W. L. BAILIE.

Soldering-Machine.

No. 162,880. Patented May 4, 1875.

FIG. II.

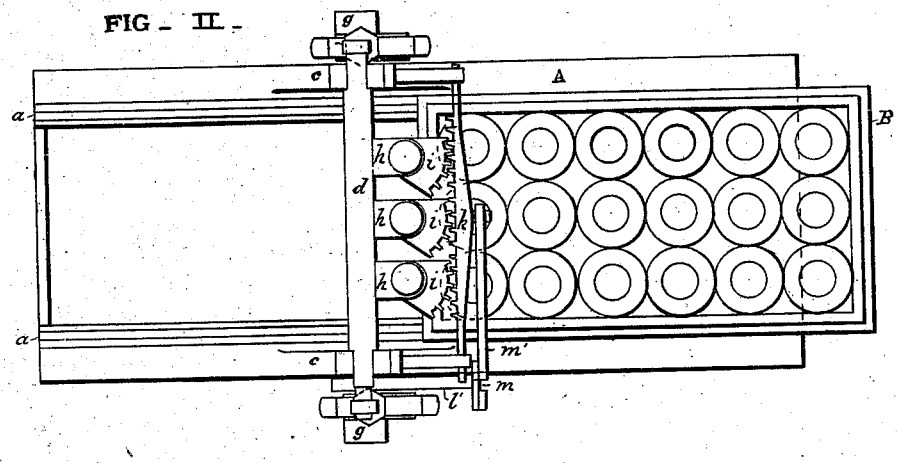

FIG. III.

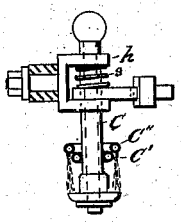

FIG. I.

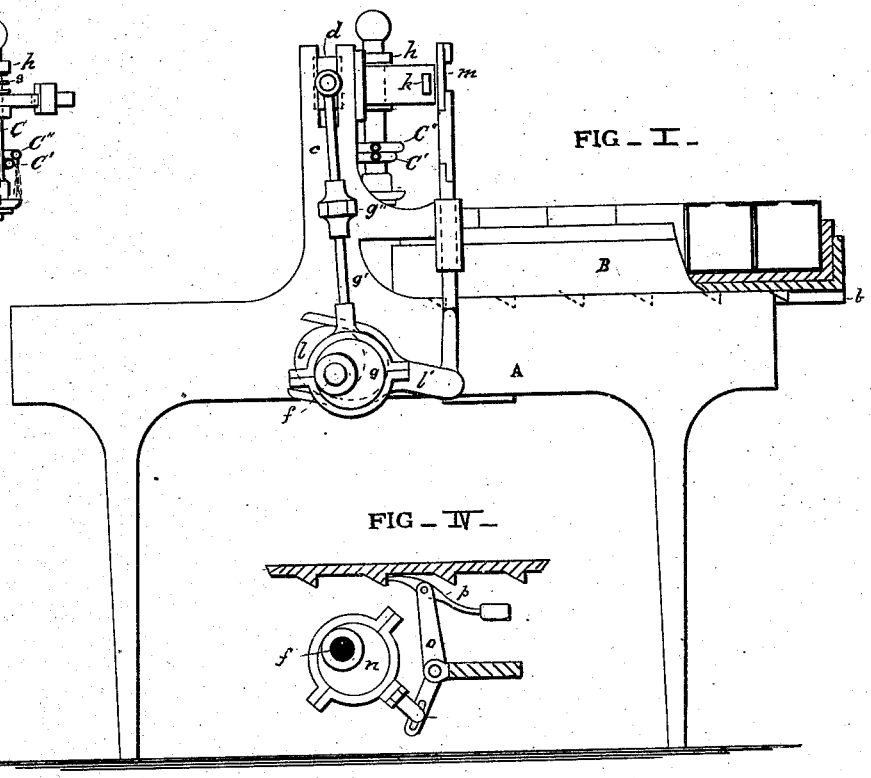

FIG. IV.

WITNESSES.

W. F. McKee

W. W. Wharton

INVENTOR.

William L. Bailie

by G. H. & W. J. Howard.

Attys.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

WILLIAM L. BAILIE, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN SOLDERING-MACHINES.

Specification forming part of Letters Patent No. **162,880**, dated May 4, 1875; application filed October 9, 1874.

To all whom it may concern:

Be it known that I, WILLIAM L. BAILIE, of the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Soldering-Machines, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to a machine for the capping and heading of cans by means of soldering-irons heated by gas-jets, and automatically applied to the said cans, which are mechanically conveyed in rows or sections to positions directly below the soldering-irons aforesaid; and to certain devices designed to adapt the machine to the requirements of cans of various dimensions, and to allow for inequalities in heights of the cans to be operated upon.

In the description of my invention which follows, due reference must be had to the accompanying drawing, forming a part of this specification, and in which—

Figure 1 is a side view, partly in section, of a machine embodying my improvements. Fig. 2 is a plan of the same, and Figs. 3 and 4 detached views of portions of the invention.

Similar letters of reference indicate similar parts in all the figures.

A is the frame of the machine. B is a carriage adapted to hold the trays in which the cans are placed during the preserving process, and furnished with the projections *b* on the under side thereof, which fit within the grooves *a* in the top of the frame A. The frame A has uprights *c* on the sides thereof, to form, in connection with the movable cross-head *d*, the support for the soldering-irons C. A vertically-reciprocating motion is given to the cross-head and soldering-irons by means of the shaft *f*, through the medium of the eccentric wheels *g* and rods *g'*. The soldering-irons are tubular, with flanges near their lower ends, upon which the gas-jets are concentrated to heat the irons, and have weighted presser-rods, which pass centrally through them, to rest upon the caps and retain them in position during the soldering operation. C' C'' are, respectively, perforated gas and air pipes, either fastened to the frame A or to the soldering-irons, in such manner as to have a reciprocating motion in common with them. In the latter case the pipes are connected to their respective supplies by means of flexible tubes. The perforations in the pipes C' C'' have such relative positions as to allow the air to strike the gas-jets at or near a right angle therewith, thereby forcing intensely-heated flames to the flanges of the soldering-irons. The soldering-irons are confined adjustably within the bearings *h*, connected to the cross-head *d*, and have two movements, the vertically-reciprocating motion before alluded to, and a circumferential one transmitted thereto by means of the toothed sectors *i*, and the laterally-sliding rack *k* geared therewith. The lateral motion of the rack is derived from the shaft *f* through the medium of an eccentric or cam, *l*, rod *l'*, and bell-crank *m*, with its connection *m'*; but, instead of these devices, a combination may be formed of any of the well-known contrivances for transmitting and changing the direction of movements. The rack *k* is of such depth as to prevent the sectors from passing beyond its upper and lower edges during their reciprocating motion, and, in addition, to allow for the vertical adjustment of the irons, independently of the cross-head *d*, as and for the purpose hereinafter described. In order to bring the centers of the series of cans automatically and successively under the soldering-irons, a feed is provided of such character as to give to the carriage containing the cans a forward movement at each revolution of the shaft *f* equal to the diameter of a can. This forward movement is obtained as follows: An eccentric, *n*, is secured to the shaft *f* centrally of the frame A, and attached by a rod to a bell-crank, *o*, having its fulcrum upon a cross portion of the frame. To the upper arm of the bell-crank is pivoted a pawl, *p*, adapted, during its vibratory movement, to engage with teeth on the under side of the carriage, and move the carriage a distance equal to the diameter of a can, and a series or row of cans to a position directly in line with and under the soldering-irons.

Other portions of the invention not before alluded to will be described, and their uses set forth in the description of the operation of the

machine which follows. The cans are placed in the carriage in trays, and the carriage moved longitudinally of the frame, until the first tooth is in a position to come in contact with the pawl *p*. Upon the vibration of the bell-crank and pawl, the first row of cans is brought under the soldering-irons, which, at this stage of the process, are elevated, and, as the pawl recedes from the tooth, the irons descend upon the cans, and are given the rotary motion before alluded to. The presser-rods are constructed to extend below the soldering-irons, in order to place a certain pressure upon the caps before the application of the irons to them, and to retain the pressure upon the said caps after the elevation of the irons for the purpose of preventing the caps from being raised by steam generated in the cans while the solder is in a molten state. As the soldering-irons are elevated, the carriage is again moved the requisite distance, and the irons applied to the next series of cans, the process continuing until the entire number of cans are operated upon. The spiral springs *s*, which occupy the space on the irons between the sectors *i* and the upper portion of the bearings *h*, are compressed as the soldering-irons descend upon the caps or heads of the cans, and consequently retain a pressure upon the caps or heads after the cross-head has commenced its upward movement. By this arrangement the period of application of the irons to the cans is lengthened without decreasing the rapidity of the shaft or the motive mechanism. The springs *s* also provide for any inequality in the height of the cans by being variously compressed during the soldering operation before described.

Cans of various diameters may be capped by means of my machine by altering the spaces existing between the bearings *h*, they being held within a slot in the cross-head *d* by bolts and nuts. The height of the cross-head *d* above the frame A may be increased or diminished to suit cans of different height by means of the right and left screws on the rod *g* and the nuts *g''*.

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

1. In a soldering-machine, the adjustably-held soldering-irons C, adapted to have the vertically-reciprocating and circumferential movements described, in combination with the sliding carriage B, to which an intermittent feed is applied, substantially as set forth.

2. The cylindrical and flanged soldering-irons C within the adjustable bearings *h*, in combination with the springs *s*, substantially as described.

3. The soldering-irons C and toothed sectors *i*, in combination with the laterally-sliding rack *k*, as specified.

4. The vertically-movable cross-head *d*, connected by the eccentric wheels *g* and rods *g'* to the shaft *f*, in combination with the soldering-irons C, as shown.

In testimony whereof I have hereunto subscribed my name this 3d day of October, in the year of our Lord 1874.

WILLIAM L. BAILIE.

Witnesses:
WM. T. HOWARD,
JNO. T. MADDOX.