(Model.)

W. B. & J. D. MACK.

INJECTOR.

No. 262,070. Patented Aug. 1, 1882.

Fig. 1.

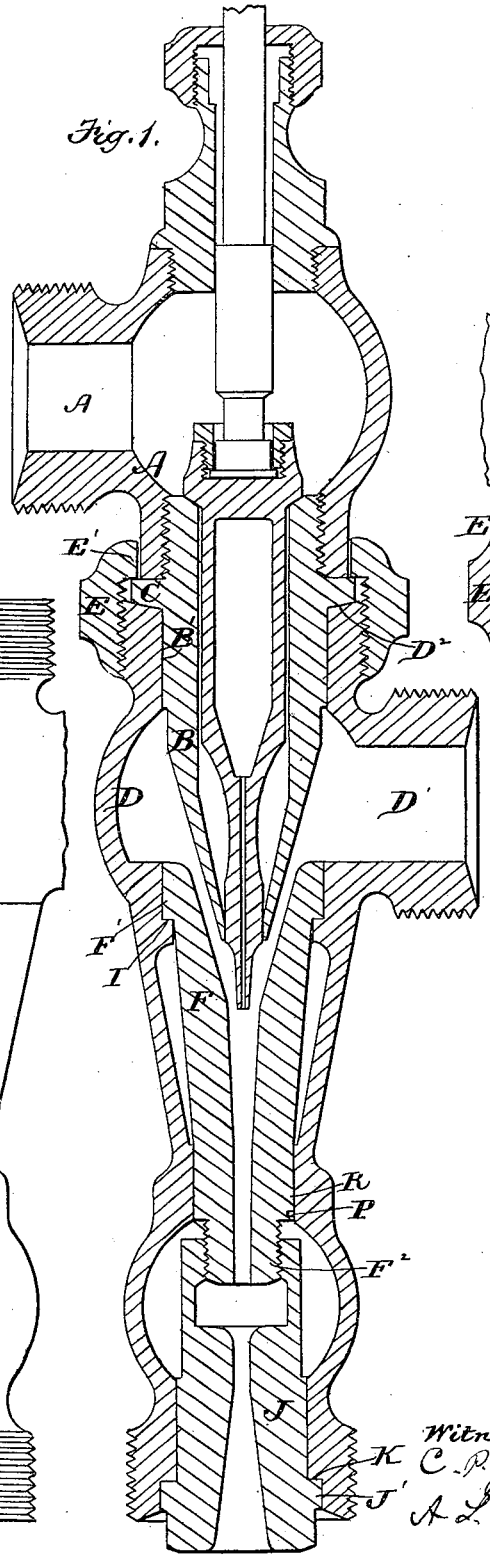


Fig. 2.

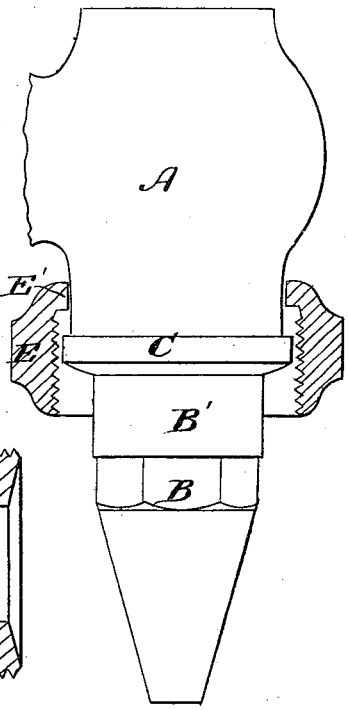


Fig. 3.

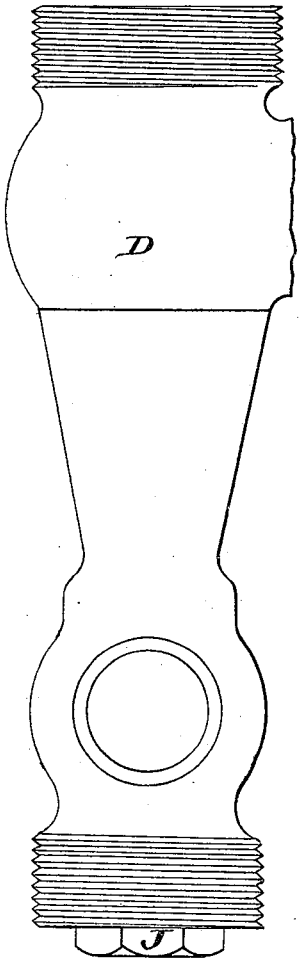
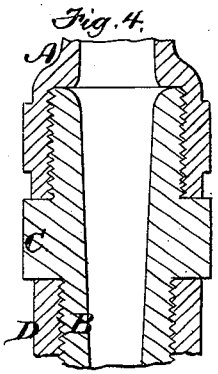


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM B. MACK AND JOHN D. MACK, OF BOSTON, MASSACHUSETTS; SAID JOHN D. MACK ASSIGNOR TO SAID WILLIAM B. MACK.

INJECTOR.

SPECIFICATION forming part of Letters Patent No. 262,070, dated August 1, 1882.

Application filed May 8, 1882. (Model.)

To all whom it may concern:

Be it known that we, WILLIAM B. MACK and JOHN D. MACK, both of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Injectors, of which the following is a specification.

This invention has for its object, first, to provide certain improvements in the manner of connecting the two sections of the casing that are connected respectively to the steam and water supply, and of securing the steam-cone in place so that it cannot project beyond the proper point into the combining-cone.

The invention has for its object, secondly, to provide improved means for supporting, securing, and permitting the ready removal of the combining-cone, so that when the same becomes worn and inoperative it can be replaced without the aid of a skilled workman.

To these ends our invention consists in the improvements which we will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section of an injector embodying our improvements. Figs. 2 and 3 represent side elevations of the parts of the casing disconnected. Fig. 4 represents a section showing the old construction.

The same letters of reference indicate the same parts in all the figures.

In the drawings, A and D represent the two sections which compose the principal portion of the casing of the injector, the section A having a branch, A′, for the connection of a steam-pipe, and the section D a branch, D′, for the connection of a water-pipe.

B represents the steam-cone, which is secured into the section A, and has an outwardly-projecting flange, C, on which the section A bears. One side of said flange is beveled or curved to form a bearing resting, when the steam-cone is in place, on a seat, D^2, on the end of the section D. The steam-cone is provided with a smooth surface, B′, at the inner or under side of the flange C, and the section D is provided with a smooth bore adapted to receive the smooth portion B′, so that the section D can slide freely on and off the cone B.

E represents a coupling-nut, which is screwed upon the end of the section D, and has an inwardly-projecting flange, E′, projecting over and bearing upon the rear or upper surface of the flange C of the steam-cone. It will be seen that when the nut E is screwed home its flange E′ will force the flange of the steam-cone firmly against the seat D′, and thus connect the sections A D, while by unscrewing said nut the sections will be disconnected.

Heretofore the steam-cone has been threaded on both sides of the flange C, instead of having the smooth portion B′, and the sections A D have both been screwed directly to the cone, as shown in Fig. 4, no flanged nut E being employed. This last-described construction is objectionable for the following reasons: In screwing the parts together it is sometimes difficult to bring the steam-cone to the exact longitudinal position required with relation to the combining-cone F, and at the same time secure the proper relative positions of the branches A′ D′, it being essential that said branches occupy certain fixed relative positions, to secure which it is sometimes necessary to turn one or the other after they have been screwed to the steam-cone. By such turning motion of one section or the other the longitudinal position of the steam-cone with reference to the combining-cone is liable to be slightly changed, so as to somewhat impair the operation of the injector, and the flange of the steam-cone is liable to be slightly separated from its bearing on the end of one section or the other, so as to cause breakage of steam. It often results therefore that the parts have to be disconnected and the threads recut, or that other operations requiring skilled labor have to be performed before the positions of the parts can be properly adjusted and the necessary conditions fulfilled. These difficulties are wholly overcome by our above-described improvements.

The connection afforded by the flanged nut E and the freedom of movement afforded by the smooth portion B′ of the steam-cone enable the sections A D to be turned independently of each other without in any way affecting the relation of the steam-cone to the com-

bining-cone or separating the flange C from its bearings. The nut E can be unscrewed and the sections A D disconnected without removing the section A from the steam-pipe. Repairs or renewal of inside parts can be effected without disturbing the steam-connections. The new line-combining cone F has a flange, F′, at its inner end bearing on a seat, I, in the casing D. The lower end, F^2, of the cone F is reduced in diameter and externally threaded.

J represents the delivery-cone, which has a flange, J′, at its outer end bearing on a seat, K, in the section D. The outer end of the delivery-cone projects outside of the casing, and is formed on its projecting end to receive a wrench, and is internally threaded at its opposite end to engage with the externally-threaded end F^2 of the combining-cone. The delivery-cone J is adapted to rotate freely in the casing, but the combining-cone is prevented from rotating by any suitable means, preferably by a projection, P, on the casing entering a longitudinal slot, R, in the exterior of the combining-cone, or by making the cone and the casing square or of equivalent shape at a point, P, near the outer end. It will be seen therefore that by rotating the delivery-cone in one direction or the other the combining-cone will be drawn firmly to place or released, so that it can be removed. By this construction we are enabled to readily apply and remove the combining-cone, so that when it is worn another can be inserted. The absence of screw-threads directly connecting the combining-cone and casing and the provision of the seat I and flange F′ insure the proper longitudinal position of the combining-cone, so that there is no possibility of its being wrongly adjusted, as there would be if the combining-cone were screwed directly to the casing.

It will be observed that the combining-cone and the delivery-cone are both drawn to their seats simultaneously when the delivery-cone is screwed into the combining-cone. The provision of the nut or wrench-receiving end of the delivery-cone enables the combining-cone to be detached without applying a key or wrench to the inner end of the combining-cone, and thus injuring or indenting the same.

The improved injector is identical in the proportions and relative arrangements of its parts with the injector shown in Letters Patent to W. B. Mack, dated May 9, 1876, No. 177,313.

We claim—

1. In an injector, the combination of the casing-sections A D, the steam-cone screwed to the section A, adapted to move freely into and out of the other section, and having a flange interposed between the two sections, and a flanged coupling-nut screwed to the section D and bearing upon the flange of the steam-cone outside of the section A, as set forth.

2. The combination of the section D, the combining-cone resting on a seat in said section, and having a device for preventing rotation, and the delivery-cone bearing on a seat in the section D, formed to receive a wrench at its projecting end, and internally threaded at its inner end to engage with an externally-threaded portion of the proximate end of the combining-cone, whereby both the combining and delivery cones are drawn simultaneously to their seats, as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 5th day of May, 1882.

WILLIAM B. MACK.
JOHN D. MACK.

Witnesses:
C. F. BROWN,
A. L. WHITE.