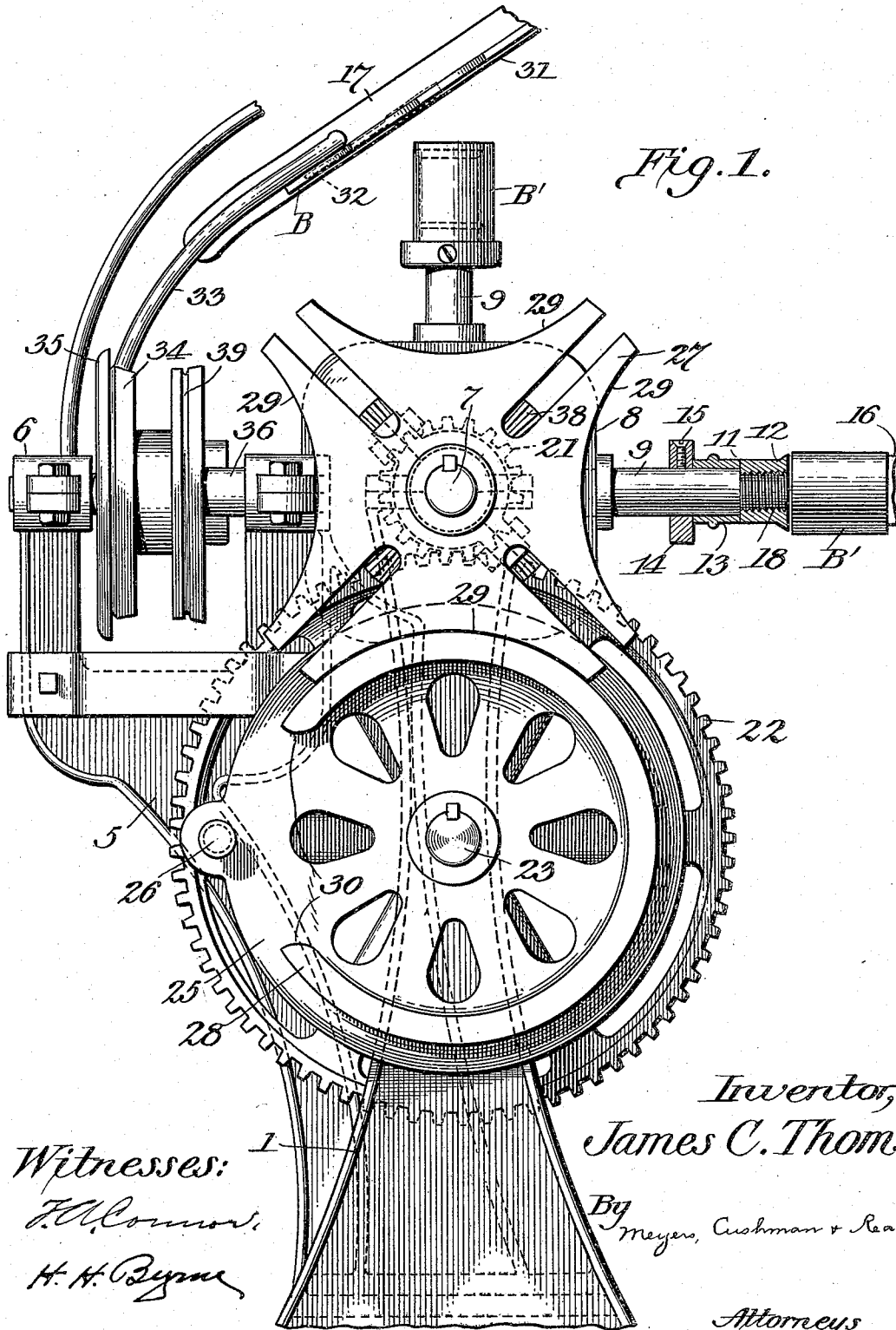


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APPLICATION FILED FEB. 7, 1907.

939,454.

Patented Nov. 9, 1909.
4 SHEETS—SHEET 1.



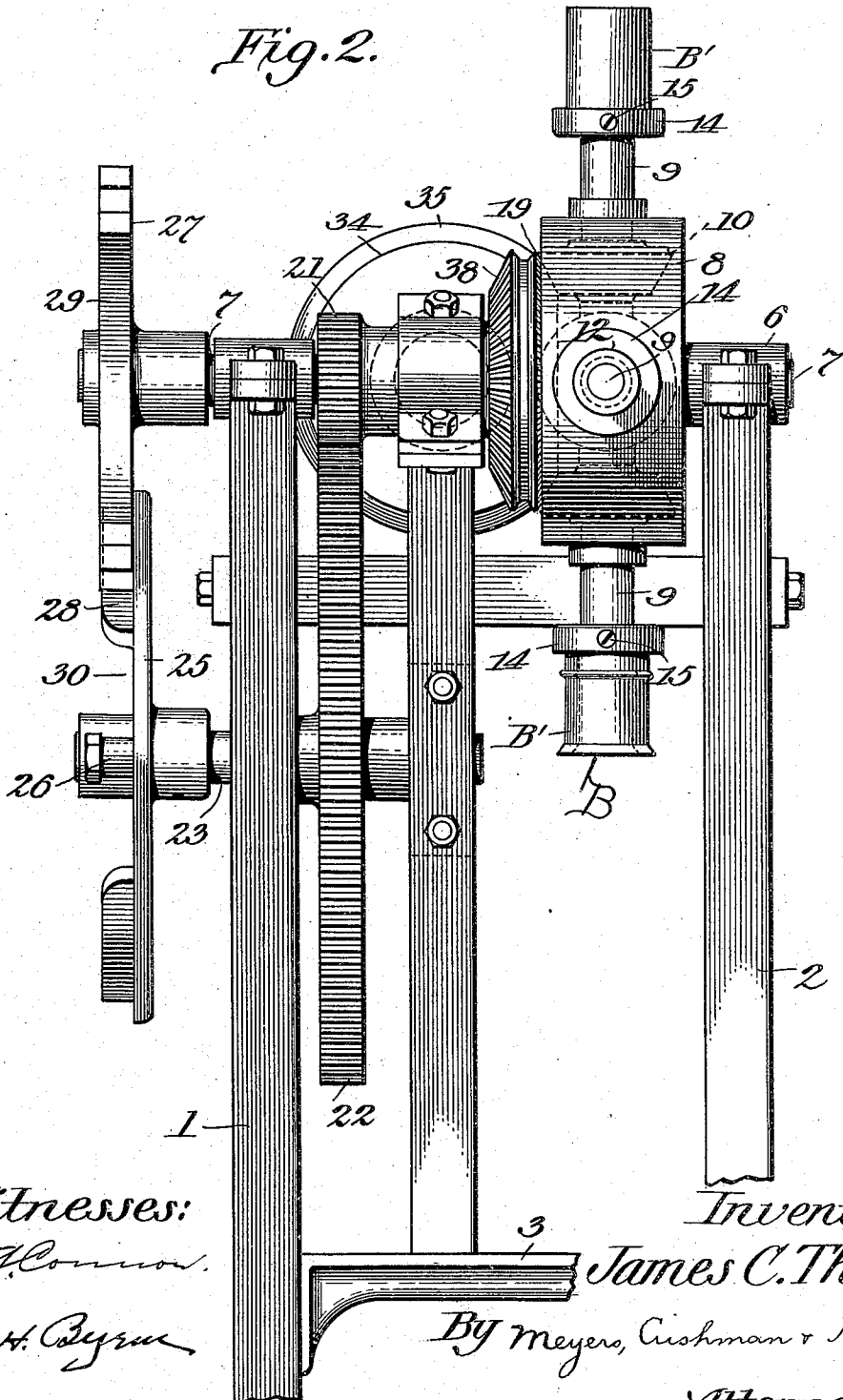
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4 SHEETS—SHEET 2.

Fig. 2.



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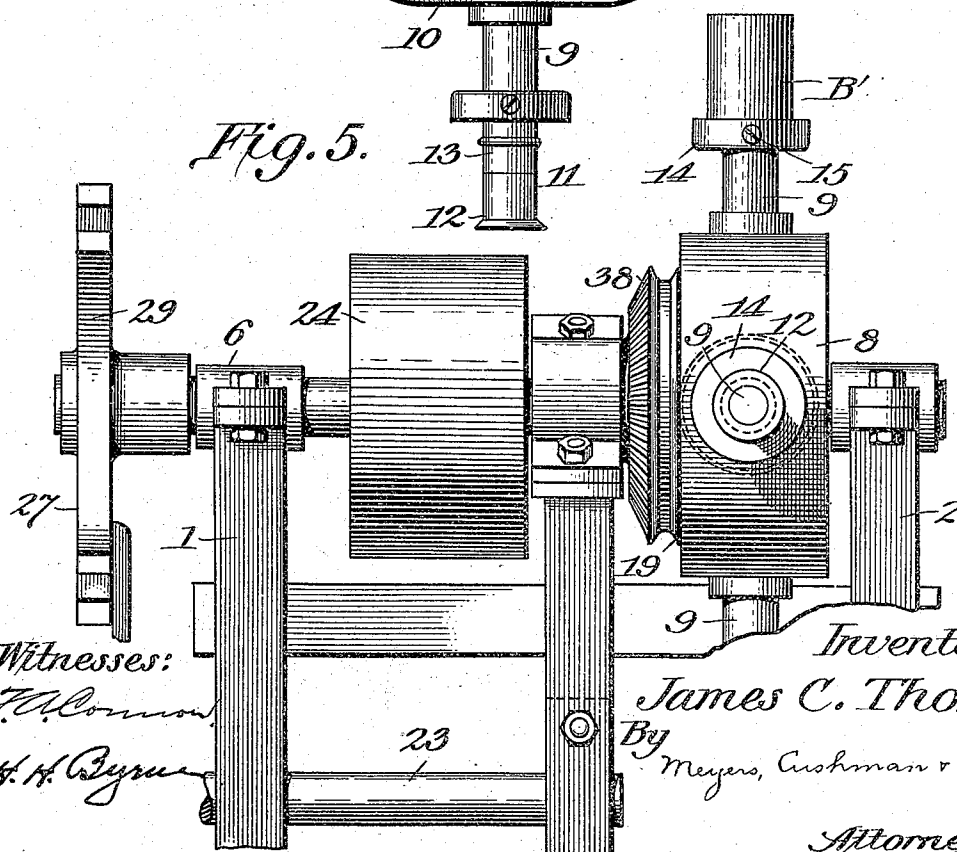
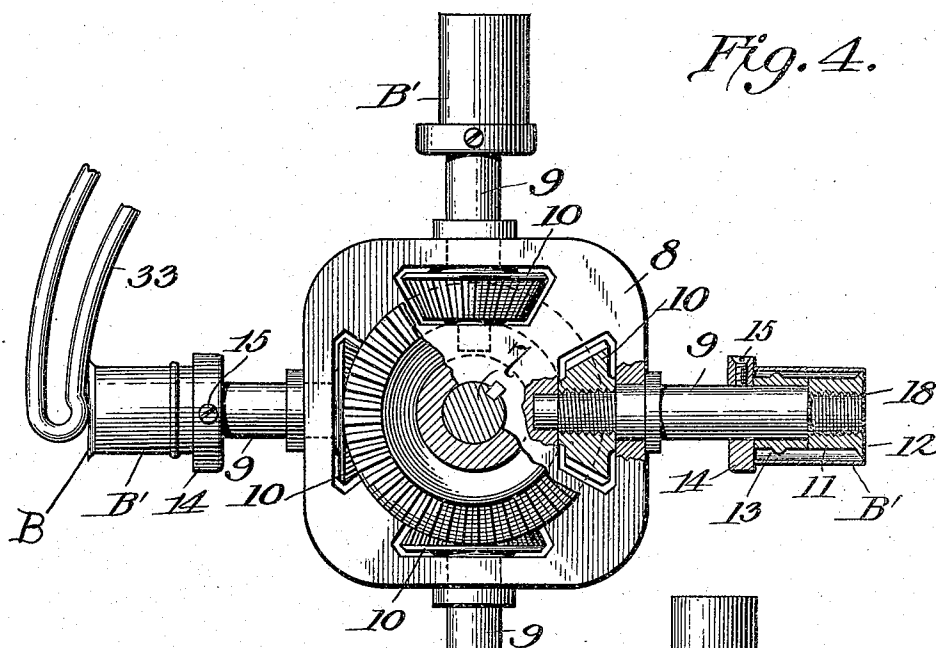
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4 SHEETS—SHEET 4.

939,454.



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MACHINE FOR APPLYING BOTTOMS TO CANS.

939,454.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed February 7, 1907. Serial No. 356,293.

To all whom it may concern:

Be it known that I, JAMES C. THOM, a citizen of the United States, residing at Helmetta, in the county of Middlesex and State of New Jersey, have invented new and useful Improvements in Machines for Applying Bottoms to Cans, of which the following is a specification.

This invention relates to improvements in machines for applying can bottoms to can bodies, and has for its object the provision of a machine for doing this work automatically, expeditiously and efficiently.

To the ends stated the invention resides in a machine possessing the elements, and the several different combinations of elements and in their arrangement and mode of operation, as hereinafter described, and then pointed out in the appended claims.

In the accompanying drawings is illustrated a machine according to the best known embodiment of the invention, and therein—

Figure 1 is a front elevation, Fig. 2, a side view, Fig. 3, a top plan view, Fig. 4, a detail, Fig. 5, a partial side elevation showing a modification of the driving means, Fig. 6, a detail of the delivery end of the can-bottom feeding mechanism.

In the said drawings is shown one suitable type of frame or base for supporting the several operative parts, comprising standards 1 and 2, a suitable table or platform 3 connected to and bridging between the standards, and a pedestal 5 rising from said table or platform, the said several standards and pedestal having appropriate journals 6 for the hereinafter referred to machine shafts.

Keyed on a shaft 7 journaled in bearings in the standards 1, 2, is a mandrel-carrier 8 in which are rotatably mounted radial arms 9 provided with planet-gears 10 and carrying mandrels 11. The mandrels 11 are suited to the dimensions and shape of the can-body to be bottomed. The mandrels are provided with one element 12 of a crimper, the other element of which is to be described, and the combined elements constitute a crimper for crimping the can-bottom B on to the can-body B', and the mandrels are, preferably, also provided with one element 13 of a beader which operates to form an annular bead near the top of the can-body

against which the flange of the can cover may rest. The arms 9 are provided with collars 14 arranged thereon, removed from the end a distance corresponding to the depth of the can-body, and which collars serve as gages against which one end of the can-bodies are made to abut to accurately position them with relation to the crimper element 12, and the beader element 13, when the latter is used. To permit dealing with can-bodies of different dimensions, the connection of the mandrels with the arms is detachable, a suitable connection being a screw-threaded one 18, as shown in the drawing; and the gage-collars 14 are adjustable along the arms and may be held in any desired position of adjustment, as by means of a binding screw 15. In this or other suitable way it is obvious that mandrels corresponding to the dimensions of can-bodies to be bottomed may be arranged on the arms and the gage-collars adjusted accordingly.

The machine shown is organized to apply the bottoms to the can-bodies and secure the same preferably by crimping, and driving mechanism, one suitable type of which is shown and will be described, is provided for rotating the mandrels continuously and revolving them intermittently, step by step, causing them periodically to come to rest at appropriate stations, for example to receive the can-bodies, and while the body-crimping and body-beading operations are going on. In accordance with this design the several mandrels, in turn, come to rest in front of a can-body-presenter 16 which is shown as an arm and which may be a delivery element of a can-making or seaming machine. While at rest in this position the mandrel receives a can-body which may be moved from the arm 16 and disposed upon the mandrel, by hand or otherwise. Obviously an operative may be stationed here to place the can-bodies upon the mandrel. The mandrel moves, one-quarter revolution in the illustrated machine, and the succeeding one is in position to receive a can-body, while the mandrel first mentioned, and the can-body arranged thereon, comes to rest adjacent a gravity can-bottom feeder 17 ready to take a can-bottom therefrom in a manner hereinafter referred to. When the second mandrel receives its can-body it is advanced, as was the first, and

a third, and then a fourth mandrel assumes the can-body-receiving position. The first mandrel and its can-body provided with a bottom has in the meantime come to rest in juxtaposition to a crimper-element 34 which coöperates with the crimper-element 12 of the mandrel. The crimper elements 12 and 34 considered broadly constitute means for securing the can closures to the can bodies, and in such of the following claims where means for securing said closures to the can bodies are referred to the combination is not to be understood as limited to crimpers as the specific means. According to the designed mode of operation the mandrels must be advanced to the several positions mentioned intermittently and come to rest in such positions to permit the crimping or crimping and beading operations to be performed, and must rotate during the crimping operation. The means by which this mode of operation is accomplished will now be described:—Loosely mounted on the shaft 7 is a sun-gear 19 in mesh with the planet-gears 10. This sun-gear as shown in one form of arrangement Figs. 1 to 4, is connected to a sleeve 20 provided with a transmitter-gear 21 in mesh with a driver-gear 22 on a drive shaft 23. The gear 22 may receive motion in any suitable manner, manually or automatically, as for instance from a moving part of a can-body making or seaming machine, in which event it will operate the mechanism for applying and crimping the can-closures in timed relation therewith. The sleeve 20 and the gear 21 fixed thereto are loosely arranged on the shaft 7. When the mandrel carrier 8 is driven manually, or when timed relation to another mechanism or machine is not of importance the sleeve 20 may be connected to a drum or other motion transmitter 24, Fig. 5, receiving motion from any suitable source. In this way the several mandrels are constantly rotated, the means for doing so being independent of the means for intermittently revolving said mandrels.

The driving mechanism by which the periodic movement of the mandrels is caused and governed, and which is regarded and claimed as a material item of invention, (although it will be understood the invention is not restricted thereto except where it is in the claims expressly mentioned) comprises the drive shaft 23 which may be driven by hand or from any suitable source of power, a driver 25 arranged on said shaft 23 provided with an eccentric stud 26 and a radially slotted transmitter cam or wheel 27, fixedly arranged on the counter shaft 7, in the slots of which the eccentric stud successively works. The radial slots of the transmitter cam open outwardly as shown and the eccentric stud engages one of said slots in each complete rotation of the driver wheel, rotating the transmitter cam and the

counter-shaft through a predetermined arc, in the illustrated example of invention a quarter rotation, to accord with the particular disposition of the mechanism shown.

Preferably for the purpose of maintaining the position of the slotted cam 27 and the elements influenced thereby in the several operative positions said cam is of a peripheral contour conforming to a retaining element which is shown formed with or connected to the driver 25. Preferably to this end the retaining device consists of a curved segmental rib 28 and the driven cam 27 is formed with correspondingly shaped seats 29 which coöperate with the retaining device when the mandrels are in their several positions as best shown in Fig. 1. During the rotation of the driver wheel 25 the slotted corners of the driven cam 27 pass into and out of the clearance 30 between the ends of the retaining device.

The can-bottom feeder is a gravity one comprising a gravity chute 31 along which the bottoms pass, flanges toward the can-bodies on the mandrels. Within the scope of the invention the can-bottoms may be placed in the feeder chute by hand, or this may be done automatically by suitable mechanism. At the discharge end of the chute are jaws 32 to detain the can-bottoms successively, flanges exposed in position to be engaged and removed by the can-bodies as they sweep past, the can-closures taking over the rim or circumferential edge of the bodies and assuming the appropriate closing position with relation thereto. A guide or can-bottom holder 33 is provided as an extension of the feed-chute, and extends to and in front of the position of rest of the mandrels at the crimping station, the object of which is to hold the loose can-bottoms in position on the bodies while going to the crimping station, and until the crimping operation is completed.

The crimper-element 34 which coöperates with the crimper elements 12 of the mandrels is carried by a wheel 35 carried on a stud-shaft 36 journaled in bearings in the pedestal 5, and provided with a pinion 37 meshing with a sun-gear 38 on the counter-shaft. This gear 38 may be separate from and connected to rotate in unison with the sun-gear 19 or the latter may be a double gear as may be desired. The crimper-wheel rotates in harmony with the rotation of the mandrels carrying the can-bodies and bottoms, and associated therewith, when the mandrels are provided with beader-elements, is a beader-element 39 for coöperation therewith.

The invention provides a machine by which bottoms may be applied to cans and secured in position with rapidity, facility, accuracy and certainty.

It is desired to emphasize that the embodi-

ment of invention shown in the drawing is regarded as best and is recommended; at the same time it is recognized that the invention may be realized by modifications and alterations in detail and therefore the claim of invention is not restricted to the particular details shown, except in respect of those claims where the same are expressly mentioned; and in this connection it will be understood that cans and can-bottoms are referred to as illustrative, without intending to restrict my invention to such use—on the contrary the invention is claimed for all the uses of which it is capable.

Having thus described my invention what I claim is:

1. In a machine for applying end-closures to can-bodies, the combination with a mandrel adapted to receive a can body, a can-end closure feeding-mechanism arranged to present a can-closure in the path of movement of the can body, and means for securing such closure to such body.

2. In a machine for applying end-closures to can-bodies, the combination with a revoluble carrier provided with a series of mandrels adapted to receive can-bodies, a can-end-closure feeding-mechanism arranged to present closures in the path of movement of the can-bodies, means for intermittently moving said carrier, and means for securing said closures to said bodies.

3. In a machine for applying end-closures to can-bodies, the combination of a series of revoluble and rotatable mandrels provided with crimper elements and a constantly rotating crimper element permanently arranged adjacent the path of movement of said mandrels.

4. In a machine for applying end-closures to can-bodies, the combination with a series of revoluble and rotatable mandrels provided with crimper and beader elements and a rotary member having crimper and beader elements coöperatively arranged with relation to said mandrels.

5. In a machine for applying end-closures to can bodies, the combination with a series of mandrels to receive the can bodies, can-end-closure feeding mechanism, and means for crimping the can-end-closures to the can bodies.

6. In a machine for applying end-closures to can bodies, the combination with a mandrel provided with a crimper element and adapted to receive a can body, a can-end-closure feeding mechanism arranged to present a can closure in the path of movement of the can body, and a rotatable crimper element coöperatively arranged with relation to said mandrel.

7. In a machine for applying end-closures to can bodies, the combination with a mandrel provided with a crimper element and adapted to receive a can body, a can-end-

closure feeding mechanism arranged to present a can closure in the path of movement of the can body, and a crimper element coöperatively arranged with relation to said mandrel.

8. In a machine for applying end-closures to can-bodies, the combination with a series of mandrels provided with crimper elements and adapted to receive can-bodies, a can-end-closure feeding mechanism arranged to present the can closures in the path of movement of the can-bodies, and a rotatable crimper element coöperatively arranged with relation to said mandrels.

9. In a machine for applying end-closures to can-bodies, the combination of a series of revoluble and rotatable mandrels provided with crimper elements, a can-end-closure feeding mechanism arranged to present the can-closures in the path of movement of the can-bodies, a rotatable crimper element coöperatively arranged with relation to said mandrels, and means for holding the closures to the bodies after leaving the feeder and while being crimped.

10. In a machine for applying end-closures to can-bodies, the combination of a series of revoluble and rotatable mandrels provided with crimper elements, a can-end-closure feeding mechanism arranged to present the can-closures in the path of movement of the can-bodies, a rotatable crimper element coöperatively arranged with relation to said mandrels, and an arm extending from the feeder to the rotary crimper element for holding the closures to the bodies after leaving the feeder and while being crimped.

11. In a machine for applying end-closures to can-bodies the combination of a can-closure feeder, a rotary crimper-element, a series of revoluble and rotatable mandrels provided with crimper-elements, means for intermittently revolving said mandrels and causing them to rest in coöperative relation to said rotary crimper element.

12. In a machine for applying end-closures to can-bodies, the combination of a can-body support, a can-closure feeder, a rotary crimper element, a series of revoluble and rotatable mandrels provided with crimper elements, means for intermittently revolving said mandrels and causing them to rest in coöperative relation to said can-body support and rotary crimper element.

13. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of revoluble mandrels carried thereby and provided with crimper elements, means for intermittently rotating said carrier to revolve the mandrels, a transmitter arranged loose on said shaft and coupled to said mandrels, and means for continuously rotating said transmitter to impart continuous rota-

tion to said mandrels, and a constantly rotating crimping element permanently arranged adjacent the path of movement of said mandrels.

5 14. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of revoluble mandrels carried thereby and provided with crimper elements, means for inter-
10 mittently rotating said carrier to revolve the mandrels, a transmitter arranged loose on said shaft and coupled to said mandrels, and means for continuously rotating said transmitter to impart continuous rotation to
15 said mandrels, a can-closure feeder, and a rotary crimper element coöperatively arranged with relation to said mandrels.

15 15. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of
20 revoluble mandrels supported by said carrier and provided with crimper-elements, a series of planet-gears associated with said mandrels, a sun-gear loosely arranged on said shaft
25 and in mesh with said planet-gears, means for continuously rotating said sun-gear, means for intermittently rotating said shaft and the mandrel carrier, and a can-closure feeder and a crimper coöperatively arranged
30 with relation to said mandrels.

35 16. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of revoluble mandrels supported by said carrier
40 and provided with crimper-elements, means for intermittently rotating said shaft and said carrier, a sun-gear arranged loosely on said shaft, a series of planet-gears associated with said mandrels and in mesh with the
45 sun-gear, means for continuously rotating the sun-gear, a crimper-element coöperatively arranged with relation to said mandrels, a planet-gear associated with said crimper-element and in mesh with said sun-
50 gear, and a can-closure feed presenting the can-closures in the path of movement of the mandrels.

55 17. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of revoluble mandrels supported by said carrier
60 and provided with crimper-elements, a transmitter fixed on said shaft, means for intermittently engaging and rotating said transmitter, planet-gears associated with said
65 mandrels, a sun-gear loose on said shaft and in mesh with said planet-gears, means for continuously rotating said sun-gear, and a crimper element coöperatively arranged with
relation to said mandrels.

18. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, and provided with crimper-elements, a series of
mandrels rotatably supported by said carrier,

means for rotating said carrier intermittently, means for continuously rotating said mandrels, and a constantly rotating crimper permanently arranged adjacent the path of movement of said mandrels.

19. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of mandrels rotatably supported by said carrier and provided with crimper-elements, means
70 for rotating said carrier intermittently, a crimper coöperatively arranged with relation to said mandrels, and a can-closure feeder presenting can-closures in the path of movement of the mandrels.

20. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of mandrels rotatably supported by said carrier
80 and provided with crimper-elements, a series of planet-gears associated with said mandrels, a sun-gear loosely arranged on said shaft, means for continuously rotating said sun-gear, a transmitter fixed on said shaft
85 and provided with a series of radial slots, a driver provided with an eccentric to engage the slots of the transmitter and intermittently rotate the latter and the elements influenced thereby, a crimper-element, and
90 means for rotating the same in harmony with the rotation of the mandrels.

21. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of mandrels rotatably supported by said carrier
100 and provided with crimper-elements, a series of planet-gears associated with said mandrels, a sun-gear loosely arranged on said shaft, means for continuously rotating said sun-gear, a transmitter fixed on said shaft
105 and provided with a series of radial slots, a driver provided with an eccentric to engage the slots of the transmitter and intermittently rotate the latter and the elements influenced thereby, a crimper-element, means
110 for rotating the same in harmony with the rotation of the mandrels, and a can-closure feeder presenting the can-closures in the path of movement of the mandrels.

22. In a machine for applying end-closures to can-bodies, the combination with a shaft, a carrier arranged thereon, a series of mandrels rotatably supported by said carrier and provided with crimper-elements,
115 a transmitter fixed to said shaft and provided with a series of radial slots, a driver having an eccentric to engage the slots of the transmitter and intermittently rotate the latter and the elements influenced thereby,
120 means engaging said transmitter for holding it in its different positions of rest, a rotary crimper-element coöperatively arranged with relation to said mandrels and means for rotating said crimper-element in
125 harmony with the rotation of the mandrels.

23. In a machine for applying end-clo-
sures to can bodies, the combination of a
series of radial arms, mandrels provided
with crimper elements detachably connected
5 to said arms, and can-body abutments ad-
justable on said arms.

24. In a machine for applying end-clo-
sures to can-bodies, the combination of a
series of radial arms, mandrels detachably

connected to said arms, and a can-body abut- 10
ment adjustable on said arms.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

JAMES CRAWFORD THOM.

Witnesses:

T. W. BARKER,

J. L. PERKINS.