

(No Model.)

2 Sheets—Sheet 1.

R. D. HUME.
CAN HEADING MACHINE.

No. 576,125.

Patented Feb. 2, 1897.

Fig. 1.

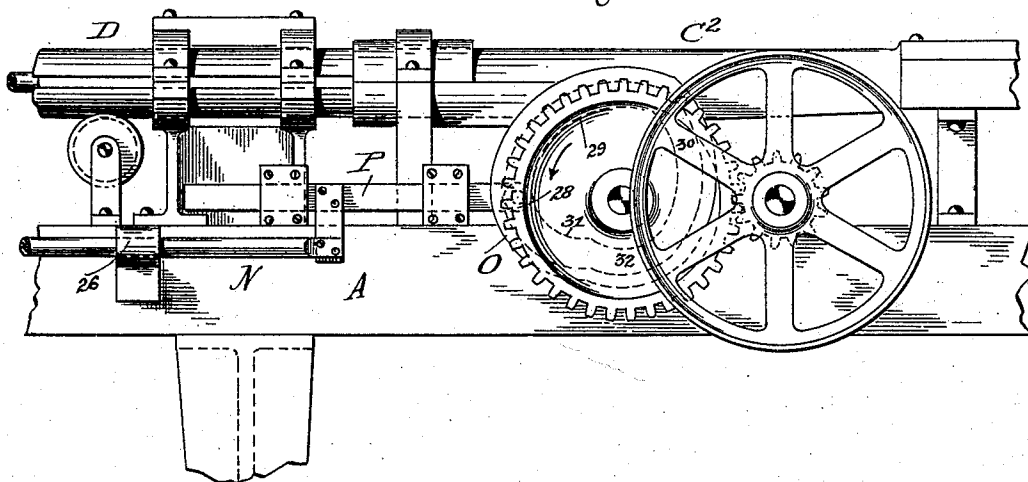
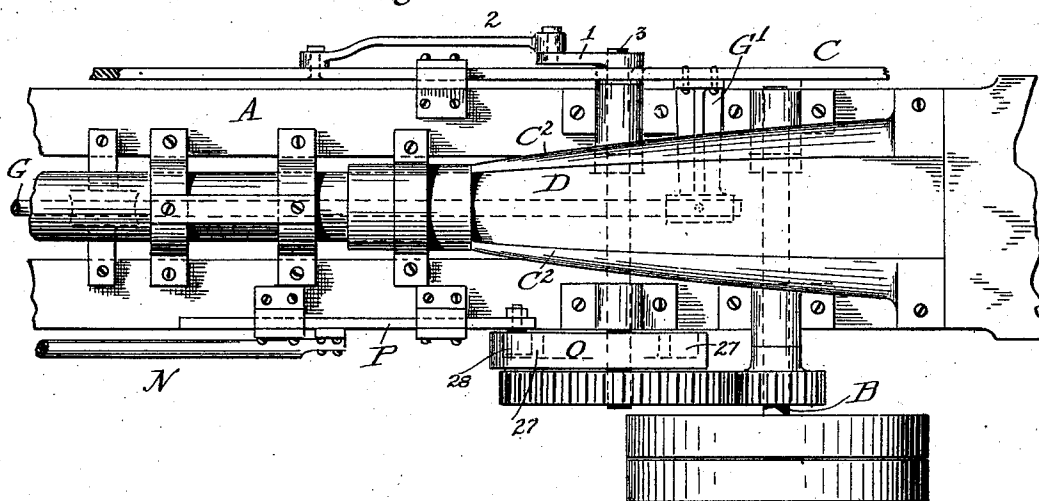


Fig. 2.



Witnesses.

H. Hartwerde.
M. Reedy

Inventor.

Robert D. Hume
by *Spaul & Seely*
Attorneys

R. D. HUME.
CAN HEADING MACHINE.

No. 576,125.

Patented Feb. 2, 1897.

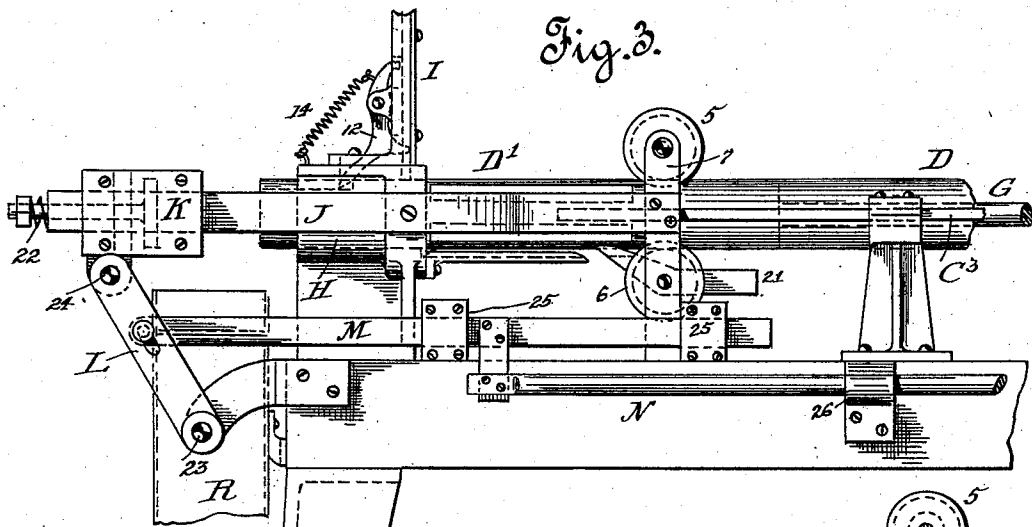


Fig. 7.

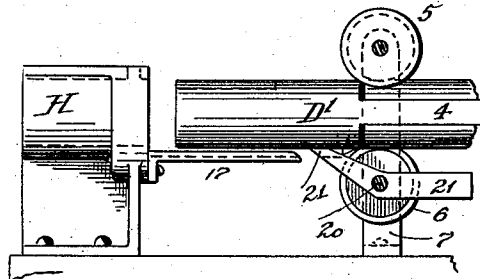


Fig. 4.

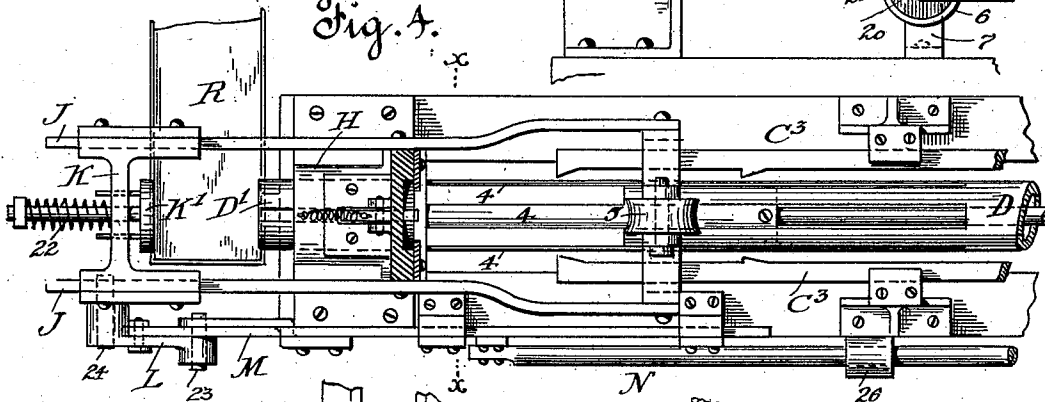


Fig. 5.

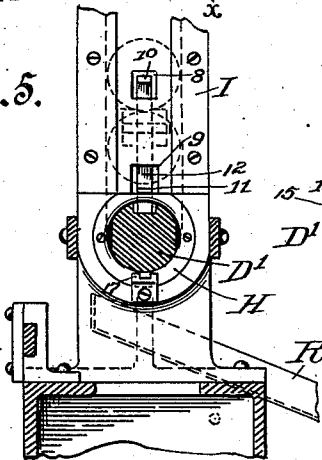
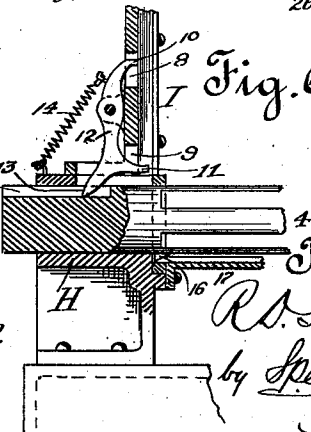


Fig. 6.



Witnesses.

J. Fontenay

M. R. Seely

Inventor.

R. D. Hume

by Spear & Seely
Attorneys

UNITED STATES PATENT OFFICE.

ROBERT DENISTON HUME, OF GOLD BEACH, OREGON.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 576,125, dated February 2, 1897.

Application filed April 2, 1896. Serial No. 585,935. (No model.)

To all whom it may concern:

Be it known that I, ROBERT DENISTON 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 improvements in the manufacture of sheet-metal cans, and more particularly to the placing of heads upon tubular can-bodies and to the automatic supplying of the heads to a position in line with the means which supply the can-bodies.

My present improvements are particularly adapted to form a part of automatic can-making machinery in which the whole can is formed and headed in a single machine, and it is in connection with a machine of this character that I have hereinafter described it, and have shown it in the accompanying drawings, in which—

Figure 1 is a side elevation of the body-forming portion of a can-machine shown for the purpose of illustrating the driving of the heading mechanism. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the heading mechanism. Fig. 4 is a plan of the same with the can-head chute in horizontal section. Fig. 5 is a cross-section on line *xx* of Fig. 4. Fig. 6 is a longitudinal section of the heading-chamber. Fig. 7 is a side elevation showing the telescopic extension of the horn withdrawn from the heading-chamber.

By comparing Figs. 1 and 2 of the drawings with Figs. 3 and 4 it will be seen that I have represented parts of a can-machine of the general character represented, for instance, in applications for Letters Patent filed by me December 1, 1894, and December 10, 1894, and serially numbered, respectively, 530,590 and 531,386.

The principal part of the present invention relates to the header, which is located at the end of a prolongation of the body-forming horn D.

Since certain parts of the heading mechanism are driven by a shaft, which I prefer to place near the feed end of the machine, I have shown such shaft and its connections in Figs. 1 and 2.

Any parts of a can-machine not shown in the drawings but located between the structures of Fig. 1 and of Fig. 3 form no part of the present invention. Such parts, if used, would be the side-seam-soldering mechanism, which may or may not form a part of the whole machine, according to the kind of can being made by it. In any case a tubular can-body is formed from a sheet of metal fed between the tapering horn D and the adjacent sheaths C² in a manner fully explained in the applications referred to. The horn D is prolonged from the tapering part, as shown, and is hollow throughout its length. The tubular can-bodies are propelled along the horn by suitable carriers operated by the side bar C, which is shown as driven by a crank 1 and pitman 2 from the shaft 3, which is geared down from the main driving-shaft B. All these parts are supported upon a long frame or table A. The forward end of the horn nearest the header is provided with a movable telescopic extension D' of the kind shown in my aforesaid application, Serial No. 530,590. This extension or plunger is operated by a rod G, working in the hollow horn and connected by a cross-head G' to the side bar C, Fig. 2.

The plunger is provided with guides 4, sliding in grooves in the extremity of the horn, and when the two are closed together an unbroken continuous surface is produced, so that the carriers C³, Fig. 4, transfer the can-bodies successively from the horn to the plunger. The sides of the plunger are slightly flattened, as shown in Fig. 5, so that the cylindrical can-bodies project a little and thus render the operation of the carriers certain. The plunger is guided in its motion by upper and lower bearing-rollers 5 6, journaled in a standard or bracket 7, supported upon the main frame. The plunger carries the can-bodies successively into the heading-chamber H, which is a tubular structure open at both ends, and upon and above which is mounted the can-head chute I. The entrance of the plunger into the heading-chamber (provided a can-body enters with it) operates the retaining and releasing device for the can-heads. (Best shown in Figs. 5 and 6.) The can-head chute has perforations at 8 and 9, into which alternately project the ends 10 and 11

of a pivoted lever 12, having a dog 13 and held in normal position (that of Fig. 6) by a spring 14, that is, with the end 11 projecting into the chute. When the can-body upon the plunger enters the header, it strikes the dog 13, which projects through a slot into the heading-chamber, and thus causes the end 11 to withdraw from the chute. When the plunger has withdrawn from the heading-chamber, the lower can-head of the series falls to its position opposite the end of the chamber; but the spring 14 acts as soon as the plunger has withdrawn, and so the can-head next above is caught by the end 11 and prevented from following into the heading-chamber. While the chute is opened for the escape of a can-head, the end 10 of the latch holds back all the can-heads in the upper part of the chute. The plunger is provided with a longitudinal slot 15, so that if no can should be upon it no effect will be produced upon the can-head feed by the entrance of the empty plunger. Each can-body on passing from the main part of the horn to the plunger depresses a yielding latch 16, pivoted in a slot in the extension, the latch springing up behind the can-body and causing the latter to be carried forward with the plunger.

In order to insure the accurate entrance of the can-body into the heading-chamber, and to prevent any sagging of its lower edge from affecting such accurate entrance, I provide a grooved guideway 17, which is secured to the end of the heading-chamber and which projects back in line with the plunger. The lower edge of the can-body passes above this guide, while the groove in the latter permits the latch 16 to move freely with the plunger. The roller 6, by which the plunger is supported and guided below, is composed of two parts mounted upon a pin 20 a little distance apart. Between these parts of the roller is pivoted a stop 21, weighted so as to project upward against the plunger, and which prevents backward movement by any can-body on the plunger. This stop is depressed by each can-body successively and returns to the position behind such can-bodies. The sequence of operation performed is thus: First, the entry of the plunger into the header, carrying a can-body, and the opening of the feed-chute; the withdrawal of the plunger and the simultaneous fall of the can-head in line with it; the advance of the plunger again, driving the head upon the can-body, pushing the headed body through the chamber, and placing another can-body therein.

The heading action of the plunger, which telescopes the head upon the body, is performed in connection with a movable abutment-plate which alternately closes and withdraws from the discharge end of the heading-chamber.

Secured to the main frame on opposite sides of the header are guides J, which project forward of the machine. On these guides is a sliding cross-head K, in which is mounted an

independently-yielding disk K', having a pressure-spring 22, which tends to force it into the position shown in Fig. 4. A link L is pivoted at 23 to the main frame and at 24 to the cross-head K. A bar M is connected by a slot and pin to this link and slides in guides 25 on the main frame. Connected to this bar is a long reciprocating rod N, working in guides 26, and which extends along the side of the machine and back to the driving mechanism, Figs. 1 and 2. On the driven shaft 3 is mounted a disk O, having a cam-groove 27, the shaft of which is clearly shown in Fig. 1. On the rod N, or on a slide-bar P secured to it, is a roller 28, which travels in this groove. Taking the parts in the position of Fig. 1, with the cam moving in the direction of the arrow and the side bar C about to pull the plunger out of the header, it will be seen that the cross-head K is at the limit of its outward movement and entirely separated from the heading-chamber by a wide space. As the plunger commences to recede the cross-head is stationary and remains stationary during a part of the revolution of the cam a distance represented by the concentric curve 29 of the cam-groove. This curve changes to an eccentric curve 30, which through the connections described causes the cross-head to approach the heading-chamber until when the cam has made half a revolution the cross-head has brought the disk K' up to the mouth of the heading-chamber, at which time, also, the plunger has been telescoped into the horn. The cross-head and disk remain stationary, the curve 32 being concentric, while the plunger enters the chamber again and pushes the head upon the body in the chamber. The eccentric curve 31 of the cam-groove causes the cross-head and disk to retreat in advance of and at the same speed as the plunger, which continues its stroke, pushing the headed can, which is supported and held between the moving plunger and the slide, on through the chamber. When the position of Fig. 3 is established, the plunger commences to retreat, leaving a space through which the headed can falls into the chute R or other receptacle.

It will be observed that the yielding disk K' allows the ram to expand a little, as it may do when heated, without interfering with the accuracy of the heading operation.

What I claim is—

1. In a can-heading machine, the combination with the heading-chamber of a plunger adapted to enter said chamber, a can-head feed, a movable abutment for closing the opposite end of the chamber, and a driving-shaft for operating said plunger and said abutment, substantially as described.

2. In a can-heading machine the combination with the heading-chamber, of a plunger, adapted to enter and pass through said chamber, a can-head, a movable abutment having a yielding disk, a driving-shaft and connections for operating said plunger and said abutment, substantially as described.

3. In a can-heading machine, and in combination, a combined can-body feeding and heading plunger; a can-heading chamber, having open ends and devices for feeding can-heads to said chamber; a movable abutment adapted to alternately close and open one end of the heading-chamber, and means for moving said plunger and abutment so that the following operations take place automatically: the entrance of the plunger into said chamber, and its withdrawal leaving a can-body therein; the descent of a can-head to a position in line with the plunger, and advance of the abutment to close the discharging end of the chamber; the advance of the plunger placing the said head upon the said can-body, and driving the headed can through the chamber, and the simultaneous withdrawal of the abutment, while the headed can is held between the plunger and the abutment, substantially as described.

4. In a can-heading machine, and in combination with a heading-chamber and can-head-feeding devices; a plunger having a constant reciprocation into and out of one end of said chamber, a movable abutment, having an inconstant reciprocation toward and away from the other end of said chamber, and a cam for imparting such movement to the abutment; whereby after the can is headed the plunger and abutment move simultaneously carrying and supporting the can between them out of the heading-chamber, and then release it, substantially as described.

5. In a can-heading machine, a longitudinally-movable can-body-feeding plunger of cylindrical cross-section slightly flattened on opposite sides substantially as and for the purposes set forth.

6. In a can-making machine, a body-forming horn, prolonged and having at its end a movable extension, a heading-chamber, a can-

head feed, and a movable abutment, and means for operating said extension and said abutment, whereby said abutment closes the heading-chamber while the head is being placed upon the can-body, and afterward, in connection with the extension, forms a movable clamp for the headed can being pushed out of the heading-chamber, substantially as described.

7. In combination with the main frame and heading-chamber supported thereby, guides J, a slide K, carried thereby, and having a yielding disk K', a cam-wheel O, and connecting-rods from said cam-wheel to said slide, and imparting an inconstant reciprocation to said slide, substantially as described.

8. In a can-heading machine, the combination with a reciprocating feeding and heading plunger, of a roller supporting said plunger, and a stop on the axis of said roller held in contact with said plunger, substantially as described.

9. In a can-heading machine, the combination with the heading-chamber and with the can-head feed-chute, of a pivoted lever having two arms adapted to alternately enter the chute, a dog projecting from such lever into the heading-chamber, and a movable plunger which is a combined can-body carrier and heading-ram, substantially as described.

10. In combination with a reciprocating plunger having the yielding stop 16, the heading-chamber, and the grooved guide 17 for said stop, substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 9th day of March, 1896.

ROBERT DENISTON HUME.

Witnesses:

L. W. SEELY,
JOHN W. HALL.