

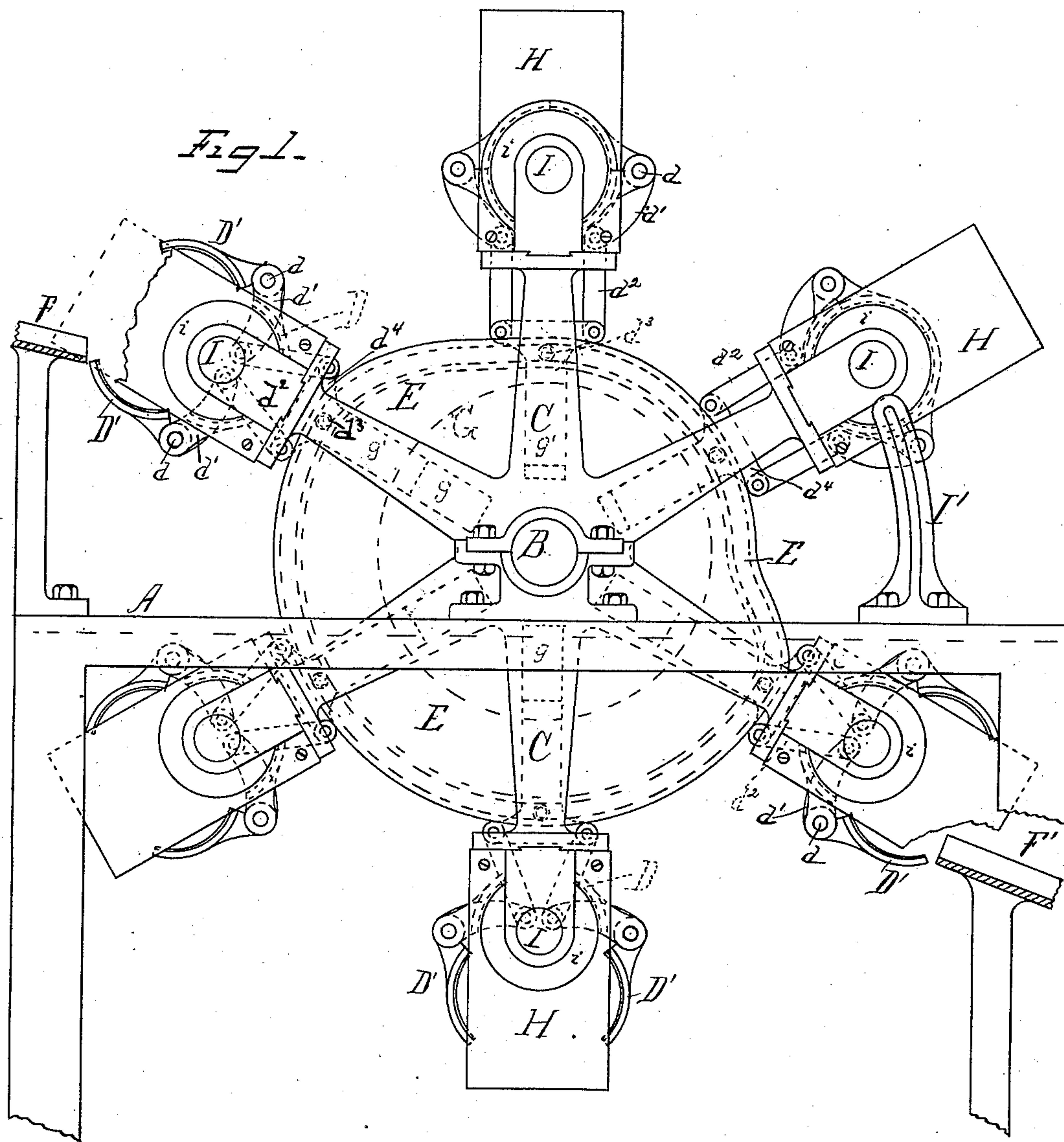
(No Model.)

2 Sheets—Sheet 1.

E. NORTON.

MACHINE FOR PUTTING ON THE ENDS OF FRUIT AND OTHER CANS.
No. 267,014.

Patented Nov. 7, 1882.



WITNESSES—
J. Everett Brown
A. Munday.

INVENTOR—
Edwin Norton
by Munday Evans & Adcock
his attys

(No Model.)

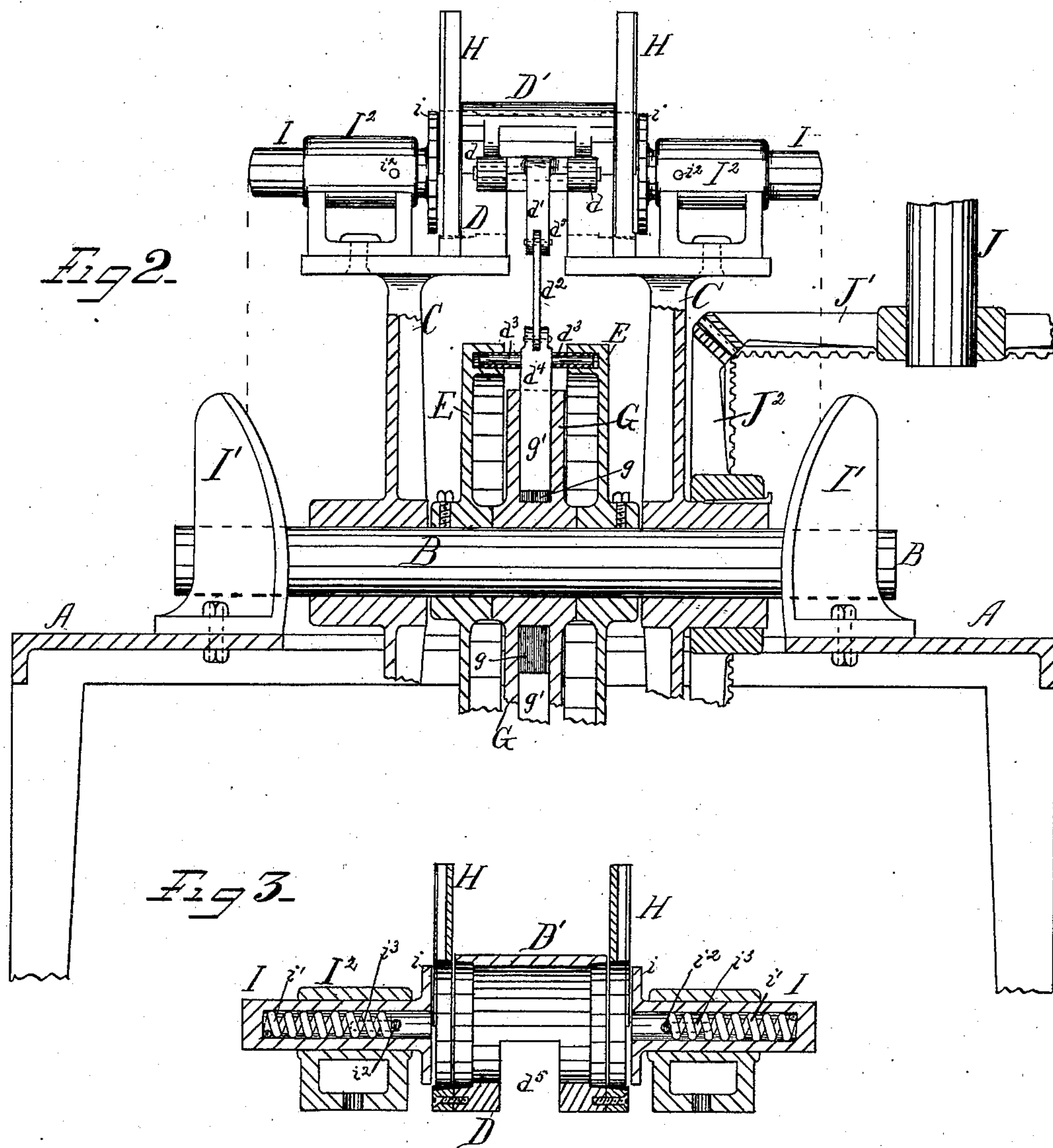
2 Sheets—Sheet 2.

E. NORTON.

MACHINE FOR PUTTING ON THE ENDS OF FRUIT AND OTHER CANS.

No. 267,014.

Patented Nov. 7, 1882.



WITNESSES
J. Everett Brown
A. M. Munday.

INVENTOR—
Edwin Norton
by Munday, Evans & Adcock
his attys.

UNITED STATES PATENT OFFICE.

EDWIN NORTON, OF CHICAGO, ILLINOIS.

MACHINE FOR PUTTING ON THE ENDS OF FRUIT AND OTHER CANS.

SPECIFICATION forming part of Letters Patent No. 267,014, dated November 7, 1882.

Application filed June 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWIN NORTON, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Machines for Putting on the Ends of Fruit and other Cans, of which the following is a specification.

This invention relates to a machine for putting on the ends of fruit and other cans, wherein the joint by which the ends are secured to the body is of the variety commonly called the "slip-joint," in contradistinction from a seamed or turned joint. The objects sought are the performance of this operation automatically and with speed and efficiency.

Heretofore machines have been constructed for applying the heads to that class of cans where the flange of the head is inserted inside the can-body, or where the head is crimped on the can-body. In such machines the interior of the can-body is ordinarily sized so as to fit and receive within it the can-head by means of an interior mandrel or former, which is forced inside the can-body while it is secured within a mold or holder, and then the can-head is dropped or pressed into place inside the can-body, as illustrated in Letters Patent No. 235,700, granted to George H. Pierce, December 21, 1880. As the can-bodies are originally formed around an inside mandrel, the interior diameter of the cans varies, if at all, very slightly, and the side seam also ordinarily forms no projection on the inside of the can, as it does on the outside, so that the operation of applying the heads to this class of cans would be comparatively simple and easy, even if the heads were required to fit the can-bodies tightly, which, however, is not the case. But heretofore no successful method has yet been devised for automatically applying the heads or covers to that class of cans wherein the flange of the cover slips or fits over the body of the can, forming the ordinary slip-joint. In that class of cans it is essential that the heads or covers, when snapped on the can-body, should fit the same very tightly and accurately; and as the exterior diameters of the can-bodies always vary somewhat, owing to the varying thickness of the different parts of the stock from which they are made, the operation of snapping or fitting the heads on the can-bodies is one of

considerable difficulty, and when done by hand, as it heretofore always has been done, it requires skilled labor, and is a slow and tedious operation. The heads or covers for the cans are formed by a stamp, so that their interior diameters are always precisely the same, and in my machine the can-bodies are placed within a can sizing and clamping mold and compressed thereby until the exterior diameter of the can-body is made to conform accurately to the interior diameter of the head, and so held while the head is forced upon the can-body, the mold or holder being cut away or enlarged at each end to conform to the exterior diameter of the head, thus leaving an annular space between the can-body and mold conforming to the thickness and width of the flange on the can head or end, into which annular space the head is forced, and then the mold is opened and the headed can discharged.

In this invention the can-body is first placed within a clamping-mold conforming accurately in shape and dimension to the exterior of the can-body, and while confined in this mold the end of the can is forced upon the body by a piston entering the mouth of the mold, room being provided for the entrance between the mold and can-body of the flange borne upon the end of the can by chamfering away the interior of the mold slightly as far as said flange extends. The mold is also preferably made tapering at the mouth, where the can end is received, so as to guide the end accurately to the body and insure the registering of one with the other. In the furtherance of speed, I place a series of these molds, accompanied by pistons, upon arms radiating from and revolving around a common center or upon a wheel, and at proper times actuate the molds to clamp and release the cans and the pistons to put on the ends by means of suitable devices with which they are connected or come in contact during the rotation of the arms or wheel. All these and other features of invention I will proceed to describe with the aid of the drawings, in which—

Figure 1 is a side view of my machine. Fig. 2 is a front view, partly in section. Fig. 3 is a detail longitudinal section through one of the molds and its pistons.

In said drawings, A represents the frame of

the machine, and B a stationary or non-revolving shaft mounted thereon. Secured upon this shaft so as to rotate around the same as a common center are a series of pairs of arms, C C, each pair whereof supports one of the clamping-molds and its piston or pistons. The inner half, D, of the mold is fixed upon the arms; but the outer half is divided into two parts, D' D', which are made capable of opening to receive the can-body and of closing in clamping it by hinging them at d to projections from the under half, D.

The actuating-power in operating the moving parts is obtained through the jointed levers d' d^2 , of which there is one for each part D', from an annular grooved cam, E, and a pin, d^3 , engaging therewith and secured in a cross-piece, d^4 , connecting the two levers d^2 . A transverse slot, d^5 , in the inner half, D, permits the entrance within the same of the levers d' d^2 when the mold is opened, as clearly illustrated.

The annular cam is preferably made in two parts, each the counterpart of the other, and the pin d^3 to extend both ways so as to enter both such parts. The cam is fixed upon the shaft B, and is shaped and positioned so as to close the mold immediately after the can-body has been received therein, and to discharge it as soon as the end has been forced on. Thus in the machine illustrated the can-body is fed from the trough F, the mold being open when it reaches that point. It is then immediately closed, as shown, by the mold at the top of Fig. 1, and remains closed until the mold reaches the discharge-trough F'.

Between the parts of the cam is a ring, G, loosely encircling the main shaft. This ring is provided with radial recesses g , into which extensions g' of the cross-pieces d^4 are fitted and slide, serving as guides to the parts operating the moving sides of the molds, and insuring a perfectly true push or movement thereof by the cam.

Accompanying each mold is a feed passage or chute, H, through which the can ends are fed into position at the open mouths of the molds, and a piston, I, having a head, i , corresponding in form and dimension as nearly as may be with the can end. These pistons are actuated to their duty of forcing the ends upon the can-bodies by the contact of their outer ends with the stationary cams I' upon the bed of the frame A, such contact taking place before the mold has reached the discharge-chute F'. After the pistons have been thus actuated they are retracted by springs i' , inserted in the interior thereof, and confined between the close end of the same and a pin, i^2 , passing through longitudinal slots, i^3 , in the sides of the piston (see dotted lines, Fig. 3) and secured in the encircling barrel I², wherein the piston slides. This barrel is secured upon an arm, C, in any appropriate manner. After the can has been capped or ended thus the annular cam forces the mold open, and in so doing the parts which enter the transverse slot d^5 eject the can into the chute F'.

As shown in Figs. 2 and 3, the end of the mold is chamfered away interiorly to give room to the flange of the cap or can end to pass outside the can-body. This is a very essential feature, and I also give the mold a slightly flaring opening, terminating at the point where the cap and body first meet, so the former may be deflected to the right position if it is not accurately positioned at the time the piston begins to move it.

Power is communicated to the mechanism from the shaft J through the bevel-gears J' J², the latter being keyed to the hub C', from which one of each pair of the arms C radiates, and the power so given to the arms upon one side is carried to those upon the other side through the molds which connect them together.

I have shown duplicate chutes for the can caps and pistons at each end of the molds.

It will be understood that the invention may be used to cap one end at a time or both ends, as desired. Nor do I wish to be limited to arms C, arranged in pairs, nor to the precise manner of opening the molds, nor to the precise operating mechanism therefor, because these features may obviously be varied in many respects.

A mold constructed after my invention—that is, so as to conform to the exterior of the can-body—fits the body accurately and presses with equal clamping force upon every part thereof. The body is thus made strong to resist collapse, and is presented for the application of the cap or end in perfectly true form and without the aid of an interior mandrel or forming device. The chutes through which the ends are fed to the molds serve the additional function of guiding the can-body in its entrance to the mold.

Instead of providing a separate piston for each one of the molds, as shown in the drawings, if preferred, a single pair of non-revolving pistons may be used; but in this case obviously the pistons must be operated by other devices than the stationary cams shown, and the carriage upon which the molds are mounted would require an intermittent instead of a continuous motion; and in this case, also, instead of providing a series of chutes for the can ends, a single stationary pair will suffice, and I do not wish to limit myself to any particular form or construction of can-mold or means of operating said mold to clamp or release the can, nor to any particular devices for forcing the can end upon the can-body when secured in said mold, as all these features or devices may be greatly varied without departing from the principle or essential characteristic of my invention.

It may also be observed that the molds may be mounted upon a reciprocating slide or an endless belt or other device instead of the revolving wheel shown in the drawings.

I claim—

1. In a machine for applying to can-bodies heads fitting outside the same, the combina-

tion of a device for sizing the exterior diameter of the can-body to conform to the interior diameter of the can-head and holding the same so sized while the head is applied, said sizing and holding device having its end enlarged to fit the exterior diameter of the can-head, so as to leave an annular space between it and the can-body for the reception of the flange of the can-head, with a device for forcing the can-head into said annular space, and thereby applying the head outside the can-body, substantially as specified.

2. In a machine for applying to can-bodies heads fitting outside the same, the combination of a chute or device for delivering the can-bodies to the machine, with a movable device for clamping the can-body and sizing its exterior diameter to conform to the interior diameter of the can-head, said clamping and sizing device having its end or mouth enlarged to leave an annular space between the same and the can-body, clamped therein for the reception of the flange of the head, a chute or

device for delivering the can-heads to the machine, and a device for forcing the can-head into said annular space at the end of said clamping and sizing device, substantially as specified.

3. In a machine for simultaneously applying the heads to both ends of a can, the combination of a series of movable devices for clamping the can-body and sizing its exterior diameter to conform to the interior diameter of the can-heads, said clamping and sizing devices having enlargements at each end or mouth for the reception of the can-heads outside the can-body, with devices for simultaneously forcing the can-heads on each end of the can-body into the annular spaces at each end thereof between the can-body and said clamping and sizing device, substantially as specified.

EDWIN NORTON.

Witnesses:

EDMUND ADCOCK,
T. EVERETT BROWN.