

(No Model.)

G. H. GRAHAM & J. A. CREELMAN.

DEVICE FOR OPERATING VALVES.

No. 350,881.

Patented Oct. 12, 1886.

FIG. II.

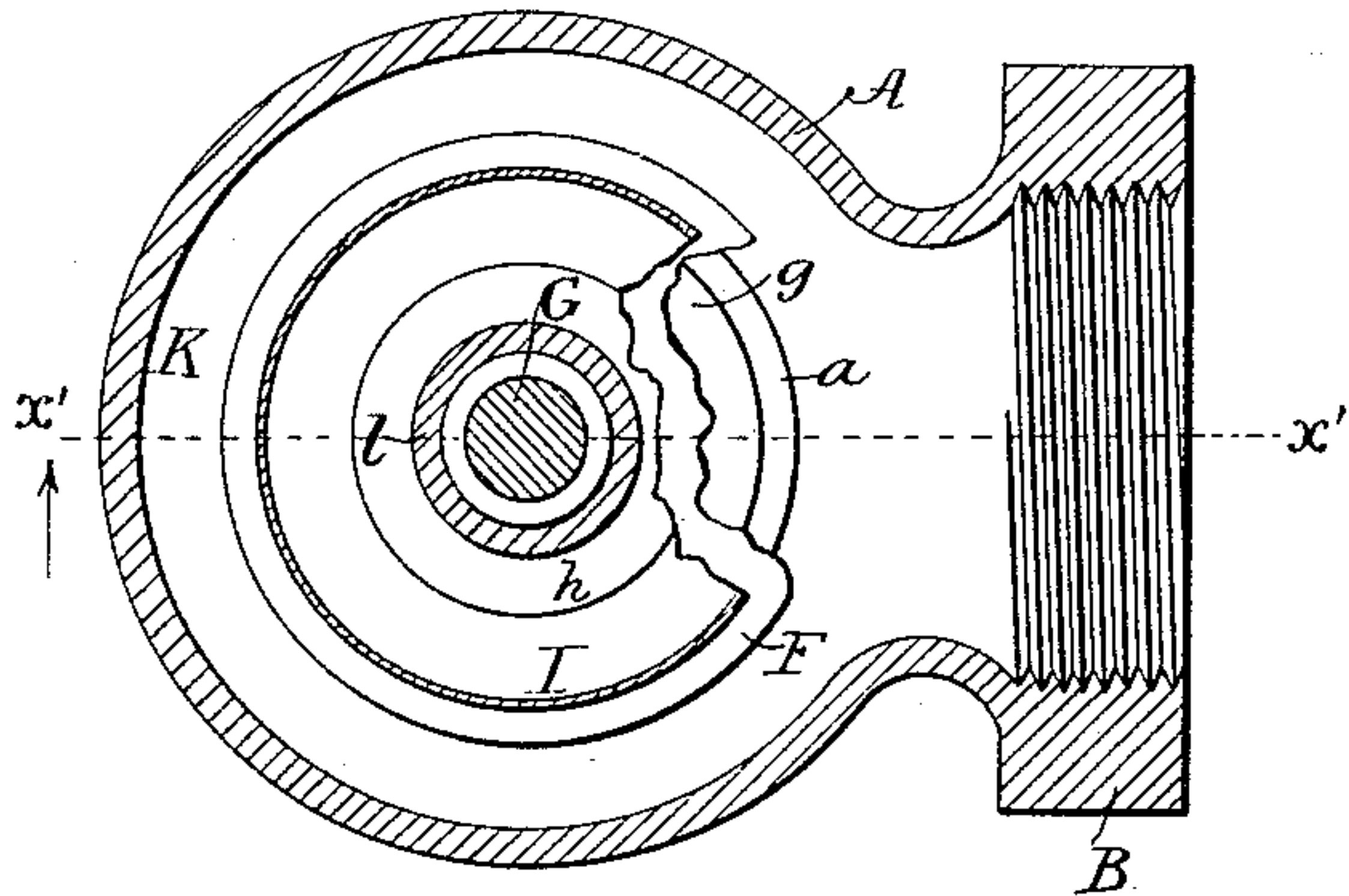


FIG. IV.

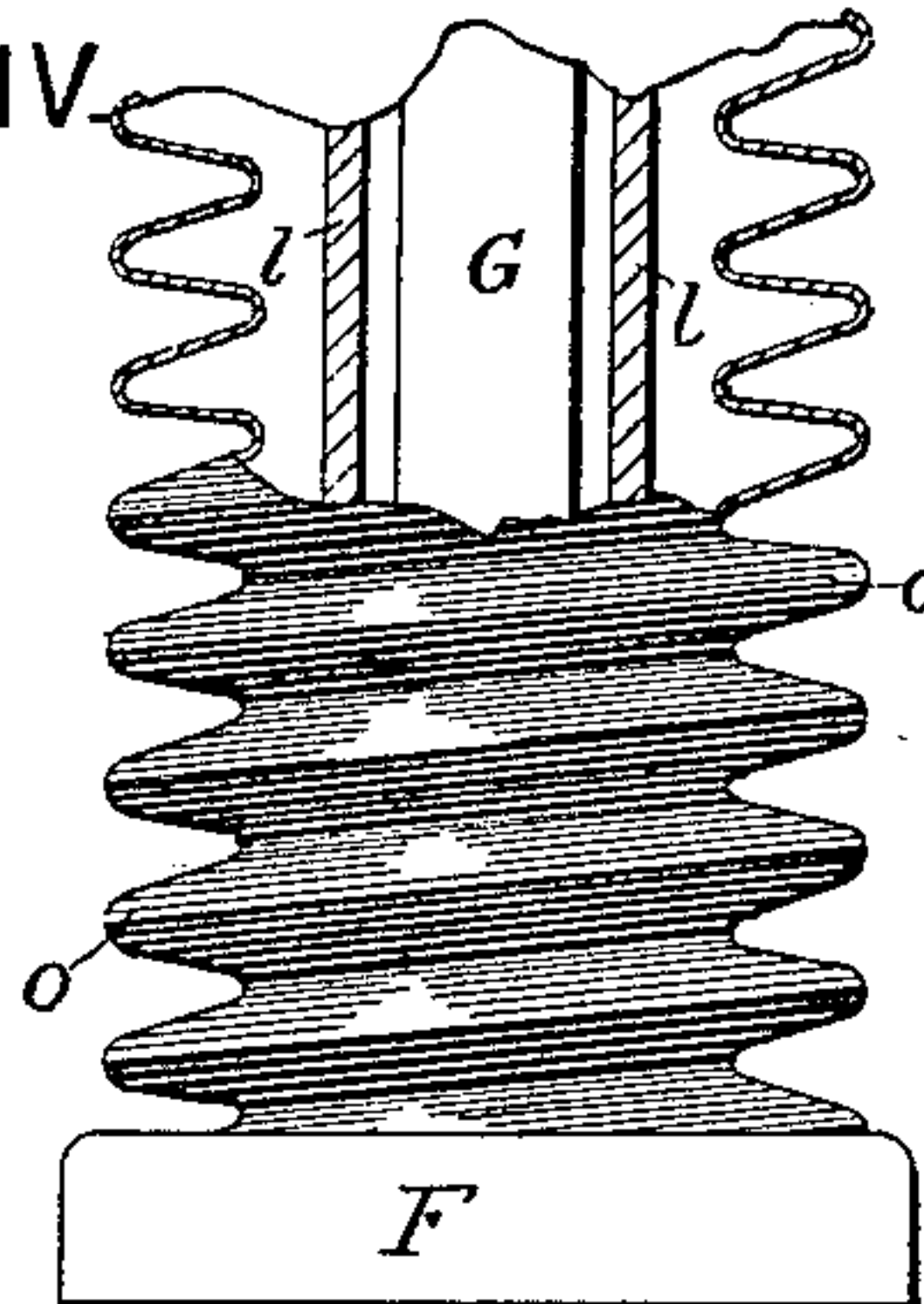


FIG. I.

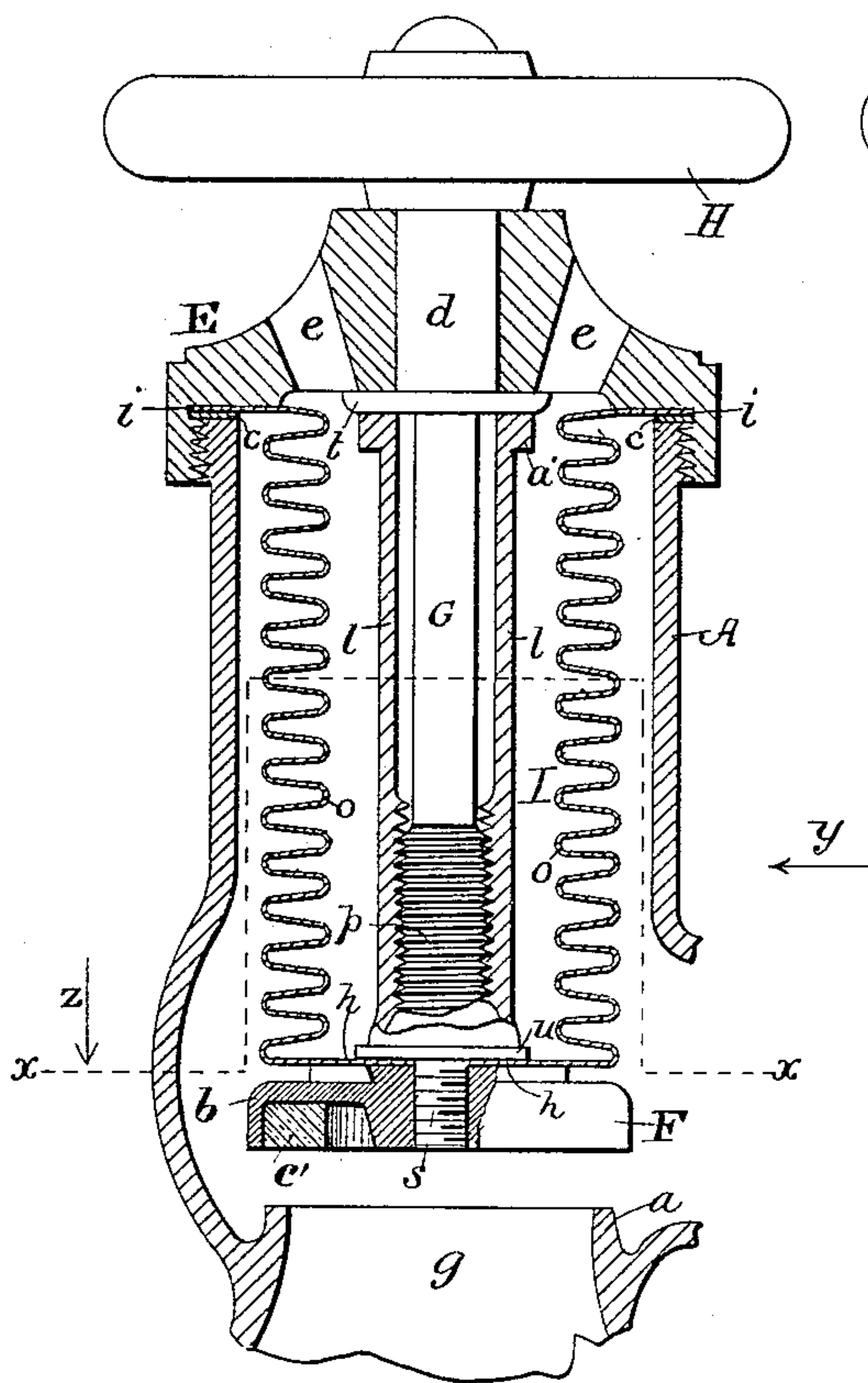
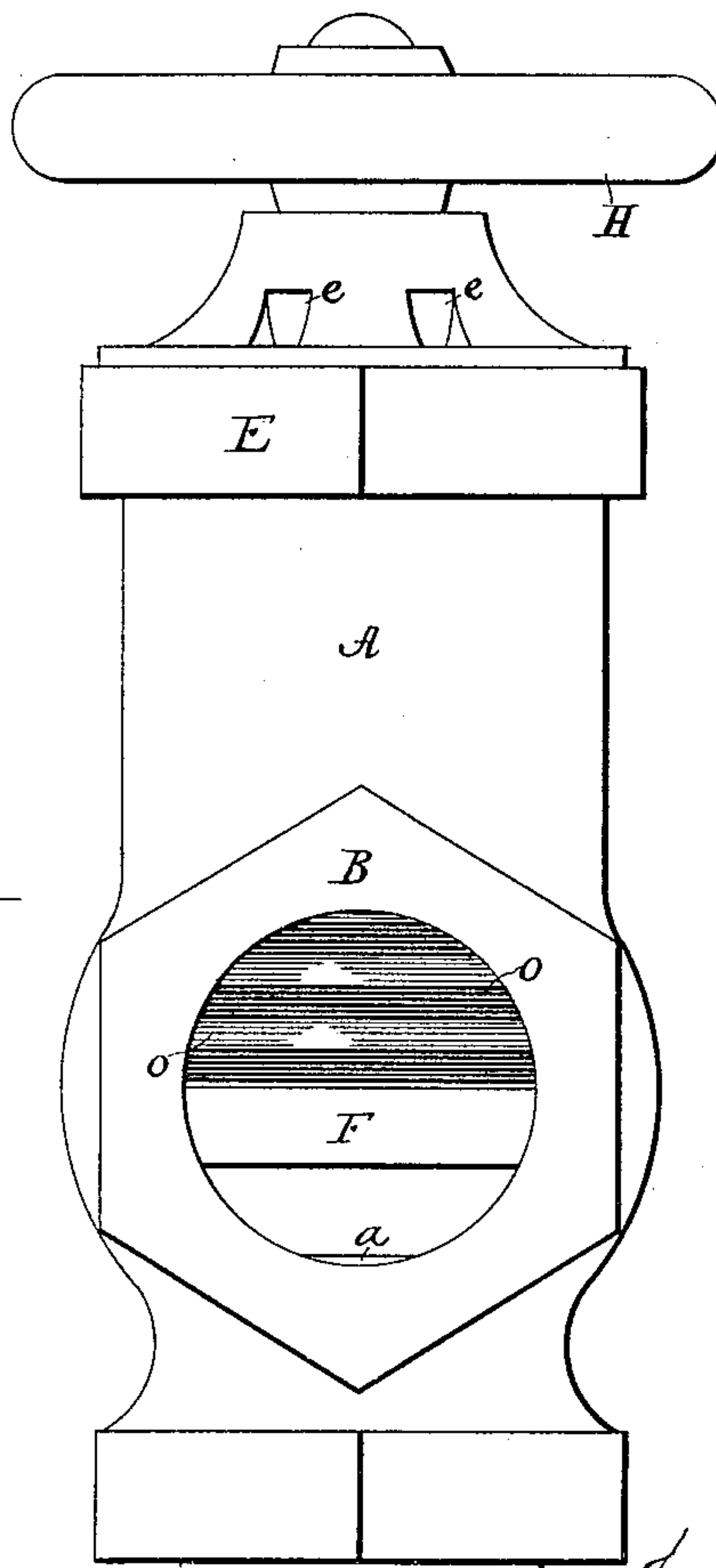


FIG. III.



Attest:

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# UNITED STATES PATENT OFFICE.

GEORGE H. GRAHAM AND JOHN A. CREELMAN, OF ROCHESTER, N. Y.

## DEVICE FOR OPERATING VALVES.

SPECIFICATION forming part of Letters Patent No. 350,881, dated October 12, 1886.

Application filed October 26, 1885. Serial No. 181,006. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE H. GRAHAM and JOHN A. CREELMAN, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Devices for Operating Valves, which improvement is fully set forth in the following specification, and shown in the accompanying drawings.

The object of our invention is to produce a device by means of which a steam or water valve may be opened or closed by means of a handle or part outside of the inclosure containing said valve, without employing a stuffing-box for the stem or part joining said valve within the water or steam space to said handle or part outside of said steam-space, the invention being fully described hereinbelow, and more particularly pointed out in the claims.

Referring to the drawings, Figure I shows a globe for a steam or water valve with our improved operating device for the valve attached in place, said globe, cap for the same, and other parts of the device being centrally longitudinally sectioned, as on the dotted line *x'*, in Fig. II; Fig. II, a transverse section of the same, taken as upon the dotted line *x* in Fig. I, and viewed as indicated by arrow *z*; Fig. III, a side elevation of the globe viewed as indicated by arrow *y* in Fig. I, and Fig. IV a modification of the form of the corrugations of the elastic cup.

Referring to the parts, A is the globe or inclosure formed with a branch, B; E, the holder for the cup and stem; F, a valve; G, a stem connected with the cup and passing out through the holder E; H, the hand-wheel for the stem; *a*, the valve-seat; *g*, the valve-opening, and I the tube or cup within the globe forming a partition between the steam or water space K within said globe, and the space within the cup and outside of the globe. A cap, E, for the globe, is fitted with a screw-thread to the open end of the globe most distant from the valve-seat. The valve F is preferably made of a cup-shaped piece of metal, *b*, containing an annular disk or packing-pad, *c'*, of softer material, which pad, when the valve is closed, rests upon the valve-seat *a*. The cap or holder E is not intended to act primarily as a cover for the inclosures within the globe or the cup

I, its functions being to secure the cup in place within the globe and to form a rest or bearing for the stem G. This cap E is perforated or formed with openings *e* to permit a ready flow of air into or out of the cup as the latter is expanded or contracted in closing or opening the valve, as hereinafter described. The cup I is made of an elastic material having its sides transversely corrugated or folded, as shown, so that it may yield either way to a longitudinal pressure exerted upon it, the folds or wrinkles *o* of the same admitting of such expansion or contraction in its length. This cup is also formed at its open end with an outward-turned flange, *i*, held between the cap E and globe A, as stated, the cup resting within the steam-space K within the globe. The stem G is slightly enlarged at its inner end, *p*, and externally threaded thereat, as shown. A sleeve, *l*, is secured to the bottom of the cup in position to have its axis coincide with the axis of the cup, said sleeve being reduced in internal diameter near the bottom of the cup and internally threaded to fit the threaded part of the stem above mentioned, said stem being held within the sleeve. From this construction of parts it will be seen that by turning the stem one way or the other, by means of a hand-wheel, H, secured thereto, the cup will be expanded or contracted, as the case may be. The sleeve *l* at its inner end is made in the form of a bolt, *s*, which pierces the cup and enters with a screw-thread into the valve F, the cup being pinched between the back of said valve and a flange, *u*, of the sleeve. A collar, *t*, is secured rigidly to the stem in position to bear against the inner surface of the holder E while the hub of the hand-wheel H bears against the outer surface of said holder, which prevents longitudinal motion of the stem, the latter having simply a journal-bearing in said holder. By turning the hand-wheel one way or the other the valve will be opened or closed, as the case may be. The upper end, *a'*, of the sleeve *l* is squared to receive a wrench with which to turn the threaded bolt *s* into the valve, and said end *a'* is designed to encounter the flange *t* to act as a stop for the lifting of the valve and the compression of the sides of the cup.

The cup I may be made of sheet-steel or other metal having sufficient strength and ca-



pable of withstanding the action of the steam or other fluid within which it may have to act. The inner end of the cup is made imperforate excepting as to the hole through which the threaded part *s* of the sleeve extends. A ring of packing, *c'*, is placed between the flange *i* of the cup and the globe to prevent leak thereat. The space within the cup forms no part of the steam-space *K* within the globe. It is practically immaterial whether the folds or corrugations *o* in the walls of the cup are parallel rings having their respective planes at right angles with the axis of said cup, as shown in Figs. 1 and 3, or made in spiral form, as shown in Fig. 4, the function of said folds being to permit the movement of the inner end of said cup longitudinally, as stated.

What we claim as our invention is—

1. In combination with the globe of a globe-valve formed with a valve seat, a yielding cup resting in the space within said globe, a holder, *E*, for the cup, a stem for said cup joined by means of a sleeve or holder, *l*, to the inner end or bottom thereof, having a bearing in said holder *E*, a hand-wheel for said stem, and a valve for said seat secured to the cup, the said holder *E* being formed with air-passages *e*, substantially as described and shown.
2. In combination with the globe of a globe-

valve formed with a valve-seat, a yielding cup resting in the space within said globe, a cap or holder for the cup, a threaded stem for said cup having a bearing in said cap and provided with a collar to bear against said cap, a threaded sleeve to hold said stem secured to said cup, a valve for said valve-seat secured to the sleeve, a stop for the contractive movements of said cup, and a hand-wheel for the stem, substantially as shown and set forth.

3. In combination with a globe of a globe-valve formed with a valve-seat, a transversely-corrugated cup resting in the space within said globe, a holder, *E*, for the cup secured to said globe, a threaded stem for said cup, a threaded holder, *l*, for said stem formed with a collar or shoulder to rest against the inner end surface of said cup, said holder *l* being formed with a part, *s*, piercing the end of the cup, a valve for the valve-seat secured to said part *s* and having a bearing against the outer end surface of the cup, and a hand-wheel for the stem, substantially as shown and described.

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Witnesses:

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H. B. KNIGHT.