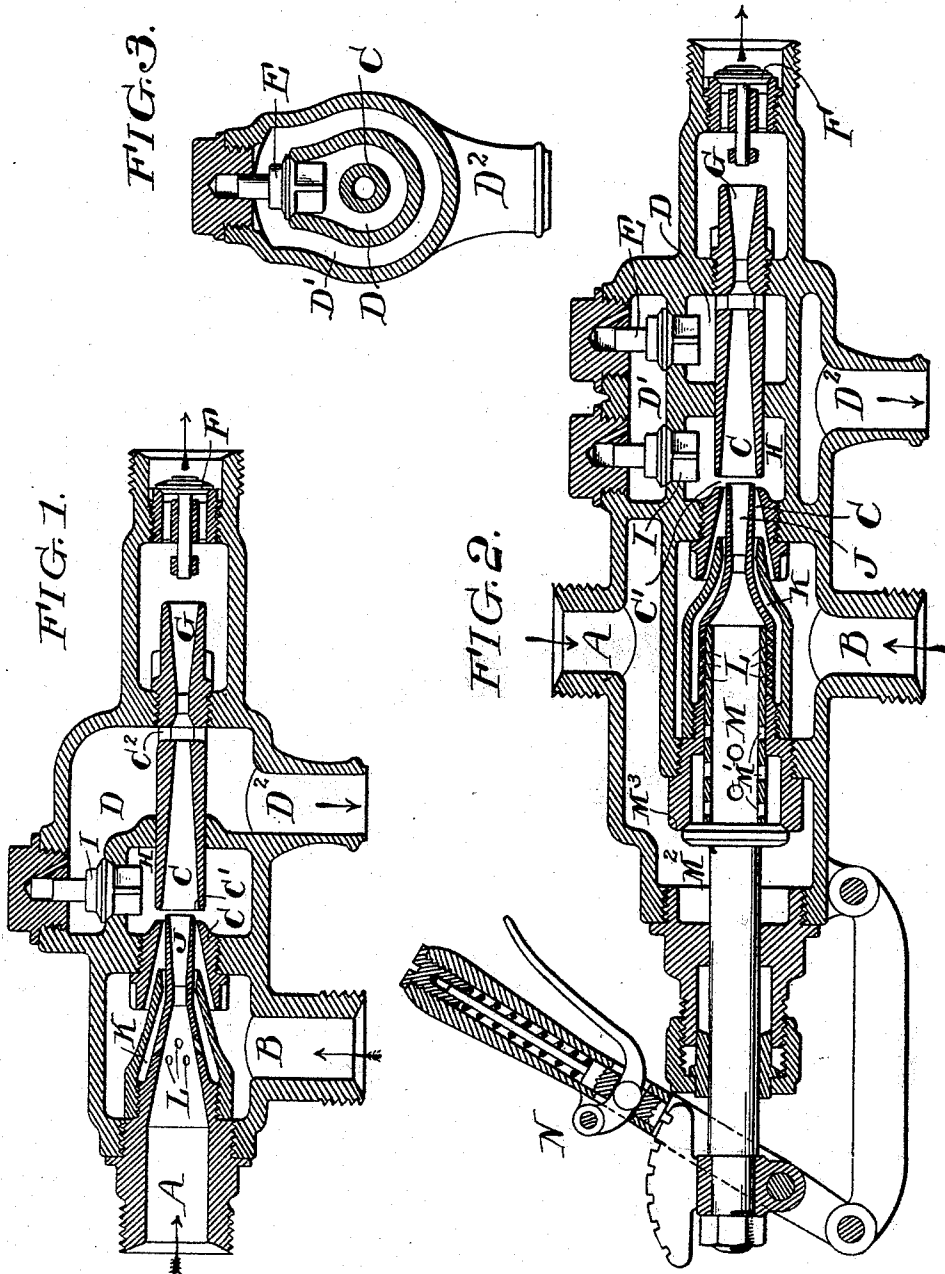


(Model.)

E. KÖRTING.
INJECTOR.

No. 496,977.

Patented May 9, 1893.



WITNESSES:

Henry Dwyer
Alfred E. Stewart

INVENTOR:

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by his atty.
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UNITED STATES PATENT OFFICE.

ERNST KORTING, OF HANOVER, GERMANY, ASSIGNOR TO LOUIS SCHUTTE,
OF PHILADELPHIA, PENNSYLVANIA.

INJECTOR.

SPECIFICATION forming part of Letters Patent No. 496,977, dated May 9, 1893.

Application filed December 21, 1892. Serial No. 455,893. (Model.) Patented in France September 29, 1892, No. 224,634, and in Belgium September 30, 1892, No. 101,586.

To all whom it may concern:

Be it known that I, ERNST KORTING, a subject of the Emperor of Germany, residing at Hanover, Germany, have invented a certain new and useful Improvement in Injectors, (for which I have obtained patents in France bearing date September 29, 1892, No. 224,634, and in Belgium bearing date September 30, 1892, No. 101,586,) of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to injectors, and has for its object to provide certain improvements in the construction thereof whereby the efficiency of the apparatus is increased.

The nature of my improvements will be best understood as described in connection with the drawings in which they are illustrated, and in which—

Figure 1, is a longitudinal section through an injector constructed in accordance with my invention, Fig. 2, being a similar section through an injector embodying the features shown in Fig. 1, and in addition certain other features which I prefer to use in connection therewith, and Fig. 3, is a cross section, taken on the section line $x-x$ of Fig. 2.

A, indicates the steam supply connection; B, the water supply connection; C, is the combining tube, which I form with a split as indicated at C'; C² being the ordinary openings from the combining tube forming the overflow into the overflow chamber D.

In Fig. 2, the overflow chamber is divided into two chambers, D and D' the opening between which is controlled by an outwardly opening check valve E.

A nozzle leading to the atmosphere in each case is indicated by the letter D².

F, indicates the check valve leading to the boiler.

G, is the ordinary discharging cone; H, a chamber surrounding the split in the combining tube, which as shown, opens to the atmosphere through the combining chambers D and D' and the nozzle D². Preferably the chamber H, is provided with an outwardly opening check valve I'.

J indicates a central steam jet, which as shown, extends to the split C' in the combining tube, and the rear portion of which receives steam directly from the source of supply.

K, is an annular steam nozzle, which surrounds the steam nozzle J, but terminates back of it, and back of the split in the combining tube forming an annular jet in the rear portion of the combining tube as shown in the drawings; preferably the annular steam nozzle receives its steam through a series of small openings L, formed through the walls of the central steam nozzle. The advantage of this construction is, that these small openings or perforations serve as a strainer which excludes all foreign substances from the annular nozzle, thus avoiding the risk of choking the small annular opening between the central and outer nozzles. Preferably I provide a valve M, Fig. 2, which can be moved forward and backward by mechanism such as is illustrated at N, and by which any desired number of the small openings between the central steam nozzle and the annular nozzle can be closed, thus regulating the supply of steam to the annular nozzle. As shown in the drawings the rear part of the valve M, which is a hollow cylinder, is formed with large openings, M' and at the extreme rear of the cylindrical valve, a valve M² is secured, which, when the valve is thrust forward to its extreme position comes in contact with a valve seat M³ thus cutting off the steam supply to the central steam nozzle. When the valve is drawn back the steam can enter between the valve M² and its seat M³ and it then passes through the openings M' to the center of the cylindrical valve M and thence to the body of the central steam jet J.

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

1. In an injector the combination of a split combining tube, a central steam nozzle extending to or about to the split in the combining tube, an annular steam nozzle surrounding the central nozzle and terminating at a point in the combining tube back of the

central nozzle and of the split, and a chamber surrounding the split in the combining tube, and opening to the atmosphere.

2. In an injector the combination of a split
 5 combining tube, a central steam nozzle extending to or about to the split in the combining tube, an annular steam nozzle surrounding the central nozzle and terminating
 10 at a point in the combining tube back of the central nozzle and of the split; a chamber surrounding the split in the combining tube and opening to the atmosphere, and an outwardly
 opening check valve governing the connection of said chamber with the atmosphere.
- 15 3. In an injector the combination of a split combining tube, a central steam nozzle extending to or about to the split in the combining tube, and directly connected with the
 20 steam supply; an annular steam nozzle surrounding the central nozzle and terminating at a point in the combining tube back of the central nozzle and of the split, said annular nozzle receiving its steam supply from the

central nozzle through a series of small holes in the intervening wall.

4. In an injector, the combination of a split
 25 combining tube, a central steam nozzle arranged to connect directly with the steam supply, and extending to or about to the split
 30 in the combining tube; said nozzle having a series of small holes extending through its walls; an annular steam nozzle surrounding
 35 the central nozzle and receiving steam through the holes in the wall thereof, said nozzle extending to a point in the combining tube back
 40 of the split; a valve arranged to move over the openings in the wall of the central nozzle to regulate the supply of steam to the
 annular nozzle and a chamber surrounding the split in the combining tube and opening to
 the atmosphere.

ERNST KORTING.

Witnesses:

W. HARMS,
 AD. THOLKE.