

(Model.)

W. McSHANE.
INJECTOR.

No. 362,300.

Patented May 3, 1887.

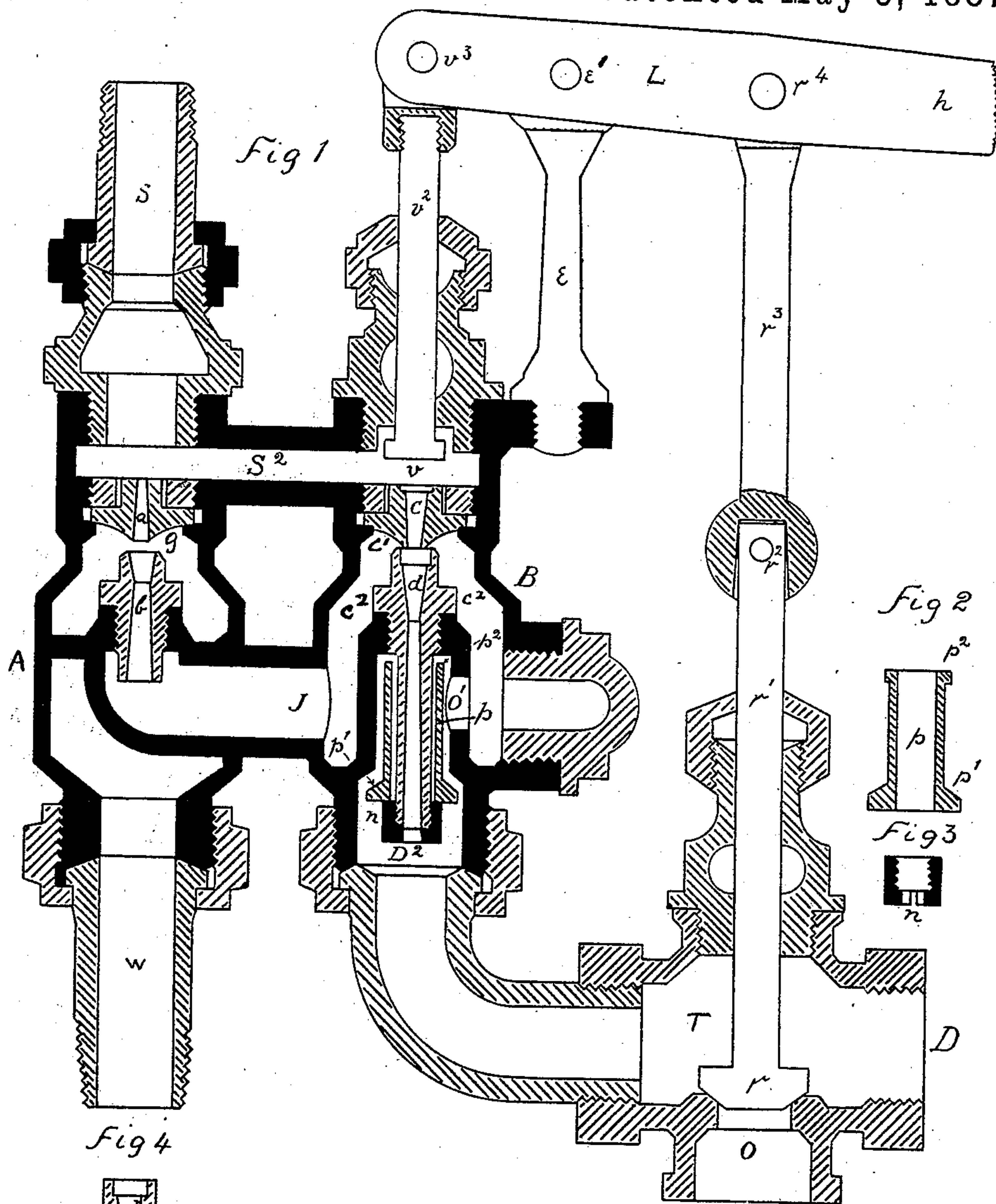


Fig 2

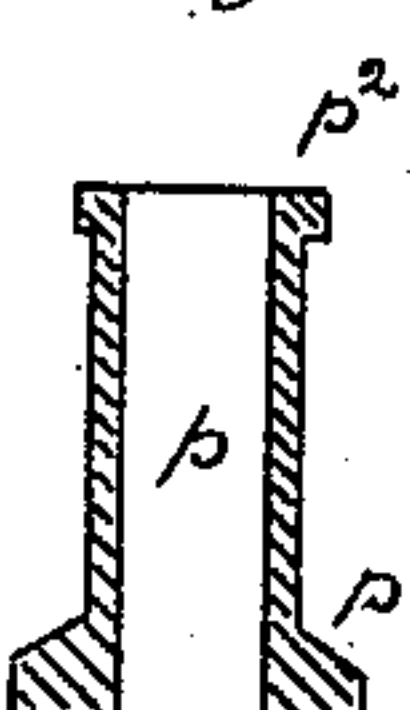


Fig 3



Fig 4

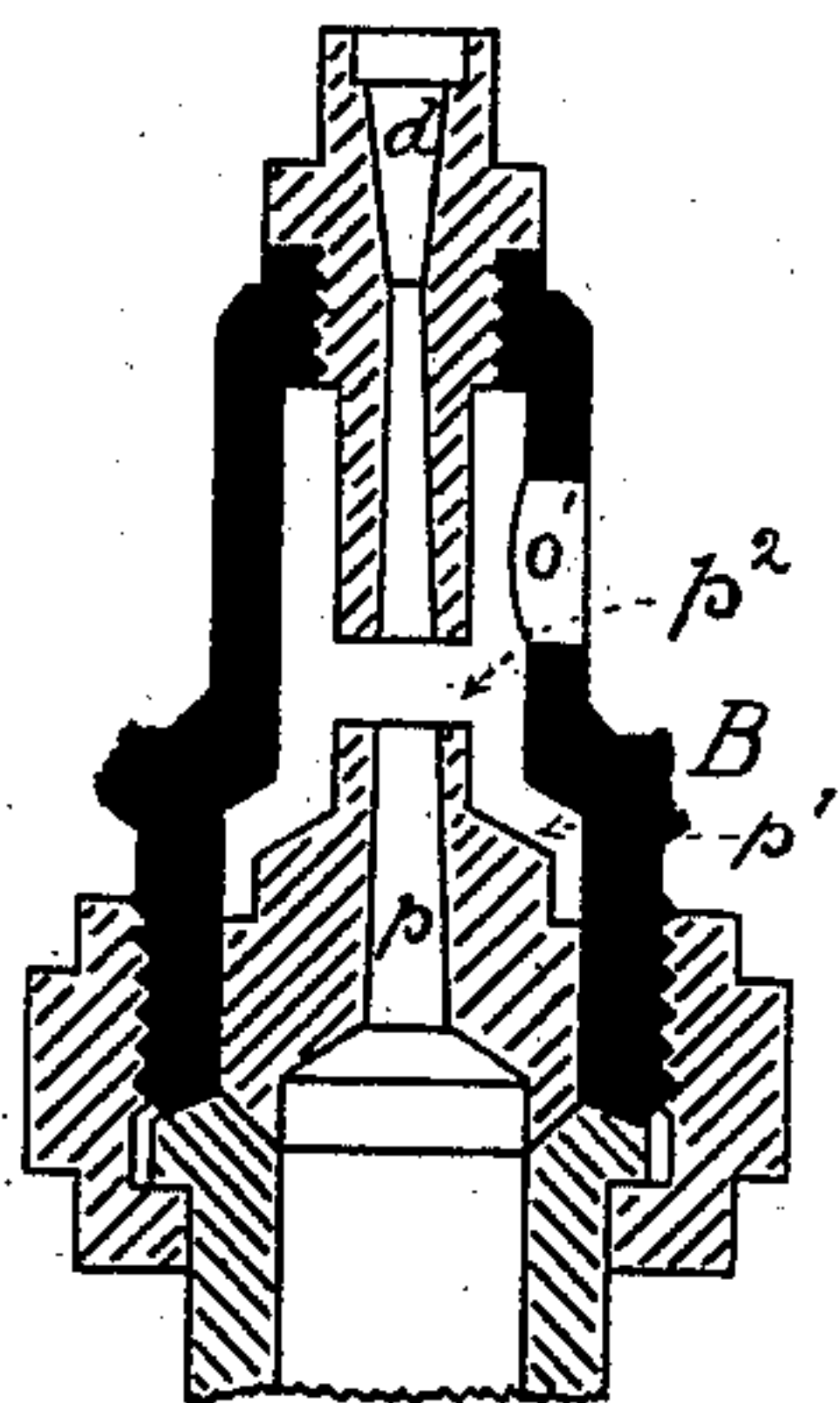
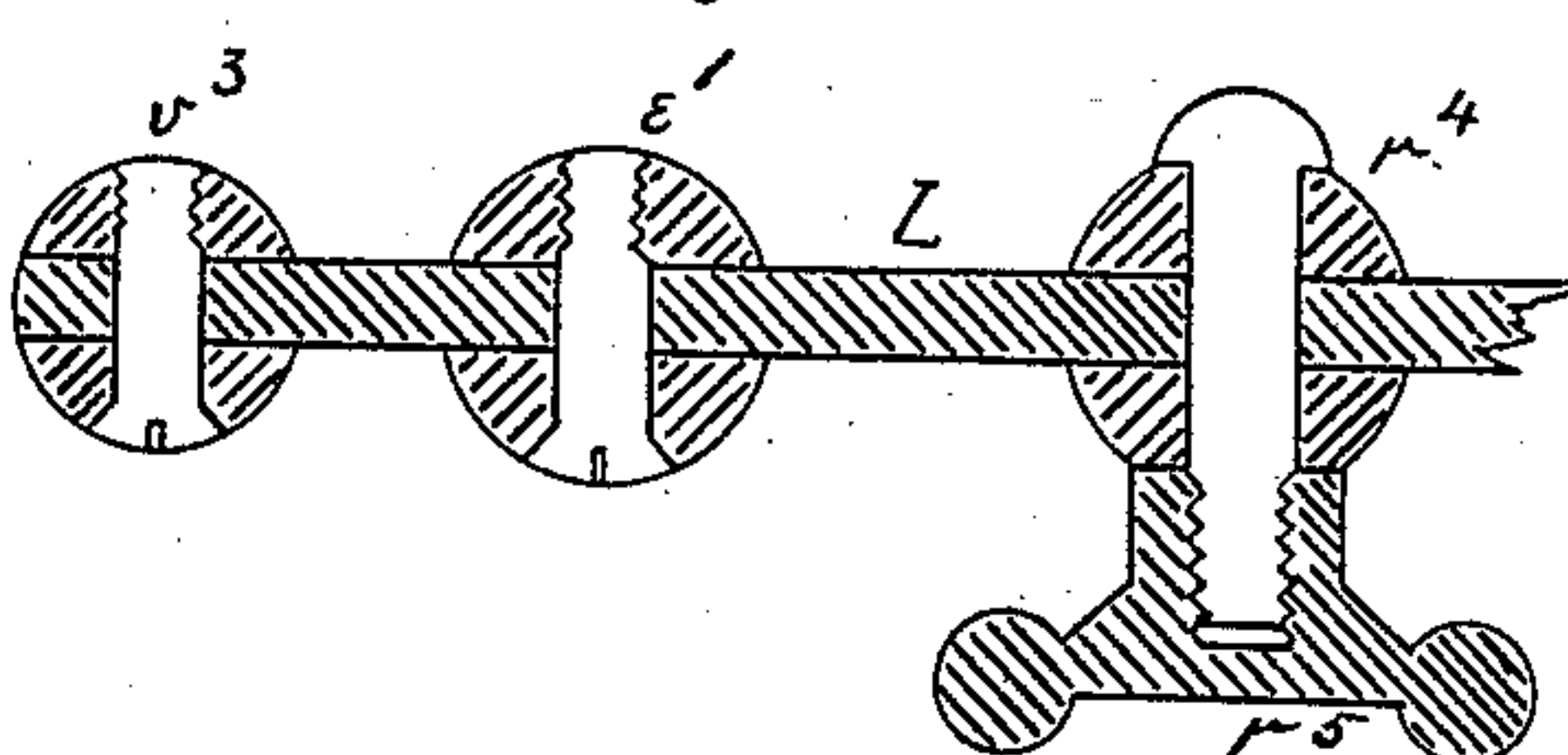


Fig 5



WITNESSES

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att'y

UNITED STATES PATENT OFFICE.

WILLIAM McSHANE, OF ST. JOHN, NEW BRUNSWICK, CANADA, ASSIGNOR
TO T. McAVITY & SONS, OF SAME PLACE.

INJECTOR.

SPECIFICATION forming part of Letters Patent No. 362,300, dated May 3, 1887.

Application filed March 19, 1886. Serial No. 195,847. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM McSHANE, a subject of Queen Victoria, residing at St. John, in the city and county of St. John, in the Province of New Brunswick, Canada, have invented certain new and useful Improvements in Steam-Pumps of the kind commonly called "Injectors," of which the following is a specification.

My improvements are more especially applicable to the Hancock or other double injector in which one part acts as a lifter for the water, which it delivers under a moderate pressure to the second part or forcer, which drives it on, exerting a comparatively high pressure.

The object of my invention is to simplify the working, rendering it almost automatic, and making its action much more perfect. The so-called "automatics" are complicated, or require careful regulation of the steam and water supply; and will not work satisfactorily with wet or low steam and under a great variation of pressure.

The drawings attached show my improvements applied to a Hancock inspirator.

Figure 1 shows the whole instrument in sectional elevation. Figs. 2 and 3 show, separately and respectively, the hollow puppet-valve and the nut for confining it on the forcer combining-tube. Fig. 4 shows an alternative form of hollow puppet sliding in the casing B. Fig. 5 shows the lever L, with parts attached, in plan.

In describing the operation of the instrument the use of the different parts will be evident.

The connections S, W, and D communicate, respectively, with the steam-supply, the water-supply, and the delivery to boiler or other required receptacle, and, supposing these passages to be opened, the steam enters into the chamber S², (the valve *v* being supposed at first to be closed and the valve *r* opened,) it then blows through the lifter steam-nozzle *a* into and through the lifter combining-tube *b*, and in passing over the interval at *g* it draws with it the air and water, thus sucking water up into and through the pipe W and chamber *g*, and combining with it in the combining-tube *b*, and delivering it in the chamber J under a

comparatively low pressure, whence it finds its way into the chamber C² and through the forcer combining-tube *d*, and also through the low-pressure opening O' into the delivery-pipe D, and thence through the main overflow O. Next the lever L is gradually moved, (not generally and necessarily very slowly,) opening the steam-valve *v* in the steam-chamber S² and closing the T-valve *r* of the main overflow O; but it is so adjusted that the valve *v* is opened before the valve *r* is closed.

As soon as the valve *v* is opened the steam rushes through the forcer steam-nozzle *c* into and through the forcer combining-tube *d*, and in passing the interval *c'* it draws and impels the water at a greatly-increased rate and pressure, driving it out of the overflow O, on the closing of which, and probably prior to that, the hollow puppet *p*, which is shown with double seat at *p'* and *p''*, is forced shut, thus cutting off the low-pressure overflow O' and preventing any water from finding its way back from the delivery-pipe D, thus delivering all the water at high pressure. A nut is shown at *n* on the end of the forcer combining-tube *d* to keep the hollow puppet *p* in position; or the hollow puppet may be made as shown in Fig. 4, sliding in the casing B, and having the two seats *p'* and *p''* corresponding to those shown in Figs. 1 and 2.

The lever L is shown pivoted at *e'* on a standard, *e*, attached to a projection on the casing B, and connected by an elongated hole with pivot, at *v''*, to the stem *v'* of the valve *v*. It is also connected by pivot *r''* to the link *r'*, which, at its other end, is movably connected with the spindle *r'* of the valve *r* by the joint *r''*. The lever L may have any form of convenient handle at *h*. Fig. 5 shows the lever L and parts attached in plan with a clamping-nut, *r''*, on the pivot-connection *r''*, by which the parts may be locked in any required position.

I make no claim for the lifter and forcer tubes, nor their combination in the casing A B, nor for the overflows O' and O, nor for the separate valves *v* and *r*, nor a perforated base or diaphragm for the combining or delivery tube, nor the annular valve automatically opening or closing such perforations or ports; nor do I claim the combination of a lever operating

both the steam and overflow valves, both being in the body or casing of the injector proper, for I am aware that they are not new; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the lever L with the steam-valve v in the injector and the T or corresponding overflow-valve r in the delivery-pipe D, in a fitting distinct and separate from the body or casing of the injector, so that v opens before r closes, as and for the purpose described.

2. The combination of the lever L with the spindle of valve v , connected by loose coupling v^3 , and with the standard E, attached to the casing of the injector, and with the spindle of

the valve r by the coupling r^1 , and the swinging link r^3 and movable coupling r^2 , or corresponding device, as and for the purpose described.

3. The combination of the steam-valve v in an injector and the overflow-valve r in the delivery-pipe, in a fitting distinct and separate from the body or casing of the injector, and the lever L, with the puppet p in the delivery-chamber D², all as and for the purpose described.

WM. McSHANE.

Witnesses:

J. S. ARMSTRONG,

THOMAS McAVITY, Jr.,