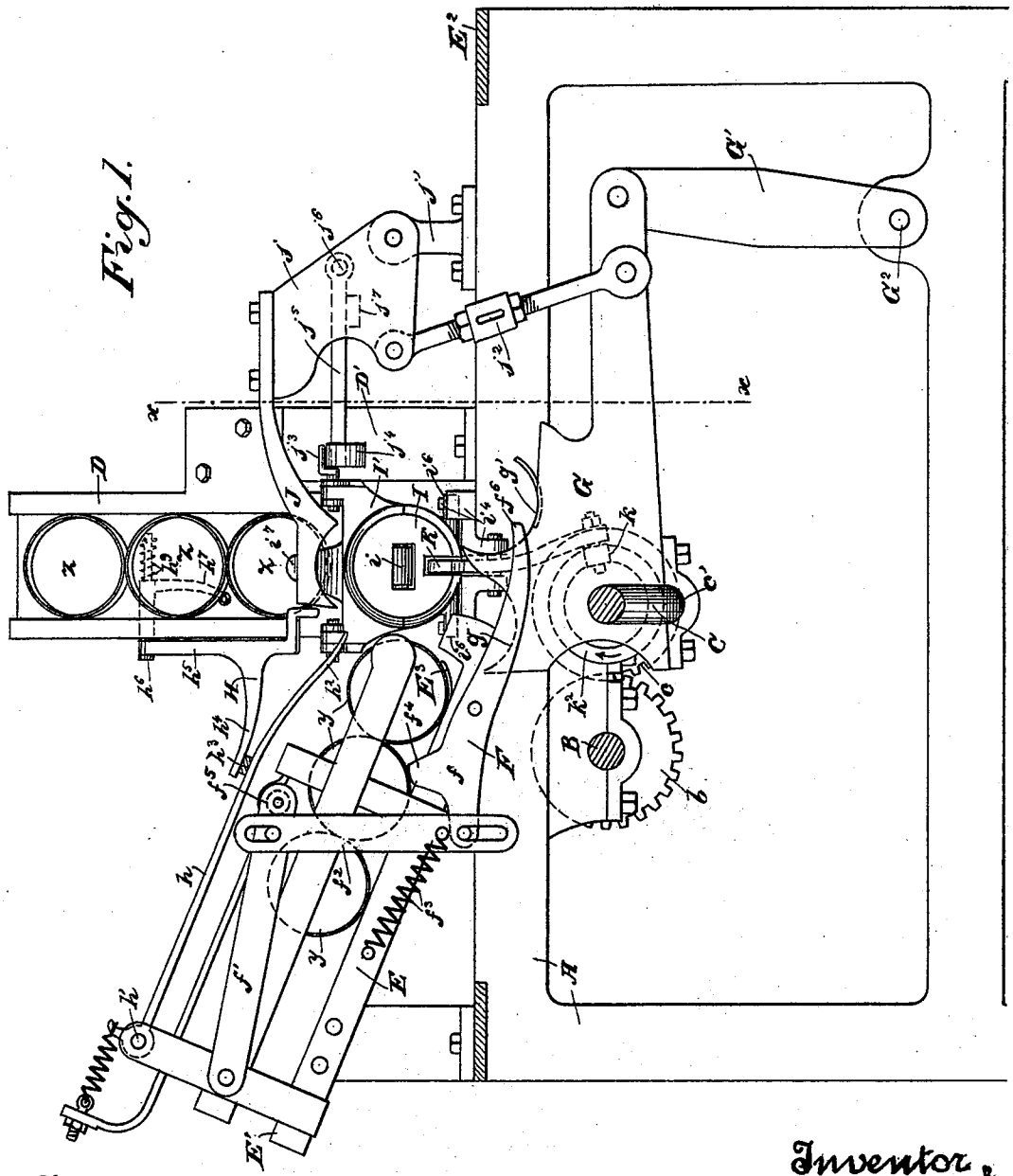
(No Model.) 3 Sheets—Sheet 1.

M. JENSEN.

CAN HEADING MACHINE.

No. 518,105. Patented Apr. 10, 1894.

Fig. 1.



Witnesses,
J. L. Howe
H. F. Ascheck

Inventor,
Mathias Jensen
By Dewey & Co.
Attys.

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

(No Model.)

3 Sheets—Sheet 2.

M. JENSEN.

CAN HEADING MACHINE.

No. 518,105. Patented Apr. 10, 1894.

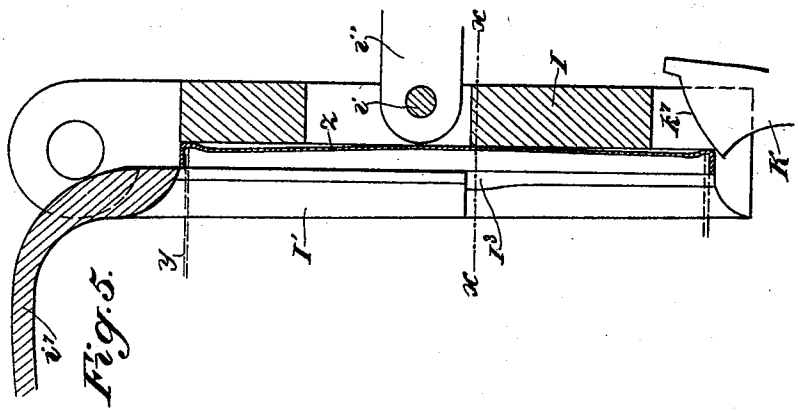


Fig. 5.

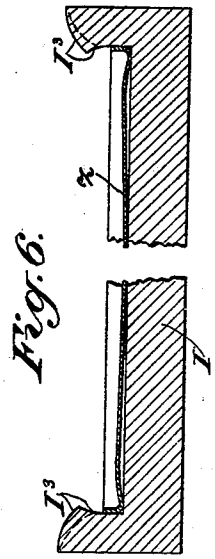


Fig. 6.

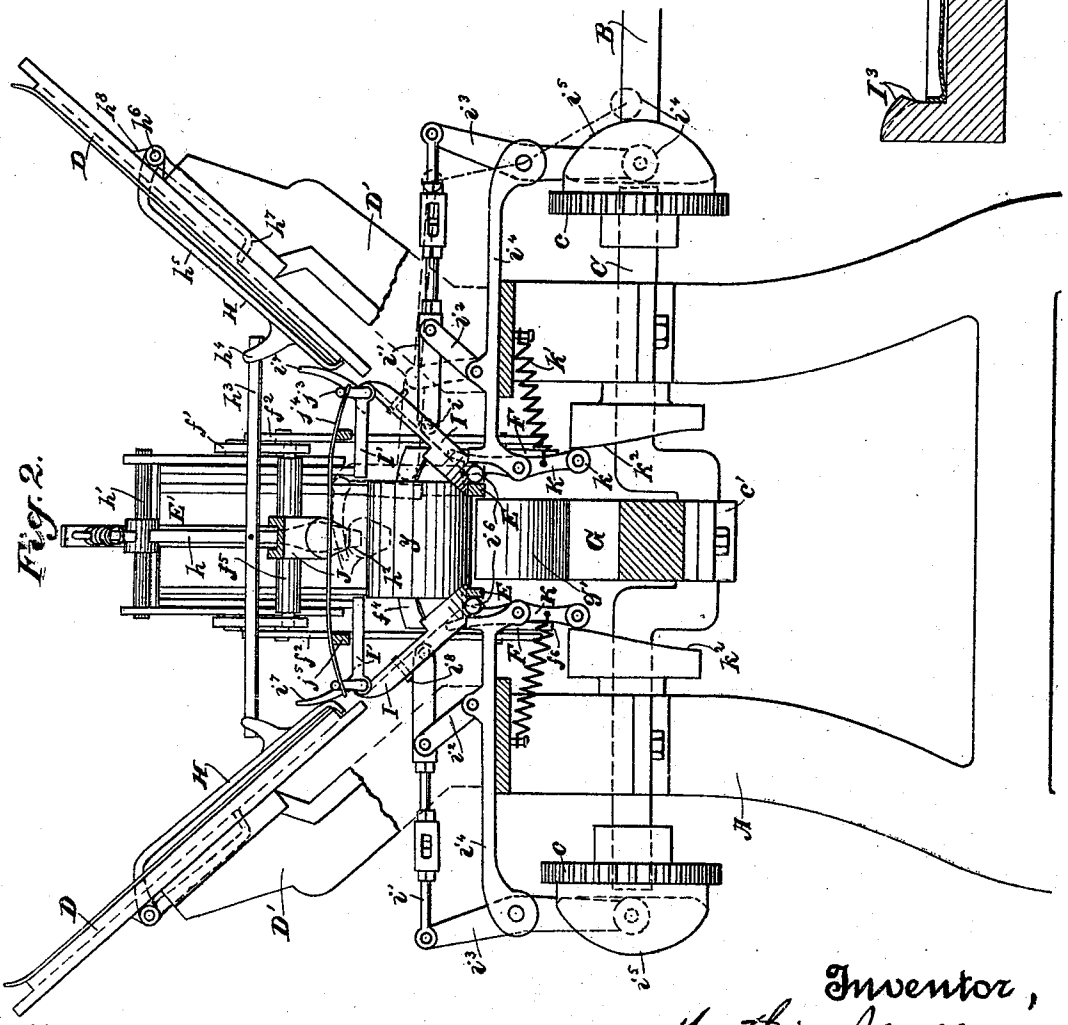


Fig. 2.

Witnesses,
J. Louise
F. F. Ascheck

Inventor,
Mathias Jensen
By Dewey & Co.
attys

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

M. JENSEN.

CAN HEADING MACHINE.

No. 518,105. Patented Apr. 10, 1894.

Fig. 3.

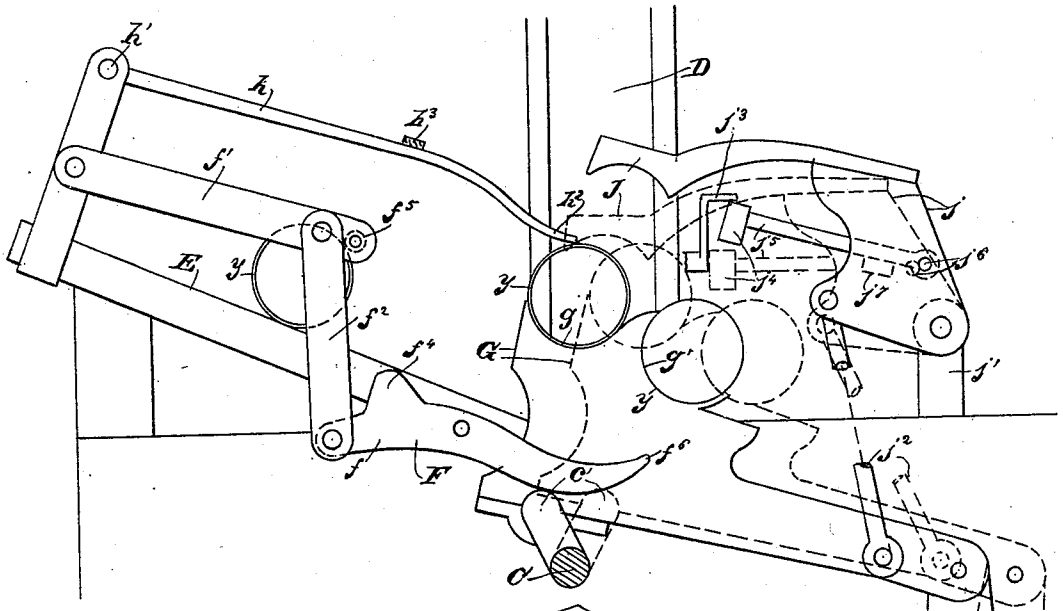
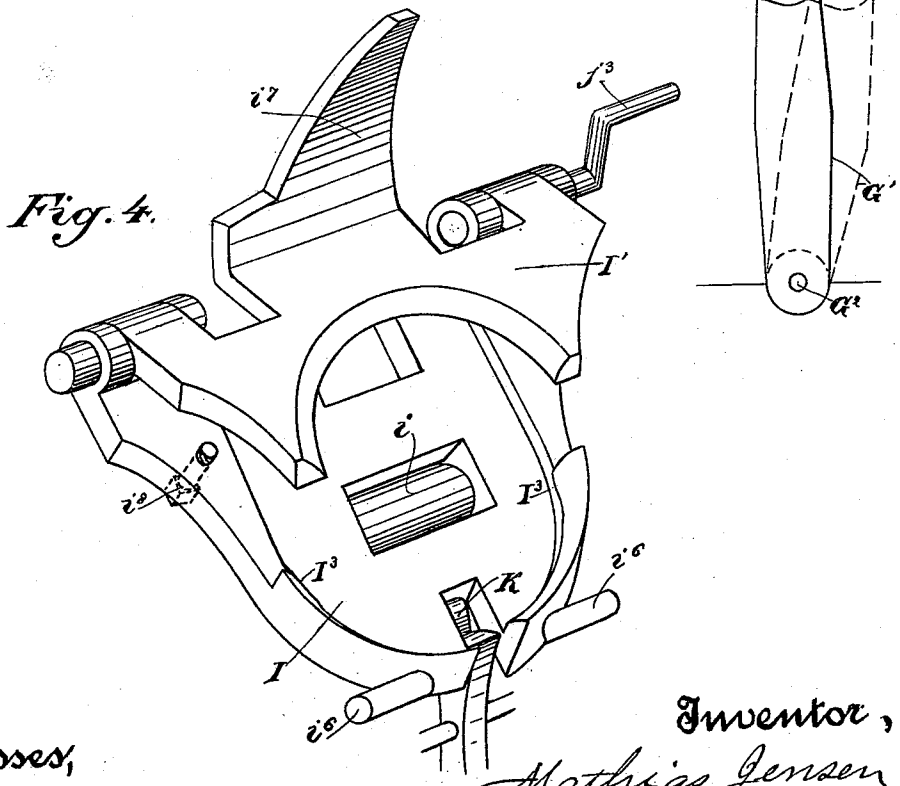


Fig. 4.



Witnesses,
L. Stowe
F. F. Ascheck

Inventor,
Mathias Jensen
By Dewey & Co
Attys

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MATHIAS JENSEN, OF ASTORIA, OREGON, ASSIGNOR TO THE JENSEN CAN FILLING MACHINE COMPANY, OF SAME PLACE.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 518,105, dated April 10, 1894.

Application filed November 6, 1893. Serial No. 490,161. (No model.)

To all whom it may concern:

Be it known that I, MATHIAS JENSEN, a citizen of the United States, residing at Astoria, county of Clatsop, State of Oregon, 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 relates to a device for putting heads upon cans.

It consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my apparatus with the front can head chute and connections removed. Fig. 2 is a transverse vertical section. Fig. 3 is a side view of a detail of parts of the machine shown in Fig. 1. Fig. 4 is a perspective view of one of the holders by which the can head is placed upon the can. Fig. 5 is an enlarged vertical section of one of the holders, showing a can head in position, and the projections I^3 to prevent crimping. Fig. 6 is a horizontal section of the same on the line x—x of Fig. 5.

A is the frame of the machine upon which the different parts are mounted and secured.

B is a driving axle to which power is applied to operate the machine.

C is a crank axle parallel with the driving axle and receiving motion therefrom by means of the gear wheels b c which mesh together.

D D are inclined chutes, one upon each side of the machine. These chutes are adapted to receive can heads Z which are delivered into them in any suitable manner. The chutes are secured to brackets D′ which are bolted to the main frame.

E is a track upon which the can bodies y are delivered at E′. This track stands at an inclination from the receiving end to a point nearly opposite the can head chutes, and from this point extends approximately horizontally to the point of delivery at E^2. The cans which are delivered into the upper end of the chute at E′ are arrested by means of two yokes F, f', which are connected together by links f^2. These links are pivoted to the track E and are retained normally in position by a spring f^3. The yoke or arm F has the end f^6 so constructed as to project into the line of rotation of the crank, so that as the latter is moved around it will lift the end f^6, thus lowering the opposite end f which is upon the opposite side of the fulcrum and is provided with a projecting stop f^4, until it is depressed below the passage in which the can bodies are moving so as to allow the lowermost one to pass. At the same time, by reason of the connecting links f^2, the upper yoke f' is also brought down until the bolt f^5 which extends between the ends of the two arms f' is depressed to such a point that it will arrest the following can body. As soon as the crank arm has released the end of the arm f^6, the spring f^3 acts to draw the parts back to their original position which raises the bar f^5 sufficiently to allow the second can body y to pass beneath the bar, and at the same time the projection f^4 will have risen to such a point as to arrest this can body and check farther movement while the first can body will have already passed down the track. The can body thus released rolls down into contact with the fixed curved projection E^3 in the track E. The crank carries with it in its rotations one end of the arm or carrier G, having the upper surface made with concavities corresponding with the shape of the can. The opposite end of this arm is fulcrumed to the upper end of an oscillating connecting rod G′, the lower end of which is fulcrumed to the frame at G^2. As the crank revolves, the semicircular concavity g in the upper part of the arm or carrier G will be moved directly beneath the can body which is being held by the projection E^3, and as the motion of the crank continues its rotation, the can is lifted by this concavity until it is carried over the projection E^3. The second concavity g' is in such relation with the concavity g that as the can body just alluded to is lifted over the stop E^3, the one in advance of it, which has in the meantime had the head applied to it, will be lifted over the side of the can head holder and delivered into the chute to pass out at the delivery end E^2. In this manner a can is removed from the position between the can head holders and another one is delivered into this position at each revolution of the crank. The can heads are in the same manner allowed to pass periodically from their chutes into the oscillating

holders I by which they are applied to the opposite ends of the cans.

In order to arrest the can heads within the chutes D and deliver them one at a time from each chute, as required, I have shown the following mechanism:—As the two can head chutes and the mechanism connected therewith are intended to operate simultaneously, the operations being alike, the description of the operation for one side of the apparatus will serve for both.

h is an arm fulcrumed at h' to standards on the upper part of the chute E, and the lower end h^2 extends down over the lowermost can body which is retained by the stop E^3, so that when the can body is raised to deliver it from this position to the heading devices, this arm h^2 will also be raised.

h^3 is a bar secured to the arm h and extending across to points on each side where it will form contact with the arms h^4 of the levers H. The arms h^5 are fulcrumed upon bolts h^6 passing through the side of the chutes D. Upon the inner end of each bolt h^6 is a lever h^7 which extends down beneath the can head chute and has an upturned point which will project into the path of the can heads as will be hereinafter described. In like manner the lever h^5 extends downward from above over the can head chute, with its lower end projecting into the passage of the can heads, the two levers being so arranged with relation to each other that when the end of the lever h^5 is in position to arrest the can heads, the lever h^7 is depressed below the bottom of the chute, and when the lever h^5 is raised so as to allow a can head to pass from the chute into the can head holder I, the lever h^7 will be simultaneously raised so as to intercept the next can head above, and prevent any movement of the line of can heads above this point, until the one which has been released has passed into the can head holder. These reciprocal movements are produced by the rising and falling of the arm h which is actuated as before described by the movement of each can when it is lifted by the carrier arm G, and transferred from the stop E^3 to the position to receive the can heads.

h^9 is a spring surrounding the pin h^6, and forming a yielding connection between the pin and the stop lever h^7, so that in case any can head should pass too far beyond the point of the lever h^7, it would not be injured by the raising of the lever, as the spring would allow the latter to yield, and not press injuriously upon the can head. It will thus be seen that as the can body is lifted over the projection or stop E^3, it will be pressed against the lower end h^2 of the lever h, and lift the latter upward, and this acting through the transverse arm or bar h^3 which extends under the arms h^4 of the lever H, will lift the latter upward, and with it the arm h^5, so that its lower end is raised from the path of the lowermost can head, and will allow the latter to escape and slide down into the can head holder. The simultaneous raising of the point of the lever h^7 into the channel prevents the heads above from moving downward until the movement of the crank and carrier have released the actuating parts and allowed the arms to drop into their normal position, when the can heads will move down until the lowermost is again arrested by the lower end of the arm h^5 which again projects into its path. The can heads thus allowed to escape from the chutes pass into the can head holders I which stand at an angle projecting upwardly and outwardly from the ends of the can body.

The position of the lower sides of the can head holders I with relation to the can body is such that the movement of the crank arm and carrier lifting the can body over the stop E^3 deposits it with its ends resting in the lower part of the flanges of the two can heads which are contained in the opposing holders. The lower parts of these holders form a semicircular recess for receiving the can head, and to the upper part is hinged a semicircular guide I′ which serves to hold the can head in the recess, and press the lower sides of the can body ends down into the curvature of the flanges of the can heads. The mouth or opening of the semicircular guide I′ is made divergent from the inner to the outer surface, so that it serves as a guide to direct the upper portion of the can body end into the upper part of the flange of the can head when the holders are closed up against the ends of the can body. The holders I I are connected at i with a connecting rod i', the length of which is adjustable by a turn-buckle or screw. This connecting rod is supported upon the oscillating levers i^2 and i^3 to which it is pivoted. These levers are fulcrumed upon a bracket i^4 which is fixed to the frame A, shown in Fig. 2. The lever i^3 extends downwardly below the bracket, and has at its lower end an anti-friction roller which is adapted to form contact with the cam i^5. This cam is secured to the crank shaft C, and rotates with it, and is so formed that the can head holders I I are moved forward against the can body ends by means of the connections just described, as soon as the can body has been lowered into the lower flanges of the can heads. Pins i^6 project upon each side of the lower part of the holder, and these pins lie between the tracks E and the inner ends of the brackets i^4. These serve as stops to prevent the holder from tilting backward any farther than just sufficient to allow the end of the can body to pass the flange of the can head, and there is sufficient room between the bracket and the track to allow the holder to move so as to push the can head fully upon the can body after the latter is properly entered into the can head.

j is a yoke which extends over the passage through which the headed cans pass, after leaving the heading devices, and this yoke is fulcrumed upon the standard j' which is secured to the frame A. The lever J is fixed to the top of this yoke, and it is oscillated

by motion transmitted to it from the carrier G by means of an adjustable connecting rod j^2 which connects at one end with the carrier G near the point where it is attached to the pitman G', and at the other end it is connected with the yoke j at a point some distance from the fulcrum post j'. These connections are such that when the carrier G leaves the can body in the lower sides or flanges of the can head, the lever J will be in its lowermost position, and will thereafter be raised so as to strike the projecting points i^7 of the guide I', thus raising the latter and turning it outward. While the headed can is thus released from the semicircular guides I', it is partly lifted by the action of the levers K K which are forced against the lower sides of the can heads by the springs k', thus allowing the can head holders to be moved backward toward the can head chutes without interfering with the headed can. The levers K have friction rollers k on the lower ends, and these form contacts with the cams k^2 which are secured to the crank shaft C. These cams serve to keep the levers away from the can head holders I I, except when it is necessary to lift the headed can as previovsly described.

j^3 are small cranks fixed to the shafts to which the semicircular guides I I' are secured, and with which these guides rotate. This crank j^3 rests upon an arm j^4. This arm j^4 is secured to lever arms j^5 which are pivoted on each side of the yoke j as shown at j^6.

j^7 is a block or support upon which the lever arm j^5 is arrested to prevent the lever from falling downward but which allows it to be moved upward, or remain at rest on the headed can, while the yoke j is still moving downward to its lowermost position.

The action of the arm j^4 upon the crank arm j^3 is such as to turn the latter into position which will hold the guide I' open, after it has been opened by the action of the lever J upon the projecting spur i^7, and this allows the headed cans to pass underneath the guide in passing out of the can head holder.

The operation will then be as follows:—The can body being raised over the stop E^3, is carried into the diverging can head holders I into which the can heads have already passed as before described, and the guides I' are held sufficiently open to allow the can body to pass their inwardly projecting ends, and be deposited with its lower edges in the lower flanges of the can heads where it is pressed down, fitting into these flanges while the movements previously described tilt the can head holders toward the ends of the can body to press the can heads upon the body. The guide I' is then closed down upon the upper part of the can head, and its conical form is such that it forces the lower edge of the end of the can body against the lower flange of the can head, while it guides the upper part of the can body into the upper part of the can head flange at the same time. The joint by which the guide I' is hinged to the upper part of the can head holder I is sufficiently separated from the space in the latter which receives the can heads, to allow the can heads to slide into the holder from the can head chute without obstruction. In putting the heads upon small cans, there is no difficulty about that part of the can retaining the proper shape which is horizontally in line with the axis of the can heads, and which is thus in a position to enter the junction of the lower semicircular half of the can head with the upper corresponding half. When the cans are large, however, the metal is too weak to resist the tendency to buckle or get out of shape. In order to prevent this, therefore, I have shown guides I^8 which project upon each side over the edge of the flange of the can head so that in conjunction with the guide I' they will surround about three-fourths of the circumference of the can head, and will thus prevent its being crimped or buckled against the edge of the can head flange while the body is being directed into the latter.

The can head holders I are made adjustable to suit the exact size of the can heads by means of the adjusting pin or screw i^8. This regulates the closing so that while it does not vary the diameter of the semicircular guide, it varies its position, so that there will be more surface of the can body passing through the guide I' when the guide is partly open than there will be when it is fully closed. It also makes a slight difference between the guide I' and the lower side of the can heads.

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

1. In a can heading machine, the can head holder having a semi-circular recess into which the can heads are received, and a semi-circular hinged guide adapted to hold the can head in said recess and to close and remain closed by gravitation alone, means for rocking the can head holder so that it may force the can head upon the contiguous end of the can body, and means for opening said guide to deliver the headed can.

2. In a can heading machine, the can head holder having a recess for the can heads and having a semi-circular guide with a beveled mouth or opening, hinged to said holder and closing over the face of the holder, and remaining closed thereon by gravitation whereby the can head is held in the recess so as to receive the lower edge portion of the can body, and means for rocking the holder to cause said can head to receive the remaining portion of the edge of the can body, said guide serving to direct the end of the can body into the can head.

3. In a can heading machine, a can head holder having a semi-circular recess for the reception of the can heads, a semi-circular guide hinged to the upper part of the holder and adapted to close thereon to retain the can head in the recess while it is forced upon the can body, and a device for adjusting the

distance between the holder and the guide, by which the can body is sized to fit the can.

4. In a can heading machine, a normally inclined can head holder having a semi-circular recess for the can heads, a semi-circular hinged guide adapted to close over the face of the holder for holding the can heads in the recess while one side of one end of the can body is first placed in the flange of the can head, means for rocking the holder to cause the can head to be forced on the remaining portion of the end of the can body, and means for releasing the headed can by opening the guide while said holder recedes from an upright to an inclined position.

5. In a can heading machine, a can head holder having a recess for receiving the can heads, a simi-circular guide hinged so as to close by gravitation, and means for placing the end of a can body in the flange of the can head on one side and afterward force the remaining parts of the flange of the can head, upon the opposite side of the end of the can body, and the oscillating lever for lifting the guide while it retracts from the headed can.

6. In a can heading machine, a normally inclined can head holder adapted to rock and provided with a recess for receiving the can head, and having a beveled mouth guide fixed upon one side thereof and overlapping a small portion of the circumference of the flange of the can head so as to insure a closer fit by less sizing in not overlapping the whole circumference of the flange of the can head.

7. In a can heading machine, a chute or carrier whereby the can bodies are delivered intermittently between inclined can head chutes, can head holders having recesses adapted to receive the heads from the chutes, mechanism whereby the can bodies are pressed downward so that the lower peripheries of their ends are pressed into the lower parts of the can head flanges, guides hinged to the can head holders having semi-circular beveled conical openings adapted to close down upon the upper parts of the can heads, and to serve as guides through which the upper portion of the can body enters the upper portion of the can head flange, and mechanism whereby the holders are forced inwardly toward the end of the can whereby the heads are placed thereon, substantially as herein described.

8. In a can heading machine, the inclined chute into which the can bodies are received, a stop f^4 by which they are arrested, a mechanism consisting of the fulcrumed levers F f' and connecting link f^2, the crank shaft, the rotary crank whereby the arms are moved to allow the cans to pass one at a time over the stop f^4, and a stop E^3 into which the cans are received after this movement, substantially as herein described.

9. In a can heading machine, the can head chute having stops whereby the can heads are delivered one at a time upon the stop E^3, a crank shaft, a carrier mounted thereon and provided with recesses, one of which lifts a can from the heading mechanism while the other simultaneously lifts a fresh can from the top which holds it, an oscillating fulcrum with which the free or outer end of the carrier is connected, and mechanism connected with and actuated by the carrier for opening the can head holding devices.

10. In a can heading machine, a chute through which the can bodies are delivered to the heading mechanism, intermediate stops by which the cans are held, a crank shaft and a carrier actuated thereby having recesses, one of which lifts a can from the heading mechanism while the other simultaneously lifts a fresh can from the stop which holds it, an oscillating fulcrum with which the outer end of the carrier is connected, a lever arm situated above the heading mechanism, an oscillating yoke to which said arm is connected, and a rod connecting the yoke with the crank actuated carrier whereby the lever arm is depressed so as to engage the can head holder guides, and open them in its return movement, substantially as herein described.

11. In a can heading machine, the chute through which the can bodies pass, stops by which the bodies are prevented from passing down the chute, a crank actuated carrier by which they are lifted from the stops and deposited in the heading apparatus, inclined chutes through which the heads are delivered, oscillating can head holders adapted to tilt outwardly so as to receive the can heads from the chutes, mechanism, consisting of connecting rods i' pivoted to the can head holders, lever arms i^2 i^3 and a cam i^5 upon the crank shaft whereby the can head holders are oscillated so as to be alternately separated and tilted to receive a can head from the chute, and then forced together to place the can head upon a can body which has been delivered between the two, substantially as herein described.

12. In a can heading machine, means for delivering the can heads intermittently from the inclined chute through which they pass consisting of the fulcrumed levers h^5 h^7 adapted to alternately check the can heads from below and from above, and mechanism whereby these check levers are actuated consisting of a lever arm fulcrumed on the chute having a lower end adapted to extend down over the lowermost can body, a bar secured to the lever arm and extending to each side thereof, and arms with which the outer portions of the bar are designed to form contact.

13. In combination with the oscillating holders by which the heads are received and placed upon the can body ends, the cam actuated releasing levers adapted to be forced against the can heads and permitting the can head holders to be moved toward the can head chutes without interfering with the headed can.

14. The oscillating holders adapted to re-

ceive can heads, overlapping guides hinged to and movable thereon, whereby the can head is retained and the can end guided, and means to open the guides and release the headed can as described.

15. The crank arms fixed to the hinge shafts of the can head holder guides, and movable arms engaging the crank arms to retain the guides after they are opened, and allow the cans to pass as described.

In witness whereof I have hereunto set my hand.

MATHIAS JENSEN.

Witnesses:
S. H. NOURSE,
J. H. BAYLESS.