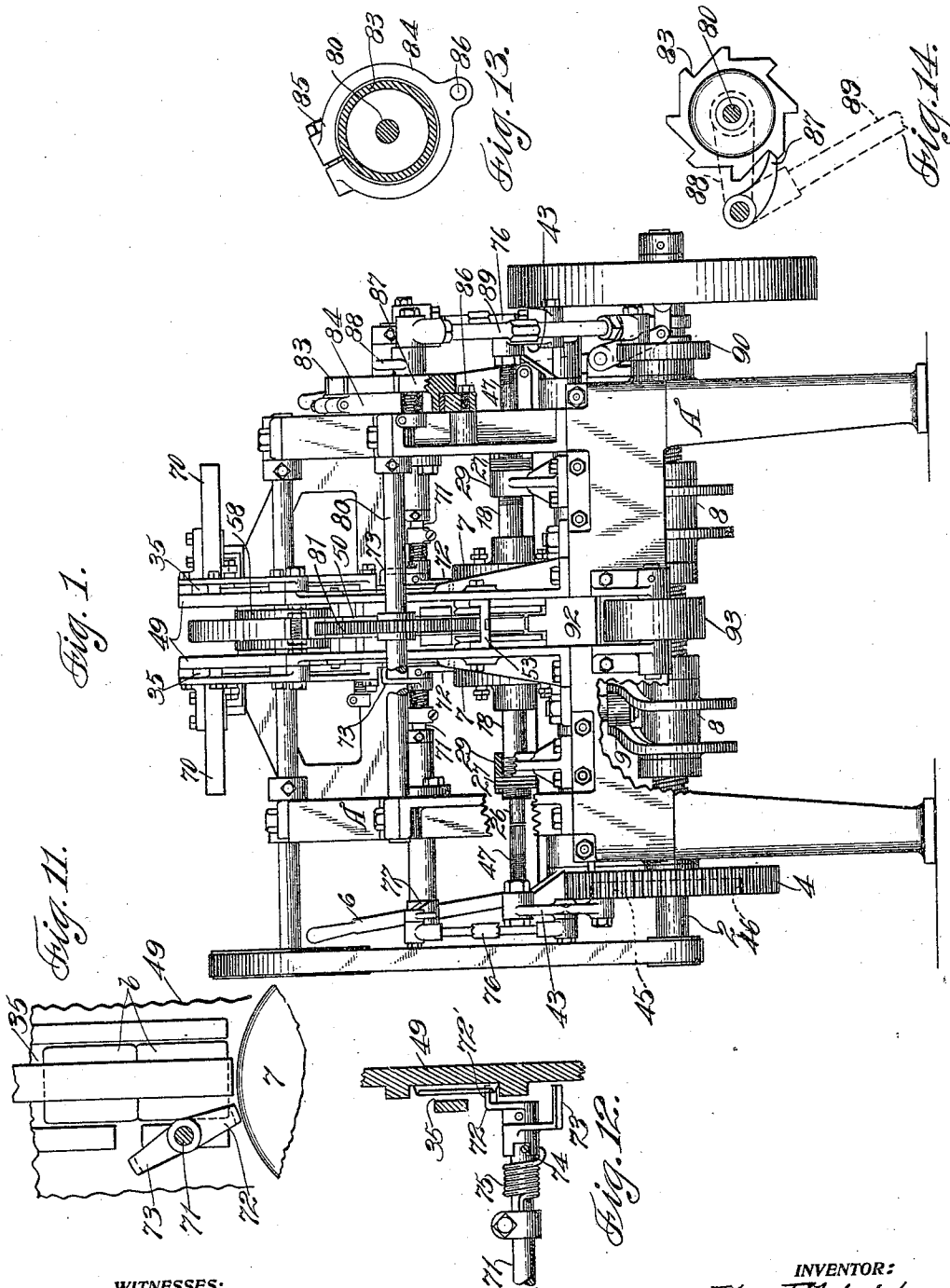


950,017.

J. ELDRIDGE.
CAN HEADING MACHINE.
APPLICATION FILED JUNE 13, 1907.

Patented Feb. 22, 1910.
6 SHEETS—SHEET 1.



WITNESSES:

F. C. Maynard,
J. H. Brown

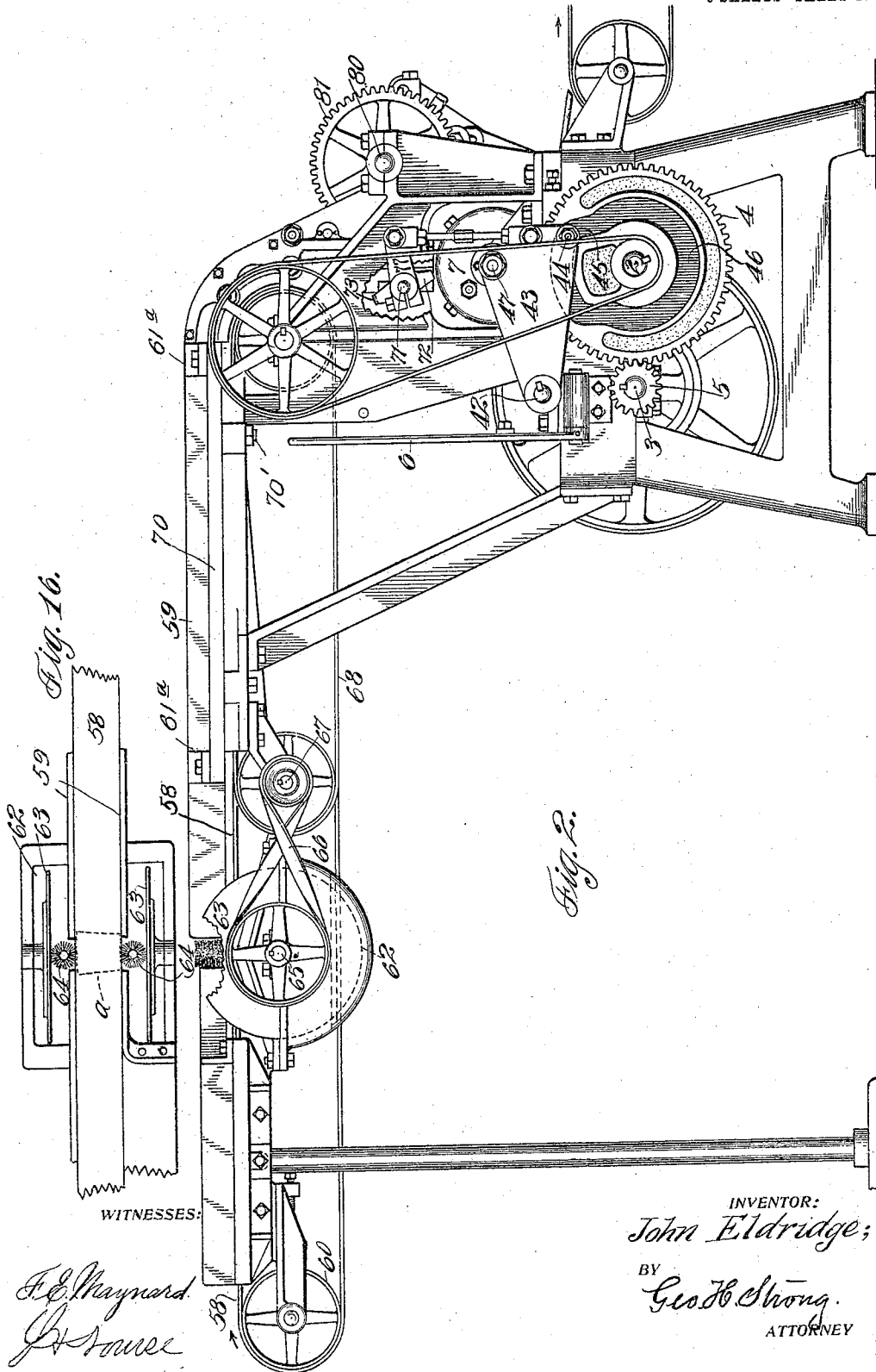
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6 SHEETS—SHEET 2.

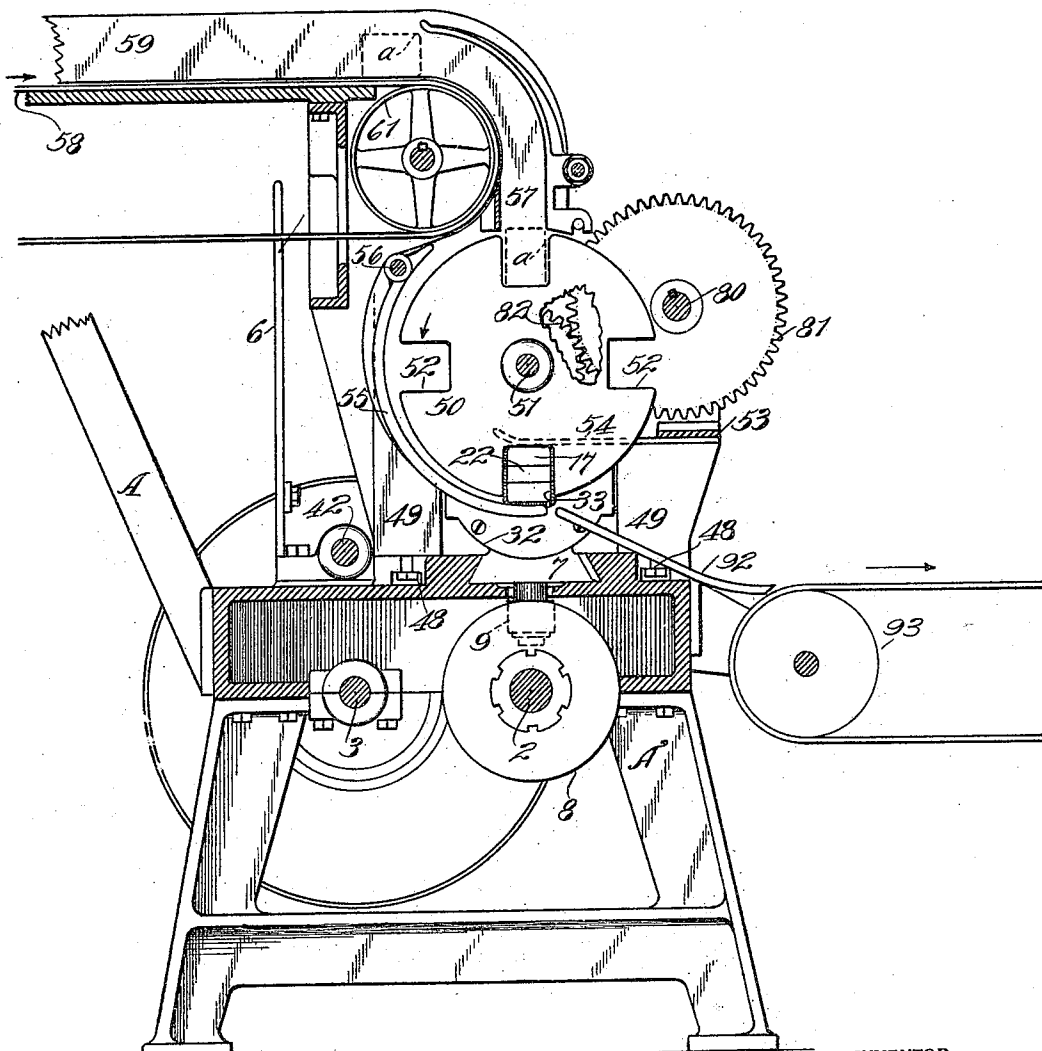


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6 SHEETS—SHEET 3.

Fig. 3.



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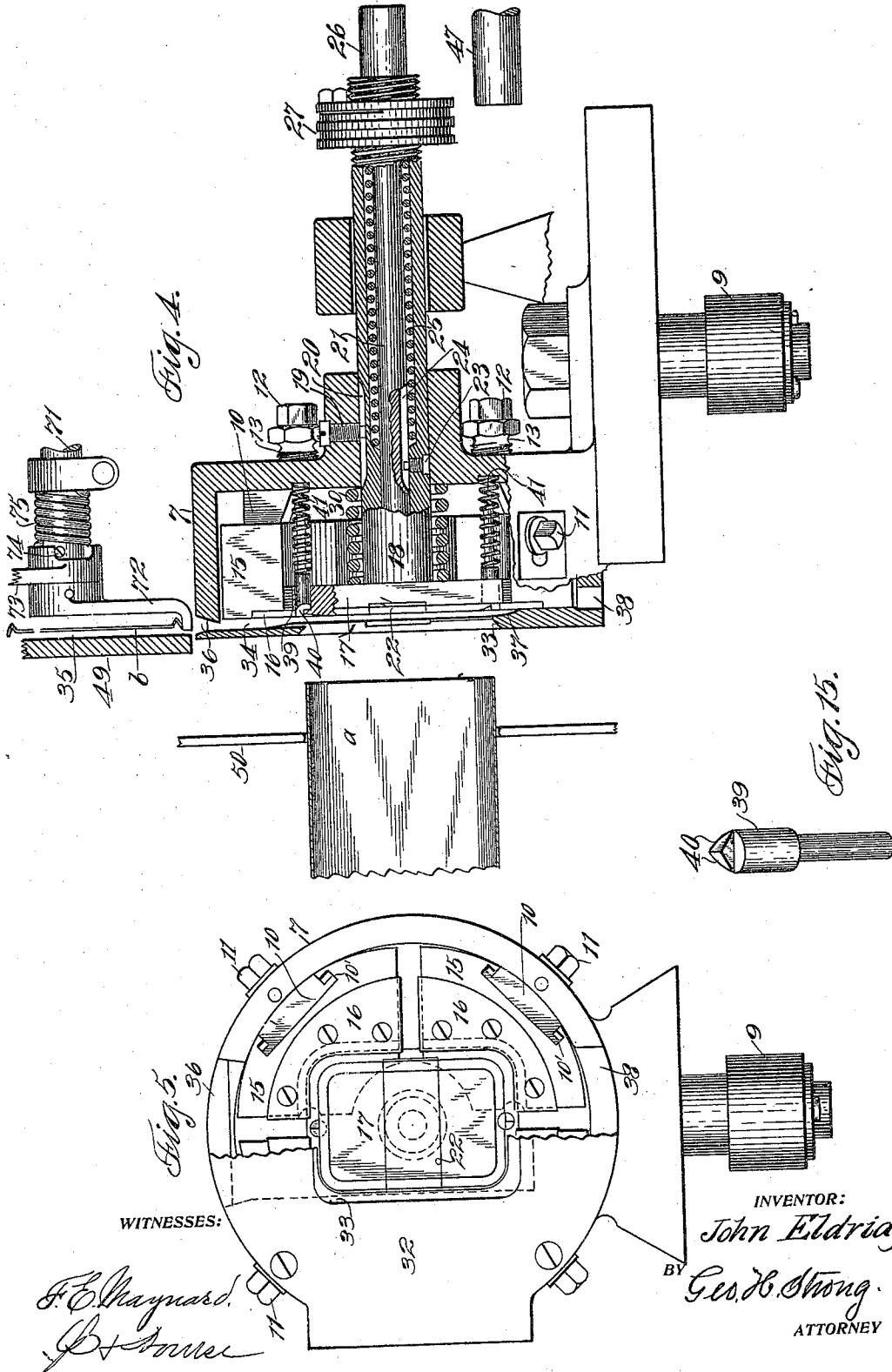
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6 SHEETS—SHEET 4.



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6 SHEETS—SHEET 5.

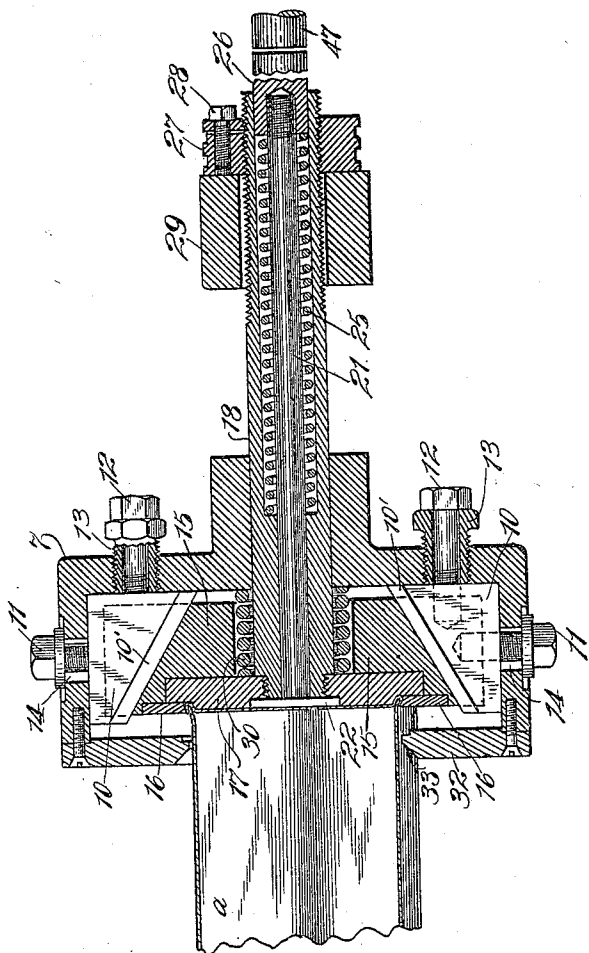


Fig. 6.

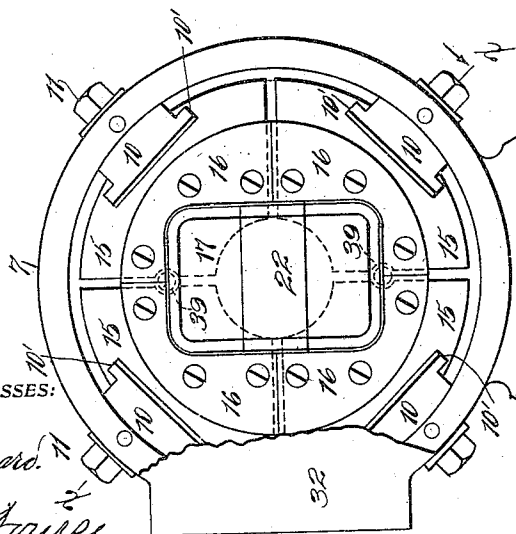


Fig. 7.

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6 SHEETS—SHEET 6.

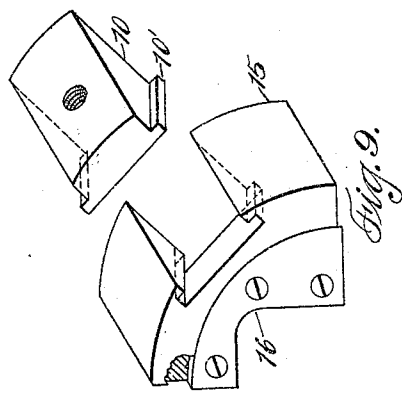


Fig. 9.

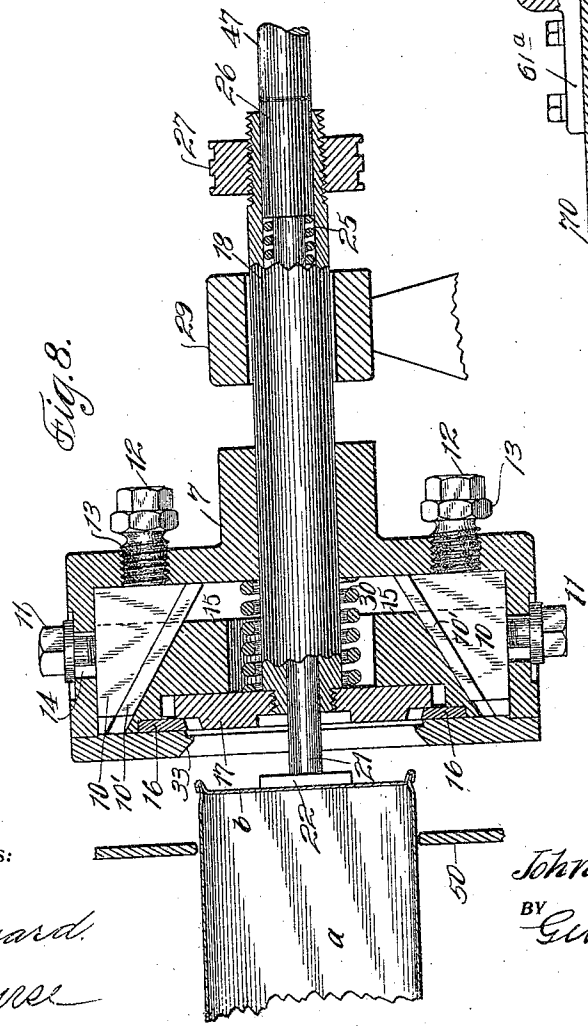


Fig. 8.

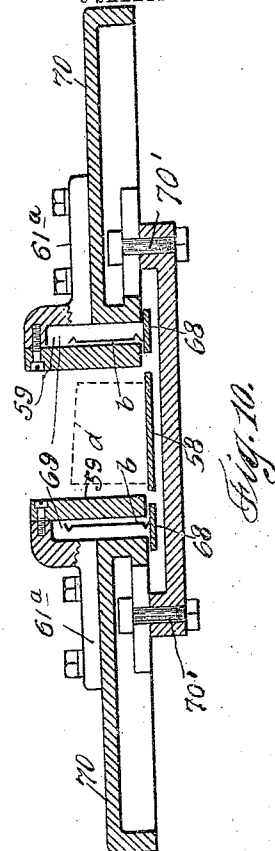


Fig. 10.

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UNITED STATES PATENT OFFICE.

JOHN ELDRIDGE, OF ASTORIA, OREGON, ASSIGNOR TO ASTORIA IRON WORKS, OF
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CAN-HEADING MACHINE.

950,017.

Specification of Letters Patent.

Patented Feb. 22, 1910.

Application filed June 13, 1907. Serial No. 378,726.

To all whom it may concern:

Be it known that I, JOHN ELDRIDGE, citizen of the United States, residing at Astoria, in the county of Clatsop and State of Oregon, have invented new and useful Improvements in Can-Heading Machines, of which the following is a specification.

This invention relates to can heading machines, and particularly to square can headers. Its object is to provide a practical machine for rapidly and uniformly putting on simultaneously the tops and bottoms of square, oblong or irregularly shaped cans, and crimping or squeezing them tightly upon the can bodies.

The invention also provides means for fluxing the ends of the can bodies before the can ends are squeezed. This is necessary in this class of work in order to insure tight joints after the ends are soldered.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a front elevation, Fig. 2 is a side elevation, and Fig. 3 is a central vertical section of my machine. Fig. 4 is a vertical section, and Fig. 5 is a front elevation of the squeezer head; parts in open position. Fig. 6 is a section on line X—X of Fig. 7, which is a front elevation of the squeezer head; parts in closed position. Fig. 8 shows the squeezer-head in open position and can ejected; taken similar to Fig. 6 on X—X Fig. 7. Fig. 9 is a perspective view of the parts of a squeezer-jaw. Fig. 10 is a section through the feed-table. Figs. 11 and 12 illustrate the feed-fingers. Figs. 13 and 14 are details of the brake and ratchet members. Fig. 15 is a perspective of the guide-pin. Fig. 16 is a plan view of the fluxing mechanism.

A represents a suitable framework supporting the various shafting and operating parts of the machine.

2 is a cam shaft journaled in the frame and operated from any suitable source of power through the drive shaft 3 and the engaging gear 4 and pinion 5. The operation of the shaft 3 may be controlled by suitable clutch mechanism not necessary here to be shown; said clutch mechanism being operated through the medium of a lever 6.

7—7 represents two symmetrical squeezer

heads or squeezer jaw carriers operable toward and from each other in suitable guides formed in the frame A. The operation of the two squeezer heads is effected through the medium of the cams 8 on the shaft 2, and which cams have the peripheral cam grooves engaging rollers 9 carried on pins which are fixed to said squeezer heads 7. In the rotation of the cam shaft 2 the cams 8 act on the rollers 9 to cause the heads 7 alternately to approach and to recede in unison toward and from each other. Each squeezer head or carrier 7 carries a plurality of wedges 10, Figs. 4 to 9 inclusive, which wedges are adjustably held in place by screws 11—12 and move in unison with the back and forth movements of the squeezer head. The rearmost screws 12 fit in sleeves 13, which latter screw into the head and abut against the back end of the wedges 10. The sleeves 13 are for the purpose of effecting a nice adjustment of the wedges to the size and length of the can bodies to be headed. The walls of the squeezer heads are suitably slotted as shown at 14 to accommodate the set screws or bolts 11 and permit of any desired adjustment of the wedges 10 being made. Each wedge is substantially T-shaped in cross-section with the inclined side flanges 10' operating in corresponding ways in the blocks 15, which latter carry the squeezing plates 16. The squeezing plates 16 are bolted to corresponding blocks 15, and an assembled block and its plate 16 constitute what I shall hereafter term a "squeezing jaw." There are any desired number of these jaws depending on the shape and character of the can to be headed. With a square can, such as the present machine is especially designed to head, I use four of these jaws, and these jaws are all constructed and operated in such fashion that they will simultaneously move inwardly and outwardly of the head and radially of a canbody as *a*, so as to circumferentially and completely embrace a can end when brought together for the purpose of crimping a head on the canbody. As shown in Fig. 7 these jaws will each act on one corner and one-half of one side and one-half of one end of a can.

The contraction of the jaws to produce a squeezing effect is done by sliding the blocks 15 downwardly and inwardly on the wedges 10; or conversely stated by pushing the

wedges out over the blocks, meanwhile holding the jaws from moving lengthwise with the wedges. The blocks 15 are suitably recessed to receive the plates 16 so that the latter will be substantially flush with the former. The blocks are also recessed in behind the plates 16 to accommodate a centering pad 17, which latter is fastened to a sleeve 18 which is carried by the squeezer head 7. This sleeve 18 is held against rotation in the head 7 by any suitable means as the screw 19 engaging in the groove 20 formed in the sleeve.

Carried by and slidable in sleeve 18 is a stem 21 which is provided at its inner end with an ejector pad or plunger 22. This plunger 22 extends crosswise of the centering pad 17, and its outer surface is normally flush with the outer surface of the pad 17; and the outer surface of the pad 17 is substantially flush with the outer surface of the squeezing jaws. The plunger pad 22 and its stem 21 are held against rotative movement in the sleeve 18 by suitable means as the screw 23 engaging a key-way 24 in the stem 21. A helical spring 25 surrounds the stem 21 and is adapted to have one end bear against a shoulder formed on the inside of the sleeve and to have the other end bear against a head 26 which screws on to the end of the stem 21 and moves with the latter. The function of the spring 25 is to maintain the ejector pad 22 normally within its recess in the center pad 17. The ejector pad 22 has its ends made to conform with the shape of the projecting peripheral ledge of the center pad 17 so that when the parts are flush with one another the two pads are virtually one as far as their action on the can head or canbody is concerned. The ends of the ejector pads 22 extend far enough so as to insure engagement with a canbody and the ejection of the same, if for any reason a canbody should not receive its can ends; the pad 22 in that case acting like a crosshead to extend across the end of the canbody and engage the edges of the same to eject it.

An adjustable regulating nut 27 screws on over the outer end of the sleeve 18 and is clamped thereto by any suitable means as the screw 28 engaging a split part of the nut. This nut 27 is adapted to come in contact with a fixed stop or abutment 29 on frame A at the moment that the centering pad 7 has engaged the end of a canbody, as will be more fully explained later. I desire to state however at the present time that the operation of the squeezing jaws is effected during the inward movement of the squeezer heads 7 by the stoppage of the centering pads 17 by suitable means as the contact of the collars 27 with the stops 29, whereby the further approach toward each other of the pads 17 is arrested, thereby holding the

squeezer jaws against further movement in unison with the squeezer heads, and causing the wedges 10 to slide over the blocks 15. When the squeezing mechanism carriers 7 draw back again away from each other, the jaws are retracted by means of a stiff helical spring 30 which is adapted to have one end bear against a squeezer head 7 and the other end against its pad 17. It will be understood that the radial movement of the squeezing jaws is not interfered with at all by the pad 17, although the latter forms a guide for the jaws and insures their proper radial movement.

Fitted to the face of each squeezer head 7 and carried thereby, is a plate 32 having a central opening corresponding in shape and size to an end of the canbody after the same has been headed and squeezed. This central opening is beveled on its outer surface as shown at 33 to form a guide for the entering canbody. Between the back of this plate 32 and its corresponding center pad and squeezers, is formed a pocket 34 for receiving the can end *b* as it is dropped from the canhead chute 35 above through the opening 36; this pocket 34 being designed to hold and to center the can end in proper position so that it will register with the canbody as the latter enters through the opening in the guide plate 32. The bottom of the pocket is beveled as shown at 37. This making the bottom of the pocket in which the can end drops wedge-shaped, is very important; for the reason that if the bottom of this recess or pocket were cut square across so as to form a horizontal ledge, the can end which must necessarily drop from a considerable distance, would rebound and continue to "chatter" up and down for an appreciable interval of time before coming to rest, which would seriously interfere with the proper working of the machine. But by making the bottom of this pocket beveled or wedge-shaped, as clearly shown in Fig. 4, this difficulty is entirely overcome; the can end coming instantly to a state of rest upon striking the bottom of the pocket by reason of its wedging in between the plate 32 and the pad 17. Another important reason for making this pocket wedge-shaped is this; if for any reason canbodies should cease to be fed to the machine and the can end chutes should at the same time be full of can ends, it follows that some provision must be made for allowing the ends to pass through and out of the machine without being injured in any way. Now, if the bottom of the pocket 34 was cut square, a can end in falling into the pocket would certainly remain there, if there were no canbody in position to receive it, since the bottom of the pocket would form a shoulder on which the can end would rest. This can end then would interfere with the next one falling,

and the machine would soon be clogged; but by having the bottom of the recess beveled the can end simply slides down through the opening 38 in the bottom of the squeezer-head or carrier 7 and thence out of the machine when the adjustable collar 27 strikes the fixed stop 29 to hold the jaws against further movement with the carrier 7. Thus holding the jaws has the effect of opening up the space between the jaws and the plate 32. Of course if a canbody is in position it will engage the can-ends and push them back against the centering pads just prior to the contact of the collars 27 with the stops 29. Just as the can enters the ends and before sufficient pressure is brought on the can to buckle it, the collars 27 hit the stops 29 to actuate the jaws.

39 represents a guide pin disposed adjacent to each end of the center pad 17, said pins having their centers exactly in line with the edge of the projecting portion of the pad. These pins slidably fit in holes in the pad, and which holes are just deep enough to come through the edge of the pad without cutting into the projecting portion thereof and are finished out with flat ended counterbores to receive the spring-pressed pins 39. These pins have a portion of their ends made wedge-shaped, as shown at 40, in Figs. 4 and 15, and a portion of an end made flat, as also therein shown, so as to abut against the thin ledge at the outer end of the counter-bores in the pad. These pins have an easy working fit in the holes or counter-bores in the pad, and the thin ledge referred to prevents a pin from projecting too far beyond the face of the pad. Each pin is prevented from turning by the vertical flat face of the wedge 40. The pins are normally pushed outward by the springs 41. The wedge shaped portion of each pin is made just long enough to come flush with the outside surface of the squeezer jaws. These spring-pressed pins 39 are for the purpose of preventing the can ends by any possibility catching upon the projecting central portion of the centering pad, except when forced back upon it by an entering canbody. The object of beveling the ends of the pins 39 is to provide a means for moving them out of the path of the corner of the squeezer jaws whenever they close without a can end in place. As the jaws close the corners come in contact with the beveled faces of the pins and force them back allowing the jaws to close over the pins without doing any damage. When the jaws are retracted the pins 39 move out just enough to push the heads clear of the central projection (shown in Fig. 8) of the centering pad.

42 represents a rock-shaft suitably journaled in frame A rearward of each squeezer head 7. This shaft carries an arm 43 which

is provided with a stud 44 on which is a roller 45 running in the cam groove 46 in gear 4 whereby suitable oscillatory movement is imparted to the arms 43 and shaft 42. Both arms 43 are provided with adjustable stop pins 47 which are adapted at each revolution of the cam shaft 2 to be brought into line with the heads 26 of the spindles 21 for the purpose of ejecting the headed canbodies from the squeezing mechanisms as will be more fully explained shortly.

Upon frame A and held by bolts in suitable slots or ways 48, Fig. 3, and adjustable toward and from each other are the standards 49 finished smooth on their inner faces and spaced apart a distance a little greater (about a quarter of an inch) than the length of the canbody to be headed. Between these standards 49 is mounted the canbody feed wheel 50 on shaft 51 having the peripheral recesses or pockets 52 adapted to freely admit and to hold the canbodies during the heading operation. Between the standards 49 and bolted thereto is a spacing piece 53 which serves to stiffen and maintain the standards at a uniform distance apart; this spacing piece 53 also carries a projecting finger 54, Fig. 3, which reaches in between the side-plates of the wheel 50 to act as a stripper for insuring the discharge of the finished cans.

55 is a spring pressed segmental guide plate which is pivoted at 56 between the standards 49 and just back of the wheel 50 and operates as a guide for holding the canbodies in position in the canbody feed wheel while the cans are passing from the canbody chute 57 to the position where they receive their heads; the direction of movement of the canbody feed wheel being indicated by the arrow, Fig. 3.

The canbodies *a* to be headed are fed singly upon a suitably supported horizontally disposed conveyer belt 58 running between adjustable guides 59 and over the pulleys 60—61, these guides 61 being fixed to brackets 61^a, Figs. 10 and 16, carried on the can end feed tables 70, which latter are arranged one at each side of the machine, and from which the operator pushes the cans over into the slot formed between a guide 69 and the inner edge of the adjacent table 70 and upon the can-carrying belt 68, which will be shortly described. Each feed table is rendered adjustable by set bolts 70'. From the belt 58 the canbodies are delivered into the chute 57 and taken one at a time into the feed wheel in the step by step movement of the latter.

The driving of the canbody feed wheel 50 and the giving to it of a step by step movement is effected by the following means: 80 is a shaft journaled in the frame A and carrying a gear 81 meshing a corresponding

gear 82 on shaft 51; the gears 81—82 being in the proportion of 2 to 1, as the machine is actually constructed. On the end of shaft 80 is a ratchet wheel 83 having a hub portion upon which is slidably clamped a leather lined friction band brake 84, the tension of which may be regulated by a stud 85 clamping the two sections of the band around the hub of the ratchet. This band is pivotally supported against rotation by means of a bolt 86 passing through a perforation in the ring and screwing into a fixed part of the frame A. The ratchet wheel 83 is operated by means of a spring-pressed pawl 87 pivotally supported on an arm 88, which latter turns loose on shaft 80. The oscillation of the arm 88 in order to produce a step by step rotation of the ratchet wheel and consequently of the canbody feed wheel 50 is accomplished by means of an adjustable connecting rod 89 which has one end pivoted to arm 88, and the other end engaging a wrist pin on disk 90 on cam shaft 2.

While the canbodies *a* are passing forward to the feed chute 57, their ends are treated to a suitable fluxing agent contained in the reservoirs 62 arranged on each side of the carrier 58; a vertically disposed disk 63 being arranged to dip into each bath 62 and transfer a suitable quantity of the fluxing fluid to the roller brush 64, which latter is arranged in the path of an end of the passing canbodies. The disks 63 are mounted on the shaft 65 which is operated by a cross belt 66 from a pulley on the drive shaft 67, which latter operates the can head conveyers 68. One of these can head conveyer belts 68 is arranged on each side of the canbody conveyer 58 and forms the bottom of a slot 69 which is formed between one of the guides 59 and edge of a corresponding adjustable can head feed table 70. The can ends which are disposed on edge and in that position are carried forward on the conveyer belts 68, are delivered into respective vertical chutes 35 formed on the outside of the uprights 49. The size of the chutes 35 is just sufficient to accommodate the can ends so that they will pass down freely to the squeezing mechanisms without any danger of the can ends overlapping each other or clogging the machine.

The delivery of the can ends from the chutes 35 to the crimping mechanism is regulated by the following means: Arranged on each side of the machine and with respect to each can head chute 35 is a shaft 71 carrying at its inner end the can end feed fingers 72—73. Finger 72 is rigidly secured to the shaft 71, and finger 73 has a limited turning movement on the shaft and independent of finger 72. Finger 73 is normally arranged at an angle to finger 72; its movement in one direction being limited by

a screw 74 engaging a suitable notch in the hub of finger 73. Finger 73 is normally held against the screw 74 by a small helical spring 75. The rigid finger 72 has a lateral projecting end 72' adapted when shaft 71 is rocked in one direction to interpose a stop in the path of the column of can ends in chute 35 and support the column. When the shaft 71 is rocked in the opposite direction to withdraw the curved end of finger 72 from beneath the column a can end is allowed to drop at the proper moment through the opening 36 of the squeezing mechanism into the pocket 34; the finger 73 yieldingly engaging the can end above, holds the column and prevents the other heads dropping while the finger 72 is inoperative. The rocking of the shaft 71 to drop the can ends at the proper moment is effected by adjustable links 76 which have one end pivoted to an arm 43 of a rock shaft 42, and the other end pivoted to an arm 77 of the shaft 71, see Fig. 2.

The operation of the machine is as follows: Canbodies *a* are placed upon the canbody-feed-belt 58, and are carried forward by it to the flux-distributing brushes 64 where they receive a small amount of flux along their edges, the flux being brought up by disks 63 and distributed by them upon the cylindrical brushes 64. The flux is kept at such a level in the flux baths 62 that disks 63 always dip into it for a short distance. The canbodies are then carried forward to the canbody-feed-wheel 50, into the openings of which they fall as it is intermittently revolved by the pawl and ratchet movement 83—87 on shaft 80, through gears 81—82; shaft 80 being prevented from turning too far by friction brake 84 which overcomes the momentum of these various parts. The various movements of the machine are so timed that the feed-wheel 50 revolves while the squeezer-heads 7 are at rest and at their farthest distance apart. The length of connecting rod 89 is so adjusted that, when feed-wheel 50 finally brings a canbody between the squeezer-heads 7, said canbody is exactly in line with the openings in plates 32. Meanwhile can-ends *b* (the tops at one side of the machine and the bottoms at the other) have been fed into the channels 69 formed by the edges of can-end-feed-tables 70 and guide-plates 59 and are being carried forward by the can-end-feed-belts 68 and discharged into the chutes 35. Here they are stopped by the can-end-feed-fingers 72 and 73 and, by these, are released, one by one, at the proper time to drop into the pockets 34 in the squeezer-heads 7 formed by the recess in the inner side of the plates 32 and the front face of the projecting portion of center-pads 17.

The can-ends are released at the proper time in the following manner: As the col-

umn of ends comes down the chute, the leading end comes in contact with feed-finger 72, which, at this time, is projecting into the chute, and is stopped by it. This finger is rigidly connected to shaft 71 which has an oscillating movement derived from rocker arms 43 through connecting rods 76 and arms 77. Shaft 71 now oscillates drawing finger 72 back from beneath the column of ends. But, while finger 72 is being drawn back, finger 73 is moving forward; and, just before the first end in the column is released, finger 73 comes in contact with the edge of the second can-end and pushes it against the opposite side of channel 35 and holds it there, of course stopping all those behind it; while, by the further movement of shaft 71 and finger 72, the first end is entirely released and falls freely into the pocket in a squeezer-head 7. During this further movement of shaft 71, the end which is being held by finger 73 is protected from injury by the yielding pressure exerted by finger 73; for, were finger 73 connected rigidly to shaft 71, as is finger 72, it would crush and spoil the end and at the same time clog the chute. Shaft 71 now oscillates in the opposite direction allowing the column of ends to advance until stopped by finger 72. It will thus be seen that but one end at a time can be fed to each of the squeezer-heads 7. With a can-end in place in each squeezing mechanism and also with a can-body in position between them, the squeezer-heads are now advanced by action of cams 8 on cam-shaft 2, causing the ends of the can-body to enter the beveled openings in plates 32: also to enter the can-ends which are now in position in recesses in the inner sides of plates 32 and to force said can-ends back, against the pressure of the spring-pressed pins 39, upon the projecting portion of center-pad 17. At this point in the movement of squeezer-heads 7, the adjustable nuts or collars 27 on sleeves 18 come in contact with yokes 29 by which the forward movement of the sleeves 18, center-pads 17 and squeezer-jaws, is stopped. The squeezer-heads 7, however, continue their movement for a short distance farther (about 7/16 in.) carrying with them the wedges 10 by action of which upon the segmental blocks 15, said blocks, together with the squeezer-plates 16 are all moved toward the center or axis of squeezer-heads 7, catching the flanges of the can-ends between the edges of the projecting portion of center-pads and inner edges of squeezer-jaws and thus crimping or "squeezing" them tightly upon the can-body. While the squeezer-heads are in this position, the rocker-arms 43 are swung upward by action of the cam groove in the side of gear 4; thus bringing stops 47 in line with, and very nearly touching the ends of the heads 26, which are screwed upon ends of ejector-stems 21. The

squeezer-heads 7 now move backward, away from each other; but the ejector-pads 22 are kept in contact with the ends of the can by reason of heads 26 on ejector-pad-stems 21 coming in contact with the ends of stops 47, thus holding the can in position and preventing its moving endwise in either direction during the backward movement of the squeezer-heads 7. It will thus be seen that, when the squeezer-heads 7 have completed their backward movement, both ends of the can have passed out through the openings in the plates 32—(or rather the plates 32 have passed over the ends of the can; as the can is stationary and the plates are moving during this operation) and that the can is now entirely clear of the squeezer-heads and merely held in position endwise by ejector-pads 22, and in other directions by can-body feed-wheel 50 and segment 55. Rocker-arms 43 now swing downward carrying stops 47 out of line with heads 26 thus allowing ejector-pads 22 to be drawn back by action of spring 25, to their normal position in center pads 17 and so releasing the can. This downward movement of rocker-arms 43, also acts upon the can-end feed-fingers 72—73, through connecting-rods 76, arms 77 and shafts 71 to release another pair of can-ends, allowing them to drop into place in squeezer-heads ready for the next can-body. The can-body feed-wheel now revolves one quarter revolution by action of gears 81—82, the pawl and ratchet movement, connecting-rod 89 and crank disk 90; thus discharging the finished can and at the same time bringing another can-body into position between the squeezer-heads. The discharge of the finished cans is made positive by a suitably supported finger 54 which reaches in between the plates of the can-body feed-wheel above the can, and acts as a stripper for removing the can as the wheel revolves.

The finished cans are discharged upon plate 92 down which they slide to a belt on pulley 93 by which they are conveyed to any desired point.

Although this machine has been designed and described with special reference to polygonal cans, it is manifest that it is capable of easy adaptation to cans of any shape or size.

Machines built according to the organization described and shown, are now in actual and successful operation.

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

1. In a can-heading-machine, the combination with a can-body support, of a squeezer-jaw carriage movable toward and from the can body to be headed, squeezer-jaws on said carriage, and means for operating said jaws through the reciprocating action of the carriage, said last-named means including

wedge members, a device connected with the jaw members and having a limited movement in unison with the carriage, a stop acting on said device to slide the jaws on the wedges to close the jaws, and independent means acting on said device to open the jaws.

2. In a square-can-header, the combination with a can-body-support, of a carriage movable toward and from the can-body to be headed, said carriage provided with a series of radially arranged squeezer-jaws, and means operative through the longitudinal movements of the carriage to move said squeezer-jaws radially, said last-named means including wedges on the carriage on which the squeezer-jaws are slidable, said jaws having a limited movement in unison with the carriage, a support for the jaws having a movement independent of the carriage, and a stop engageable by said support to move the jaws in one direction.

3. In a can-heading-machine, the combination with a can-body-support, of a series of squeezer-jaws, wedges for operating the squeezer-jaws, a carriage for the squeezer-jaws and wedges, and means for holding the squeezer-jaws to cause the wedges to act thereon, said last-named means including a sleeve connected with the squeezer-jaws, a spring acting to hold the jaws open, and a stop engageable by the sleeve to close the jaws on the operation of the carriage in one direction.

4. In a can-heading-machine, the combination of a squeezer-jaw-carrier, squeezer-jaws thereon, means for operating the squeezer-jaws, a plate mounted on and movable with the carrier and having an opening corresponding in size and shape to that of the can-body to be headed, means behind the opening in the plate for supporting and centering the can-head, means for supporting a can-body in line with said opening, and means for moving the carrier to project the can-body through said opening, an ejector on the jaw carrier, means for maintaining the ejector in normally inoperative position, and stop means for holding the ejector stationary to project the can body through said opening when the carrier moves away from the can body.

5. In a can-heading-machine, the combination of a vertically disposed plate having an opening corresponding in cross-section to the end of the can to be headed, squeezer-jaws arranged on one side of said plate, means for supporting a can-body on the opposite side of said plate and in line with the opening therein, means to move the jaws and plate to cause the can-end to be projected through the plate and into the range of action of the jaws, means for operating the jaws, and a pocket for the can-ends formed between the jaws and the plate, said pocket having a wedge-shaped-bottom.

6. In a can-heading-machine, the combination of a vertically disposed plate having an opening corresponding in cross-section to the end of the can to be headed, squeezer-jaws arranged on one side of said plate, means for supporting a can-body on the opposite side of said plate and in line with the opening therein, means to move the jaws and plate to cause the can-end to be projected through the plate and into the range of action of the jaws, means for operating the jaws, and a pocket for the can-ends formed between the jaws and the plate, said pocket having a wedge-shaped-bottom, said plate and said jaws having a limited relative movement toward and from each other.

7. In a can-heading-machine, the combination of a vertically arranged plate having an opening corresponding to the cross-section of a can-body, squeezer-jaws arranged on one side of the plate, movable-wedge-members to operate the jaws, a can-body-support, means to cause the can-body to be projected through the opening in said plate into operative position with respect to the jaws, and a can-head-pocket disposed between the plate and the jaws, said pocket having a wedge-shaped bottom.

8. In a can-heading-machine, the combination with means for supporting a can-body stationary, of squeezing-mechanism movable toward and from the can-body, said mechanism including a plate having an opening to pass the can-body, squeezer-jaws, and wedge-members to operate the squeezer-jaws, said plate and said jaws inclosing a can-head-pocket, said pocket having a wedge-shaped bottom, and means for opening the bottom of the pocket to allow a can head to be discharged.

9. In a can-heading-machine, the combination with means for supporting a can-body stationary, of squeezing-mechanism movable toward and from the can-body, said mechanism including a plate having an opening to pass the can-body, squeezer-jaws and wedge-members to operate the squeezer-jaws, said plate and said jaws inclosing a can-head-pocket, said pocket having a wedge-shaped bottom to prevent chattering of the can-heads when the latter are dropped into the pocket, and means for delivering can-heads into the pocket.

10. A carrier head, wedges on the head, squeezer-jaws mounted on the wedges to have a movement radially and lengthwise of the head, a sleeve carrying the jaws, means to reciprocate the head, and means on the sleeve engaging a stop to close the jaws on the reciprocation of the head.

11. A carrier head, wedges on the head, squeezer-jaws mounted on the wedges to have a movement radially and lengthwise of the head, a sleeve carrying the jaws, means to reciprocate the head, means on the sleeve

engaging a stop to close the jaws on the reciprocation of the head, an ejector arranged centrally of the jaws, said ejector having a limited movement in unison with the head and having a stem concentric with said sleeve, and a stop interposable in the path of said stem to actuate the ejector on the reciprocation in one direction of the head.

12. In a can-heading-machine, a squeezing-mechanism comprising a carrier, wedges on the carrier to operate the squeezer-jaws, a spring-pressed-centering-pad on the carrier, means operative through the pad to spread and close said jaws, and ejector-mechanism operative through the pad and means including a stop to hold the ejector mechanism stationary when the carrier moves in one direction.

13. In a can-heading-machine, a squeezing-mechanism comprising a reciprocating carrier, squeezer-jaws on the carrier, wedges on the carrier operative on the reciprocation of the carrier to open and close the jaws, and means on the carrier including a stop to limit the movement of the jaws in the direction of reciprocation of the carrier and cooperate with the wedges to effect said opening and closing of the jaws and stop means cooperating with said means on the carrier.

14. In a can-heading-machine, a squeezing-mechanism comprising a reciprocating carrier, squeezer-jaws on the carrier operative on the reciprocation of the carrier to open and close the jaws, means on the carrier including a stop to limit the movement of the jaws in the direction of reciprocation of the carrier and cooperate with the wedges to effect said opening and closing of the jaws, a plate on the carrier having an opening to pass the can-body, and a pocket having a wedge-shaped-bottom arranged between the plate and the squeezer-jaws.

15. In a can-heading-machine, a squeezing-mechanism comprising a reciprocating carrier, wedge-members on the carrier, squeezer-jaws supported by and slidable on said wedges, and means on the carrier to hold the wedges against movement in the line of reciprocation of the carrier and cooperate with the wedges to open and close said jaws.

16. In a can-heading-machine, a squeezing-mechanism comprising a reciprocating carrier, wedge-members on the carrier, squeezer-jaws slidably mounted on the wedge-members, a sleeve slidably-mounted on the carrier provided with a centering-pad, means operative through the medium of said sleeve and centering-pad to cause the jaw-members to slide in and out to open and close, a spring-pressed-ejector carried by said pad and sleeve, and means to operate said ejector.

17. In a can-heading-machine, a squeezing-

mechanism comprising a reciprocating carrier, wedge-members on the carrier, squeezer-jaws slidably mounted on the wedge-members, a sleeve slidably-mounted on the carrier provided with a centering-pad, means operative through the medium of said sleeve and centering-pad to cause the jaw-members to slide in and out to open and close, a spring-pressed-ejector carried by said pad and sleeve, and means to operate said ejector, said last-named means including a stop-member independent of the carrier and interposable in the line of reciprocation of the carrier to engage the ejector and hold the same against the movement of the carrier.

18. In a can-heading-machine, a squeezing-mechanism comprising a reciprocating carrier, wedge-members on the carrier, squeezer-jaws slidably mounted on the wedge-members, a sleeve slidably-mounted on the carrier provided with a centering-pad, means operative through the medium of said sleeve and centering-pad to cause the jaw-members to slide in and out to open and close, a spring-pressed-ejector carried by said pad and sleeve, means to operate said ejector, a plate on the carrier having an opening to pass the can-body, and a can-head-pocket formed between the plate and the squeezer-jaws.

19. In a can-heading-machine, a squeezing-mechanism comprising a reciprocating carrier, wedge-members on the carrier, squeezer-jaws slidably mounted on the wedge-members, a sleeve slidably-mounted on the carrier provided with a centering-pad, means operative through the medium of said sleeve and centering-pad to cause the jaw-members to slide in and out to open and close, a spring-pressed-ejector carried by said pad and sleeve, means to operate said ejector, a plate on the carrier having an opening to pass the can-body, a can-head-pocket formed between the plate and the squeezer-jaws, and spring-pressed-guide-pins having tapered ends mounted in the pad.

20. The combination with can-body-delivery-mechanism and can-end-delivery-mechanisms, means for assembling said can-bodies and can-ends and for crimping the ends on the bodies, said last-named means comprising two squeezer-mechanism-carriers movable toward and from each other, said squeezer-mechanisms each including wedge-members and squeezer-jaws slidably mounted on the wedge-members, centering-pads slidably mounted on said carriers and cooperating with the wedge-members to open and close the jaws, ejectors carried by the centering-pads, and movable-stop-members interposable in the path of the ejectors to operate the latter on the movement of the carriers away from one another.

21. In a can-heading-machine, the combination with a suitable squeezing-mechan-

ism, of means for delivering can-bodies thereto and for applying a flux to the ends of the can-bodies, said can-body delivery-means comprising a carrier operative between suitable guides, said fluxing-means comprising a brush arranged in the path of an end of a can-body on said carrier, and a disk dipping into a suitable bath and engaging with said brush to apply a fluxing medium thereto.

22. In a can-heading-machine, the combination with means for automatically assembling can-ends and bodies and attaching the ends to the bodies, of a can-body-conveyer, guides between which said can body conveyer is operative, two can-end-conveyer-belts arranged one on each side of the can-body-conveyer, a movable can-end table adjustable toward and from each of said guides and over a respective can-end-belt, the inner edge of each table and the corresponding guide inclosing a slot for the reception of can-ends on edge, said can-end-belts forming the bottoms of said slots, can-end delivery chutes into which the can-ends are discharged from said belts, and means for delivering the can-ends singly from the latter.

23. In a can-heading-machine, the combination with means for automatically assembling can-ends and bodies and attaching the ends to the bodies of a can-body-conveyer, guides between which said can body conveyer is operative, two can-end-conveyer-belts arranged one on each side of the can-body-conveyer, a movable can-end-table adjustable toward and from each of said guides and over a respective can-end-belt, the inner edge of each table and the corresponding guide inclosing a slot for the reception of can-ends on edge, said can-end-belts forming the bottoms of said slots, can-end delivery chutes into which the can-ends are discharged from said belts, means for delivering the can-ends singly from the latter, said last-named means including a stop-member intermittently interposable in the path of the column of can-ends in said chutes and a yieldingly supported presser-member intermittently engaging the column laterally to hold the column when said stop-member is inoperative.

24. In a can-heading-machine, the combination of a can-body-holder and suitable crimping mechanism, of means for delivering can-ends intermittently to said crimping mechanism, said means including a can-head-chute, a stop-member intermittently interposable in the path of a column of can-ends in said chute, and a yieldingly-supported-member engaging the column side-wise and yieldingly to hold the same when said stop-member is inoperative.

25. In a can-heading-machine, the combination of a can-body-holder and suitable

crimping mechanism, of means for delivering can-ends intermittently to said crimping mechanism, said means including a can-head-chute and a rock-shaft carrying two fingers, one of which is intermittently interposable in the path of columns of can-ends in said chute, and said other finger having a limited movement on the shaft independent of the first finger and arranged to exert a yielding pressure on the column of can-ends when said first-named finger is inoperative.

26. In a can-heading-machine, the combination of an intermittently rotating can-body-feed-wheel, means for delivering can-bodies to said wheel, means for intermittently rotating the wheel, a pair of squeezer-mechanisms, one arranged on each side of the wheel movable toward and from each other, said mechanisms each comprising a carrier, squeezer-jaws on the carrier, means operative on the jaws on the reciprocation of the carrier to open and close the jaws, vertically disposed plates on the carriers having an opening through which the opposite ends of the can bodies are projected on the approach of the carriers, and ejector mechanisms on the carriers operative on the headed can-body to push the latter back through said openings on the retreat of the carriers.

27. In a can-heading-machine, the combination of an intermittently rotating can-body-feed-wheel, means for delivering can-bodies to said wheel, means for intermittently rotating the wheel, a pair of squeezer-mechanisms, one arranged on each side of the wheel movable toward and from each other, said mechanisms each comprising a carrier, squeezer-jaws on the carrier, means operative on the jaws on the reciprocation of the carrier to open and close the jaws, vertically disposed plates on the carriers having each an opening through which the opposite ends of the can-body are projected on the approach of the carriers, ejector mechanisms on the carrier operative on the headed can-body to push the latter back through said openings on the retreat of the carriers, a can-head-pocket formed behind each plate, and means for delivering can-ends into said pockets.

28. The combination with radially acting squeezer jaws, of a guide plate with a hole in it to pass the can-body, and a can-head-pocket between the plate and jaws, said pocket having a wedge-shaped bottom to prevent chattering of the can-head when the latter is dropped into the pocket.

29. The combination with radially acting squeezer jaws, of a guide-plate with a hole in it to pass the can-body, a can-head-pocket between the plate and jaw, said pocket having a wedge-shaped bottom to prevent chattering of the can-head when the latter is dropped into the pocket, and means to open

up the pocket to permit the can-head to drop through the bottom of the pocket.

30. The combination with radially acting squeezer jaws, of means inclosing a can-head-pocket in operative position with respect to said jaws, said pocket having a wedge-shaped-bottom to prevent the can-head from chattering when dropped into the pocket.

31. The combination with radially acting squeezer jaws, of means inclosing a can-head-pocket in operative position with respect to said jaws, said pocket having a

wedge-shaped-bottom to prevent the can-head from chattering when dropped into the pocket, and means to open up the pocket to permit the can-end to drop through the bottom. 15

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 20

JOHN ELDRIDGE.

Witnesses:

G. C. FULTON,
JOHN FOX.