

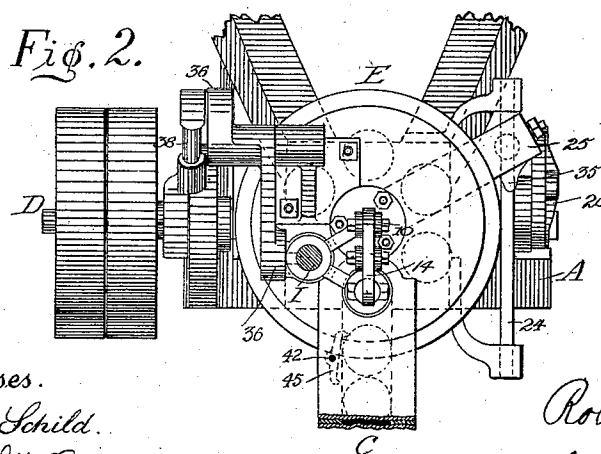
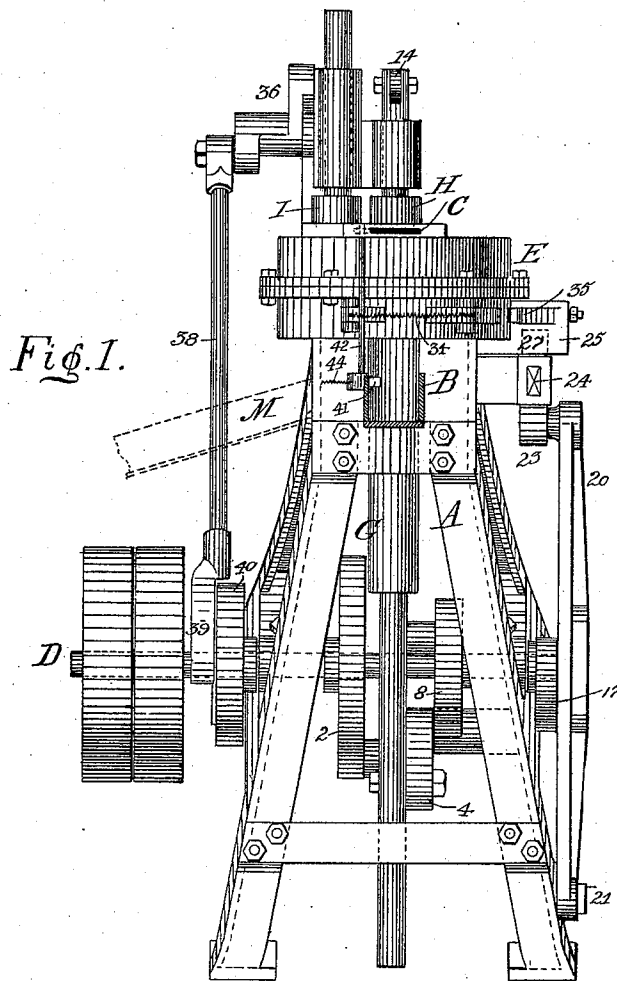
(No Model.)

3 Sheets—Sheet 1.

R. D. HUME.
CAN HEADING MACHINE.

No. 576,123.

Patented Feb. 2, 1897.



Witnesses.
Geo. F. Schild.
Francis M. Burt.

Inventor.
Robert D. Hume
by Spear & Seely
Attorneys

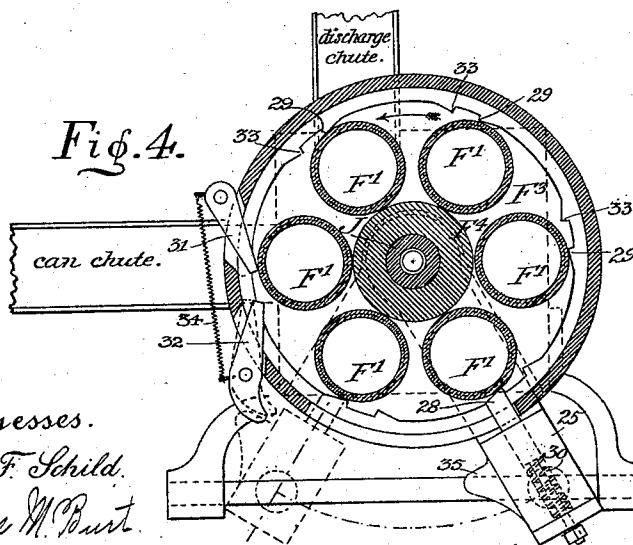
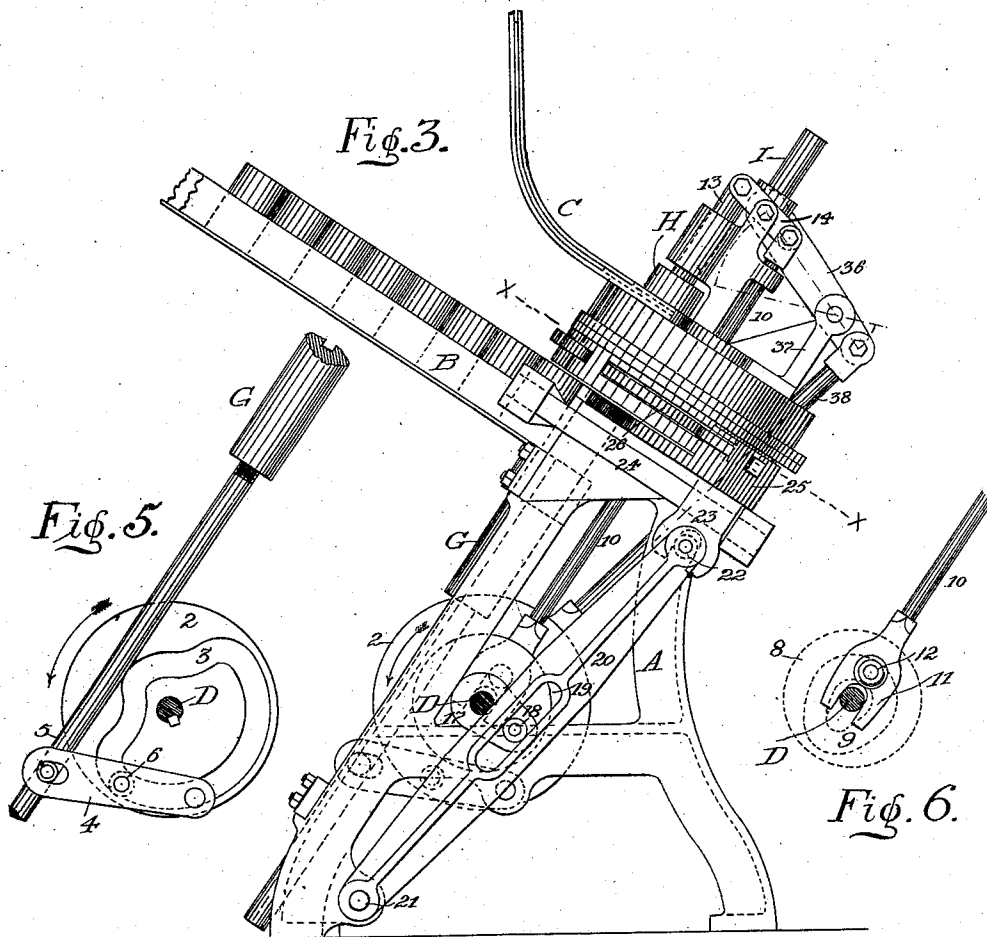
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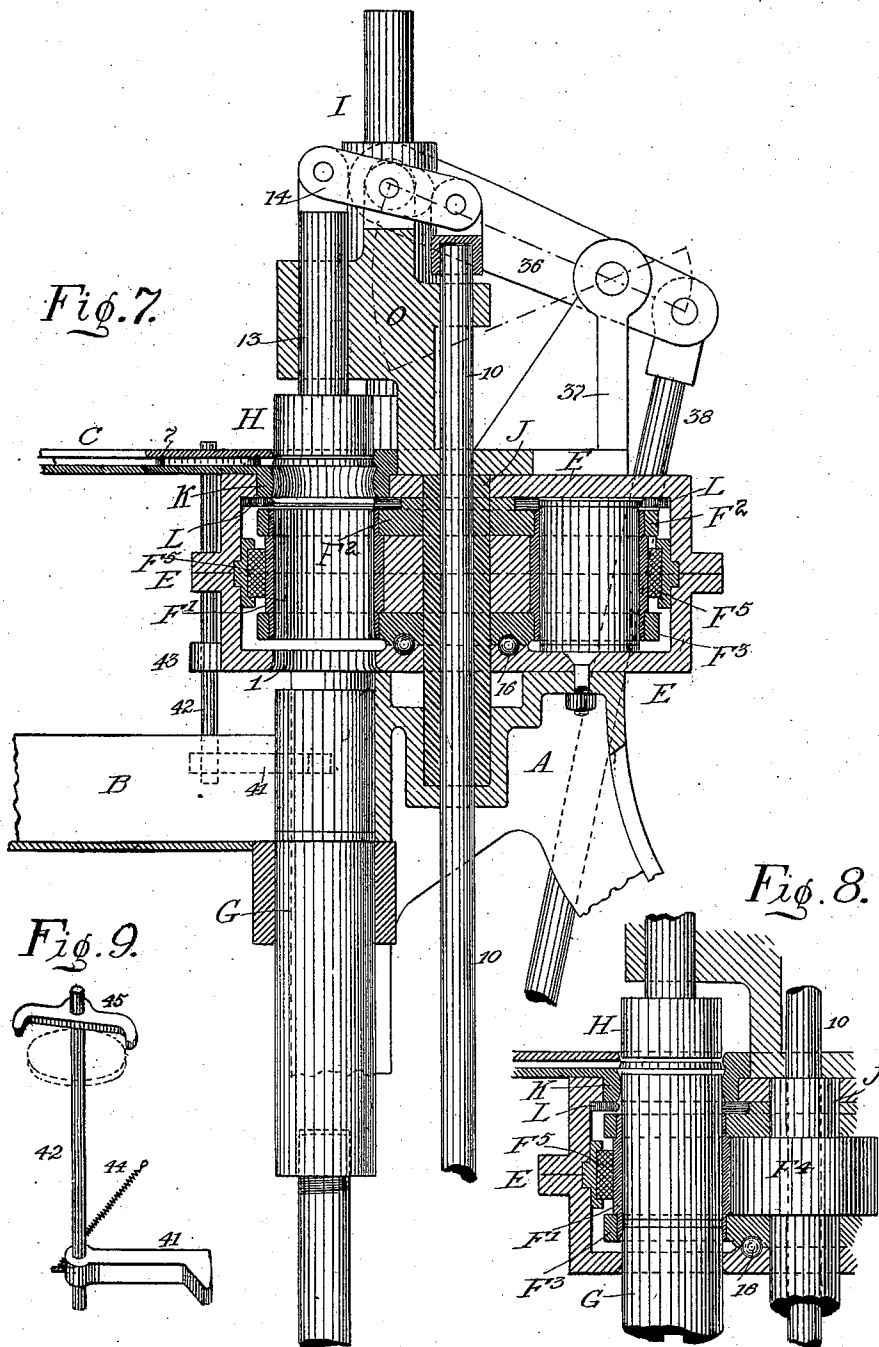
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UNITED STATES PATENT OFFICE.

ROBERT D. HUME, OF GOLD BEACH, OREGON.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 576,123, dated February 2, 1897.

Application filed June 24, 1895. Serial No. 553,850. (No model.)

To all whom it may concern:

Be it known that I, ROBERT D. HUME, a citizen of the United States, residing at Gold Beach, in the county of Curry and State of Oregon, have invented certain new and useful Improvements in Can-Heading Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to machinery for heading cans, and more particularly to the heading of cans previously filled.

My invention consists in certain new and improved features in the construction, arrangement, and means for operating the heading and head-crimping mechanisms and for giving the proper and necessary movements to the cans and can-heads and for discharging the headed cans. These various novel features will be fully hereinafter described, and to assist in their comprehension reference is made to the accompanying drawings, in connection with which this specification should be read, and in which—

Figure 1 is a front elevation of the complete machine. Fig. 2 is a plan view. Fig. 3 is a side elevation. Fig. 4 is a horizontal section of the crimper on line *xx* of Fig. 3. Fig. 5 is an elevation of the cam which operates the plunger for feeding the cans. Fig. 6 is an elevation of the cam for operating the heading-ram. Fig. 7 is an enlarged vertical section of the machine. Fig. 8 is a detail section of the heading mechanism as it appears at the end of the upward stroke of the can-feeding piston and should be compared with Fig. 7. Fig. 9 is a detail perspective of the can-head controller or feeding device.

The machine is supported by a frame A, which is preferably inclined from the perpendicular in order to permit the can-feeding chute B and the can-head chute C to feed cans and heads effectively by gravity on lines at right angles to the inclination of the frame. This inclination of the frame, as a matter of convenience in delineation, is not shown in Figs. 7 and 8. Power is transmitted to the heading, crimping, and discharging devices by a shaft D, journaled in the frame and provided with power-pulleys.

On the top of the frame or table A is bolted a hollow casing E, within which the can-carrier F rotates intermittingly through connec-

tions to be hereinafter described. The rotary carrier receives the cans successively from their feed-chutes, holds them in separate chambers while their heads are being applied, and carries them around to a point of discharge, the crimping of the heads being done during the revolution. Each can is received from the chute above a plunger G, driven from the shaft D, and the upward stroke of this plunger pushes the can through an opening 1 in the casing E and into and a little beyond one of the chambers in the rotary carrier, Fig. 8. The can-head chute supplies the heads successively to a position in line with and above such opening and chamber. The head is forced upon the can by an oppositely-acting heading-ram H, driven from above, and which by the same stroke places the now headed can accurately in the rotary carrier. The can is now revolved with the carrier and at the same time rotated upon its own axis in contact with a crimping rim or edge, which crimps or creases the flange upon the body. The can while being crimped travels intermittingly to a point of discharge, at which point a plunger I pushes it out of the carrier with the heading completed. The intermittent rotation enables the single can-carrier to perform two functions—first, while stationary to receive the cans and hold them in line while the heads are being applied, and, second, while traveling to bring an empty chamber in line with the feeding-plunger, as well as to act as an essential part of the crimping mechanism. This I regard as a very important improvement, inasmuch as I dispense with independent crimping devices and with means commonly employed for carrying the cans from the header to such devices. The construction is exceedingly compact and simple, enabling me to make a very small machine at a low cost and to head the cans very rapidly and accurately.

Taking the different mechanisms in their proper sequence of operation, the feeding piston or plunger G is driven from the shaft D by a disk 2, keyed to the shaft and having a cam-groove 3, Figs. 1 and 5. A lever 4 is pivoted in the frame and to the stem 5 of the plunger and is provided with a stud or roller 6, which enters the cam-groove in the disk 2. The shape of the cam-groove is such as to

cause an intermittent reciprocation of the plunger, although the cam revolves steadily with the shaft. The can fed in from the chute above the plunger is pushed upward by the latter and into one of the shells or chambers F' of the carrier F . These shells are open-ended tubes held between the plates F^2 F^3 , which compose the carrier, and six of them are shown in the drawings. A loose friction-roller F^4 is mounted upon a central sleeve J , and a friction-ring F^5 , of rubber or other suitable material, is secured in the casing E and bears upon all the can-chambers F' . It is evident that while the carrier as a whole is being revolved each chamber F' will be individually rotated, at the same time traveling with the carrier. Now referring to Figs. 7 and 8, the plunger G pushes a can into one of these chambers until it projects a little beyond such chamber, Fig. 8. Just above the chamber is secured the swaging-plate K . This plate is a solid ring, the inner periphery of which is of a convex shape, as shown, and it is provided with a slot 7, which registers with the mouth of the can-head-feed chute. The heads cannot drop through this ring, but can be forced through by the heading-ram H . The convex curve of the ring, in connection with the straight wall of the can, insures the accurate placing of the head upon the can. The heading-ram is operated by a disk 8 on the driving-shaft, having a cam-groove 9. The rod 10 of this ram has a fork 11, which straddles the driving-shaft, and has a roller 12, that enters the groove 9. The connecting-rod can pass centrally through the sleeve J and be connected at the top with a lever 14, which in turn is pivoted to the stem 13 of the heading-ram. The movements of the cams are so timed that the heading-ram places the head upon the can and then follows the feeding plunger down, pushing the can backward until it is accurately set in the carrier, beyond which it has hitherto projected a little, Fig. 8; but since there is now a continuous opening from top to bottom through the can-carrier and its inclosing casing I must provide some means for stopping the can and preventing it from retreating out of the carrier. I do this in a very simple and effective manner without additional mechanism of any character in the way of stops or the like by shaping the cam-groove which operates the feeding-plunger so that for a brief interval it shall cease to be effective during the descent of the feeding-plunger. The result is that the feeding-plunger stops an instant at the bottom of the carrier, and in that instant the carrier commences to revolve a step and carries the can off the plunger and out of line with the opening 1 in the casing E . The plunger G immediately resumes its descent to the end of its stroke below the can-chute.

The crimping of the can-head is accomplished by the revolution of the can-carrier and by the independent rotation of the individual can-chambers F' between the fric-

tional surfaces before described. The lower plate F^3 has preferably a ball-bearing 16 upon the casing E , in order to insure an easy and steady motion. A stationary circular crimping rim or edge L extends around the inner periphery of the casing E , which bears upon the head-flange, the latter projecting slightly from its chamber F' . The combined rotation and revolution of the chamber brings the rim to bear upon the whole length of the flange, forming a continuous crease.

A step-by-step motion is given the can-carrier by devices and connections shown in Figs. 2, 3, and 4. On the end of the driving-shaft is a crank 17, having a roller 18, which engages with a long slot 19 in the lever 20. The lever is pivoted by its lower end to the frame of the machine at 21. The direct oscillation of this lever is transmitted through proper connections, so as to produce a rotary movement of the can-carrier. At the upper end of the lever 20 is a roller 22, which is inclosed by the slide 23, which reciprocates upon the straight guide rod or bar 24 on the machine-frame. The swinging crimper-arm 25 enters a slot 26 in the casing E and has a bearing on the central sleeve or hollow shaft before referred to. This arm is connected to the lever 20 by a roller 27, (dotted lines, Fig. 1.) These connections permit the arm to swing radially while the slide moves in a right line. The outer end of the arm 25 carries a spring-pawl 28, Fig. 4, which enters the casing E and engages with the peripheral notches 29 in the edge of the carrier-plate F^3 . The spring 30 forces the pawl constantly inward, but yields to permit the pawl to follow the arc of the carrier as the arm 25 swings. Two holding-pawls 31 32 are provided for holding the carrier perfectly stationary and steady while the heading is being done. These pawls are respectively held in against the notches 29 and reversely-placed notches 33 by a spring 34, and the swinging arm 25 has a projection 35, which, at the end of its back or ineffective stroke, strikes and disengages the pawl 32 until the forward movement of the carrier has commenced. Each can is thus carried around by the intermittent movement of the carrier until the chamber which holds it arrives above the discharge-chute M , at which point an opening is made in the bottom of the casing E . The headed and crimped cans are successively forced out of their holding-chambers by the discharge-plunger I . The connections for operating this plunger are like those for operating the heading-plunger. To the stem of the plunger is connected a lever 36, pivoted in the standard 37 of the bracket O . The bracket is secured to the top of the machine and is provided with guides for the heading and discharging plungers. A connecting-rod 38 extends downward from the lever 36 and is provided at the lower end with a fork 39, which straddles the driving-shaft and has a roller which enters a cam-groove in the disk 40 on such shaft.

Figs. 1, 2, 7, and 9 show the device for regulating the feed of can-heads from their chute to the machine, which device is operated by the incoming cans. A dog 41 on an oscillating stem 42, pivoted in a projection 43 of the crimper-casing E, is held by a spring 44 in the path of the cans as they come down the feed-chute, Figs. 1 and 7. On the upper end of the stem 44 is a double pawl 45, which projects into the can-head chute, Fig. 2. When the dog 41 is struck by the can, one arm of the pawl will release the first can-head, while the other arm will be caused to project inward and retain the succeeding head. Fig. 2 shows in dotted lines the position of the parts at the time when the first can-head is about to be released. This device prevents any crowding of the can-heads at their delivery and enables the chute to be kept filled, since only a single head can be delivered, and this simultaneously with the entrance of the can to the header.

What I claim is—

1. In a can-heading machine and in combination, a can-feeding plunger, an oppositely-acting heading-ram, an intermittently-rotating can holder and carrier, and a crimping-rim surrounding said holder and carrier, substantially as described.

2. In a can-heading machine and in combination, a can-feeding plunger, an oppositely-acting heading-ram, a casing carrying a circular crimping-rim, and an intermittently-moving can holder and carrier alternately stationary and movable, substantially as described.

3. In a can-heading machine and in combination, a can-feeding plunger, an oppositely-acting heading-ram, an intermediate can holder and carrier alternately stationary and movable, independently-rotatable can-chambers in said carrier and a crimping-rim, substantially as described.

4. In a can-heading machine, and in combination, a fixed casing having openings in line, oppositely-acting plungers working through said openings, a can holder and carrier having independent chambers adapted to register successively with said openings, means for moving said holder and carrier intermittently, and a circular crimping-rim, secured to said casing, substantially as described.

5. In a can-heading machine, the combination with oppositely-acting feeding and heading plungers, of an intermediate can-holder, and a fixed swaging-ring having a convex inner periphery, substantially as and for the purposes set forth.

6. In a can-heading machine and in combination, a feeding-plunger, a heading-ram in line therewith, an intermediate movable

can holder and carrier, having tubular chambers adapted to be alined with said plungers, a crimping-rim, and connections for causing the following operations: the feeding of a can into and partly through one of said chambers and the placing of a can-head in line therewith; the withdrawal of the feeding-plunger to the entrance-opening of said chamber and its momentary stoppage there, and the simultaneous advance of the heading-ram in its heading movement; the partial rotation of the can-carrier, and the complete withdrawal of both plunger and heading-ram, substantially as described.

7. In a can-heading machine, a table, a crimper-casing mounted thereon and having a continuous crimping-rim, a can holder and carrier within said casing intermittently movable, a can-feeding plunger, a heading-ram, a discharging-plunger, a driving-shaft, and connections from said shaft for operating said plungers and for moving said carrier, substantially as described.

8. In combination with a casing E having a crimping-ring, and a friction-ring, a central friction-roller, a can-carrier, and tubular can-holders loose in said carrier and having a bearing upon said friction-roller and friction-ring, substantially as described.

9. In a can-heading machine and in combination, a frame or table, a hollow sleeve supported thereby, a casing having an interior crimping-rim, a friction-roller having a bearing on said sleeve, and a rotary can-carrier within the casing having independently-rotatable can-chambers bearing upon said casing and said friction-roller, substantially as described.

10. In combination with the rotary can-carrier, and with heading and crimping mechanism acting in conjunction therewith, a driving-shaft, an oscillating lever, a swinging arm carrying a yielding pawl, and a universal connection between said lever and said arm for transferring the direct oscillation of the lever to an arc swing of said arm, substantially as described.

11. In combination, the rotary can-carrier, heading and crimping mechanism operating in conjunction therewith, a driving-shaft, an oscillating lever, a reciprocating slide having a roller connection with said lever, a swinging arm having a roller connection with said slide, and a yielding pawl connected to said swinging arm, substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 8th day of April, 1895.

ROBERT D. HUME.

Witnesses:

L. W. SEELY,
JAMES L. KING.