(Model.)

3 Sheets—Sheet 1.

P. BROWNLEY.

INJECTOR.

No. 513,378. Patented Jan. 23, 1894.

Fig. 1.

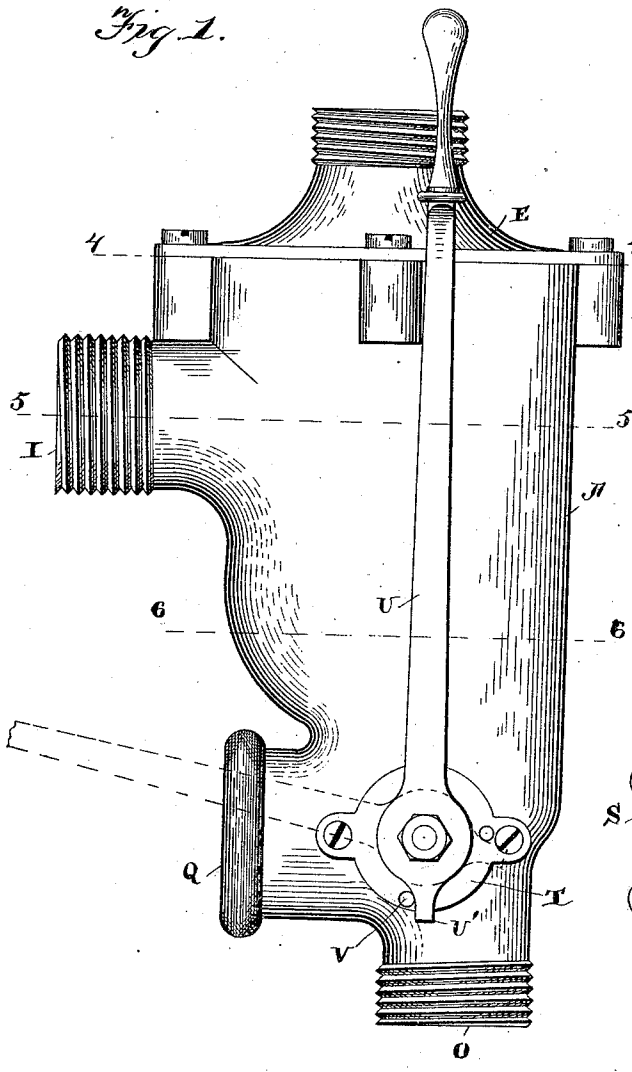
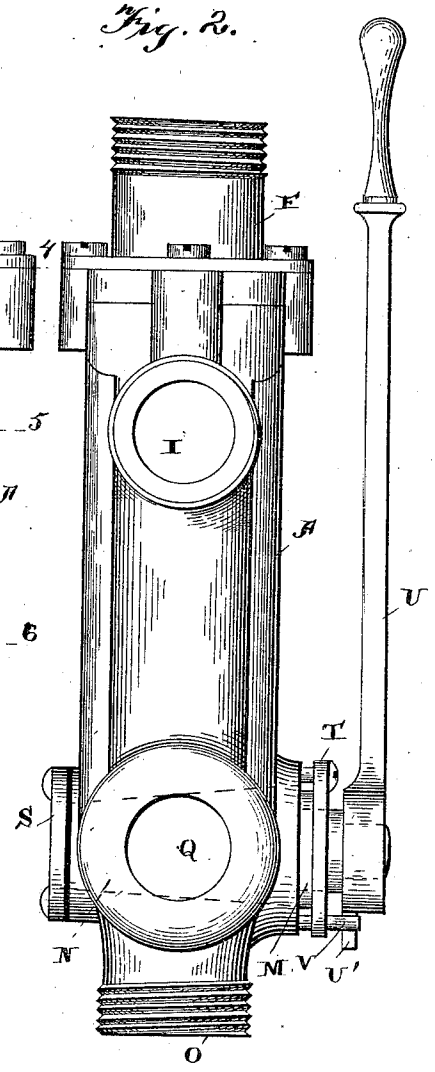


Fig. 2.



WITNESSES—

Geo. E. Frech.

Roland A. Fitzgerald.

INVENTOR—

Patrick Brownley.

By Lehmann Pattison & Wahl—attys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(Model.)

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INJECTOR.

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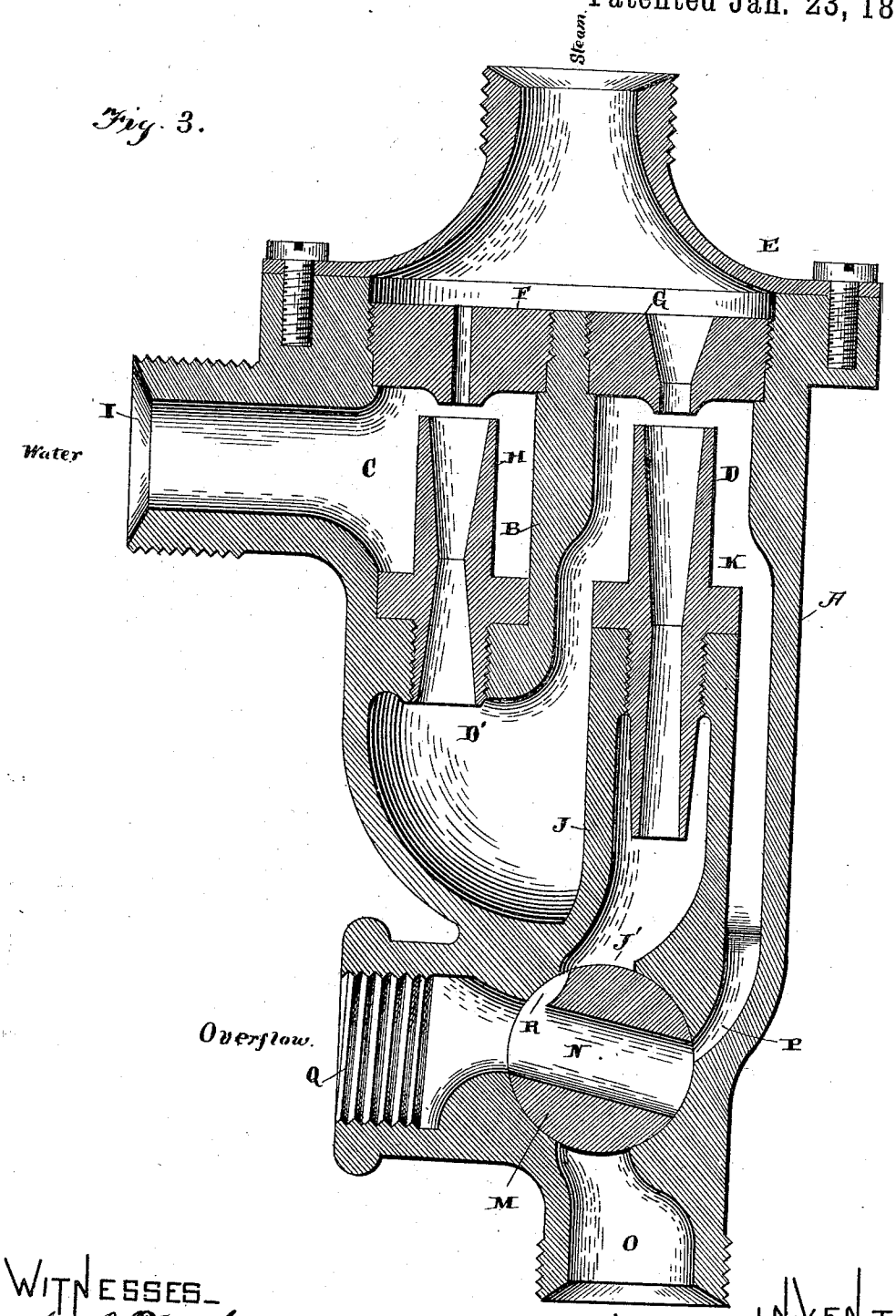
Fig. 3.



WITNESSES—
Geo. E. Frech.
Roland A. Fitzgerald.

INVENTOR—
Patrick Brownley,
By Lehmann Pattison & Nesbit—Attys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(Model.) 3 Sheets—Sheet 3.

P. BROWNLEY.

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Fig. 4.

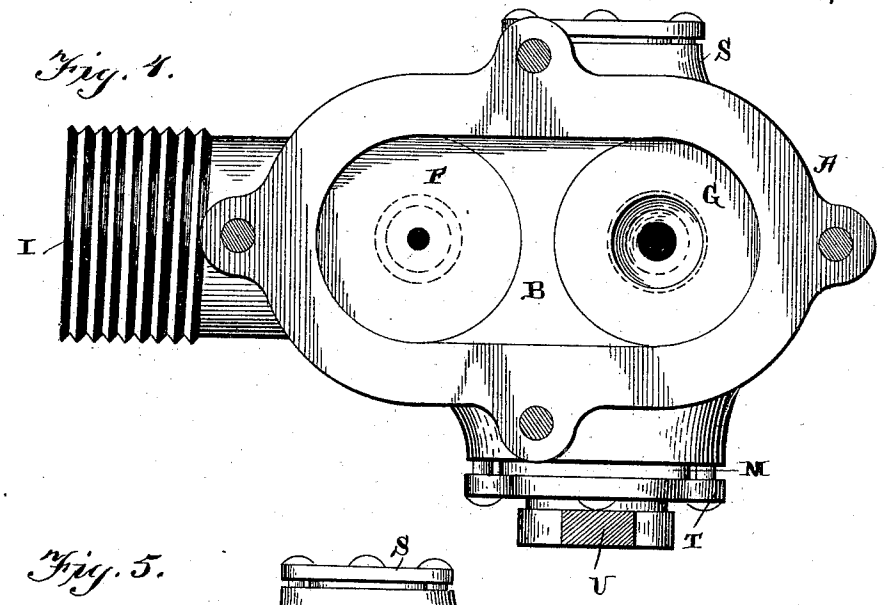


Fig. 5.

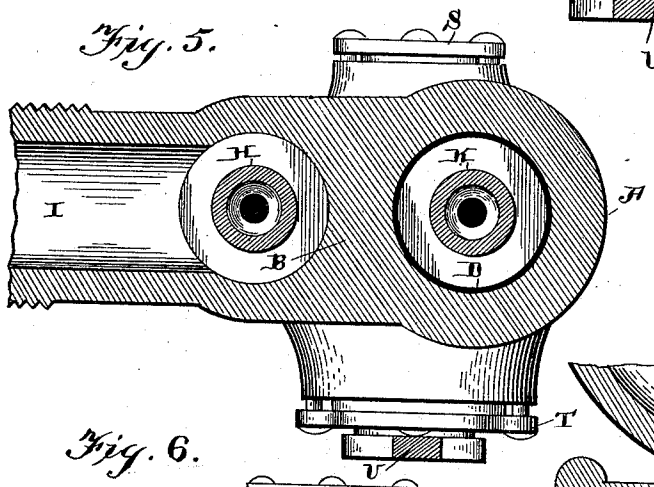


Fig. 6.

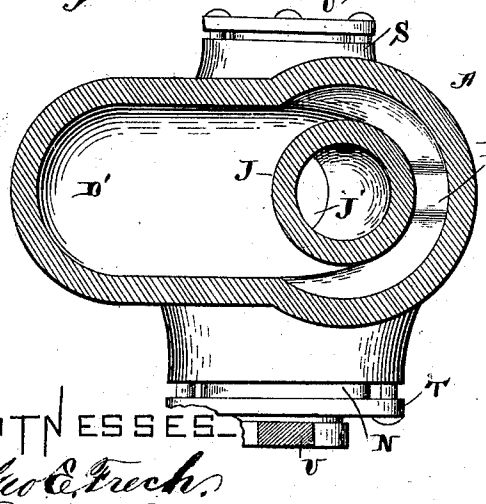
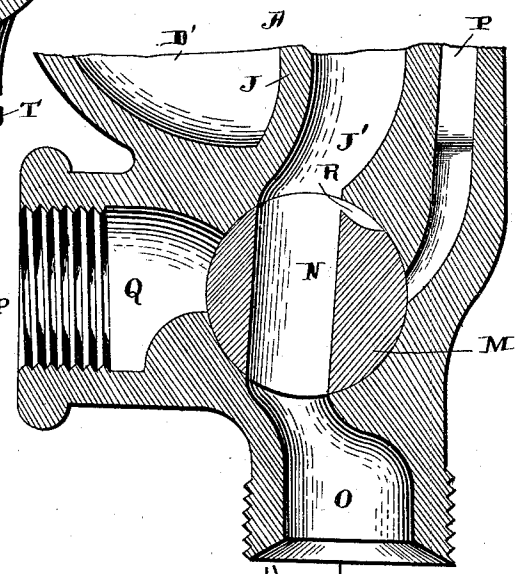


Fig. 7.



WITNESSES—

Geo. E. Frech.

Roland A. Fitzgerald.

INVENTOR—

Patrick Brownley.

By Lehmann Pattison & Meslet— attys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PATRICK BROWNLEY, OF ST. JOHN, CANADA.

INJECTOR.

SPECIFICATION forming part of Letters Patent No. 513,378, dated January 23, 1894.

Application filed September 4, 1893. Serial No. 484,763. (Model.)

To all whom it may concern:

Be it known that I, PATRICK BROWNLEY, of St. John, in the Province of New Brunswick, Canada, have invented certain new and useful Improvements in Injectors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in injectors, and its object is to provide a device of the simplest possible construction, in which all throttle valves and other regulating devices usually present in attachments of this character are effectually dispensed with.

My device is rendered operative by the use of a single cock which is turned by a lever, whose movement is limited by suitably arranged stops, thereby rendering the operation thoroughly mechanical and such as can be effected as well by an inexperienced person as an engineer.

The invention consists in certain novel features of construction hereinafter fully described and claimed and illustrated in the accompanying drawings, in which—

Figure 1, is a side elevation of my improved injector. Fig. 2, is an edge view of the same. Fig. 3, is a vertical sectional view. Figs. 4, 5, and 6, are horizontal sectional views taken on lines 4—4, 5—5, and 6—6, respectively of Fig. 1. Fig. 7, is a sectional view of the lower portion of the device, the turning plug or cock being shown in an injecting position.

The device consists of an irregular inclosing shell A, provided with a vertical web or partition B, which serves to separate elevating chamber C, from the discharge chamber D. The upper end of the shell or casing A is provided with an enlarged removable capping E, which forms a steam inlet chamber and arranged immediately thereunder and directly over chambers C and B, are the removable and vertically recessed heads F and G, respectively, through which the steam passes to said chambers. The discharge or forcing chamber D is considerably larger than chamber C, and extends thereunder as shown at D′, where it is placed in communication with said chamber C by vertical tube H, which projects upward therein within close proximity to head F. Water supply I leads into said chamber C as shown.

Extending vertically from the lower end of chamber D is well J, and removably secured in its upper end is the forcing tube K, which terminates quite close to the lower end of head G. The lower end of the well is curved laterally as shown, and terminates with passage J′ which is adapted to be opened and closed by the transverse turning plug or cock M, having formed therethrough passage N, which is adapted to place said passage J′ in direct communication with boiler discharge O, or when turned to a horizontal position is equally effective in placing passage C leading from chamber D in communication with overflow pipe Q arranged on the opposite side of the said turning plug. One edge of the turning plug or cock is cut away as shown at R, thus serving to place passage J′ in communication with the over-flow along with passage P, for the purpose presently to be stated. The cock is preferably conical in form, as indicated in dotted lines in Fig. 2, and has its inner end to bear in the boxing S, while encircling its outer end for the purpose of holding it in proper position is the gland T, and arranged upon the projecting stem of the cock is operating lever U having projecting therefrom a short arm U′ to engage stop V on gland T, which serves to limit the movement of the lever and which stops are so arranged as to regulate to a nicety the throw of the cock.

For starting the injector the cock M is turned to the position shown in Fig. 3, with the lever inclined as shown in dotted lines in Fig. 1. Steam is then admitted through capping E and heads F and G to tubes H and K through which it descends into chamber D and well J. From the former it continues its course through passage P and cock passage N to the overflow while from well J it is discharged through passage J′ and cut out portion R, to the overflow as will be readily understood. This operation is continued until all the air in chamber C has been withdrawn, thereby inducing by suction a flow of water thereinto, which is carried by the inflowing steam downward through tube H and into chamber D. As soon as water begins to discharge from the overflow cock N is turned

into the position as shown in Fig. 7, thus closing the communication between chamber D and well J, with the overflow and placing said well in direct line with the boiler to be supplied with water. The water is safely lodged in chamber D and from there it is drawn or forced downward into tube K, by the inflow of steam through head G from whence it is conducted through the cock and to the boiler as before explained.

Well J is turned laterally at its lower end to accomplish the twofold purpose of reaching the overflow through small cut out R, and also that a deflecting surface may be provided against which steam from tube K, may discharge, thus relieving the cock of the wear which would ensue should the discharge be directed directly against it. The orifice in head G is made larger than the one in head F, so that the passage of steam therethrough may be accompanied with greater force, thereby effectually drawing or forcing the water from chamber D downward through tube K and well J.

An injector constructed as herein shown and described embodies simplicity in construction and operation with an entire absence of complicated parts and mechanisms, thereby reducing to a minimum the liability of its getting out of order.

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

1. In an injector having water and steam inlets, a lifting chamber, a forcing chamber, overflow and boiler passages extending from the forcing chamber, and a single cock intersecting said passages, for the purpose described.

2. In an injector having water and steam inlets, a lifting chamber, a forcing chamber, overflow and boiler passages extending from the forcing chamber, and a cock intersecting said passages, the said cock being formed with a transverse opening, whereby said passages may be closed to the boiler and opened to the overflow, or closed to the overflow with one of the passages open to the boiler, substantially as shown and described.

3. In an injector having water and steam inlets, a lifting chamber, a forcing chamber, overflow and boiler passages extending from the forcing chamber which intersect at substantially right angles to each other, and a cock at the point of intersection having a transverse passage, whereby said passages may be closed to the boiler and opened to the overflow, or closed to the overflow with one of the passages open to the boiler, substantially as shown and described.

4. In an injector having water and steam inlets, a lifting chamber, a forcing chamber having passage P, well J, an overflow, a boiler discharge, and a cock at the junction of the overflow—the boiler discharge—passage P— and well J, said cock having passages N and R, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

PATRICK BROWNLEY.

Witnesses:
H. B. WHITE,
EDWARD P. RAYMOND.