

No. 654,257.

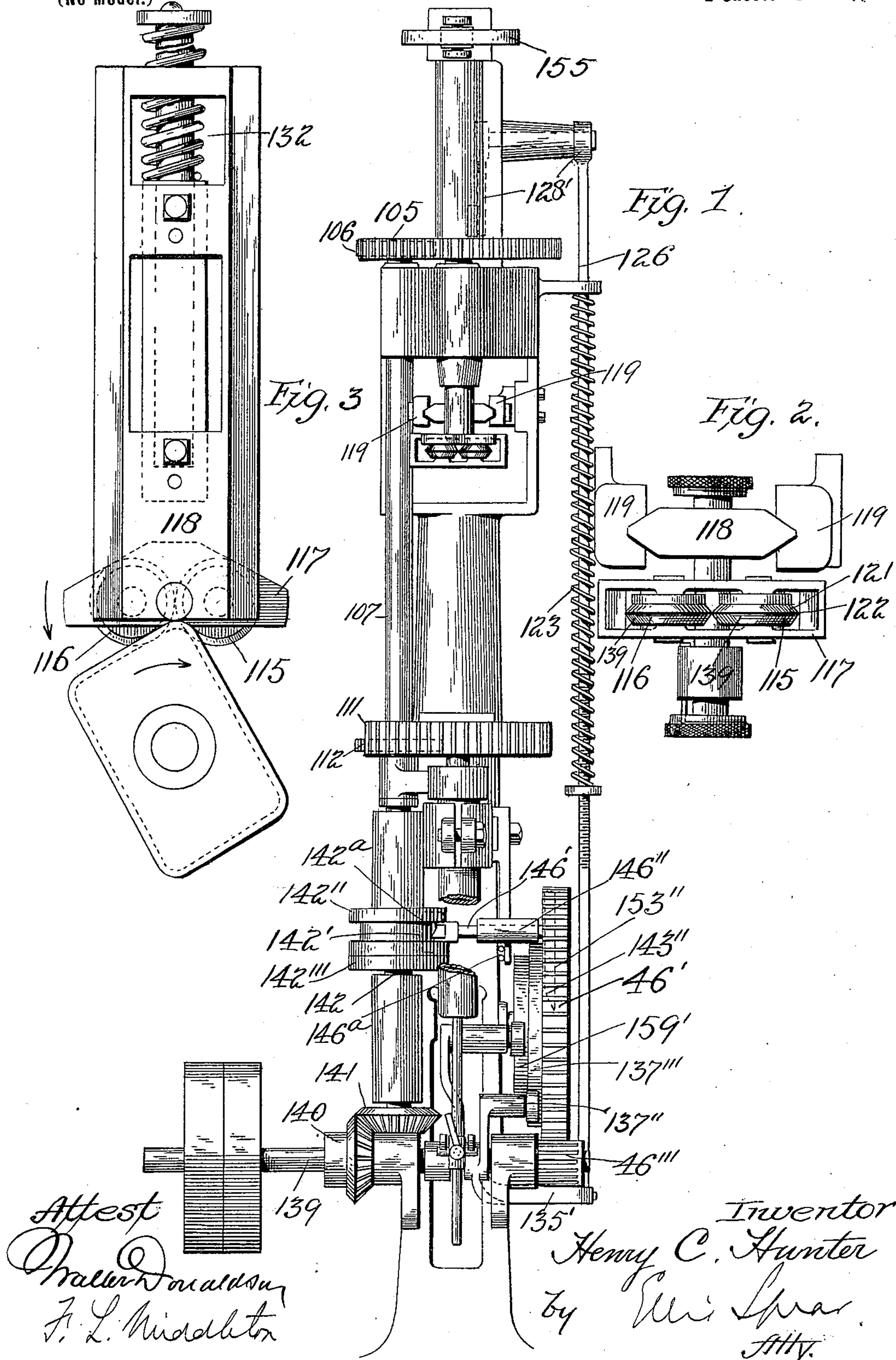
Patented July 24, 1900.

H. C. HUNTER.  
CAN HEADING MACHINE.

(Application filed July 23, 1898.)

2 Sheets—Sheet 1.

(No Model.)



Attest  
Walter Donaldson  
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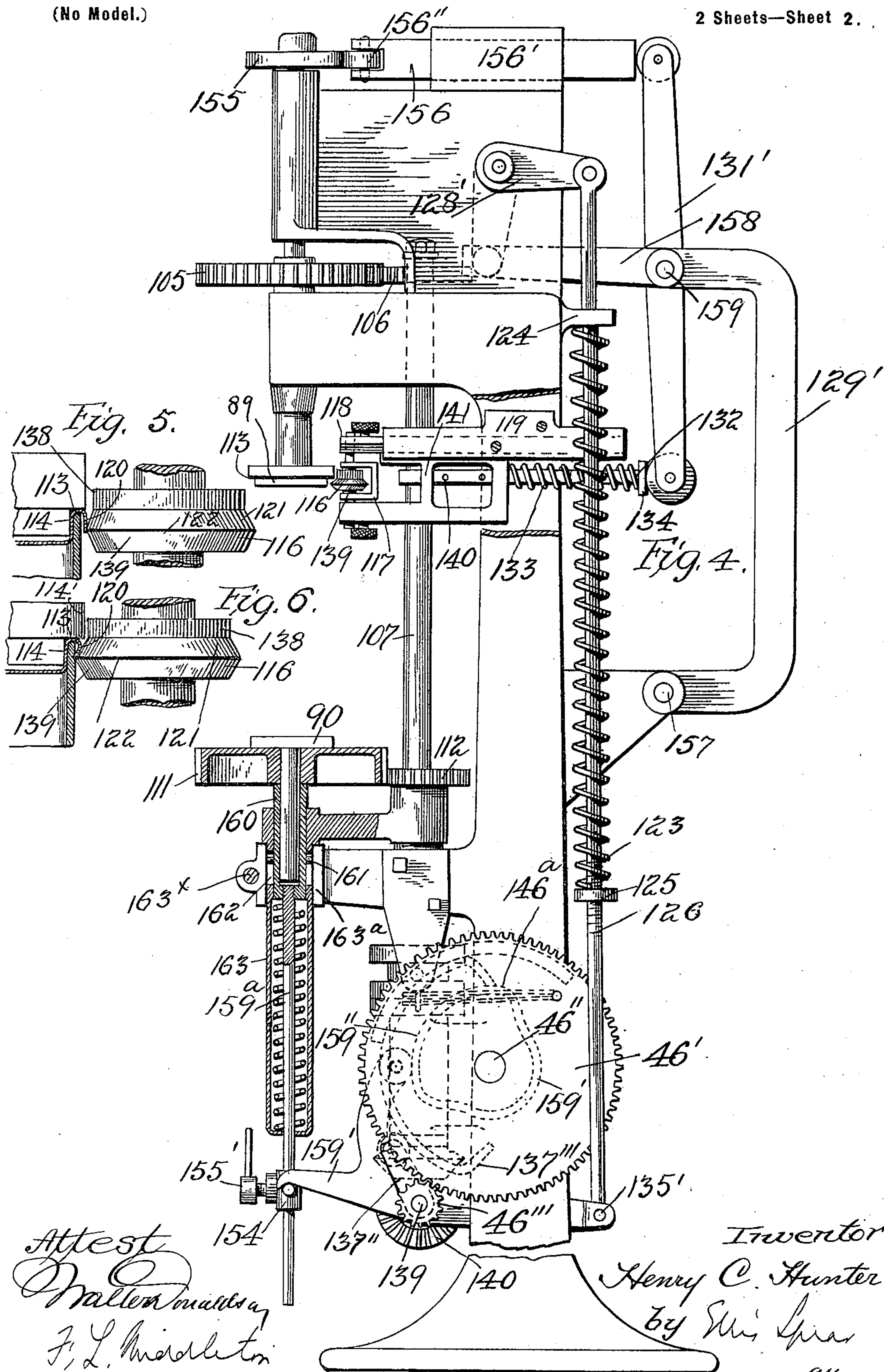
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

HENRY C. HUNTER, OF HAMILTON, CANADA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CANISTER MANUFACTURING COMPANY, OF PHILLIPSBURG, PENNSYLVANIA.

## CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 654,257, dated July 24, 1900.

Application filed July 23, 1898. Serial No. 686,736. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. HUNTER, a citizen of the United States, residing at Hamilton, Ontario, Canada, have invented certain  
5 new and useful Improvements in Can-Heading Machines, of which the following is a specification.

My invention relates to the manufacture of packing-cans of rectangular or like shape  
10 having corners, and particularly to the form of can having a fiber body, metallic heads, and a seaming-strip, as in my Patent No. 492,806, dated March 7, 1893.

My present invention concerns particularly  
15 the means for crimping the metallic heads to the fiber body, my object being to insure a perfect air-tight joint between the metallic flange of the head and the fiber body and one in which the crimping effect of the metallic  
20 flange will be uniform on all sides and corners of the cans. For the crimping action, therefore, I use a determined spring-pressure for forcing the crimping-wheels against the flange of the head, and this pressure being  
25 slight at first is gradually increased up to the point determined upon, which is sufficient to firmly unite the flange of the metallic head with the body. This feature of applying a  
30 predetermined yet yielding pressure in the action of uniting the metallic head with the fiber body is of greater importance in the formation of fiber cans, as by it the metal of the head is compressed into the fiber body just  
35 enough to insure a perfect union of the parts, and the work is insured against damage. The spring-pressure is removed or the crimping-wheels retracted when the crimping action is finished by positively-operating means.

For the formation of my rectangular can I  
40 employ a pair of crimping-rollers on an oscillating support, both of which rollers operate on the flange of the head simultaneously. The predetermined spring-pressure is applied to these rollers to force them against the can-  
45 head, and being thus spring-pressed and on an oscillating support they work perfectly on a can of rectangular shape, maintaining a uniform and steady contact therewith both along the sides and at the corners, and they have

no tendency to jump from the can at the corners, as each roller of the pair in connection  
50 with the spring-pressure controls the action of the other roller in passing around the corner. In connection with the crimping-rollers and the rotary chucks for holding the cans  
55 of rectangular or like cross-sectional shape I have provided means for compensating for the angular shape of the cans which will insure a uniform action of the crimping-rollers on the heads notwithstanding the fact that  
60 the crimping-rollers will be moved rapidly back and forth radially of the can by the rotation of the rectangular-shaped can as it revolves, and this compensating means is intended to prevent this reciprocating move-  
65 ment of the crimping-rollers from affecting the means by which the pressure is applied to the rollers, so as to keep the same uniform whether the crimping-rollers are operating  
70 on the sides or at corners of the cans. In connection with the rotary chucks for holding the fiber cans I employ means for applying a predetermined but yielding pressure to prevent damage to the can, said chucks being  
75 opened by positively-acting mechanism.

In the drawings, Figure 1 is a front view of the machine. Figs. 2 and 3 are detail views relating to the crimping-rollers and their supports. Fig. 4 is a side view of Fig. 1. Figs. 5 and 6 are details relating to the  
80 crimping-roller and upper chuck.

The fiber can having the metallic head placed thereon ready for crimping is placed over the chuck-disk 90 on the gear-wheel 111, and this lower chuck-disk being then raised  
85 through the means hereinafter described the can, with its head, will be clamped between the said lower chuck-disk 90 and the upper chuck-disk 89. These chuck-disks are geared together to rotate in unison through the gears  
90 111 105 on the spindles of the lower and upper chuck-disks, respectively, and the pinions 112 and 106 on the shaft 107, which is driven through a clutch 142' from a shaft 142, driven  
95 in turn through bevel-gears 141 140 from a main shaft 139, having pulleys thereon. By thus driving the chuck-disks in unison the fiber can-body will not be damaged by twist-



ing. The upper chuck 89 has an undercut shoulder 113 and a substantially-vertical face 114 for receiving the metallic head of the can, as in Figs. 5 and 6.

5 The crimping of the metallic head onto the fiber body is done in connection with the upper chuck, the lower chuck being movable vertically and serving to hold the can against the upper chuck. Crimping-rollers 115 116  
10 are journaled in a block 117, which is swiveled in a carriage 118, moving in ways 119, fixed to the frame of the machine. These crimping-rollers act simultaneously upon the flange 120 of the head to force the same firmly  
15 into contact with the fiber can-body, as illustrated in Fig. 6, and they are arranged side by side in the same plane, and they are of like form, each having an inclined crimping-surface 121, ending in an edge 122 opposite  
20 the lower edge of the metallic flange 120. The shoulder 113 on the chuck serves to confine the upper edge of the rim of the metallic head, and under the action of the crimping-roller the flange 120 will be crimped into firm  
25 connection with the fiber body, and the original form of the upper edge of the rim will be preserved, the confining-shoulder 113, together with the bearing-face 114 and the inclined face 121 of the roller, forming a confined space in which the crimping is done,  
30 thus serving to prevent any distortion or any irregularities from occurring in the crimping action. The forward movement of the rollers to crimp the metallic head is given by the  
35 spring 123, bearing at its upper end against a lug 124 on the frame and at its lower end against an adjustable nut 125 on a screw-rod 126. The upper end of the rod is connected  
40 with a bell-crank 128', which is connected through a link 158 with the fulcrum 159 of a lever 131'. The fulcrum of this lever is carried by a swinging bracket 129', pivoted to the frame at 157. When the link 158 is pulled  
45 inwardly, the lever 131' will move the bar 132, and this through the spring 133 will force forward the carriage 118, and thus the crimping-rollers will be pressed against the flange to be crimped. The bar 132 slides loosely in  
50 the carriage 118, and the spring 133 is interposed between a collar 134 on the rod 132 and the rear end of the carriage 118. In action when the spring 123 is allowed to exert its force it depresses the rod 126, and through the described connections the rollers are  
55 pressed against the metallic head. The spring 123 is the primary means used for pressing the crimping-rollers to their work, and the force of this spring being accurately determined the pressure exerted by the crimping-rollers is just sufficient to press the metal  
60 flange into the fiber body.

In operating upon the body-blanks of fibrous material it is essential that the crimping pressure be accurately predetermined in  
65 order to prevent cutting of the fiber and to secure uniformity of work, and it is also essential that this primary predetermined pres-

sure be of a yielding nature. This predetermined and yielding pressure I secure by means of the spring 123. In order to relieve  
70 the crimping pressure, I employ positively-operating mechanical means for withdrawing the force of said spring 123, consisting of a lever 135' pivoted loosely on the main shaft and connected to the rod 126 and having an  
75 arm 137'', operated by a cam-surface 137''' on a gear-wheel 46', which turns on a pin 46'' and is operated by a pinion 46''' on the main driving-shaft. After the crimping action has been performed this mechanical means  
80 will raise the rod 126, take off the pressure of the spring 123, and the crimping-rollers will then be free from pressure, though they may with their surfaces 138 bear lightly upon the upper face 114' of the chuck by reason of the  
85 pressure of the spring 133. The rollers have their lower faces inclined at 139, so that the rims of the cans will be guided to the seats 113 114 on the chuck, and when the can is inserted its rim bearing against the inclined  
90 surface 139 of the crimping-roller will force the same backward slightly, the spring 133 yielding for this purpose. The crimping pressure is applied gradually to the crimping-rollers as the force of the spring 123 is gradually  
95 exerted and applied through the lighter spring 133, and after this spring 133 has been compressed a pin 140 on the slide-bar 132 contacts with the bar 141 of the crimping-roller carriage, and then the full force of the spring  
100 123 is exerted upon the carriage to force the crimping-rollers to their work. This gradual application of the spring-pressure is important, as it prevents any damage to the material, which might occur should the crimping-  
105 rollers be forced suddenly and with the full pressure against the head. After the pressure has been applied and the crimping-rollers set against the work the chucks are set in rotation through the described gearing from  
110 the clutch 142', which comprises the members 142'' 142''' and a spring-pin 142'', which connects these members and is controlled to connect or disconnect the clutch members by a sliding piece 146', which moves in a bracket  
115 146'' and is operated by the cam 143'' on the gear-wheel 46', a spring 146'' being used to return the slide, so that the spring-pin may connect the clutch members. Through the described gearing the upper and lower chucks  
120 are rotated in unison to prevent twisting of the fiber can-bodies.

The crimping-rollers, as before stated, are arranged in pairs in the oscillating block 117, and by this arrangement and the fact that  
125 they are under pressure they act perfectly in connection with the square, oblong, or like shape cans having corners, as in turning the corners the movement or position of one roller relative to the can will be controlled by the  
130 position of the other roller, and a uniform contact will be insured between the rollers and the flange of the head. In passing the corners the blocks carrying the pairs of crimp-



ing-rollers simply rock upon their pivots and there is no tendency of the rollers to jump from the corners of the cans. Both rollers act simultaneously upon the head, and a double crimping effect is thus secured for each revolution of the chuck, and this insures a rapid production of the work with a comparatively-slow rate of rotation of the chucks. Referring to Fig. 3, it will be seen that the crimping-wheels 115 116 are bearing upon the can at each side of the corner, and supposing the can to be rotating in the direction of the arrow the roller 115 will rise upon the apex or edge of the corner, and this will cause the block 117 to rock on its pivot in the direction of the arrow, and thus keep the other roller 116 against the flat side of the can, and the pressure of the roller 116 along the flat side will be the same as the pressure exerted at the corner by the roller 115. In crimping the heads of these square or like shape cans having corners the crimping-rollers must necessarily move back and forth radially of the cans as they work upon the flat sides and corners thereof, and this movement should be compensated for and prevented from affecting the pressure-applying means, so that said means may be constant and uniform in its action in order that all parts of the can-head may be crimped uniformly, whether at the corners or at the sides. This compensating means is interposed between the pressure-applying spring and the carriage of the crimping-rollers, and it comprises the lever 131', before described, bearing at one end upon the slide 132 of the crimping-roller carriage and at its opposite end engaging the slide 156, moving in a guide 156' of the frame and having a roller 156'' at its front end bearing upon the cam 155, which is connected with the shaft of the upper chuck. This cam is formed to compensate for the rectangular or like shape of the can, and it is so set relatively to the chuck that its high parts lie in substantially the same relative position radially of the shafts as the low parts of the chuck, or, in other words, the corners of the cam 155 are in line vertically with the flat sides of the chuck-disk and out of line vertically with the corners. It will be seen from this that as the corners of the cans are passing the crimping-rollers and forcing them backward the flat side or low part of the cam 155 will be opposite the roller 156'', so that the slide 156 may move forwardly as the crimping-roller carriage 118 moves rearwardly, the compensating-lever 131' simply rocking upon its fulcrum for this action, and as the flat side of the can comes opposite the crimping-rollers the corner or high parts of the cam 155 will force the slide 156 rearwardly, and through the lever 131' the crimping-rollers will be kept uniformly against the flange of the head. In this compensating action the compensating lever 131' simply turns upon its pivot, but the position of this pivot or fulcrum will not be changed relatively to the connections

leading to the pressure-applying means, and the backward and forward movement of the crimping-rollers in acting upon the corners and flat sides will not affect the pressure-applying spring, and the force of this will be uniformly exerted through the fulcrum 159 and the compensating lever 131'. The lower chuck-disk, with its gear-wheel, is pressed upward with a predetermined pressure exerted by the spring in the barrel 163, Fig. 4, which bears at its upper end against the lower end of the socket 160, into which the spindle of the lower chuck is dropped, and the lower chuck is depressed to allow the operator to place the can in position by a rod 159<sup>a</sup>, connected to the socket 160 and operated through a lever 159' from a cam 159'' on the gear-wheel 46', the said lever having a forked end engaging pins on the collar 154, adjustably secured to the rod 159<sup>a</sup> by a set-screw 155'. The socket 160 is guided in its vertical movement by pins 161, entering slots 162 in the spring-barrel. The lower chuck, with its geared connection, can be adjusted vertically to suit different sizes of cans by moving the barrel 163 vertically and fixing it in the desired position by the clamp-bolt 163<sup>x</sup>, which presses together the two parts of the split bracket 163<sup>a</sup> of the frame. The screw 155' is used to set the collar 154 on the rod 159<sup>a</sup> to suit the adjustment of the lower chuck.

It will be seen from the above that all parts which act upon the can will be pressed into engagement therewith by a predetermined and yielding pressure, these parts including the chuck mechanism and the crimping mechanism, and by this the work may be carried on without damage to the fiber can-body and the crimping will present a uniform appearance and be uniformly effective. The working parts set against the can by a predetermined spring-pressure are retracted by the positively-acting means, as described.

My invention may be advantageously used in the making of round cans or cans with rounded sides or corners as well as cans of rectangular shape, and I do not wish to limit myself at all in this respect.

I claim—

1. In combination in a machine for making cans of rectangular or like shape, means for holding such cans, a pair of crimping-rollers acting simultaneously upon the flange of the can-head, a swiveled block carrying the pair of crimping-rollers, and yielding means for forcing the swiveled block forward to make the rollers bear simultaneously upon the can-head whereby one roller will control the position of the other roller in passing around the corner, substantially as described.

2. In combination in a can-making machine, the crimping mechanism for the heads comprising a crimping-roller, a movable support therefor, and primary means for applying a predetermined yet yielding pressure to the roller consisting of a spring having a predetermined force and connected with the roller-



support and positively-operating means acting upon said primary means for relieving the spring-pressure at the roller or for retracting the roller, substantially as described.

5 3. In combination in a machine for making cans, crimping mechanism comprising the pair of crimping-rollers acting simultaneously upon the can-head and one directly in rear of the other, a swiveled block carrying the pair  
10 of rollers, and primary means for forcing the swiveled block with the rollers forward with a predetermined yet yielding pressure consisting of a spring of predetermined force in connection with the swiveled block, substantially  
15 as described.

4. In combination in a machine for forming cans, a pair of crimping-rollers adjacent to each other and acting simultaneously upon the can-head, a swiveled block carrying the  
20 said rollers, a carriage in which the block is swiveled, a sliding bar to move in the carriage, a spring between said bar and the carriage and a primary means for setting the crimping-rollers against the can-head comprising the spring of predetermined force with  
25 connections between the same and the sliding bar, the said bar having a part thereon to form an unyielding contact with the carriage after the interposed spring has been compressed  
30 whereby the full force of the primary spring will be active on the carriage after the spring-pressure has been gradually applied to the crimping-rollers, substantially as described.

5. In combination in a machine for making  
35 cans, means for holding the can, a crimping-roller to act on the can-head, means for forcing the crimping-roller forward to its work, and means for compensating for the shape of the can, said compensating means being interposed between the said crimping-rollers  
40 and the pressure-applying means therefor to prevent the reciprocating movement of the crimping-roller toward and from the center of the can from being transmitted to or from affecting the pressure-applying means, substantially as described.  
45

6. In combination in a machine for making cans, a crimping-roller, means for applying a pressure thereto and a compensating means  
50 in connection with the crimping-roller and pressure-applying means, said compensating means acting to prevent the reciprocating of the roller while passing around the can from affecting the pressure-applying means, substantially as described.  
55

7. In combination in a machine for making cans, means for holding the cans, a crimping-roller to act on the can-head, means for applying pressure to the roller to set it to its  
60 work and a compensating lever having connection with the crimping-roller and with the pressure-applying means, and compensating controlling means for said lever, substantially as described.

65 8. In combination in a machine for making cans of rectangular or other shape, the crimping-roller to act on the can-head, means for

applying the pressure to the roller, a compensating lever in connection with the said roller at one end, a device acting as a cam for the  
70 other end of the lever to keep the crimping-roller pressed against the can and a connection between the said lever and the pressure-applying means, substantially as described.

9. In combination in a machine for making  
75 cans, a crimping-roller to act on the can-head, the spring for applying pressure to the roller a compensating means consisting of a lever in connection at one end with the crimping-roller, the device having a cam action on the  
80 other end of the lever to keep the roller pressed against the can-head and a connection from the pressure-spring to the pivot of the compensating lever intermediate of its ends, substantially as described.  
85

10. In combination in a machine for making cans, a pair of crimping-rollers, a swiveled block carrying the same, said rollers acting simultaneously upon the can-head, a spring for applying a predetermined pressure  
90 to the rollers, a compensating lever connected with the spring and having connection with the crimping-rollers and a cam device acting upon the end of the lever to compensate for the shape of the can, substantially as described.  
95

11. In combination in a machine for making cans, the chuck for holding the can comprising the plate having an undercut shoulder and substantially-vertical faces 114 114',  
100 and a crimping-wheel having a crimping-face opposite the vertical face 114 and undercut shoulder and having a face 138 opposite the face 114, substantially as described.

12. In combination in a can-making machine, the chuck for holding the head having an undercut shoulder, and a substantially-vertical face forming a corner for receiving the flange of the head and a crimping-roller having reversely-inclined faces operating in  
110 conjunction with the chuck and yielding means to hold the roller to its work, substantially as described.

13. In combination in a machine for making cans, a crimping-roller, a movable support therefor, a spring for forcing the support with the roller toward the can-head to crimp the same and a cam and lever connections for relieving the pressure of the spring or retracting the crimping-roller, substantially as described.  
120

14. In combination, the upper and lower chuck-disks, the spring for forcing the lower chuck upwardly with a determined pressure, a cam-lever adjustably connected with the  
125 lower chuck for retracting it, a crimping-roller, a spring having connection therewith for setting the roller to its work with a determined pressure, a cam-lever having connection with the said spring for relieving the  
130 crimping-roller from the pressure thereof, the gearing for rotating the chuck-disks, a clutch controlling said gearing, a cam and crescent operated thereby for controlling the clutch,



the driving-shaft with connections to the clutch and a gear driven from the driving-shaft and carrying the cams, substantially as described.

5 15. In combination, the crimping-roller, the movable support therefor, the spring for applying a determined yet yielding pressure to the crimping-roller and the loose connection between the spring and the roller-support with a stop whereby the force of the  
10 spring will be applied at first gradually and then to the full extent when the stop is brought into action, substantially as described.

15 16. In combination, the chuck, the crimping-roller, a compensating lever, the shifting fulcrum and means for applying a pressure to the crimping-roller, said pressure acting through the said fulcrum, one end of the compensating lever being connected with the  
20 roller and the other end of the lever having a compensating action, substantially as described.

17. In combination in a can-making machine, a crimping-roller with its support or  
25 block, means for applying a pressure thereto, and compensating means in connection with the crimping-roller and pressure-applying means, said compensating means serving to prevent variations in the action of the roller  
30 from affecting the pressure-applying means, substantially as described.

18. In combination in a can-making machine, a crimping-roller, a spring for applying pressure to the roller, a compensating lever in connection with the crimping-roller at  
35 one end, and a cam acting on the other end of the said lever, the said spring-pressure being applied to the pivot of the lever intermediate of its ends, substantially as described.

40 19. In combination, the two chucks, a primary means for forcing them together con-

sisting of the spring, automatic positively-operating mechanism for retracting the chucks and allowing them to close at given intervals, crimping-rollers and means for advancing the  
45 same automatically, the action of the rollers being timed to correspond to the automatic action of the chucks, substantially as described.

20. In combination in a machine for making cans, a means for holding the can, a crimping-roller to act on the can-head, means for forcing the crimping-roller forward to its work, and means for compensating for the shape of the can comprising a movable part  
50 and automatically-operating means to control the same, said compensating means being interposed between the said crimping-rollers and the pressure-applying means therefor to prevent the reciprocating movement of the  
55 crimping-roller toward and from the center of the can from being transmitted to or from affecting the pressure-applying means, substantially as described.

21. In combination in a machine for making cans, a crimping-roller, means for applying a pressure thereto and a compensating means in connection with the crimping-roller and pressure-applying means, said compensating means comprising a movable part and  
65 automatically-operating means to control the same, said compensating means acting to prevent the reciprocating of the roller while passing around the can from affecting the pressure-applying means, substantially as described.  
70 75

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

HENRY C. HUNTER.

Witnesses:

J. W. TERRY,  
H. C. GWYN.