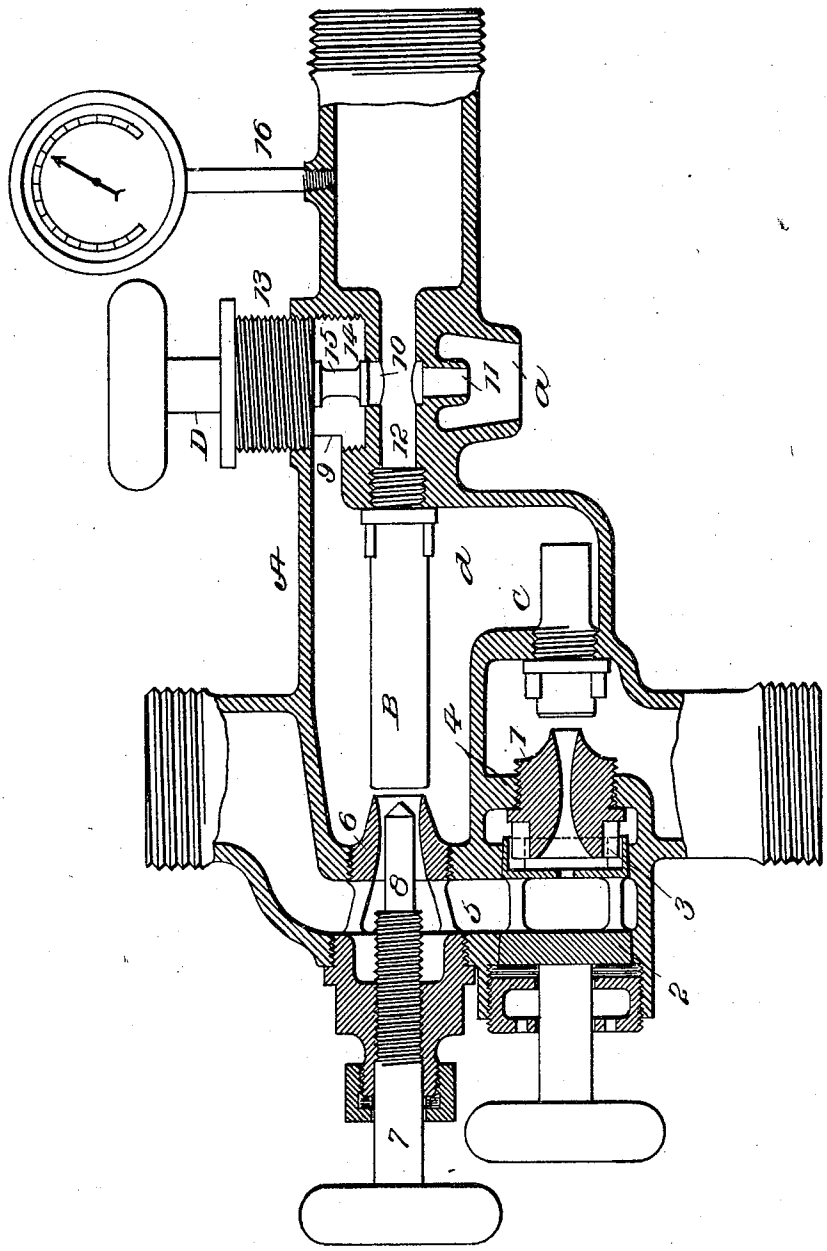
No. 674,183. Patented May 14, 1901.

F. STICKER.

STEAM INJECTOR.

(Application filed May 4, 1900.)

(Model.)



Witnesses

Inventor

Francis Sticker,

by Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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. 674,183, dated May 14, 1901.

Application filed May 4, 1900. Serial No. 15,519. (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 contemplates certain new and useful improvements in steam-injectors of the double-tube variety.

The object of the invention is to provide a simple and highly-efficient machine of this class which may also be employed as a boiler-washer and boiler-tester.

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

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

Referring to the drawing, A designates the casing, having the usual steam and water inlets and boiler-outlet and an overflow branch *a*.

B is the forcer, and C is the lifter. The steam-inlet tube 1 of the lifter is adjustable longitudinally for the purpose of regulating the water capacity of the machine. This is accomplished by means of a cock 2 engaging lugs 3 of the tube, which latter is externally threaded to engage a threaded opening in the partition 4 after the manner shown and described in my application for patent, Serial No. 15,518, filed on the 4th day of May, 1900. In said application I showed similar means for adjusting longitudinally the combining-tube of the lifter for regulating the capacity of the machine; but in the present instance I seek to obtain the same result by the longitudinal adjustment of the steam-inlet tube of the lifter. Steam is supplied to the lifter and also to the forcer from steam-chamber 5. The admission of steam to the steam-tube 6 of the forcer is under the control of a valve 7, having a projecting spindle 8, the function of which is to prevent a full head of steam from passing into the forcer until such spindle is withdrawn.

The auxiliary overflow of the lifter passes outwardly through a port at 9, and thence through an outlet 10 and a lower outlet 11 into overflow branch *a*. The primary overflow, being that which occurs through the forcer, is through the delivery-tube of the latter, through bore 12, and outlet 11. The overflows are controlled by valve D, which is shown as formed with a threaded valve 13, engaging a corresponding threaded recess 14 in the upper part of casing A. From this barrel 13 projects a spindle 15, flanged or widened at its ends. When this valve is screwed down, the spindle 15 first closes the auxiliary-overflow outlet 10, and at the same time the barrel cuts off the overflow at port 9. The further turning of the valve will cut off the primary overflow through outlet 11. The valve may be turned in a reverse direction sufficient to permit discharge through the outlet 11 without allowing discharge through the port 9, as is required when the machine is used for boiler-testing purposes.

In practice the overflow-controlling valve is turned so as to free both outlets, and steam being admitted and passing through the lifter upon finding its way to the outside atmosphere a vacuum will be created, effecting the lifting of the water, and when this is discharged into chamber *d* and passes through the auxiliary-overflow openings valve 7 is turned, so as to remove spindle 8 from tube 6, and valve D is operated to cut off the auxiliary and primary overflows upon the steam in the combining-tube of the forcer being condensed by the water in chamber *d*, allowing the established jet to pass to the boiler. It is not necessary, however, that spindle 8 remain in the steam-tube 6 in the starting of the injector, as steam may, when the injector is to be used merely for feeding water to the boiler, be admitted to both the lifter and forcer simultaneously. For boiler-washing and ejecting steam valve 7 remains closed, as does also the overflow-valve D, as there is no pressure to resist. The steam enters the lifter and lifts the water and ejects the same to any open or pressureless vessel in any desired quantity or under any predetermined temperature. For use as a boiler-tester after the boiler is entirely filled with water, as recited in conjunction with the use of the ma-

chine as a boiler-washer, valve 7 is opened to create considerable pressure and the overflow-valve D is opened or closed to admit or prevent overflow, according to the pressure to which it is desired to subject the boiler, which pressure will be indicated upon the gage, indicated at 16 as being connected to the discharge-chamber of the injector. If this gage indicates a greater pressure than is desired, the overflow-valve is opened sufficient to allow a partial overflow, which may be regulated to maintain the predetermined pressure within the boiler.

The working capacity of the machine is controlled by the adjustment of the steam-inlet tube of the lifter, which may be accomplished while the injector is working.

I claim as my invention—

1. A steam-injector having a primary and auxiliary overflow outlets, and a valve having a projecting portion for closing first the auxiliary-overflow outlet, and secondly the primary-overflow outlet.

2. A steam-injector having primary and auxiliary overflow outlets, a valve having a projecting portion for closing first the auxiliary-overflow outlet, and secondly the primary-overflow outlet, and additional means for closing the auxiliary overflow when the primary-overflow outlet is opened.

3. The combination with the casing having an auxiliary-overflow port and outlet, and a primary-overflow outlet, of a valve for successively closing said outlets and having means for closing said auxiliary-overflow port, substantially as set forth.

4. The combination with the casing having an auxiliary-overflow port and outlet and a primary-overflow outlet, said port opening into a recess in said casing, of a valve having a barrel designed to fit in said recess and also having a spindle designed to close both of said outlets, substantially as set forth.

5. A steam-injector having a lifter and forcer and a steam-chamber common to both said lifter and said forcer, a valve having a spindle designed to extend into the steam-tube of the forcer, the overflow branch having outlets for the auxiliary and primary overflows, and the valve having a spindle designed to successively close said outlets, 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.