

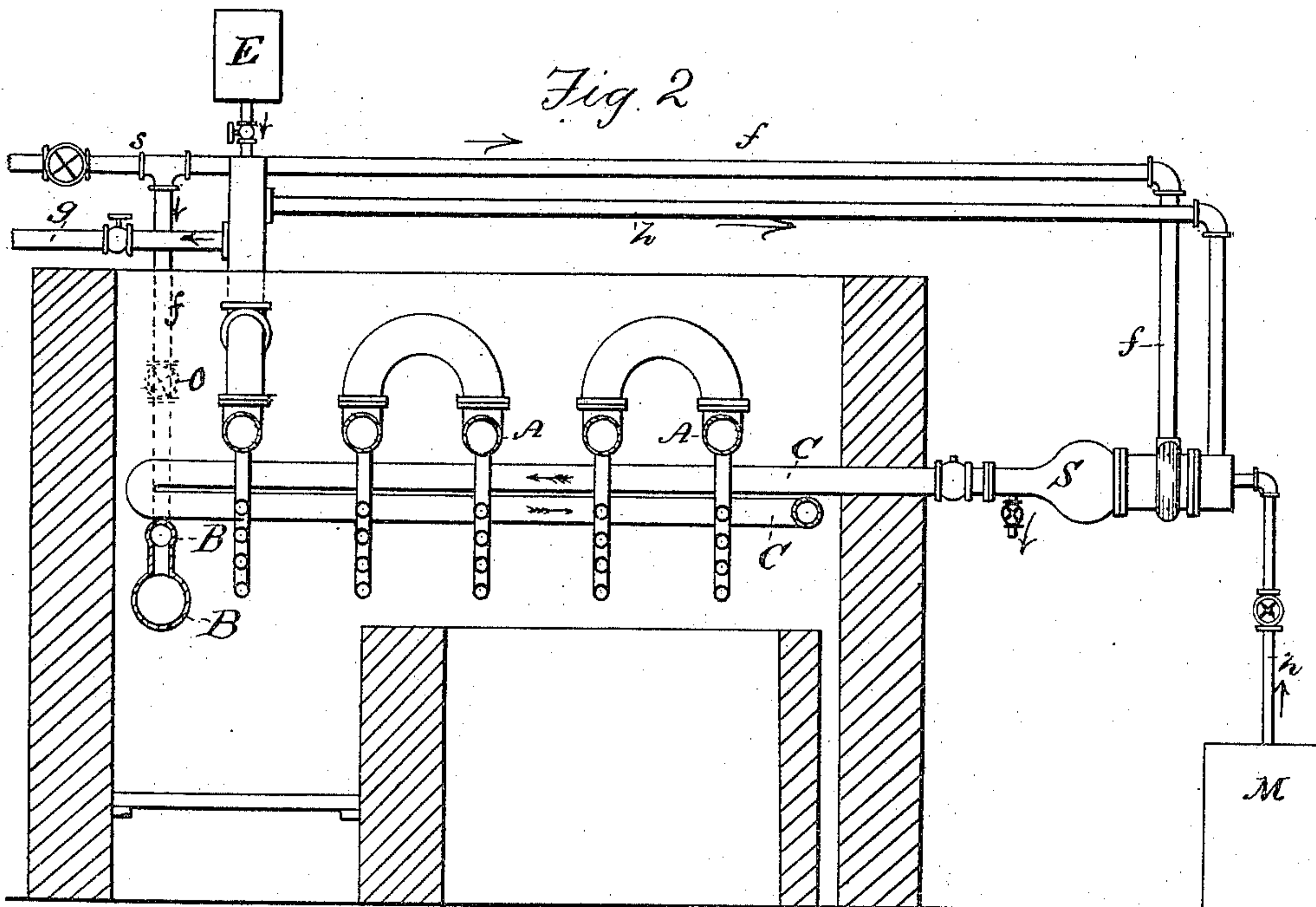
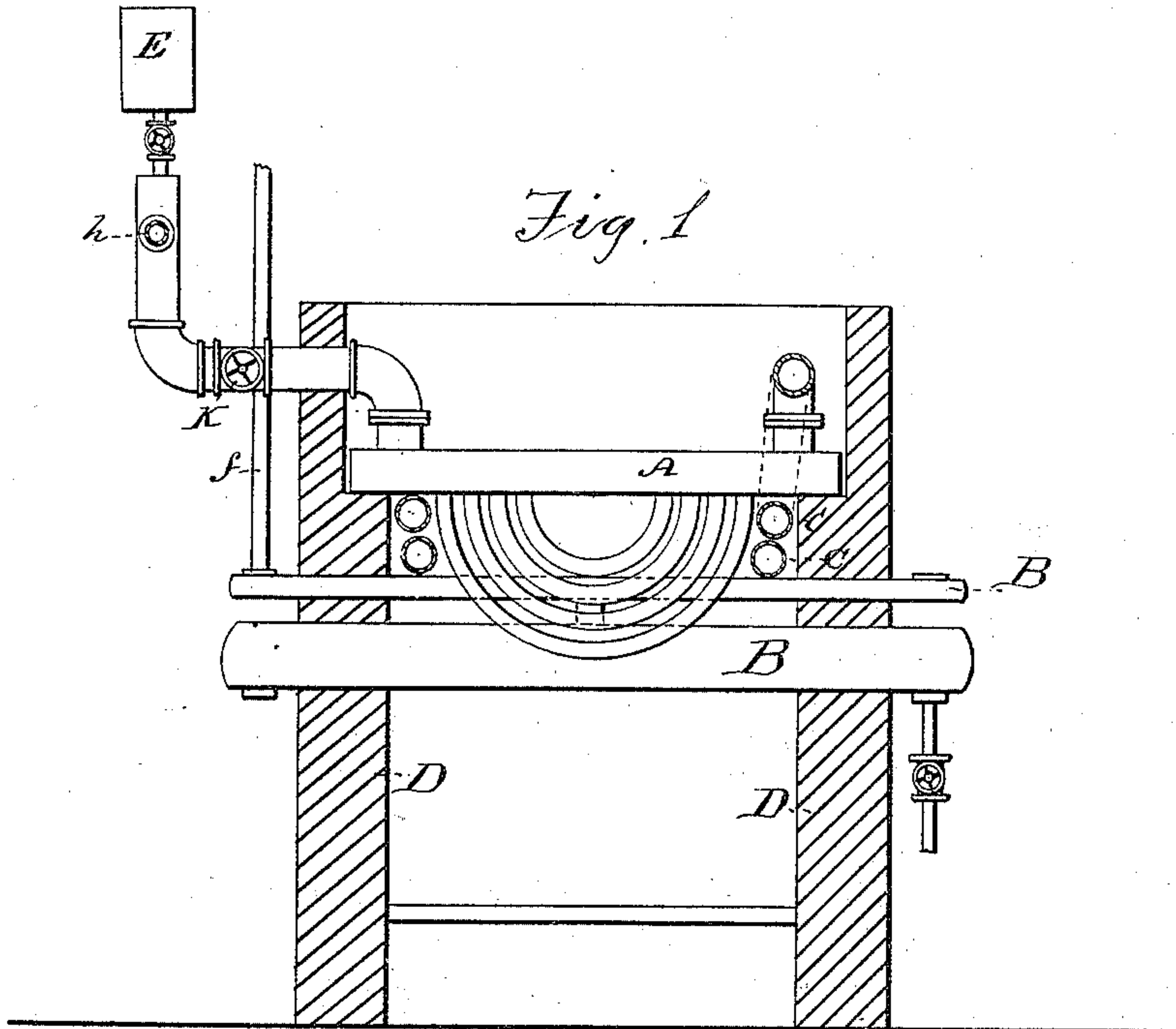
(No Model.)

D. RENSHAW.

MAINTAINING PRESSURE IN SUPERHEATERS.

No. 285,843.

Patented Oct. 2, 1883.



WITNESSES
Chas. R. Burr
W. E. Bowen

INVENTOR
David Renshaw
per O. E. Duffy
Attorney

UNITED STATES PATENT OFFICE.

DAVID RENSHAW, OF BRAINTREE, MASSACHUSETTS.

MAINTAINING PRESSURE IN SUPERHEATERS.

SPECIFICATION forming part of Letters Patent No. 285,843, dated October 2, 1883.

Application filed February 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, DAVID RENSHAW, of Braintree, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Maintaining Pressure in Superheaters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The object of this invention is to maintain in superheaters a pressure greater than that due to the source of their supply; and, further, to widen the range of usefulness of such superheaters, by this means fitting them for use as blowing and fluxing engines, high-pressure steam-boilers, &c.

It consists in first producing the desired working pressure on a superheater, and then maintaining such pressure by means of injection, in connection with water, of atmospheric pressure, while carrying continually a portion of the superheated bodies to the work to be done or accomplished by them.

It further consists in providing minor mechanical means for the prevention of injury to superheaters so used, by interposing between them and the injector and the furnace a subsidiary heater, so arranged and of such material as to permit of the injection into it, while under high temperatures, of liquid spray, or even water; also, for providing for the production of fluxing-gases, in combination with steam in the apparatus, and over the furnace or other source, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 shows a front elevation of my invention; and Fig. 2 shows a side elevation of the same in section.

Referring more particularly to said drawing, A is the superheater.

B B is a boiler of low pressure, which may be used for the preparation of fluxing-gases, or steam of a denser body, which intermingles in the superheater with the superheated steam.

C is a subsidiary heater, into which the

superheated steam or gases, and water and gases of denser body—such as hydrocarbon, &c.—are first injected, that any water remaining in the mixture, as water, may be brought to the condition of steam before entrance to the superheater proper. This subsidiary heater C, I prefer to make of brass tubing.

D is the brickwork of the superheater.

E is a cold-water tank, located over the delivery stand-pipe of the superheater, from which a sufficient quantity of water is let into the superheater before starting the fire, which, when made into superheated steam, will give the pressure at which it may be desired to work said superheater, thus forming a simple way of putting the apparatus into operation.

f is a pipe connecting the low-pressure boiler B with injector S, and when gases or fluids other than steam are used they enter pipe f through the valve s.

o is a valve in pipe f, below valve s.

g is a pipe for carrying superheated steam or gases from the superheater to the work to be done.

h is a pipe leading from the front or hottest part of the superheater to the injector, located in rear of the same.

K is a valve controlling the outlets from the superheater.

M is a water-tank, which may be located in any suitable position, and n is a pipe connecting the same with the injector S. Of course, this water supply may be taken from some other source than the tank, but in all cases would be led to the injector S by pipe n.

It will be seen that this process has a wide range of uses, and its details may be greatly varied without departing from the spirit of my invention.

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

1. The process herein described of maintaining pressure greater than the source of supply, which consists of first supplying the superheater with the desired quantity of water for working purposes, then taking steam or gases of greater density than the superheated steam, which may be fluxing or other gases, then conveying the superheated steam and said gases into an injector, by which the mix-

ture is forced into a subsidiary heater, and then to the superheater, where it is maintained at a greater pressure for working or blowing purposes, as set forth.

5 2. The process of maintaining pressure greater than the source of supply, consisting of first raising steam in a superheater for working purposes, then conveying denser gases or fluids (which may be of a fluxing character) to
10 the injector, in which they are brought in contact with superheated steam and water at atmospheric pressure, by which the resultant mixture is forced into a subsidiary heater, where its volume is increased, and thence to the
15 superheater, to be used for the purposes set forth.

3. The combination of means for maintaining pressure in a superheater greater than the source of supply, consisting of the vessel B, the subsidiary heater C, the superheater A, 20 and the injector, with intermediate connections, substantially as set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

DAVID RENSHAW.

Witnesses:

B. F. MORSELL,
EUGENE D. CARUSI.