6</sup> in the body of the valve-casing. The continued movement of the screw in the same direction will lower the yoke after the seating of the valves upon the stops, and this independent movement of the yoke will cause its inclines to coact with the inclines upon the backs of the valves in such manner as to force the valves away from each other and against their seats *b'* *b*<sup>2</sup>.

It will be seen that my improvement involves means coacting directly with the valves for shifting them from one position to another and in such manner that at a certain time these means are connected and at another time disconnected from the valves and that it also comprises other means capable of movement independently of the valves for

causing them to coact with the valve-seats or permit them to move away from the valve-seats.

The valve-casing and the valves may advantageously be made of iron and the valve-seats, the face-rings of the valves, the yoke, and the screw of brass or like metal.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a valve, of a nut connected thereto, a screw capable of being engaged with and disengaged from said nut for giving movement to the valve in one direction, and another nut engaging with the same screw and operating means whereby the valve may be forced to its seat, substantially as specified.

2. The combination of two valves arranged back to back and having inclines upon their backs, a part provided with inclines coacting with those of the valves, and comprising a nut, a screw engaging with said nut, and another nut connected with the valves and capable of engaging with said screw, substantially as specified.

3. The combination with two valves arranged back to back, a nut carried by said valves, means operating said nut for moving it so that the valves will be moved from one position to another, a device fitted between said valves for forcing them apart and permitting them to come together, said device being operated independently of the nut and said device being also adapted to move the valves from one position to another, substantially as described.

4. The combination with two valves arranged back to back, a yoke fitted between said valves and adapted when moved in one direction to coact with the valves to force them apart, and when moved in another direction to permit them to come together and to raise them, means for moving said yoke, and means carried by the valves for preserving the relative positions of the said yoke and valves when they are moved from one position to another, and before they are forced apart, substantially as described.

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

ANTHONY P. SMITH.

Witnesses:

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GEO. E. CRUSE.