No. 774,064. PATENTED NOV. 1, 1904.

P. GILBERT.

SOLDERING IRON.

APPLICATION FILED NOV. 11, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

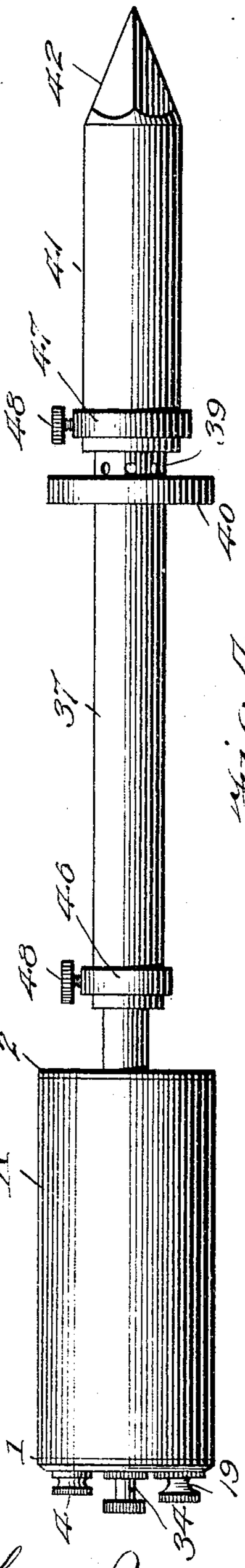

Fig. 1.

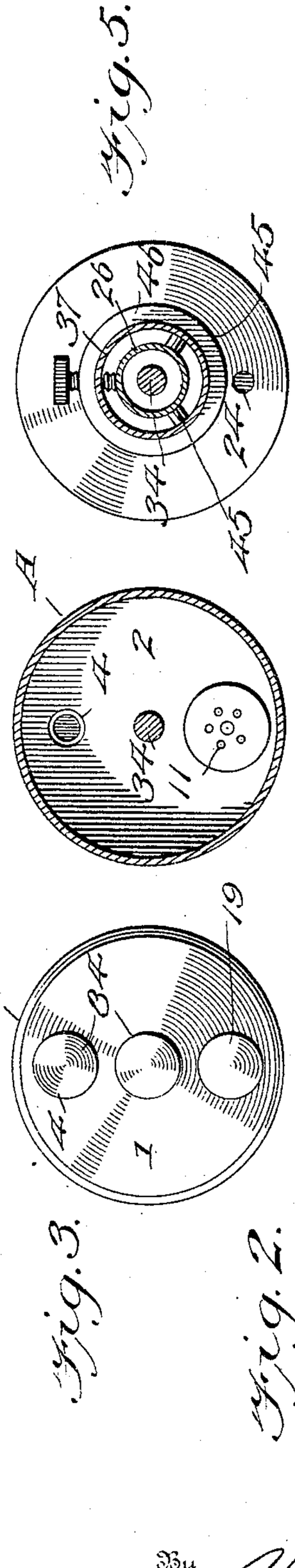

Fig. 4.

Fig. 3.

Fig. 5.

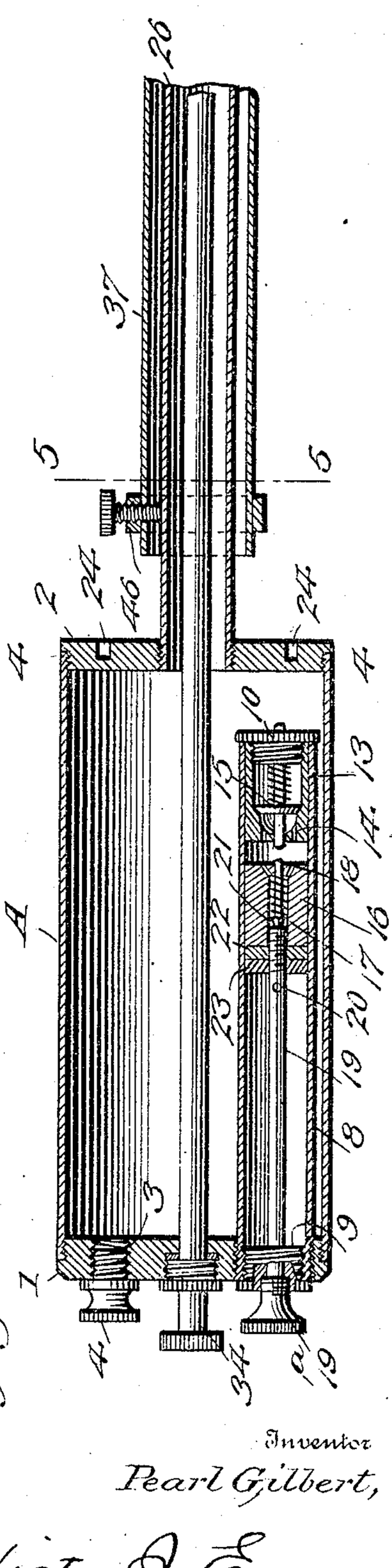

Fig. 2.

Witnesses

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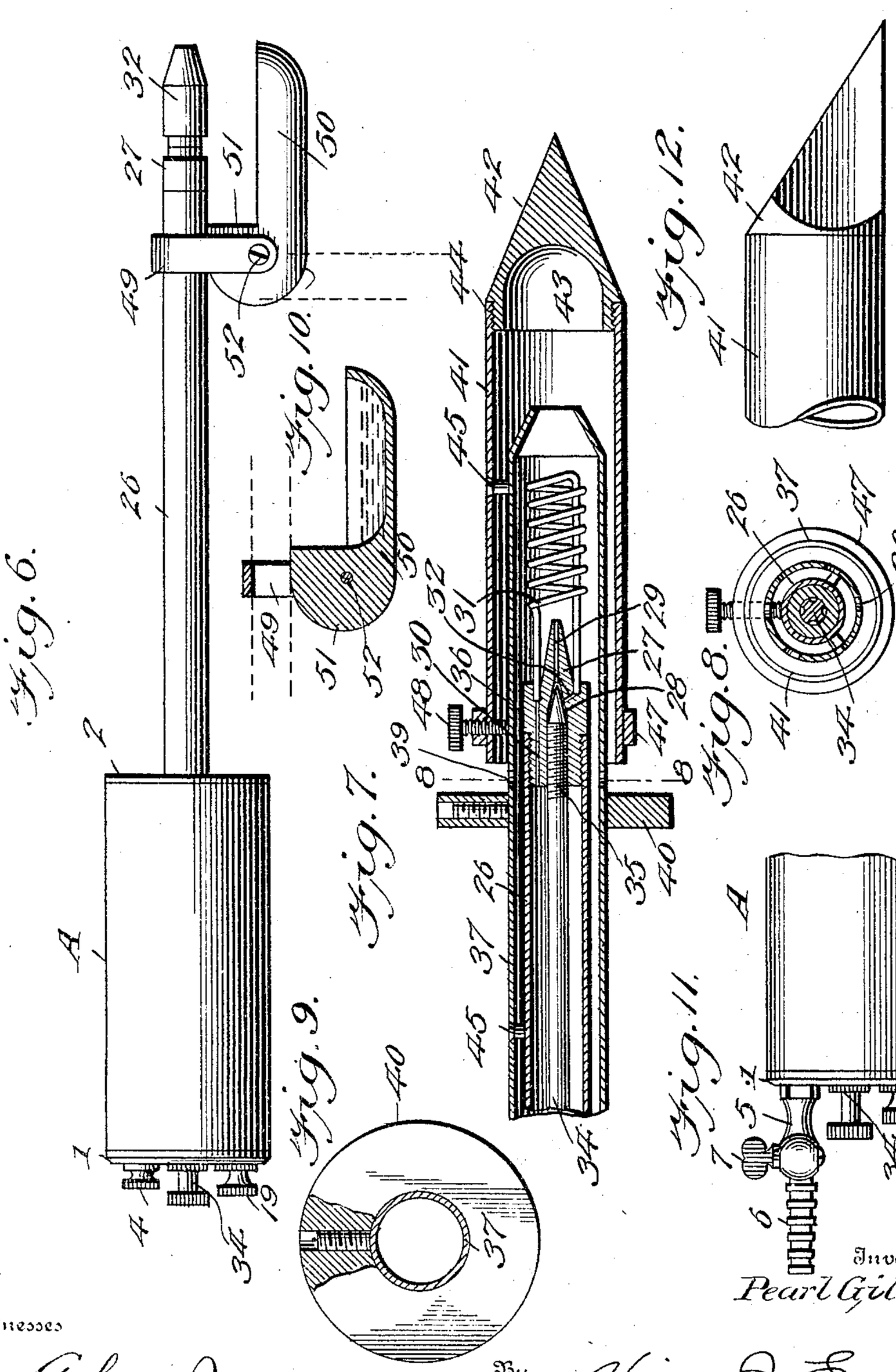

Witnesses
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No. 774,064. Patented November 1, 1904.

UNITED STATES PATENT OFFICE.

PEARL GILBERT, OF BOSTON, MASSACHUSETTS.

SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 774,064, dated November 1, 1904.

Application filed November 11, 1903. Serial No. 180,773. (No model.)

To all whom it may concern:

Be it known that I, PEARL GILBERT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Soldering-Irons, of which the following is a specification.

My invention relates to improvements in self-heating soldering-irons; and the object is to provide an implement of the kind named which is adapted to burn either gas or gasolene as a fuel for heating the iron. Another object is to simplify and improve the existing art.

The invention embodies a gas or gasolene cylinder, a pressure-pump in the cylinder, a jet-nozzle, a heating-coil to feed the jet-nozzle, an air cylinder or tube, and a soldering-tip held in the air-tube.

The invention also resides in the novel construction of parts and their aggroupment in operative combination, as will be hereinafter fully specified, and the novelty particularly pointed out and distinctly claimed.

I have fully and clearly illustrated my improvements in the annexed drawings, to be taken as a part of this specification, and wherein like parts appearing in the several illustrations are designated by similar notations, and, reference being had to the drawings, Figure 1 is a side view of the complete implement. Fig. 2 is a longitudinal central section through the gas or gasolene cylinder, the pump, and the pipes or tubes and showing the stem of the needle-valve and the means for locking the pump piston-rod in the pump, the handle-tube portion of the pipes being broken off. The broken-off parts are shown in Fig. 7. Fig. 3 is a rear end view of the cylinder or gasolene-receptacle, showing the finger-pieces of the parts carried by the head of the cylinder. Fig. 4 is a transverse section through the cylinder, taken on the line 4 4 of Fig. 2. Fig. 5 is a cross-section through the several pipes and valve-stem, taken on the line 5 5 of Fig. 2. Fig. 6 is a side view of the device minus the tip-sleeve and the handle-sleeve and illustrating the application to the feed-tube of a starting-pan for effecting the preliminary heating of the jet-nozzle. Fig. 7 is a longitudinal central section through the rearward portion of the implement, showing the jet-nozzle and the feeding-coil, the forward portion of the implement being illustrated by a similar view in Fig. 2. Fig. 8 is a cross-section taken on line 8 8 of Fig. 7. Fig. 9 is a cross-section through the main pipe or barrel of the implement and face view of the shield-disk for protecting the hand of the workman from the heat. Fig. 10 is a longitudinal vertical central section through the gasolene-pan. Fig. 11 is a side view of a portion of the cylinder, showing the connecting gas-tube attached. Fig. 12 is a detail view showing a triangular soldering-tip secured in the tube.

In the drawings similar parts appearing in the several illustrations are designated by like reference notations.

The parts are all made of metal and preferably of a non-corrodible character, such as brass, except the soldering-tip, which is made of copper or any proper metallic composition adapted to the purpose.

A designates a cylinder of such diameter and capacity as will suit it to the uses desired. This cylinder constitutes the receptacle for gas or for a hydrocarbon fluid to be volatilized or vaporized at the jet-nozzle. The cylinder is provided with substantial heads 1 2, threaded into the ends, as shown. The head 1 is provided with a filling-aperture 3, closed when gasolene is used as the heating agent by a threaded plug 4. Because the implement may be used with gas as the heating agent a suitable gas-plug connection 5 is provided screwed into the filling-aperture and formed with a suitable stem 6, to be secured in the end of any flexible gas-tube. A turning plug 7 regulates and shuts off the flow of gas, and suitable gas-hose or other tube can be used to carry the gas into the cylinder. In the cylinder is disposed an air-pump 8, arranged longitudinally in the cylinder and of such power and capacity as may be desired. The ends of the barrel of the pump are closed by threaded plugs 9 10, and the pump-barrel is secured in place by having its outer end threaded in the head

1 of the cylinder. The plug 10 is made with a series of air-passages 11, through which air is forced into the cylinder. In the inner end of the pump-barrel 8 is arranged a valve-casing 13, opening at its outer end into the pump-barrel through passages in the end of the valve-casing, as at 14, and in this valve casing or chamber is formed a valve-seat with which engages a spring-actuated check-valve 15. In the pump is arranged a piston block or plunger 16, in which is a central socket 17, having communicating air-passages 18, opening through the inner end of the piston-head. 19 designates the piston-rod let through the plug 9 and made hollow for a distance at its inner end portion, into which an air-aperture 20 communicates to admit air above the piston-head. The finger-piece 19ª of the piston-rod is screw-threaded at its inner end, as shown, and engages in a threaded socket in the plug 9, whereby the piston-rod may be locked against movement, as desired. In the socket of the piston-head is placed a spring-actuated check-valve 21, which closes the inner end of the piston-rod and prevents the escape of air when the piston is forced inward. A suitable packing-ring 22 is mounted on the piston-rod, and a retaining-ring 23 holds and clamps the packing-ring in position. The purpose of this pump is to pump air into the cylinder to create pressure on the gasolene or gaseous fluid when that is used as the heating medium in order to force it through the burner.

The head 2 is provided with wrench-sockets 24 to afford means for applying a suitable wrench to detach and attach the head, and in the center this head 2 is provided with a threaded hole 25, in which the screw-threaded inner end of the feed-tube 26 is secured, and in the outer end of the feed-tube is secured by threaded connections a jet-nozzle 27, in which is formed a valve chamber and seat 28, from which leads a suitable passage 29, opening through the end of the jet-nozzle. The jet-nozzle 27 is provided with a gas-passage 30, which leads into a heating-coil 31, positioned as indicated, and the return branch of which leads into a passage 32 in the burner, thence through the passage in the jet-nozzle to the gas-chamber and against the soldering-tip. Projected through the head 1 of the cylinder and extending through the cylinder and into the feed-tube 26 is a stem or rod 34, which has its lower portion screw-threaded. The end of the rod 34 is formed conical, as at 36, to set in the valve-seat 28, as indicated in Fig. 7 of the drawings, so that by screwing the rod into the jet-nozzle 27 the flow of gas or gasolene to the jet-nozzle may be regulated to suit, or the flow may be entirely shut off.

37 designates the handle tube or sleeve, made of larger diameter than the feed-tube 26 and arranged thereon with its inner end adjacent to the cylinder-head 2 and its outer end made conical, as at 38, to serve as a deflector to concentrate the burning gases and direct them into the bowl of the soldering-tip. At 39 the handle-tube is provided with a plurality of air-holes to let air into the tube. On the handle-tube is adjustably mounted a broad ring-disk 40, which serves as a protecting-shield to keep the heat from the hand of the workman.

41 designates the outer tube, which constitutes the element which supports the soldering-tip. This tube is of greater diameter than the handle-tube 37, over which it is arranged, as shown, with its open end closely adjacent to the air-holes 39 in the handle-tube. The outer end of the tube 41 is provided with interior screw-threads to engage with the threads made on the end of the soldering-tip.

42 designates the soldering-tips, which may be of any desirable shape—conical, straight, or oblique, round or polygonal—but formed in the body with a bowl-shaped depression 43 and a threaded flange 44 to engage with the coincident threads in the tube 41, as shown in the drawings. The feed-tube and the jet-nozzle are held centrally in the handle-tube by means of short screw-studs 45, let radially through the latter, with their inner ends bearing against the former, and adjacent to the rear open ends of the handle-tube and the soldering-tip tube collars 46 47 are respectively mounted, and through these collars are projected thumb-screws 48, which bear against the respective tubes, as shown, and seat and clamp the tubes against the ends of the radial studs or short screws. It will thus be seen that the soldering-tip sleeve and the handle-sleeve may both be removed from the feed-tube and jet-nozzle by simply loosening up the thumb-screws and then slipping the tubes off. This removal is necessary in the preliminary heating of the jet-nozzle, and to accomplish this preliminary heating I have provided the following-described device: 49 designates a U-shaped strap the bend of which conforms to the curve of the filling-tube of the implement and the limbs of which extend parallel with each other. Between the extended limbs is arranged a gasolene-pan 50 of such capacity and length as may be required. One end of the pan is formed with an end block 51, which sets between the straps and is there held by a clamping-screw 52, let through the parts, as shown. Now when the preliminary heating is to be made the pan is turned into a position which brings it parallel with the jet-nozzle, as shown in the drawings, and supplied with a charge of gasolene obtained either from the pressure in the cylinder or from a can, and then lighting the fluid the jet-nozzle is soon heated to the required temperature to produce vaporization. The pan can then be detached and the jet-nozzle arranged and secured in its operative relation to the other members of the implement.

If gasolene is the heating medium, the cyl-

inder is first filled with the fluid and then the pump is operated to create the desired pressure. The handle-tube is then removed from the implement and the gasolene-pan attached to the filling-tube. The preliminary heating of the jet-nozzle then is proceeded with. When the jet-nozzle begins to discharge the burning vapor, the pan is removed and the handle-tube replaced in position. Then after the needle-valve has been adjusted if the vapors have ceased to burn they may be lighted by holding a burning match at the air-holes or between the end of the tube 41 and the shield 40, and then after the vapor begins to burn the ignition will continue until the supply of fuel is exhausted or until the valve 36 shuts the supply off.

If illuminating-gas is the medium of heating, the gas-connection plug 5 is fixed in the filling-aperture of the cylinder, the valve 36 is opened, and the gas is lighted, as above mentioned.

The parts shown in Fig. 6 are the same in all respects as corresponding parts shown in the other figures, it being understood that the handle-tube and tip-sleeve are not therein indicated, the one addition being that of the pan 50, which is employed for the preliminary heating of the device.

Having thus fully described the invention, what is claimed as new is—

1. A soldering implement comprising a charging-receptacle, a pump in the receptacle to create air-pressure on the charge, a feed-tube leading from the receptacle, a jet-nozzle carried by the said tube, a valve to regulate the flow of the heating medium through the nozzle to the soldering-tip, a handle-tube inclosing the feed-tube, and a tubular support having a rear open end into which the rear handle-tube and jet-nozzle project and provided at its front end with a soldering-tip into which the heat is delivered.

2. A soldering implement comprising a receptacle to contain a volatile fuel, an air-pump in the receptacle, a feed-tube leading from the receptacle, a valve carried by the feed-tube, a jet-nozzle carried by the valve-casing, a handle-sleeve surrounding the feed-tube, and of greater diameter and extending beyond the jet-nozzle, a tip-supporting sleeve of greater diameter and surrounding the lower portion of the handle-tube into which the latter and jet-nozzle project and having a rear open end for the admission of air thereto in rear of the point of combustion, and a soldering-tip secured in the end of the tip-supporting tube.

3. A soldering implement, comprising a cylindrical receptacle, means to introduce a gaseous fuel into the receptacle, a feed-tube leading from the receptacle, a jet-nozzle in the end of the feed-tube formed with a valve-seat and outlet and inlet gas-passages, a heating-coil communicating with the jet-nozzle, a valve-rod projected through the receptacle and extending into the feed-tube and having its end formed to close the valve-seat, a handle-tube of greater diameter than the feed-tube arranged on the latter and extending beyond the jet-nozzle, a soldering-tip-supporting tube of greater diameter than the handle-tube and arranged on the lower end of said handle-tube and having a rear open end, the remaining part of the supporting-tube being closed, and a soldering-tip formed with a bowl-recess in its inner end and secured in the tip-supporting tube.

4. A soldering implement comprising a gaseous-fuel receptacle, a feed-tube extending from the receptacle, a jet-nozzle secured in the end of the feed-tube and formed with a valve-seat, and outlet and inlet gas-passages, a heating-coil communicating with the said passages, a valve engaging in said valve-seat and having a stem projected through the receptacle, a handle-tube of greater diameter than the feed-tube and arranged thereon and extending beyond the end of the jet-nozzle, a soldering-tip-supporting tube of greater diameter than the handle-tube, having a rear open end for the admission of air in rear of the point of combustion and arranged on the lower end portion of the same, a soldering-tip held in the supporting-tube, means to hold the tube in relative position, and a shield adjustably secured on the handle-tube in rear of the tip-supporting tube.

5. In a soldering implement of the character set forth, the combination with a handle-tube having a rear open end and a tip-supporting tube disposed in operative relation thereto, of a shield secured on the handle-tube adjacent to the lower end of the tip-supporting tube.

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

PEARL GILBERT.

Witnesses:
JESSIE A. KING,
GEORGE M. BOND.