No. 658,532. Patented Sept. 25, 1900.

H. A. ROSS.

SELF HEATING SOLDERING IRON

(Application filed Nov. 14, 1898.)

(No Model.)

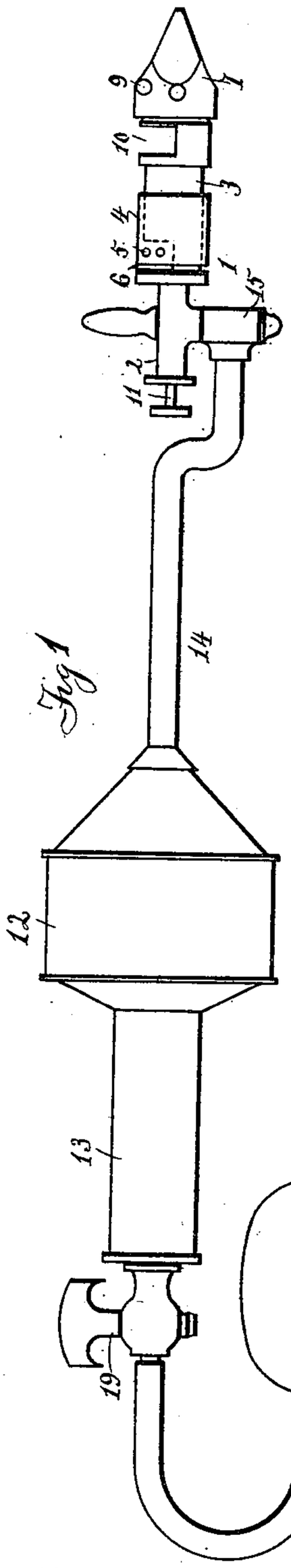

Fig 1

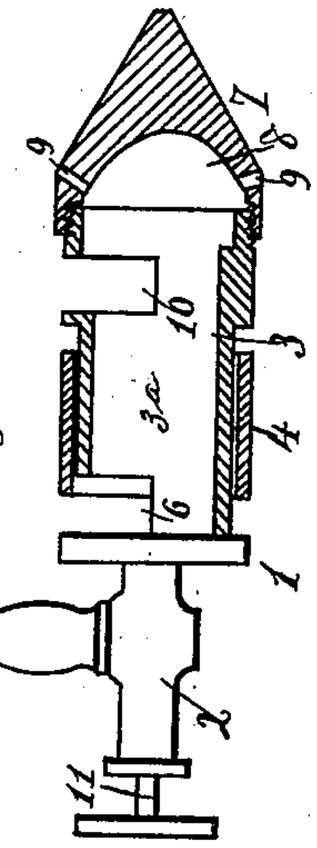

Fig. 3.

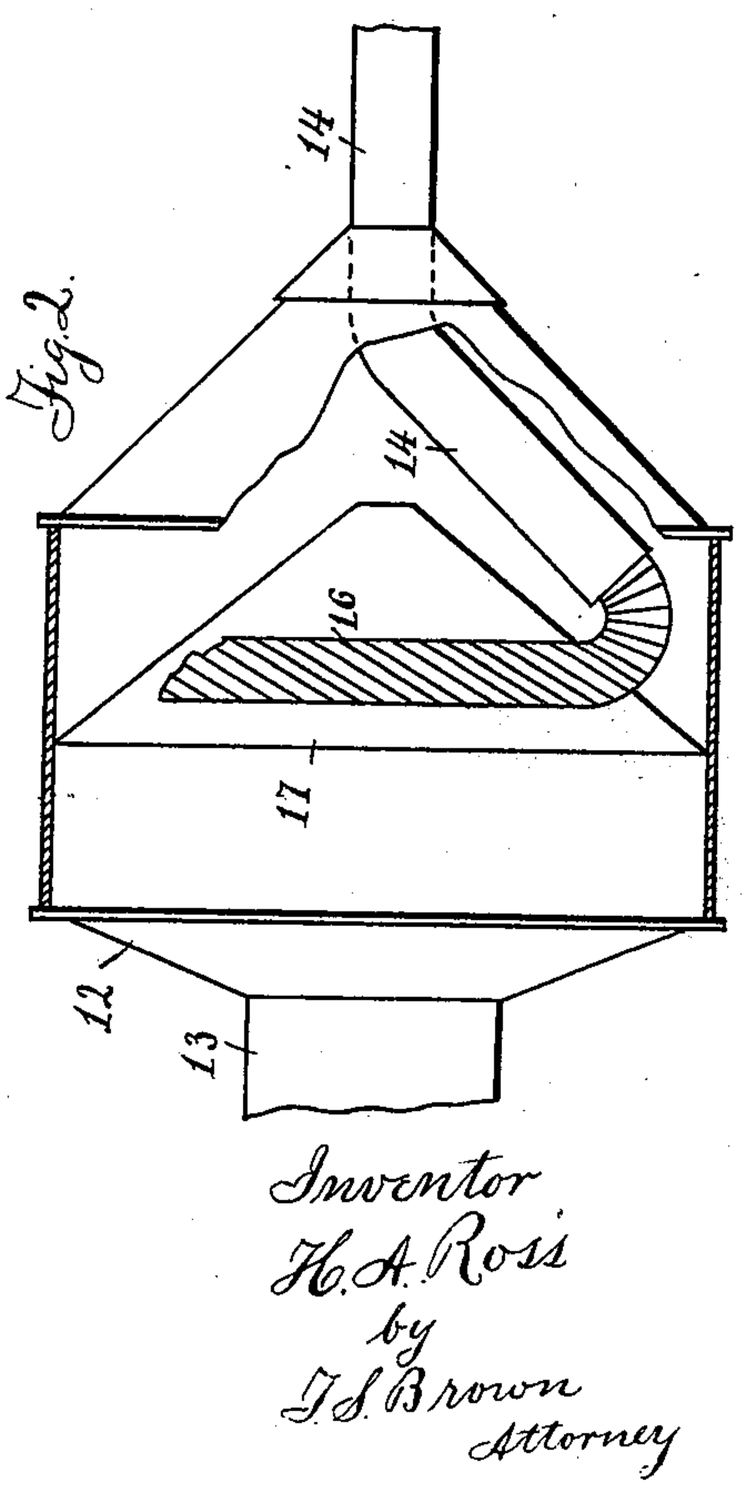

Fig. 2.

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UNITED STATES PATENT OFFICE.

HENRY A. ROSS, OF KANSAS CITY, MISSOURI.

SELF-HEATING SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 658,532, dated September 25, 1900.

Application filed November 14, 1898. Serial No. 696,343. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. ROSS, of Kansas City, in the county of Jackson, in the State of Missouri, have invented certain new and useful Improvements in Self-Heating Soldering-Irons, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in self-heating soldering-irons in which by connection of the tip or soldering-point with a vapor-burner supplied with gasolene or other light hydrocarbon oil the soldering-point is kept continually heated and ready for work, thus avoiding the waste of time necessary to changing the iron and giving the tool a facility in use in many places and under many circumstances where it would be highly inconvenient, if not impossible, to carry a plumber's furnace for heating the irons; and my invention consists in certain features of novelty hereinafter described, and pointed out in the claim.

Figure 1 represents an elevation of a soldering-iron embodying my improvements and invention. Fig. 2 represents a view, partly in cross-section, of the cup for holding the gasolene. Fig. 3 represents a view, partly in cross-section, showing the manner of connecting the soldering-tip with the vapor-burner.

Similar numerals refer to similar parts throughout the several views.

1 represents a vapor-burner, in which the oil or gasolene is vaporized in passing through the tubular vaporizer 2 and in which the flow of the oil and discharge of the vapor are controlled and regulated by the needle-valve 11. Such vaporizer, provided with a needle-valve, being of usual and familiar construction this part of the burner is not shown in detail.

3 represents a tube connected with the vaporizer and having threaded upon its opposite end a soldering-tip 7. Said soldering-tip has formed within it a pocket 8, forming a combustion-chamber therein, and is provided with the draft-openings 9, communicating with said combustion-chamber. Said tube 3 forms a mixing-chamber 3^a and has cut or formed in it an air-gap 6, between the mixing-chamber 3^a and the vaporizer, for the admission of air to the mixing-chamber, there to mix with the vapor passing from the vaporizer into the same. It has also cut or formed in it an air-gap 10, between the mixing-chamber and the soldering-tip, for the admission of air to the combustion-chamber in said tip to maintain the combustion therein. The mixed vapor and air or carbureted air passing from the mixing-chamber into said combustion-chamber is ignited therein and the combustion confined substantially to said chamber, the flame issuing from the draft-openings 9, and the vapor in the mixing-chamber, being highly heated and rarefied, but not burned, has mixed with it a large amount of air entering at the air-gap 6, producing a gas or carbureted air, which enters said combustion-chamber in the tip at a high temperature and with high heating power. Upon said tube 3 is provided a sleeve 4, having the openings 5. Said sleeve is arranged to slide over and cover the air-gap 6 between the mixing-chamber and the vaporizer, and for this reason when the tool is used in exposed places (here exposed to the wind or to strong currents of air) there is danger that the vapor passing from the vaporizer across the air-gap will be blown aside and out at the air-gap and not pass into the mixing-chamber. The sleeve will prevent this, while still admitting a certain amount of air through the openings 5 to mix with the vapor; but when not used in such exposed places the sleeve should be slipped back and the air-gap left open, as to obtain the most effective action of the tool a larger amount of air is required to mix with the vapor than can pass through said openings.

It will be observed that when in operation as the gasolene is vaporized in the vaporizer 2 and the vapor issues therefrom with considerable force in crossing the air-gap 6 a quantity of air will by suction be drawn in and in the mixing-chamber 3^a will become mixed with the rarefied vapor therein, forming a gas or carbureted air of high heating power. This mixed vapor and air or carbureted air, thence crossing the air-gap 10, will enter the combustion-chamber formed by the pocket 8 in the soldering-tip and is there ignited, the air-gap 10 providing for the admission of such amount of air to the combus-

tion-chamber as is necessary to complete combustion therein, it being further observed that by the arrangement of the air-gap 10 adjacent to the combustion-chamber in the tip the combustion is confined to this combustion-chamber, and the heat therefrom is prevented by the air-gap 10 from acting back upon and in the mixing-chamber 3^a to the extent of producing combustion therein, there being no combustion or flame in the mixing-chamber, and the mixing-chamber is thus fitted and adapted to perform properly and at all times its office as a mixing-chamber. This result is one of the leading features and principal advantages of my invention, for as there is no combustion or flame in the mixing-chamber the vapor becomes highly rarefied and thoroughly mixed with the air coming in at the air-gap 6, and the mixture or carbureted air enters the combustion-chamber of the tip in a condition for the most effective action, and the carbureted air being of high heating-power and the combustion taking place in and being confined to the tip the result is most effective for heating the tip with the least consumption and least waste of material.

12 represents a vessel containing gasolene and is provided with an extension 13, forming the handle of the tool.

14 represents a tube connecting the vessel with the burner through the ordinary gas union 15, upon which the burner and its tip turn, adapting it for use in the most convenient position. As shown in Fig. 2, said tube extends within the vessel and is provided with the wicking 16. Also within the vessel is arranged the conical or funnel shaped partition 17, the purpose of which is to retain the oil around the tube when the tool is used in such position that the vessel stands inverted. This partition may, however, be omitted and the wick extended back into the extension 13, it being found in practice that the wick will take up enough of the oil to supply the burner.

18 represents an air-bulb having the usual valves and communicating with the stem 13 of the oil vessel for supplying air-pressure upon the oil in the vessel, and thus supply a desired pressure to insure proper feeding of the burner, a valve 19 being provided to close the communication and maintain the pressure. The air-bulb and its connections, being old and well known, are not shown in detail.

By this construction and arrangement is provided a soldering-iron that is self-contained and always ready and convenient for use and when in use is kept constantly and uniformly heated, thus avoiding the annoyance met in the ordinary iron as it begins to get cold and also saving the trouble and time in changing and heating the irons.

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

A self-heating soldering-iron consisting of the combination with a vapor-burner, and a soldering-tip secured upon and forming part of the burner, of an oil vessel, a tube connecting said vessel with the burner and extending within the vessel, a cone or funnel shaped partition arranged within said vessel, and an extension on said vessel forming a handle wherewith to handle the tool, substantially as set forth.

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