

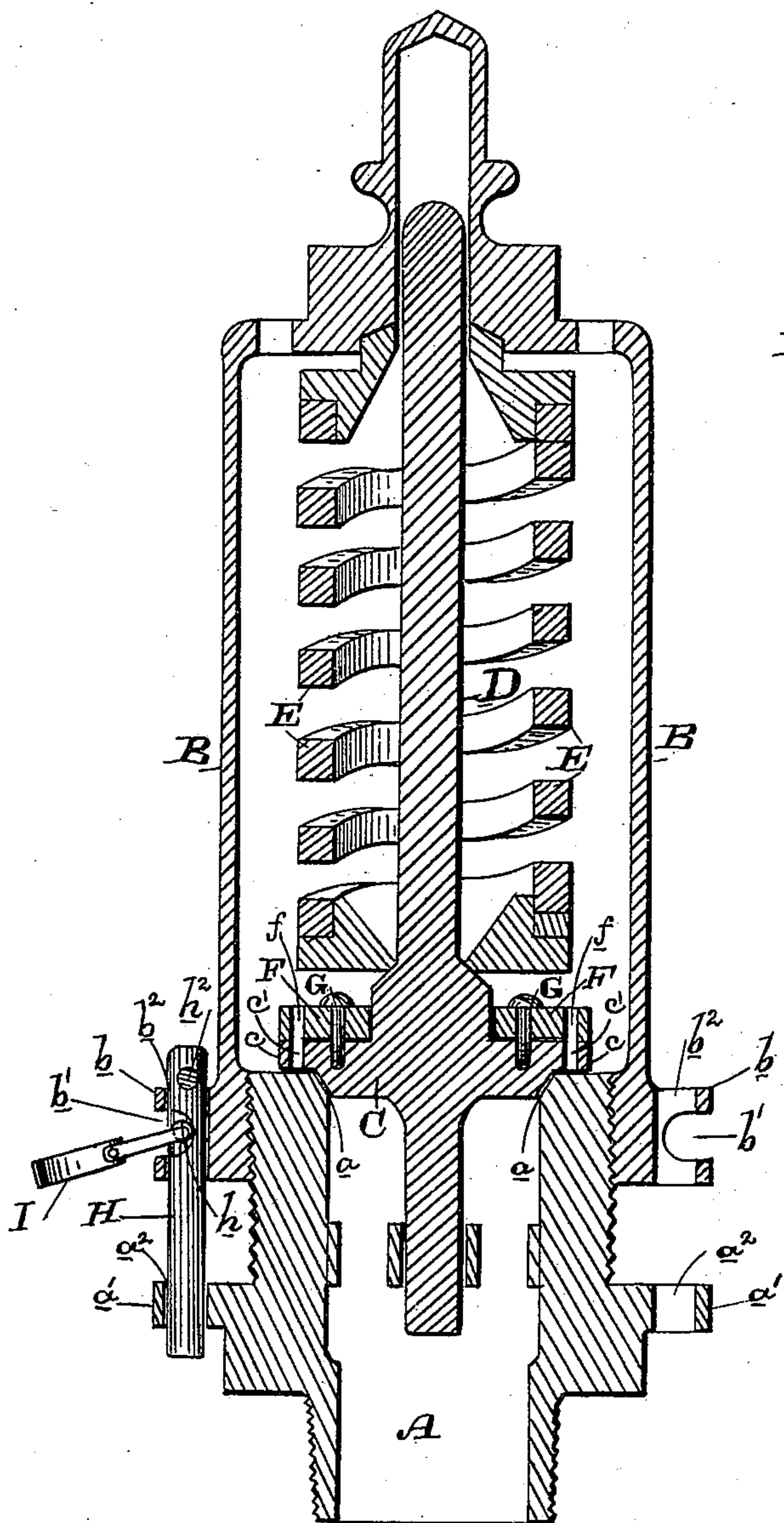
(No Model.)

F. A. MILLER.  
POP SAFETY VALVE.

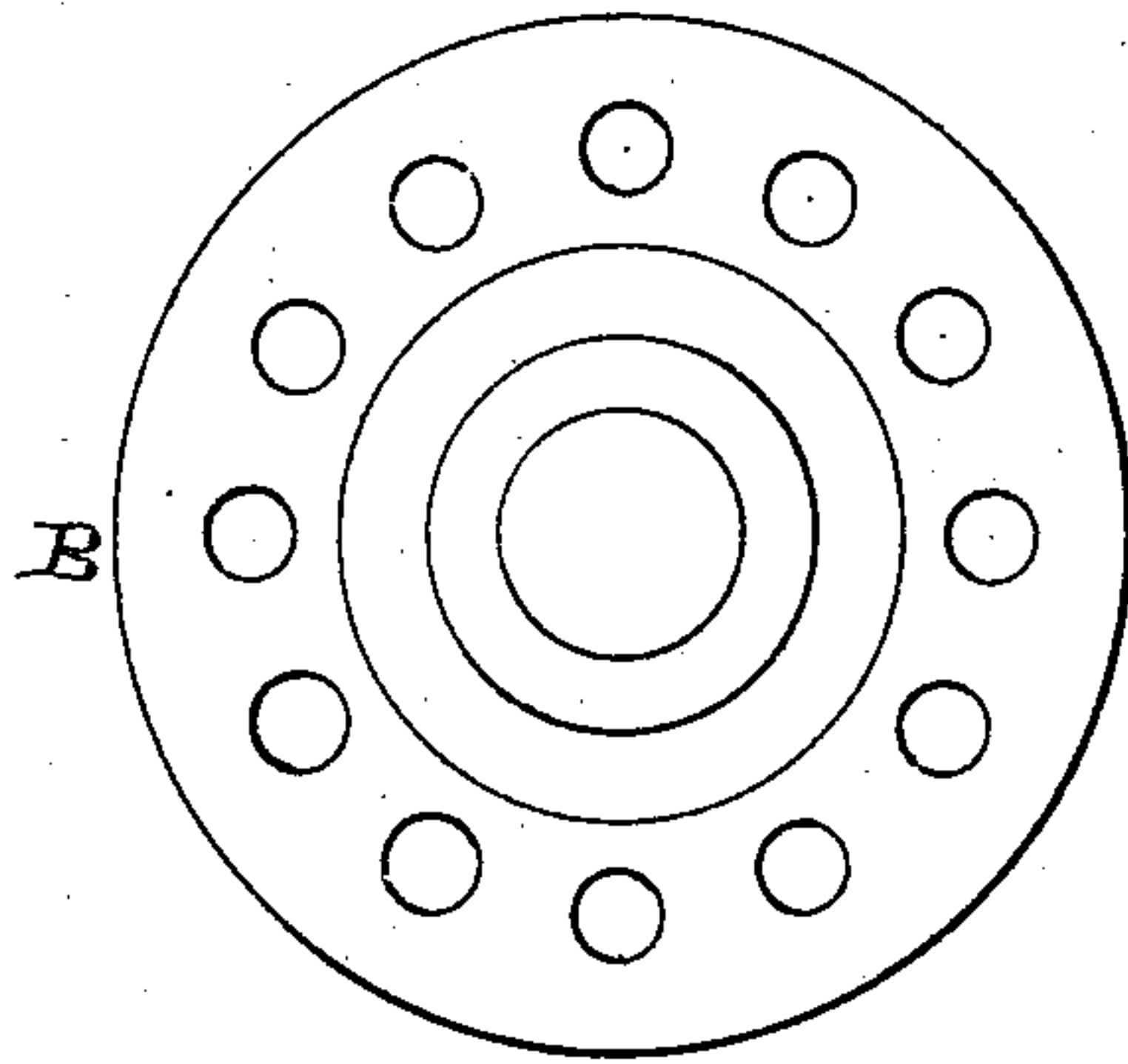
No. 395,911.

Patented Jan. 8, 1889.

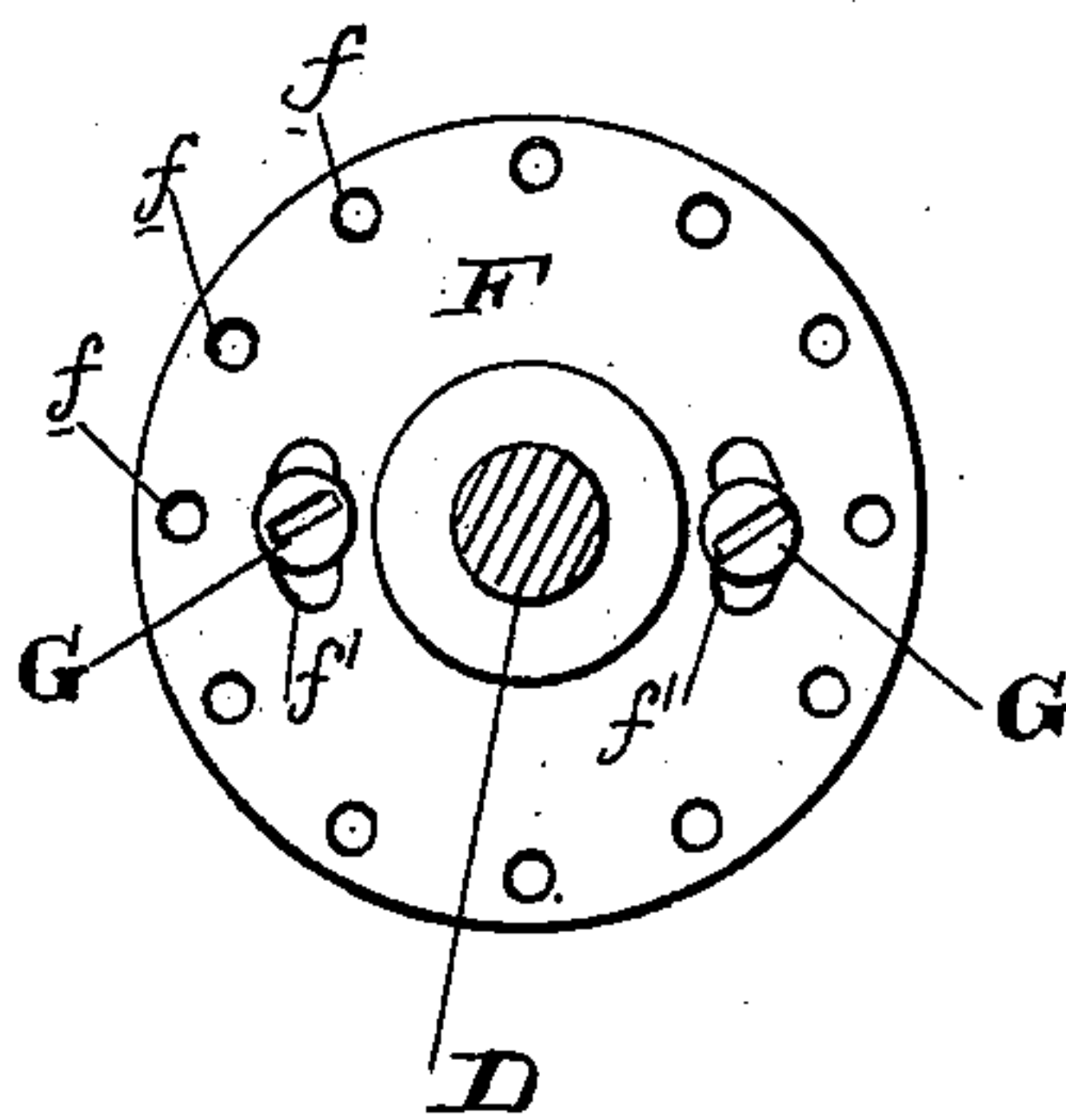
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses,  
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# UNITED STATES PATENT OFFICE.

FREDERICK A. MILLER, OF OAKLAND, CALIFORNIA.

## POP SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 395,911, dated January 8, 1889.

Application filed August 15, 1888. Serial No. 282,796. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK A. MILLER, of the city of Oakland, Alameda county, State of California, have invented an Improvement in Pop Safety-Valves; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of safety-valves commonly known as "pop-valves," in which the excess of steam is allowed to escape suddenly and the valve returns to its seat immediately; and my invention consists in the constructions and combinations of devices which I shall hereinafter fully describe and claim.

The object of my invention is to accurately and conveniently control the amount of steam which is allowed to escape, and also to prevent any improper adjustment.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical section of a pop-valve, showing my improvements. Fig. 2 is a plan of the top of the shell B. Fig. 3 is a top view of the cap-plate F.

A is the coupling by which the device is secured to the boiler.

B is the shell screwed upon the exterior top portion of the coupling.

C is the valve within the shell, and  $a$  is the valve-seat.

D is the stem of the valve, and E is the spring encircling said stem, and by which the valve is held down to its seat. The valve C has an outer rim,  $c$ , through which are made the series of perforations  $c'$ .

F is the cap-plate on the top of the valve and encircling its hub, said plate having perforations  $f$  above the perforations  $c'$  of the valve. The cap-plate is secured to the valve by means of the screws G, which pass through elongated holes or slots  $f'$  in the plate, whereby upon loosening the screws the said plate may be moved axially, so as to bring its perforations into more or less perfect alignment or coincidence with the perforations  $c'$  of the valve.

The effect of this construction is as follows:

By moving the cap-plate so that its perforations are in perfect alignment with the perforations of the valve, whereby the full ca-

capacity of the passage through said perforations is obtained, it will be seen that the excess of steam-pressure below upon raising the said valve from its seat will be at once relieved by the escape of the steam through the fully-opened perforations of the valve and cap-plate. The pressure is therefore instantly relieved by the escape of the steam and the valve instantly returned to its seat by the pressure of the spring. By moving the cap-plate so that its perforations are brought into less perfect alignment or coincidence with the perforations of the valve a less amount of steam is allowed to escape through said perforations, and having therefore to pass around the rim of the valve the pressure will hold the valve open longer and allow more steam to escape, thereby reducing the pressure to the required degree.

In order to prevent the engineer from screwing down the shell B, so as to increase the tension of the spring, thereby preventing the valve from operating under the pressure primarily intended, I have the following lock: On the outer surface of the coupling A is formed a flange,  $a'$ , provided with a series of perforations,  $a^2$ , all around it. On the base of the shell B is formed a flange,  $b$ , provided with the groove  $b'$  and with one or more perforations,  $b^2$ .

H is a locking-bolt, which is adapted to be dropped through the perforation  $b^2$  of the flange  $b$  and through the perforation  $a^2$  of the flange  $a'$  when said perforations are brought into alignment by the turning of the shell B. In this locking-bolt is made a hole,  $h$ , which, when the bolt is dropped into place and is limited by a cross-pin,  $h^2$ , above, lies exposed within the groove  $b'$  of the flange  $b$ , and through this hole is passed the bow of a suitable padlock, I, the key of which being retained by a proper authority prevents the padlock from being removed, so that the bolt remains in position and the shell cannot be moved.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An improved safety-valve comprising the coupling and shell secured together and each provided with perforated flanges, the

flange of the shell having also the groove *b'*,  
a locking-bolt fitted in the perforations, and  
a lock secured to the pin in the said groove  
portion, a perforated valve and perforated cap-  
5 plate axially rotating thereon, and a spring  
above the valve for returning the latter to  
position, substantially as herein described.

2. In a safety-valve, the coupling and the  
shell screwed together, as described, in com-  
10 bination with the means for locking the shell,  
comprising the perforated flange on the coup-  
ling, a perforated grooved flange on the shell,

a locking-bolt passing through the perfora-  
tions of the two flanges and having a hole  
which is exposed in the groove of the shell- 15  
flange, and the lock engaging said hole, sub-  
stantially as herein described.

In witness whereof I have hereunto set my  
hand.

FREDERICK A. MILLER.

Witnesses:

S. H. NOURSE,

H. C. LEE.