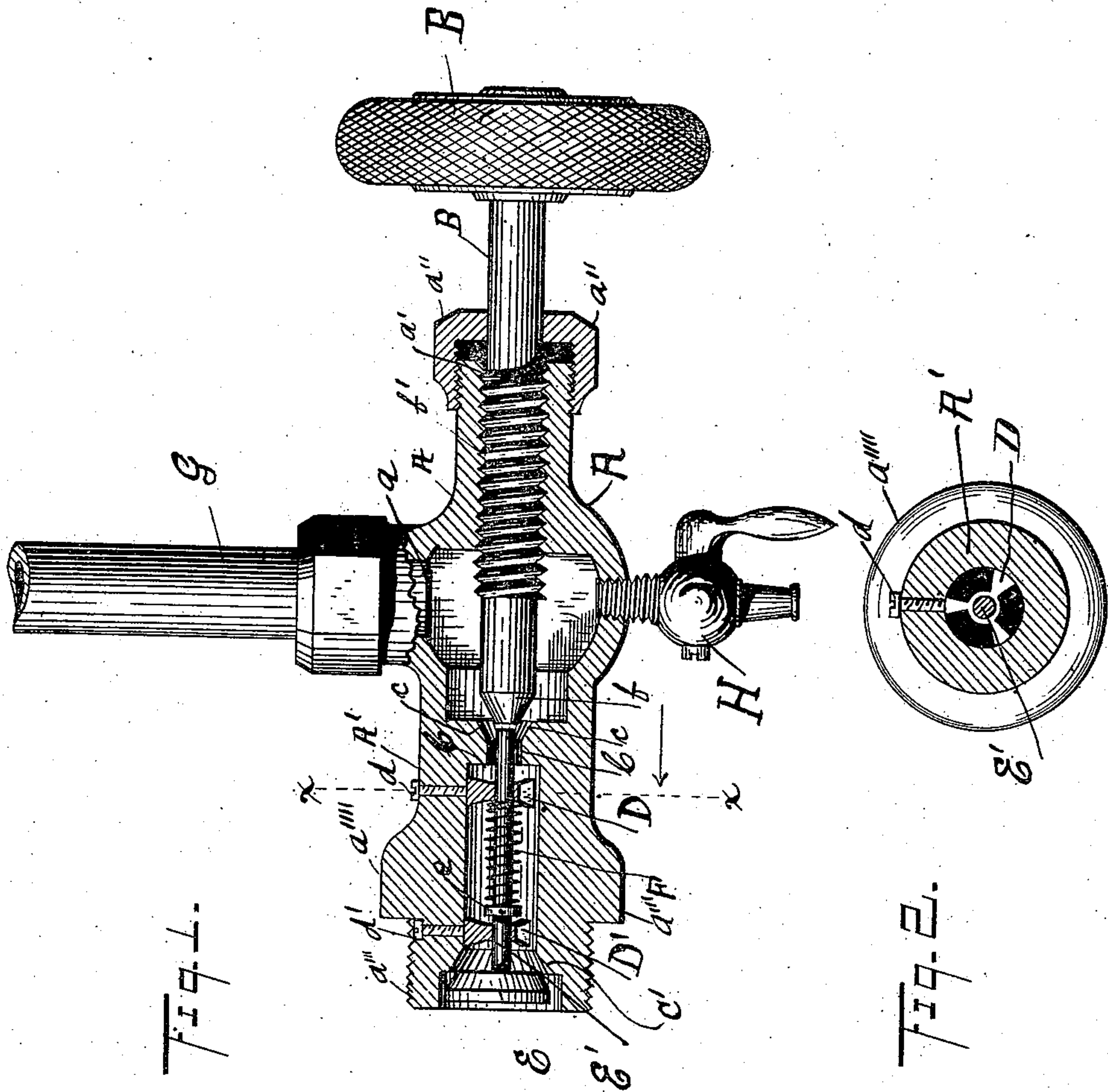


(No Model.)

F. J. STULP.  
WATER GAGE.

No. 501,544.

Patented July 18, 1893.



WITNESSES

*Belle S. Lowrie,*  
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# UNITED STATES PATENT OFFICE.

FRED J. STULP, OF MUSKEGON, MICHIGAN.

## WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 501,544, dated July 18, 1893.

Application filed April 7, 1892. Serial No. 428,257. (No model.)

*To all whom it may concern:*

Be it known that I, FRED J. STULP, a resident of Muskegon, in the county of Muskegon, State of Michigan, have invented certain new and useful Improvements in Water-Gages; and I do hereby declare the following, with the accompanying drawings, to be a specification of the same.

My invention relates generally to improvements in the valves of water-gages used upon steam boilers, and especially to the improvement of the water-gage covered by my United States Patent No. 469,336, dated February 23, 1892.

The object of my present invention is to cheapen the manufacture and to simplify the construction of the water-gage covered by my said patent, and produce a valve which will automatically close whenever the glass of the water-gage breaks, and which can be opened when desired.

My invention consists in the details of construction and combination of parts as shown in the drawings, described herein, and defined in the claim.

In the drawings, Figure 1 is a vertical section of my valve with a broken section of the gage-glass attached. Fig. 2 is a cross-section of Fig. 1 on the line  $x x$ .

I show only one valve of the water-gage, as they are both alike, except that the lower one (shown in the drawings) has a blow-cock attached. The valve consists of a valve-case A having a horizontal opening through it, and also a vertical opening  $a$  from the horizontal opening. A main-valve stem B having the valve  $b$  enters the horizontal opening, and is provided with a thread  $b'$  which has its female counterpart  $a'$  in the valve-case A. The valve is made steam tight around the main valve-stem by means of a nut  $a''$  and packing, as in water-gages heretofore in use; and the main valve-stem B is turned by means of a hand wheel B' attached to it in the usual manner.

Upon the horizontally extended part A' of the valve-case is formed a thread  $a'''$  to screw into the boiler sheet, and  $a''''$  is a shoulder which fits against the boiler sheet. Within the horizontal part A' is a vertical wall or diaphragm C having a central opening adapted to form a seat  $c$  for the valve  $b$ . Within

the opening of said part A' are two removable spiders, D D' (shown with three legs), which are bored centrally and form boxes for the check-valve-stem E'. These spiders are held in place by means of set-screws  $d d'$ , as illustrated.

The check-valve E, formed upon or attached to the outer end of the check-valve-stem E', is adapted to seat against the valve-seat  $c'$  formed within the inner end of the valve-case.

A collar  $e$  is fixed upon the check-valve-stem E' inside the spider D', to keep said stem from working out or being forced out of the case. A coil spring F, having one end bearing against the valve-box D and the opposite end bearing against the collar  $e$ , encircles the check-valve-stem E'.

Instead of the collar  $e$ , a pin or other arrangement may be adopted for a bearing for the spring F and to keep the check-valve-stem from coming out of the case.

The water-glass G connects with the vertical opening of the valve-case, and is attached to the case in the usual manner.

A blow-off cock H of any desired construction is attached to the bottom of the lower valve-case.

In the drawings, all parts of my valve are shown open, or in their normal positions when the water-gage is in ordinary use. The valve-stems B of both valves are withdrawn, and at such times the check-valves E remain away from their seats, as the pressure upon both sides of the valves is substantially the same; but should the glass G break, the inward pressure upon these valves is relieved and the pressure upon them from the boiler will close said valves and prevent the escape of water and steam from the boiler. The springs F will sustain the valves E away from their seats when the pressure upon both sides of the valves is equalized. When the glass G breaks and the valves E have been closed as described, and a new glass shall have been put into the gage, the check-valves are opened by means of the main valve-stems B, which are turned in till the valves  $b$  close the openings through the walls C. The stems B are then withdrawn, when the gage is again open for use.

When it is desired to blow through the gage, the main valve-stems B are turned in far enough to strike the check-valve-stems E' and

hold the valves E from their seats, but not far enough to close the opening through the valve-case. The blow-off cock H is then opened. While blowing through the gage, the stems  
5 E' will rest against the stems B. Should it be desired at any time to positively close the gage, it may be done by turning the main valve-stems B of both the upper and lower valves till the valves *b* are close against their  
10 seats *c*.

It will be seen that the construction of valve shown and described herein avoids the use of the removable tube or shell shown in my patent, before mentioned.

15 What I claim as my invention is—  
In a water-gage, the valve-case A having

the projecting part A', the main valve-stem B having the valve *b*, the wall C having a central opening and forming a seat *c* for the valve *b*, the seat *c'* at the outer end of the opening  
20 in the projecting part A', a check-valve E adapted to close against the seat *c'*, a stem E' to which the valve E is attached, and removable spiders or boxes D D', the said check-valve-stem E' being supported and guided in  
25 said spiders, and screws *d*, *d'* to hold the spiders D, D' substantially as shown and described.

FRED J. STULP.

Witnesses:

HENRY BAKER,  
EDWARD FLEISCHER.