(No Model.) 3 Sheets—Sheet 1.

M. A. WHEATON.

CAN HEADING MACHINE.

No. 499,949. Patented June 20, 1893.

Fig. 1.

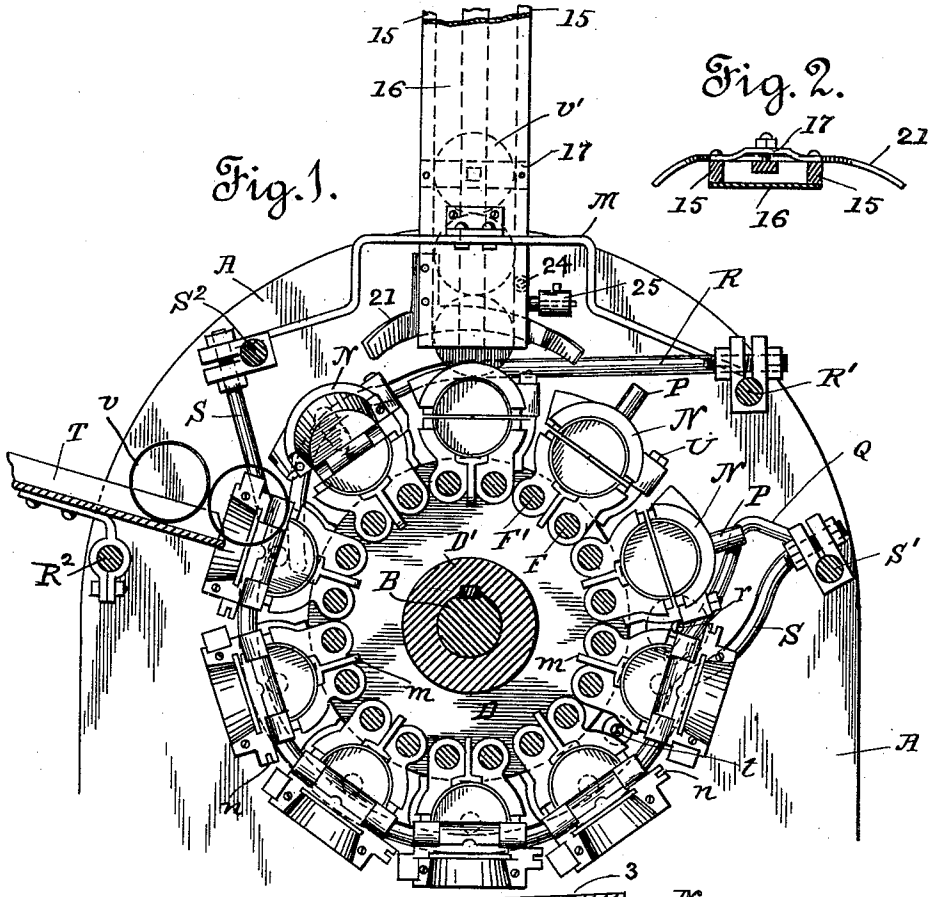
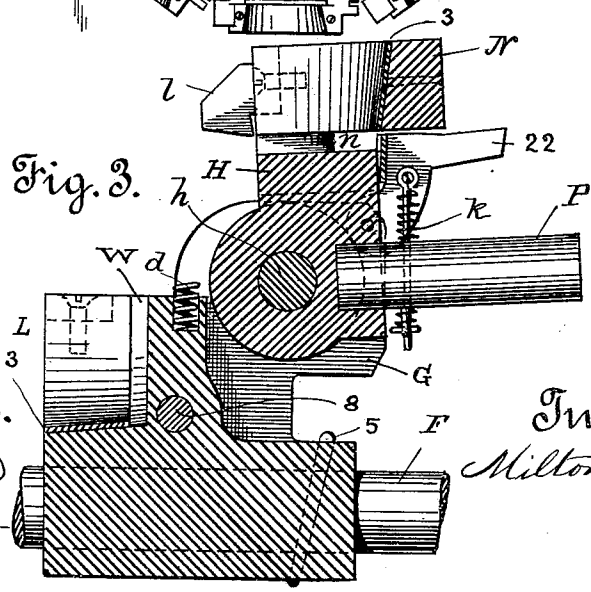


Fig. 2.

Fig. 3.



Witnesses.

F. Montenerde.

J. R. Towner

Inventor.

Milton A. Wheaton

(No Model.) 3 Sheets—Sheet 2.

M. A. WHEATON.

CAN HEADING MACHINE.

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Fig. 4.

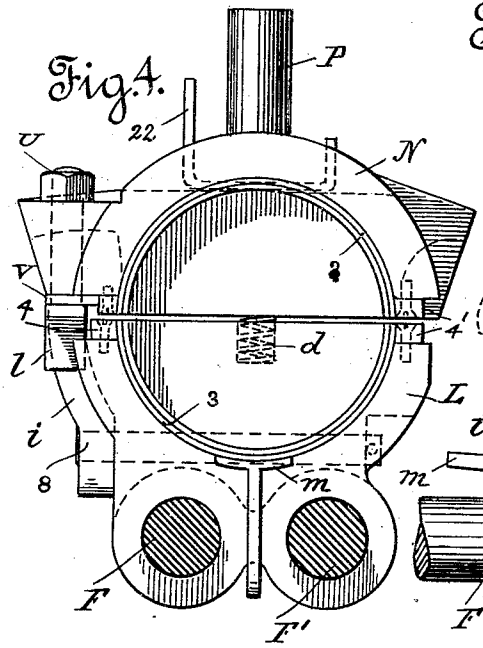


Fig. 5.

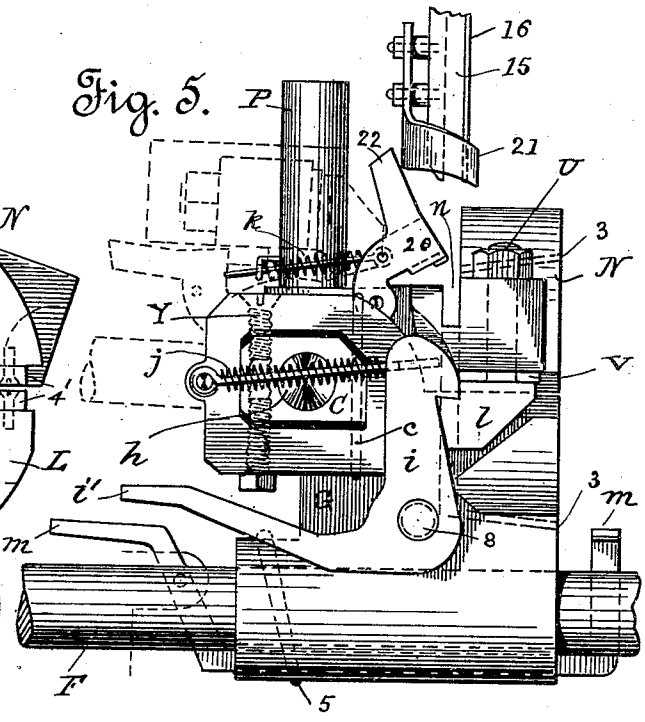


Fig. 6.

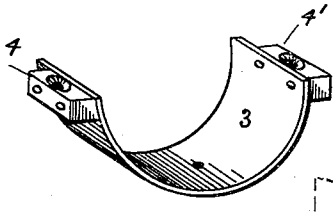
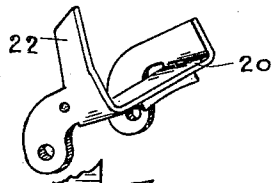


Fig. 7.



Witnesses.

Fig. 8.

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(No Model.) 3 Sheets—Sheet 3.

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CAN HEADING MACHINE.

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Fig. 9.

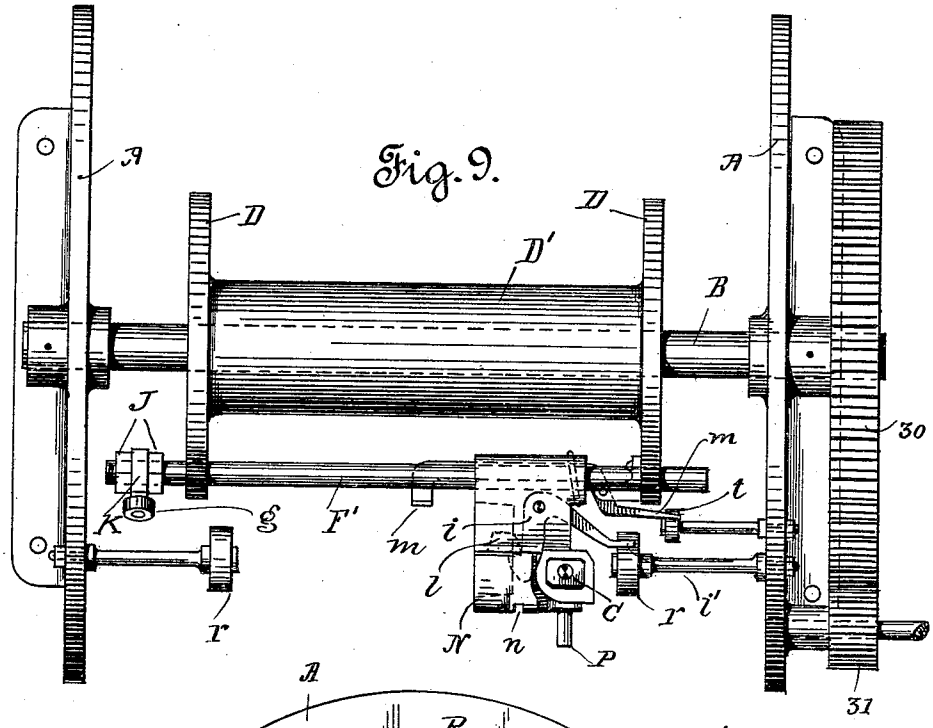
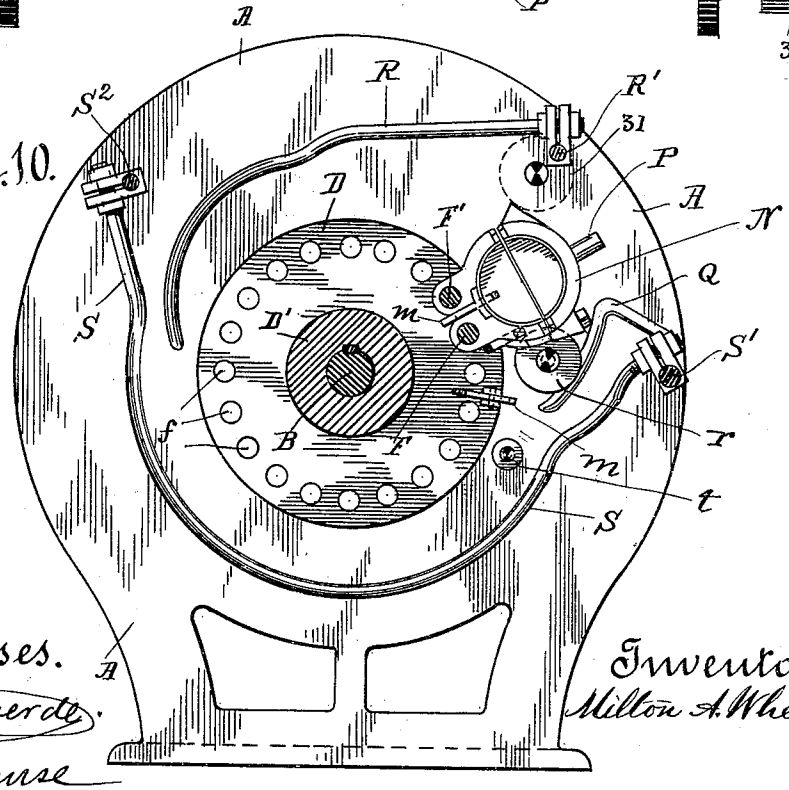


Fig. 10.



Witnesses.
H. Montevercle.
P. A. Snow

Inventor.
Milton A. Wheaton

UNITED STATES PATENT OFFICE.

MILTON A. WHEATON, OF SAN FRANCISCO, CALIFORNIA.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 499,949, dated June 20, 1893.

Application filed January 26, 1893. Serial No. 459,897. (No model.)

To all whom it may concern:

Be it known that I, MILTON A. WHEATON, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Can-Heading Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention consists of certain improvements upon a can heading machine which was patented to me by United States Letters Patent, numbered 477,584, and bearing date June 21, 1892, and is more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical cross section taken through the machine from front to rear. I call the right hand of the machine, as shown in Figs. 1 and 10, its front, and the left hand, as shown in the same figures, its back. Fig. 2 is a detail in cross section showing the construction of the lower end of the can head chutes and the guiding cam piece 21, which is attached thereto. Fig. 3 is a vertical sectional elevation taken through the middle of one of the sets of jaws, and shows the position of the parts when the jaw is open. Fig. 4 shows a front elevation of one of the sets of jaws when the jaw is closed. Fig. 5 is a side view of the same. This figure shows the can head chute edgewise. Fig. 6 shows an inner lining for the jaws with lugs riveted thereto. Fig. 7 shows a spring cap which is used for securing the can head in its place after it has dropped to its proper position in the jaws, and been carried from under the can head chute. Fig. 8 shows a plan or top view of a co-operating pair of the sets of jaws, with attachments belonging to them; also the rods which carry and move the jaws; and also other devices which are connected with the said rods and with their operation. Fig. 9 is a plan or top view of the side plates which comprise the principal parts of the frame of the machine, and also the gear wheel 30, and spur-wheel 31, by which the machine is driven; also friction rollers *r r* that are used for unlatching the heading jaws and a roller *t* for operating the ejector *m*. Fig. 10 is a sectional elevation showing one of the side plates of the frame of the machine, and other parts which are hereinafter explained.

The general character, construction and operation of my present improved machine are similar to the general character, construction, and operation of my original machine as shown in my said patent of June 21, 1892. I have therefore only shown in my present drawings such portions of the machine as are necessary or convenient for showing and explaining the changes which I have made in the devices, arrangement, and construction of the machine, with the changes in operation which result therefrom, and which constitute my present invention.

My machine as changed by the improvements herein described differs from the machine as described in my said patent of June 21, 1892, by so altering the jaws and changing their movements that the can bodies are first received into the open jaws, after which the jaws are closed before the can heads are admitted into them. After the jaws are closed each one of the can heads is admitted to the jaws through a slot which is made through the jaw N which opens and closes. In my original machine the can bodies and can heads were admitted to the jaws simultaneously, and while the jaws were open. In my present improvements the jaws only revolve one-quarter of a revolution in opening, while in my original machine they revolved one-half of a revolution. In my present improvement the upper jaws, in opening, do not move toward, or come in contact with each other, as they would do if they were opened simultaneously in my original machine, and, consequently, a shorter can may be headed in my improved machine than could be headed in my machine as originally patented.

In the drawings, A A are side plates which constitute most of the main frame of the machine. These side plates are held together by rods which connect one side plate with the other, and of which S′, S^2, R′ and R^2, in Fig. 1, are cross sections, or by any other convenient devices.

B is the main shaft by which motion is transmitted to drive the operative parts. The gear wheel 30, and spur wheel 31, show the apparatus that I have used in practice for driving the main shaft. In practice I have connected the spur wheel 31 to its shaft by a sliding clutch so that the machine can be instantly stopped by throwing it out of gear.

Referring more particularly to Figs. 3, 4 and 5, of the patent, I will now describe my improved jaws with their connections. N is the outside jaw which opens and closes by revolving about one quarter of a revolution around the hinge bolt *h*. A hook *l* is at the lower end of a bolt that passes upward through an extension at one side of the jaw N. This hook bolt is secured in place by a nut U at its upper end. A bent lever *i* is pivoted to the lower or inside jaw L by a strong bolt 8. I prefer that this pivot bolt 8 should be rigid with the bent lever *i*, and should pass entirely through and turn in, the solid part of the lower jaw, in order that the hook lever *i* may be held with great firmness and not vary in its motions, as it turns with the pivot 8. The hook bolt *l* may be adjusted to a somewhat higher or lower relative position, by means of the nut U at its upper end, and varying the thickness of the washer V, which is placed on a shoulder of the hook bolt, that is just above the hook at the bottom part of the extension of the jaw N, through which the bolt passes. By this adjustment the upper jaw N may be drawn closer to the lower jaw, which is lettered L, or left farther from it, and thus vary slightly the diameter of the funnel opening of the jaws in which are held the end of the can body and the can head. One leg of the bent lever *i* extends out as shown at *i'*, Fig. 5, in order that the jaws may be unlatched at the proper time, by the part *i'*, coming in contact with the stationary roller *r* as shown in Figs. 1, 9 and 10. A long pin P projects from the shank of the upper jaw, and is used for opening and closing the jaw by coming in contact with the bent rods S and R, shown in Figs. 1 and 10. A coil spring *j* serves to keep the head of the bent lever *i* pushed forward, while a projection of the solid part of the lower jaw, or any other sufficient device placed in front of the lever *i* may be used to stop its forward motion and prevent it from going too far.

Upon the shaft B are mounted flanges D D which may be cast together with a connecting shaft D' between them, as shown in the drawings, or separately as may be desired. Several pairs of rods F and F' arranged in a circle around the shaft B, and concentric therewith pass through holes *f*, Fig. 10, in the flanges or disks D D as shown.

Each pair of jaws, consisting of an inner and an outer jaw, I call a "set of jaws," and there may be as many of these sets of jaws extending around the periphery of the disks D, as the size of these disks will admit. The drawings herein, Fig. 1, show ten sets of these jaws in a circle on one side of the machine, and ten pairs of the companion rods F and F' for carrying them.

Each pair of the rods F and F' carry two sets of the heading jaws facing each other. One set of these jaws is fastened by the pin 5, or in any other convenient way, rigidly to the rod F, while the other set is fastened rigidly to its companion rod F'. A collar K carrying a friction roller *g'* is fastened by nuts J J to one end of the rod F, while a similar collar K, carrying a similar friction roller *g* is attached in the same manner to the rod F'. One end of each of the rods F and F' slides loosely through one end of the collar that is attached to its companion rod. As the disks D D revolve the friction rollers *g* and *g'* come in contact with inclines on the ends of cam rings E and E' (as in my said patent of June 21, 1892) and thereby each friction roller moves the rod to which it is attached. The rods move simultaneously and longitudinally, but in opposite directions from each other, and thereby cause the two opposite set of companion jaws that are carried by them to alternately move toward and recede from each other when required. The relative positions of these several parts are well shown in Fig. 8 of the present drawings, except that only one end of each cam ring E and E' is there shown. The inner jaws L of each set are mounted upon the rods F and F', while the outer jaw is fulcrumed upon the hinge pin *h*. The ends of the hinge pin *h* are supported in adjustable blocks C C that are carried by two wings G G, which are extensions of the lower jaw L. (Figs. 1, 3, 5, 8 and 9.) The outer jaw has a shank H extending backward, which fits in between the wings G G and blocks C C. The hinge pin *h* passes through the two blocks C C and shank H, and hinges them together, and the outer jaw N moves around this fulcrum or hinge pin *h* as its axis when opening and closing.

As shown in the drawings, the axis about which the upper jaw moves in opening and closing is nearly in a line that is horizontal with the central line which divides the upper from the lower jaw. One object of so arranging the relative positions of the jaws and this axis is to avoid the inconvenience of having the jaws move toward each other in opening, making it impossible for them to open simultaneously. In the present arrangement of these parts I am enabled to put heads upon a shorter can body than can be headed in a machine with these parts arranged as described in my patent of June 21, 1892. In the back of the lower jaw L is a small spring *d* which presses the outer jaw against the latch when it is closed, and when the jaws are unlatched this spring *d* throws open the outer jaw a short distance. A little space is left between the two jaws when they are closed so that if a broken or defective can head or can body should get between them there is room for them to be flattened and carried around, without springing the jaws or their connections. By means of this space and the yielding of spring *d* the jaws may be moved a little farther than is necessary in closing so that the latch will be more sure to catch when the jaw is closing over the end of the can body, after which, the spring *d* will push the jaw upward to its exact position be-

fore it receives the can head. The insides of the jaws are preferably made flaring so that when closed the hollow within them will be funnel shaped so as to better receive and guide the end of the can body into the can head.

At the extreme back part of the concave of the lower jaw is cut a semi-annular channel W, Fig. 3, which is wide enough to receive the can head edgewise, and just deep enough to form a semi-annular shoulder in front of the lower half of the rim of the can head when one is in the jaws. Immediately over this semi-annular channel W there is formed through the outer jaw a slot of the proper size to allow a can head to pass from the can head chute down through the upper jaw and reach its place in the jaws with the lower half of its rim in the semi-annular channel W. When the can head has thus fallen to its place, the edge of the slot in the upper jaw, through which it has fallen, will form the necessary shoulder around the front edge of the upper half of the can head rim that is in the upper jaw. An entire annular shoulder is thus formed around the front edge of the can head rim with a diameter that is no larger than the diameter of the inside of such rim, and thus is furnished a smooth guide way which forces the end of the can body to enter the rim of the can head when the machine is at work.

M is a bar that supports the can head chute in position. Each bar M is adjustable crosswise with the machine, and each can head chute is movable along the length of the bar M which supports it. I am thus enabled to adjust the can head chute to any position desired. The top of the movable jaw N is somewhat extended in the line of travel and a channel *n*, wide enough to receive the can heads edgewise, is formed along its entire length in the line of its travel, and concentric with the circle in which it travels. The line of this channel is immediately over the semi-annular channel W, that is in the lower jaw, and immediately over this annular channel W, a slot is cut through the upper jaw, so that a can head that is riding along said channel *n* will drop through the slot and fall with its lower edge in the semi-annular channel W, and there remain until it is forced upon the end of the can body. The channels *n* in the different jaws being in the same line of travel follow each other from one jaw into the next through all of the jaws. The can head chute is placed immediately over the said channel *n* (see Fig. 5 where the can head chute is shown edgewise), and when it is filled with can heads and the machine revolved, the lower edge of the lowest can head in the chute will be riding in the channel *n*, until it is reached by the slot through the upper jaw, when it will descend through the slot to its place in front of the end of the can body in the jaws. The column of can heads in the chute will follow the descent of the said lowest can head, and as the can head in the jaws is carried forward, the can head next above it in the column will ride along in the continuation of the channel *n* in the top of the jaws, and this operation will be constantly repeated while the machine is at work. A spring cap 20 having an arm 22, is pivoted as shown so that it will close over the slot and rest upon the top of the can head that is in the jaws, as soon as it has passed beyond the head chute, and thus lock the head in its place. This spring cap 20 has a little arm 22 extending upwardly and a cam piece 21, properly fastened to the bottom of the can head chute raises the arm 22 as it comes in contact with it, and thereby opens the spring cap while it is passing the head chute, and leaves the slot through the upper jaw open for the head to fall into it from the chute.

To the hinge of the movable jaw is attached a vertical pin P which is engaged by the cam rod R to close the jaw after it has received the can body. The same pin P also comes in contact with the cam rod S, to open the jaw after the cam is headed and the bent lever *i* unlatched.

Fig. 6 shows a lining 3 for the jaws. This lining has lugs 4 and 4′, riveted to its ends. These lugs project over the edges of the jaws which are cut away to make room for them. By means of vertical screws passing through the lugs and into the jaws, the lining 3 is easily secured in its place, as shown in Figs. 3 and 4. This furnishes a cheap and easy method of replacing new linings when those in use are too much worn to do further duty.

I am aware that linings for wearing surfaces are not new, and I do not broadly claim the linings 3, except when they are combined with lugs and fastened in the particular manner herein described. The vertical screws by their positions have a powerful effect in forcing the linings into a closely fitting connection with the concave surface of the jaw.

The chutes by which the can heads are delivered into the jaws are constructed essentially as shown in my former patent, a vertical rod serving as the outside of each chute and being held in place by suitable brackets 17, Fig. 1, extending across the chutes and secured to their vertical side pieces 15, Figs. 1 and 5, the inner side 16, of the chute being a plain sheet of metal.

One of the side pieces, 15, of each head chute is made of two pieces which are connected by a hinge 24, as shown in Fig. 1. To the short swinging part is attached an arm having a sliding weight, 25, mounted upon it. The sliding weight is adjusted so as to furnish the proper degree of resistance to prevent the part from swinging too easily outward. The object of this contrivance is to allow any can head that gets jammed or wedged in the slot of the jaw to push the swinging part out of the way and be carried forward out of the chute, where it can be easily reached and removed from the machine.

A device *m* for ejecting the headed cans from the machine is shown in the drawings. It is the same as a similar device in my former patent. The extension *i'* of the bent lever *i* is carried a little higher than the extension of the ejector *m*, while the latter extends farther back from the jaw. The object of this arrangement is for the purpose of allowing the extension *i'* to be depressed by the stationary roller *r*, Fig. 1, without interfering with the extension of *m*, and at the same time also of allowing the extension *m* to be depressed by the stationary roller *t* without interfering with the extension *i'*. (See Fig. 5.)

A can body chute T is shown with can bodies *v* in it, in Fig. 1. A short bent rod Q, Fig. 1, prevents the pin P from opening the jaw N, too far, when it is first unlatched after the heads are upon the can body.

Can heads *v'* are shown in the can head chute, in Fig. 1.

The blocks C C, Fig. 5, are held in place and made adjustable by means of the screw bolt Y, and a pin *c* that pass down vertically through the said blocks and the wings G G which carry them. The holes in the wings through which the bolts Y pass are large enough to permit the bolts to move up and down freely. Threads for the screws are cut in the blocks, so that by turning the screw bolts the blocks are moved up or down as may be desired, and when they are properly adjusted the heads of the bolts and the nuts at their lower ends hold them securely in place, while the threads of the screws in the blocks prevent the blocks from moving out of their positions in the wings. These blocks C C may be placed in the shank of the upper jaw N, instead of being in the wings of the lower jaw, as herein described.

The operation is as follows:—The jaws arrive and pass the can body chute in an open condition, and the lowest can body in the chute will be received into the two lower jaws L L, and be carried along with them. As the machine revolves the pins P P, in the two outer jaws, will engage the cam rods R R, and be gradually raised in their travel, thereby closing and latching the outer jaws N N, before they reach the can head chute. When near the can head chutes, the arms 22 of the spring caps 20, strike the cam bar 21, and are thereby raised and turned away from the slots through the upper jaws leaving those slots open until the can head chutes are passed. In passing the can head chutes, the lowest can head in each chute drops down through the slot into the set of jaws beneath, and they are carried forward with the jaws. As soon as the chutes are passed, the spring cap 20, closes with the lip under its forward edge resting upon the upper rim of the can head. The two sets of jaws then approach each other and force the can heads upon the ends of the can body in the same manner as described in my former patent. When fully drawn together and the heads forced upon the can body, the extensions *i' i'* of the bent levers *i i*, come in contact with the rollers *r r* and are pressed down until they are disengaged from the catches *l l*, at which moment the springs *d d* will force the jaws apart, and the pins P P will pass beneath the cam rods S S, which by their peculiar bends force the pins P P, outwardly and complete the opening of the jaws, and keep them open until they have again passed the can body chute. In the meantime, the roller *t* has also operated the lever *m*, and its head has thrown out the headed can while the sets of jaws have been separated as described in my said former patent.

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

1. In a can heading machine having sets of heading jaws that are carried around a central axis and in which the outside jaw of each set opens and closes by moving around an axis that is transverse to such central axis, the said outside jaw having a slot made through it, through which the can heads may pass from the can head chute into the set of jaws, substantially as herein described.

2. In a can heading machine having sets of heading jaws that are carried around a central axis and in which the outside jaw of each set of jaws opens and closes by moving around an axis that is transverse to such central axis, the channel *n* made along the upper surface of the outer jaw in which the lower can head in the can head chute may ride and be guided directly into an opening through such outer jaw, and through which opening the can heads will pass from the can head chute to their proper positions in the set of jaws, substantially as herein described and set forth.

3. In a can heading machine having sets of heading jaws that are carried around a central axis, and in which the outside jaw of each set opens and closes by moving around an axis that is transverse to said central axis, the axis about which the outside jaw moves, said axis being on a line that is nearly or quite in the same plane with the central line that separates the upper from the lower jaw, substantially as herein set forth and described.

4. In a can heading machine having sets of heading jaws that are carried around a central axis, and in which the outside jaw of each set opens and closes by moving around an axis that is transverse to said central axis, the combination with one of the jaws of such set of the adjustable blocks C, carried by said jaw and hinge pin *h*, mounted in said blocks substantially as and for the purposes herein described.

5. In a can heading machine having sets of heading jaws that are carried around a central axis, and in which the outside jaw of each set opens and closes by moving around an axis that is transverse to said central axis, the combination of a bent latch lever *i* piv-

oted to one of the jaws, and hook bolt *l* carried by the opposing jaw, constructed and arranged substantially as set forth and described.

6. In a can heading machine having sets of jaws that are carried around a central axis and in which the outside jaw opens and closes by moving around an axis that is transverse to said central axis, the combination with said outside jaw of the spring cap 20, carried thereby and adapted to rest upon the top of the can head in the jaws substantially as and for the purpose herein described.

7. In a can heading machine having sets of heading jaws carried around a central axis and in which the outside jaw of each set opens and closes by moving around an axis that is transverse to said central axis, the combination of the spring *d*, mounted in or on one of the jaws, and adapted to operate against the opposing jaw substantially as herein described.

8. The combination with the jaws of a can heading machine, of a removable lining therefor having laterally projecting lugs extending over the edges of the jaws which are cut away to receive them, and screws passing vertically through said lugs and into the jaws for forcing the linings into close contact with the inner surface of the jaws.

9. In a can heading machine having jaws hinged together and carried about a central axis, a can head chute having a weighted swinging section let into one of its sides contiguous to the plane of rotation of the jaws and adapted to be opened outward when engaged by a can head carried by the jaws.

10. In a can heading machine having jaws carried about a central axis and provided with slots or openings through which the can heads pass into the jaws, a can head chute having a hinged portion in one side in the path of a can head that has become wedged in said slot or opening, whereby the said hinged portion may open outward when engaged by said head to permit the latter to be carried forward out of the chute, substantially as herein described.

11. The fixed and movable jaws of a can heading machine, said movable jaws being hinged to the fixed jaws and having a slot or opening made through them for the passage of the can heads from the chute into the set of jaws.

In witness whereof I have hereunto set my hand.

M. A. WHEATON.

Witnesses:
T. W. FOWLER,
CHAPMAN FOWLER.