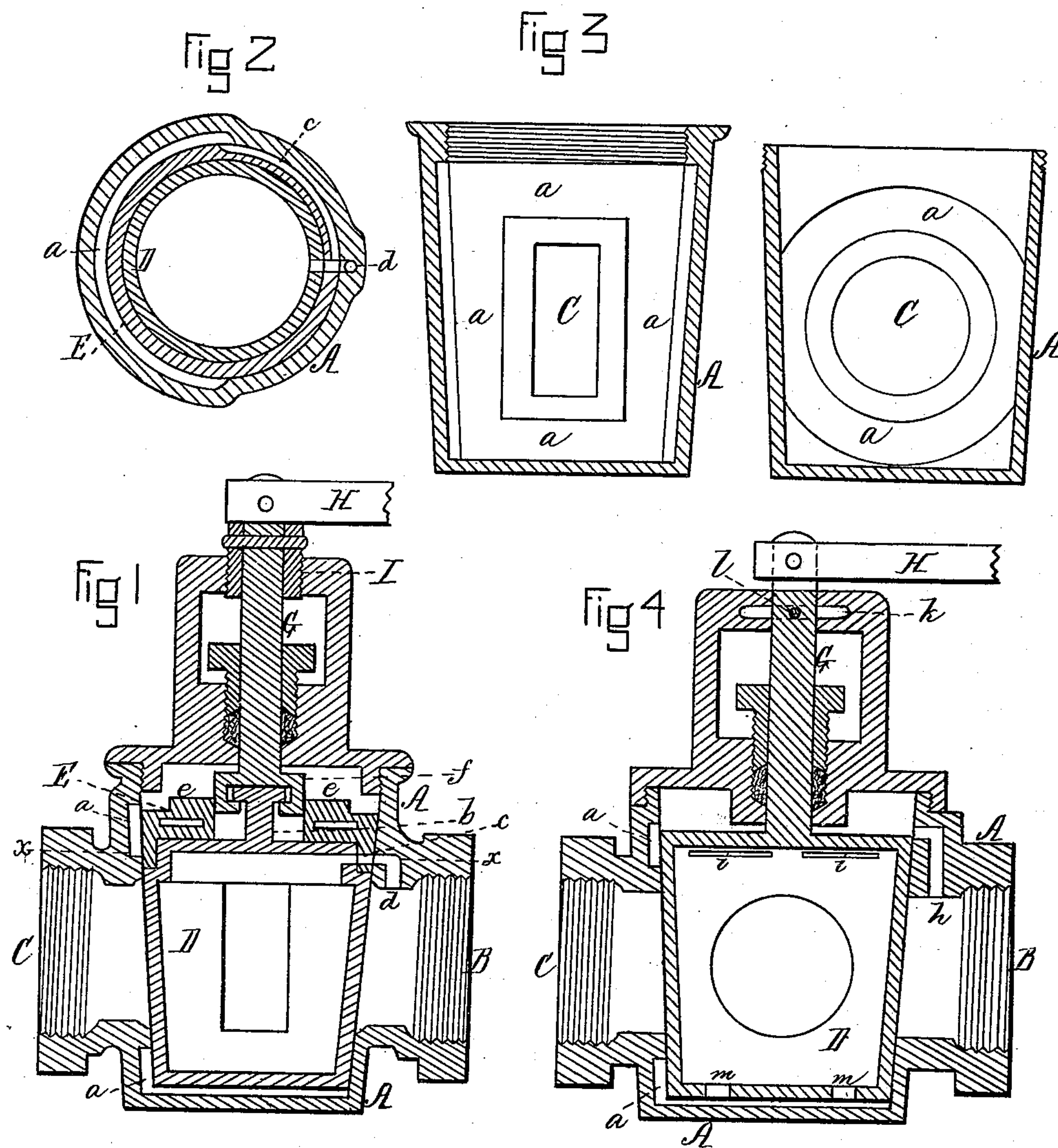


(No Model.)

W. J. CAMBRIDGE.  
VALVE.

No. 330,676.

Patented Nov. 17, 1885.



WITNESSES  
*R. A. Young.*  
*H. A. Deaton*

INVENTOR  
*Wm. J. Cambridge*



# UNITED STATES PATENT OFFICE.

WILLIAM J. CAMBRIDGE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO  
JOHN C. CHAPMAN, OF SAME PLACE.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 330,676, dated November 17, 1885.

Application filed January 12, 1885. Serial No. 152,678. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. CAMBRIDGE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain  
5 Improvements in Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in  
10 which—

Figure 1 is a longitudinal vertical section through a valve with my improvements applied thereto. Fig. 2 is a transverse section on the line *xx* of Fig. 1. Fig. 3 is a vertical  
15 section through the shell of the valve. Fig. 4 is a section representing a modified form of valve.

The object of this invention is to produce a valve that can be easily operated while under  
20 heavy pressure; and it consists in certain details of construction and combinations of parts, as will be hereinafter more fully set forth and specifically claimed.

In the drawings, A represents the shell or  
25 outer casing of the valve, which is provided with the usual inlet and outlet apertures, B C. Around a portion of the interior of the shell A, opposite to the inlet-aperture B, is a recess or chamber, *a*, for a purpose presently to be  
30 explained.

D is the main valve, which is made hollow, and is provided with a T-shaped projection, *b*, on its upper side, cast integral therewith.

E is an auxiliary valve, which fits over the  
35 top of the main valve D, which is turned down to receive it, and turns loosely thereon, and upon the outside of this auxiliary valve is a groove, *c*, extending quarter-way round the same, one end of this groove communicating with a port or aperture, *d*, in the  
40 upper side of the inlet-aperture B, while the other end of this groove *c* communicates with the chamber *a* in the shell of the valve. Upon the upper side of the auxiliary valve E  
45 are two projections, *e*, between which fit snugly the enlarged lower end, *f*, of the stem or rod G, which passes up through a suitable stuffing-box, and is provided at its upper end

with a handle, H, by means of which the valves E D are operated to let on or shut off  
50 the supply of water or steam. Within the enlarged lower end, *f*, of the stem G loosely fits the T-shaped projection *b* of the main valve D, and by means of which it is turned. Around the stem or rod G is secured an  
55 adjusting-screw, I, by means of which the valve can be raised or lowered, and it will thus be seen that by this construction when the valve is to be opened it will slightly raise the same, and when closed it will lower the  
60 same and force it tightly in place, this up-and-down movement serving to wear the surfaces even and uniform, as desired.

The water or steam under pressure flows through the inlet-opening B, through the port  
65 *d*, into the groove *c*, whence it enters the chamber *a* upon the rear side of the valve and fills the same and also the chambers at the top and bottom of the valve, for the purpose of equalizing the pressure upon all sides  
70 of the same, to enable it to be operated with the least expenditure of power; and when it is desired to open the valve D to allow an uninterrupted flow from the inlet to the outlet aperture the auxiliary valve E is first  
75 turned, owing to the enlarged lower end, *f*, of the stem acting directly on the projections *e*, thus closing the port *d* and shutting off communication with the chamber *a* at the  
80 rear of the valve before the main valve commences to move on account of the play allowed between the T-shaped projection *b* on the top of the main valve and the interior of the enlarged portion *f* of the stem G. The inlet-aperture in the main valve D has a  
85 slight lead over the outlet-aperture.

In Fig. 4 is represented a valve of a slightly different construction, in that no auxiliary valve is employed, the water or steam entering ports *h i*, leading into the interior of the  
90 valve, and passing through another port, *m*, in the valve, opening into the chamber *a* for the purpose of equalizing the pressure and balancing the valve, and in lieu of the adjusting-screw I a slot, *k*, and pin *l* is provided to  
95 raise and lower the valve.

What I claim as my invention is as follows:

1. The shell or casing A, with its chamber *a*, in combination with a valve provided with suitable ports, substantially as and for the purpose set forth.

2. The shell or casing A, with its chamber *a*, the valve D, and auxiliary valve E, with its port *c*, in combination with the stem G, for

operating the valves, substantially as and for the purpose described.

Boston, January 10, 1885.

WM. J. CAMBRIDGE.

In presence of—

GEO. A. MERRILL,  
JOHN F. MERRILL.