

(No Model.)

S. HAIGH.  
VALVE.

No. 599,059.

Patented Feb. 15, 1898.

Fig- 1-

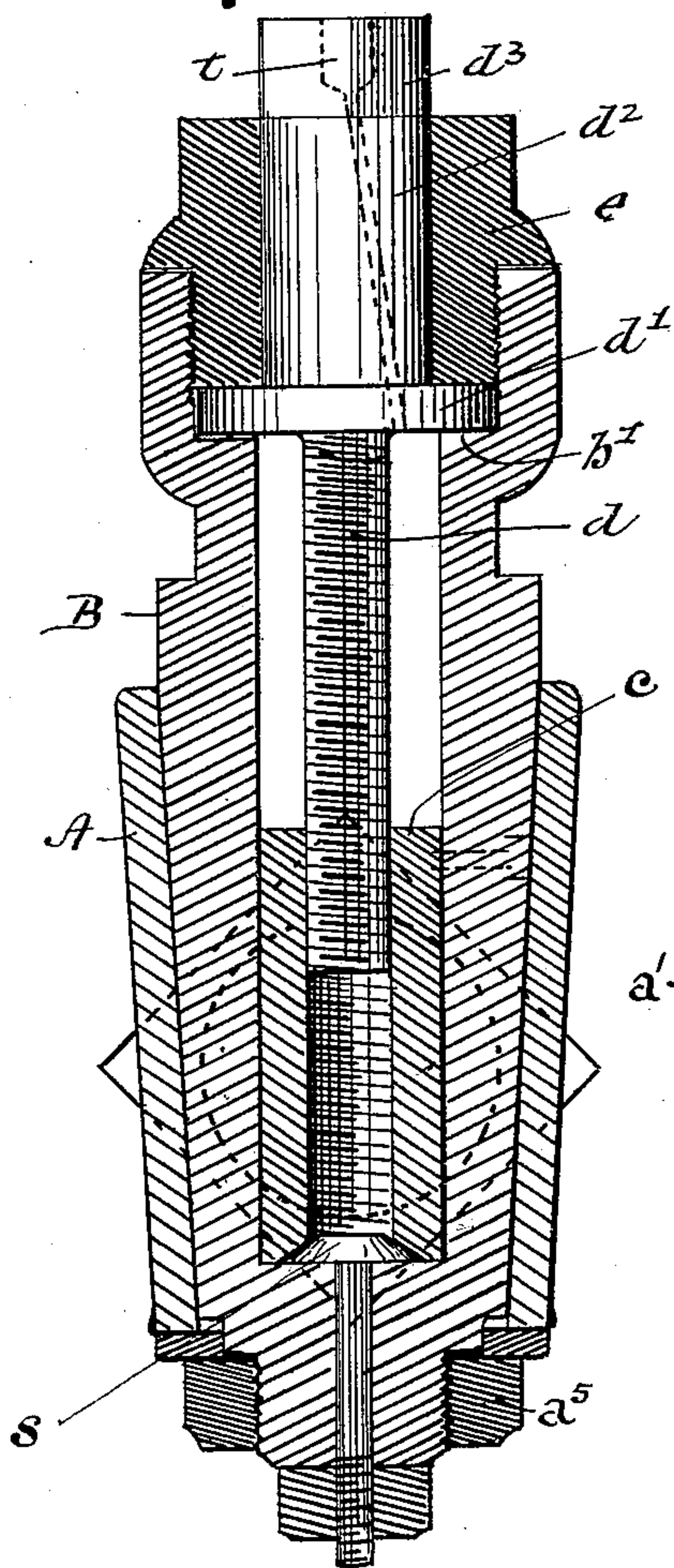


Fig- 2-

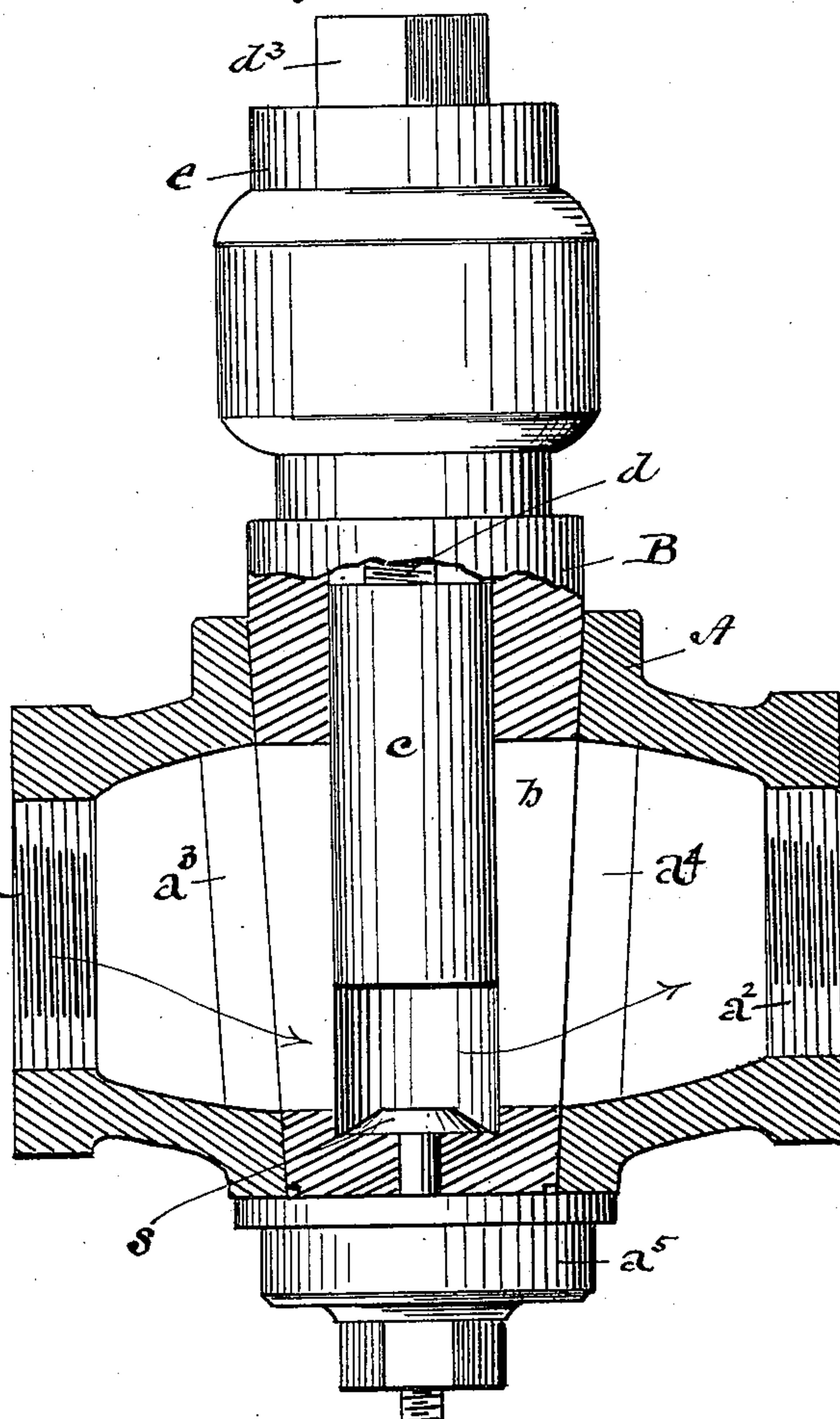
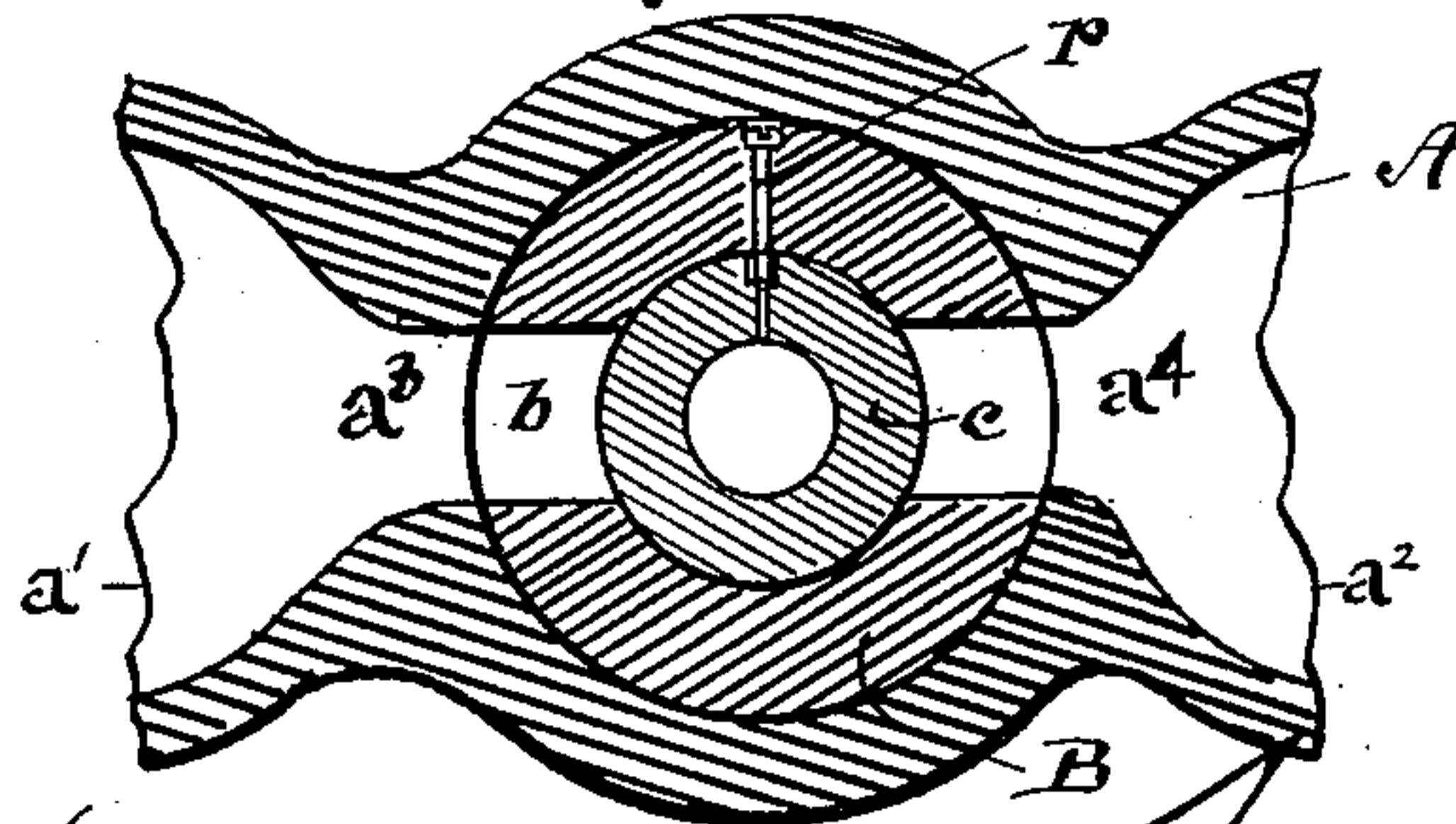


Fig- 3-



Witnesses:

Herbert J. Allouf  
Friedrichshagen

Samuel Haigh  
Inventor  
By L. M. Rosea Atty.



# UNITED STATES PATENT OFFICE.

SAMUEL HAIGH, OF CINCINNATI, OHIO.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 599,059, dated February 15, 1898.

Application filed March 29, 1897. Serial No. 629,742. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL HAIGH, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Valves, of which the following is a specification.

My invention relates to stop-cocks on valves having a laterally-perforated plug rotated within a casing having lead and discharge openings coinciding therewith, its object being to improve the efficiency of such valves and enhance their durability in situations where they are subject to excessive wear—as, for example, where used as “blow-off” cocks for steam-boilers.

To this end the invention consists in the improved stop-cock constructed as hereinafter set forth.

Mechanism embodying my invention is illustrated in the accompanying drawings, in which—

Figure 1 is an axial sectional elevation of my improved valve, taken across the line of transmission; Fig. 2, a similar section taken in the line of transmission, and Fig. 3 a horizontal cross-section in the axis of the transmission-passage.

Referring now to the drawings, A designates the outer casing of a cock or valve having transmission-passages  $a'$   $a^2$  leading to and from the same. Within said casing is a rotating plug or bushing B, fitted to a slightly-conical seat and provided with a vertically-elongated rectangular passage  $b$ , registering with similarly-formed ports  $a^3$   $a^4$  at opposite sides of the casing A. The plug is fitted at its lower terminus with a nut  $a^5$  and the usual washers, &c., to hold it to its seat, and as thus far described the parts do not materially differ from the ordinary construction, except that the plug is a little longer than is usual.

From the top of the plug downward to a point below the bottom of the lateral passage  $b$  the plug is provided with an axial circular aperture or recess of somewhat greater diameter than the width of the passage  $b$ . The upper end of said recess is countersunk, forming an annular shoulder  $b'$ . Within the axial recess thus formed is fitted a piston or plunger  $c$ , of sufficient length to completely fill said recess across the zone of the passage  $b$

and adapted to slide up and down in said recess to open more or less of the passage through the plug B as a gate-valve. The piston or plunger  $c$  is also axially perforated and interiorly threaded for the reception of a screw-stem  $d$ , which is enlarged above into a flange  $d'$ , projecting over and upon the shoulder  $b'$  and beyond this into a cylindrical head  $d^2$ , with a squared terminal  $d^3$ . The stem  $c$  is held in place by an annular cap or plug  $e$ , fitting the cylindrical head  $d^2$  exteriorly and itself threaded into the countersunk enlargement of the plug and bearing against the flange  $d'$ , which is thus held against the shoulder  $b'$  and permitted to rotate freely without vertical movement.

The plunger  $c$  is prevented from rotating by a slot-and-feather engagement with a pin  $p$ , projecting at the inside of the plug B, and being so prevented from rotation is moved up and down by the rotation of the screw-stem  $d$ . A gasket or packing-washer upon the shoulder  $b'$  prevents leakage.

As thus constructed, the parts are fully operative. When the plunger  $c$  is raised, the passage is beneath it to the extent of its elevation. The plug B when opened is always opened to the full extent, so that its passage  $b$  stands in line with the ports of passages  $a'$   $a^2$ . The degree of opening, however, is regulated by the plunger  $c$ . Thus the passages stand in line and all wear is equal and does not tend to enlarge the ports by wear at the edges. The only “cross-wear” is taken at the bottom of the plunger  $c$ , which does not affect the general action or lessen its efficiency.

In addition to these features and to insure tight seating of the piston-valve  $c$  I prefer to construct it as follows: The piston on  $c$  is completely divided longitudinally at one side, as shown in Fig. 3, and may thus fit in its inclosing recess or chamber in a state of slight compression, thus insuring a tight seating. At the bottom it may also be coned interiorly, as shown in Fig. 1, and in reaching its lowest position seats upon a conical “spreader”  $s$ , by which, should the parts become worn by use, it is expanded to a tighter fit, effectually preventing any possible leakage. The spreader may be, as shown, a conical-headed bolt inserted through the bottom of the plug.



An oiling-passage  $t$  may be provided through the head  $d^2$ , inclined outwardly of the screw-stem  $d$ , passing through the zone of the flange  $d'$ , as shown in Fig. 1 in dotted lines.

5 While I have shown a rotating screw-stem as a means of raising and lowering the piston  $c$ , I do not confine myself to such means exclusively.

I claim as my invention and desire to secure by Letters Patent of the United States—

10 1. In a valve of the character indicated the combination of a casing; a rotating plug-valve having a relatively narrow and vertically-extended opening through the same, coinciding  
15 with the lead and discharge openings of the casing; a supplemental non-rotating piston-valve seated in an axial perforation of the plug-valve intersecting said opening and of greater diameter than the width of the same,  
20 and a rotating stem threaded axially in said piston-valve and extended outwardly through

the plug-valve and held against vertical movement, substantially as set forth.

2. In a rotating plug-valve of the character indicated the combination of the later- 25 ally and vertically perforated conical turning plug, the vertically-adjustable non-rotating piston-plunger seated in the axial and controlling the lateral perforation of the conical plug, the threaded screw-stem seated in said 30 plunger, and provided with a flange seated upon a shoulder of the vertical perforation of the plug, and the stuffing-box seated in the perforation of the plug and upon the flange 35 of the stem, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL HAIGH.

Witnesses:

L. M. HOSEA,  
HERBERT J. ALLSUP.