

G. H. CROSBY.
Steam-Cock.

No. 208,961.

Patented Oct. 15, 1878.

Fig. 1.

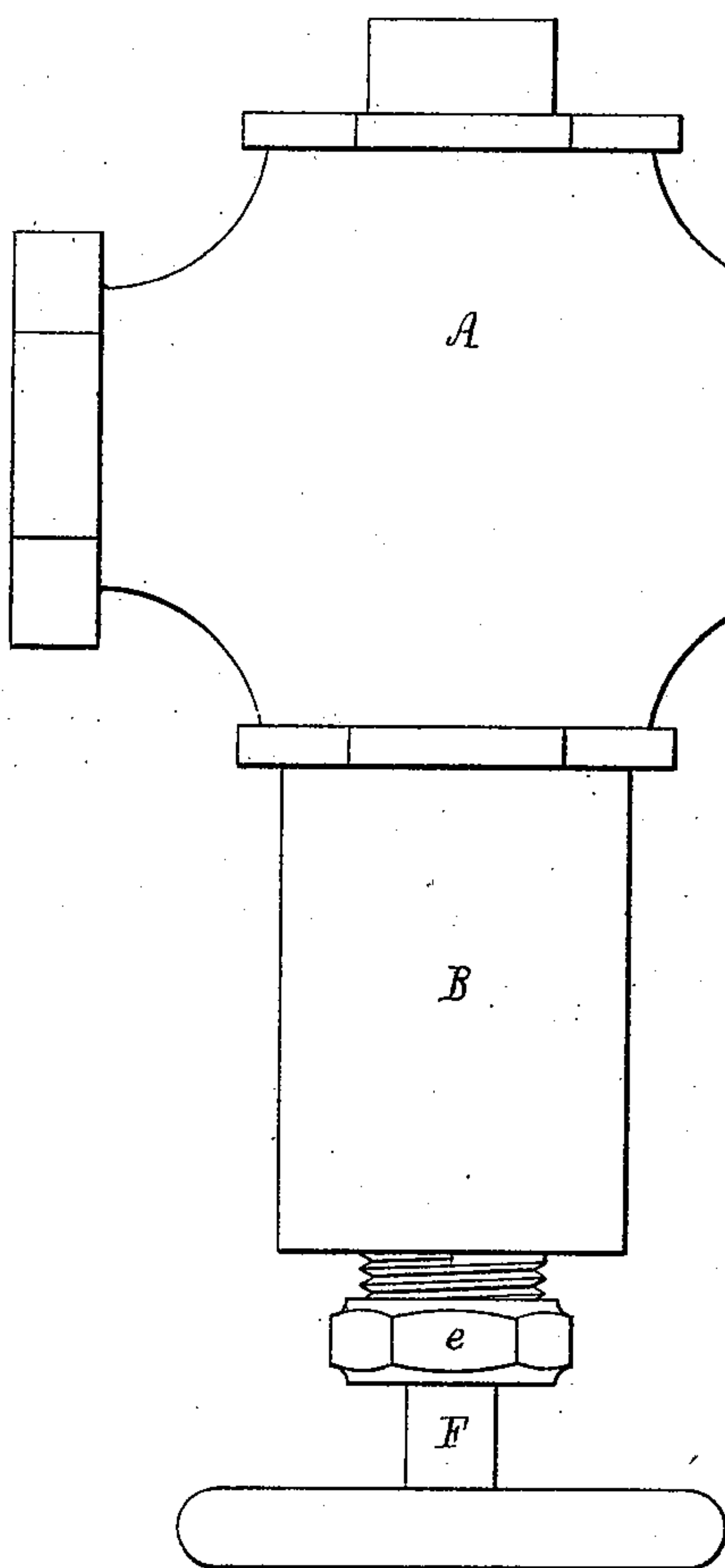
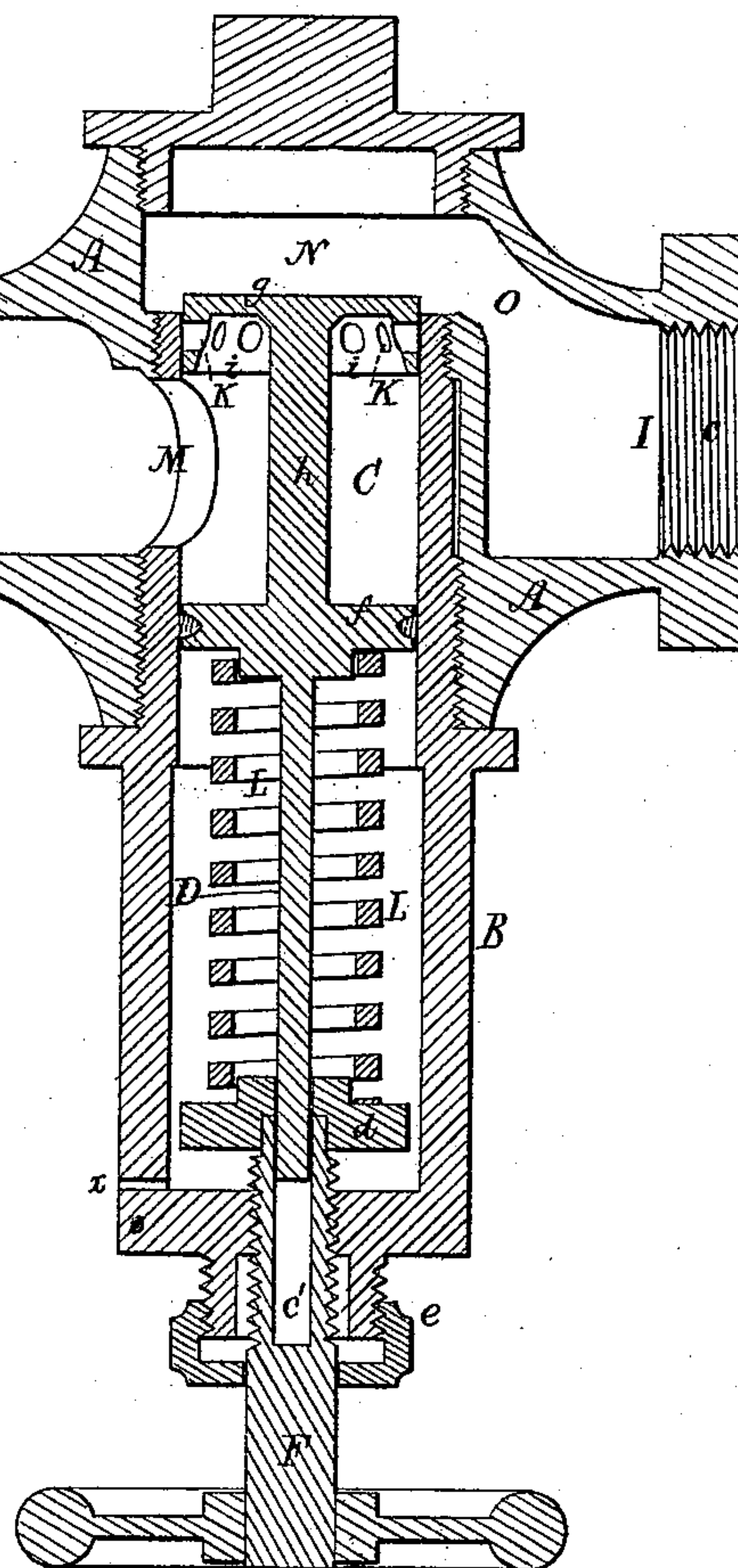


Fig. 2.



Witnesses.

S. W. Piper.
L. M. Miller

Inverton
George H. Crosby.

by his attorney.
R. M. Sddy

UNITED STATES PATENT OFFICE.

GEORGE H. CROSBY, OF EAST SOMERVILLE, MASSACHUSETTS.

IMPROVEMENT IN STEAM-COCKS.

Specification forming part of Letters Patent No. **208,961**, dated October 15, 1878; application filed March 8, 1878.

To all whom it may concern:

Be it known that I, GEORGE H. CROSBY, of East Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Automatic Differential Steam-Cock; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, and Fig. 2 a vertical and longitudinal section, of it.

The article in question, in common parlance, may be termed a "self-regulating balance-valve," its purpose being to enable steam to be extracted from a boiler or receiver and delivered at a constant or essentially uniform pressure at any desirable degree less than that of the steam in such boiler or receiver.

My invention consists in the combination of a balanced valve and a spring and screw with the case, as described, provided with a passage leading out of the lower part of such case, and being for the escape of steam that may get into the part of the case in which the spring is placed.

By means of the screw the spring may be compressed so as to exert on the balanced valve the degree of force that may be necessary to cause the steam discharged to have the required reduced pressure.

In the drawing, B denotes a cylindrical case, open at its inner end and provided with an inlet, M, arranged as represented. The case is extended within and screwed into a head, A, provided with a receiving and discharging chamber, N, arranged at the open inner end of the case B. The said head A is furnished or constructed with an induct, H, and an educt, I, disposed in line or ranging with each other and the inlet M, in manner as shown, there being a short passage or auxiliary educt, O, leading from the chamber N into the educt I. The induct H and educt I, I usually construct or provide with female screws arranged in them or their outer ends, in manner as represented at *b* and *c*.

Within the case B is the balanced valve C, which I generally provide with a stem, D, to extend into the bore *c'* of a screw, F, which is screwed through the closed end of the case B and against a disk, *d*, between which and the

valve, and bearing against both, is a helical spring, L, all being arranged as shown.

To prevent steam that may leak past the valve into the spring-space of the case from impeding the correct action of the water and soiling the handle of the screw, I provide the case and screw with a stuffing-box, *e*, and also make in the lower part of the case a hole or passage, *x*, the latter serving to allow the escape of the steam from the spring-chamber or space, and thereby prevents it from exerting upward pressure on the valve. Without the stuffing-box the steam that might condense in the spring-chamber would be liable to flow out around the screw and wet or soil its handle.

The balanced valve C has two heads, *f g*, of like diameter, and arranged and connected by a stem, *h*, as represented. The upper head is recessed, as seen at *i*, and has a series of holes, K K, extended laterally through it from its periphery to the recess. The valve is to fit to and slide endwise in the case B, the space between the heads of the valve communicating with the induct H by means of the inlet M. From such it will be seen that when steam from a generator or vessel is received within the valve the pressure exerted against one is counterbalanced by that against the other of its two heads. Under these circumstances, if the spring L be contracted by the screw F, the valve C will be moved more or less into the chamber N, so as to cause steam to be discharged through the passages K into such chamber. As soon as the steam thus received in the chamber N may attain a pressure beyond the force exerted against the valve by the spring L, the valve will be forced back against the spring, and the steam will be shut off from entering the chamber.

From this it will be seen that the pressure of the steam received into and discharged from the chamber N may be regulated by means of the screw F and the spring L. If a pressure-gage be applied to the chamber N, it will be an easy matter to ascertain when the steam received within and discharged from such chamber may be of the required tension or of a pressure sufficiently less than that of the steam received into the balanced valve.

Thus, by means of my said automatic differential steam-cock, steam, while at high pressure in a boiler or other vessel, may be delivered therefrom at a reduced and uniform tension.

I would remark that in the place of the screw F a lever and weight, like a steelyard beam and weight, may be substituted and applied to the spring L, so as to effect its contraction, such being a mechanical equivalent for the screw.

What I claim as my invention is as follows, viz:

The case B, open at its inner end and provided with the inlet M and waste-steam escape-outlet *x*, arranged substantially as described, in combination with the chamber N, balanced valve C, spring L, and screw F, applied to such case, as set forth.

GEO. H. CROSBY.

Witnesses:

R. H. EDDY,
JOHN R. SNOW.