(Model.)

W. B. MACK.

INJECTOR.

No. 318,636. Patented May 26, 1885.

Fig. 1.

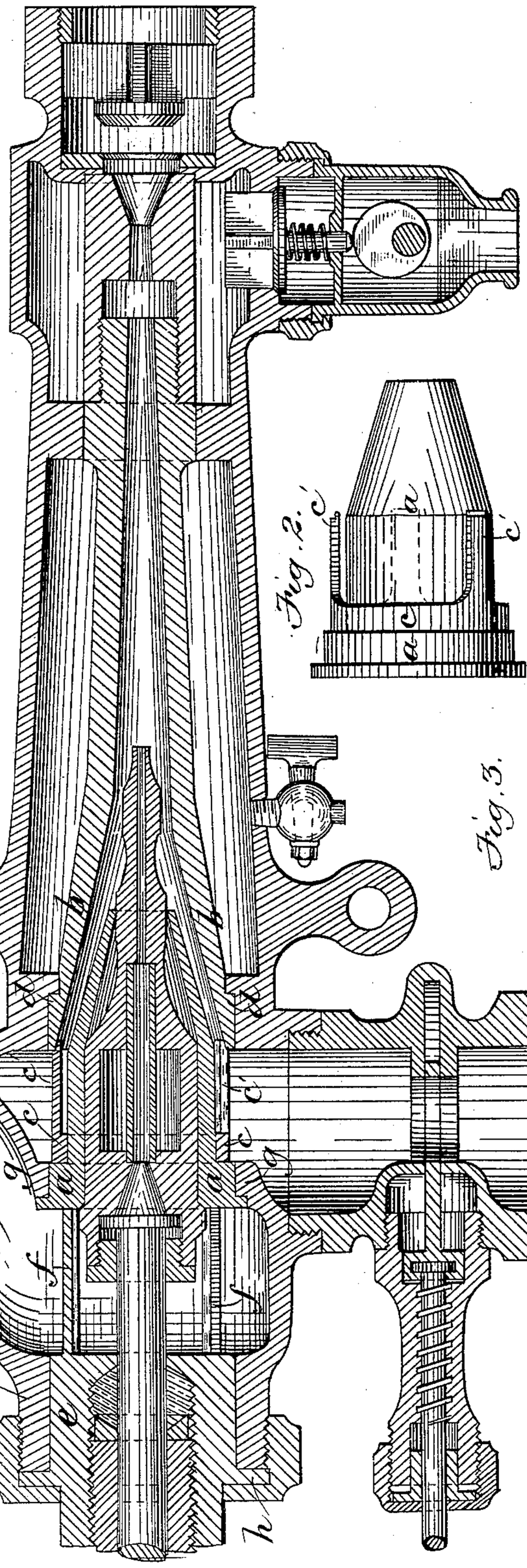
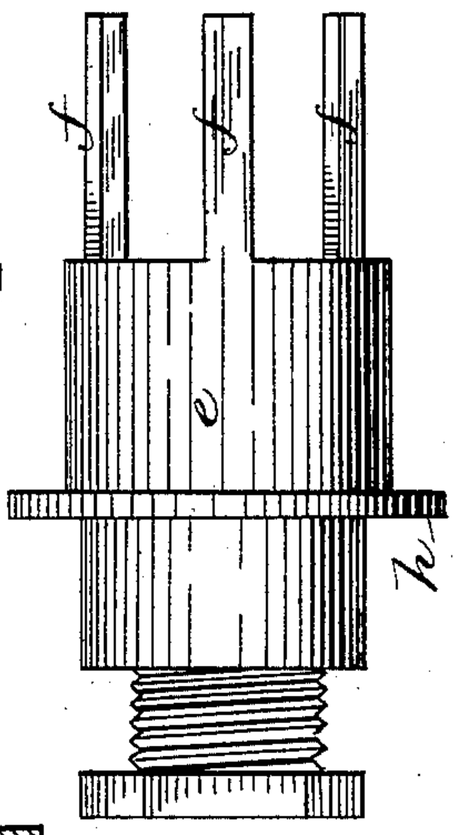


Fig. 2.

Fig. 3.



Witnesses.
H Brown
R J. Powers

Inventor
W. B. Mack
by Wright Brown
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM B. MACK, OF BOSTON, MASSACHUSETTS.

INJECTOR.

SPECIFICATION forming part of Letters Patent No. 318,636, dated May 26, 1885.

Application filed February 16, 1885. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM B. MACK, 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 to provide a cheap, durable, and effective device adapted to hold in place the interior parts of an injector, and also to permit of said parts to be more readily removed whenever desired for repairs or other purposes, dispensing with the numerous screw-threaded connections heretofore used, thereby effecting a great saving in the cost of construction, all of which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a sectional view of a boiler-feeding injector embodying my improvements. Fig. 2 represents a side elevation of the steam-cone with the collar attachment hereinafter described. Fig. 3 represents a side elevation of the principal holding device combining the stuffing-box and packing-nut usually attached to the rear ends of an injector, and having projections adapted to bear against the steam-cone at the outer or rear end of the same.

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

In the drawings, *a a* represent the steam-cone, and *b b* the combining-cone, of a boiler-feeding injector. On the steam-cone *a a*, I have placed a collar, *c*, (see Fig. 2,) said collar being provided with projections or prongs *c'*, three in number, and adapted to bear against the rear end of the combining-cone *b b*, thus holding said cone in place against the shoulder *d*, formed in the casing of the injector. Heretofore it has been the custom to cut screw-threads for the purpose of securing the cone *a a* and the combining-cone *b b* in place, thereby causing a considerable expense in the cost of construction, and rendering the removal of said parts very difficult on account of their location.

e represents the principal holding device, composed of a filling-piece fitted to the rear end of the injector and provided with fixed projections *j f f*, said projections bearing against the steam-cone *a a*, and holding it in place against shoulders *g g* of the injector-casing. Said filling-piece is provided with a flange, *h*, which engages with a nut, *i*, screwed onto the outside of the injector-casing *k*. When the nut *i* is screwed tightly to place, it presses the flange *k* firmly against the casing of the injector, and holds it rigidly in the position shown in Fig. 1. The projecting prongs of said filling-piece *e* press firmly against the rear or outer end of the steam-cone *a a*, and the projections *c'* of the collar *c* press firmly against the combining-cone *b b*, the whole of the interior parts of the injector being virtually held in place by the nut *i*.

It will be readily seen that the above-described devices for securing the interior parts of the injector in place are convenient, durable, and economical, and do away with the inconvenience and expense entailed by the use of screw-threaded connections, and permit the easier and quicker removal of said parts when necessary.

Heretofore the casing or shell of injectors has been made in two separate parts and fastened together by bolts, so that access can be obtained to the interior parts, which could not otherwise be had when said parts are screwed into the shell or casing. This mode of construction consumes time and causes delay at times when said parts are required to be quickly reached—as, for instance, when the accumulation of dirt and other matter causes a stoppage in the water-passages, as is often the case, requiring the removal of the steam-cone and of the combining-cone to remove the foreign matter. By the use of my devices such inconvenience is entirely obviated, as the removal of the nut *i* permits the ready removal of the inner parts without delay.

The shell or casing may be cast in a single piece, thus doing away with bolts and ground joints required when said casing is constructed in sections.

I claim—

1. In an injector, the external shell or casing having seats for the steam-cone and combining-cone, arms or projections supported by the steam-cone and holding the delivery-cone against its seat, and arms or projections secured to the casing and holding the steam-cone against its seat, as set forth.

2. The combination of the casing, the cones *a b*, bearing on seats formed in the casing without positive attachment thereto, the ring *c*, having arms *c'*, supported by the cone *a* and bearing against the cone *b*, and the collar or filling-piece *e*, positively secured to the casing and having arms *f*, which bear against the cone *a*, and thereby hold both cones in place.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 12th day of February, 1884.

WILLIAM B. MACK.

Witnesses:
C. F. BROWN,
RICHARD J. POWERS.