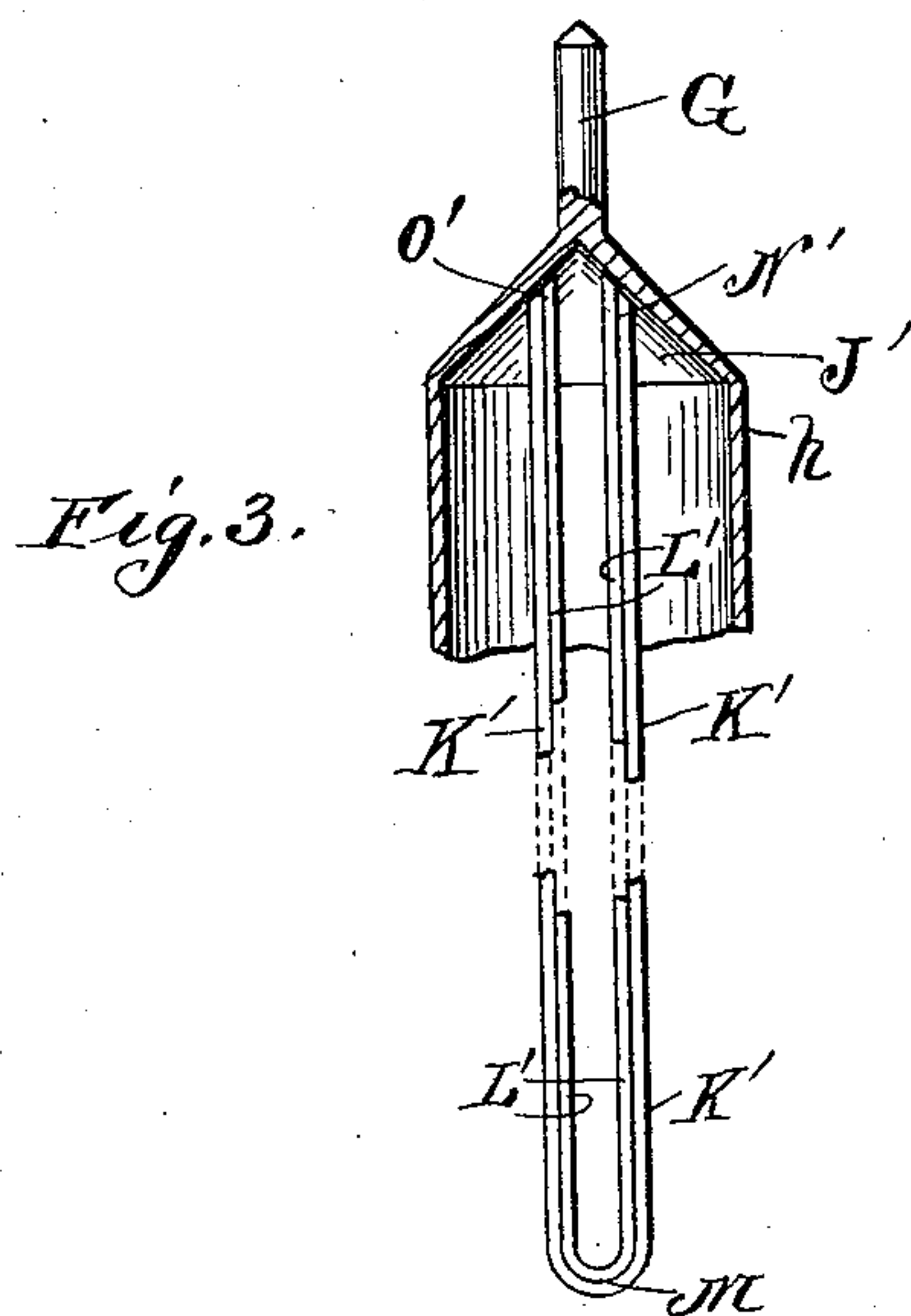
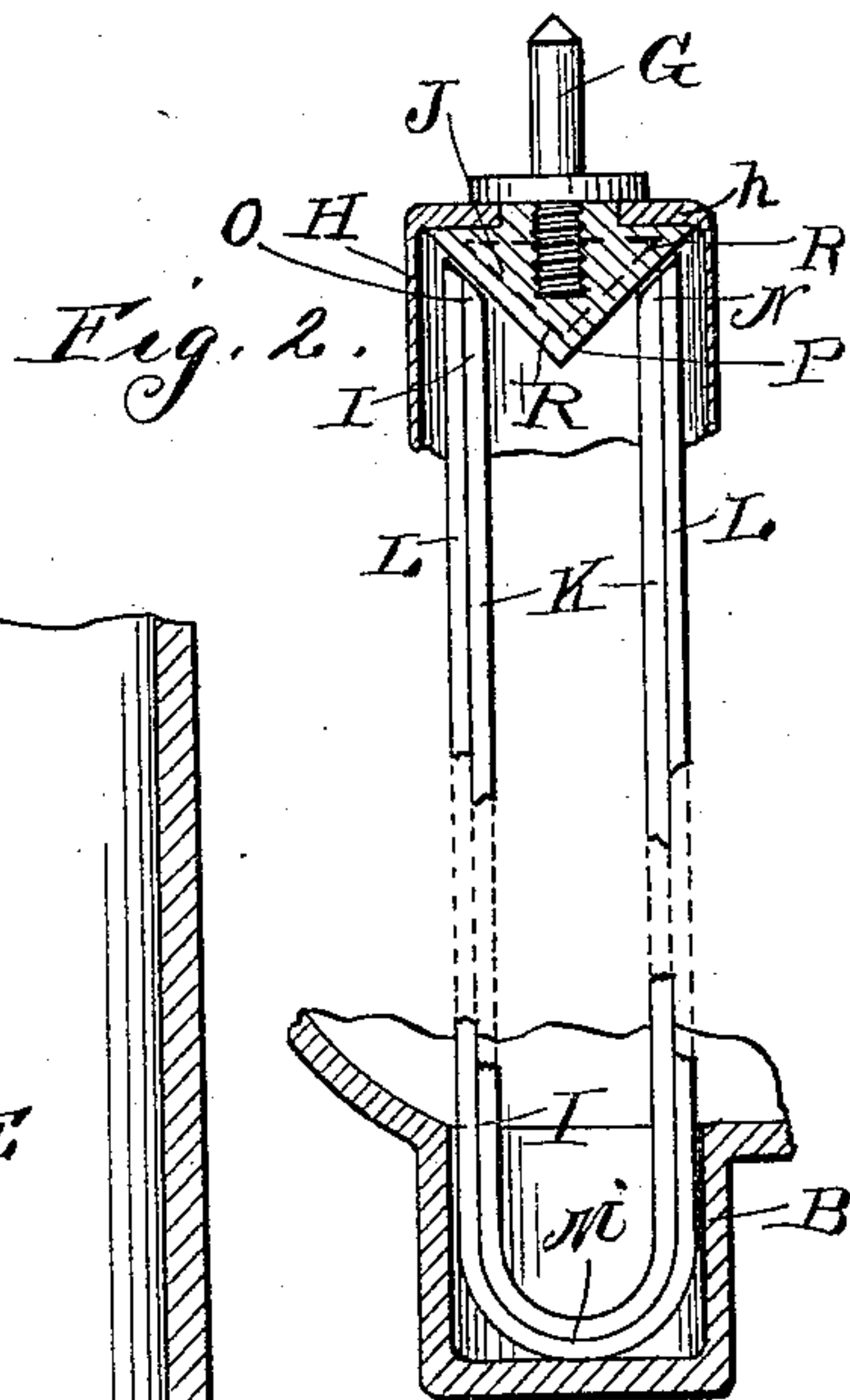
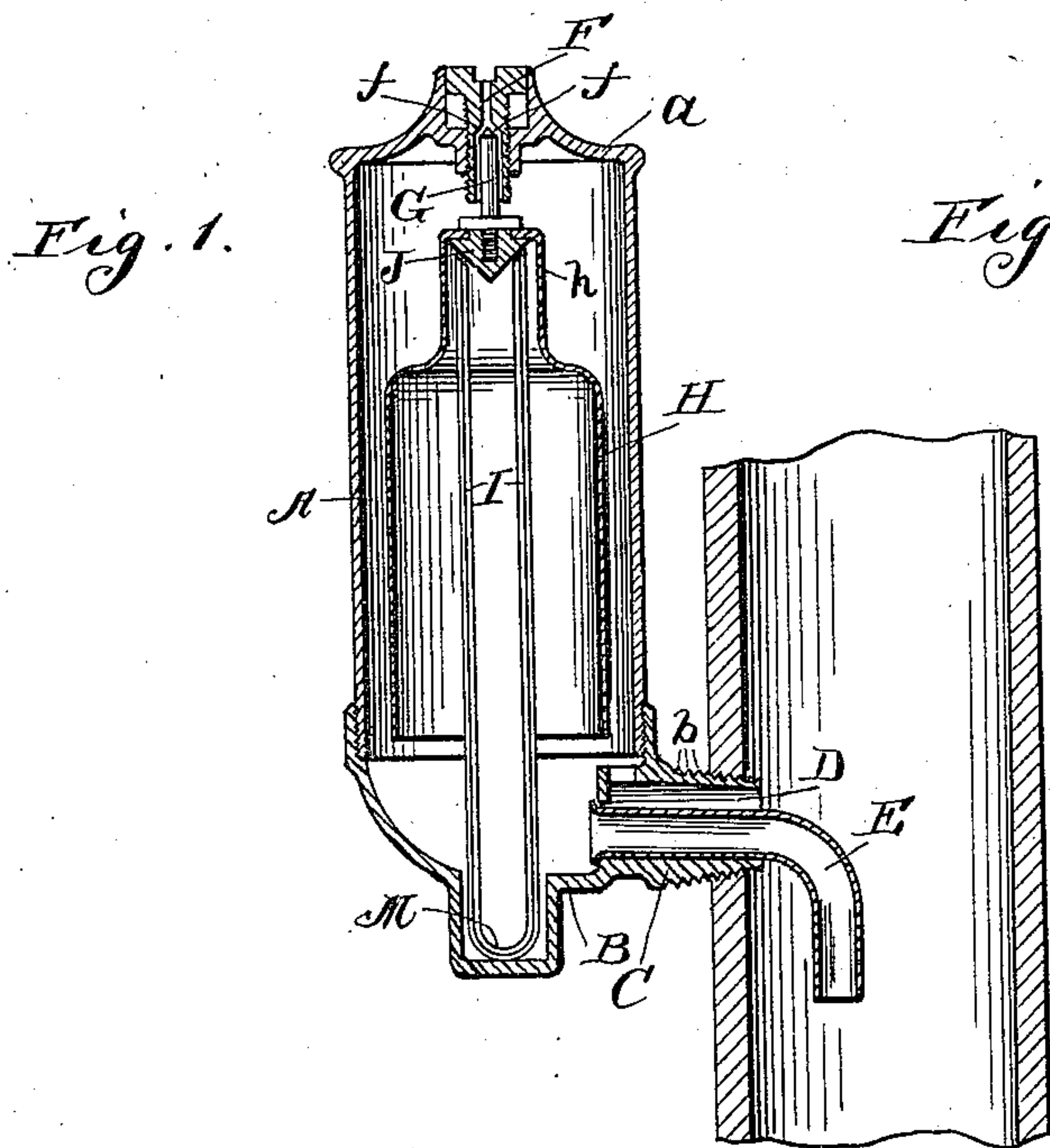


(No Model.)

C. E. VAN AUKEN.
AUTOMATIC AIR VALVE.

No. 574,962.

Patented Jan. 12, 1897.



Witnesses:
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UNITED STATES PATENT OFFICE.

CLARENCE E. VAN AUKEN, OF CHICAGO, ILLINOIS.

AUTOMATIC AIR-VALVE.

SPECIFICATION forming part of Letters Patent No. 574,962, dated January 12, 1897.

Application filed March 23, 1896. Serial No. 584,399. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. VAN AUKEN, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Air-Valves, of which I do declare the following to be a full and complete description, when taken in connection with the drawings accompanying and forming a part hereof, sufficient to enable those skilled in the art to which it pertains to understand, make, and use the same.

The object of this invention is to obtain an automatic air-valve (that is, an air-valve attachable to steam radiators, by means of which air contained in the radiator will be automatically delivered therefrom, while steam and water contained in the radiator will not be discharged through such valve) wherein the expansion member may be composed of metal and the movement of the valve in closing the air-outlet caused by the opening or closing of the open end of a bent compound metallic expansible member.

I have illustrated my invention by the drawings accompanying and forming a part hereof, in which—

Figure 1 is a vertical sectional view of a valve embodying the invention; Fig. 2, a vertical sectional view, on an enlarged scale, of the upper end of the float forming an element therein, of the valve secured in such upper end of the float, and of the ends of the compound metallic expansible member adjacent to the valve and upper end of the float; Fig. 3, an elevation of a modification of the valve, the float, and the expansible member, and of the connection to the expansible member of the float and valve.

In the drawings a reference-letter employed to designate a given part is used to indicate such part throughout the several figures of the drawings wherever the same appears.

In air-valves having a shell, an inlet and an outlet, and a water-outlet, with a float and a valve arranged to control the outlet and wherein the float is supported by an expansible member, when such expansible member consists of a stick or post of composition material whereof rubber is the principal element the composition becomes softened by heat and steam and the effectiveness of the apparatus

is thereby impaired. Further, the continuous expansion and contraction of the expansible member, when composed of such composition material, causes it soon to become inert and non-effective.

In this air-valve, A is the shell or case, *a* the top of shell A, and B the bottom thereof.

b are the screw-threads on projection C of base B, such screw-threads fitting into corresponding screw-threads in the radiator.

D is a passage-way through projection C, and E a bent tube extending through passage-way D from the inside of shell or case A to and into the radiator to which the valve is attached.

F is the outlet of the air-valve.

G is a valve arranged to close the outlet F when forced onto its seat.

H is a float resting on the expansible member I when no water is contained in the shell A.

J is an inverted cone on the under side of stem *h* of float H.

The valve G may be integral with cone J, as illustrated in Fig. 2, and should be integral therewith when the float H is omitted from the construction, as when an air-valve arranged to permit the escape of water, as well as air, from the shell A is desired.

The expansible member I is constructed of the strips of metal K L, firmly secured together, having different degrees of expansibility, bent at M, so that the two ends N O will come on opposite sides of cone J, Figs. 1 and 2. Strip K in the construction illustrated in Fig. 1 may well consist of iron, and strip L in such composition may well be composed of brass. When steam is admitted to the air-valve and the compound expansible member I subjected to the heat thereof, the strip L of brass will be thereby expanded more than will the strip K of iron, and hence the two ends N O of the expansible member will be forced together onto the face P P of cone J, thus forcing the valve G upward and onto its seat *f* at the base of the opening F, and the valve of the outlet thereby closed.

In the modification illustrated in Fig. 3 the outer strip of metal is composed of iron, and hence is lettered K', and the inner strip of metal of brass, lettered L', such strips being secured firmly together as before. When this

compound strip is heated, as by the presence of steam (or even hot water) in the shell A, the ends N' and O' are forced apart. Hence to force the valve G forward I insert such
5 ends in the inverted cone J'.

Cone J may be punched or forced up of sheet metal, if desired, and so hollow, as indicated by the dotted lines R R, Fig. 2.

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

1. In an automatic air-valve having an inlet and an outlet, a valve to the outlet, a cone to which the valve is secured, and a compound metallic expansible member the ends
15 whereof are by variations of temperature,

forced to and away from each other and against the surface of the cone, and the valve thereby closed upon the subjection of the expansible member to heat; substantially as described.
20

2. In an automatic air-valve having an inlet, and an outlet, a float, a valve mounted on the float, the float and valve being longitudinally movable, a cone secured to the float
25 and valve, and a compound metallic expansible member, both ends whereof are in contact with the cone; substantially as described.

CLARENCE E. VAN AUKEN.

In presence of—

CHARLES TURNER BROWN,
FLORA L. BROWN.