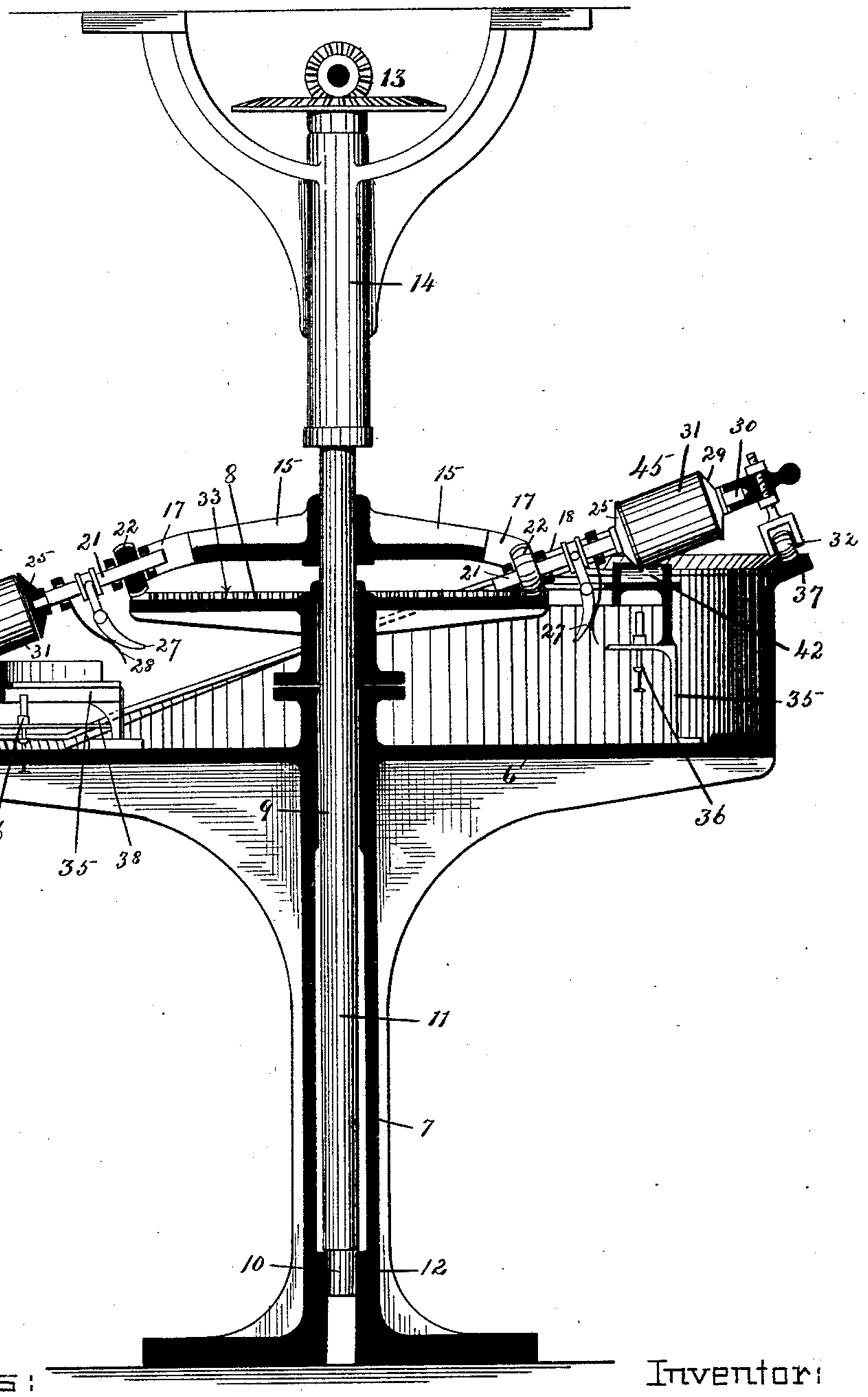
(No Model.) 3 Sheets—Sheet 1.

D. M. MONROE.

CAN SOLDERING MACHINE.

No. 353,421. Patented Nov. 30, 1886.

Fig. 1.



Witnesses:
Wilson Ringle
Chas W. Smiley

Inventor:
David M. Monroe
By Boyden Bailie & Mason
Attys.

(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

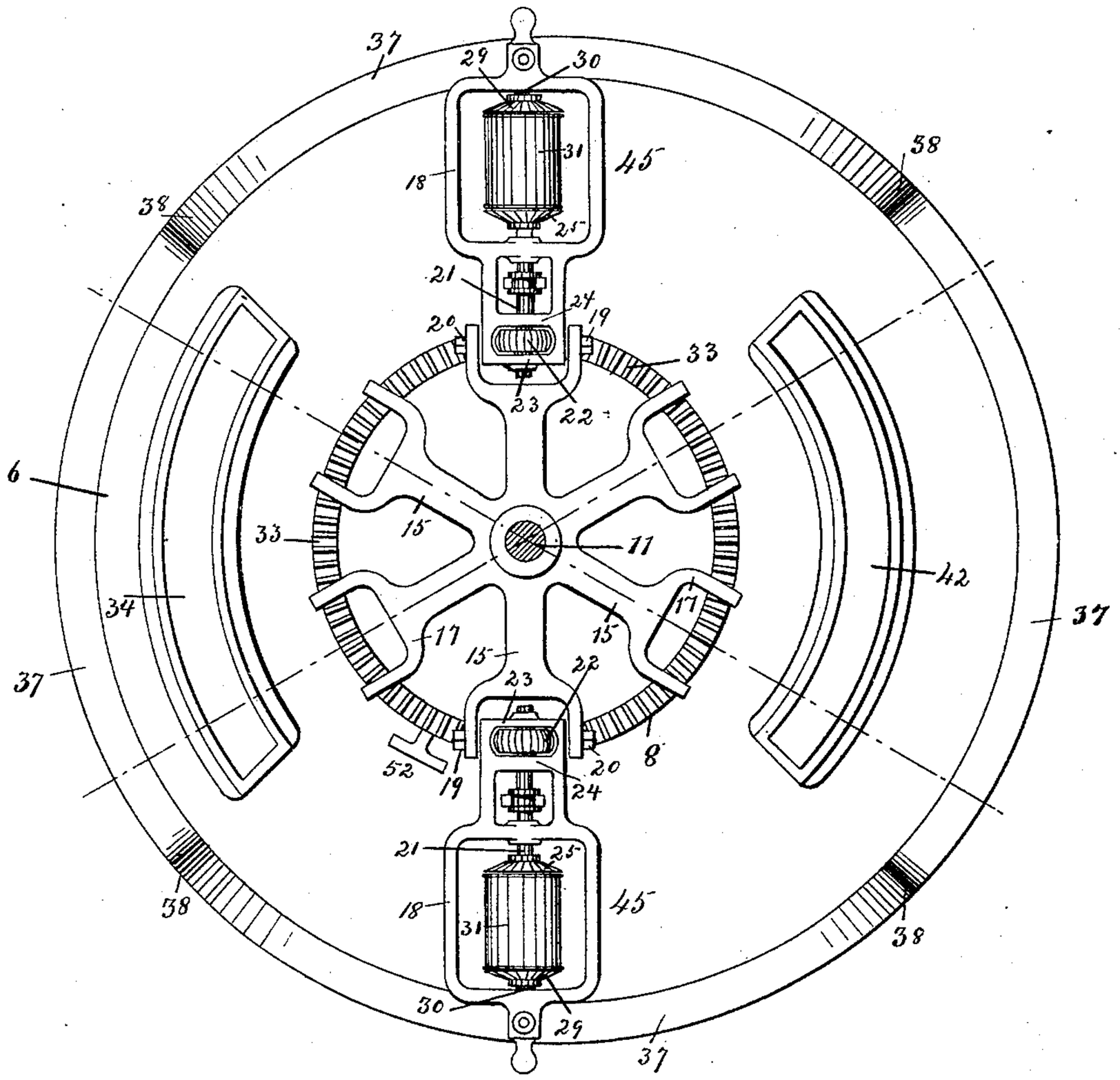


Fig. 3.

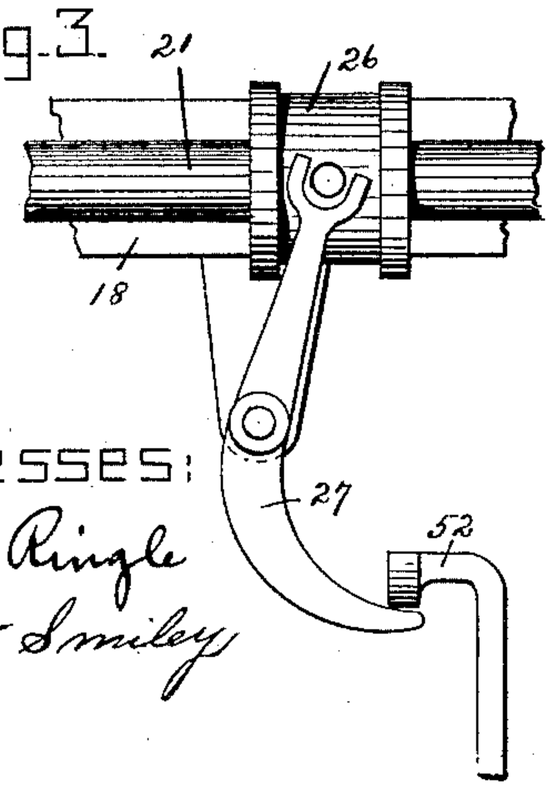
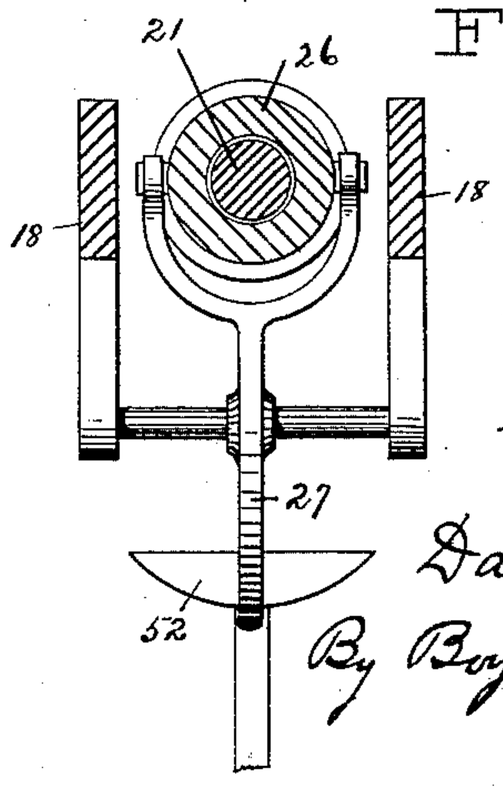


Fig. 4.



Witnesses:
Wilson Ringle
Chas. W. Smiley

Inventor:
David M. Monroe,
By Boyden, Bailie & Mason
Attys.

(No Model.) 3 Sheets—Sheet 3.

D. M. MONROE.

CAN SOLDERING MACHINE.

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Fig. 5.

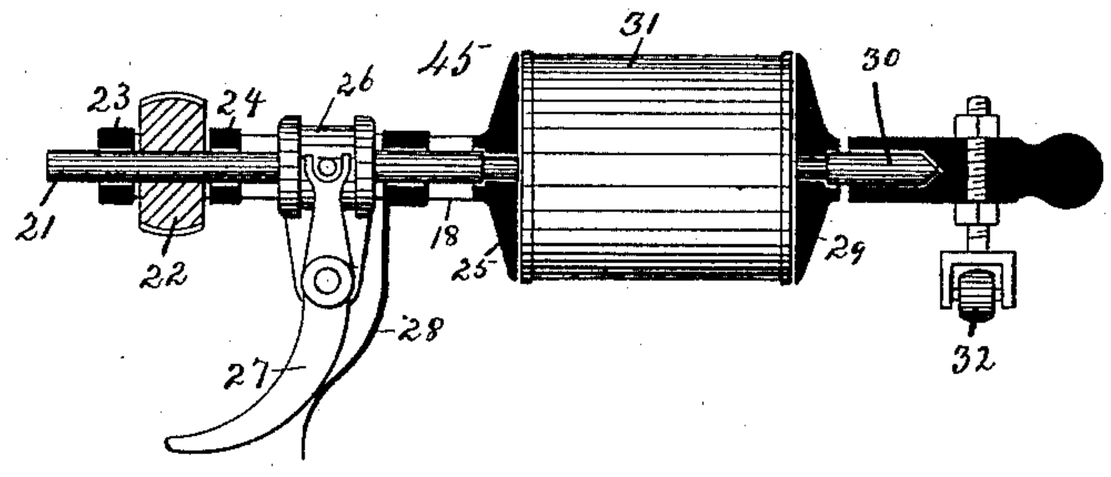
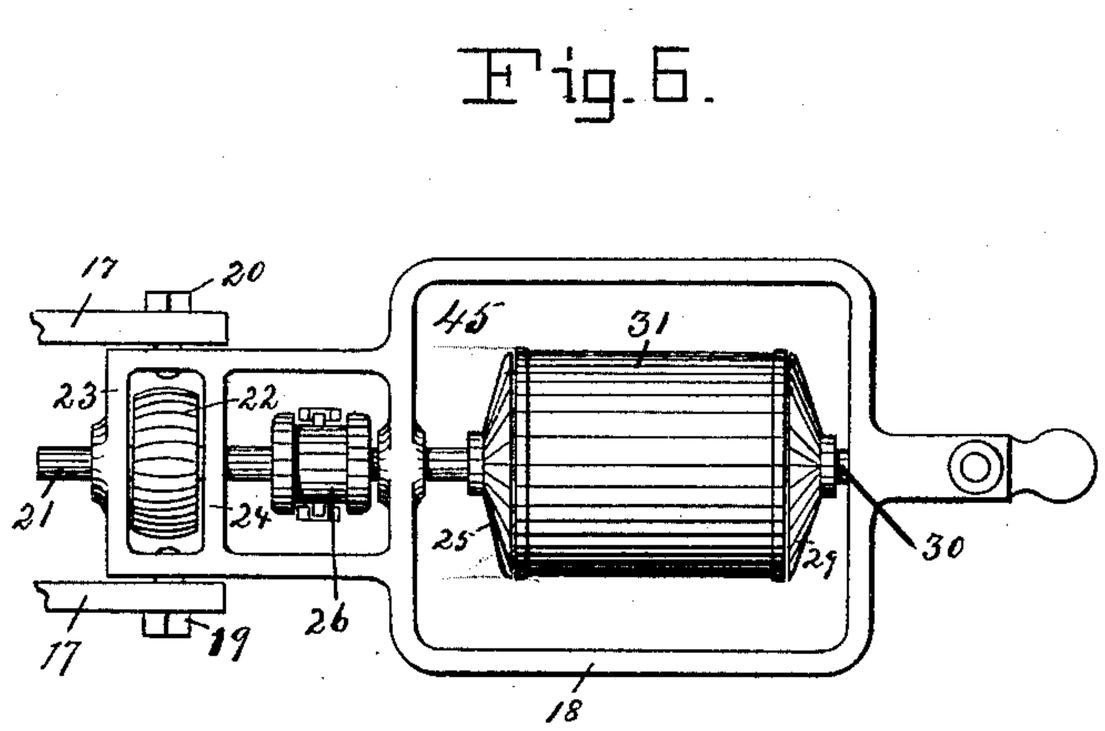


Fig. 6.



Witnesses:
Wilson Ringle
Chas. H. Smiley

Inventor:
David M. Monroe
By Boyden Bailie & Mason
attys.

UNITED STATES PATENT OFFICE.

DAVID M. MONROE, OF BALTIMORE, MARYLAND.

CAN-SOLDERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 353,421, dated November 30, 1886.

Application filed October 11, 1886. Serial No. 215,938. (No model.)

To all whom it may concern:

Be it known that I, DAVID M. MONROE, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Can-Soldering Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in can-soldering machines wherein a circumferential, rotating, and oscillating movement is given the cans, and whereby the head-seam of one end of the can is caused to rotate through a trough containing molten solder, which lies in the path of its circumferential movement, and by a change of angle of the can, which is permitted by an oscillating clamping-arm, the head-seam of the other end of the can is caused to rotate through a second trough of molten solder, which lies in its path opposite the first trough, and placed at a proper elevation for the immersion of this second seam within the molten solder, thereby with one adjustment soldering both head-seams of the can. In order that the solder may have sufficient time to chill before removing the can, sufficient interval is allowed between the troughs for this purpose.

In the further description of my invention reference is had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of the device complete. Fig. 2 is a plan of the device with the hanger and portion of the shaft removed. Figs. 3 and 4 are enlarged views of the can-tripping device. Fig. 5 is a detail view in section of the clamping device. Fig. 6 is a plan of Fig. 5.

Similar figures refer to similar parts throughout the several views.

The table 6, with its pedestal 7, constitutes the frame of the machine, to which is secured the rack-plate 8. Revolving freely within and supported by the said frame at 12 is the shaft 11, which is provided with the necessary bearings at 9 and 10. Motion is conveyed to the shaft 11 by means of the bevel-gearing 13, the upper end of the shaft being furnished with the hanger 14 as a further support.

To the shaft 11 are secured the radial arms 15—six in number—two only of which are shown in the drawings, Fig. 1, the said radial arms terminating in the jaws 17, Figs. 2 and 6.

The clamping device 45 consists of the frame 18, which is centered by means of the bolts 19 and 20, so as to oscillate in the jaws 17 of the radial arms 15, and is provided with the spindle 21, which revolves freely within the said frame 18.

Secured to the spindle 21 by means of a feather is the pinion 22, which works freely between the guides 23 and 24, thus maintaining the position of the pinion 22 in line with the centers 19 and 20, and permitting the said spindle to be moved in or out, which is accomlished by means of the strap 26 and the lever 27, the spring 28 pressing against the lever 27, serving to press the spindle 21 outward. The end of the said spindle is provided with the disk 25, which, with the disk 29, that has its spindle 30 working freely in the free end of the frame 18, serves to hold the cam 31 in position, and permits it to rotate during the process of soldering.

The free end of the frame 18 is provided with the adjustable roller 32, which serves as a support and guide for the frame. The necessary rotating motion is given to the spindle 21 by means of the circumferential movement of the pinion 22 on the rack 33, which is mounted upon the fixed rack-plate 8, the pinion 22 being provided with the curved teeth shown and so centered in the jaws 17 of the radial arm 15 that the said pinion and rack are in gear at any desired angle.

The troughs 34 and 42, which contain the molten solder, are secured to the table 6 by means of the brackets 35, the necessary heat to melt the solder being applied at the bottom of the said troughs by means of the burners 36. Each trough lies in the paths of the respective end seam of the can to be soldered, and occupies one-fourth of the circle through which the can passes, being placed at a proper height for the immersion of the can-seam in the molten metal contained within the said troughs, the depth to which the can-seam is immersed being regulated by the adjusting-screw on the roller 32.

To the table 6 is secured the track 37, upon

which travels the roller 32, the said track being of the inclined form shown, to give the necessary elevation or depression to the free end of the clamping-frame 18, as may be required, to solder one end or the other of the can, and is further provided with the additional inclines 38, in order that the cans may be caused to rise and pass the ends of the trough.

To maintain a uniform height of metal in the soldering-troughs 34, any of the common devices may be employed, whereby an amount of solder equal to that being used in soldering the cans will be continuously supplied.

The manner of operating the device is as follows: The solder in the troughs having been melted by means of the burner 36 and ascertained to be at the proper height, the can to be soldered is placed in the clamping device by an operator by throwing back the lever 27, which permits the can to be placed between the clamping-disks 25 and 29, the concave form of the can-head readily adjusting itself to the corresponding surfaces of the disks. Upon releasing the lever 27 the disk will return to its closed position by means of the spring 28, and clamp the can between the said disks with sufficient firmness to maintain a fixed position during the operation of soldering. The machine having been put in operation by throwing in gear the bevel-wheels 13, the shaft 11 in its rotary movements carries with it the radial arms 15. The pinions 22 being in gear with the rack 33 imparts a rotary motion to the spindle 21 and the clamping-disk 25, the disk 29 turning freely on its spindle in the frame 18, thus imparting to the can a rotating and circumferential movement.

In the path of the outer end of the can 31 lies the trough 34, which occupies one-fourth of the circle traversed by the can, the track 37 being provided with the necessary additional inclines 38, over which the roller 32 will pass and lift the can sufficient to clear the ends of the troughs and return to a height for the proper immersion of the can-seam in the molten solder, the extent of this immersion being regulated by the adjusting-screw on the roller 32. The can in its passage through the trough 34 having a rotary movement will cause all parts of the seam to be brought in contact with the molten metal and insure an equal distribution of the solder. The can in its circumferential movement having passed through the trough 34 and completed the soldering of the outer end seam, will be caused to rise by the roller 32 traveling up the incline of the track 37, and the clamping-frame 18, oscillating on its center 19 and 20, will bring the can to the required angle for soldering the inner end seam, during the interval between the two troughs sufficient time having been allowed to chill the solder. In the path of the inner head-seam of the can lies the trough 42, through which the can-seam passes and rotates, as in the first trough, thus soldering the second head-seam, after passing which the roller 32 descends the incline on this side of the track and reaches its first position, when the completed can is removed automatically by the tripper device 52 illustrated in Figs. 2, 3, and 4, an unfinished can substituted by the operator and the operation repeated.

Having described my invention and the manner of operating, what I claim, and desire to secure by Letters Patent, is—

1. In a can-soldering machine, the combination of the inclined track 37, the soldering-troughs 32 34, placed, respectively, at different elevations, and a circumferentially-movable rotating and oscillating clamping device, for the purpose set forth.

2. In a can-soldering machine, the combination of circumferentially-movable radial arms, or a hub, 15, a rotary oscillating can-clamping device, the inclined track 37, and the soldering-troughs 32 34, placed, respectively, at different elevations, for the purpose set forth.

3. In a can-soldering machine, the combination of circumferentially-movable radial arms, or a hub, 15, the rack 33, an oscillating clamping device, the rotating spindle 21, the pinion 22, the inclined track 37, and the troughs 32 34, placed, respectively, at different elevations, substantially as shown, and for the purpose set forth.

4. In a can-soldering machine, the combination of the circumferentially-movable radial arms, or hub 15, a rotary oscillating can-clamping device, the inclined track 37, and solder-applying devices placed, respectively, at different elevations, whereby both end seams of the can may be soldered without removing the can from the machine.

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

DAVID M. MONROE.

Witnesses:

JNO. T. MADDOX,

G. A. BOYDEN.