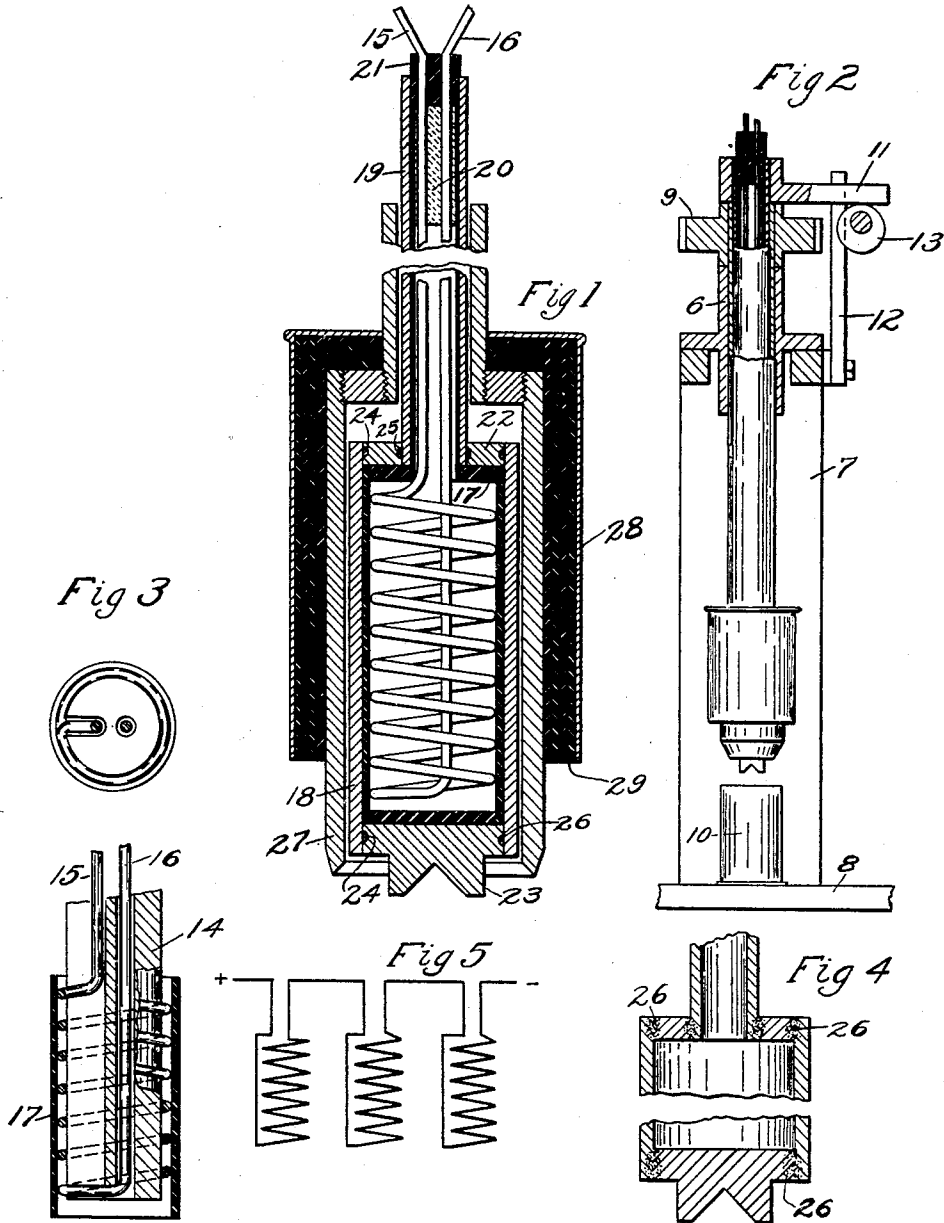


M. H. JOHNSON.
ELECTRICALLY HEATED SOLDERING IRON.
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Patented June 17, 1913.



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UNITED STATES PATENT OFFICE.

MONTGOMERY H. JOHNSON, OF UTICA, NEW YORK.

ELECTRICALLY-HEATED SOLDERING-IRON.

1,064,739.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed December 18, 1909. Serial No. 532,919.

To all whom it may concern:

Be it known that I, MONTGOMERY H. JOHNSON, a citizen of the United States, residing in Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Electrically-Heated Soldering-Irons, of which the following is a specification.

This invention relates to that class of soldering-irons that are heated by electricity.

It is an object of the invention to guard against that destruction, in structure, that is common in devices of this kind, as a result of the extreme degree of heat, created by the current, that must be maintained in order to render such devices efficient.

Electric heaters for soldering-irons, used in the art of can-sealing, or what is more commonly known as can capping machines, are subject to numerous conditions, which so affect their general structure as to rapidly impair their usefulness. To the overcoming of these defects, by improved structural organization, is the invention especially directed.

On a sheet of drawings forming a part of this specification, I have illustrated, in numerous views, one of the practical forms or arrangements into which the essence of the invention can be embodied, it being understood, of course, that within the purview of this invention, and the range of mechanical and electrical skill, variations may be resorted to in the building up of structures of this type.

On this sheet of drawings, Figure 1 illustrates various portions of a soldering iron assembled, all of the portions, excepting the heating element being in section; Fig. 2 illustrates, partly in elevation and partly in section, the iron assembled with a portion of suitable operating mechanism of a can capping machine; Fig. 3 illustrates two views, comprehending a convenient method of introducing a heater-element, such as a coil, into a heater case for a heater of this kind; Fig. 4 illustrates the result of a process by which portions of the heater case are united to other portions of the case in such a manner as to render the casing practically and substantially jointless and hermetically sealed, and Fig. 5 illustrates a diagram, by electrical sign, indicating that the heaters may be used in series.

Inasmuch as the means for mechanically

operating the irons, when placed in a can sealing or can capping machine, constitute a minor portion of the invention, very little of such operating mechanism need be illustrated. If information on this point is desired, reference may be had to Letters Patent of the United States, granted to me on December the 3rd, 1907, Number 872,656, on an application filed in the United States Patent Office on April 5th, 1907. However, it may be said that the iron is mounted for rotation, in a bearing 6, carried on a standard 7, extending from a can table 8, of a can sealing or capping machine. This iron may be rotated by any suitable means, for instance, by a gear 9, suitably associated with an elongated stem of the iron. In order to elevate the iron from a can 10, and to permit it to associate therewith alternately, an arm 11, controlled as to lateral movement by a stop 12, may be affixed to said iron, and both are raised and lowered, at will, by a suitable cam 13.

Applying the specification more especially to a construction and arrangement of parts of a soldering device of this character, and a convenient method of constructing the same, an electric heating element, in this case consisting of a coil of wire, preferably relatively large in cross-section, may be convoluted on a mandrel of some suitable form of construction, such, for instance, as is illustrated at 14, with a lead 16, passing through the coil. One of the leads, as 15, is passed through an aperture in the mandrel, and convolutions are made about the same, while the other lead passes into a recess in the mandrel and is positioned parallel with the first named lead, for instance, in a manner as shown. However, it is to be understood that the method of forming this heat-producing element, constitutes no improved feature of the invention, except in so far as some practical means must be adopted for preparing this element. The structure so formed is incased in an electric insulation 17, and is then introduced into a casing 18, the leads being housed in an elongated stem 19, the purpose of which, among other things, is to allow the leads to be carried away from the iron heating case, and still be protected against interferences of any undesirable nature.

In the use of devices of this kind, especially in connection with can sealing or capping machinery—as the term is more com-

monly employed, it is important and necessary to exclude the flux, its vapors, and various moistures from the interior of the casing 18. In order to accomplish this result, 5 there may be introduced into a portion of the elongated stem, a filling 20, such as cement or any other suitable material, and an insulated plug 21, a cap 22 and a plug 23, which form the top and bottom walls of the 10 casing 18, may be provided with annular peripheral recesses 24, and 25, in which may be contained a suitable filling 26, which, in connection with any suitable process form hermetically sealed joints, as indicated more 15 especially in Fig. 4. The walls of the parts creating the joints may be so suitably fused or welded by any suitable process, such for instance, as that which abounds in the use of acetylene gas and oxygen, that the metals 20 of the various walls of the various parts, may so flow together as to create autogenous joints by the flowing together of the metal as indicated at 26 on the drawing. It will thus be seen that the heating element is safe 25 from contact with any undesirable substances that might aid in its destruction. This heating element is inserted into a cavity of a solder-fusing element 27, and both are relatively movable in order that the 30 solder-fusing element may approach and recede from the can. This solder-fusing element may be of any suitable construction and form, and is known in the art as the "steel." The structure thus assembled may 35 be so used, or the steel may be partially enveloped in a heat insulating casing 28, between which, and the element 27, is a comparatively large wall of heat insulation 29.

It will be seen that I have constructed an 40 electrical heater, in a metallic case, which, in the form illustrated, consists of a few turns of relatively large wire placed inside of the case with suitable refractory insulation, and that I have so suitably joined the 45 elements of the casing into which the heating element is placed, that a true metallic union exists throughout the structure of the case, and therefore the heating element is insured against contact with undesirable 50 substances.

Another important feature of the invention is that coils made in this manner, and placed in a plurality of heating cases for a plurality of solder-fusing elements, in one

machine, may be, as can be noted from the 55 diagram in Fig. 5, connected in series so that the current will pass consecutively through each heating element in the machine.

The measure of voltages used where can- 60 ning machinery is operated, gages from one hundred to two hundred and fifty volts and direct current, at the present time, is employed. By constructing a heater, in accordance with this invention, it may be used 65 by existing plants, and produce a sufficient length of life to insure entirely satisfactory service. Obviously the same result with low voltage and much current can be obtained if alternating current is available. 70

Having thus described this invention, I claim.

1. In an electrically heated soldering iron, the combination of a hermetically-sealed heater-case, an electric heat-generating coil 75 located in said case, and a solder-fusing member adapted to be heated from said case.

2. In an electrically heated soldering iron, the combination of a hermetically-sealed heater-case having autogenous joints, an 80 electric heat-generating coil located in said case, and a solder-fusing member adapted to be heated from said case.

3. In an electrically heated soldering iron, the combination of a heater case, a hollow 85 stem extending therefrom, an electric heat-generating coil located in said case and hermetically sealed therein, leads from said coil passing out through said stem and hermetically sealed therein, the joints in said case 90 and between said case and stem being autogenous, and a solder-fusing member adapted to be heated from said case.

4. In an electric heater device, the combination of a hollow casing, insulation ar- 95 ranged about the inner surface of the outer shell of said casing and an electric heat-generating coil arranged in open convolutions within said insulation and tensioned to expand thereagainst and hold said insula- 100 tion against the casing.

Signed at Utica, in the county of Oneida and State of New York, this 5 day of Oct. 1909.

MONTGOMERY H. JOHNSON.

Witnesses:

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