No. 677,335. Patented July 2, 1901.

J. H. C. BUERSTATTE.

ELECTRIC SOLDERING DEVICE FOR CAN CAPPING MACHINES.

(Application filed Sept. 17, 1900.)

(No Model.)

Fig. 1.

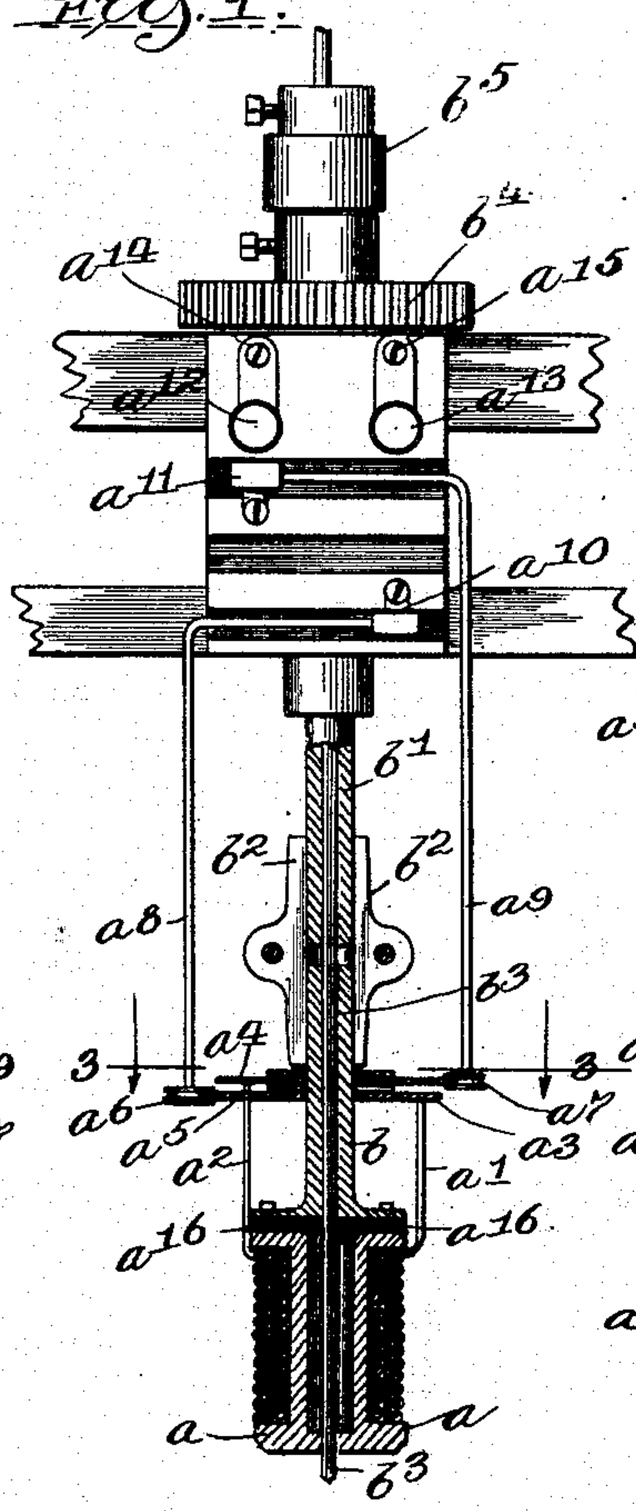


Fig. 2

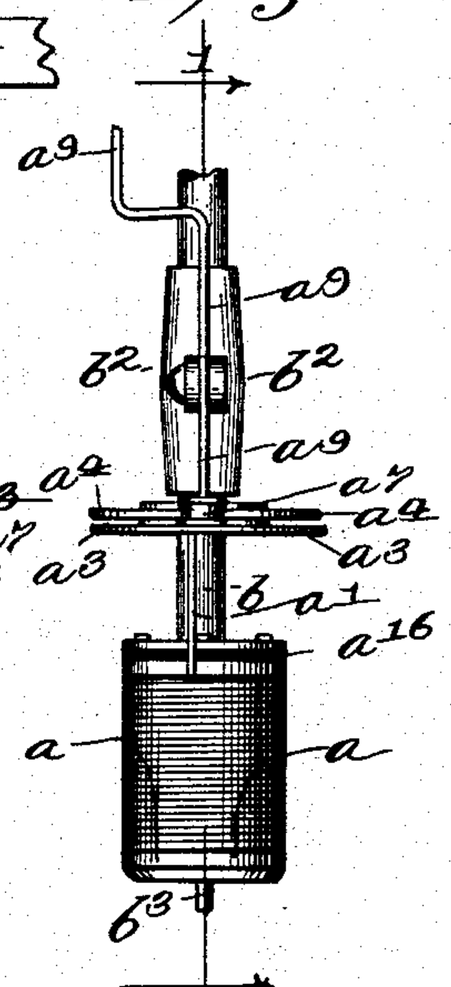


Fig. 3

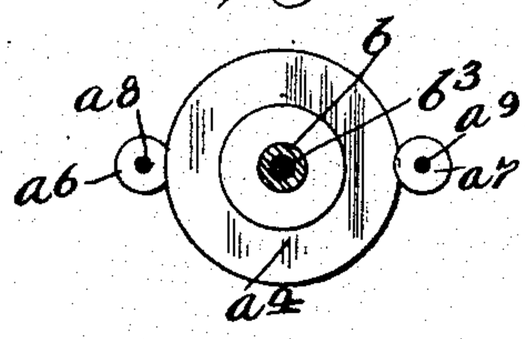


Fig. 4

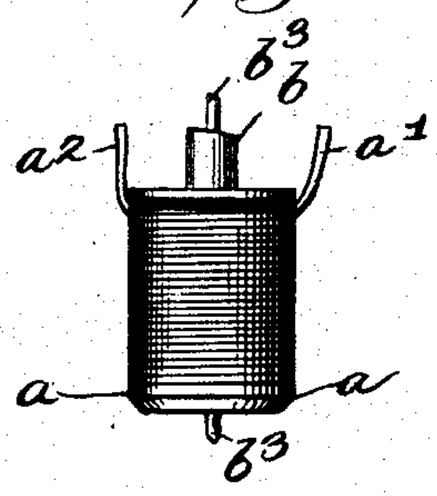
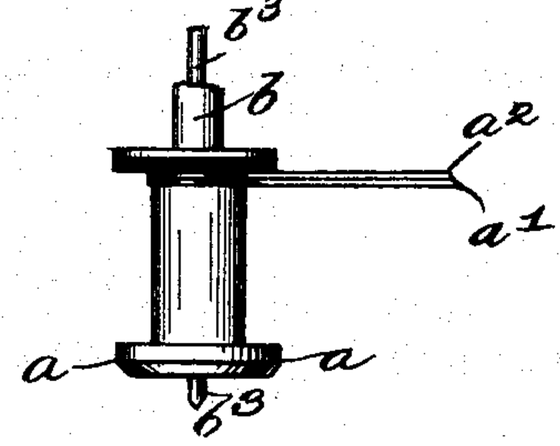


Fig. 5.



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UNITED STATES PATENT OFFICE.

JULIUS H. C. BUERSTATTE, OF MANITOWOC, WISCONSIN.

ELECTRIC SOLDERING DEVICE FOR CAN-CAPPING MACHINES.

SPECIFICATION forming part of Letters Patent No. 677,335, dated July 2, 1901.

Application filed September 17, 1900. Serial No. 30,216. (No model.)

To all whom it may concern:

Be it known that I, JULIUS H. C. BUERSTATTE, a citizen of the United States, residing in Manitowoc, county of Manitowoc, and State of Wisconsin, have invented certain new and useful Improvements in Electric Soldering Devices for Can-Capping Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable persons skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in means for heating the soldering-steels of can-capping machines.

The object of my invention is to provide a means for heating the soldering-steels of can-capping machinery, whereby the heat is confined directly to the location where it is required and is not distributed in the machine, as in cases where the excessive heat evolved from gas-heaters is distributed through the working parts of the machine.

By the use of my invention great economy is secured and an even temperature of the iron is always maintained, whereby the soldering metal and flux may be uniformly and positively distributed at the point where it is required for the purpose of uniting the surfaces.

By using electricity for the purpose of heating the soldering-steels instead of gas-flames, as heretofore, the heat is confined directly to the point where it is required and is not lost by being conducted away from the objective point and distributed over the working parts of the machine, by which the said working parts are destructively affected and are rendered difficult to lubricate.

By the use of my invention the temperature of the room in which the machine is located is not increased in warm weather, at such times when these machines are mostly in use, because the amount of heat needed is so small in proportion to that usually required and is infinitesimal when compared with that produced by the usual method of heating the irons when gas, gasolene-vapor, &c., are used for the purpose.

In the drawings I have shown a section of a capping-machine containing one element thereof for the purpose of illustrating my invention, in which—

Figure 1 is an elevation of such a broken-away section. Fig. 2 is a side view of the same. Fig. 3 is a section through the same looking from the top, taken on lines 3 3 of Fig. 1. Fig. 4 is a perspective view of the completed steel broken away from the machine. Fig. 5 is a view showing the method that I prefer to pursue in winding the wire upon the said steel, so as to render the said device non-inductive and non-magnetic.

In all of the views the same letters of reference indicate similar parts.

a is the steel portion of the part to be heated, which is tapered at the bottom and tinned, as is usual with steels of this description.

a' and a^2 are the terminals of a heating-coil of wire that are wound about the steel frame a and terminate in two circular conducting-disks a^3 and a^4, which are insulated from the spindle b by a proper insulating material. These disks are rigidly fixed to the spindle b and turn with it and also with the soldering-steel a when they are revolved.

Two grooved rollers a^6 and a^7 surround the conducting-rods a^8 and a^9, preferably copper, and bear upon the respective disks a^3 and a^4. The conducting guide-rods a^8 and a^9 are secured in a suitable manner to the terminals of an electric circuit, shown in this case by the clasps a^{10} and a^{11}, which are parts of a fuse-block of which a^{12} and a^{13} are the fuses and are also part thereof. The terminals of the said fuse-blocks a^{14} and a^{15} are adapted to be conveniently connected to an electric circuit.

For the purpose of preventing the heat from escaping from the heated steel a I prefer to insulate it from the body of the machine by means of the insulating-disk a^{16}, which may be composed of mica, asbestos, or like substances and which is contained between the flanges of the spindle b and the upper part of the steel a. This serves as an electric insulator and also as a heat-insulator and prevents the escape of the heat to the other parts of the machine and also reduces the liability of electrical short-circuit.

Fig. 5 illustrates the manner in which the electric conducting-wire is wound upon the

steel for the purpose of heating the same. I first insulate the body of the steel with mica, asbestos, or the like. I then select a conductor of suitable size and double it and begin winding the steel at the doubled end, leaving the two free ends of the conductor for terminals. Between each layer of wire I put a suitable insulation, and when the coil is completely wound the two terminals that remain on the outside of the said coil, a' and a^2, are connected to the disks a^3 and a^4 in the manner plainly shown in Fig. 1. By pursuing this method of winding the magnetic effect due to the current circulating around the steel is reduced to a minimum, and the counter electromotive force that would be otherwise produced by the inductive effect of the coils when alternating currents are used is almost reduced to a minimum. For this reason I prefer this method of winding.

In the operation of the can-capping machine the steel a is reciprocated vertically and it is also revolved. It will be noticed that I have provided for both of these movements. During the revolution of the steel the small rollers a^6 and a^7, which surround the conducting-rods a^8 and a^9, bear upon the respective disks a^8 and a^4, and these disks are insulatingly attached to the spindle, which spindle and steel have a rotary motion imparted to them. By this means the current is contributed to the coil during the said rotary motion, and inasmuch as the small rollers a^6 and a^7 are adapted to be reciprocated over the conducting-rods a^8 and a^9 they will move in conformity with the reciprocating motion of the steel and its connecting elements of the machine.

The mode of operation is as follows: The steel a and the connecting system are raised, and a can having a cap properly covering the top is inserted under the said steel. Then the vent-rod is depressed on top of the can, which centralizes the can with reference to the system. The steel is now brought down on top of the can and is then given a rotary motion, and at the same time the flux and solder are fed to the lower surface of the steel, which is thereby flowed over the joint between the cap and the body of the can. When the soldering operation has been performed, the steel and vent-rod are raised and the can is removed.

The current necessary to heat the steel may be adjusted to the work to be done so that the steel will be maintained at practically uniform temperature.

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

1. A can-soldering device for can-capping machines comprising a steel adapted to flow solder, when hot, a supply-circuit, a non-inductive, electric, heating conductor surrounding said steel, and fixed thereto, a means for moving said steel and accompanying heating conductor, and movable electric conductors adapted to maintain constant connections between said heating conductor and said supply-circuit.

2. A soldering device for can-capping machines comprising a steel adapted to flow solder, an electric heating conductor, doubled upon itself, and wound about the said steel, leaving two outside terminals, a spindle to which said steel is attached, two insulated conducting-disks fixed to said spindle, and comprising the terminals of the electric-heating-conductor rollers engaged with the said disks, and conductors upon which said rollers are adapted to be reciprocated, substantially as set forth.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 4th day of September, A. D. 1900.

JULIUS H. C. BUERSTATTE.

Witnesses:
JOHN CHLOUPEK,
EMIL BALUSCH.