

(Model.)

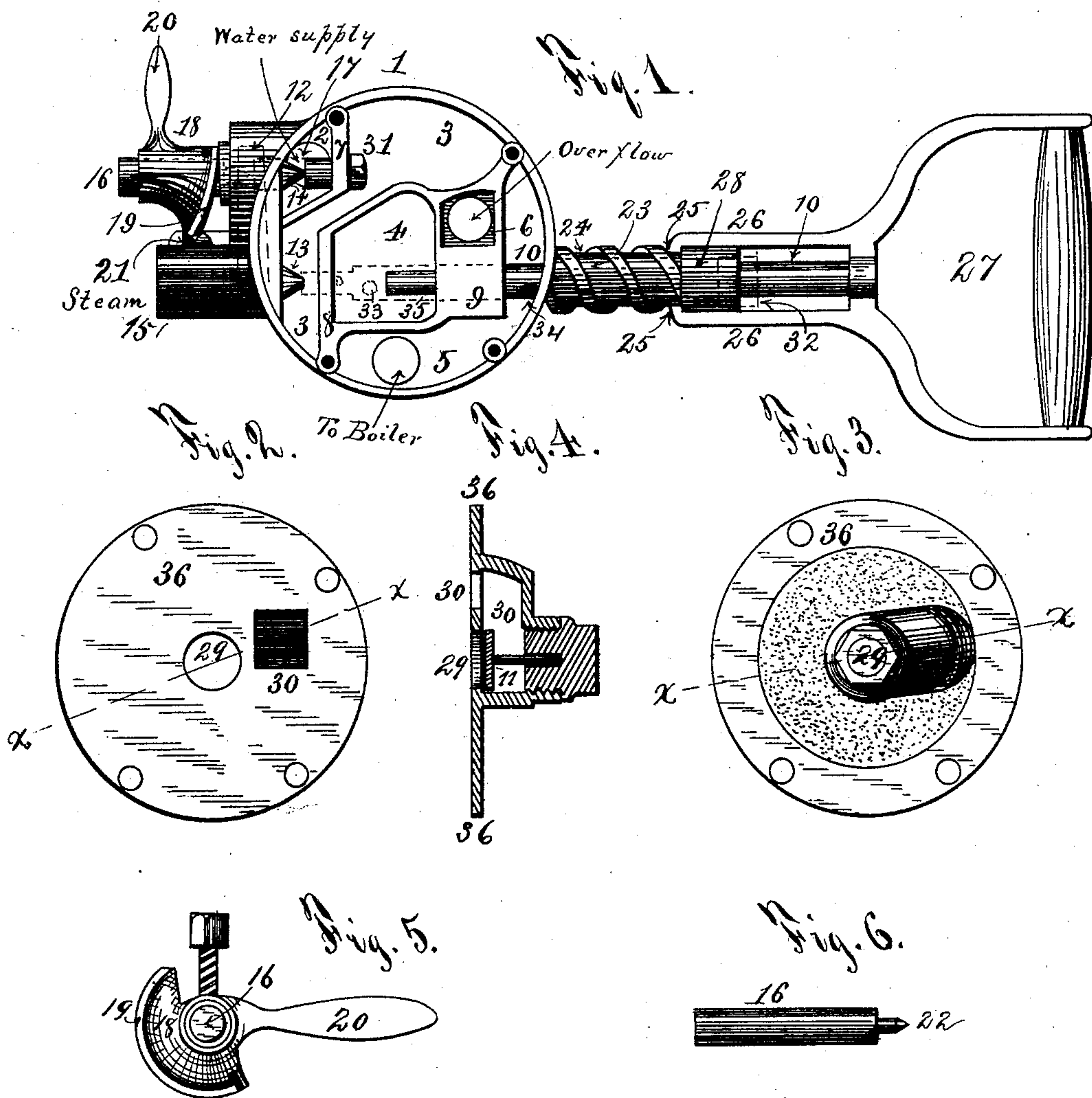
2 Sheets—Sheet 1.

J. M. MARTY.

INJECTOR.

No. 341,030.

Patented May 4, 1886.



Witnesses.

Jos. C. Ingram.
Chas. B. Parkhurst.

Inventor.

John M. Marty
By his Attorney
John Duffie

(Model.)

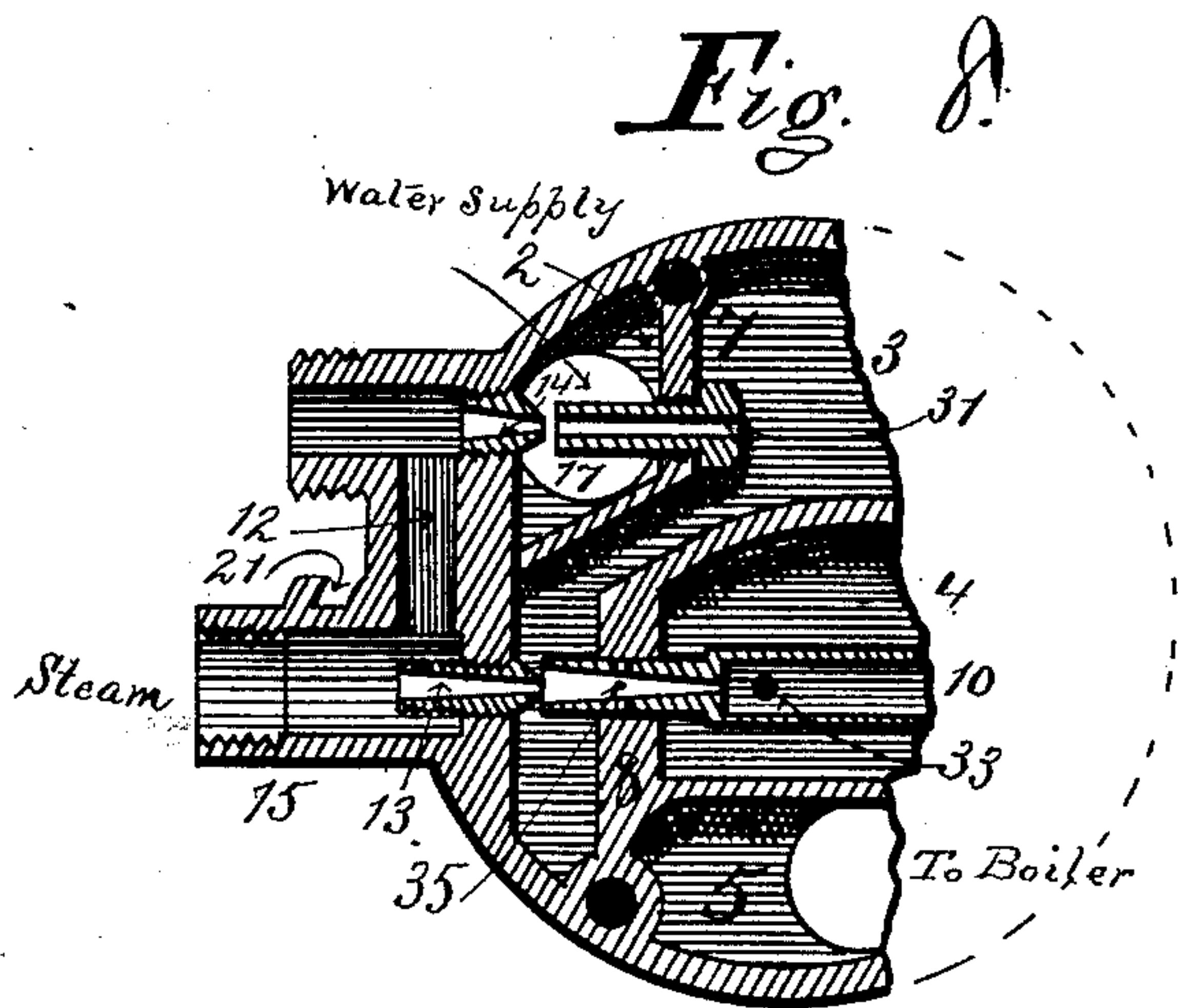
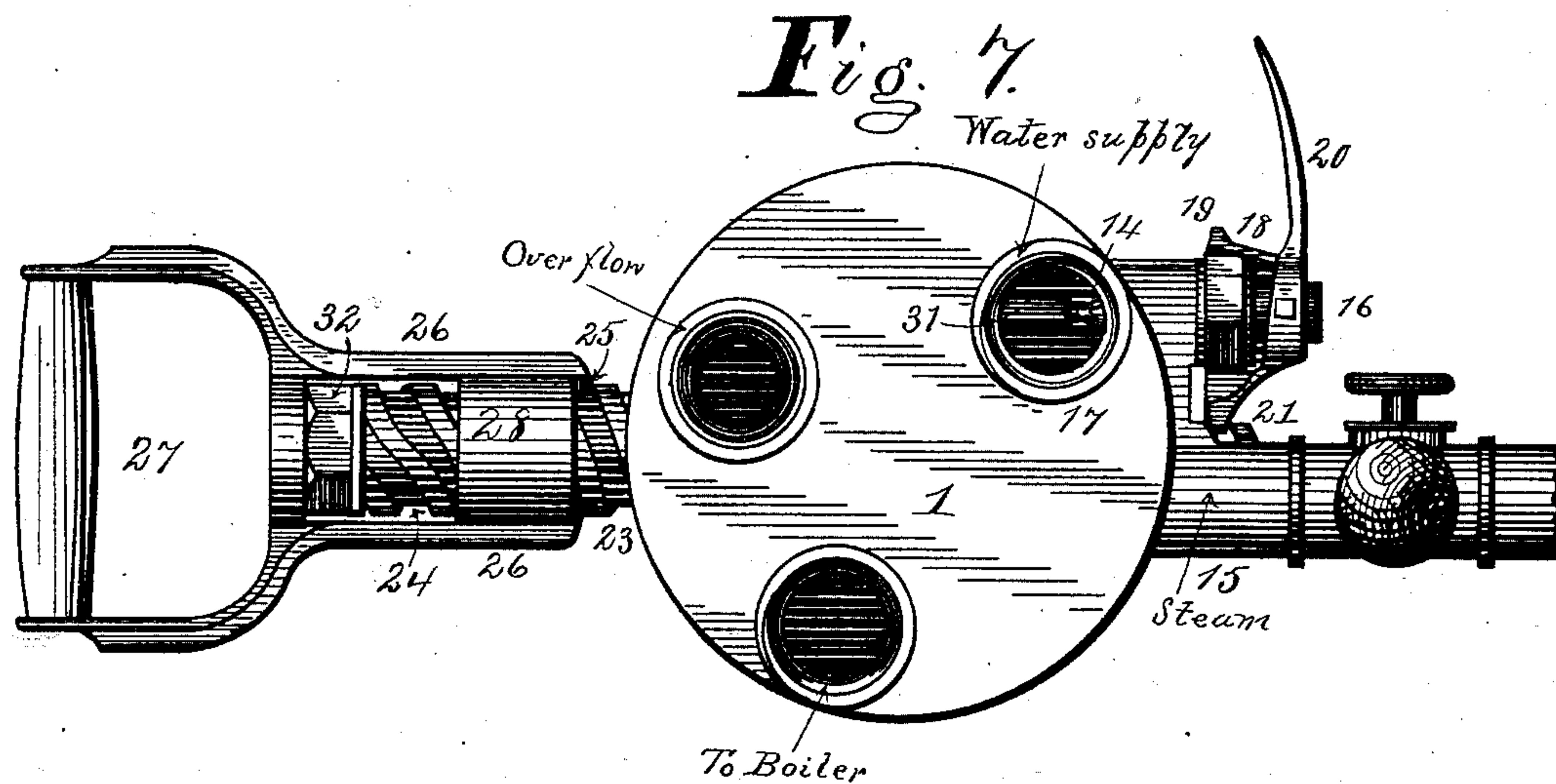
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Jno. C. Ingram.
S. A. Birrell.

Inventor.

John M. Marty
By his atty J. S. Dwyer

UNITED STATES PATENT OFFICE.

JOHN M. MARTY, OF CLEVELAND, OHIO.

INJECTOR.

SPECIFICATION forming part of Letters Patent No. 341,030, dated May 4, 1886.

Application filed January 2, 1886. Serial No. 187,425. (Model.)

To all whom it may concern:

Be it known that I, JOHN M. MARTY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Injectors, and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The object of my invention is to make a combined ejector and injector which is simple, reliable, can be adjusted to feed more or less, work automatically under a head or with a low lift.

In the accompanying drawings, Figure 1 is a side elevation of my invention, the cap or cover being removed. Fig. 2 is a view of the inside of the cap or cover. Fig. 3 is a top side view of the same. Fig. 4 is a sectional view on the line *x x* of Fig. 3. Fig. 5 is a detailed view of the bell-shaped cap. Fig. 6 is a detailed view of the regulating-pin. Fig. 7 is a bottom view of the invention. Fig. 8 is a sectional view of part of the invention.

I accomplish my object by the following construction: I make the body 1 of the injector of any desired shape and divide the same into chambers 2, 3, 4, 5, and 6 by partitions 7 8 9, which partitions also support the necessary tubes. The said chambers are open on top, as shown in Fig. 1, when not closed by a cap, but are covered by a plate or cap, 36, which is screwed down onto the body of the injector.

The chamber 2 is the suction-chamber. 3 is the room between the first and second sets of tubes or the lifter and forcer tubes. 4 is the overflow or vacuum-chamber; 5, the discharge-chamber; 6, the discharge-overflow chamber; 10, the combining (mixer and discharge) tube.

Chamber 2 is connected with the water-supply reservoir by proper tubing; 5, with the boiler. 6 is open on the bottom, and 4 has an automatic closing check-valve, 11, on top in the cover or cap 36. There is also a small chamber (shown by the dotted lines 12, Fig.

1, and more fully shown in Fig. 8) in the body of the injector not open on top, the same being used to connect the two steam-jets 13 and 14, and through which a part of the steam from the steam-connection rushes over through said chamber 12 to the lifter-jet 14.

16 is a regulating-pin to adjust the amount of steam entering the lifting steam-tube 14, and enabling the operator to feed less water without making the lifted water hotter, as would be the case by a constant steam-supply and a globe or stop-cock valve in the suction-pipe 17. This regulation is accomplished by the bell-shaped cap 18, having the screw-like flange 19, handle 20, and regulating-pin 16, passing through the center of the said cap. The flange 19 works in a corresponding screw-like slot, 21, on the steam-connection 15. The point 22 of the pin 16 opens or closes the forcer-tube 14 as the handle 20 of said cap is turned up or down.

Attached to body 1 of the injector, and in a line with the axis of the forcer-tube 13 and combining tube 10, is a threaded neck, 23, in the grooves 24 of which neck work projections 25 on the ends of the arms 26 of the handle 27, the closed end of the combining-tube 10 being also attached to the said handle, the arms 26 being supported and strengthened by a sleeve, 28, which works around the threaded neck 23.

The combining-tube 10 projects through the body of the injector. When said tube is drawn back away from the steam-forcer tube 13, so that it is clear out of the partition 8, between the chambers 3 and 4, and some distance back of it, the said two steam-jets serve to produce suction, throwing first steam and then water out of the overflow-valve 29 into the chamber 6 through the channel 30, (see Fig. 4,) which overflow valve and channel 30 are both within the cover 36 of the body of the injector. When water appears at the overflow, the combining-tube 10 is moved toward and over the mouth of the steam-tube 13 until the water ceases to flow out of the overflow. If less water is desired, the combining-tube 10 can be still moved forward, (by turning the handle 27,) lessening the amount of water by diminishing the orifice at the mouth of the said tube. Both of the lines of the tubes 14 31 and 13 10

have thus an independent regulation which is especially beneficial in lifting water a great distance or after the tubes begin to wear.

On the end of the threaded projection 23, I provide a stuffing-box nut, 32, which has a rim, α , on the inside of said nut, to prevent the handle 27 from slipping off of said threaded projection.

The combining-tube 10 has the water-overflow holes 33 and discharge-holes 34, and about in the center of the combining-tube 10 are several steam-overflow holes 35, whose combined area is somewhat greater than the area in the steam-tube 13, and which holes open into the vacuum-chamber 4 for the purpose of allowing the steam issuing from the steam-tube 13 to escape without causing back-pressure inside the said chamber 3, thus enabling the lifting apparatus to resume work automatically after casual interruptions. It also starts automatically under a head, even if steam is given before water.

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

1. In a combined injector and ejector, the body 1, having open chambers 2, 3, 4, 5, and 6, and closed chamber 12, formed by means of partitions 7, 8, and 9, cover 36, having overflow 29, and channel 30, substantially as shown and described.

2. In a combined ejector and injector, as above described, the bell-shaped cap 18, having a handle, 20, screw-like flange 19, adapted to work in slot 21, and pin 16, having point 22, adapted to close the steam-tube 14, substantially as shown and described, and for the purpose set forth.

3. In a combined ejector and injector, as

above described, the cover 36, having on its outer face the overflow-valve 29, and channel 30, connected with the said overflow, substantially as shown, and for the purpose set forth.

4. In a combined ejector and injector, as above described, the combining-tube 10, having the steam-overflow holes 35, water-overflow holes 33, discharge-holes 34, said tube projecting through and outside of the injector and stuffing-box, and adapted to be operated from the outside, substantially as shown and described, and for the purpose set forth.

5. In a combined ejector and injector, as above described, the threaded neck 23, and handle 27, having arms 26, and projections 25, adapted to work in the grooves 24 of the said neck, and sleeve 28, supporting said arms and working around said neck, substantially as shown and described, and for the purpose set forth.

6. In a combined ejector and injector, the combining-tube 10, as above described, adapted to reciprocate within the body of the injector, vacuum-chamber 4, and partitions forming the same, substantially as shown and described, and for the purposes set forth.

7. In a combined ejector and injector, the combination of the body 1, having the closed chamber 12, suction-chamber 2, open chamber 3, vacuum-chamber 4, discharge-chamber 5, the steam-lifter tube 14, steam-forcer tube 13, cap 18, pin 16, and combining-tube 10, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN M. MARTY.

Witnesses:

FRANK STRAUS,
JAY COMSTOCK.