F. A. MONROE.

DEVICE FOR CLEANING WELLS.

APPLICATION FILED DEC. 8, 1908.

943,885. Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

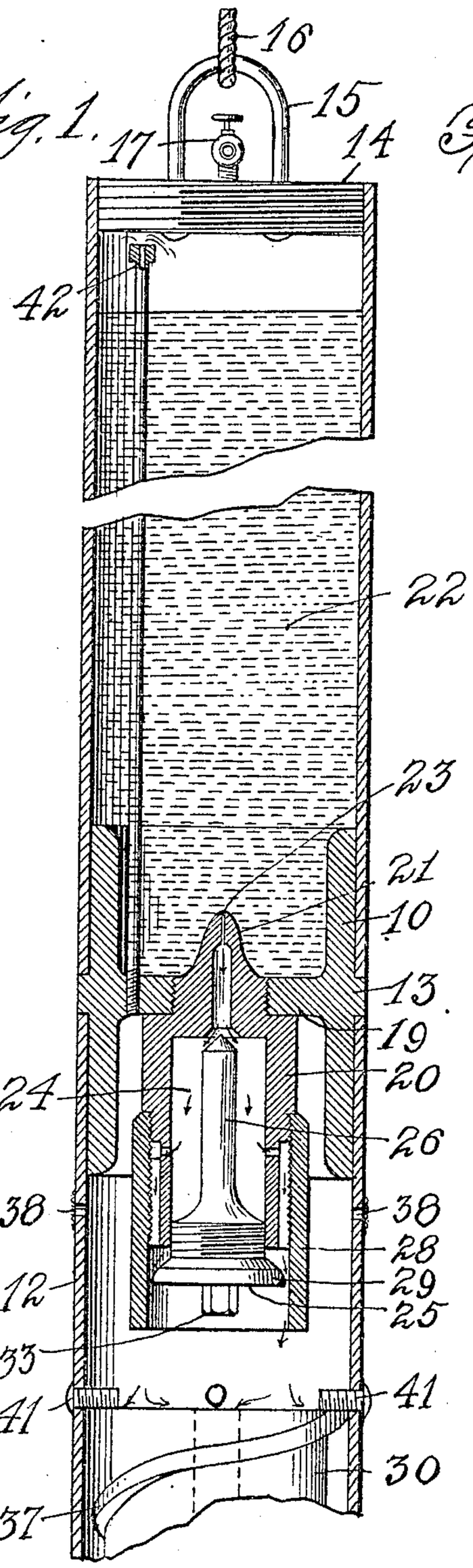
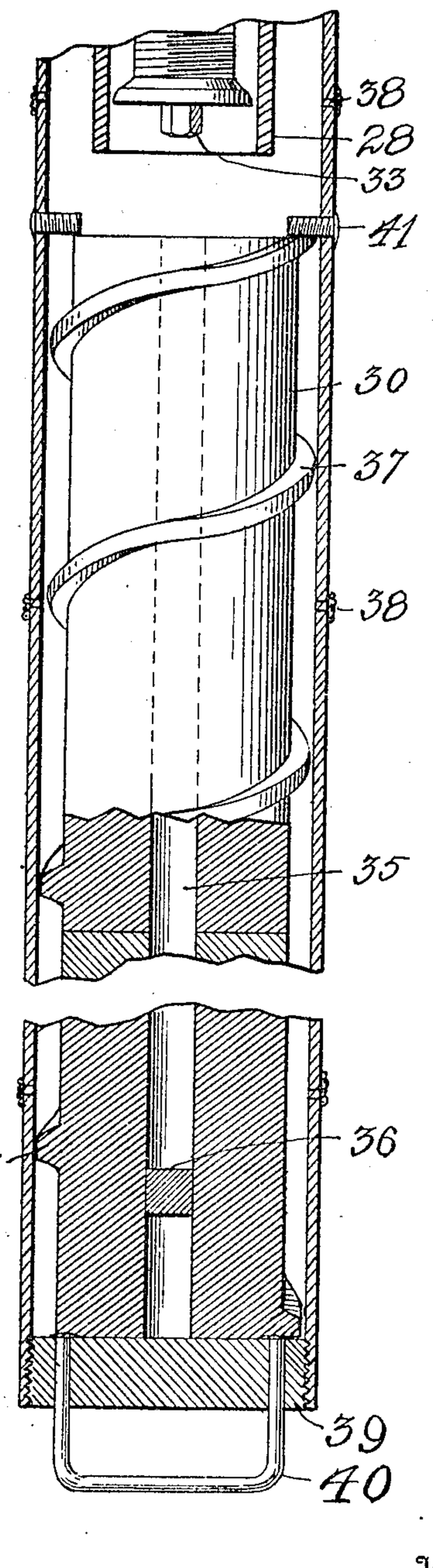


Fig. 2.



Witnesses

J. A. Ellsworth

A. M. Attig

Inventor

Frank A. Monroe.

By J. Arthur Balderis.

Attorney

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 3.

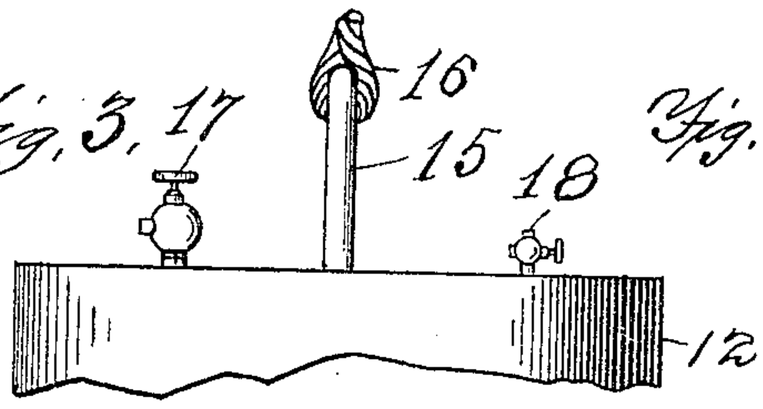


Fig. 6.

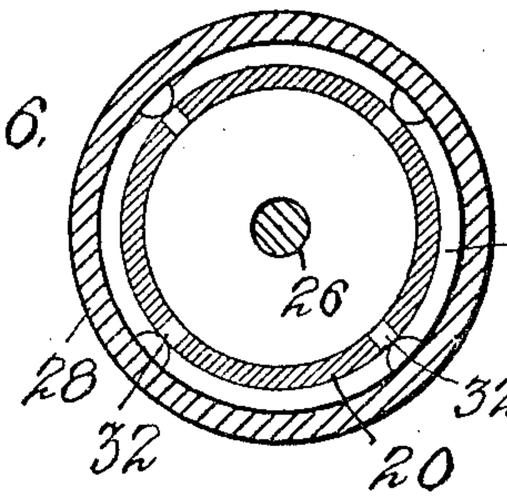


Fig. 7.

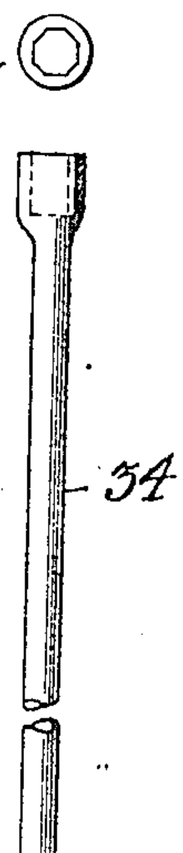


Fig. 4.

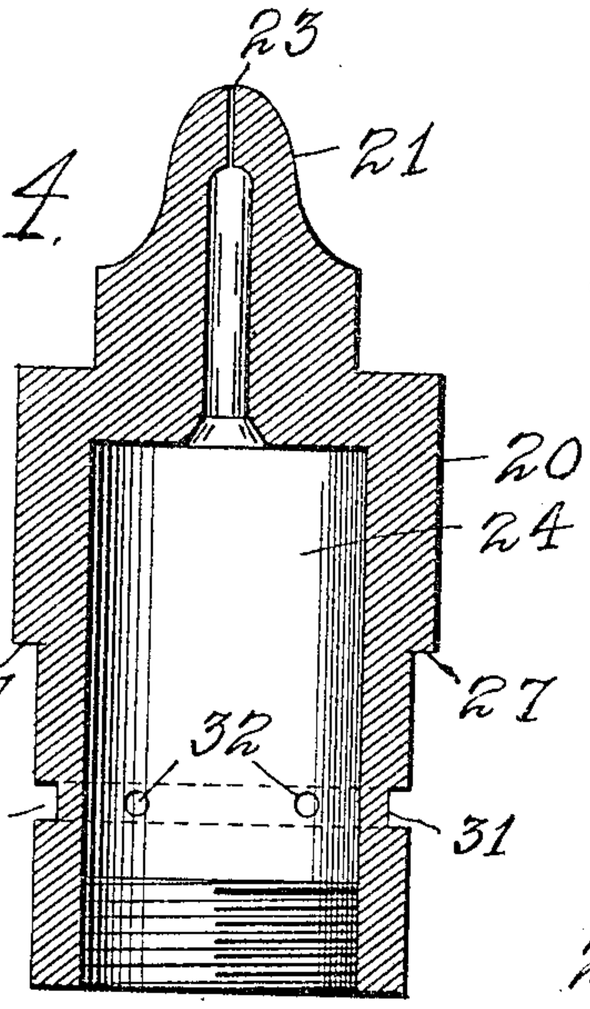


Fig. 8.

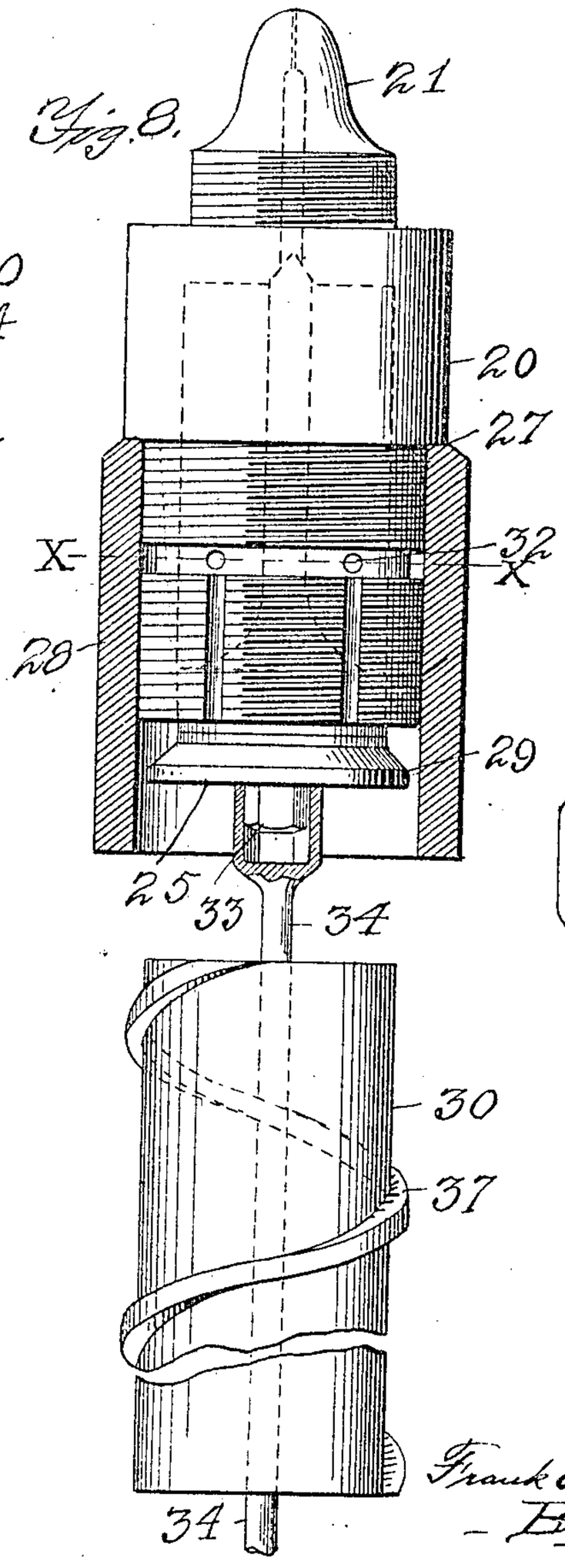
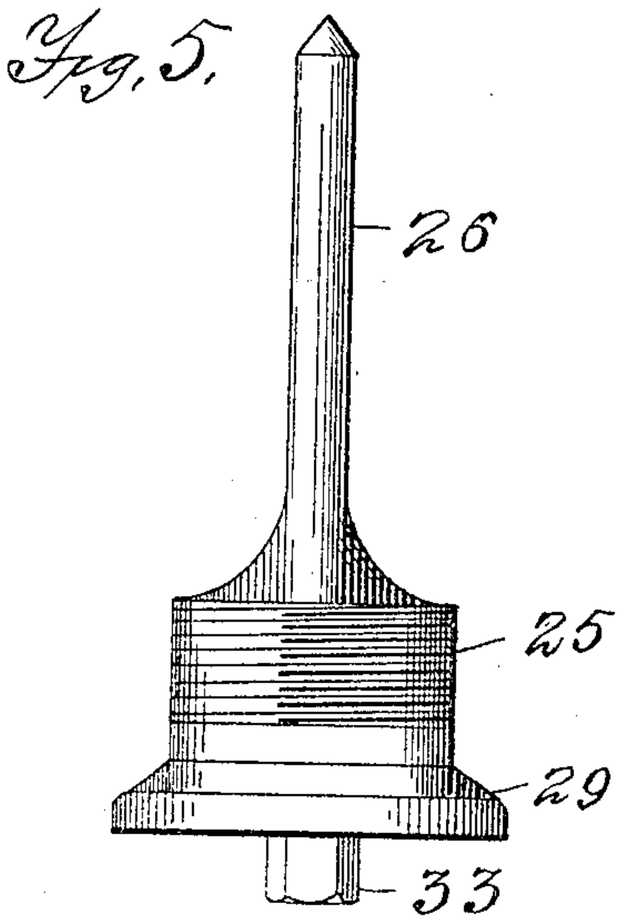


Fig. 5.



Witnesses

J. A. Ellsworth.

A. W. Metcalf.

Inventor

Frank A. Monroe

By

S. Arthur Baldwin

Attorney

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

FRANK A. MONROE, OF BEMUS POINT, NEW YORK.

DEVICE FOR CLEANING WELLS.

943,885. Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed December 8, 1908. Serial No. 466,515.

To all whom it may concern:

Be it known that I, FRANK A. MONROE, a citizen of the United States, and resident of Bemus Point, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Devices for Cleaning Oil-Wells, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention is an improvement upon the oil well cleaning mechanism shown in Letters Patent Number 884,675, and relates to improvements in the means for removing paraffin, the thickened product of petroleum, or other deleterious substances from the oil bearing portion of the well.

The object of the present improvement is to provide means for increasing the efficiency of the steam producing mechanism so as to largely increase the production of steam and render the action more convenient and sure of operation, and the novelty lies in the combination and arrangement of the parts as shown in this specification and drawings and pointed out in the claims.

In the drawings, Figure 1 is a vertical sectional view of the upper portion of the improved cleaner; and Fig. 2 is a similar view of the lower portion, the metal billets being shown only partly in section in order to show the spiral enlargement for the direction and control of the steam. Fig. 3 is a side elevation of the upper end of the cleaner showing the inlet and air valves. Fig. 4 is a vertical sectional view of the nozzle at the lower end of the reservoir; and Fig. 5 is a side elevation of the screw valve or plug which is insertible within said nozzle. Fig. 6 is a sectional view at line X X in Fig. 8. Fig. 7 is a side elevation and end view of the wrench for opening valve plug. Fig. 8 is a side elevation of the nozzle with the plug inserted and the lower tubular portion in section, and a side elevation of the metal billets with the wrench extending up through the same to turn the valve plug.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates the tubular casting at the lower end of the tubular reservoir which unites parts 11 and 12 of the tubular casing. Part 10 is formed with a central flange 13, the outer sides of part 10 being formed above and below flange 13 so that parts 11 and 12 of the tubular casing may be attached on to the same in any suitable manner, it only being necessary to form a tight joint. A screw plug 14 is provided for the upper end of part 11 of the casing having a suitable bail 15 therein for supporting line 16. Plug 14 also has an inlet valve 17 and an air valve 18 thereon.

The tubular connecting casting 10 is formed with a crosswise partition 19 into the center of which a nozzle portion 20 is screwed, which nozzle has a raised portion 21 extending up into the reservoir 22. Part 21 has a small opening 23 extending down therethrough to allow of the slow egress of the water from reservoir 22. Nozzle 20 is tubular in form, and the opening 23 is enlarged before it enters the tubular cavity 24 within the lower portion. The lower end of cavity 24 is closed by means of a screw plug 25 which bears a conical pointed extension 26 on its upper side which conical point fits within a valve seat at the lower end of opening 23 thereby forming, as it were, a needle valve at the lower end of said opening which spreads or distributes the water in all directions around said conical point and within cavity 24 when plug 25 is withdrawn sufficiently from the valve seat to allow egress of the water.

The outer side of the tubular lower end of part 20 has a shoulder 27 cut thereon and is correspondingly less in size. The outer side of tube 20 from shoulder 27 downward being threaded to receive an outer tubular portion 28 which extends down below part 20 and plug 25. The lower end of plug 25 has an outwardly beveled flange 29 to distribute the water on to the inner side of tube 28, so that it will fall about midway between the outer and inner sides on the upper end of billet 30, as shown in Fig. 1. Tubular nozzle portion 20 has a circular cut 31 around its outer side above the plug 25 when inserted therein, and openings 32 from inner cavity 24 to cut 31, vertical grooves being cut from each hole 32 to the lower end of part 20, as shown in Figs. 1 and 8.

A hexagonal extension 33 is provided on the lower end of plug 25 to receive the upper end of a wrench 34, which wrench is of sufficient length to extend up through the billets 30 and embrace part 33 for opening valve 26.

Billets 30 are made with a tubular opening 35 extending therethrough, except in the lower billet, wherein near its lower end

a plug 36 is inserted so that the water may enter tubular opening 35 and being stopped by plug 36 will be thrown back out of the metal billets by their superheated condition, thereby delaying the water upon the billets and superheating the steam arising therefrom. On the outer side of billets 30 a spiral enlargement or thread 37 is provided to further delay the water, causing it to pass around the billets following down the thread 37 and superheating the steam.

Lower part 12 of the casing has a series of minute openings 38 at spaced intervals down the length of the same. The lower end of the lower part 12 is closed with a screw plug 39 having a bale 40 to turn the plug, as well as to support the cleaner at the bottom of the well.

In order to stop the billet 30 at a spaced distance from the lower end of tube 28 within casing 12, a number of short screws 41 are inserted in casing 12, so that when it is desired to enter the billets 30 into tubular casing 12 after reservoir 22 has been filled, the cleaner is turned bottom side up and all but the last billet inserted. The screws or stops 41 will hold the hot billets from approaching too near to part 28. The plug 25 is then turned sufficiently to open needle valve 26 by inserting wrench 24 through the hot billets, the tubular opening 35 forming a guide for the wrench to the hexagonal extension 33 on plug 25, as shown in Fig. 8, after which the last or plugged billet is inserted and plug 39 is screwed to place. The cleaner is then turned right end up and immediately inserted in the well; and it is obvious that the water will pass down through the nozzle and over the hot billets and they will immediately begin to steam, the steam passing out of the minute openings 38 into the well.

In order that the water in reservoir 32 may be forced down through the nozzle 21, a tube 42 is inserted in partition 19 and extends up through the water to a close proximity to the under side of plug 14, so that the steam will pass up through the same, and into the space above the water within the reservoir, thereby heating the water and exerting pressure upon the same.

I claim as new:

1. In a device for cleaning oil wells, a tubular casing, a removable metal billet in said casing having a spiral projection on its outer side to detain fluid thereon, a reservoir for fluid in said casing, and means for permitting the passage of said fluid on to said billet.

2. In a device for cleaning oil wells, a tubular casing composed of two parts, a metal connection for said parts having a partition therein to form a reservoir for liquid in the upper part of said casing, and means for the passage of the liquid through said partition.

3. In a device for cleaning oil wells, a tubular casing composed of two parts, a connective casting for said parts having a partition therein to form a reservoir of the upper part of the casing, a tubular nozzle inserted through said partition, and a screw valve on the under side of said nozzle.

4. In a device for cleaning oil wells, a tubular casing composed of two parts, a connective casting for said parts having a partition therein to form a reservoir of the upper part of the casing, a tubular extension on the under side of said partition having a small opening through said partition, a screw valve in the lower end of said tubular extension having a valve seat in the lower end of said small opening, said tubular extension having openings through the sides thereof, and a tubular shield to control the liquid from said openings.

5. In a device for cleaning oil wells, a tubular casing composed of two parts, a connective casting for said parts having a partition therein to form a reservoir of the upper part, a tubular nozzle extending through said partition and having a small opening therein, a screw valve in the lower end of said tubular nozzle having a valve seat at the lower end of said opening in said nozzle, said tubular nozzle having openings through the sides thereof, a tubular shield to guide the liquid from said openings, said screw valve having a flange on its lower end, and a central squared nut, substantially as and for the purpose specified.

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

FRANK A. MONROE.

Witnesses:

A. W. KETTLE,

I. A. ELLSWORTH.