(No Model.) 2 Sheets—Sheet 1.

H. SCHAAKE.

MACHINE FOR CRIMPING CAN HEAD FLANGES.

No. 528,306. Patented Oct. 30, 1894.

Fig. 1.

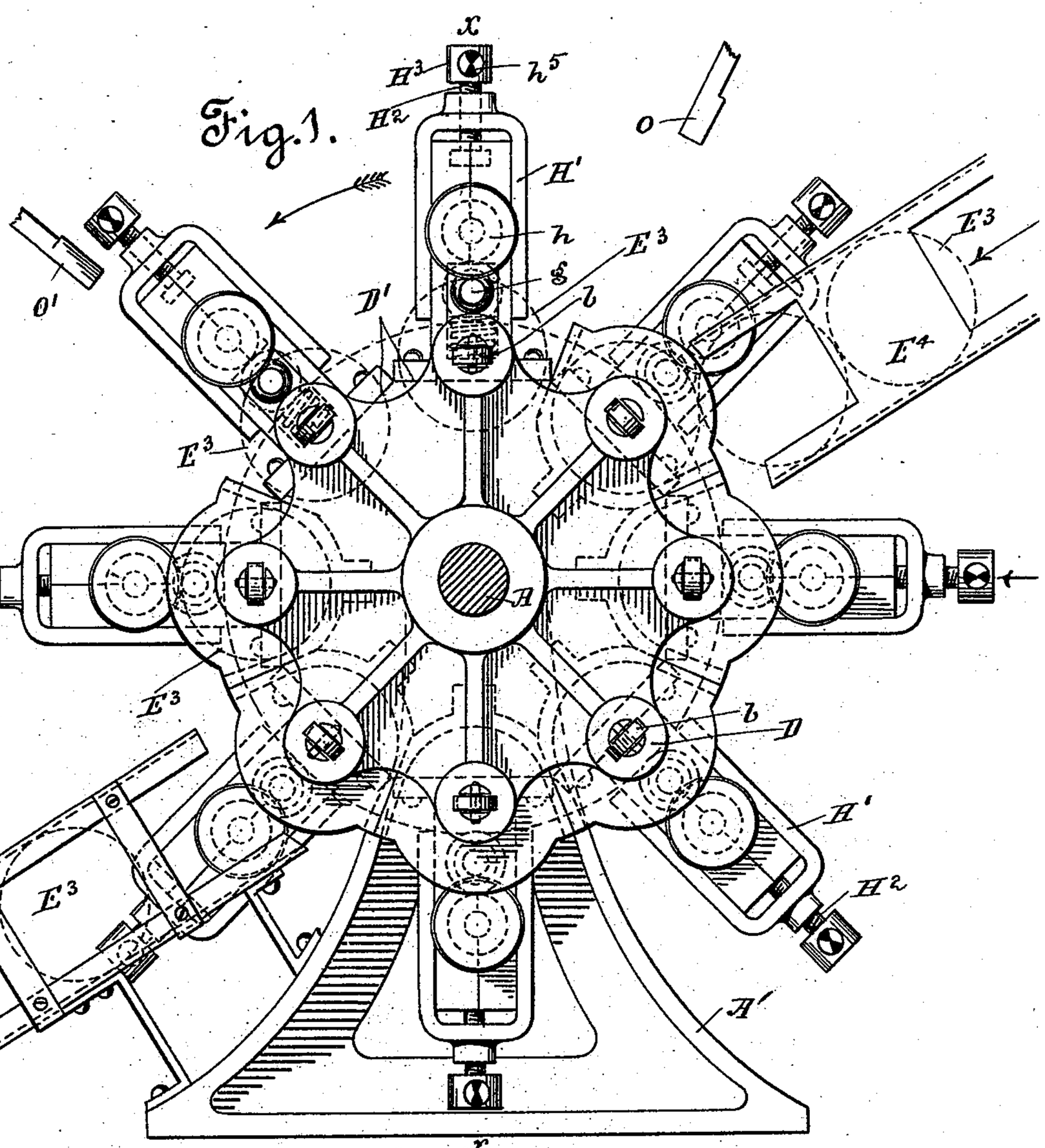

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

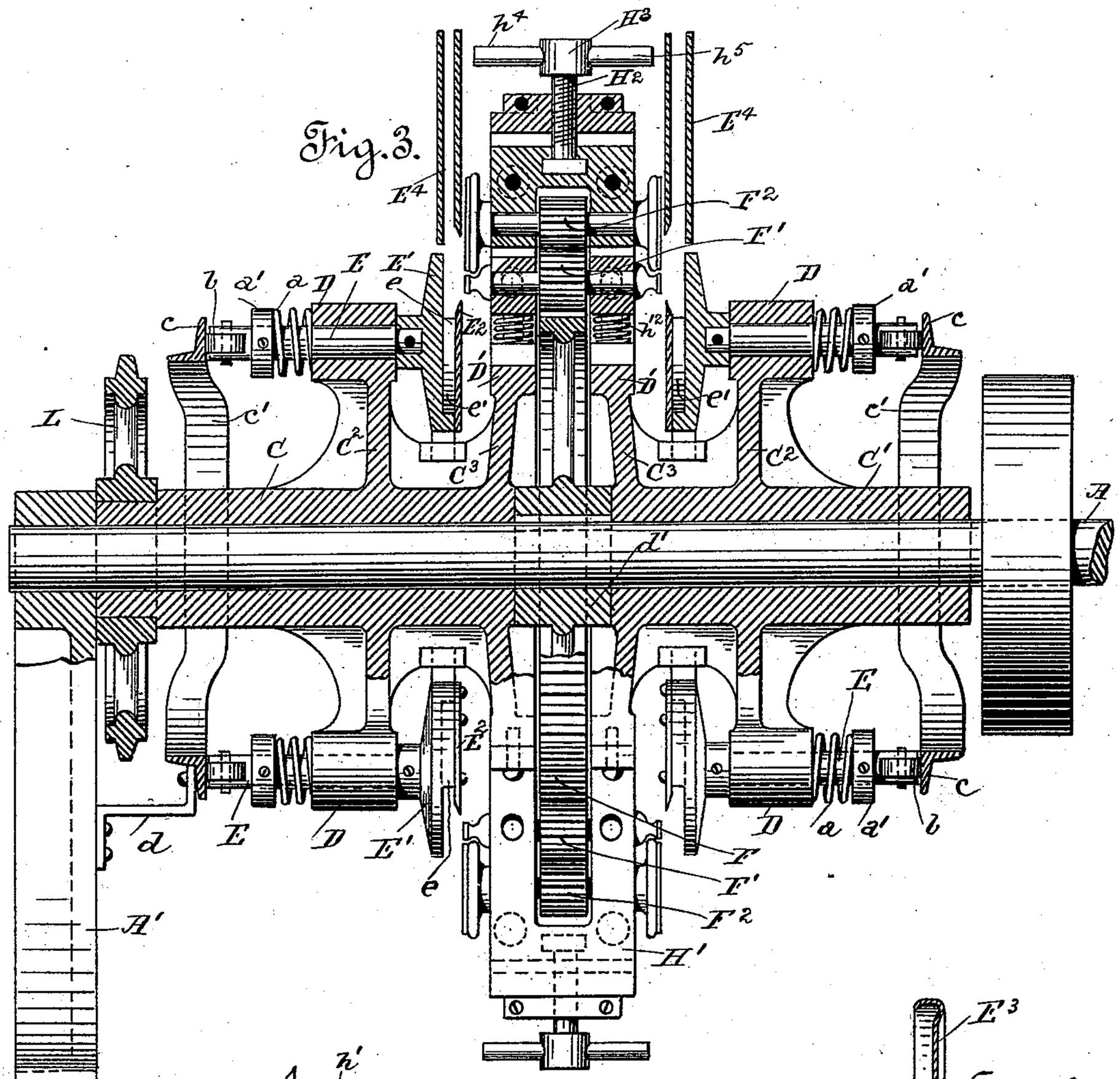


Fig. 4.

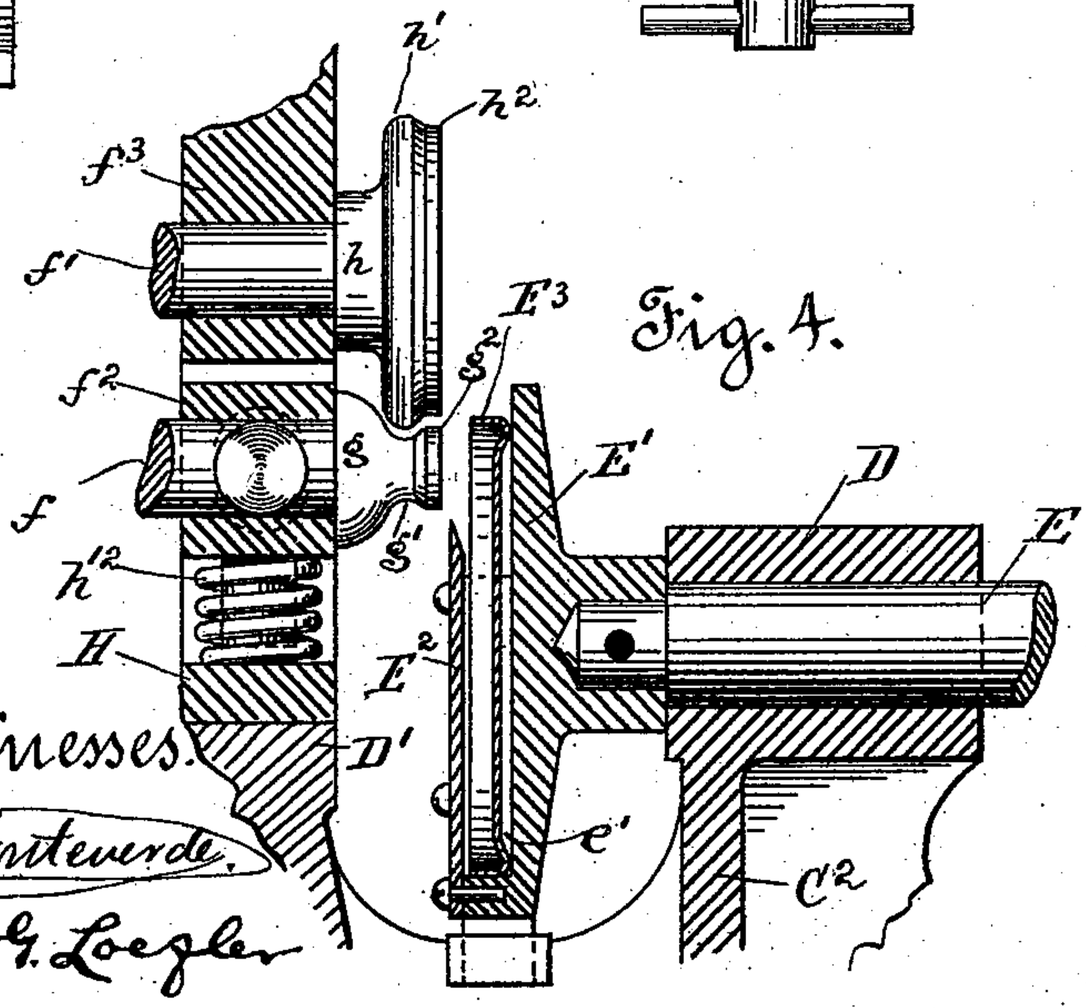
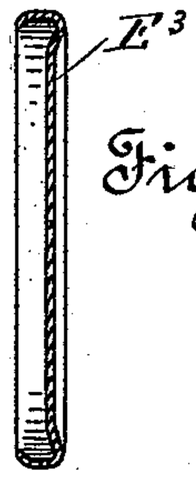


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY SCHAAKE, OF SAN FRANCISCO, CALIFORNIA.

MACHINE FOR CRIMPING CAN-HEAD FLANGES.

SPECIFICATION forming part of Letters Patent No. 528,306, dated October 30, 1894.

Application filed December 18, 1893. Serial No. 493,998. (No model.)

To all whom it may concern:

Be it known that I, HENRY SCHAAKE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Machines for Crimping Can-Head Flanges; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

The present invention has relation to a certain new and useful can head crimping machine, the object of which is to inturn or crimp the flange of the can head so as to enable the same to readily pass inside a can body in order to make an inside headed can, and it consists in the arrangement of parts and details of construction as will be hereinafter more fully set forth in the drawings, described and pointed out in the specification.

It is extremely difficult to place the head inside of that class of can bodies which are made with what is known as a lap seam or joint, for the reason that the flange of the head catches the under lap of the seam and thus prevents the head readily slipping into the body, or if it is forced in, the can body or flange of the head is damaged and an imperfect can is the result. I have found that by turning in or crimping the edge of the flange slightly the head will slip into its proper place without engaging the under lap of the can body seam, which is of the utmost importance where the heads are rapidly placed into the body by machinery.

In order to more fully understand my invention, reference must be had to the accompanying sheets of drawings, wherein—

Figure 1, is a side elevation of the machine. Fig. 2, is a detail view showing one set of the crimping rolls; Fig. 3, a vertical sectional elevation taken on line *x*—*x*—and viewed in the direction of the arrows; the feed chute being shown at the top of the machine. Fig. 4, is an enlarged detail sectional view showing the crimping rolls, the holder for the head and the piston for moving said holder in order to insert the flange of the head between the crimping rolls; and Fig. 5, a detail view of the head after being crimped.

The operating shaft A, works in bearings held within the side pieces A′, of the machine, only one of which have been shown. These pieces may be said to constitute the frame of the machine, but any suitable style of frame may be made use of. One end of the operating shaft has a drive wheel mounted thereon, which wheel imparts rotary motion to the said shaft. Upon this shaft is loosely mounted the sleeves C, C′, from which sleeves project the disks C^2, C^3. The disk C^2, is provided at its periphery with a series of bosses D, while the inner disk has its periphery flattened into a number of faces D′, as shown. In the drawings I have shown eight bosses and a similar number of flattened faces, but the number is immaterial, this depending upon the style of the machine. Through the bosses D, works the piston E, the inner end of which is provided with the head E′, which head has a semi-circular projecting flange *e*, to which is bolted or otherwise secured the face plate E^2, thus forming a pocket, socket or holding seat *e*′, for the can head E^3, dropped therein from the feed chute E^4. The outer projecting portion of the piston E, is surrounded by the spring *a*, said spring being held in place by a collar *a*′, bolted to the piston as shown. The extreme outer end of said piston is bifurcated and between the arms formed thereby is held the roller *b*, which bears against the flange *c*, of the cam-ring *c*′, which ring surrounds the sleeve and is secured to the frame of the machine by the bracket *d*. It will be observed that the shape of this ring or the ring flange is such as to force the piston inward at certain points, that is to say as the roll of the piston travels against the inwardly curved portion of the flange *c*, the piston is forced inward, but when the outwardly curved portion of the flange is reached the piston moves outward by the resiliency of the spring *a*.

It will be noticed that by the foregoing I have only described the action of one of the pistons, but each being constructed and working the same upon each disk, it will not be necessary to enter into a detailed description of each. While I have shown two sleeves,

thus providing for the working of a set of pistons, this is not necessary except to crimp two heads at a time.

The sleeves C, C′, are separated by the hub d', of the gear wheel F., which hub is keyed to the shaft A and consequently rotates therewith. Gear wheel F, transmits its rotary motion to pinion F′, which in turn imparts its motion to pinion F^2. These pinions are mounted upon shafts f, f', which project through sliding boxes f^2, f^3. The outer projecting end of shaft f, has secured thereto the roll g, which roll is cut away so as to form a groove g', and a bearing flange g^2. To the end of the shaft f', upon which the upper pinion is mounted, is secured the larger roll h, which is provided with a forming flange h', which rotates within grooves g', of the smaller roll, and a bearing flange h^2, this flange being somewhat less in diameter than the forming flange. It will be noticed that I locate one roll above the other, see Figs. 3 and 4, which rolls I arrange in pairs. These form the crimping rolls for the flange of the can head and serve to crimp the flange of the can head as hereinafter set forth.

The sleeve C′, when two sets of crimping devices are made use of, I connect by the yoke H, the base of which yoke is bolted to the flattened faces D′, of the disks C^3, and hence the motion of one sleeve is conveyed to the other. Within guide-ways, not shown, cut in the walls of this yoke fit the sliding boxes f^2, f^3. The lower sliding box f^2, bears upon the spring h^{12}, which permits the same to give slightly as the flange of the can head is withdrawn from between the crimping rolls in order that the crimped portion or edge thereof may not be flattened out by meeting with too great a resistance. The sliding boxes are held in place by the yoke H′, which fits over and is bolted to yoke H. This yoke H′, prevents the boxes from falling out during the rotary travel thereof. The sliding boxes may be given a vertical adjustment, in order to regulate the position of the crimping rolls, by means of the screw bolt H^2.

To the outer end of one of the sleeves, say C′, there is secured a sprocket wheel not shown, which is rotated through the medium chain leading from any suitable machinery. The two sleeves being connected it is obvious that the motion of one is imparted to the other. Of course an ordinary belt wheel may be used instead of a sprocket wheel for imparting motion to the sleeve, or if the machine is made on a small scale, say for hand operation, the sleeve may be rotated by an ordinary crank handle.

In the machine illustrated by the accompanying drawings, which is designed for rapid work and the crimping of many thousand heads per day, I have shown a pair of pistons, a pair of head retaining pockets, sockets, holders, jaws or cups for receiving two heads from two chutes at the same time, and two sets of crimping rolls for crimping the edge of the can head flange.

This machine, as shown, may be termed a vertical rotating crimping machine, but I do not wish to confine myself thereto for I am aware that the same may be constructed to rotate in a horizontal plane. Again the machine shown is designed to automatically receive, crimp and discharge the crimped head. Still I do not confine nor wish to be understood as confining myself to such a machine, for I am aware that in building a small sized machine or one not designed for rapid work the feeding and working of the machine may be done by hand or foot mechanism, thus forming what is known as a hand or foot machine.

In my machine I so adjust the movement thereof that the crimping rolls will rotate about three times the speed of the sleeves, but while the crimping rolls rotate with greater rapidity than the sleeves and disks, still they do not travel forward any faster than said sleeves and disks, for the reason that the disks and sleeves are connected and the boxes holding the crimping rolls are held by the connecting devices for the disks. Hence the position of the crimping rolls to the pockets, or sockets holding the heads never varies. Consequently the crimping rolls are always prepared to receive the flange of the can head when the pistons are moved inward. The disks being rotated so as to bring the retaining pockets in line with the feed chutes, the heads drop therein, and as the disks continue to rotate the piston roll travels against the inwardly curved portion of the open rings or cams, and forces the piston inward until the flange of the can head is forced between the crimping rolls, the rotation of which imparts a similar motion to the head and thus causes the entire surface of the can head flange to travel between the crimping rolls. As the rolls rotate the flange h' forces the edge of the can head flange into the groove g', of the lower roll, and thus gives a slight inturn thereto. See Fig. 5. After the sleeve has traveled such a distance as to carry the piston roll off the inwardly curved portion of the cam-ring flange, the resiliency of the springs surrounding the piston forces the same outward and likewise carries the can head held within the pockets, thus causing the flange of the can head to be withdrawn from between the crimping rolls. The continued rotation of the disks brings the heads in line with the discharge chutes L′, into which they run and by means of which they are conveyed to any suitable place, say to a heading machine. As one head is being crimped another is entering the next pocket, socket, jaw or holder so as to be crimped in its proper order.

The machine herein shown and described successively receives, crimps and discharges the crimped heads.

The adjusting screw-bolt H^2, is provided

with the head H^3, from which head projects the arms h^4, h^5. These arms, during the rotation of the crimping mechanism, are brought into contact with the cams O, O'. The arm h^4, engages with cam O, and serves to throw the screw-bolt H^2, so as to cause the downward movement of the sliding block f^3, which causes the crimping roll to bear tightly against the flange of the can head held therebetween. As the crimping mechanism continues its rotary travel the arm h^5, engages the cam O', and imparts an opposite throw to the screw-bolt, which causes the sliding block f^3 to be raised, thus moving the crimping rolls apart and permitting the withdrawal of the can head flange. The spring located beneath the lower sliding box enables the rolls to adjust themselves to different thickness of metal.

By the expression, pockets for the retention of the can head, I wish to be understood as meaning and covering a jaw, mold, socket, or any suitable device which will receive and hold the can head during the operation of crimping the flange thereof.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent, is—

1. In a machine for crimping the flange of a can head, the combination with the crimping rolls, of a device for receiving the can head and holding the same during the operation of crimping, and of mechanism for forcing the holding device in and out, so as to place the flange of the head between the crimping rolls and remove the same therefrom after the flange has been crimped.

2. In a machine for crimping the flange of a can head, the combination with the adjustable crimping rolls, of mechanism for imparting rotary motion thereto, a device for receiving the can head and holding the same during the operation of crimping the flange thereof, and of mechanism for forcing the holding device in and out so as to place the flange of the can head between the crimping rolls and remove the same therefrom after the flange has been crimped.

3. In a machine for crimping the flange of a can head, the combination with the adjustable crimping rolls, of a regulating device for raising and lowering the crimping rolls, a device for receiving and holding the can head while the flange is being crimped, and of mechanism for moving the holder in and out so as to place the can head flange between the crimping rolls and remove the same therefrom after being crimped.

4. In a machine for crimping the flange of a can head, prior to its being secured to the body of a can, the combination with the crimping rolls, a device for receiving the can heads, chutes for supplying heads to the holding device, and of mechanism for automatically forcing the holding device inward so as to place the flange of the can head between the crimping rolls, maintaining the same in this position until the flange is crimped and automatically releasing the holding device after the flange has been crimped.

5. In a machine for automatically crimping the flange of a can head, the combination with the rotary traveling mechanism, the crimping rolls carried thereby, mechanism for imparting motion to the crimping rolls, the holding device for the can head, the feed chute for supplying heads thereto, and of mechanism for forcing the head holding device in and out so as to place the can head flange between the crimping rolls and remove the same therefrom after having been crimped.

6. In a machine for automatically crimping the flange of a can head, the combination with the rotary mechanism, the adjustable crimping rolls, gear mechanism for imparting motion to the crimping rolls, the holding device for the head, the feed chute for supplying heads thereto, mechanism for forcing the head holding device inward so as to place the flange between the crimping rolls, holding the same in such position during the operation of crimping, and forcing it outward after having been crimped, and of the chute for receiving the heads as discharged from the holding device.

7. In a machine for crimping the flange of a can head, the combination with the crimping rolls, mechanism for imparting motion thereto, the rotating disk for imparting rotary travel to the crimping rolls, the spring actuated piston carried by a rotary traveling disk, the cam for forcing the piston inward during its travel, the device for holding the head carried by the piston and moved therewith, the chute for feeding heads to the holding device, and of the chute for receiving the discharged heads.

8. In a machine for crimping the flange of a can head, the combination with sliding boxes working within a frame, of the crimping rolls carried threby, one of said boxes being spring actuated, mechanism for imparting motion to the crimping rolls, the holding device for the can heads, mechanism for moving the holding device to and from the crimping rolls, the feed chute for supplying heads and the chute for receiving the discharged heads.

9. In a machine for crimping the flange of a can head, the combination with the operating shaft, the sleeve loosely mounted thereon, disks projecting from said sleeve, the gear keyed to the operating shaft, a frame carried by the inner disks, sliding boxes secured within the frame, pinions located within the sliding boxes, operated by the gear wheel, crimping rolls operated by the pinions, the spring actuated piston working through the outer or larger disk, the head holding device carried by the piston, the cam for forcing the piston and head holding device toward the crimping rolls, the feed chute for supplying heads to the machine, and the chute for receiving the discharged heads.

10. In a machine for crimping the flange of

a can head, the combination with the adjustable crimping rolls, of a device for automatically lowering the crimping rolls so as to bear upon the flange of the can head, and raising same to permit the flange to be withdrawn after having been crimped, a device for receiving the can head, and of mechanism for automatically moving said holding device inward so as to place the flange of the head between the crimping rolls, holding the same during the operation of crimping and removing the heads after the flange thereof has been crimped.

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

HENRY SCHAAKE.

Witnesses:
W. A. ACKER,
LEE D. CRAIG.