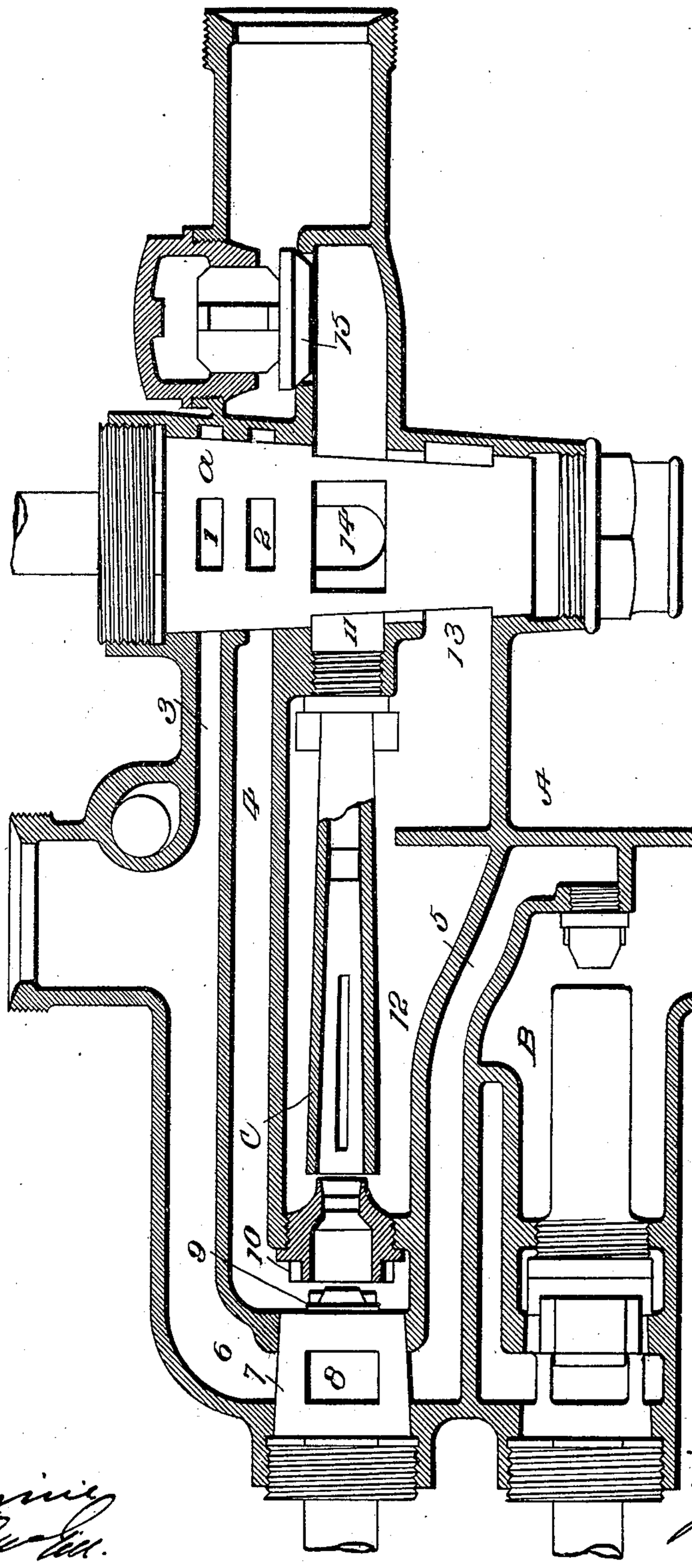
No. 674,182. Patented May 14, 1901.

F. STICKER.

STEAM INJECTOR.

(Application filed May 4, 1900.)

(Model.)



Witnesses

Inventor

Francis Sticker,

Attorney

UNITED STATES PATENT OFFICE.

FRANCIS STICKER, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO CHARLES A. DRUCKLIEB, OF SAME PLACE.

STEAM-INJECTOR.

SPECIFICATION forming part of Letters Patent No. 674,182, dated May 14, 1901.

Application filed May 4, 1900. Serial No. 15,518. (Model.)

To all whom it may concern:

Be it known that I, FRANCIS STICKER, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Steam-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 appertains to make and use the same.

This invention relates to certain new and useful improvements in steam-injectors, and has special reference to the type shown in Letters Patent No. 600,455, issued to me on March 8, 1898.

The primary object is to facilitate the starting of the injector by insuring passage to the atmosphere without creating back pressure. This I accomplish by admitting a primary supply of steam to the tubes of the forcer through a supplemental steam-inlet tube in line with and in addition to the forcer-tubes. The smallest cross-sectional area of this supplemental steam-inlet tube is equal to or less than the smallest cross-sectional area of the delivery-tube of the forcer. Steam is admitted through this supplemental steam-tube simultaneous with the admission of steam to the lifter and before the admission of the full head of steam to the regular steam-tube of the forcer.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawing the figure is a vertical longitudinal sectional view.

Referring to the drawing, A designates the casing, having the usual steam and water inlets and boiler-outlet. The overflow-openings into the overflow-outlet are controlled by a single cock *a*. Through ports 1 and 2 of this cock the steam passes to the forcer from conduit 3 (leading from the inlet) to the conduit 4, after the manner shown and decribed in the Letters Patent before mentioned.

B is the lifter, and C is the forcer. The combining and delivery tube of the lifter is capable of longitudinal adjustment for regulating the capacity to the machine after the manner shown and described in a concurrent application for patent filed by me on the 4th day of May, 1900, Serial No. 15,517. Steam is supplied to the steam-tube of the lifter through conduit 5, leading from steam-chamber 6. Extending through this steam-chamber is a cock 7, having a transverse port 8. This cock controls the passage of steam to the lifter and the initial supply of steam to the forcer. In this cock is mounted a supplemental steam-inlet tube 9 in line with the main steam-inlet tube 10 of the forcer. The smallest cross-sectional area of tube 9 is equal to or less than the smallest cross-sectional area of the delivery-tube. This insures the free passage of the steam to the atmosphere without occasioning any back pressure, the escape being through the primary discharge-opening at the point 11. In starting, cock 7 is turned to admit steam to the lifter through conduit 5 and also to the tube 9. As the steam reaches the atmosphere through the primary overflow-opening and the water is lifted and discharged by the lifter it passes into the water-chamber 12 of the forcer and may find an outlet through the auxiliary overflow-opening 13. At this time the cock *a* is turned, cutting off the overflows and allowing steam to pass from conduit 3 to conduit 4 through the ports 1 and 2 of said cock, the steam in conduit 4 at once entering the regular steam-tube 10 of the forcer, and being condensed in the combining-tube by the water in chamber 12 the jet will be immediately established and pass to the boiler through the port 14 of the cock, unseating check-valve 15. Thus it will be observed that the forcer is provided with the additional steam-inlet tube 9, which will admit a primary supply of steam to pass immediately through the tubes of the forcer to the atmosphere, aiding in the lifting of the water into the injector by the creation of a vacuum therein.

I claim as my invention—

1. A steam-injector having a supplemental steam-inlet tube in line with, and for admitting a primary supply of steam to, the other tubes of a series, said supplemental steam-inlet tube being independent of the other tubes, as set forth.

2. A steam-injector having a supplemental steam-inlet tube in line with, and for admitting a primary supply of steam to, the steam,

combining and delivery tubes, the smallest cross-sectional area of said supplemental steam-inlet tube being equal to or less than the smallest cross-sectional area of the delivery-tube, said supplemental steam-inlet tube being independent of said steam-inlet tube, as set forth.

3. A steam-injector having a supplemental steam-inlet tube for admitting a primary supply of steam to the tubes of the forcer, and means for admitting steam to the forcer independently of the primary supply, as set forth.

4. A steam-injector having a steam-chamber, a cock in said chamber for admitting steam to the lifter and forcer, a supplemental steam-inlet tube in line with the forcer, and means for admitting steam to the forcer independently of the primary supply through the supplemental steam-inlet tube, as set forth.

5. A steam-injector having a steam-chamber leading to the lifter, and a branch conduit leading to the forcer, a supplemental steam-inlet tube for admitting steam from said chamber to the forcer, and a cock or valve for controlling the steam to the forcer through said conduit independent of the primary supply through the supplemental steam-inlet tube, substantially as set forth.

6. A steam-injector having a steam-chamber leading to the lifter, and a branch conduit for the passage of steam to the forcer, a cock or valve for controlling the passage of steam through the conduit, a cock in said steam-chamber for controlling the steam to the lifter and a primary supply to the forcer, and a supplemental steam-inlet tube carried by said cock or valve in line with the tubes of the forcer, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANCIS STICKER.

Witnesses:
ANNA T. MALLON,
L. HERZIG.