(No Model.) 2 Sheets—Sheet 1.

W. M. EMMART.

SOLDERING MACHINE.

No. 362,150. Patented May 3, 1887.

Fig. 1.

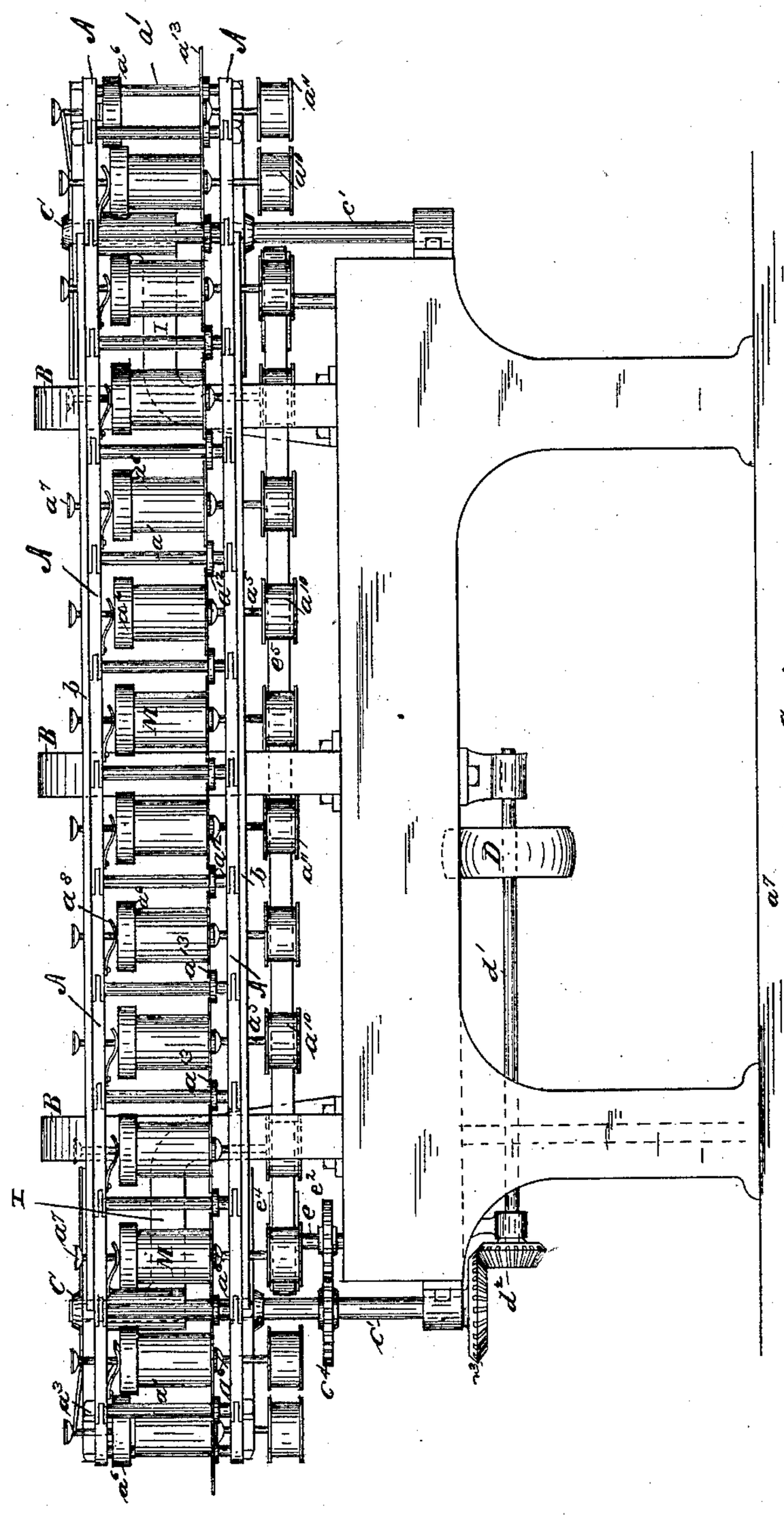
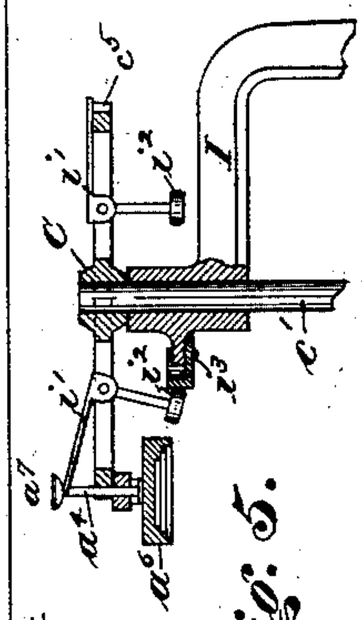


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

W. M. EMMART.

SOLDERING MACHINE.

No. 362,150. Patented May 3, 1887.

Fig. 2.

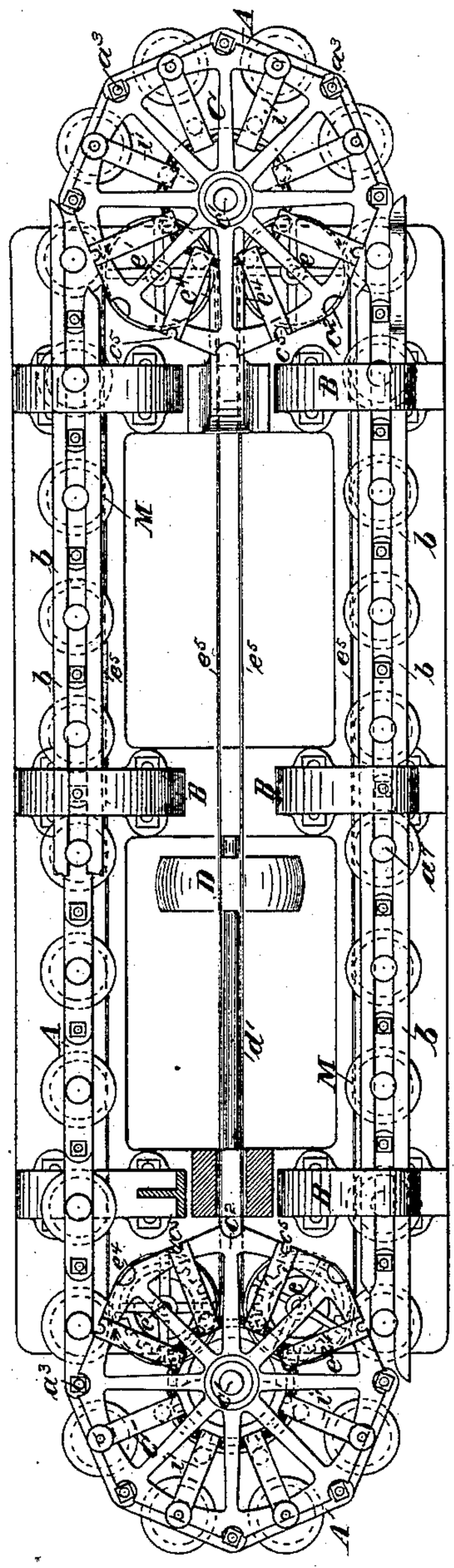


Fig. 4.

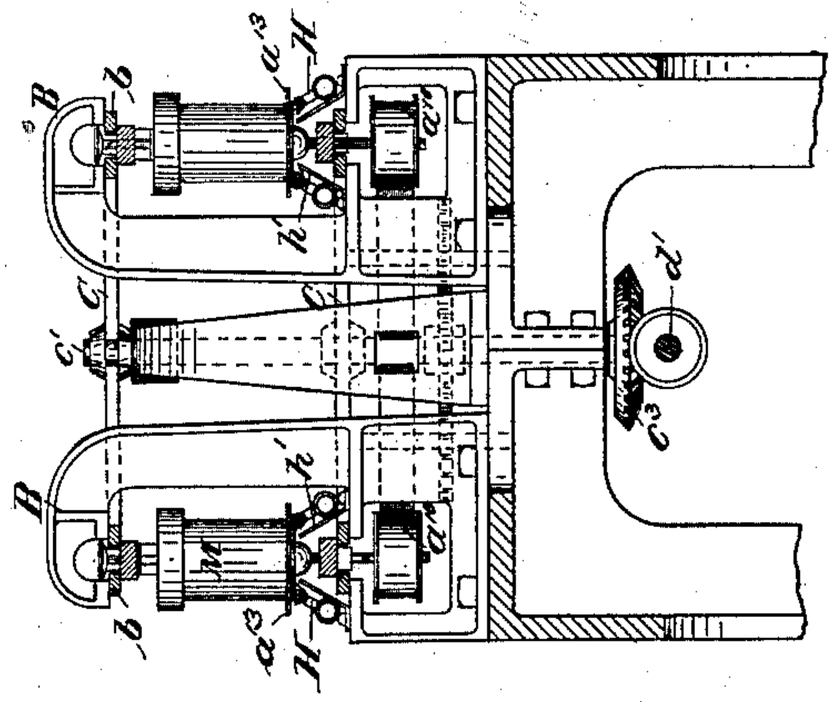
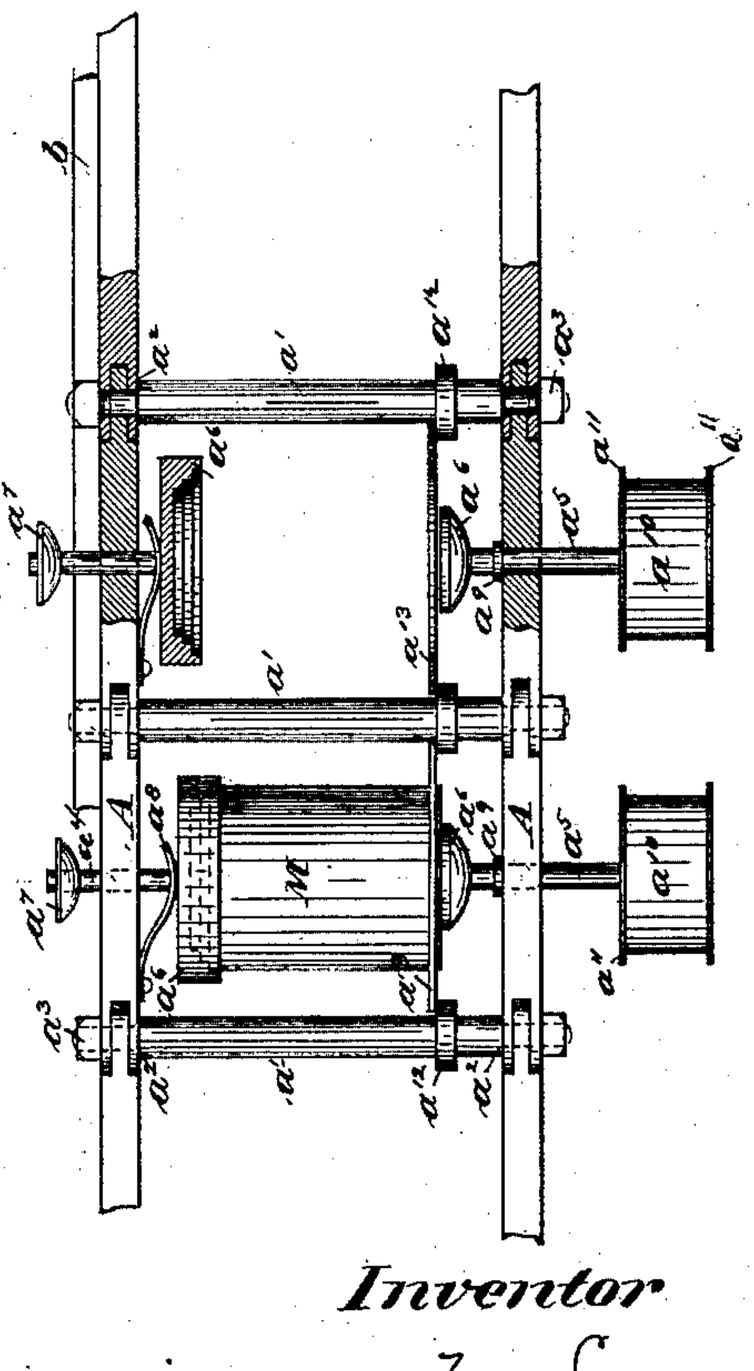


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM M. EMMART, OF BALTIMORE, MARYLAND.

SOLDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 362,150, dated May 3, 1887.

Application filed December 29, 1886. Serial No. 222,874. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. EMMART, of the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Machines for Soldering the Heads of Metallic Cans to the Bodies thereof, of which the following is a full description, accompanied by drawings illustrating the same.

Figure 1 is a side view of the machine, showing the sections hinged together, the cans seated therein, and the guiding device. Fig. 2 is a top view of the same, showing the polygonal wheels for moving the sections; Fig. 3, an enlarged detail view of the sections as they are hinged or joined together, the can in its seat, and the collared or shouldered pulley below, upon which the belt acts to turn the cans; Fig. 4, a sectional end view showing the standards which support the guiding device, the wheels, and portions of the sections for holding the cans. Fig. 5 is a sectional view of a standard and bearing supporting the polygonal wheels; also showing in section the cam attached to the standard, and the lever operated by the cam for lifting the button to release the can.

A A, Figs. 1 and 3, represent the top and bottom pieces of a section mortised or otherwise joined at their ends a' a', a series of bolts passing through the joined ends of the side pieces, A A. These bolts form the lateral sides of the sections and serve as hinge-bolts, upon which the joints of the top and bottom pieces of the section may have a slight turning movement. These bolts are provided with shoulders a^2 a^2, equidistant upon each bolt, and upon their narrow ends, which pass through the joints, a screw is cut to receive the nuts a^3. This screw is not cut far enough down on the end of the bolt to pass below the frame-pieces, so that the nut a^3 may be tightened to the end of the thread and leave the joints free to work. As thus constructed it will be seen that there are formed a series of sections consisting of top and bottom links joined together by bolts. Within each of these sections is placed the mechanism which supports the can M. The top and bottom pieces, A A, are perforated centrally, and through the perforation in the top piece is passed the stem a^4, and through the bottom one the stem a^5.

Attached to the bottom of the stem a^4 is the disk a^6, which may be constructed with steps for receiving cans of different sizes, as shown in Fig. 3, and at the top of the stem a^4 is secured the button a^7. To a suitable part of the top piece A is attached the spring a^8, which exerts its tension downwardly upon the disk a^6. Another disk a^6 is also placed upon the top of the stem a^5. The stem a^5 is also provided with collar a^9, which rests upon the bottom piece A, and at the lower end of the stem is placed the pulley a^{10}, provided with the shoulders a^{11}, to sustain the belt which drives these pulleys, as will be more fully explained hereinafter. The can is seated between the two disks a^6, and is held in place by the action of the spring a^8 upon the upper disk.

B B are a series of standards, of which there are three shown in the drawings, located on each side of the machine. These standards support the guide-pieces b, which consist of two pieces of metal lying parallel with each other and leaving a space between them, or it may be constructed of one piece slotted longitudinally. These guide-pieces are located, as shown, above and below the sections. C is a polygonal wheel, of which there are four, two at each end, which are the same distance apart as the top and bottom pieces of the sections A. These wheels are mounted upon the driving-shaft c', and are located upon said shaft so as to conform to the top and bottom pieces of the sections. These wheels are intended to be turned by the shaft, and as they turn carry with them the sections and cans M seated therein. The wheels are notched, as shown at c^2, to receive the nuts a^3 upon the hinge-bolts a' as they pass around the wheel. The guide-pieces b run nearly the full length of each side of the machine and are cut off just before they reach the wheels C. The bolts a', which join and journal the ends of the frame-pieces, as before described, are provided with a nut, a^3, at the top and bottom, these nuts having parallel sides which run in the space or slot in the guide-pieces, while the lower piece of the section rests upon the lower set of guides. The sections are thus supported, kept in perpendicular position, and guided in line. The button a^7 projects above the guide-pieces, and travels with the sections until it reaches its position at the polygonal wheel C, and is there raised to release the can

by the following mechanism: Viewing Fig. 5, I is a standard which supports the upright shaft c', upon which is mounted the wheel C, which wheel contains the notches c^2, to receive the nuts a^3, and also the notches c^5, to receive the stem a^4, upon which is mounted the button a^7. Between the ribs or arms of the wheel C are pivoted the bell-crank levers i', each of which upon its lower arm carries the roller i^2, while the other arm lies upon the rim of the wheel, and at its end is notched to correspond with the notch c^5 in the wheel, so that when the moving sections reach the wheel this button overlaps and rests upon the notched end of the lever-arm i'. Upon the standard I is erected the cam i^3, and as the wheel moves the roller i^2 rides upon this cam, lifting the end of the lever under the button a^7. This movement lifts the button, the stem a^4, and the disk a^6, attached to the stem, and keeps them up until the can is removed or placed in its seat. When the roller leaves the cam, the spring a^8 forces the disk and button down, carrying with it the lever i' to its normal position. The apertures through the pieces A serve as journals for the stems a^4 and a^5. The upper disk, a^6, however, may be swiveled or made to turn upon its stem. The driving-pulley D gives motion to the machinery through the shafts d' and beveled wheels d^2 c^3 and driving-shaft c'. Upon a suitable part of the frame are erected the shafts e e', upon which are mounted the gear-wheels e^2 e^3, which mesh into the wheel c^4, mounted upon the shaft c', and receive their movement from that shaft. Upon the shafts e e' are also mounted the drums e^4, which are located on the shafts so as to be in line with the pulleys a^{10}, attached to the spindles or stems a^5. Around these drums a belt, e^5, is placed, which runs against the pulleys a^{10}, and gives a revolution in a reverse direction to the stems a^5 and to the cans seated within the sections. The collars a^{11} on the pulleys a^{10} keep the belt from falling or sagging. Thus as the sections with their cans move in one direction the cans are turned in the other.

Before the cans are seated within the sections a small piece of wire or drop solder is placed inside, which, when melted, finds its way around the seam of the can-head. A suitable flux is also placed therein, and as the cans are moved along in their sections and revolved they are subjected on the outside to a suitable heat, which, heating the tin, melts the solder by conduction, which readily flows around the seam. A good way for heating the cans is by a series of gas-jets, or a series of flames from Bunsen or hydrocarbon burners, which are regulated to play their flames upon the seam from below, as shown in Fig. 4, in which H represents one or more burners. In order that the can may not be heated over a greater surface than is necessary, the following devices are arranged to protect the longitudinal seam and lower head of the can M from too much heat: Upon the hinge-bolts a' are placed the collars a^{12}, and upon these collars are placed the plates a^{13}, which cross the space between the two bolts and have circular openings for the can. The opening is just sufficient in size to admit the can and prevent the flame from injuring the side seam. There is also placed upon the guide-pieces an upright strip or plate, h', the upper edge of which reaches to within a short distance of the bottom of the can and protects its lower head from the heat. The space formed between the two pieces a^{13} and h' exposes the head-seam only to the action of the heat, and protects the body and head of the can, as well as the lower disk and frame.

As will be seen, this machine is designed to work continuously, and may be constructed with several tiers of cans arranged within a series of sections joined by bolts moving through the entire length of the sections, and a can may be entered, soldered, and taken out of the machine upon each side, and as the section moves continuously and makes no stops each can is subjected to the heat which lasts during the time it takes to travel through one side of the machine. With a machine having a continuous movement the number of cans soldered is very much greater than with one having an intermittent movement.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine for soldering the head seams of metallic cans, a continuously-movable endless conveyer composed of sections formed by a series of upper and lower links, A, joined together by pivotal bolts a', the links A perforated to journal and support a revolving bearing for a can, and means for imparting a continuous lateral movement to the conveyer, substantially as described.

2. In a machine for soldering the head-seams of metallic cans, a continuously-moving endless conveyer composed of sections formed by a series of upper and lower links joined together by pivotal bolts, as a', the links A perforated centrally, the stems a^4 a^5 passing through the perforated links and carrying the disks a^6, substantially as described.

3. In a machine for soldering the head-seams of metallic cans, an endless conveyer composed of sections formed by a series of upper and lower links joined together by pivotal bolts, as a', in combination with means for retaining a can in position in each section, substantially as described.

4. In a machine for soldering the head-seams of metallic cans, an endless conveyer composed of sections formed of a series of upper and lower links joined together by bolts, as a', having the nuts a^3 above and below, in combination with the guiding device b, as set forth.

5. In a machine for soldering the heads to metallic cans, the hinged frames A a' and the spring-actuated stem a^4, journaled therein and provided with the button a^7, in combination with the polygonal wheel C, lever i', pivoted thereto, and the cam i^3, arranged and operating substantially as shown.

6. In a machine for soldering the head-seams of metallic cans, an endless conveyer composed of sections formed by a series of upper and lower links joined together by bolts, as a', the bolts in each section provided with the collars a^{12}, the plates a^{13}, resting on the collars and having an opening to admit the can, the strip h', resting on the guide-piece b, operating together to expose the seam and protect the can body and head and guide the flame, in combination with the burners H, arranged to direct a flame between the plates a^{13} and strip h', substantially as described.

7. In a machine for soldering the heads to metallic cans, the bolts a', forming the side of the hinged frames and provided with the collars a^{12}, in combination with the plates a^{13}, resting on the collars, and each having an opening to admit the can, the strip h', resting on the lower guide-pieces, b, and the burners H, arranged and operating together substantially as described.

8. In a machine for soldering the heads to metallic cans, the frames A a' a^3, carrying the stems a^4, in combination with the polygonal wheels C, provided with the notches C^2 C^5, substantially as described.

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Witnesses:
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EDWARD A. OSSE.