

(No Model.)

J. E. DAVIS.
POP SAFETY VALVE.

No. 323,794.

Patented Aug. 4, 1885.

FIG.1.

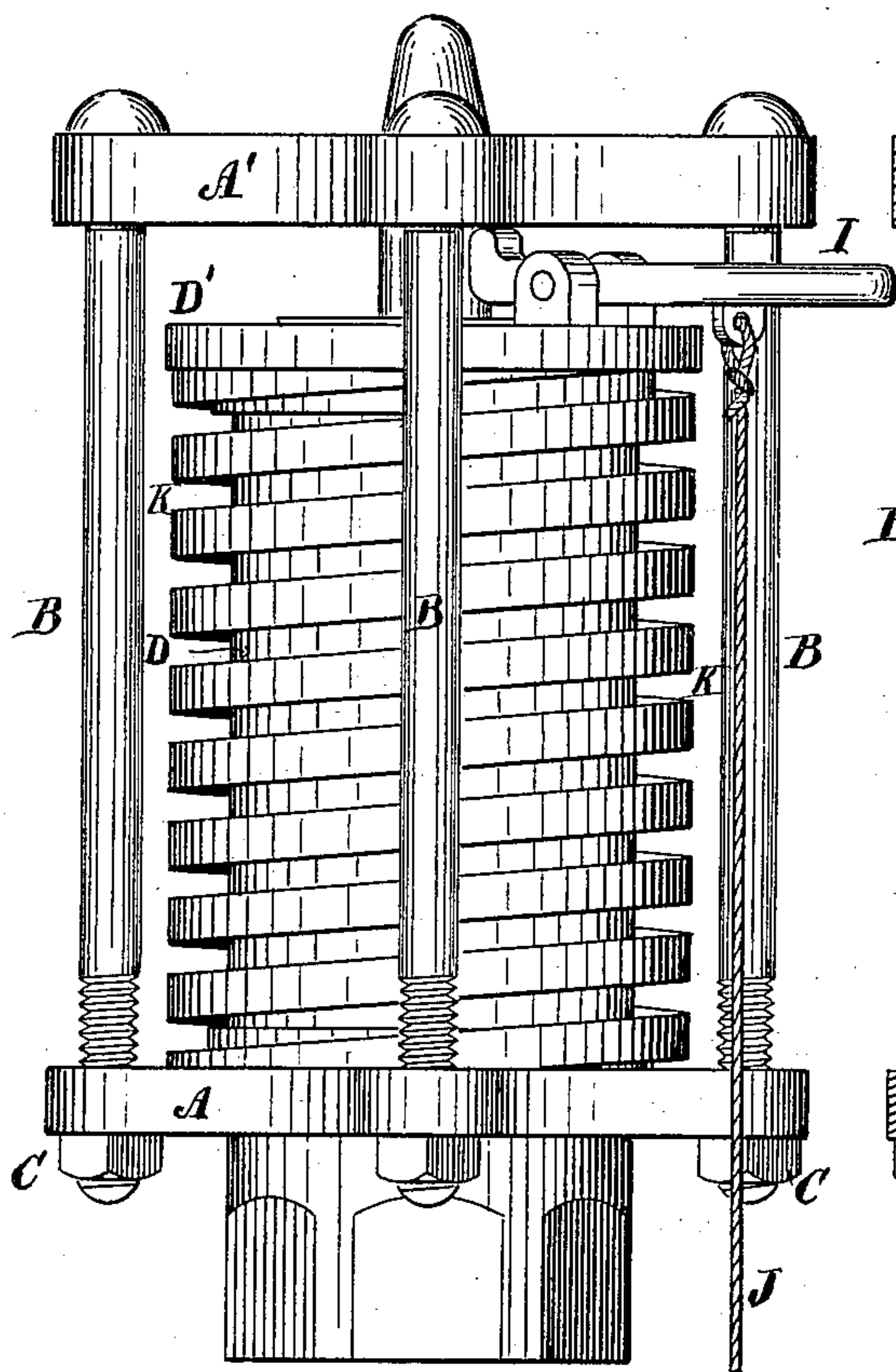


FIG. 2.

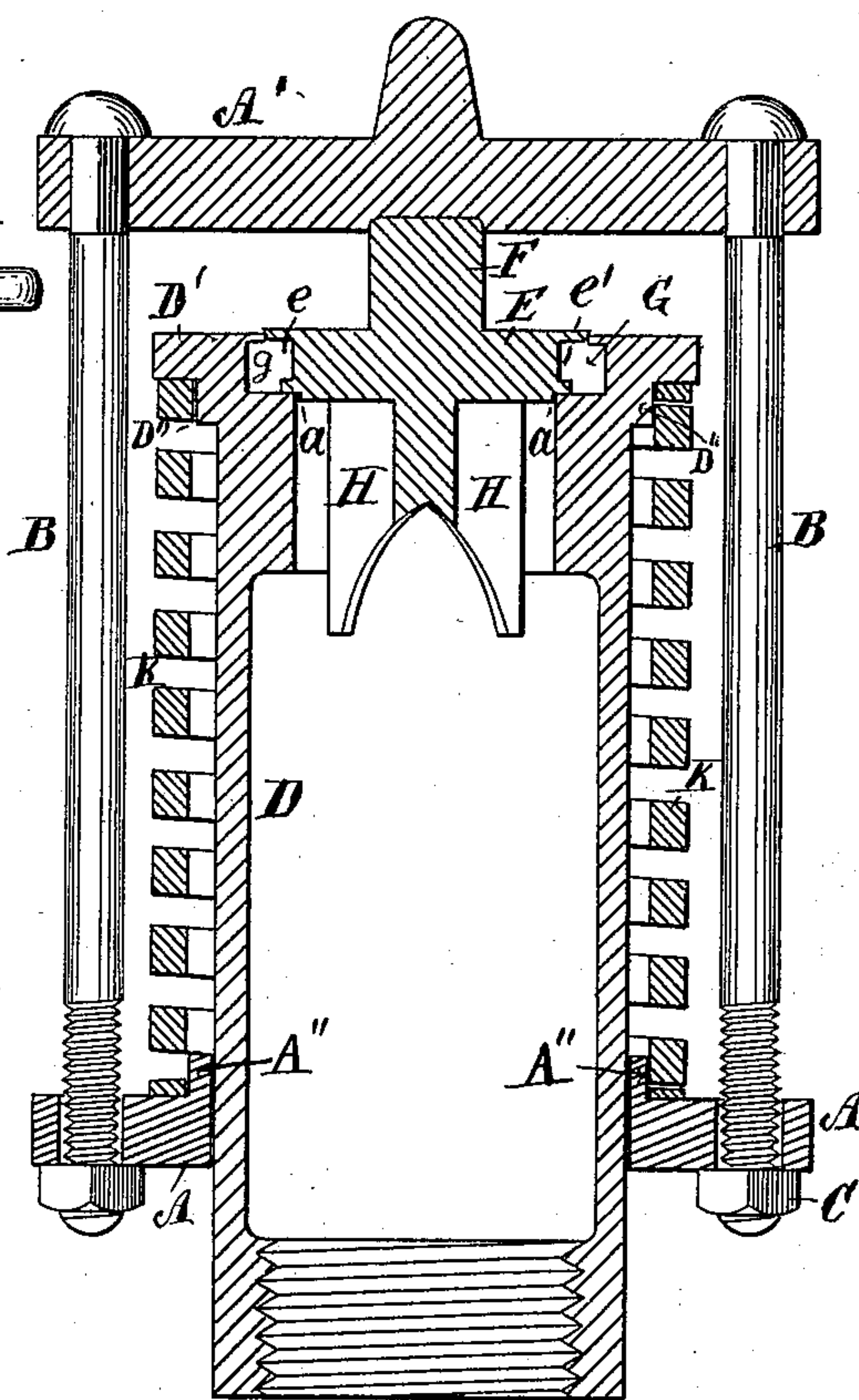


FIG. 3.

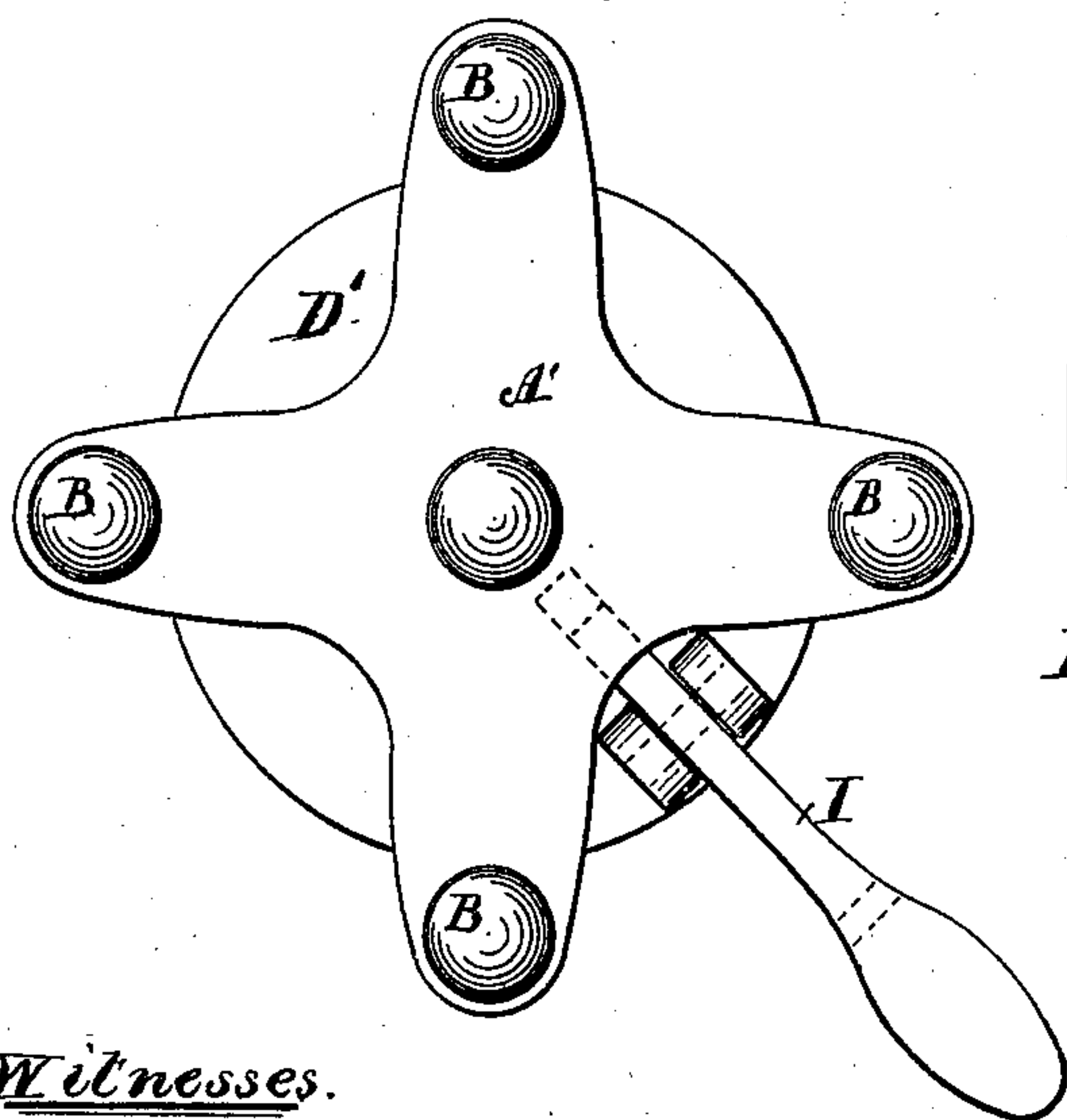
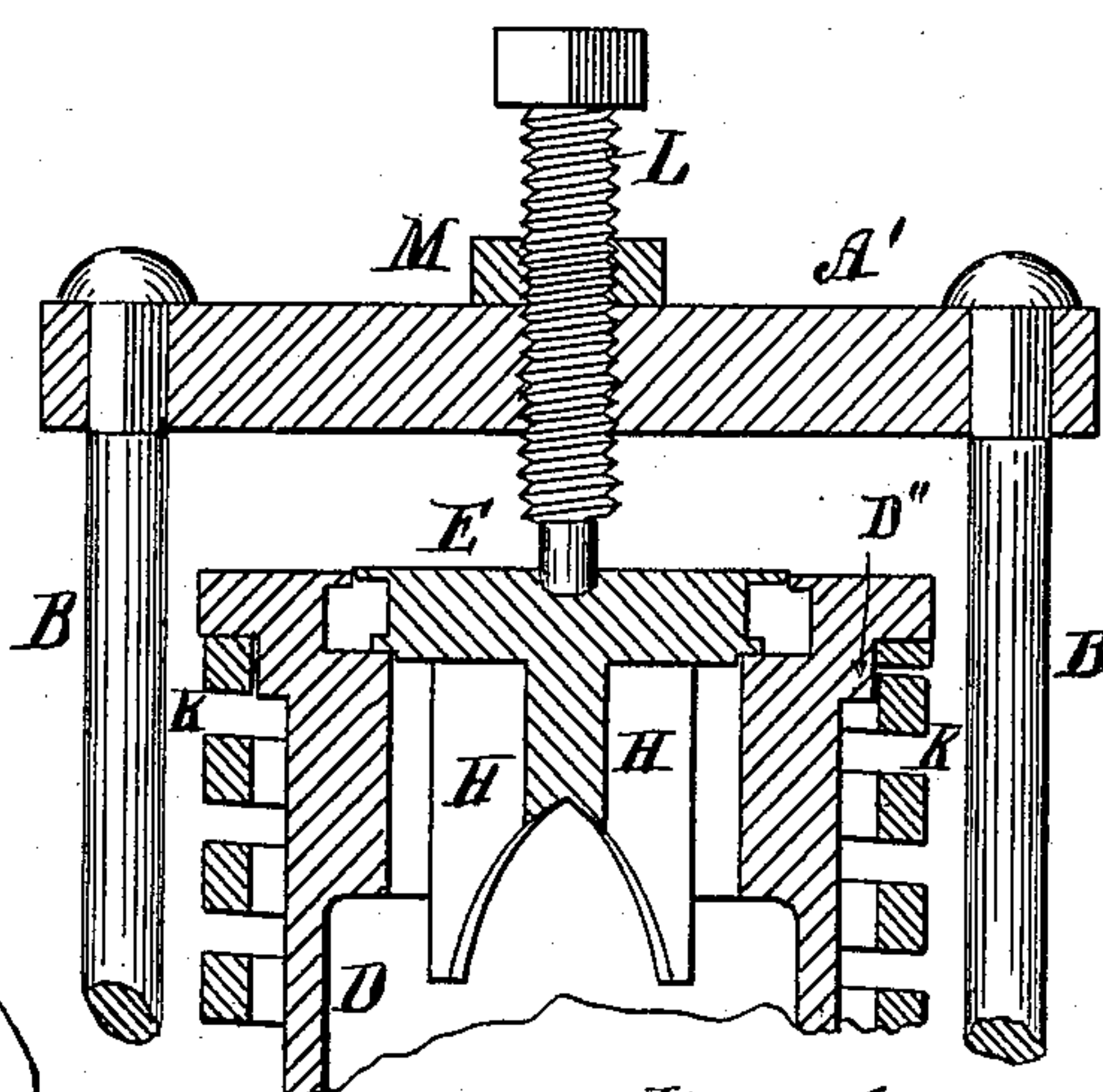


FIG. 4.



Witnesses.
H. E. Morse
C. Blanta

Inventor
Jas. E. Davis
by J. H. Adams
Attorney.

UNITED STATES PATENT OFFICE.

JAMES E. DAVIS, OF BOSTON, MASSACHUSETTS.

POP SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 323,794, dated August 4, 1885.

Application filed June 30, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. DAVIS, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Pop Safety-Valves, of which the following is a specification.

In what are known as "pop" safety-valves now in use the spring which governs the pressure is arranged on the inside of the body of the valve, or otherwise so placed that the steam comes in contact with such spring, the result of which is that the elasticity of the spring is injuriously affected, and thus interferes with the nice working of the valve. It is the object of my invention to obviate this difficulty; and to that end the invention consists in arranging the spring outside of the body of the valve, so as to be entirely free from any contact with the steam, whereby the spring maintains a uniform and constant elasticity under all circumstances.

The invention further consists in constructing the valve and the valve-body each with a recess opposite the other, thus constituting a chamber, and above the chamber or recess of the valve is a flange which fits snugly in the aperture of the top of the valve-body, so that steam in passing through the valve will enter the chamber, and then, coming in contact with the flange, will attain an additional lifting-surface, whereby the greatest possible opening for the escape of steam is at once obtained.

Referring to the accompanying drawings, Figure 1 is an elevation of a pop safety-valve embodying my invention. Fig. 2 is a vertical section of the same. Fig. 3 is a top view, and Fig. 4 is a modification.

A is a ring provided with ears for the reception of screw-bolts B; and A' is a cap or plate, also having ears for the reception of the bolts B, the bolts being secured in the ring A by the nuts C, and by means of which the spring is adjusted.

D is a cylinder, which forms the body of the valve, and is provided at its upper end with a flange, D', below which is a projection, D''.

K is a spiral spring arranged on the outside of the body D of the valve, the upper coil of the spring bearing against the under side of the flange D' and encircling the projection D'', and the lower coil of said spring bearing upon

the upper surface of the ring A and encircling a projection, A'', on the ring A. By this means the spring K is kept from contact with the body of the valve, and is prevented from being affected by the contact of the steam. The spring K is adjusted to the proper tension by means of the nuts C on the bolts B.

E is the valve, resting upon the seat *a* of the valve-body D, and provided with the stem F, fitting in the cap A'. On the periphery of the valve E is formed a recess, *e*, and in the valve-body is a corresponding recess, *g*, the two forming a chamber, G, whereby the steam is allowed a freer escape, and is relieved from choking. Above the recess *e* of the valve is a flange, *e'*, which fits closely in an opening in the top of the valve-body, the said flange affording an additional lifting-surface for the action of the steam after passing through the valve-opening into the chamber G. H H are the valve-guides.

I, Fig. 1, is a lever fulcrumed on the top of the valve-body, having its shorter arm in contact with the under side of the cap A', for the purpose of opening the valve at intervals to prevent its sticking to the seat, or to reduce the pressure, if necessary. The lever may be operated by hand above or by a rope, J, from below.

In Fig. 4 is shown a set-screw, L, passing through a check-nut, M, and through the cap A', and bearing at its lower end on the top of the valve E, for the purpose of providing an additional means of adjusting the spring K to varying pressures.

The operation is as follows: The valve-body being connected to the pipe or steam-passage, and the tension of the spring being properly adjusted, the steam passes up against the bottom of the valve. When the required limit of pressure of the steam is exceeded, the valve E opens, and steam passes into the chamber G and strikes against the flange *e'*, thus securing an additional lifting-surface, and opening the valve to its greatest capacity, thereby insuring instant relief and the prompt closing of the valve at the instant that the pressure is reduced.

The spring K may be inclosed in a casing made in two parts, the upper part being cast with the upper flange, D', and the lower part cast with the ring A. The lower part of the said casing enters the lower portion of the up-

per casing, but without coming in contact with it, the purpose being to protect the spring, if necessary, and at the same time allowing of its free adjustment.

5 I do not claim a recessed valve, as I am aware such is not new; but

What I claim as my invention is—

A pop safety-valve consisting of a cylinder or body, D, valve E, the spring K, placed on
10 the outside of the body D, the ring A, and cap

A', connected together by the adjusting bolts and screws B C, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two sub- 15
scribing witnesses.

JAMES E. DAVIS.

Witnesses:

J. H. ADAMS,
E. PLANTA.