

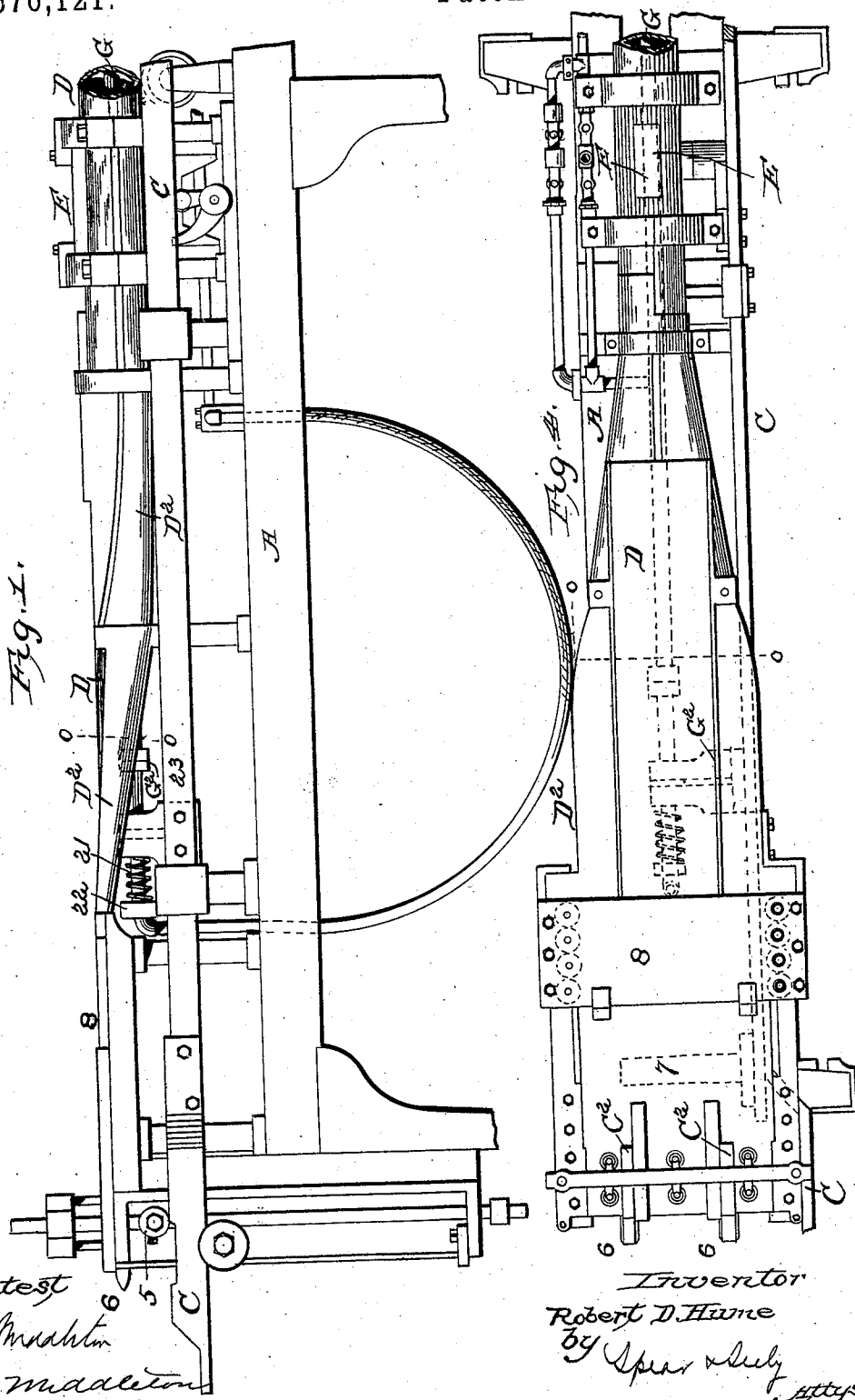
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8 Sheets—Sheet 1.

R. D. HUME.
CAN MAKING MACHINE.

No. 576,121.

Patented Feb. 2, 1897.



Attest
F. L. Maudslott
C. S. Maudslott

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by Spear & Selby
Attys.

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CAN MAKING MACHINE.

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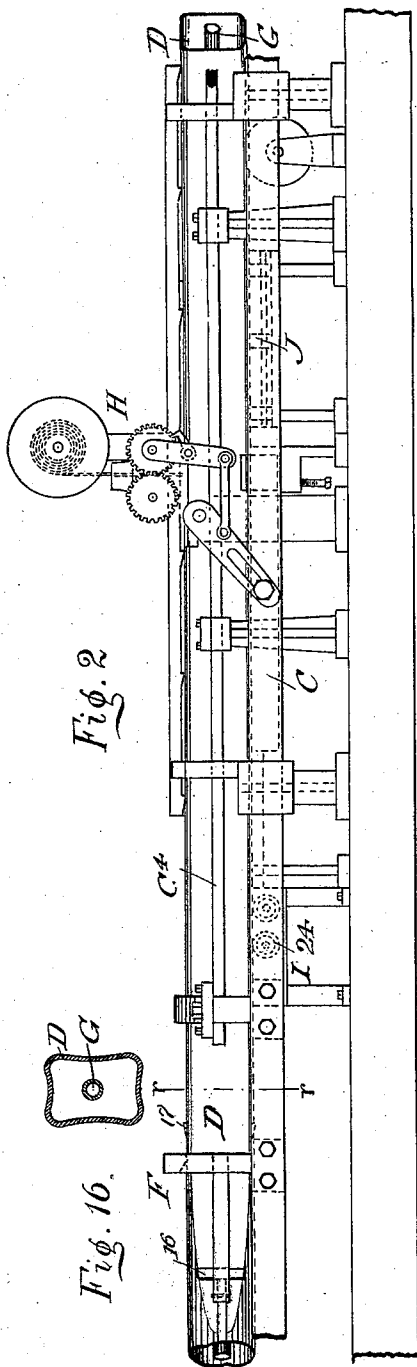


Fig. 2

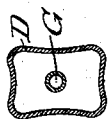


Fig. 16.

Witnesses
M. R. Seely
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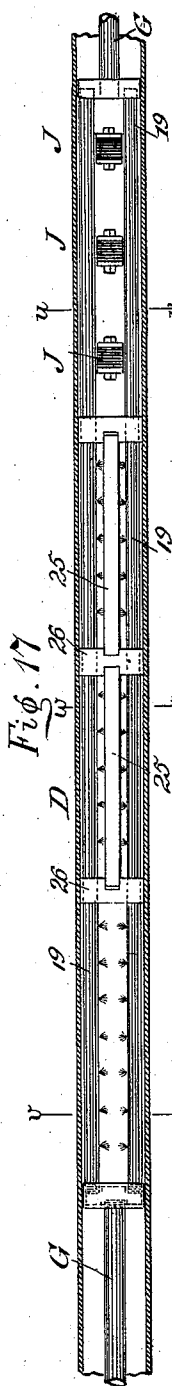


Fig. 17

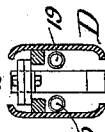


Fig. 20



Fig. 19

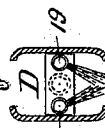


Fig. 18

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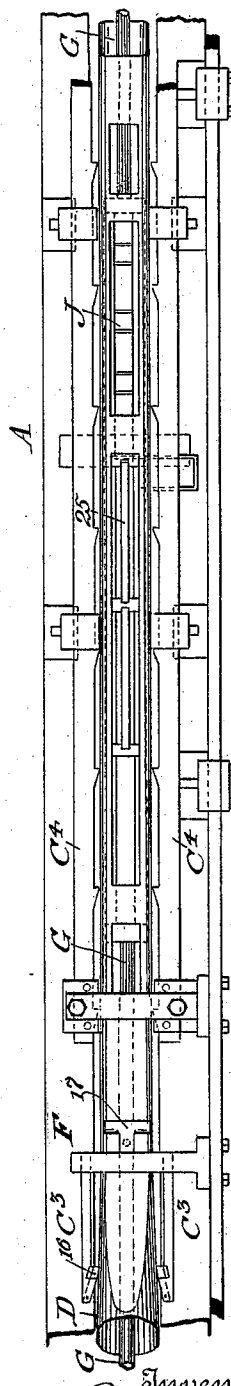


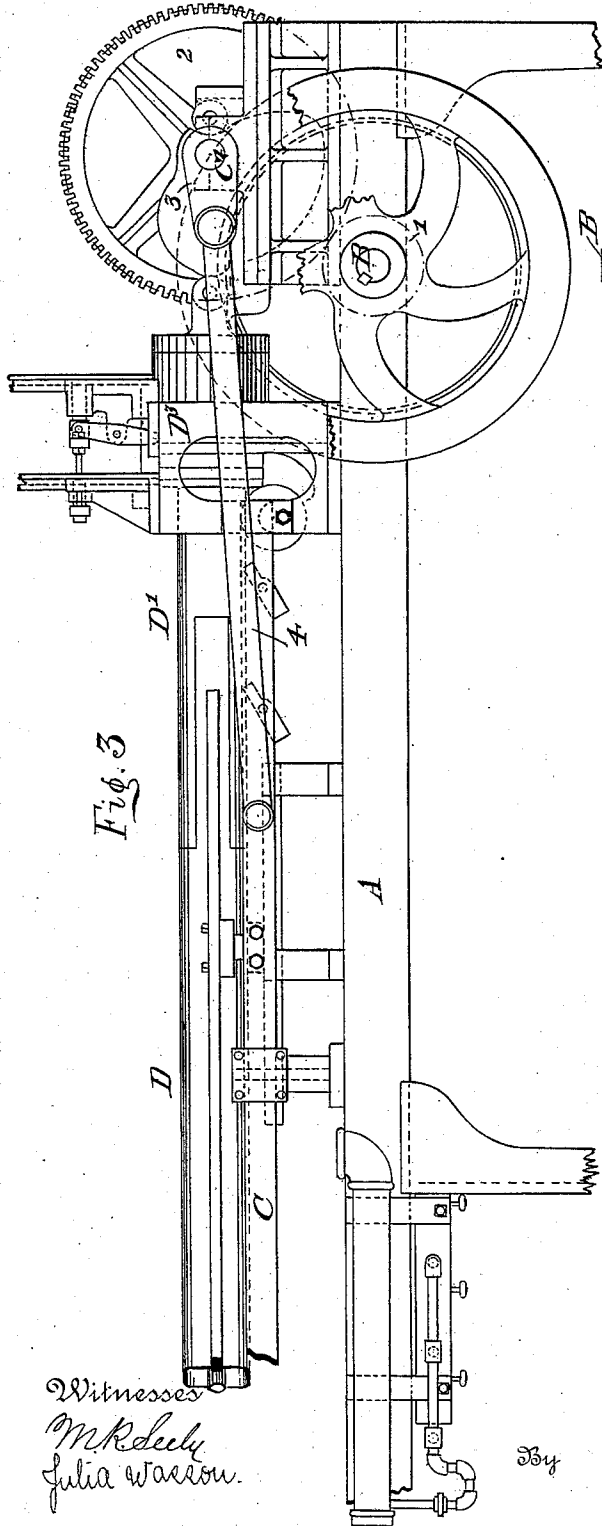
Fig. 5

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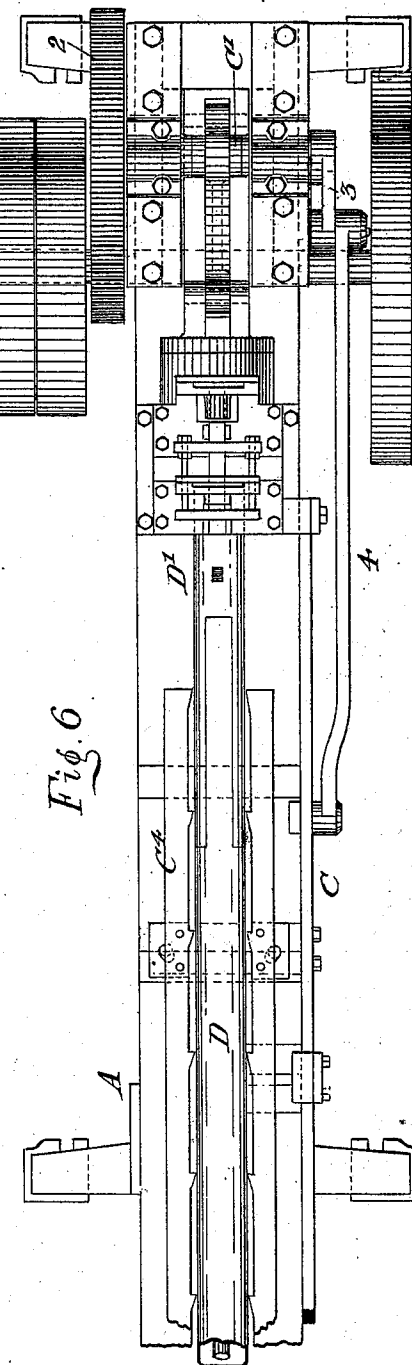
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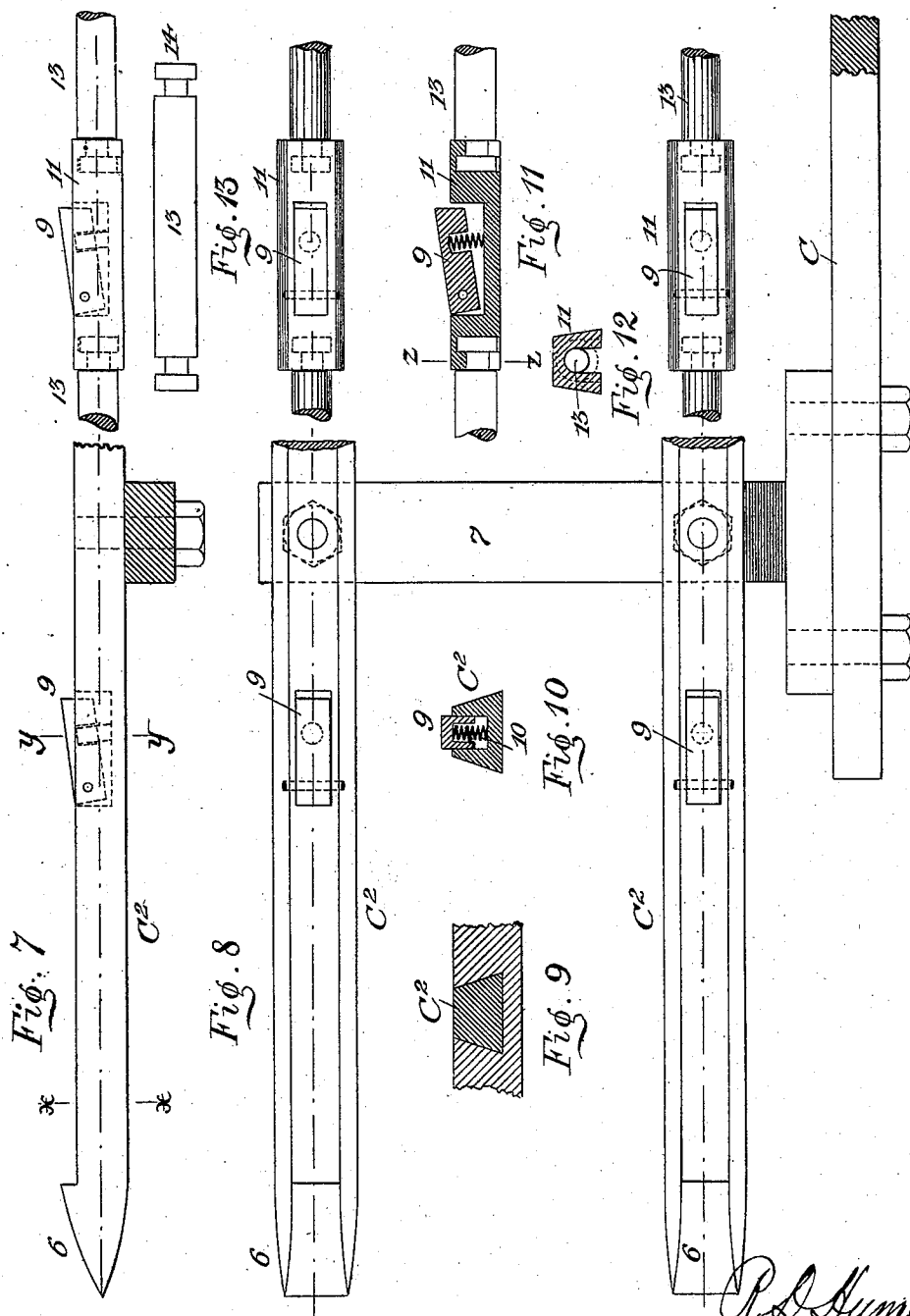
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(No Model.)

8 Sheets—Sheet 5.

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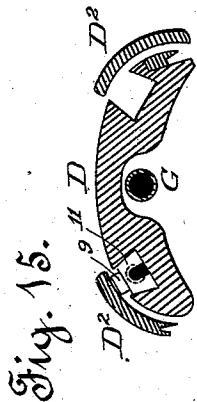
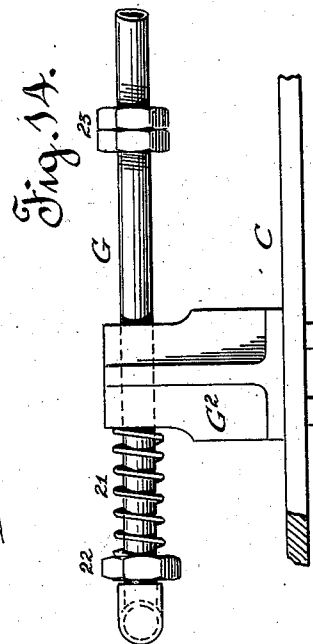
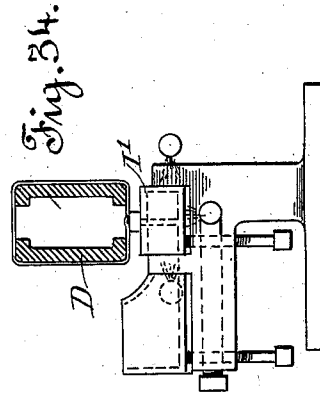
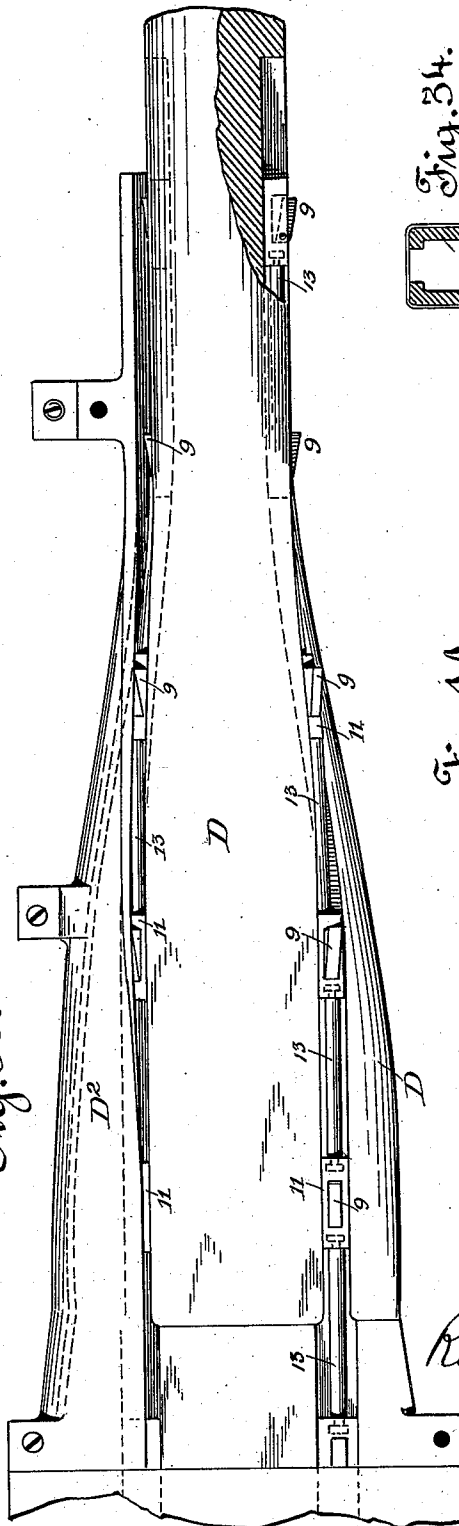


Fig. 33.



Witnesses.

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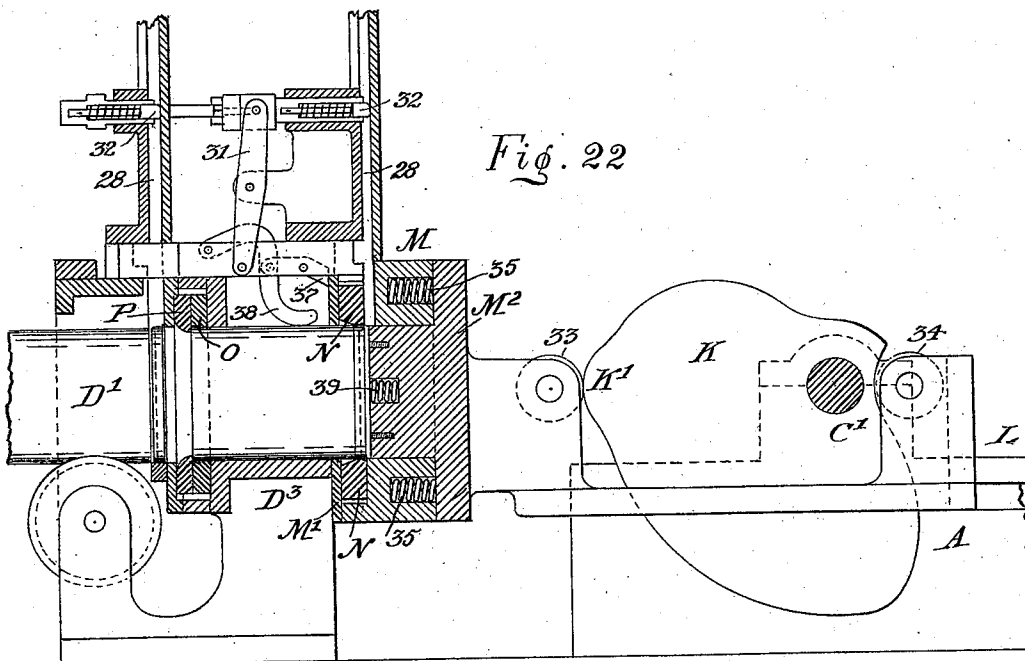
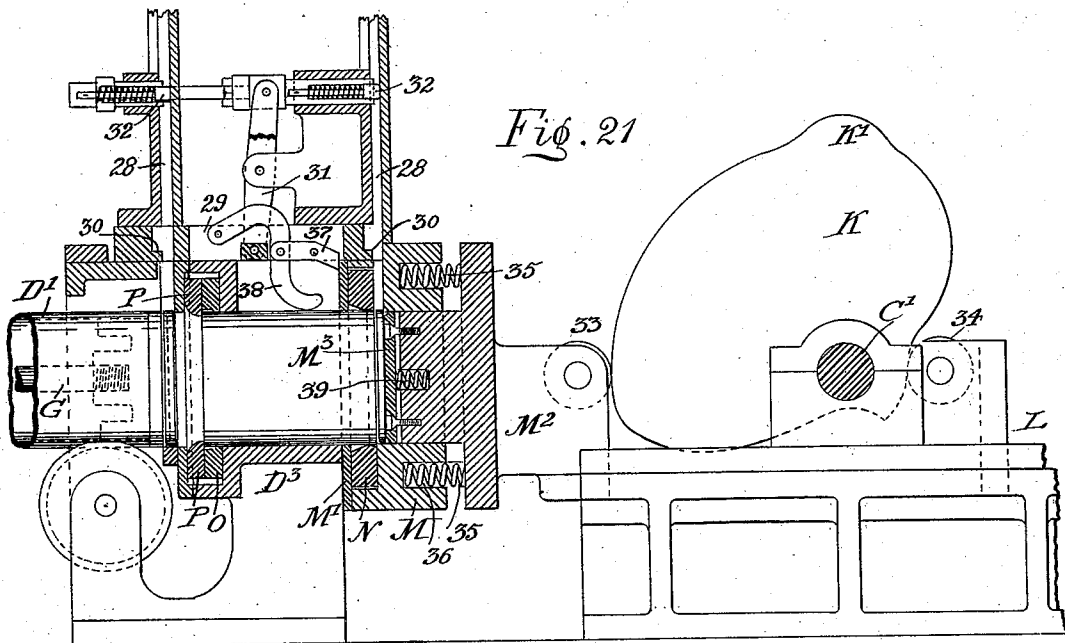
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8 Sheets—Sheet 6.

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Patented Feb. 2, 1897.



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(No Model.)

8 Sheets—Sheet 7.

R. D. HUME.
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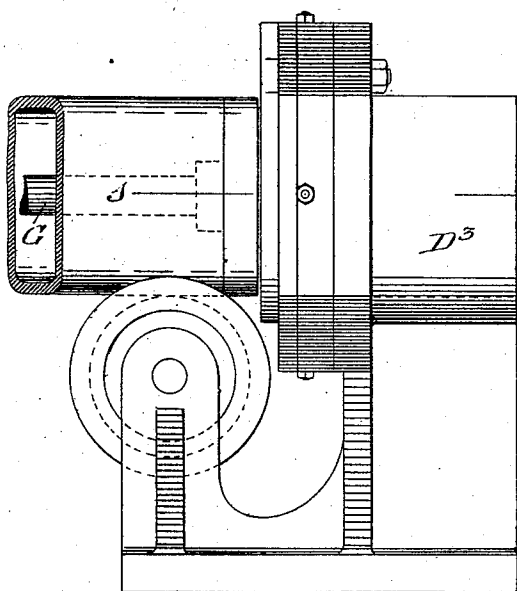


Fig. 23

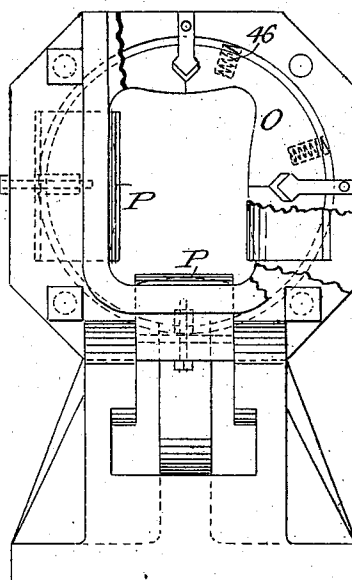


Fig. 24

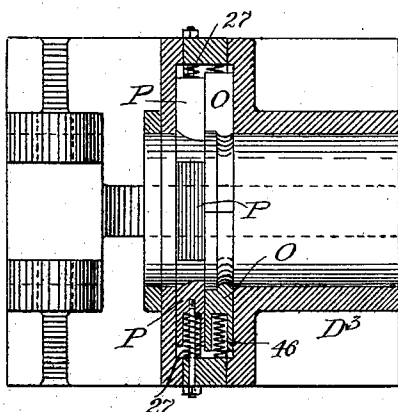


Fig. 25

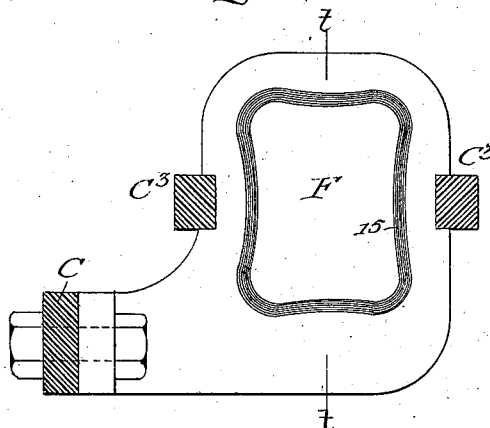


Fig. 26

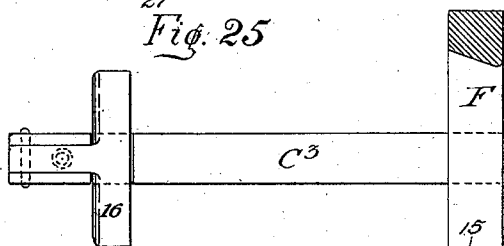
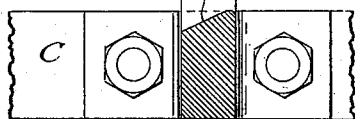


Fig. 27

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(No Model.)

8 Sheets—Sheet 8.

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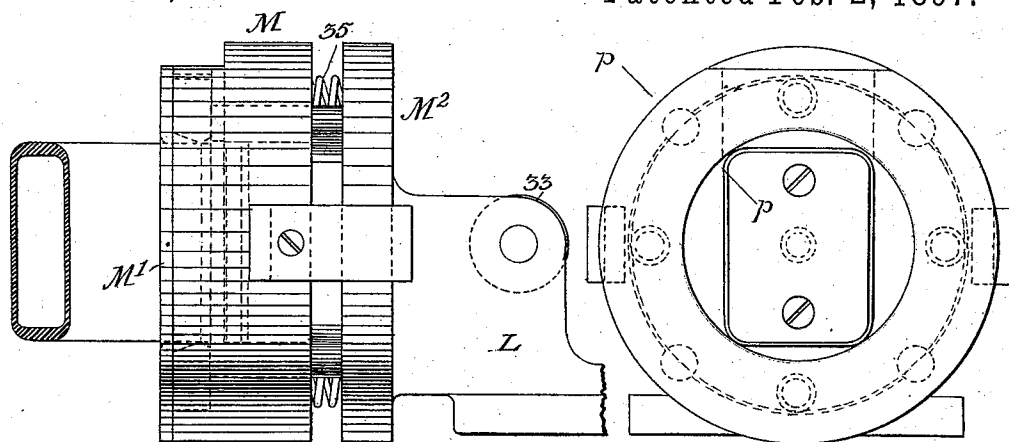


Fig. 28

Fig. 29

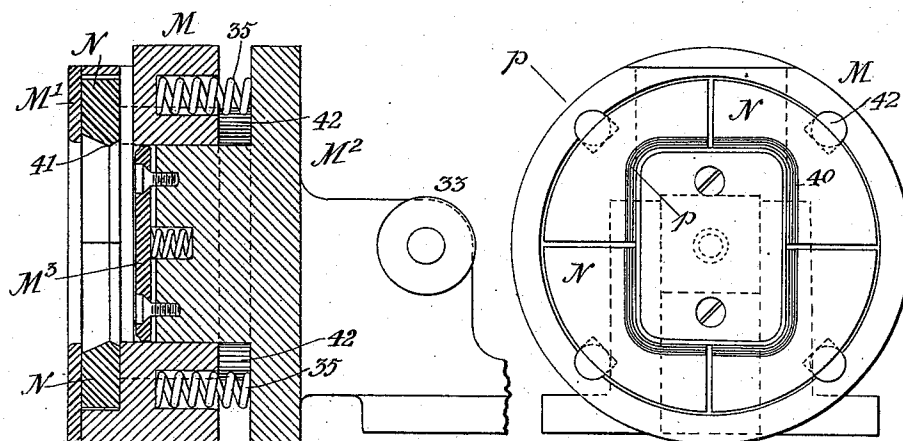


Fig. 30

Fig. 31

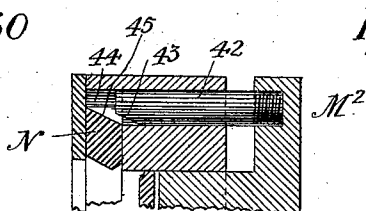


Fig. 32

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Julia Warren.

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UNITED STATES PATENT OFFICE.

ROBERT D. HUME, OF GOLD BEACH, OREGON.

CAN-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 576,121, dated February 2, 1897.

Application filed December 10, 1894. Serial No. 531,386. (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-Making Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to the manufacture of cans from sheet metal, and more particularly to a method of and machinery for automatically producing cans of other than cylindrical shape, rapidly and cheaply, from blanks of sheet metal.

In Letters Patent issued to me April 11, 1893, No. 495,426; October 17, 1893, No. 506,878; November 6, 1894, No. 528,673, and November 13, 1894, No. 529,269, and in an application for Letters Patent filed by me December 1, 1894, Serial No. 530,590, I have described and shown machinery for making cans in which flat blanks, propelled successively along a forming-horn, are formed into cylindrical can-bodies, which in their progress along the horn are subjected to the successive operations of side-seaming, soldering, and heading in single automatic machines.

The object of my present invention is to form can-bodies of square, oblong, or other polygonal cross-section from flat blanks and to place heads or covers upon such can-bodies by a connected continuously-operated mechanism.

In the following description I have set forth in detail the method and apparatus employed by me, and in connection with such description I refer to the accompanying drawings, in which—

Figures 1, 2, and 3 are side elevations on different sheets which represent, when taken together, the machine as a whole. Figs. 4, 5, and 6 are plan views of the same. Fig. 7 is a side elevation of part of the carrier. Fig. 8 is a plan view of the same. Fig. 9 is a section through the carrier-bar on line *x x*, Fig. 7. Fig. 10 is a section through the carrier-bar and latch on line *y y*, Fig. 7. Fig. 11 is a longitudinal section through the movable latch-block. Fig. 12 is a section through the end of the movable latch-block on line *z z*, Fig. 11. Fig. 13 is a plan view of a link-rod between the movable latch-blocks. Fig. 14

shows the connection of the gas-pipe ramrod with the sliding side bar. Fig. 15 is a section through the horn on line *o o*, Fig. 1. Fig. 16 is a section through the horn on line *r r*, Fig. 2. Fig. 17 is a horizontal section through the horn, showing the shape of the ramrod, the inside soldering-iron, and wiper. Fig. 18 is a section through the horn on line *v v*, Fig. 17, showing the gas-pipe ramrods with gas-jets to warm the can-bodies. Fig. 19 is a cross-section through the horn on line *w w*, Fig. 17, showing the inside soldering-iron. Fig. 20 is a cross-section through the horn on line *u u*, Fig. 17, showing the inside wiper. Fig. 21 is a longitudinal section through the forward end of the machine, showing the automatic feed for heads and bottoms, also the stop-ring and squeezer-ring holder, the ram containing the crimper arrangement, and the cam operating the ram and crimper. This section shows the can-body and the head and bottom in place and the crimper-jaws open. Fig. 22 is the same longitudinal section, showing the bottom slipped over the can-body and the crimper closed. Fig. 23 is a side elevation of the preventer or stop-ring and squeezing-ring holder, also of the roller upholding the end of horn. Fig. 24 is a rear view of the same with part of the covering-plate and the roller removed to show the preventer as well as the squeezer-ring. Fig. 25 is a horizontal section through the same on line *s s*, Fig. 23. Fig. 26 is a rear view of the shaping-ring. Fig. 27 is a section through the same on line *t t*, Fig. 26, showing also the carrier attached to the shaping-ring and its connection with the sliding side bar. Fig. 28 is a side elevation of the rear end of the ram containing the crimping arrangement. Fig. 29 is a rear view of said ram. Fig. 30 is a longitudinal section through the same, showing the pad for placing the can-bottom in position and the devices for operating the crimping-sections. Fig. 31 is a rear view of the same with the covering-plate removed. Fig. 32 is a section through the crimping-jaw on line *p p*, Figs. 29 and 31. Fig. 33 is a plan view of the tapering part of the horn with one of the sheaths removed, showing the sectional carriers in the grooves of the horn. Fig. 34 is an elevation of the outside soldering-tank.

The main frame A of my machine extends

throughout its length, as shown in Figs. 1, 2, and 3, taken together. The driving-shaft B is journaled at the forward end of the frame, Fig. 3, and is provided with belt-pulleys and fly-wheel, as shown. A crank-shaft C' is geared down from the driving-shaft by the spur-gears 1 and 2. The crank 3 gives motion to the reciprocating side bar C through the connecting-rod 4. The side bar is supported by guides in the main frame and extends throughout its length, and from the reciprocation of such bar are derived all the operative motions required in the making of cans.

At the rear end of the machine is the feeding device for the blanks from which the can-bodies are formed. The details of this mechanism are fully shown in Letters Patent granted to me November 6, 1894, No. 528,673, and form no part of the present invention. It consists of pneumatic cups operated vertically from the side bar by means of a roller 5 and a depression in the side bar. The blanks are arranged in a pile, and the cups adhere to each blank successively and lift it to a position where it can be seized by the hooked ends 6 of the reciprocating carriers C². These carriers are dovetailed in grooves in the frame and are connected by a cross-head 7, Figs. 4 and 8, secured directly to the side bar. The forward stroke of the carriers pulls the flat blank forward beneath the plate 8 and above the forming-horn D. Beneath this plate, and shown in dotted lines, Fig. 4, are the horizontal rollers which bend the edges of the blank into hooks, which are afterward interlocked to form the side seam. The carriers C² are recessed, as shown in Figs. 7, 8, and 10, and in each recess is pivoted a latch 9, which, by a pressure-spring 10, is caused to project so as to bear upon the rear edges of the blanks and move them forward. On the back stroke of the carriers the latches are pressed inwardly by passing under the next blank following.

As shown in my previous patents and in the application above referred to, the blanks formed into cylinders between the horn D and sheath D² and with their hooked edges loosely engaged are fed intermittently and successively along the horn to the side-seaming mechanism, consisting of dies and a hammer, and which as a whole is represented at E, Figs. 1 and 4. The details of the construction of this mechanism form no part of the present invention, but are fully set forth in the application for patent before referred to. The drawings therefore show only the external appearance of the side-seaming device and the connections by which it is operated from the side bar.

As the grooves for guiding the carriers through the tapering part of the horn are spirally formed in the horn, I have devised a peculiar construction for the carriers at this point, by means of which they can reciprocate freely in such grooves in spite of the

spiral configuration of the latter. A rigid carrier-rod would necessarily have to twist to conform to these grooves. Hence I make this part of the carrier-rods in sections, swiveled together, so that when moving on the spiral line the sections can move axially independently of one another, producing the same effect as if a single rod were compelled to twist in each groove. This construction keeps the latches in proper position and reduces the friction against the side of the grooves. The figures of the drawings from 7 to 13 and Fig. 33 show this arrangement. Each pivoted latch 9 is held in a recess in a tapered or dovetailed block 11, the latter being guided by the groove, which is of corresponding cross-section. The ends of the blocks are slotted, Fig. 12, to receive short rods 13, having heads 14, which form swiveled connections between the respective blocks, the whole comprising a flexibly-jointed carrier-rod, which, with its latches, is self-adjusting in the groove in which it travels. These swiveled carriers terminate at the ends of the grooves in which they work, and the subsequent movement of the can-bodies is accomplished by other carriers, hereinafter to be described.

Beyond the side-seaming device the cross-section of the horn is changed from circular to polygonal. In the drawings I have shown the cross-section as oblong with rounded edges, but any angular cross-section can be given the horn, according to the shape of can to be made.

The circular can-body enters upon the angular part of the horn, which for convenience I term the "square" part, at the left-hand end of Figs. 2 and 4, and its cross-section commences to change at that point. It first assumes the form of a circle partly flattened on four sides. At this point the body is seized by carriers C³, Figs. 2 and 5. These carriers are secured to the shaping-ring F, which surrounds the horn, such ring being bolted to the side bar and moving with it. The cross-section of the horn at this point—that is, beneath the line of travel of the shaping-ring—is shown in Fig. 16. Its sides, top, and bottom are slightly curved inward, so that the ring, similarly shaped, will slightly curve the sides of the can-body inward. The ring is shown in detail in Figs. 26 and 27 with the carriers C³ attached to it. It has an internal bevel 15, forming an ironing or shaping edge, which on its backward stroke presses all sides of the can-body against the horn and produces the slight inward curvature above referred to. When released from the shaping-ring, the sides of the can-bodies are allowed to spring out, so that they are flat on all sides. If the shaping-surface of the ring were square instead of curved inwardly, the elasticity of the can-body would tend to cause the sides to bulge slightly outward instead of being flat. At the ends of the carriers C³ are latches 16, pivoted in recesses in such carriers and ex-

tending transversely across them, their length being nearly or quite equal to the width of the horn, so that they can bear upon the side edges of the can-bodies for the greater part of the length of such edges. In the horn and just in front of the top and bottom of ring F are pivoted similar latches 17, which act as stops to prevent the shaped can-bodies from driving backward until they are seized by the carriers C⁴, by which they are impelled along the horn while being subjected to the various operations required to complete them. The shaping-ring itself acts as a carrier to bring each can-body to the carriers C⁴, its inwardly-curved edges 15 slipping over the rear straight edges of the can-body, so that its forward stroke carries the can-body just shaped along the horn to the point where the carriers C⁴ come into operation.

The operations following the shaping of the can-bodies will depend upon the kind of cans to be made and the purposes for which they are to be used. If the machine is to make cans for holding pepper, spices, or other dry products, the can-bodies, after being side-seamed and shaped, are ready for the operation of heading, since no soldering is required. When cans are to be used for containing liquid or partly-liquid contents, such as oil, syrups, &c., it is necessary to solder the side seam, and I have hence shown in the drawings soldering devices, or so much of them as will give a clear understanding of their operation. The soldering devices are heated by gas-burners. The main gas-pipe G also acts as a sliding rod, which, as in my application referred to, is connected to the heading-ram or extension of the horn. It is provided with a flexible section or hose 18, so that it can reciprocate freely, and extends through the horn. At one portion of its length, however, it is coupled to two branch pipes 19 19, Fig. 17, which pass through the horn and are provided with burner-openings to heat the can and soldering-irons from both sides. The gas-pipe at its rear end is connected to the side bar by a cross-head G², through which the rod can slide freely a limited distance. A spring 21 is interposed between the cross-head and a nut 22 at the end of the gas-pipe, which forms a yielding stop for preventing jar. In Fig. 1, where the side bar is shown at the end of its backward stroke, the spring is compressed. At the forward stroke of the side bar the cross-head G² slides on the rod until it strikes a nut 23, fixed on the rod G, and pushes the rod forward. Thus if the side bar has, for instance, a full stroke of eight inches, while it is only desired to move the gas-pipe and the heading extension or ram the length of a can-body, (say four inches,) the nut 23 can be adjusted relatively to the cross-head G², so as to cause the side bar to act on the gas-pipe during only a part of its stroke.

Before the can is soldered it passes in contact with the fluxing-rollers 24, (dotted lines,

Fig. 2,) which are held in the acid-tank I and which apply acid to the exterior of the side seam. As will be seen in Figs. 18, 19, and 20, the horn is open at top and bottom. The outside soldering-tank I' is shown in Fig. 34 and is preferably constructed like the one fully described in my application before referred to.

Fig. 18 shows in cross-section the arrangement of the interior gas-pipes with their burner-orifices arranged to project the flame down against the seam of each can.

The inside-seam-soldering device consists of stationary bars 25, mounted in brackets 26, secured within the horn, which extend down to the slot in such horn and spread the solder which comes through the joint upon the inner part of the seam.

A solder cutter and feeding device of the kind fully described in my application referred to automatically cuts lengths of solder from a wire of that material and feeds them to the heated tank. H, Fig. 2, represents such a device together with the connections for operating the same from the side bar.

J represents the wipers for removing the excess of solder from the inside seam. They are mounted within the horn and are preferably composed of strips of asbestos secured together and extending down to the open bottom of the horn and into contact with the side seams of the passing cans. Suitable outside wipers are also used.

The can-body, side-seamed and soldered, is now ready to receive its heads. The heading mechanism shown in the drawings is especially constructed and adapted to head a certain kind of square can for containing dry products, such as pepper, spices, &c., which are used gradually and in small quantities at a time. Such cans must be provided with two heads or, speaking more accurately, with a tightly-secured bottom and a closely-fitting but removable slip cover or top. In making cans for holding liquid or partly-liquid contents the heading mechanism must be so modified as to firmly and rigidly secure a head at each end, which is afterward soldered.

The ram or telescopic extension D' of the horn is, as before stated, connected to the reciprocating gas-pipe rod G, so as to have a stroke of about the length of the can-body independently of the horn. It slides in guides in the sides of the horn and receives the can-bodies successively from the latter. At each forward stroke of the rod G the ram carries a can-body into the heading-tube D³ and past the beveled sliding blocks P, four in number, which are held in recesses in the tube and are forced constantly toward the interior of the said tube by springs 27. As soon as the can-body is in place and the extension D' has been withdrawn these blocks spring in behind the can and hold it in the position shown in Fig. 21.

The can bottom and cover are fed simultaneously into the tube through feed passages or chutes 28. The feed takes place

while the extension D' is withdrawn and is controlled by the mechanism for putting the bottom upon the can-body. A sliding bolt or cut-off 29 has shoulders 30, which simultaneously open and simultaneously close both feed-passages 28 above the heading-cylinder. Connected to this cut-off by a forked lever 31 is a sliding frame having stop-pins 32, which close the feed-passages when the cut-off is open, and vice versa. Thus a large number of can-heads may be in the passages above the pins 32, but such pins will allow them to drop only singly and successively upon the shoulders of the cut-off in each passage. Fig. 21 shows a slip-cover and a can-bottom in position in line with a can-body and ready to be placed upon such body. The slip-cover is placed upon the body by the extension D' at its forward stroke following that which placed the can-body in position, an operation that will be hereinafter described.

This specification follows the operation of the machine in the order of its successive steps, and as, in point of time, the securing of the bottom upon one end of the can-body precedes the placing of the slip-cover upon the other end I shall first describe the devices which accomplish the former result.

Reference is made to Figs. 21 and 22, to Figs. 28 to 32, inclusive, and to Figs. 3 and 6, the latter for general views showing the connections for operating the header from the driving-shaft.

Mounted upon the shaft C' is a cam K. L is a slide guided in the main frame of the machine and moved toward and away from the heading-tube by the action of the cam upon rollers 33 and 34, respectively, journaled in the slide. In its motion toward and into the heading-tube it opens the cut-off and feeds the can bottom and cover into line with the can-body, places the bottom upon the can-body, and then crimps it there. By its reverse motion it opens the end of the tube, so that the extension D' in its forward stroke can drive the finished can out of the tube after placing the cover in position.

To the slide L is secured a heading-ram, which consists of a ring M, a back or covering plate M', secured thereto, and an independently-movable plunger M², which fits loosely within the ring M and is normally forced outward by springs 35 in recesses 36 of the ring. These springs are strong enough to allow the cam K to move the ring and plunger together toward the cylinder. When this movement takes place, the back plate M' strikes an arm 37, pivoted to the cut-off 29, and opens the cut-off, so as to let the bottom and cover drop, as before described. This arm 37 is pivoted to an S-shaped lever 38, one extremity of which is pivoted to the cut-off, while the other rests upon the can in the heading-tube. The lever 38 also acts as a safety-latch to prevent the feeding of can-heads excepting when a can-body is in readiness to receive them.

A slot is formed in the top of the extension D', into which the latch drops unless held up by a can-body. The dropping of the latch raises the arms 37 above the plate M', and hence the cut-off cannot be moved nor can-heads supplied until an incoming can-body raises the latch. The cut-off is closed by the action of the springs on bolts 32 through the lever 31.

Secured to the plunger M² and projecting a little beyond its face is a square pad M³, having a spring 39, which bears against and fits within the recessed or paneled can-bottom and places and holds such bottom upon the can-body, the latter, it will be remembered, being held firmly by the stops P. This pressure is imparted by the cam K, Fig. 22, which drives the plunger and pad inwardly. An independent movement of the plunger operates the crimping-sections by which the bottom is firmly crimped upon the can-body. These crimping-sections N are held between the back plate M' and the ring M. Fig. 31 shows their shape in elevation clearly, and their cross-section is best shown in Fig. 30. Their inner peripheries, when brought together, form a continuous crimping edge 40, extending entirely around the flange of the can-bottom. Each section crimps a quarter of the periphery of the flange, including one corner. The crimping edges are formed by a double bevel 41, Fig. 30, and the pad M³ is also beveled at its edges, so as to fit snugly and hold the can-head rigidly in place while the crimping is being done. This insures the accurate crimping of the flange in a line around its entire extent.

The crimping-sections are forced inwardly by pins 42, secured in the rim of the plunger and having inclined surfaces 43 at their ends, Fig. 32. A recess 44 is formed in each crimping-section and provided with an opposing incline 45. A projection K' on the cam forces the plunger inward independently of the ring M and pad, so that the pins 42 act against the inclines 45 and drive the crimping-sections inward and toward each other and against the flange of the can-bottom. The slide L is then withdrawn and the end of the heading-tube is now open. All this operation of securing the can-bottom has taken place during the backward movement of the extension D' and while it is advancing to push the slip-cover upon the can-body. At the forward stroke of the extension following up the retreating ram three results are accomplished. The slip-cover is placed on the can just before the slide L commences to retreat, the finished can is driven out of the heading-tube, and another can-body is placed within the tube ready to be headed.

Referring again to Figs. 22, 24, and 25, the can-body and slip-cover are in place and in line when the extension commences its forward stroke. A sectional compressing-ring O, having rounded and inwardly-curved edges, (like the shaping-ring, Fig. 26,) is

pressed constantly inward by springs 46, so that the curved edges bear against the can-body close to its rear or open end. The object of this is to temporarily compress the end of the can-body on all sides, reducing the size a little, so that the slip-cover will readily pass into place upon it. The extension strikes the slip-cover, pushes it over the end of the can-body, and by the same movement drives the can, now complete, out of the heading-tube. The blocks P and sections O yield as the extension enters, and the compressed end of the can-body springs out against the slip-cover, which now fits closely. I now have a finished can with tight bottom and removable cover, which if intended for dry products is ready for use. If intended for liquid or partly-liquid contents, the side seam will have been soldered, as herein described, and it is only necessary to solder the head or heads.

It must be understood that although throughout the foregoing description I have used the terms "square," "angular," and "polygonal" to define the kind of can produced by my machine such terms are not literally correct, although customarily used in the art. The corners of the can-bodies are usually rounded for strength and to give a better appearance, and thus, strictly speaking, do not form angles. Hence the words used apply to the general shape of the cans and are not necessarily to be taken literally, although of course cans of a literal angular cross-section can be produced by modifying the shape of the forming devices.

What I claim is—

1. In a can-making machine, the combination with a former or horn of angular cross-section, of carriers for propelling can-bodies successively along said horn, and a movable shaping-ring surrounding the horn and of a cross-section corresponding to that of the horn, substantially as described.

2. In a can-making machine, and in combination, a blank-feeding mechanism, a tapering former or horn and a surrounding sheath for bending the blanks into a tubular form, mechanism for side-seaming the can-body, a prolongation of the horn of angular cross-section, a movable shaping-ring surrounding said angular part of the horn, and carriers for moving the cans in succession upon the horn, substantially as set forth.

3. In a can-making machine and in combination, a stationary horn of angular cross-section, a blank-feeding mechanism, reciprocating carriers for moving said blanks along said horn successively and intermittently, a movable shaping-ring fitting upon and around the horn, and a reciprocating side bar connected to said shaping-ring, substantially as described.

4. In a can-making machine, the combination with the horn or former, of the reciprocating side bar, the movable shaping-ring surrounding said former and connected to the

side bar, and carriers secured to and moving with said shaping-ring, substantially as described.

5. In a can-making machine, the combination with a stationary and tapering horn or former, having spiral grooves, of carriers reciprocating in such grooves, such carriers being composed of two or more sections swiveled together, substantially as and for the purposes set forth.

6. In a can-making machine, the combination with a stationary and tapering horn or former, having spiral grooves, of recessed carrier-blocks, spring-latches in said recesses, and rods or links swiveled to said blocks, whereby said blocks and latches are self-adjusting in said grooves, substantially as and for the purposes set forth.

7. In a can-making machine, the combination with a former or horn having its top, bottom and sides formed on inwardly-curved lines in cross-section, of a movable shaping-ring having an inner edge of corresponding cross-sectional curvature, substantially as and for the purposes set forth.

8. In a can-making machine, the combination with a former or horn having its top, bottom, and sides, formed on inwardly-curved lines in cross-section, of a shaping-ring surrounding said horn and having an inner edge of corresponding curvature, and a reciprocating side bar connected to said shaping-ring, substantially as described.

9. In a can-making machine, a former or horn having a flat rear upper surface, merging first into a tapered portion, thence into cylindrical cross-section, and thence into angular cross-section, in combination with a sheath inclosing the tapered portion, a separate movable shaping-ring inclosing and conforming to the angular portion, and carriers for impelling flat blanks and can-bodies along such horn or former, substantially as described.

10. In a can-making machine, a hollow horn or former, stationary soldering-irons within said horn, a gas-pipe extending through the horn, and branching into two pipes adjacent to said soldering-irons, and means for reciprocating said gas-pipe and branches, substantially as described.

11. In combination with the former or horn having at one end a sliding extension, a reciprocating side bar, a gas-pipe rod connected loosely to said side bar, and an adjustable stop on said gas-pipe for regulating the length of the stroke derived from said side bar, substantially as described.

12. In combination with the former or horn, a sliding gas-pipe, a reciprocating side bar connected by a cross-head to said gas-pipe, a spring on the gas-pipe adjacent to said cross-head, and a stop on the gas-pipe, whereby the gas-pipe derives a reciprocating stroke relatively shorter than that of the side bar, substantially as described.

13. A mechanism for heading cans com-

prising an open-ended heading-tube adapted to receive and hold a can-body and can-heads in line, in combination with reciprocating heading-rams and connections for operating such rams successively, whereby the can-heads are placed successively upon the ends of the can-body, substantially as set forth.

14. In combination with a heading-tube, having means for holding a can-body and two can heads or covers in line, two heading-rams, adapted to act independently and successively upon the respective heads or covers, substantially as described.

15. In a can-making machine, and in combination, a heading chamber or tube; a reciprocating plunger for placing can-bodies within such tube and for heading one end of such can-bodies; can-head-feeding passages into said heading-chamber for placing can-heads in positions in line with said can-bodies; a heading-ram for heading the other end of said can-bodies; a driving-shaft, and independent connections from said driving-shaft to the plunger and to the heading-ram, whereby they are successively operated to head both ends of the can and to discharge the headed can, substantially as described.

16. In a can-making machine and in combination, a heading chamber or tube; a reciprocating plunger or ram for placing can-bodies within such tube and for heading one end of such can-bodies; can-head-feeding passages into said heading-chamber; a heading-ram for heading the other end of said can-bodies; a driving-shaft; a connecting-rod for operating said plunger, and a cam for operating said ram, all substantially as described.

17. In a can-making machine, a can-body former having a telescopic extension, in combination with a heading-tube, can-head-feeding mechanism, a heading-ram, and driving means for causing the following consecutive operations: the introduction of a can-body into the heading-tube by the forward stroke of the telescopic extension; the withdrawal of said extension; the feeding of two can-heads into line with the can-body; the secur-

ing of one can-head upon the can-body by the advancement of the heading-ram; the placing of the other head upon the can by the next forward stroke of the telescopic extension, and the discharge of the headed can from the tube by the same stroke of said extension, substantially as set forth.

18. In a can-making machine, the combination with the heading-tube, having can-head-feeding passages communicating therewith, of a heading-ram, a sliding cut-off, an arm for opening said cut-off, normally in the path of said ram, and a safety-latch connected to said arm, adapted when no can-body is in the heading-tube to fall and thereby remove said arm from the path of the ram, substantially as and for the purposes set forth.

19. In a machine for making cans of angular cross-section, the combination with a heading-tube and with can-body and can-head supplying devices, of a heading-ram having crimping-sections and means for forcing such sections together so as to surround and bear upon the rim of the can-head, substantially as set forth.

20. In a can-making machine the combination with the heading-tube, of a two-part heading-ram, crimping-sections, a cam for moving said two-part ram as one for placing a can-head upon a can-body in the heading-tube, and a cam for moving one part of said ram independently for operating the crimping-sections, substantially as set forth.

21. In a can-making machine, a heading-tube, can-head-crimping sections, a reciprocating heading-ram, having an independently-movable plunger, beveled pins in said plunger, and beveled recesses in said crimping-sections, all constructed and arranged to operate substantially as described and shown.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 26th day of November, 1894.

ROBERT D. HUME.

Witnesses:

S. W. SEELY,
JAMES L. KING.