G. H. STEWART.

CAN HEADING MACHINE.

APPLICATION FILED MAY 28, 1907.

936,956.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.

Fig. 1

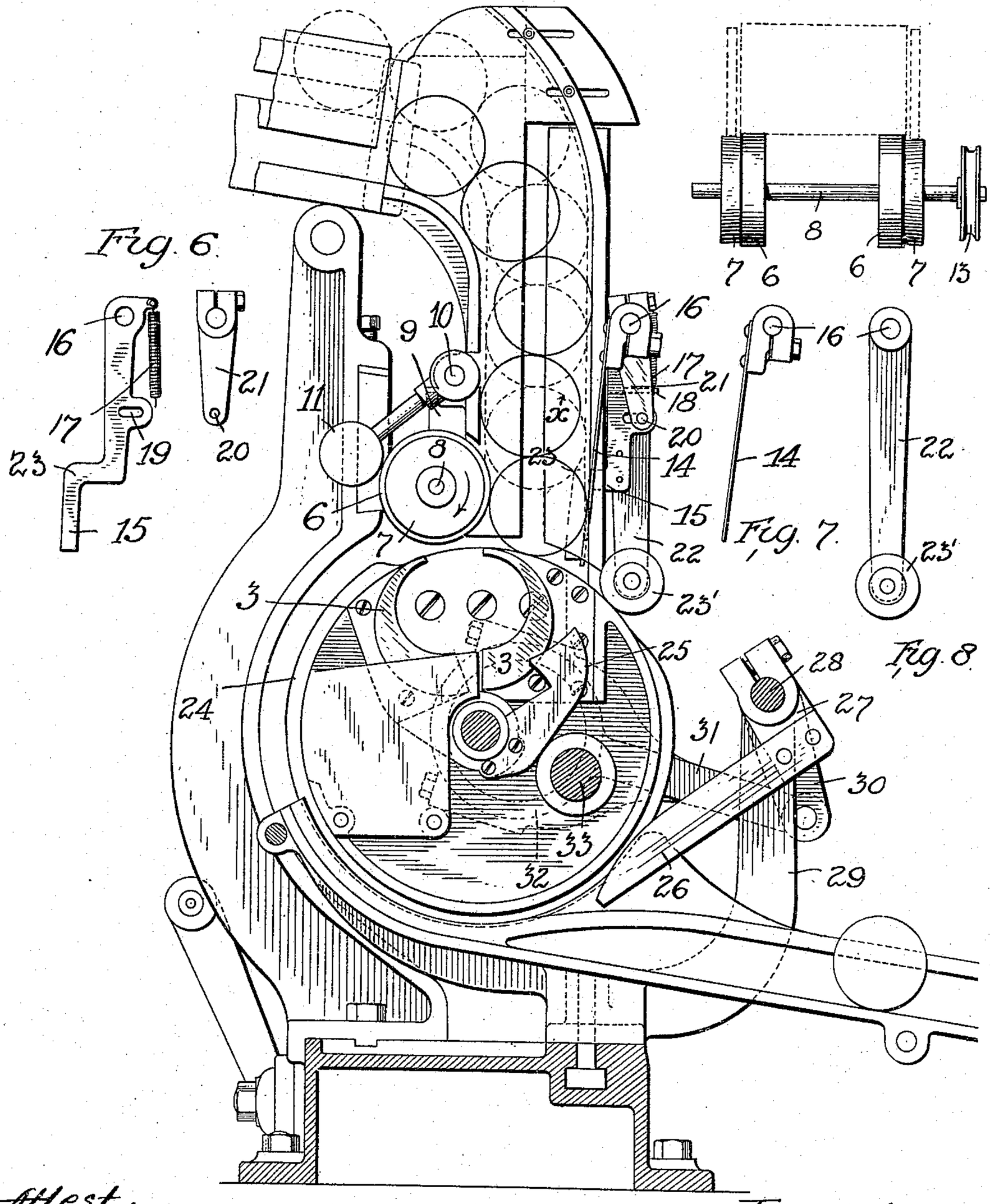

Fig. 5

Fig. 6.

Fig. 7.

Fig. 8

Attest:

Beatrice J. Phillips.

Edward M. Slaton

Inventor

George H. Stewart.

by Spear, Middleton, Donaldson & Spear

Att'ys.

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2 SHEETS—SHEET 2.

Fig. 4.

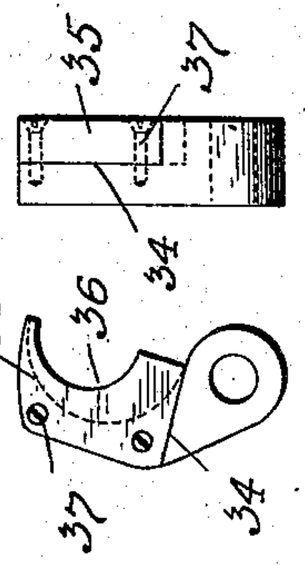

Fig. 2.

Fig. 3.

Attest:

Beatrice G. Phillips

Edward M. Sarton

Inventor

George H. Stewart,

by Spear, Middleton, Donaldson & Spear,

Att'ys.

UNITED STATES PATENT OFFICE.

GEORGE H. STEWART, OF LOS ANGELES, CALIFORNIA.

CAN-HEADING MACHINE.

936,956. Specification of Letters Patent. Patented Oct. 12, 1909.

Application filed May 28, 1907. Serial No. 376,174.

To all whom it may concern:

Be it known that I, GEORGE H. STEWART, citizen of the United States, residing at Los Angeles, California, have invented certain new and useful Improvements in Can-Heading Machines, of which the following is a specification.

My invention is an improvement in can heading machines, and particularly that form of machine disclosed in Letters Patent of the United States granted to me Sept. 4/06, #830189. In the machine disclosed in the said patent the can members are fed to the operating parts by gravity.

It is the object of my present invention to provide means whereby the can members may be fed more rapidly than is possible in a gravity feeding arrangement and whereby the can members may be fed more positively than by gravity. By the use of this feeding mechanism the machine may be run at a high rate of speed which is not the case with a gravity feed.

In the accompanying drawings,—Figure 1 is a sectional view of the machine, parts being in elevation. Fig. 2 is a front view. Fig. 3 is a detail view showing the operation of the discharge mechanism. Figs. 4, 5, 6, 7 and 8 are detail views.

The headers 1—2 are substantially of the same form as those disclosed in the said patent, these headers carrying a single set of molds or jaws 3 for receiving and holding the can members for the heading operation. The can members are introduced into the machine by run-ways 4—5, the run-way 4 being for the can bodies, and the run-ways 5 for the can ends or heads. In order to feed the can members positively and rapidly to the heading means, I provide a series of disks 6—7 on a shaft 8, the disks 7 being arranged with their peripheries opposite the run-ways 5 for the can ends and the disk or feed wheel 6 being opposite the run way 4 for the can bodies. The shaft 8 of these disks is carried by arms 9, which are pivoted to the run-way frame at 10, and to the shaft or pivot 10 is connected a weighted arm 11, the effect of which is to hold the feeding disks in position in relation to the run-ways to perform their feeding action when the can members are brought into contact therewith. The feeding disks are rotated constantly by a belt 12 driven through any suitable means and passing over a pulley 13 on the shaft 8. The disks or wheels rotate in the direction of the arrow, Fig. 1 and when the headers in their rotation bring the open mold or holding jaws into proper position beneath the run-ways or feed chute, the can members are fed into the said mold positively and rapidly by the rotary feed wheels or disks.

In order to control the position of the can members in relation to the feed wheels and the passage of the can members through their run-ways, I provide controlling arms to engage the can ends and also the can bodies when they arrive at a point in their run-ways near the feed wheels.

In Fig. 1 the arm for controlling the can bodies is shown at 14 and one of the arms for controlling the can ends at 15. The arms 15 are loosely hung upon a shaft 16 and are under tension of springs 17 connected with the arms at one end and with the frame at 18 at their other ends, said springs tending constantly to press the arms inwardly in relation to the run-ways and toward the feed wheels or disks. Each arm is slotted at 19 and receives a pin 20 on arms 21 which are fixed to the shaft 16. The shaft 16 also has fixed thereto an arm 22 carrying a roller 23′ arranged to be acted upon by a cam rib 24 on one of the rotary headers. The arm 14 for acting upon the can bodies is also carried by the shaft 16, being rigidly secured thereto. With the parts in the position shown in Fig. 1 the alining jaws or molds have received a set of can members and the controlling arms 14—15 for the can body and ends respectively are now in position to obstruct the movement of the members which have arrived near the discharge end of their run-ways and are next to be introduced into the alining jaws or molds when they are brought around again in the revolution of the headers. At this time it will be seen from Fig. 1 that the can ends indicated at *x* in dotted lines are resting upon the shoulders 23 of the arms 15, thus holding said ends against downward movement into contact with the feed wheels. At this time it will be noticed that the roller 23′ is running upon the periphery of the header and is not acted upon by the cam 24 thereon. This cam is located just in advance of the jaws or molds and in the revolution of the machine the said cam will move the roller 23′ bodily toward the right, thus swinging the lever 22 and turning the shaft 16 so that the controlling arms 14—15 will be drawn toward the right and entirely beyond the line

of travel of the can members along their run-ways so that the movement of the can members can take place freely. This movement will cause the can ends to fall into a position between the controlling arms and the feed wheels and immediately the mold or alining jaws have opened and have arrived in proper position to receive the can members the roller 23′ rides off of the cam 24 and the springs 17 then exerting their force swing the controlling arms inwardly in relation to the run-ways, thus forcing the can members against the revolving feed wheels 6 and 7 resulting in the positive and rapid feeding of the can members into the molds or alining jaws. The position of the alining jaws in relation to each other when fully opened is represented in Fig. 3. The slot 19 is provided in the arms 15 so that the said arms 15 when acting upon the can ends will be under tension of the springs 17 only and will not be under the positive pressure of the arms 21. By this arrangement the arms 15 may yield to accommodate any irregularities in the can members or any obstruction passing through the run-ways.

The feed wheel or disk 6 for acting upon the can body is preferably of greater diameter than the disk or wheels 7 for the can ends, this extra diameter compensating for any irregularities in the shape of the can bodies, that is to say, some of the can bodies may be slightly flattened when they arrive at the feeding point and if the shorter diameter is perpendicular to said feed wheel the feed wheel 6 will be of sufficient diameter to reach into the run-way and contact therewith, while if otherwise the feeding action will not be interfered with by reason of the larger diameter of the wheel 6 because the resiliency of said bodies will insure a proper feeding action on the part of the feed wheel.

In the present machine, like that disclosed in the patent above referred to, I employ discharge arms 25, which give the can a discharging impulse. As my present machine runs at a high rate of speed, I have also provided means which will prevent the can from being carried around by the rapidly rotating headers. Another undesirable effect which arises from the rapid rotation of the headers is that the discharged can is apt to rebound when it strikes the discharge chute and return into a position between the headers. The means which I employ to prevent these effects consists of an arm 26 carried by a bracket or arm 27 fixed to a shaft 28, which shaft has its bearing in a bracket or brackets 29 extending from the frame. On this shaft an arm 30 is fixed to which is connected the arm 31 of an eccentric strap 32, the eccentric of which is on the central shaft of the machine. This arm, 26 is moved by the action of the eccentric from the position shown in Fig. 1 to the position shown in Fig. 3 when the can is about to be discharged by the action of the discharge arms 25, and thus the complete removal of the can from the headers is insured.

As in my former machine, I employ a driving pin 33 connecting the headers and communicating rotary motion from one header to the other. This driving pin revolves about the central shaft of the machine as the headers rotate and the arm 26 is given the movement above described in order to avoid contact with the driving pin.

In my present invention, consisting fundamentally of means for positively feeding the can members to the headers or heading machine, it will be understood I do not limit myself to the form of feeding devices above described, as the invention may be carried out in other ways.

It will be observed that the controlling arms 15 when they move toward the feeding wheels to cause the feeding action to be performed, also serve as arresting or stop means for the succeeding can members or ends.

The alining jaws I prefer to make with removable and interchangeable portions so as to suit cans of different diameter. I show in Fig. 4 one of these arms having a seat at 34 to receive the jaw member proper 35. This jaw member may be of different forms to suit different diameters of cans, the segment or edge for engaging the can being indicated at 36. These pieces 35 are removably secured by the screws 37 to the main portion of the jaw and are thus capable of being removed and replaced by jaw members adapted to other sizes of cans.

It will be understood that the arm 23 obstructs the path of the can ends so that only one end or head can drop down into the heading mechanism at a time. Were this arm not employed, a second or third can end might drop into the heading mechanism, there being space laterally at the foot of the chute for this to occur. The bodies, however, having considerable horizontal length can enter the header only one at a time and therefore no provision is necessary to obstruct the passage of a second can body into the header when the first body is in place.

It will be noticed that the cam 24 extends approximately three-quarters around the circumference of the header so that as soon as the jaws with their opening have fairly passed the foot of the chute, the can members will be allowed to take their place on the periphery for the succeeding action.

What I claim is:

1. In combination in a can heading machine, heading means, a chute for directing the can members to the heading means, and having its end disposed directly at the said heading means to deliver the cans directly thereto, and power driven feeding

means for forcibly feeding the can members from the chute into the heading means, said feeding means rotating in one direction only, substantially as described.

2. In combination with the rotary heading means having an open side to receive the can member, a power feed consisting of the member to engage the can member, and means for driving the rotary member rotating in one direction only, to force the can members into the open side of the rotary heading means whenever the open side is prevented to receive said members substantially as described.

3. In combination, the can heading means, a chute for directing the can members thereto, a rotary member to engage the can members to forcibly feed the same from the chute, into the heading means and rotating in one direction only, and driving means for the rotary member or members, substantially as described.

4. In combination, the heading means, the chute, a series of disks to engage respectively the can body and the heads, and means for driving the said disks, substantially as described.

5. In combination, can heading means, a chute for directing the can members thereto, a series of disks to engage the can body and heads respectively, and means for driving the said disks, the body disk being of greater diameter than the disks which engage the can heads, substantially as described.

6. In combination, can heading means, a chute for directing the can members thereto, feeding means yieldingly supported and engaging the can members to forcibly feed the same from the chute to the can heading means, and driving means for the feeding means, substantially as described.

7. In combination, can heading means, a chute for directing the can members thereto, a series of disks for engaging respectively the can bodies and heads, said disks being yieldingly supported, and means for driving the disks, substantially as described.

8. In combination in a can heading machine, can heading means, a chute for directing the can members thereto, constantly rotating feeding means rotating in one direction only, driving means therefor for forcibly feeding the can members from the chute to the heading means, and controlling means to engage the can members as they arrive at the feeding point with automatic means for operating the said controlling means, substantially as described.

9. In combination with the rotary heading members, a chute for directing the can members thereto, constantly rotating feeding means for engaging the can members to forcibly feed the same to the rotary heading members and rotating in one direction only, said rotary heading members carrying jaws for holding the can bodies, and controlling means for engaging the can members, said controlling means being operated when the open jaws arrive at the point to receive the can members, substantially as described.

10. In combination, heading means, power operated feeding means, a chute for directing the cans thereto, said power operating feeding means being arranged at one side of the chute and adjacent the discharge end where the chute delivers into the heading means controlling means to engage the can members, said controlling means being arranged on the side of the chute opposite the feeding means and causing the can members to assume certain positions in relation thereto, and means for operating the controlling means automatically, substantially as described.

11. In combination rotary heading means, a chute for directing the can members thereto, power operated feeding means arranged adjacent the heading members, and adjacent the discharge end of the chute, controlling means to engage the can members, and means for operating the said controlling means automatically from the rotary movement of the can heading members, substantially as described.

12. In combination with the heading members, the chute leading thereto, feeding means near the discharge end of the chute with means for driving the same, a shouldered arm or controlling member arranged on the side of the chute opposite that upon which the feeding means is located, said shoulder being adapted to contact with and arrest the can member, and means for operating the controlling means automatically, substantially as described.

13. In combination with the heading members, a chute leading thereto, power feeding devices at the discharge end of the chute, a spring controlling arm arranged at the side of the chute opposite that upon which the feeding device is located and adapted to bear on the can body, and means for controlling said arm automatically, substantially as described.

14. In combination, rotary can heading means, rotary power driven feeding means, means for pressing the can bodies thereagainst, and means for automatically retracting said pressure means, substantially as described.

15. In combination, can heading means, a chute, power driven feeding means arranged adjacent the discharge end of the chute, means located substantially opposite the feeding means for pressing the can member or members thereagainst and said means serving also to control the passage of the can member or members along the chute, and

means for operating the controlling means in time with the heading means, substantially as described.

16. In combination, a rotary header, a chute, and means controlling the feed of can members through the said chute, said controlling means being operated from the rotary header, substantially as described.

17. In combination with the rotary header, a chute, an arm projecting into the chute to control the feed of the can members therethrough, and means for withdrawing the said arm operated from the rotary header, substantially as described.

18. In combination, the heading means, a chute, a feeding device with means for operating the same to forcibly feed the cans to the heading means, a blade or spring arm 14, an arm 15, a shaft to which the arm 14 is fixed, and on which the arm 15 is loosely hung, an arm 22 operated from the movement of the header and fixed to the said shaft, and an arm 21 fixed to the shaft and having a pin and slot connection with the arm 15, substantially as described.

19. In combination, a rotary header, a chute leading thereto, means for feeding the can members from the chute into the header, driving means for the feeding means and a controlling member arranged on the opposite side the chute from that upon which the feeding means is located, the said rotary header carrying jaws for receiving the can members, and means for operating the controlling means to retract said controlling means from and move the same toward the feeding means before the jaws arrive in position to receive the can members from the chute, substantially as described.

20. In combination with a rotary header comprising the two heading members connected by a driving pin and an arm carried by a fixed support with means for operating the said arm to move in between the heading members to contact with the cans and insure their proper discharge, said arm being movable to avoid contact with the driving pin, substantially as described.

21. In combination, a can heading apparatus, heading means, a chute leading thereto to direct the can bodies and the ends, and power operated feeding means for the can bodies and ends, the said feeding means having the portion adapted to contact with the can bodies reaching a greater distance into the chute than the portions to contact with the can ends.

22. In combination, in a can heading machine, rotary headers having molds to receive the can bodies and heads, runways for directing the can bodies and heads to the rotary headers and means in frictional contact with the can bodies and heads for applying a feeding pressure thereto whereby when the open mold arrives opposite the can bodies and heads they will be forcibly fed into said open mold, substantially as described.

23. In combination in a can heading machine, rotary headers for receiving between them the can bodies and heads in axial alinement, runways, one for the can body and one for each head to discharge the can body and its head into the machine substantially in axial alinement and means for applying a feeding pressure to the can body and its head to forcibly feed the same into the header, substantially as described.

24. In combination, rotary headers having an opening at one point for the introduction of the can members between them, a runway for the can members, and means in frictional contact with the can members to apply thereto, a feeding pressure whereby when the open side of the headers arrives at the runway a can member will be forcibly fed into the headers, substantially as described.

25. In combination, a rotary header having an opening at one point for the introduction of the can members, a runway, a force feed device engaging the can member and means for rendering said force feed device effective when the opening in the headers is presented to the can member, substantially as described.

26. In combination in a can heading machine, the rotating heading means having an opening at one point to receive the can bodies and means for forcibly feeding the can bodies into the heading means when the opening is in position to receive the cans, said feeding means acting constantly upon the can bodies and said bodies bearing upon the rotating heading means until the opening arrives in position to receive the can bodies, substantially as described.

27. In combination with rotating heading means, means for forcibly feeding the can members into the same and a controlling arm coacting with the said feeding means to control the can members, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

GEO. H. STEWART.

Witnesses:
E. W. RENKIN,
E. G. HOWELL.