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C. W. SLEEPER.

CAN MAKING MACHINE.

No. 552,336. Patented Dec. 31, 1895.

Fig. 1.

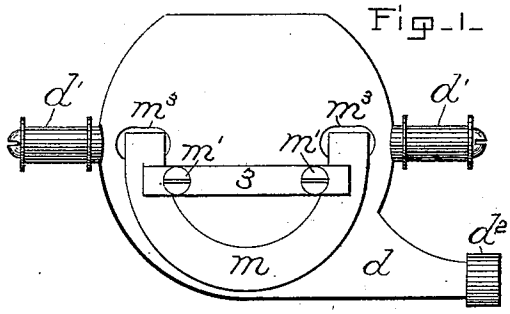


Fig. 2.

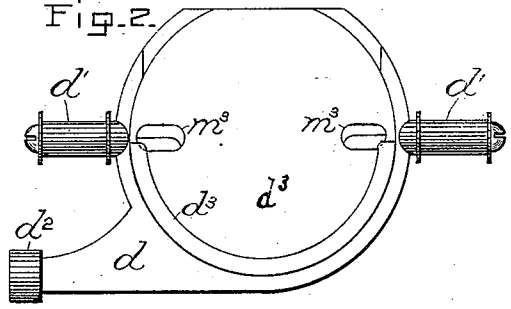


Fig. 3.

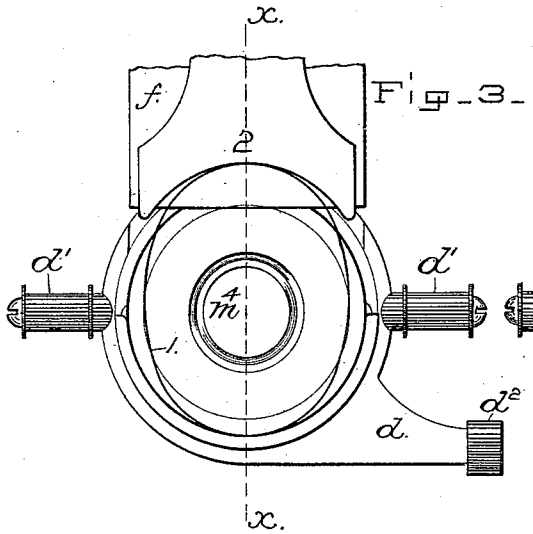


Fig. 4.

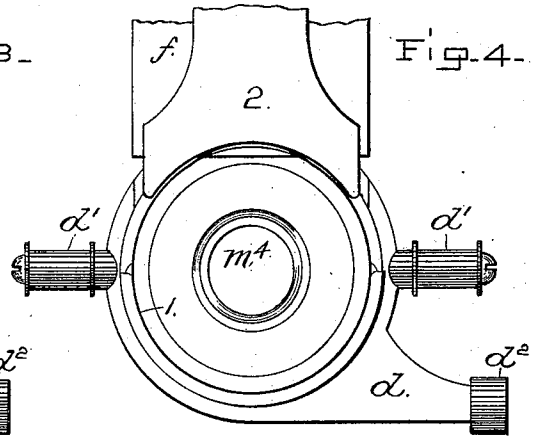
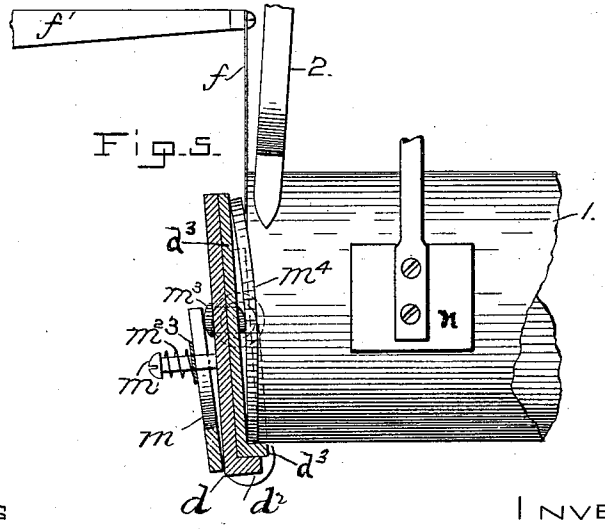


Fig. 5.



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CAN MAKING MACHINE.

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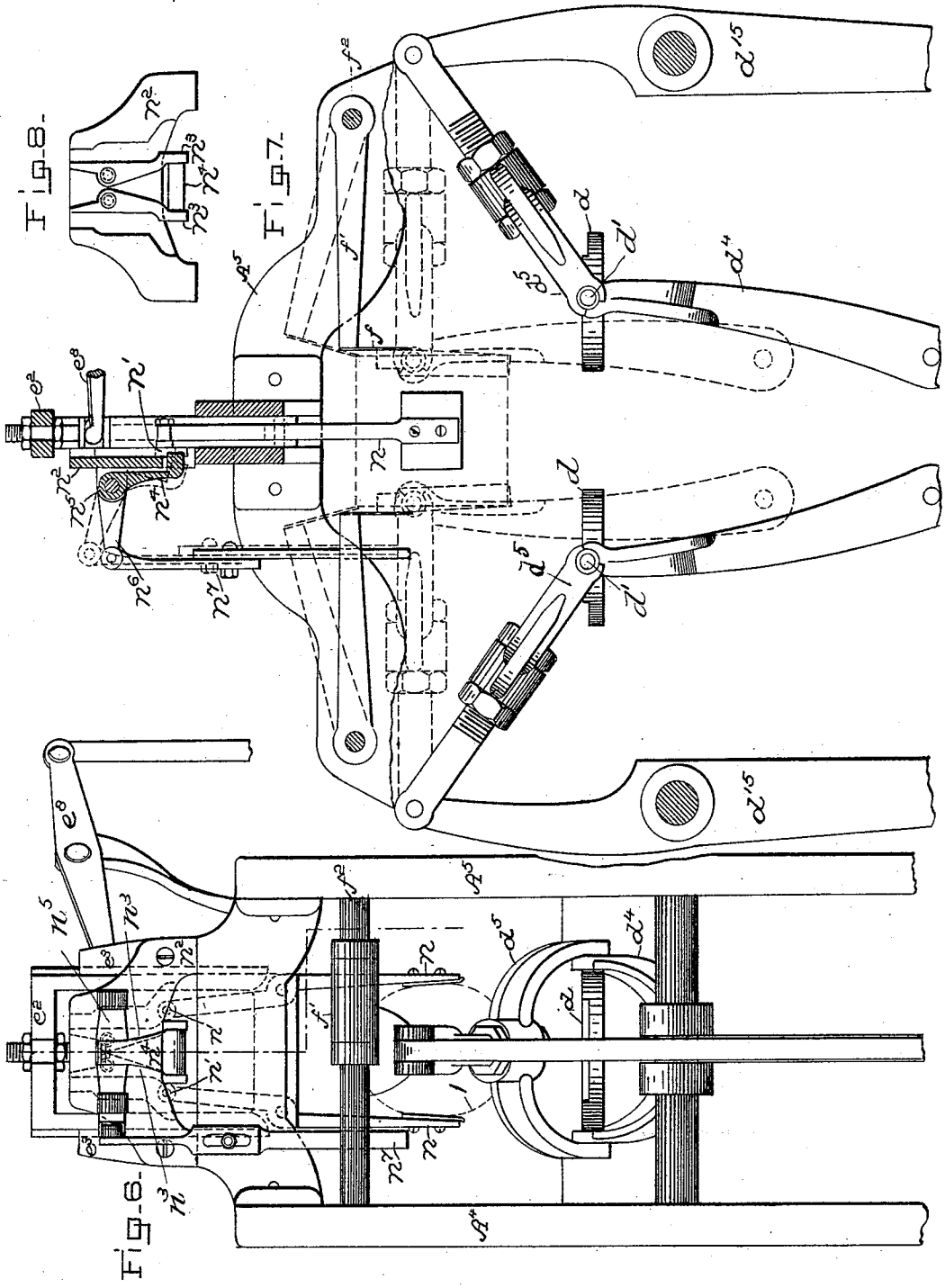

Fig. 8.

Fig. 7.

Fig. 6.

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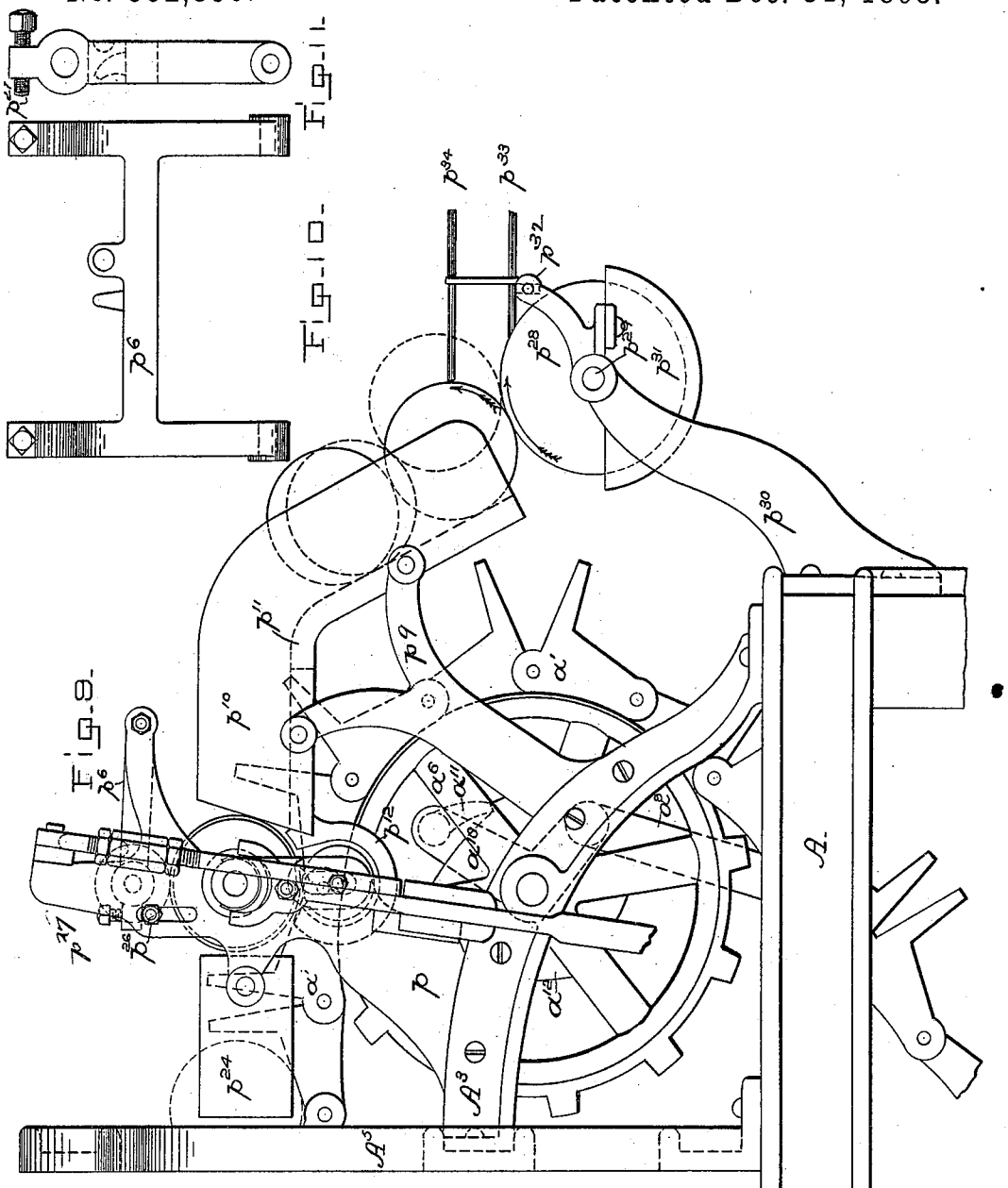

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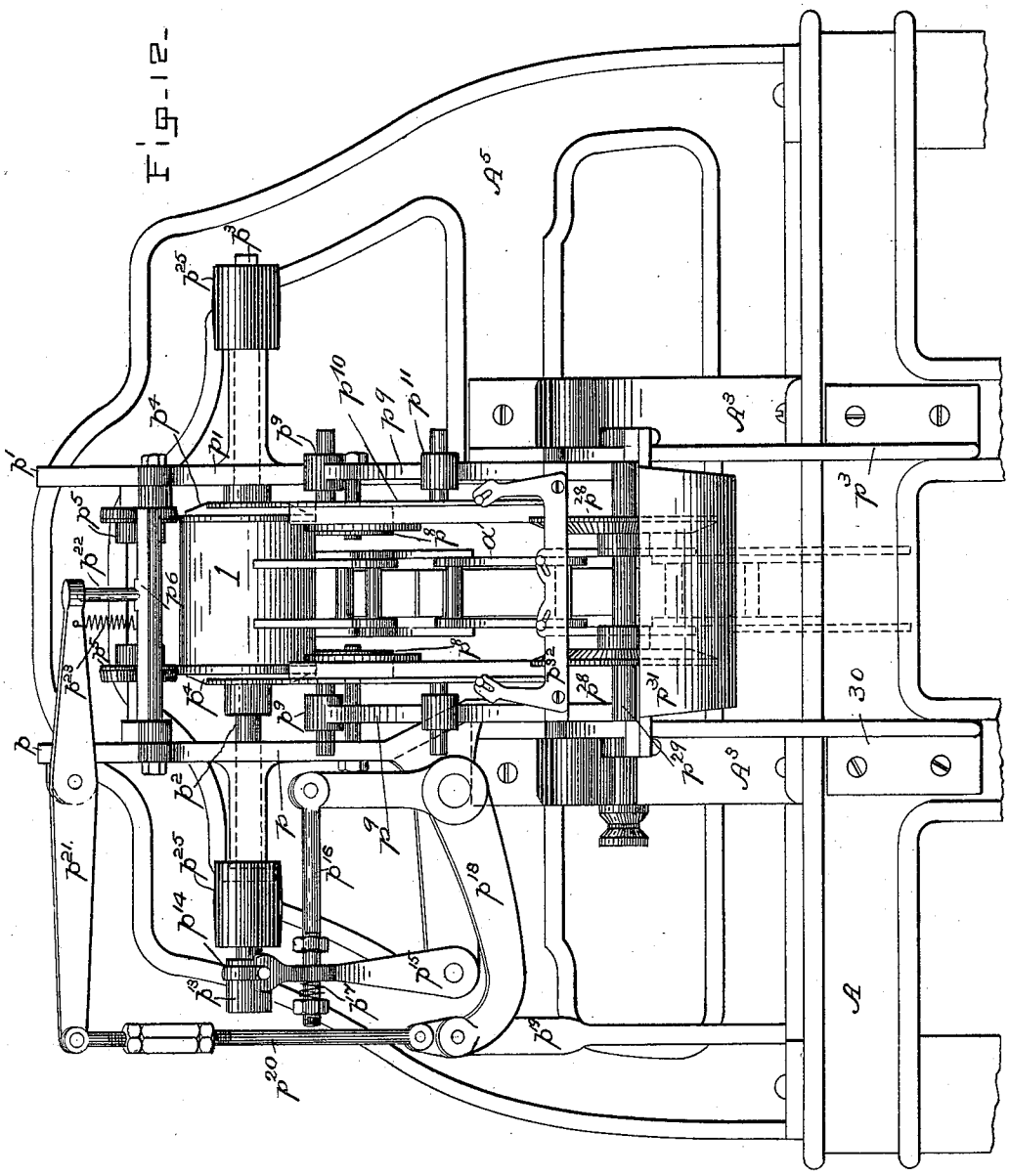
No. 552,336. Patented Dec. 31, 1895.

Fig. 12.



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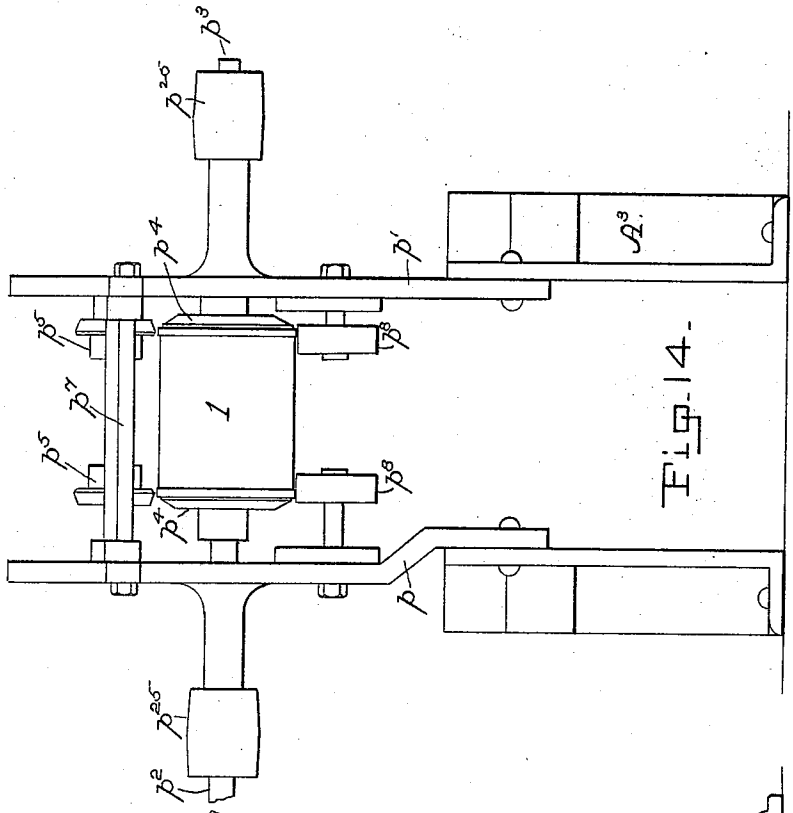

Fig. 14.

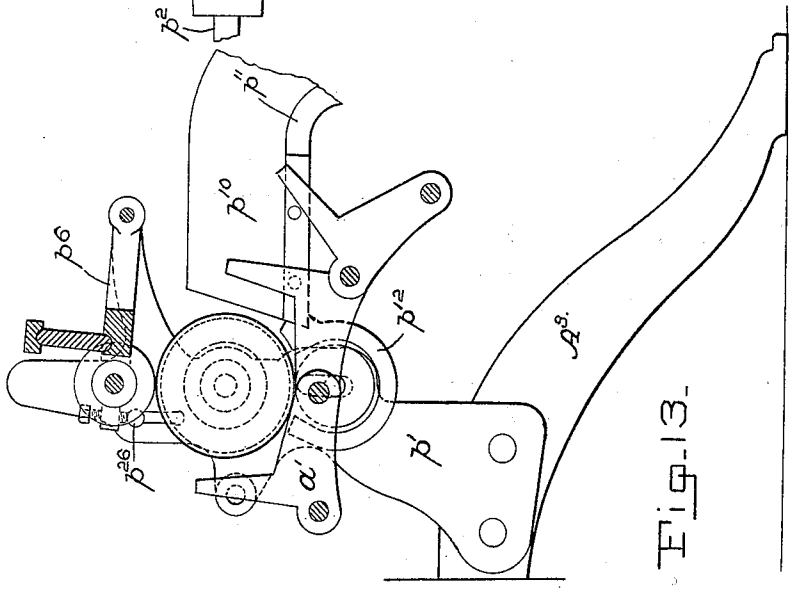

Fig. 13.

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UNITED STATES PATENT OFFICE.

CHARLES W. SLEEPER, OF LANCASTER, NEW HAMPSHIRE, ASSIGNOR TO THE SLEEPER MACHINE COMPANY, OF MAINE.

CAN-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 552,336, dated December 31, 1895.

Application filed July 12, 1894. Serial No. 517,289. (No model.)

To all whom it may concern

Be it known that I, CHARLES W. SLEEPER, of Lancaster, in the county of Coos and State of New Hampshire, have invented a new and useful Improvement in Can-Making Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to improvements in mechanisms for heading cans; and it consists in certain new and improved mechanisms added to or combined with machines for which Letters Patent of the United States were granted to me October 8, 1889, No. 412,552, and May 10, 1892, No. 474,534, the object being to improve the mechanisms described in the above patents in relation to mechanisms for holding and placing the can-heads, for gripping the body of the can and holding and shaping it while the head is being placed in position, and also to add to the machine appliances by which the crimping and fluxing of the cans is effected. These objects I attain by means of the mechanism shown in the accompanying drawings, in which—

Figure 1 is an elevation showing the outside of one of the chucks or holders for holding and applying the can-head to the can. Fig. 2 shows in elevation the inside of one of the chucks. Fig. 3 shows in elevation one of the chucks, a can-head, and body of can, also showing parts of the mechanism used in placing the can-head upon the can-body. Fig. 4 shows the same parts in the position that they occupy when the act of placing the can-head is about completed. Fig. 5 is a view showing a part of the can-body and the can-head in side elevation, the chuck in vertical section, and connected parts of the mechanism in elevation. Fig. 6 shows in side elevation of the machine parts that relate to the holding and placing of the can-head upon the body and also the parts that relate to holding and gripping the body and to manipulating the same in the process of placing the can-head upon the body. In this view parts that are shown in detail in Figs. 1, 2, 3, 4, and 5 are shown in connection with the more immediate devices for transmitting motion to them. Fig. 7 shows in end elevation of the machine the same parts that are shown in Fig. 6. Fig. 8 is a detail of parts grouped in Figs. 6 and 7. Fig. 9 shows in side elevation of the machine the parts more immediately connected with the process of crimping the can-head to the body and also the fluxing device; Figs. 10 and 11, detail views, enlarged, of one of the parts shown in Fig. 9. Fig. 12 shows in end elevation of the machine the parts shown in Figs. 8, 9, and 10. Figs. 13 and 14 are illustrations to show more clearly some of the mechanism for crimping grouped in Figs. 9 and 12.

In the above-described drawings I have shown such parts only as are new or directly connected with the new parts. The parts not fully shown in these drawings are shown in the specifications of the patents above referred to.

I will now describe the parts that relate to the placing of the can-head upon the body, reference being had to Figs. 1, 2, 3, 4, 5, 6, 7, and 8.

For convenience of reference I will designate the part *d* as the "chuck" *d*. The function of this chuck is to receive and place the can-head upon the body of the can. The chuck that I now use is adapted to hold the can-head by magnetic attraction and may be constructed and arranged in a great variety of ways. For instance, the chuck itself may be a magnet itself, either permanent or electro, or it may be made of non-magnetic material and have connected to it a device capable of exerting sufficient magnetic attraction to safely hold the can-head.

To illustrate one method of putting the invention in practice, I use the following described means: The chuck *d* and lining d^3 are made of non-magnetic material—brass, for instance—and said lining is provided with a flange or arm for the edge of the can-head to rest against. A permanent magnet *m*, placed upon the side opposite the lining d^3 and held in place by a bar 3, which rests upon the magnet *m* and is yieldingly held by two screws *m'* *m'* and springs m^2 m^2. The ends or poles

of the magnet m rest upon two irons or steel buttons m^3 m^3, which pass through chuck d and project through the lining d^3 about one-sixteenth of an inch. (See Fig. 5.) The buttons m^3 m^3 become magnetized and act as poles of magnet m. Can-heads, being usually made of iron or steel plates coated with tin, are susceptible to the influence of the magnet, and when pushed into the chuck they strike the buttons m^3 m^3 and act as armatures to the magnet m and are held securely in place by its attraction while the chuck d moves from a horizontal position, Figs. 6 and 7, to a vertical position. (See Figs. 3, 4, and 5.) The buttons m^3 m^3 also serve to spring the head m^4, as shown in Fig. 5, (which is a side view of Fig. 3 with chuck and lining shown in section on line x x,) in which position it will be noticed that the head m^4 embraces considerably more than one-half the end of body 1 within its flange. When the head is finally forced upon the body by action of the cam-rods d^{15}, the resistance of spring m^2 is overcome and the buttons forced back even with lining of chuck.

The action of the chucks d in placing the can-head onto the can-body by the aid of the arms 2 and guards f is fully described in specification of Patent No. 474,534, above referred to, and may be stated as follows: The chucks d d being in a horizontal position, as shown in Figs. 6 and 7, the heads are then inserted into the chucks with their lower edges resting upon the rim of the lining d^3. The conveyer chain carries the can-body above the chucks d d and under one of the swinging arms 2, Figs. 3, 4 and 5, which holds the can in position, the grippers n n (more particularly described later on) descend and press the body to elliptical form. The shield f descends. (See Fig. 5.) The chuck d is then raised by the carrier d^5 and arm d^4, turning upon its trunnions as it rises. The flange of the head strikes the lower part of the body 1 and rests against the shield f, the latter preventing the head from entirely engaging with the edges of the body until it can do so uniformly and perfectly. As the chuck d continues to rise, the upper part of the body 1 resting against the arm 2, the slide e^2 will then rise, permitting the grippers n n to gradually separate and thus allow the can-body to gradually assume a circular form and fit into the head.

For gripping the can-body to properly present it to the can-head I have the following-described improved mechanism. Referring to Figs. 5, 6, 7, and 8, n n are gripping-fingers pivoted within the slide e^2 and provided with rollers n' n'. n^2 is a stationary cam-plate, Figs. 7 and 8, having cam-bars n^3 n^3 pivoted to it. These cam-bars n^3 n^3 are represented as being braced apart by the locking-block n^4 and as holding the gripping-fingers n n apart at their upper ends, so that their lower ends are compressing the can-body 1, as shown in Fig. 6. The locking-block n^4 is attached to a rocking-shaft n^5 and is swung in and out of position by means of the arm n^6 and adjustable link n^7, which in turn is operated by the mechanism attached to the chuck d, the rising of the chuck-carrier d^5 striking against the lower end of the link n^7, raising the arm n^6 and causing the release of the block n^4 from the plate n^2. (See dotted lines, Fig. 7.)

In operation the slide e^2 upon which the gripping-fingers n n are pivoted is made (by suitable mechanism) to descend, taking with it the gripping-fingers n n, and as their rollers n' n' come in contact with the shoulders on the lower ends of the cam-bars n^3 n^3 their upper ends will be moved away from each other and their lower ends will be made to grip the can-body, as shown in Fig. 6, and compress it so as to receive the can-head, as illustrated in Fig. 5 and by dotted lines in Fig. 7. The cam-bars n^3 n^3 are allowed to come together and release the can-body from the fingers n n at the proper time by the withdrawal of the locking-block n^4. After this action has taken place the slide e^2 is drawn up, taking with it the gripping-fingers n n. The can-body having received its head as above is carried forward to the crimping mechanism. (See Figs. 9, 10, 11, 12, 13, and 14.)

The mechanism for crimping is added to one end of the machine and is supported by standards p p' attached to the frame A^3 A^3. These standards are provided with hubs which support the spindles p^2 p^3. Upon the inner ends of the spindles disks p^4 p^4 are attached, and to their outer ends driving-pulleys p^{25} p^{25}, by means of which the can (being crimped) is rotated. The can rests upon rollers p^8 p^8 turning freely upon two studs which pass through vertical slots made in the standards p p' and secured by nuts. Two standards p^9 p^9 attached to the frame A^3 A^3 support the guides p^{10} p^{10} and inclined ways p^{11} p^{11} for the cans to roll on as they leave the crimping mechanism in the passage to the fluxing device. The floor of said ways terminates far enough back of a perpendicular line drawn through the center of the roller, so that the cans will drop upon the roller with their centers of gravity back of said perpendicular line to prevent the cans from falling off the roller until they are fluxed. For directing the cans toward the crimping mechanism I have guides p^{24}, Fig. 9. Can-holding pieces p^{12} p^{12} are attached to the guides p^{10} p^{10}. (See Figs. 9 and 13.) A grooved collar p^{13}, Fig. 12, is attached to the shaft p^2 and has a yoke p^{14} fitted to it. The yoke p^{14} is connected to a shipper-lever p^{15} pivoted to a fixed part of the frame of the machine. The shipper-lever p^{15} is moved back and forth through intermediate mechanism by a cam-rod p^{19} operated by suitable mechanism connected to the main shaft of the machine. This cam-rod p^{19} operates a bell-crank lever p^{18}, to which it is pivoted, which in turn operates the link p^{16} connected to the shipper-lever p^{15} by nuts and a

spring p^{17}. The above-described parts serve to operate the disk p^4 attached to the shaft p^2, by the movement of which the can is held or released.

For raising and lowering the crimping-rolls p^5 p^5 I have the following apparatus: p^{20} is an adjustable link attached at its lower end to the cam-rod p^{19} and at its upper end to the lever p^{21}. The lever p^{21} actuates a pin p^{22}, which connects with the swinging frame p^6, (see Figs. 12, 9, 10 and 11,) in which the crimping-rolls p^5 p^5 are hung. A spring p^{23} serves to draw the frame p^6 toward the lever p^{21}.

In operation the chain a' which has an intermittent motion brings the can 1 from holding mechanism and, carrying it between the guides p^{24} p^{24}, places it between the disks p^4 p^4, where it rests upon the flat rolls p^8 p^8 and is supported by the guides p^{12} p^{12}. At this instant the spindle p^2 is moved by the can and train of levers so as to approach and grasp the can 1 between the disks p^4 p^4, and as the spindles p^2 p^3 are driven by suitable belts over the pulleys p^{25} p^{25} the can is made to revolve as soon as grasped by the disks. The upward motion of rod p^{19}, acting through the connecting-rod p^{20} and lever p^{21}, causes the frame p^6 to descend and press the rolls p^5 p^5 down upon the can, the rollers being adjusted to strike the flanges of the can-heads so as to spin them down and press them tightly upon the can-body. The rollers p^8 p^8 are so set as to prevent the can from being thrown out from between the disks by the pressure of rollers p^5.

To insure crimping the heads uniformly, I have provided adjustable stops p^{26} for the adjusting-screws p^{27} to rest upon, the connection p^{20} being adjusted to press the frame p^6 firmly down upon the stops. The object of spring p^{17} is to provide for variation in the length of cans and give a uniform pressure upon all. While spring p^{17} is being compressed the rollers p^5 continue to descend but do not touch the can-heads until the can is set in motion by the disks. After the can is crimped the spindle p^2 moves back, the frame p^6 raises, the chain a' moves forward, and the can is thrown upon the ledges p^{11} of guides p^{10}, and is delivered to the fluxing device.

The fluxing is effected by the following means: The can drops upon the two wheels p^{28}, which are driven by a belt from the main shaft of the machine and secured to a shaft p^{29} journaled in the arms p^{30} p^{30}. p^{31} is a pan filled with liquid flux in which the wheels revolve and have their circumferences continually wetted. The motion of the wheels causes the can resting upon them to revolve, and this applies the flux to the can, the wheels being so placed as to support the can close to each head. The can continues to revolve until another can falls upon it, when the friction of the second can stops the revolution of the first, which is rolled out by the wheels, as shown by dotted lines, Fig. 9, and drops into a rollway composed of a number of pieces p^{32}, which support four wire rods p^{33} p^{34}, the can being supported by rods p^{33} and guided by rods p^{34}.

I claim—

1. In a can heading machine, a magnetized heading chuck substantially as and for the purpose set forth.

2. In a can heading machine the combination of a heading chuck and permanent magnet adapted to hold the can head, substantially as and for the purpose set forth.

3. In a can-heading machine the combination of a chuck and a yieldingly connected permanent magnet, with buttons adapted to operate, substantially as and for the purpose set forth.

4. In a can heading machine, the combination of a chuck and yielding buttons arranged to operate substantially as described and for the purpose set forth.

5. In a can heading machine, the pivoted heading chuck d furnished with yielding buttons m^3 in combination with the movable shield f, gripping fingers n and operating mechanisms, substantially as and for the purpose set forth.

6. In a can heading machine, the combination of the gripping fingers n n pivoted to the slide e^2 and having rollers n' n'; with the slide e^2, cam bars n^3 n^3, lock-block n^4 and operating mechanism, substantially as and for the purpose set forth.

7. In a can-heading machine, the combination of the holding disks p^4 p^4, spindles p^3 p^2 and shipping lever p^{15} connected with the spindle p^2, bell crank lever p^{18}, means connected with said lever for operating the same, and the link p^{16} pivoted to said lever p^{18} and loosely connected with the lever p^{15}, all combined and adapted to operate substantially as described.

8. In a can-heading machine, the combination of the holding disks p^4 p^4, spindles p^3 p^2, and shipping lever p^{15} connected with the spindle p^2, bell crank lever p^{18}, the link p^{16} pivoted to said lever p^{18} and loosely connected with the lever p^{15}, frame p^6, rollers p^5 p^5 supported upon said frame, lever p^{21} having one arm connected with the frame p^6, the link p^{20} connecting the other arm of said lever with the lever p^{18}, and means for operating said lever, all combined and adapted to operate substantially as described.

9. In a can heading machine the combination of one or more fluxing rollers revolving upon a common axis with a steeply inclined guide or chute for feeding the cans to the rollers arranged above and behind said rollers, having its lower end at a distance from said rollers less than the diameter of the can to be operated upon, the said rollers being arranged to revolve in the direction away from said guide, whereby a can dropping down said guide will fall against said rollers near their tops and be retained between the

same and said guide while being rotated by contact with the rollers and be afterward forced over said rollers by another can dropping down said guide behind it, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 18th day day of May, A. D. 1894.

CHAS. W. SLEEPER.

Witnesses:
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WM. T. JONES.