

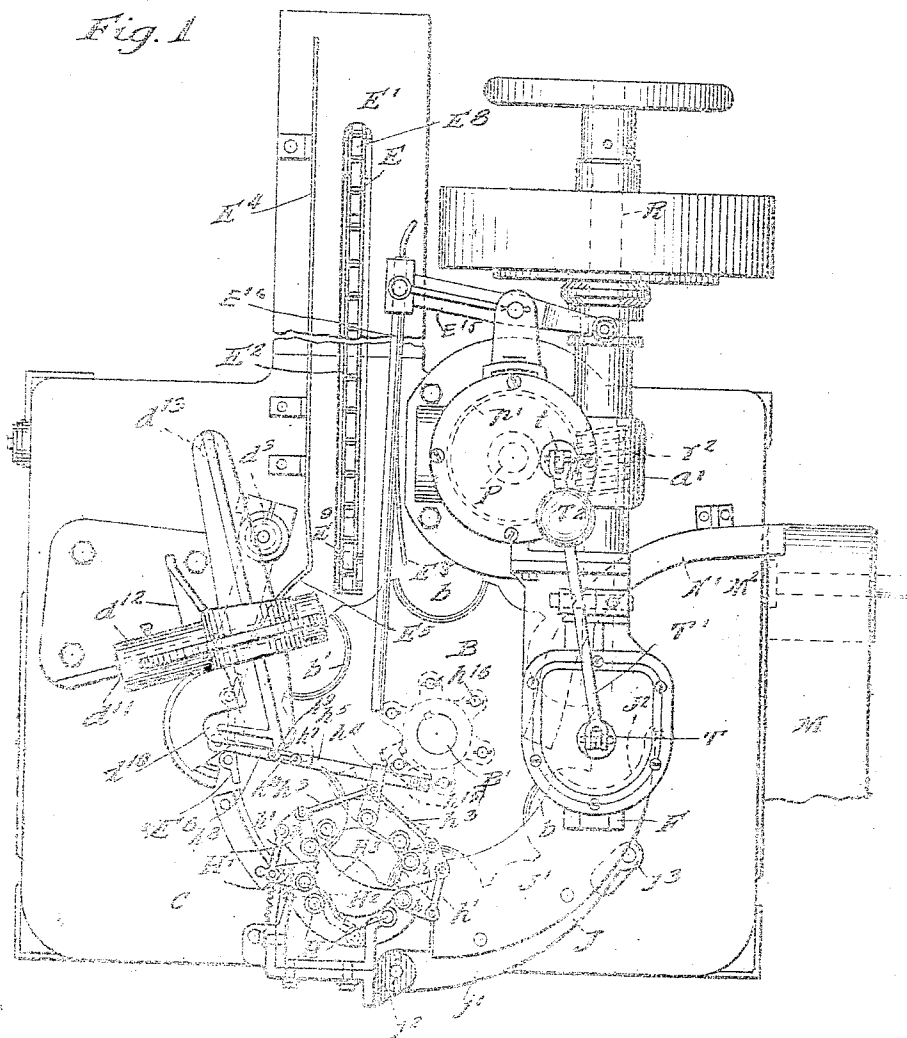
A. JOHNSON.
CAN FLANGING AND DOUBLE SEAMING MACHINE.
APPLICATION FILED DEC. 3, 1909.

2,055,467.

Patented Mar. 11, 1913.

7 SHEETS—SHEET 1.

Fig. 1



Witnesses:

Wm. J. Jager
J. H. Jager

Inventor
Axel Johnson

By Murray, Evans, Adams & Co.
his Attorneys

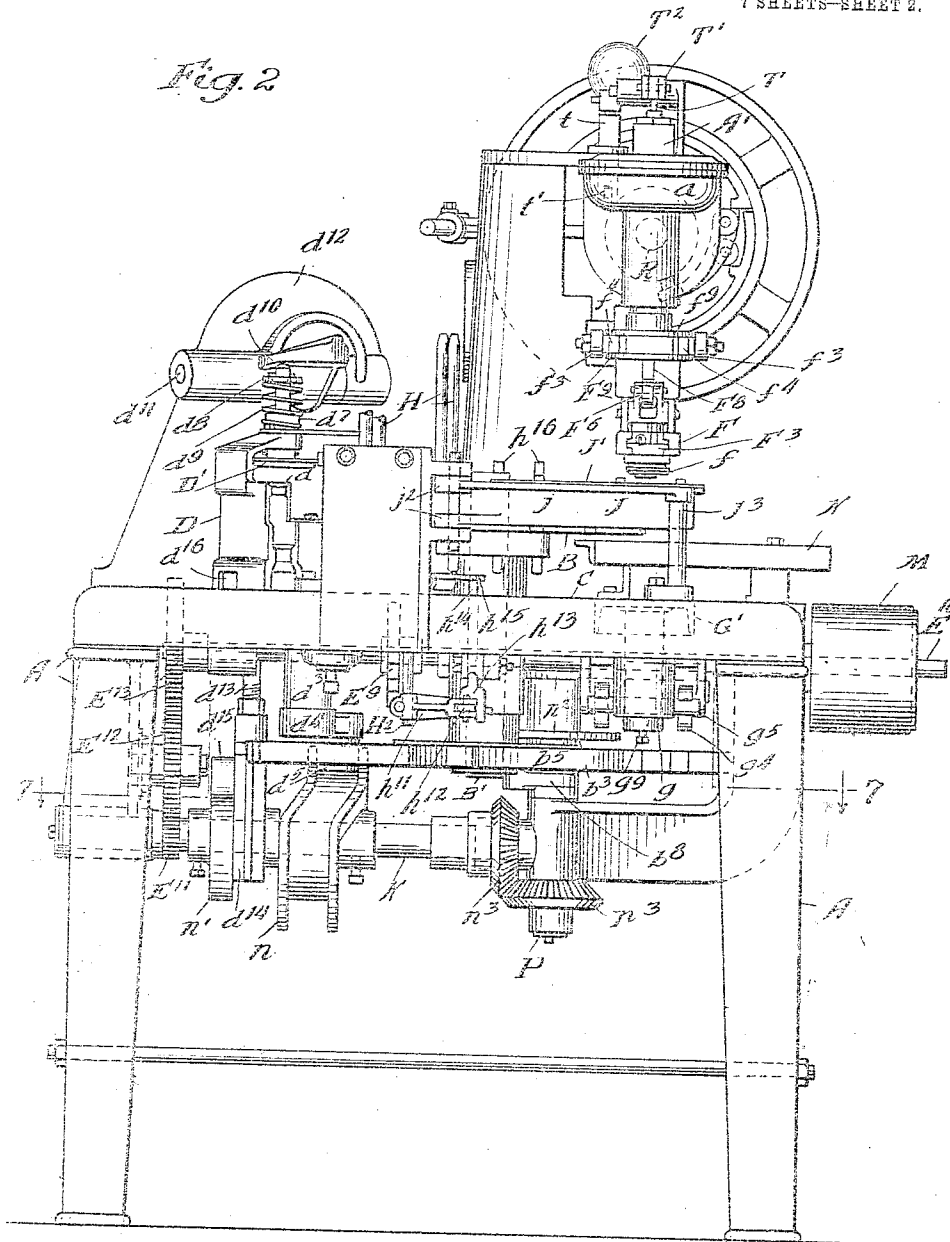
A. JOHNSON.
CAN FLANGING AND DOUBLE SEAMING MACHINE.
APPLICATION FILED DEC. 3, 1909.

1,055,467.

Patented Mar. 11, 1913.

7 SHEETS—SHEET 2.

Fig. 2



Witnesses:

Wm. Geiger
H. W. Munday

Inventor:

Axel Johnson

By Munday, Evans, Adams & Clark

his Attorneys

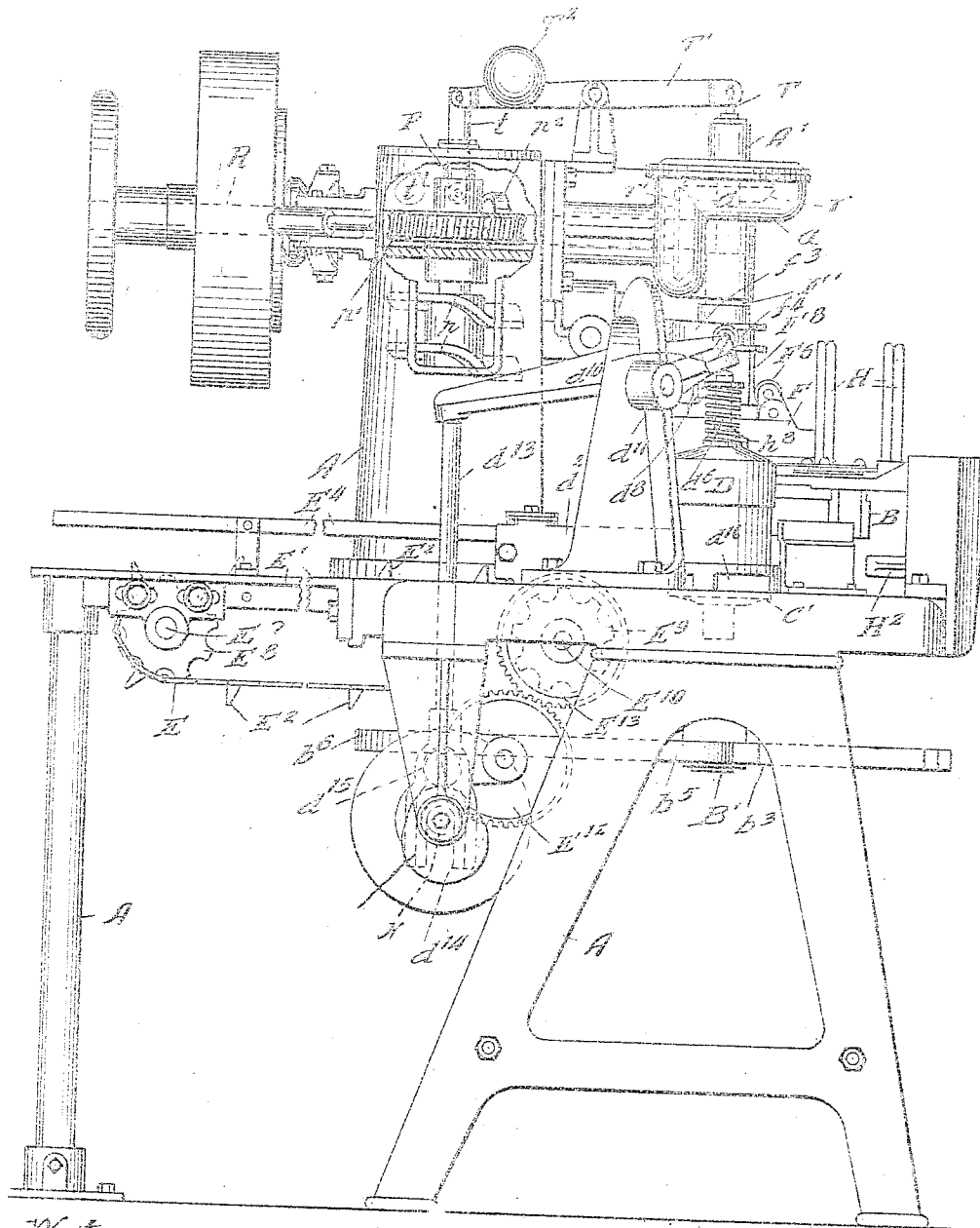
A. JOHNSON.
CAN FLANGING AND DOUBLE SEAMING MACHINE.
APPLICATION FILED DEC. 3, 1909.

1,055,467.

Patented Mar. 11, 1913.

7 SHEETS-SHEET 3.

Fig. 3



Witnesses:

Wm. Geiger
Atty. General

Inventor:

Axel Johnson
By Munday, Evans, Alesch & Clark,
his Attorneys

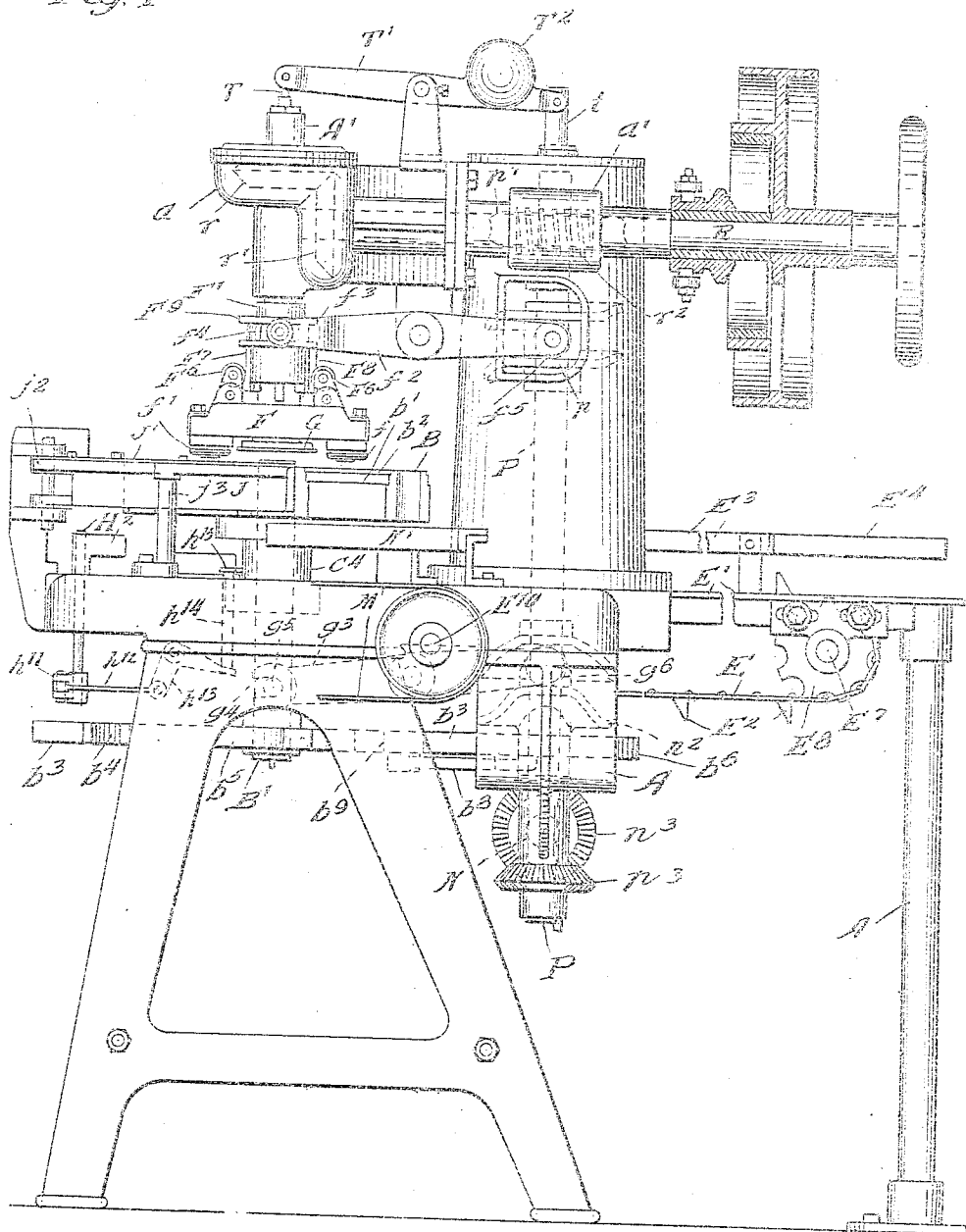
A. JOHNSON.
CAN FLANGING AND DOUBLE SEAMING MACHINE.
APPLICATION FILED DEC. 3, 1909.

1,055,467.

Patented Mar. 11, 1913.

7 SHEETS—SHEET 4.

Fig. 4



Witnesses:

Wm. Seiger
J. W. Munday

Inventor:
Axel Johnson
By Munday, Evans, Adelman & Clarke
his Attorneys

A. JOHNSON.

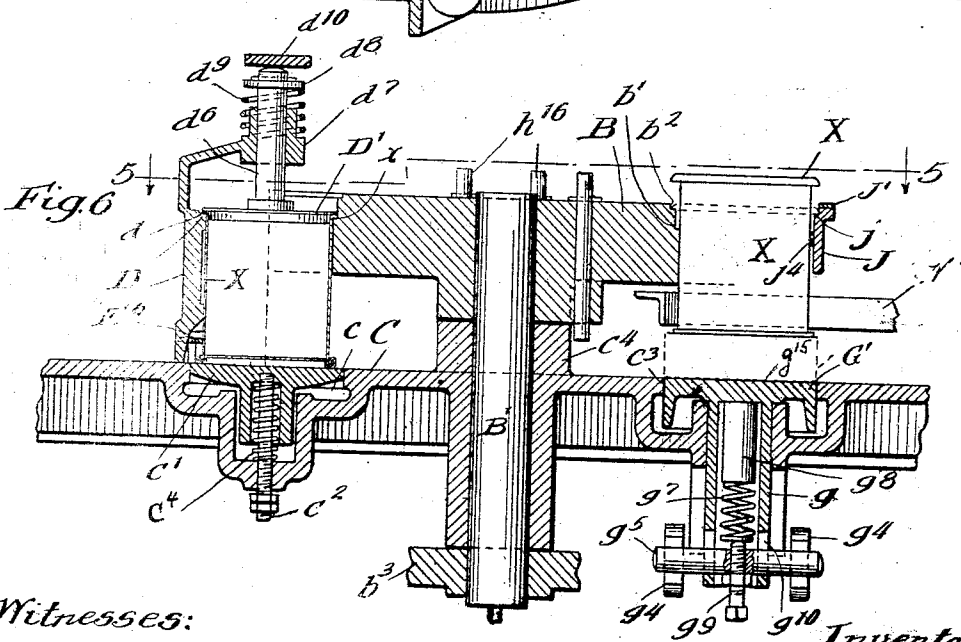
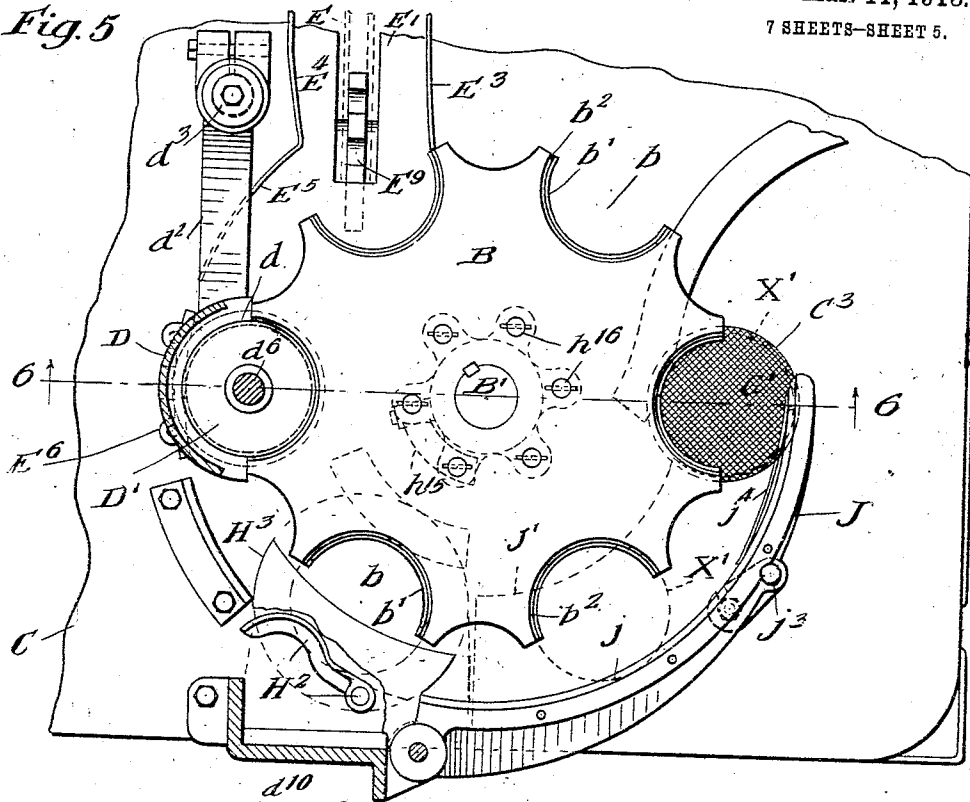
CAN FLANGING AND DOUBLE SEAMING MACHINE.

APPLICATION FILED DEC. 3, 1909.

1,055,467.

Patented Mar. 11, 1913.

7 SHEETS—SHEET 5.



Witnesses:

Wm. Geiger
H. W. Munday

By Munday, Evans Adcock, Clerk
his Attorneys

gth Inventor
Arel Johnson
Adcock, Clerk
his Attorneys

A. JOHNSON.
CAN FLANGING AND DOUBLE SEAMING MACHINE.
APPLICATION FILED DEC. 3, 1909.

1,055,467.

Patented Mar. 11, 1913.

7 SHEETS—SHEET 6.

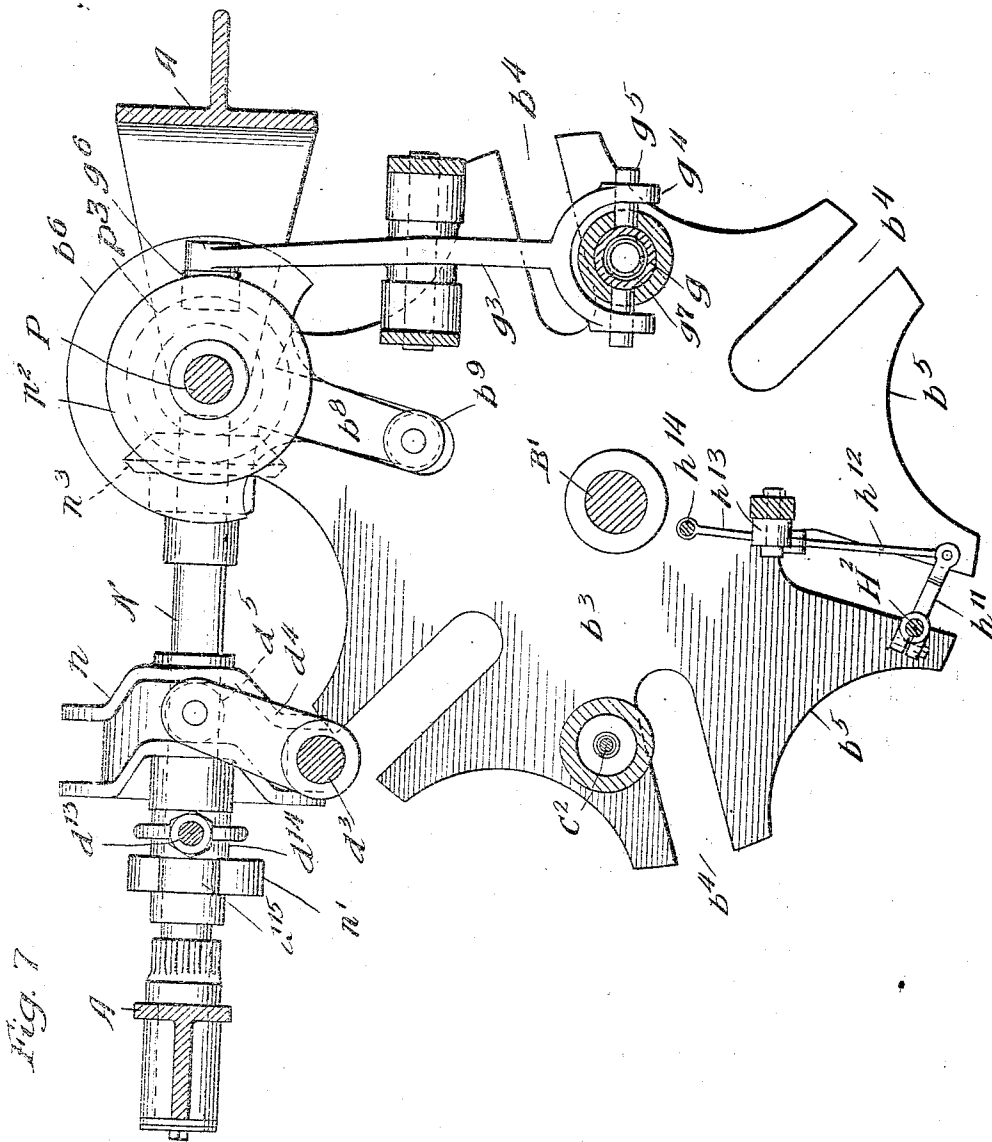


Fig. 7

Witnesses:

Wm. Seiger
Atty. at Law

Inventor:

Axel Johnson

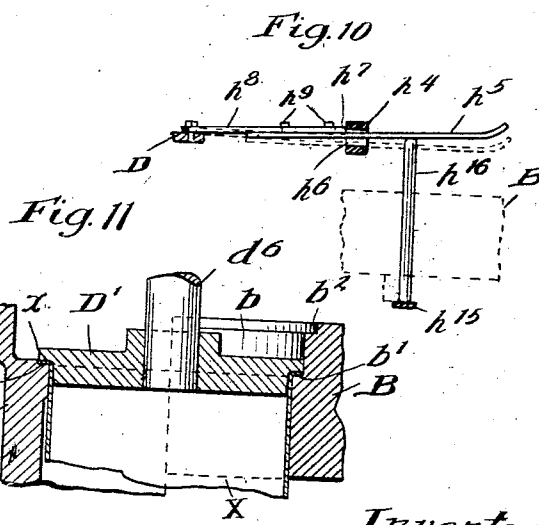
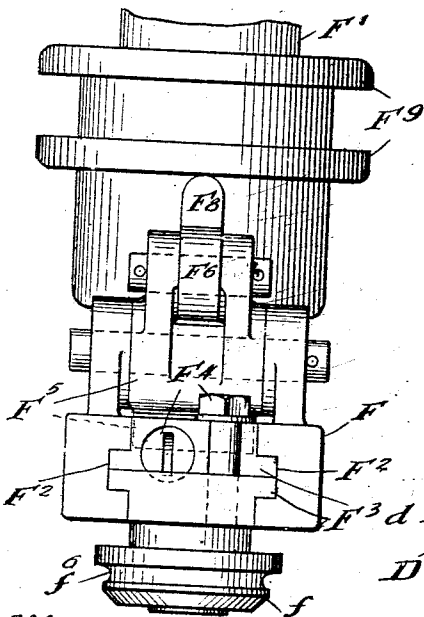
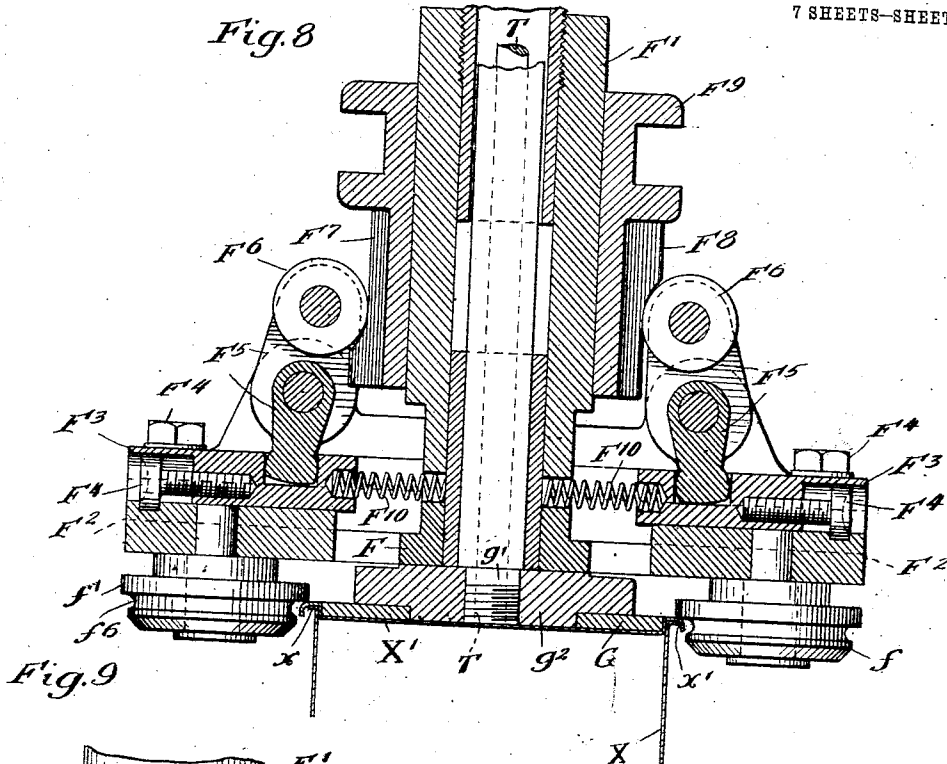
By Munday, Everts, Appel & Foster
his Attorneys

A. JOHNSON.
CAN FLANGING AND DOUBLE SEAMING MACHINE.
APPLICATION FILED DEC. 3, 1909.

1,055,467.

Patented Mar. 11, 1913

7 SHEETS-SHEET 7



Witnesses:
Wm. Geiger
H. W. Munday

Inventor:
Axel Johnson
By Munday, Evans, Adcock & Clarke
Attorneys

UNITED STATES PATENT OFFICE.

AXEL JOHNSON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CAN FLANGING AND DOUBLE-SEAMING MACHINE.

1,055,467.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed December 3, 1909. Serial No. 531,126.

To all whom it may concern:

Be it known that I, AXEL JOHNSON, a citizen of the United States, residing in San Francisco, in the county of San Francisco and State of California, have invented a new and useful Improvement in Can Flanging and Double-Seaming Machines, of which the following is a specification.

My invention relates to improvements in can flanging and double seaming machines.

The object of my invention is to provide an automatic can body flanging and double seaming machine of a simple, efficient and durable construction suitable for use in canning factories for closing filled cans by double seaming the final heads or covers thereto, by means of which cans may be so closed, rapidly and cheaply and with certainty and uniformity in the production of hermetically tight seams. Also to provide a machine which will operate with equal facility upon either flanged or unflanged can bodies, and this without requiring any change, removal or adjustment of parts, the flanging devices or means being adapted to either form a flange upon an unflanged can body or to straighten, true up and render uniform the flange of a previously flanged can body. Also to provide a machine in which the flanging or flange straightening means will serve to true up distorted can bodies at the mouth ends thereof to adapt the same for certain reception of the can heads or covers when automatically fed. Also to provide a machine which will operate to automatically feed both the can bodies and the can heads and to automatically discharge the closed or double seamed cans, and in which the feed of the can heads will be controlled by the presence or absence of a can in position to receive the head so that no can head will be fed unless a can is in position to receive it.

My invention consists in connection with upper and lower chucks for clamping the can head and cover together and holding them from rotation during the double seaming operation, and a rotary seaming head having double seaming rollers, of external segmental flanging dies adapted to open and close and embrace or clamp the mouth end of the can body, and an internal reciprocating flanging die adapted to enter the mouth of the can body and turn a horizontal flange thereon or to straighten and true

up a previously formed flange if the can body is one which has been already flanged. The external and internal flanging dies also serve by the internal and external pressure simultaneously exerted by them upon the entire periphery of the can body at its mouth end, inside and outside, to true up the can body if it is distorted out of shape, and adapt it to properly receive the can head or cover which is to be double seamed thereto.

My invention further consists in connection with these devices, of a feed table or supporting plate for the can bodies and an intermittently moving carrier having segmental pockets to receive the can bodies and feed or move them along from the flanging devices to the rotary seaming head, the carrier being furnished with a plurality of segmental flanging dies, each of which cooperates in turn with an opening and closing segmental flanging die carried by a movable can clamp on the frame of the machine.

It further consists in connection with these parts, of a conveyor for automatically delivering the can bodies to the carrier one by one, a holder for the can heads and a feeder for automatically delivering the can heads one by one from the can head holder to the can body carrier, which is furnished with a series of segmental can head receiving seats or shoulders adapted to receive and support the can head directly above the can body in cooperation with a stationary can head support or guide. The lower can chuck or clamping disk by its upward reciprocating movement raises the can body against the can head and thus lifts it from its supports or seats and clamping it against the upper stationary chuck preparatory to the seaming operation. It further consists in connection with these parts, of means for controlling the operation of the can head feeder by the presence or absence of a can body in the carrier to receive the can head as it is fed, so that no can head will be fed or discharged from the can head holder unless a can is present on the carrier to receive it.

My invention further consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown and described and more particularly specified in the claims.

In the accompanying drawing forming a

part of this specification, Figure 1 is a plan view of a can flanging and double seaming machine embodying my invention. Fig. 2 is a front elevation. Figs. 3 and 4 are side elevations looking from opposite sides of the machine. Fig. 5 is a detail plan view, partly in section, on line 5—5 of Fig. 6. Fig. 6 is a detail vertical section on line 6—6 of Fig. 5. Fig. 7 is a detail horizontal section on line 7—7 of Fig. 2. Fig. 8 is a detail vertical section of the rotary seaming head, showing the means for actuating the double seaming rollers carried thereby. Fig. 9 is a front elevation of the rotary double seaming head. Fig. 10 is a detail view showing certain parts of the can head feed control mechanism. Fig. 11 is an enlarged detail section of the external and internal flanging dies.

In the drawing, A represents the frame of the machine, B an intermittently moving can body carrier having segmental pockets b to receive the cans, and segmental flanging dies b^1 , one for each pocket b , and segmental can head seats b^2 , one for each pocket b , C the feed table or supporting plate upon which the cans rest as they are moved along or around by the carrier B, D an opening and closing can body clamp having an external segmental flanging die d cooperating in turn with each of the segmental flanging dies b^1 on the carrier B, D^1 an internal reciprocating flanging die, F a rotary seaming head carrying double seaming rollers f f^1 , G the upper stationary can chuck or clamp disk, G^1 a lower or reciprocating can chuck or clamp disk, H a can head holder or magazine, H^1 can head feed devices for feeding or delivering the can heads one by one from the holder or magazine H, H^2 a device for controlling the operation of the can head feed devices by contact with the can, E a conveyor for delivering the can bodies to the carrier B and feed table C, and M a conveyor for delivering the closed cans from the machine.

The frame A may be of any suitable construction, adapted to give support or mounting for the other parts of the machine.

The can body carrier B is preferably a horizontally rotating turret or disk. It is secured to an upright shaft B^1 which may be intermittently rotated as required or given a step by step movement and locked in position, to enable each of its can body receiving pockets, segmental flanging dies and can head seats to cooperate in turn with the can body clamp D and its external segmental flanging die d and internal or convex flanging die D^1 , and with the rotary double seaming head and can clamping chucks, by any suitable operating means; the same preferably being a Geneva gear mechanism comprising a disk b^3 having radial slots b^4 and concave faces b^5 cooperating with a convex

locking disk b^6 on the shaft P which carries a crank arm b^8 having a roller b^9 adapted to engage the radial slots of the disk. Each of the segmental external flanging dies b^1 is preferably formed integral with the can body carrier B, and each of the can head seats b^2 is likewise preferably formed integral with the carrier B.

The can feed table or supporting plate C is preferably furnished with a circular socket c to receive an adjustable disk C^1 to support the can under the reciprocating internal flanging die D^1 , the disk or plate C^1 being accurately adjusted in relation to the stroke of the flanging die D^1 by means of a screw C^2 . The feed table or can supporting plate C is provided with a further socket C^3 to receive the lower reciprocating can chuck or clamp disk G^1 and with an opening to receive the hollow stem or shank g of the chuck disk G^1 .

The opening and closing or movable can body clamp D which is mounted on the frame of the machine and carries the cooperating external segmental flanging die d is preferably carried by a horizontally swinging arm d^2 on an upright rock shaft d^3 having an arm d^4 carrying a roller d^5 which is engaged by a cam n on the cam shaft N.

The reciprocating internal flanging die D^1 has an operating stem or plunger d^6 mounted to slide in a suitable guide or sleeve d^7 , preferably formed integral with the can body clamp D. The stem d^6 is provided with a collar d^8 secured thereto against which bears a coil spring d^9 which serves to retract the reciprocating flanging die D^1 . The internal flanging die D^1 is forced within the upper end or mouth of the can body X to turn the flange x on the can in cooperation with the external segmental flanging dies b^1 d , preferably by means of a lever d^{10} pivoted at d^{11} to a bracket d^{12} on the frame of the machine, which is actuated by a reciprocating rod d^{13} having a fork d^{14} at its lower end and carrying a roller d^{15} which engages a cam n^1 on the cam shaft N.

The can body clamp D rests at its lower end on the feed table C so that the segmental flanging die d is thus firmly supported and adapted to properly resist the thrust of the internal flanging die D^1 . The can body carrier B which carries the external segmental flanging dies b^1 also rests and is supported directly by the feed table C which has an upwardly projecting hub C^4 for the carrier B to fit against.

The rotary seaming head F is secured to and carried by a hollow shaft F^1 and is provided with radial slides F^2 upon which the seaming rollers f f^1 are directly journaled, the slides F^2 having adjusting members F^3 connected thereto by adjusting screws F^4 . The seaming roller slides F^3

are moved radially in and out to operate the seaming rollers by means of levers F^2 , the lower ends of which engage the adjusting members F^3 of the slides F^2 , and which levers F^2 carry at the upper ends rollers F^4 which are engaged by cams F^5 on the cam sleeve F^6 which surrounds the shaft or hub F^1 of the seaming head. The cam sleeve F^6 is reciprocated as required to successively operate the seaming rollers f f^1 by means of a lever f^2 having a fork f^3 furnished with blocks f^4 which engage the cam sleeve F^6 and which lever is furnished at its opposite end with a roller f^5 which engages a cam p on the upright shaft P . The cam sleeve F^6 by its downward movement operates first the seaming roller f and then by its upward reciprocation operates the closing roller f^1 . The seaming rollers f f^1 are held normally separated by the springs F^7 sufficiently to admit the can head between them, as will be readily understood from Fig. 8. The double seaming rollers f f^1 preferably have seaming grooves or operating faces f^6 of the customary contour employed for double seaming rollers of double seaming machines, the roller f serving to curl the flange w^1 of the can head or cover H^1 about the flange w of the can body X and the closing roller f^1 serving to finish the formation of the seam and to snugly compress the folds thereof against the can body. The seaming roller slides F^2 are preferably returned to position by coil springs F^8 interposed between their adjustable members F^3 and the rotary seaming head F . The rotary seaming head is continuously rotated from the main driving shaft through intermeshing bevel gears r r^1 which are preferably inclosed in a case or housing a . The upright shaft P carrying the cam p which reciprocates the cam sleeve F^6 is preferably driven at the necessary reduced speed from the driving shaft R through a worm gear p^1 and worm r^2 on the driving shaft R , the same being also preferably inclosed by a case or housing a^1 .

The upper stationary can chuck or clamp disk G is supported by a hollow stem or sleeve g^1 fixed to a disk g^2 which carries the chuck disk G and which hollow stem or sleeve g^1 is connected at its upper end to the hollow standard A^1 of the frame A . The stem g^1 is made hollow to receive the reciprocating ejector rod T which serves to eject the double seamed can from the upper chuck G . This ejector rod or stem T is preferably reciprocated as required by means of a lever T^1 having a weight T^2 to return it to position and which is connected to a reciprocating rod t having a roller t^1 which is engaged by a cam p^1 on the upright cam shaft P .

The lower vertically reciprocating can chuck or clamping disk G^1 is vertically re-

ciprocated as required to lift the can body X into the can head X^1 which at this time is resting on the can head seats b^2 on the carrier B and j on the can head guide J , and then by its further upward movement to firmly clamp the can and can head between itself and the opposing upper chuck G , preferably by means of a lever g^3 having a fork g^4 and pin g^5 inserted through the hollow stem g of the can chuck disk G^1 and which lever g^3 carries a roller g^6 engaging a cam w^2 on the shaft P . The can chucks G G^1 are preferably adapted to yieldingly clamp the can between them in order to accommodate slight variations in the length of the can. This yielding clamping of the can is preferably effected by an interposed spring with which one of the chucks G G^1 is preferably provided. For convenience, I prefer to provide the lower chuck G^1 with a spring g^7 , the same being preferably inserted between a stud g^8 on the chuck disk G^1 and a tension adjusting screw g^9 carried by the pin g^5 which connects the chuck operating mechanism with the hollow stem g , the hollow chuck stem having a slot g^{10} to receive said connecting pin g^5 .

The can conveyor E by which the filled cans are moved along the can track E^1 preferably consists of an endless chain having fingers E^2 to engage the cans and push them along the track E^1 . The can track E^1 is furnished with side guides E^3 E^4 , the latter joining with a curved can body guide E^5 extending partially around the carrier B to hold the cans snugly in the pockets b of the carrier as the carrier rotates.

The opening and closing can body clamp D has a cut away portion d^{10} at its lower end to admit a short segment E^6 of the curved guide E^5 , which segment E^6 serves as an ejector to free the can from the clamp D when the clamp D opens.

The can head holder H may be of any suitable construction adapted to hold the can heads and permit them to be fed therefrom one by one as required. The same, however, preferably consists of a plurality of upright rods fixed to the frame of the machine between which a stack or pile of can heads X^1 may be placed.

The can head feeder H^1 may be of any suitable construction adapted to feed the can heads one by one from the holder H . The same, however, preferably consists of two pairs of vibrating feed blades or fingers arranged around the can head holder, the upper pair being spaced apart from the lower pair the thickness of a can head, the two pairs alternately opening and closing so that when the upper pair are closed or projected within the can head holder to support the pile or stack of can heads in the holder and the lower pair withdrawn, the lowermost can head of the pile will be thus

released or fed and permitted to drop down upon the can head seat b^2 on the carrier B and j on the can head guide J.

The can head feeder blades are each preferably pivotally mounted so that they may vibrate or swing horizontally, and they each have operating arms h connected by links h^1 and h^2 with an operating lever h^4 which is actuated by a reciprocating bar h^5 passing through a wide guide slot h^6 in the operating lever h^4 and having a shoulder h^7 adapted to engage the lever h^4 when the bar or strip h^5 is raised, as shown in Fig. 10, and to permit the bar h^5 to reciprocate through the slot of the lever h^4 without actuating said lever h^4 when the bar h^5 is not so raised. The bar h^5 has an adjustable member h^8 connected thereto by screws h^9 passing through a slot h^{10} therein and which is pivotally connected to the can body clamp D or its operating lever. In order to cause the operation of the can head feeder blades H^1 to be controlled by the presence or absence of a can in the carrier B in position to receive the can head so that no can head will be fed unless a can body is present to receive it, I provide a movable can head feed controlling device H^2 , preferably consisting of an arm adapted to be engaged by the can body in the pocket b of the carrier B as the carrier rotates, and this controlling arm H^2 is connected by an arm h^{11} , link h^{12} , bent lever h^{13} engaging a vertically movable pin h^{14} which operates to raise the quadrant lever h^{15} which in turn raises one of the six pins h^{16} carried by the carrier B, thus raising the reciprocating bar h^5 , so that its shoulder h^7 will engage the operating lever h^4 of the can head feeder H, and thus operate the same if a can is in position in the pocket of the carrier B to engage and operate the can head feed controlling device H^2 . While, if no can should be present in the pocket b of the carrier B, the controlling device H^2 will not be moved as the pocket b of the carrier B passes it, and as a consequence, the can head feed device will not be operated. When the can head is fed from the holder or magazine H by the feeder H^1 , the can head so fed or released drops down upon the segmental can head seat b^2 with which each of the segmental pockets b of the carrier B is provided, and upon the corresponding seat or ledge j of the curved can head guide J, thus supporting the can head in position to have the flanged can body in the pocket b of the carrier raised into the can head when the carrier B moves the can body around the table C into registry with the lower or reciprocating can head chuck G^1 and the rotary seaming head. During such rotary movement of the can carrier B, the can head is supported by the segmental can head seat b^2 on the carrier B and by the can head seat or ledge j of the curved can head guide

J. The curved can head guide J preferably has a movable or hinged segment j^1 connected to the frame by a hinge j^2 at one end and by a fastener j^3 at the other end so that this hinged portion of the guide may be swung out to remove a can head or can in case the machine should become clogged. After the can head or cover X^1 has been seamed upon the can body X by action of the rotary double seaming head F and seaming rollers carried thereby, the lower can chuck G^1 moves downward into its normal position flush with the feed table C and then the carrier B makes a further rotary movement and causes the double seamed can to be discharged from the pocket of the carrier B by engagement with the curved can discharge guide N^1 and delivered onto the can discharge track or way M^2 which is provided with a can discharge conveyer M, preferably an endless belt.

The cam shaft N is preferably continuously driven from the upright shaft P by intermeshing bevel gears p^3 on the shaft P and n^3 on the shaft N. The can conveyer E is driven by sprocket wheels E^8 on shaft E^7 and E^9 on shaft E^{10} . The shaft E^{10} is driven from the shaft N by intermeshing gears E^{11} E^{12} E^{13} .

E^{15} is the clutch lever and E^{16} the clutch rod for stopping and starting the machine.

To hold the can heads seated on the flanged cans after they are fed thereto by the feeder H, I prefer to provide the machine with a curved guide plate J^1 , the same terminating near or adjacent to the seaming station with a curved end J^2 . Immediately under the can head holder H, I provide a thin sheet metal segmental can head support H^3 , which, in connection with the segmental can head seat b^2 on the carrier B, supports the can head directly over the flanged cans until the can head by the movement of the carrier B is carried off said plate H^3 onto the can head seat or shoulder j of the curved guide J. The can passes under the can head supporting plate H^3 .

The lower and reciprocating can holder or chuck disk G^1 preferably has its upper surface g^{15} roughened or knurled to aid in holding the cans from rotation when clamped between the upper disk G and lower disk G^1 during the operation of the seaming rollers.

The lower can holder or supporting plate C^1 which supports the can against the thrust of the convex flanging die or plunger D^1 preferably has a spring c^4 interposed between it and the plate C which serves to hold the supporting plate C^1 flush with said plate C and the can preferably about one eighth of an inch above its natural position, thereby allowing the cans to enter the turret without danger of damaging the flanges on the cans. The downward move

ment or stroke of the flanging die or plunger D¹ compresses the spring and brings the can supporting plate C¹ and the can down to their natural position, thus allowing the convex flanger or plunger D¹ to cooperate with the concave flanging dies or members b¹ and d on the turret B and can body clamp D. In other words, the purpose of the spring C¹ is to hold the can slightly above the flanging dies b¹, d, just prior to the descent of the convex flanging die or plunger D¹.

In operation the can body carrier B revolves intermittently and the cans are received one by one into the semi-circular pockets b of the carrier as it turns, the cans being pushed along into the pockets by the conveyer E. The carrier B moves the cans along the feed table C upon which the cans rest, first to the opening and closing can body clamp D, the can at this time resting upon the supporting disk C¹ in the table C and in registry with the internal flanging die D¹; which then descends and enters within the mouth of the can, and in cooperation with the external segmental flanging dies b¹ on the carrier B and d on the clamp D, turns a flange upon the upper end of the can body if it has no flange, or straightens up a previously formed flange on the can body if it has already been flanged; the internal flanging die D¹ in cooperation with the external flanging dies b¹, d being constructed and adapted to true up a previously formed flange, as well as to produce an original flange. The further rotation of the carrier B brings the flanged can body in registry with the can head holder H and then the can head feeder H¹ releases the lowermost can head in the holder and permits it to drop down upon the segmental can head seat b² with which each of the segmental pockets b of the carrier is provided, and upon the corresponding seat or ledge j of the can head guide J. The further rotation of the carrier B brings the can and can head into registry with the lower reciprocating can head chuck G¹ and the rotary seaming head F, the chuck G¹ then first operating to raise the flanged can body up against the can head and clamp the two together; and then the seaming head F through the action of its seaming rollers interfolds the seaming flanges of the can head and cover into a double seam. The further movement of the rotary carrier causes the discharge of the finished can.

I claim:—

1. In a can closing machine, the combination with an intermittently moving carrier, of external and internal can body flanging dies, the internal flanging die conforming in size and shape to and adapted to enter within the mouth of the can, a rotary seaming head having double seaming

rollers, a pair of can holding chucks, a can track, a conveyer for delivering the cans to said intermittently moving carrier, a can head holder, a can head feeder and a device for controlling the operation of the can head feeder by the can in said intermittently moving carrier, substantially as specified.

2. In a can closing machine, the combination with an intermittently moving carrier having can receiving pockets, of an opening and closing can clamp, said clamp and carrier having external segmental can body flanging dies, a reciprocating internal can body flanging die conforming in size and shape to and adapted to enter within the mouth of the can body, a rotary seaming head having double seaming rollers, an upper stationary can clamping chuck and a lower reciprocating can clamping chuck, substantially as specified.

3. In a can closing machine, the combination with an intermittently moving carrier having can receiving pockets, of an opening and closing can clamp, said clamp and carrier having external segmental can body flanging dies, a reciprocating internal can body flanging die, a rotary seaming head having double seaming rollers, an upper stationary can clamping chuck, and a lower reciprocating can clamping chuck, the pockets of said carrier having segmental can head supporting seats and a guide having a can head supporting seat, substantially as specified.

4. In a can closing machine, the combination with an intermittently moving carrier having can receiving pockets, of an opening and closing can clamp, said clamp and carrier having external segmental can body flanging dies, a reciprocating internal can body flanging die, a rotary seaming head having double seaming rollers, an upper stationary can clamping chuck, a lower reciprocating can clamping chuck, the pockets of said carrier having segmental can head supporting seats and a guide having a can head supporting seat, a can head holder and a can head feeder cooperating to deliver the can heads one by one to said seats, substantially as specified.

5. In a can closing machine, the combination with an intermittently moving carrier having can receiving pockets, of an opening and closing can clamp, said clamp and carrier having external segmental can body flanging dies, a reciprocating internal can body flanging die, a rotary seaming head having double seaming rollers, an upper stationary can clamping chuck, a lower reciprocating can clamping chuck, the pockets of said carrier having segmental can head supporting seats and a guide having a can head supporting seat, a can head holder, a can head feeder, and a can head feed controller adapted to be engaged by a can in

the pocket of the carrier and actuated thereby, substantially as specified.

6. In a can closing machine, the combination with an intermittently moving carrier
 5 having can receiving pockets, of an opening and closing can clamp, said clamp and carrier having external segmental can body flanging dies, a reciprocating internal can body flanging die, a rotary seaming head
 10 having double seaming rollers, an upper stationary can clamping chuck, a lower reciprocating can clamping chuck, the pockets of said carrier having segmental can head supporting seats and a guide having a can head supporting seat, a can head holder, a can head feeder cooperating to deliver the can heads one by one to said seats, a can head feed controller adapted to be engaged by a can in the pocket of the carrier and
 20 actuated thereby, and a can track and can conveyer for delivering the cans to said carrier, substantially as specified.

7. In a can closing machine, the combination with an intermittently moving carrier
 25 having can receiving pockets, of an opening and closing can clamp, said clamp and carrier having external segmental can body flanging dies, a reciprocating internal can body flanging die, a rotary seaming head
 30 having double seaming rollers, an upper stationary can clamping chuck, a lower reciprocating can clamping chuck, the pockets of said carrier having segmental can head supporting seats and a guide having a can head supporting seat, a can head holder above the path of said can head supporting seats on the carrier, a can head feeder below said holder and above said guide and carrier, a can head feed controller adapted to be engaged
 40 by a can in the pocket of the carrier and actuated thereby, a can track and can conveyer for delivering the cans to said carrier, and a discharge device and discharge track for the seamed cans, substantially as specified.
 45

8. The combination with a pair of can clamping chucks, of a rotary seaming head having double seaming rollers, an intermittently moving carrier having can receiving
 50 pockets, and a can body flanging die conforming in size and shape to the mouth of the can and adapted to enter within the mouth of the can and turn a flange thereon as well as to straighten and true up a previously formed flange, substantially as specified.
 55

9. The combination with a pair of can clamping chucks, of a rotary seaming head having double seaming rollers, an intermittently moving carrier having can receiving
 60 pockets, a can body flanging die conforming in size and shape to the mouth of the can and adapted to enter within the mouth of the can and turn a flange thereon as well as to straighten and true up a previously
 65

formed flange, and external segmental flanging dies cooperating with said first mentioned flanging die, substantially as specified.

10. The combination with a pair of can clamping chucks, of a rotary seaming head
 70 having double seaming rollers, an intermittently moving carrier having can receiving pockets, a can body flanging die conforming in size and shape to the mouth of the can and adapted to enter within the mouth of the can and turn a flange thereon as well as to
 75 straighten and true up a previously formed flange, and a stationary table for supporting the cans as they are moved along by said carrier from the flanging die to the seaming head, substantially as specified.
 80

11. The combination with a pair of can clamping chucks, of a rotary seaming head having double seaming rollers, an intermittently moving carrier having can receiving
 85 pockets; a can body flanging die conforming in size and shape to the mouth of the can and adapted to enter within the mouth of the can and turn a flange thereon as well as to straighten and true up a previously formed flange, external segmental flanging dies cooperating with said first mentioned flanging die, and a stationary table for supporting the cans as they are moved along by
 90 said carrier from the flanging die to the seaming head, substantially as specified.
 95

12. The combination with a pair of can clamping chucks, of a rotary seaming head having double seaming rollers, an intermittently moving carrier having can receiving
 100 pockets, a can body flanging die conforming in size and shape to the mouth of the can and adapted to enter within the mouth of the can and turn a flange thereon as well as to straighten and true up a previously formed flange, a stationary table for supporting the cans as they are moved along by
 105 said carrier from the flanging die to the seaming head, a can head holder and a can head feeder, substantially as specified.
 110

13. The combination with a pair of can clamping chucks, of a rotary seaming head having double seaming rollers, an intermittently moving carrier having can receiving
 115 pockets, a can body flanging die conforming in size and shape to the mouth of the can and adapted to enter the mouth of the can and turn a flange thereon as well as to straighten and true up a previously formed flange, a stationary table for supporting the cans as they are moved along by said carrier from the flanging die to the seaming head, a can head holder and a can head feeder, said carrier having segmental can head receiving
 120 seats, substantially as specified.
 125

14. The combination with a pair of can clamping chucks, of a rotary seaming head having double seaming rollers, an intermittently moving carrier having can receiving
 130

1,055,487

7

pockets, a can body flanging die adapted to enter the mouth of the can and turn a flange thereon as well as to straighten and true up a previously formed flange, a stationary table for supporting the cans as they are moved along by said carrier from the flanging die to the seaming head, a can head holder and a can head feeder, said carrier having segmental can head receiving seats, and a guide having a can head supporting shoulder, substantially as specified.

15. The combination with a pair of can clamping chucks, of a rotary seaming head having double seaming rollers, an intermittently moving carrier having can receiving pockets, a can body flanging die adapted to enter the mouth of the can and turn a flange thereon as well as to straighten and true up a previously formed flange, a stationary table for supporting the cans as they are moved along by said carrier from the flanging die to the seaming head, a can head holder and a can head feeder, said carrier having segmental can head receiving seats, a guide having a can head receiving shoulder and a can head feed controller adapted to be engaged by a can in the carrier, said can head holder and feeder cooperating with said carrier and guide to deliver the can heads one by one to said seats, substantially as specified.

16. The combination with an intermittently moving can carrier, of a rotary seaming head having double seaming rollers, a stationary can holding chuck and a movable can holding chuck, a stationary table for supporting the cans as they are moved along by said carrier and a reciprocating can body flanging die conforming in size and shape to and adapted to enter within the mouth of the can, substantially as specified.

17. The combination with an intermittently moving can carrier, of a rotary seaming head having double seaming rollers, a stationary can holding chuck and a movable can holding chuck, a stationary table for supporting the cans as they are moved along by said carrier and a reciprocating can body flanging die conforming in size and shape to and adapted to enter within the mouth of the can and cooperating external flanging dies adapted to embrace the mouth end of the can, substantially as specified.

18. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die conforming in size and shape to and adapted to enter within the mouth of the can, substantially as specified.

19. The combination with a can carrier having can receiving pockets, of a stationary

can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die conforming in size and shape to and adapted to enter within the mouth of the can, said carrier having at each of its can receiving pockets a segmental flanging die, and said can body clamp having a segmental flanging die, substantially as specified.

20. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die conforming in size and shape to and adapted to enter within the mouth of the can, said carrier having at each of its can receiving pockets a segmental flanging die and said can body clamp having a segmental flanging die, each of the pockets of said carrier having a segmental can head supporting seat, substantially as specified.

21. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die, said carrier having at each of its can receiving pockets a segmental flanging die and said can body clamp having a segmental flanging die, each of the pockets of said carrier having a segmental can head supporting seat, and a curved guide having a can head supporting ledge, substantially as specified.

22. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die, said carrier having at each of its can receiving pockets a segmental flanging die and said can body clamp having a segmental flanging die, each of the pockets of said carrier having a segmental can head supporting seat, a curved guide having a can head supporting ledge, a can head holder and a can head feeder, said feeder cooperating to deliver the can heads one by one to said can head supporting seat of the carrier and supporting ledge of said guide, substantially as specified.

23. The combination with a can carrier having can receiving pockets, of a stationary

can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die, said carrier having at each of its can receiving pockets a segmental flanging die and said can body clamp having a segmental flanging die, each of the pockets of said carrier having a segmental can head supporting seat, a curved guide having a can head supporting ledge, a can head holder and a can head feeder, said feeder cooperating to deliver the can heads one by one to said can head supporting seat of the carrier and supporting ledge of said guide and a device for controlling the operation of the can head feeder by the can in the can carrier, substantially as specified.

24. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die, said carrier having at each of its can receiving pockets a segmental flanging die and said can body clamp having a segmental flanging die, each of the pockets of said carrier having a segmental can head supporting seat, a curved guide having a can head supporting ledge, a can head holder above said carrier and into registry with which said can head supporting seats on the carrier are successively brought and a can head feeder, said feeder cooperating to deliver the can heads one by one to said can head supporting seat of the carrier and supporting ledge of said guide and a device for controlling the operation of the can head feeder by the can in the can carrier, and a can conveyer for delivering the cans to said carrier, substantially as specified.

25. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die, said carrier having at each of its can receiving pockets a segmental flanging die and said can body clamp having a segmental flanging die, each of the pockets of said carrier having a segmental can head supporting seat, a curved guide having a can head supporting ledge, a can head holder above said curved guide and carrier and into registry with which said can head supporting seats on the carrier are successively brought, a can head feeder, said feeder co-

operating to deliver the can heads one by one to said can head supporting seat of the carrier and supporting ledge of said guide, a device for controlling the operation of the can head feeder by the can in the can carrier, a can conveyer for delivering the cans to said carrier, and a device for discharging the seamed cans from the machine, substantially as specified.

26. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, a movable can holding chuck, a rotary seaming head having double seaming rollers, a movable can body clamp cooperating in turn with each of the pockets of said carrier, and a reciprocating can body flanging die, said carrier having at each of its can receiving pockets a segmental flanging die and said can body clamp having a segmental flanging die, each of the pockets of said carrier having a segmental can head supporting seat above each flanging die, a curved guide having a can head supporting ledge, a can head holder, a can head feeder, said feeder cooperating to deliver the can heads one by one to said can head supporting seat of the carrier and supporting ledge of said guide, a device for controlling the operation of the can head feeder by the can in the can carrier, a can conveyer for delivering the cans to said carrier, a device for discharging the seamed cans from the machine and a conveyer for carrying away the seamed cans, substantially as specified.

27. The combination with an intermittently moving can carrier having can receiving pockets, of a stationary supporting plate for the cans, a rotary seaming head having double seaming rollers, an upper stationary can holding chuck, a lower reciprocating can holding chuck, a movable clamp for clamping a can body in a pocket of the carrier, a can body flanging die conforming in size and shape to and adapted to enter within the mouth of the can body, a can head holder above the carrier and into registry with which the pockets of the carrier are successively brought, and a can head feeder, and means for automatically operating said feeder, flanging device, clamp and carrier, substantially as specified.

28. The combination with an intermittently moving can carrier having can receiving pockets, of a stationary supporting plate for the cans, a rotary seaming head having double seaming rollers, an upper stationary can holding chuck, a lower reciprocating can holding chuck, a movable clamp for clamping a can body in a pocket of the carrier, a can body flanging device, a can head holder, a can head feeder and means for automatically operating said feeder, flanging device, clamp and carrier, and means for controlling the operation of

said feeder by a can in the carrier; substantially as specified.

29. The combination with an intermittently moving can carrier having can receiving pockets, of a stationary supporting plate for the cans, a rotary seaming head having double seaming rollers, an upper stationary can holding chuck, a lower reciprocating can holding chuck, a movable clamp for clamping a can body in a pocket of the carrier, a can body flanging device, a can head holder above the carrier and into registry with which the pockets of the carrier are successively brought, a can head feeder and means for automatically operating said feeder, flanging device, clamp and carrier, means for controlling the operation of said feeder by a can in the carrier, and a can conveyor for delivering the cans to said carrier, substantially as specified.

30. The combination with a can carrier, of a rotary seaming head having double seaming rollers, can holding chucks cooperating with said seaming head and a can body flanging die adapted to enter within the mouth of the can body and conforming in size and shape thereto, said die simultaneously engaging the entire circumference of the can body mouth and turning a flange around its whole circumference at the same time, substantially as specified.

31. The combination with a can carrier, of a rotary seaming head having double seaming rollers, can holding chucks cooperating with said seaming head and internal and external can body flanging dies, said internal flanging die adapted to enter within the mouth of the can body and conforming in size and shape thereto, said dies simultaneously engaging the whole circumference of the can body mouth and turning a flange thereon around its whole circumference at the same time, substantially as specified.

32. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck and a reciprocating can holding chuck, a rotary seaming head having double seaming rollers, the pockets of said carrier having can head supporting seats and a guide having a cooperating can head supporting ledge said reciprocating can holding chuck raising the can up against the can head supported by said seats, substantially as specified.

33. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck and a reciprocating can holding chuck, a rotary seaming head having double seaming rollers, the pockets of said carrier having can head supporting seats, a guide having a cooperating can head supporting ledge, a can head holder and a can head

feeder said reciprocating can holding chuck raising the can up against the can head supported by said seats, said feeder delivering the can heads one by one to said carrier seat and guide ledge, substantially as specified.

34. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck and a reciprocating can holding chuck, a rotary seaming head having double seaming rollers, the pockets of said carrier having can head supporting seats, a guide having a cooperating can head supporting ledge, a can head holder, a can head feeder, and a device for controlling the operation of the can head feeder by the presence or absence of the can in the carrier, substantially as specified.

35. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, and a reciprocating can holding chuck, a rotary seaming head having double seaming rollers, the pockets of said carrier having can head supporting seats, a guide having a cooperating can head supporting ledge, a can head holder, a can head feeder, and a can conveyor for delivering the cans to said carrier, substantially as specified.

36. The combination with a can carrier having can receiving pockets, of a stationary can supporting plate, a stationary can holding chuck, and a reciprocating can holding chuck, a rotary seaming head having double seaming rollers, the pockets of said carrier having can head supporting seats, a guide having a cooperating can head supporting ledge, a can head holder, a can head feeder, said feeder delivering the can heads one by one to said carrier seat and guide ledge, a device for controlling the operation of the can head feeder by the presence or absence of a can in the carrier, and a can conveyor for delivering the cans to said carrier, substantially as specified.

37. The combination with a can carrier, of a rotary seaming head having double seaming rollers, can holding chucks cooperating with said seaming head, external segmental can body flanging dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder and a can head feeder, said internal flanging die entering within and truing up the mouth of the can body before the can head is delivered by said feeder, substantially as specified.

38. The combination with a can carrier, of a rotary seaming head having double seaming rollers, can holding chucks cooperating with said seaming head, external segmental can body flanging dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder, a can

head feeder, said internal flanging die entering within and truing up the mouth of the can body before the can head is delivered by said feeder, and means for controlling the operation of said feeder by the presence or
5 absence of a can in said carrier to receive the can head, substantially as specified.

39. The combination with a can carrier having can receiving pockets, a stationary
10 table for supporting the cans as they are moved along by the carrier, a rotary seaming head having double seaming rollers, can holding chucks cooperating with said seaming head, external segmental can body flanging
15 dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder and a can head feeder, said internal flanging die entering within and truing
20 up the mouth of the can body before the can head is delivered by said feeder, substantially as specified.

40. The combination with a can carrier having can receiving pockets, a stationary
25 table for supporting the cans as they are moved along by the carrier, a rotary seaming head having double seaming rollers, can holding chucks cooperating with said seaming head, external segmental can body flanging
30 dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder, a can head feeder, said internal flanging die entering within and truing up
35 the mouth of the can body before the can head is delivered by said feeder, and means for controlling the operation of said feeder by the presence or absence of a can in the carrier, substantially as specified.

41. The combination with a can carrier having can receiving pockets, a stationary
40 table for supporting the cans as they are moved along by the carrier, a rotary seaming head having double seaming rollers, can holding chucks cooperating with said seaming head, external segmental can body flanging
45 dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder, a can head feeder, said internal flanging die entering within and truing up
50 the mouth of the can body before the can head is delivered by said feeder, means for controlling the operation of said feeder by the presence or absence of a can in the carrier, and a conveyer for delivering the cans
55 to said carrier, substantially as specified.

42. The combination with an intermittently moving can carrier having can receiving
60 pockets, of a rotary seaming head having seaming rollers, can holding chucks cooperating with said seaming head, a supporting table for the cans, and external segmental can body flanging dies and an internal
65 flanging die adapted to enter within and

conforming in size and shape to the mouth of the cans, said table supporting said external segmental can body flanging dies against the thrust of said internal flanging die, substantially as specified.

43. The combination with an intermittently moving can carrier having can receiving
70 pockets, of a rotary seaming head having seaming rollers, can holding chucks cooperating with said seaming head, a supporting table for the cans, external segmental can body flanging dies and an internal
75 flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder and a can head feeder, said internal flanging die entering within and truing up the mouth
80 of the can body before the can head is delivered by said feeder, substantially as specified.

44. The combination with an intermittently moving can carrier having can receiving
85 pockets, of a rotary seaming head having seaming rollers, can holding chucks cooperating with said seaming head, a supporting table for the cans, external segmental can body flanging dies and an internal
90 flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder, a can head feeder, said internal flanging die entering within and truing up the mouth of
95 the can body before the can head is delivered by said feeder and means for controlling the operation of the can head feeder by a can in the carrier, substantially as specified.

45. The combination with a can carrier having can receiving pockets, of a rotary
100 seaming head having seaming rollers, an upper stationary can holding chuck and a lower movable can holding chuck cooperating with said seaming head and external segmental can body flanging dies, an internal
105 flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, and a table supporting said external segmental can body flanging dies against the thrust of said internal
110 flanging die, substantially as specified.

46. The combination with a can carrier
115 having can receiving pockets, of a rotary seaming head having seaming rollers, an upper stationary can holding chuck and a lower movable can holding chuck cooperating with said seaming head and external
120 segmental can body flanging dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder and a can head feeder, said internal flanging die
125 entering within and truing up the mouth of the can body before the can head is delivered by said feeder, substantially as specified.

47. The combination with a can carrier having can receiving pockets, of a rotary
130

seaming head having seaming rollers, an upper stationary can holding chuck and a lower movable can holding chuck cooperating with said seaming head and external segmental can body flanging dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder, a can head feeder, said internal flanging die entering within and truing up the mouth of the can body before the can head is delivered by said feeder, and means for supporting the can head fed from the holder above the flanged can in the pocket of the carrier, substantially as specified.

48. The combination with a can carrier having can receiving pockets, of a rotary seaming head having seaming rollers, an upper stationary can holding chuck and a lower movable can holding chuck cooperating with said seaming head and external segmental can body flanging dies and an internal flanging die adapted to enter within and conforming in size and shape to the mouth of the cans, a can head holder, a can head feeder, said internal flanging die entering within and truing up the mouth of the can body before the can head is delivered by said feeder, means for supporting the can head fed from the holder above the flanged can in the pocket of the carrier, said lower movable can holding chuck operating to raise the flanged can against the can head and to clamp the same against the upper stationary chuck, substantially as specified.

49. The combination with an intermittently moving carrier having can receiving pockets, of a stationary supporting table for the cans, a rotary seaming head having seaming rollers, can holding chucks cooperating with said seaming head, the lower one being vertically movable, can body flanging means, a can head holder, a can head feeder, said carrier having segmental can head supporting seats, and a cooperating can head supporting plate projecting under the can head holder and over the can in the carrier, substantially as specified.

50. The combination with an intermittently moving carrier having can receiving

pockets, of a stationary supporting table for the cans, a rotary seaming head having seaming rollers, can holding chucks cooperating with said seaming head, the lower one being vertically movable, can body flanging means, a can head holder, a can head feeder, said carrier having segmental can head supporting seats, a cooperating can head supporting plate projecting under the can head holder and over the can in the carrier, and a curved guide having a can head supporting ledge to support the can head on its outer side and hold it in the segmental seat of the carrier as the carrier moves the can and can head along, substantially as specified.

51. The combination with an intermittently moving carrier having can receiving pockets, of a stationary supporting table for the cans, a rotary seaming head having seaming rollers, can holding chucks cooperating with said seaming head, the lower one being vertically movable, can body flanging means, a can head holder, a can head feeder, said carrier having segmental can head supporting seats, a cooperating can head supporting plate projecting under the can head holder and over the can in the carrier, a curved guide having a can head supporting ledge to support the can head on its outer side and hold it in the segmental seat of the carrier as the carrier moves the can and can head along, and means for controlling the operation of the feeder by the presence or absence of a can in the carrier, substantially as specified.

52. The combination with an intermittently moving carrier having can receiving pockets, of a stationary can supporting plate, a rotary seaming head having seaming rollers, can holding chucks cooperating with said seaming head, can body flanging means, said pockets having segmental can head supporting seats and a curved guide for holding the can heads in said seats and supporting their outer edges as they are moved along by the carrier, substantially as specified.

AXEL JOHNSON.

Witnesses:

ROBERT H. GAY,
O. A. EGGERS.