

C. COSBY.

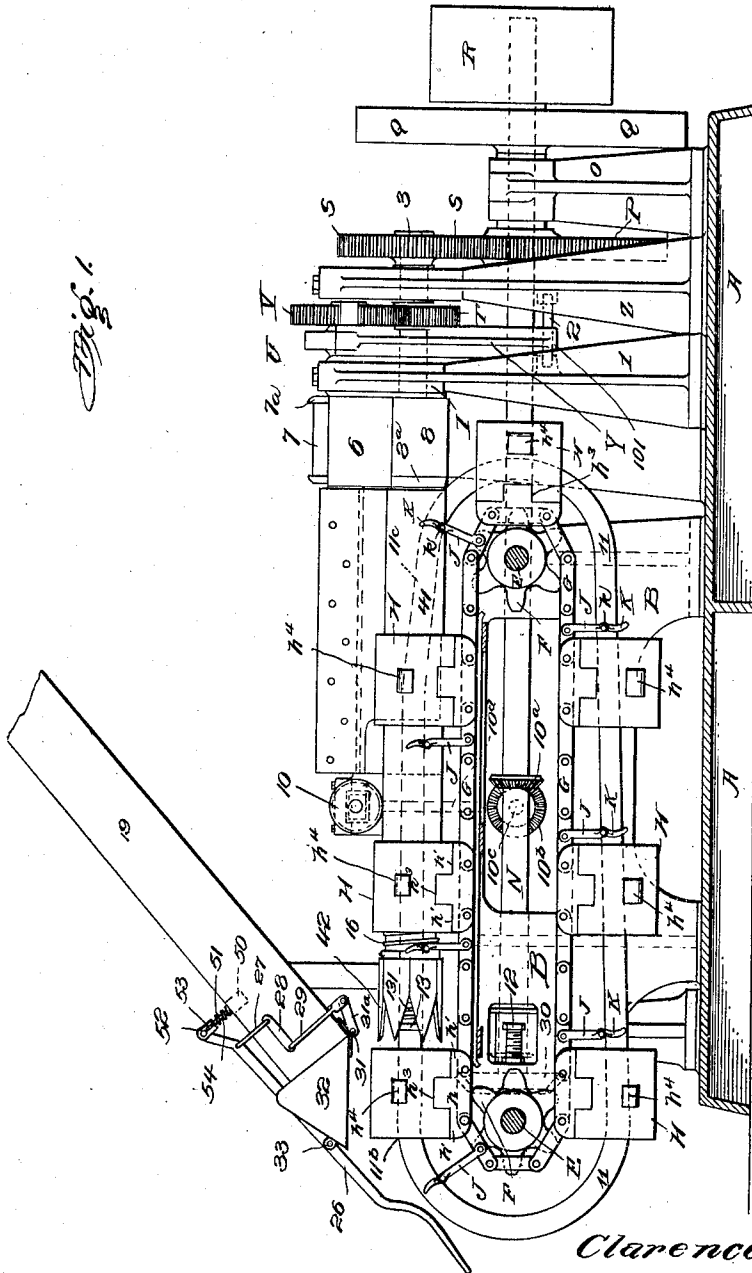
CAN SHEARING MACHINE.

APPLICATION FILED FEB. 23, 1910. RENEWED MAR. 11, 1911.

1,006,439.

Patented Oct. 17, 1911.

5 SHEETS—SHEET 1.



Inventor
Clarence Cosby.

Witnesses
G. H. Tolson

Edith L. Smith

By

R. E. Tew

Attorney

C. COSBY.

CAN SHEARING MACHINE.

APPLICATION FILED FEB. 23, 1910. RENEWED MAR. 11, 1911.

1,006,439.

Patented Oct. 17, 1911.

5 SHEETS—SHEET 2.

Fig. 7

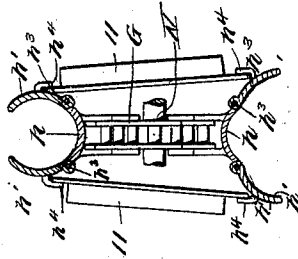
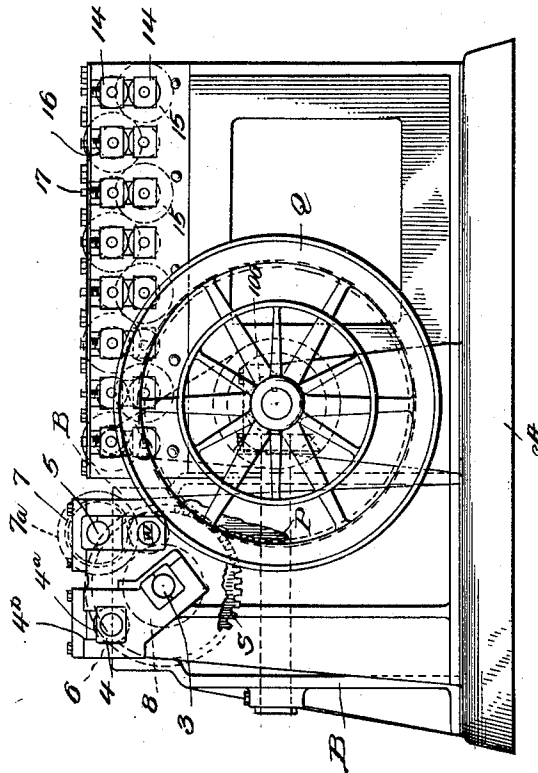


Fig. 8



Witnesses

E. H. Tolson
Edith L. Smith

Inventor
Clarence Cosby

By

W. E. Tew

Attorney

C. COSBY.
CAN SHEARING MACHINE.

APPLICATION FILED FEB. 23, 1910. RENEWED MAR. 11, 1911.

1,006,439.

Patented Oct. 17, 1911.

5 SHEETS—SHEET 3.

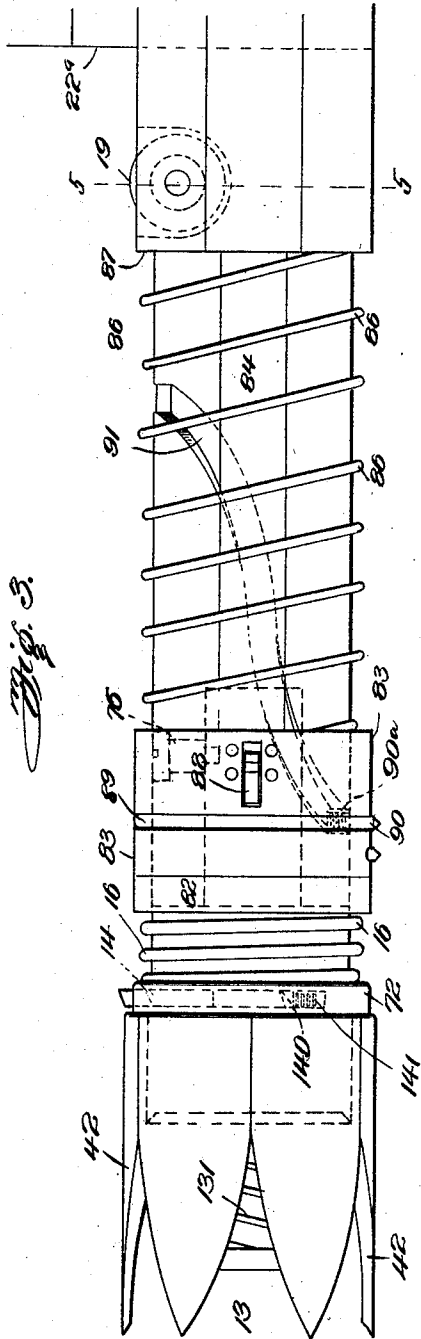


Fig. 3.

Witnesses
E. F. Hoban
Edith L. Smith

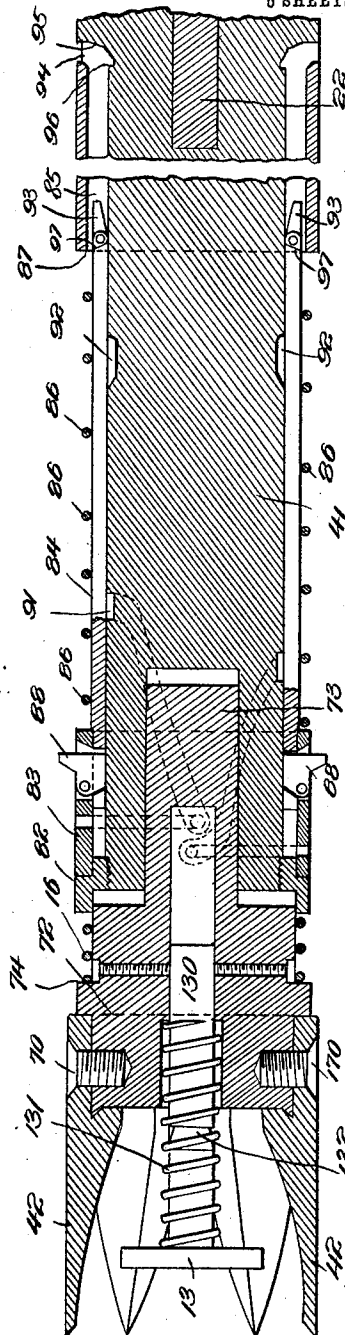


Fig. 4.

Clarence Cosby.

By

W. E. Tew

Attorney

CAN SHEARING MACHINE.

1,006,439.

6 SHEETS—SHEET 4.



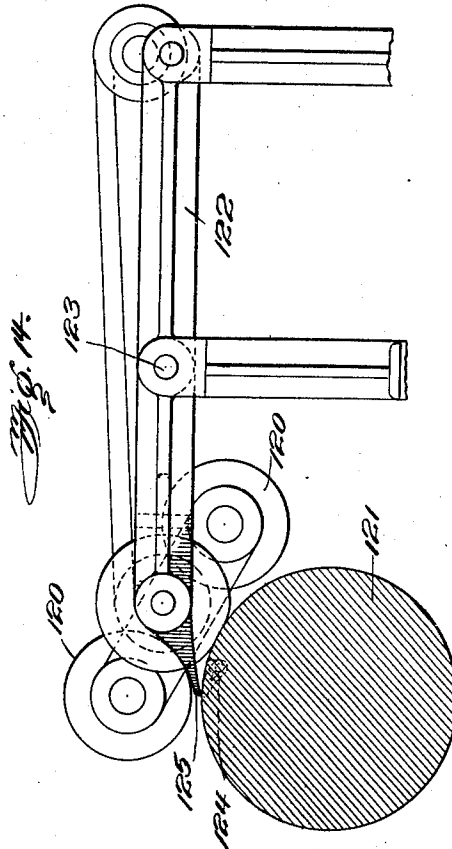
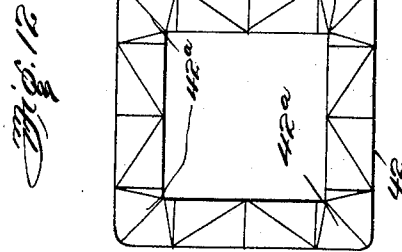
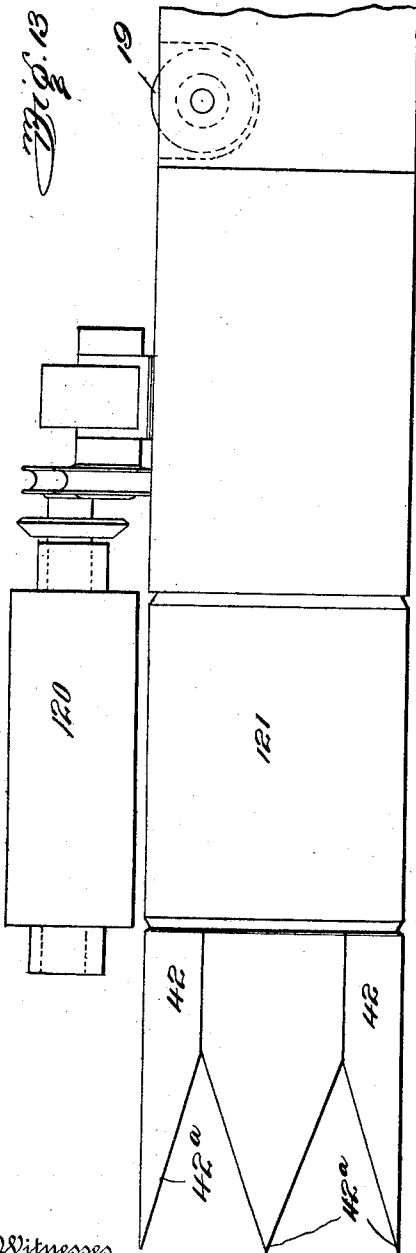
C. COSBY.
CAN SHEARING MACHINE.

APPLICATION FILED FEB. 23, 1910. RENEWED MAR. 11, 1911.

1,006,439.

Patented Oct. 17, 1911.

5 SHEETS—SHEET 5.



Witnesses
G. H. Wilson.
Edith L. Smith

Inventor
Clarence Cosby.

By *W. E. Tew*
Attorney

UNITED STATES PATENT OFFICE.

CLARENCE COSBY, OF RICHMOND, VIRGINIA.

CAN-SHEARING MACHINE.

1,006,439.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed February 23, 1910, Serial No. 545,407. Renewed March 11, 1911. Serial No. 613,848.

To all whom it may concern:

Be it known that I, CLARENCE COSBY, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Can-Shearing Machines, of which the following is a specification.

This invention relates to automatic shearing machines for shearing the heads or ends of cans, and for flattening and cleaning the sheets forming the bodies of the cans after shearing, to make said sheets available for further industrial purposes.

The object of the present invention is first, to provide means for cutting out the heads of the cans; second, for cutting out the side seam of the cans; and third, for cutting off the head seams and flattening and cleaning the body sheets.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a side elevation, partly in section, of the machine. Fig. 2 is an end elevation thereof. Fig. 3 is a detail in side elevation of the mandrel and associated devices which cuts out the heads of the cans and also cuts out the longitudinal or body seam. Fig. 4 is a detail in longitudinal section of the parts shown in Fig. 3. Fig. 5 is a section of the same on the line 5—5 of Fig. 3. Fig. 6 is a view of the mandrel. Fig. 7 is a detail in end view of the track on which the can carriers travel. Figs. 8 and 9 are details in section of the stripping devices. Figs. 10 and 11 are details in section of parts of the mandrel. Figs. 12, 13 and 14 are details in end, side and sectional views of a modified form of mandrel.

The base of the machine is indicated at A, with two side frames B mounted thereon, and these side frames have bearings C at opposite ends which carry the cross shafts E provided with sprockets F around which passes a chain belt G which carries a series of can carriers or buckets H fastened thereto. Behind each bucket the chain carries a fixed arm J with a spring finger K pivoted to the outer end thereof.

The shafts E are driven by means of bevel gears 30 on the main shaft N which will be driven by means of a belt on pulley R, and which carries a fly wheel Q, and is sup-

ported by pedestals O on the base. The boxes for one of the shafts E may be set up by screws 12, to take up any slack in the chain.

Mounted upon the side frames B is a continuous track consisting of two opposite corresponding rails 11, conveniently made of angle metal. The buckets or can carriers H travel on this track, the runs of the chain being parallel to those of the track, and the chain being located in a position between the opposite rails. Each bucket or can carrier consists of a base member h and two side members h' , hinged at h^3 to the sides of the base member, which latter is fastened to one of the links of the chain. Each section h' of the bucket or carrier has a lug h^4 which hooks over the flange 11^a of the track, and the hooked lugs serve to open or close the buckets, according to the lateral variation in the line of the rails with respect to the line of the chain. The rails approach each other as indicated at 11^b , which is the place where the cans are received by the carriers from the chute 19. At the opposite end of the top run of the track the rails diverge and incline downwardly, as indicated at 11^c , which is the place where the cans are released from the carriers, as more fully hereinafter explained, the effect of the irregular lines of the rails being to close and open the carriers at desired points, to grip or release the cans, by means of movement of the hinged sections h' of the carriers. The chain travels with its upper run moving to the right, in Fig. 1, and by means to be described the cans are fed one by one to the carriers and the cans travel endwise with the carriers along the track, and while they are so carried the heads are cut out and also the longitudinal seam.

For cutting out the heads of the cans as they are carried along the following means are provided: 41 is a mandrel which is supported and extends lengthwise between the upper runs of the track rails and above the upper run of the chain 11, and in the line of travel of the carriers. At the front end this mandrel has a plurality of pointed blades 42 fastened by screws 70 to a plunger 72 the stem 73 of which works in an axial bore in the front end of the mandrel. The head 72 also carries an ejecting plunger

13 provided with a stem 130 which slides in an axial bore in the head 72. The plunger 13 is normally extended with its head between the shear blades by means of a spring 131, and the stem is provided with a notch 132 arranged for engagement by the edge 140 of a latch 14 which works transversely in a suitable recess in the head 72 and is arranged to be engaged and pressed in by the forward edge of a can as the can is carried over the mandrel. Screwed on a reduced portion at the front end of the mandrel is a ring 82, and a spring 16 is coiled around the head 72 between a shoulder 74 on said head and the front end of the ring. The stem 73 of the head has an inclined groove at 75 which receives the point of a screw 76. Mounted upon the mandrel behind the ring 82 is a sleeve 83 which is slidable lengthwise on the mandrel, and attached to this sleeve are arms or rods 84 which travel in longitudinal slots 85 in the mandrel. A spring 86 is coiled around the mandrel between the sleeve 83 and a shoulder 87, and the purpose of this spring is to normally hold the sleeve in advanced position and to return it after it is pushed back on the mandrel as hereinafter described. The sleeve 83 carries catches 88 working in recesses in said sleeve and having points projecting beyond the surface of the sleeve in position to be struck by the side pieces *h'* of the can carriers as the latter travel with the can along the mandrel. The sleeve 83 has semi-circular slots 89, on opposite sides thereof, and through each slot projects a pin 90 the inner end of which is mounted and travels in one of a pair of spiral slots 91 which extend from the bottom or underside of the mandrel and upwardly and backwardly on opposite sides of the mandrel. The mandrel has recesses 92 in position to allow the catches 88 to drop into the same when the sleeve 83 is pushed back to its extreme rear position. The rear ends of the arms 84 carry pivoted latches 93. The grooves 85 terminate in openings 94, with a curved back wall 95 and an inner shoulder 96. When the sleeve 83 is pushed back the ends of the fingers 93 strike the wall 95 and are turned up to project out through the openings 94, and the heel 97 of the finger catches on the ledge or shoulder 96, acting as a latch to prevent the forward movement of the sleeve 83 until the projecting ends of the fingers 93 are struck by the advancing carrier and released by pressing the same backwardly until the heels 97 disengage from the shoulders 96, when the sleeve and parts carried thereby are returned by the spring 86. The operation of the parts just described is as follows: As indicated above, a can is grasped by the carrier jaws 42 which penetrate the front end or the head

of the can and begin to cut the same out. When the head of the can strikes the plunger head 13 it forces the plunger backwardly against the tension of the spring 131 into the mandrel head, and when it reaches its limit of movement the notch 132 is engaged by the edge 140 of the catch 14, in consequence of the pressure of the spring 141, and the plunger is held in this position until the forward end of the can comes in contact with the exposed beveled end of the catch 14, and as the can is carried along it forces said catch inwardly, thereby releasing the plunger stem, and the spring 131 expands and clears the shear blades of the scrap or cut out head, said head having meanwhile been cut out by the advance of the can. While this action is taking place the coiled spring 16 is compressed, permitting the plunger head 72 to be forced back slightly, and in consequence of the engagement of the screw 76 in the inclined groove 75 the head 72 is turned slightly, thus turning the blades 42 and insuring a clean cut. The same action takes place when the rear or other head of the can reaches the shear blades, and both heads are thereby cut out of the can and ejected by the action of the plunger 13. The can body is then in tubular condition with a slight rim at each end, and it is thus carried along until the front edge of the carrier sections *h'* strike the ends of the catches 88, and in consequence of the advance of the carrier the sleeve 83 is slid back along the mandrel. As the sleeve moves it carries with it the pins 90 and said pins have a turning movement around the mandrel in the slots 89 in consequence of the shape of the grooves 91. As the pins travel along the spiral grooves one or the other will come in contact with the longitudinal seam of the can, or with the ridge produced thereby on the inside of the can at the seam, said ridge being made by the lap of the seam on the inside of the can. Obviously the longitudinal seam may be located in any position around the mandrel, and hence it is necessary to provide two grooves and two pins so that if it happens to be on one side of the mandrel it will be caught by one pin, or on the opposite side of the mandrel by the other pin. As the appropriate pin 90 travels around inside the can it is pressed in contact therewith by the spring 90^a and sooner or later will strike the seam, and when it does this it will carry the can with it, that is, the can, in addition to its forward movement along the mandrel, will have a turning movement incident to the engagement of the pin 90 with the seam, and finally will be turned so that the seam will lie along the top of the mandrel, at which time the pins will reach the ends of the respective grooves 91, which are there deepened to allow the pins to retract from the can, and the can will advance with the

longitudinal seam, as stated, directly along the top of the mandrel. Meanwhile, the fingers 93 at the ends of the arms 84 will have been caught at the ends of the grooves 85, as above described and the sleeve 83 will be held, the catches 88 dropping in the recesses 92 to allow the can to pass along, and when the fingers 93 are struck by the advancing carrier the release is effected as above described and the spring 86 will expand and force the sleeve back to original position for operation on the next can. In order, then, to cut out the longitudinal seam of the can as it is advanced along the mandrel, a pair of cutters 10 is provided, co-operating with a shear roller 19 set in a recess in the mandrel, this roller being directly in line with the ends of the slots 91, so that the seam will pass across the roller, and the cutters 10 coöperating with said roller will shear the can on opposite sides of the seam, and so cut out the seam which will drop off into scrap.

The mandrel is supported by means of a web 22 depending from angle brackets 20 fastened to the frames B, and said web is located in line with the slot produced by cutting out the longitudinal seam. It is desirable to spread the slot somewhat, and for this purpose the web is sharpened at the front end as indicated at 22^a.

The rotary shears 10 may be driven by any suitable means. I have illustrated a bevel gear 10^a on the shaft N which meshes with a bevel gear 10^b on a cross shaft 10^c which is connected by bevel gears to a vertical shaft 10^d which has at the upper end a bevel gear meshing with a bevel gear on the shaft of the cutters 10. After the can passes the shears 10 it is carried along the mandrel in the carrier H, and the track then drops and spreads slightly as indicated at 11^c, and the can is finally pushed off the rear end of the mandrel onto a roll 8 which is mounted on a shaft 3 driven by gears P and S from the main shaft N, the shaft 3 being mounted in bearings in the pedestals I and Z. The can is effectively pushed off the mandrel and onto the roll 8 by means of the fingers K which engage behind the end of the can, the carriers H meanwhile opening in consequence of the spread of the rails at that point. The fingers K are carried by the arms J projecting from the chain and as the chain travels the fingers advance and push the can onto the roll, the fingers finally yielding in consequence of springs at k, coiled around their pivots, thereby permitting the fingers to slip by the end of the can body on the roller 8, which is beveled at its front end, as indicated at 8^a, to let the can on.

Coöperating with the roll 8 is a roll 6 mounted on a shaft 4, the boxes 4^a of which are slidable up and down in guides 4^b in the pedestals. The shaft 4 and the roller 6 car-

ried thereby are raised and lowered in proper time by means of an eccentric 100 on the shaft N which operates a lever 101 pivoted at 2 on the pedestals and connected by a link Y to said shaft 4. The eccentric is properly constructed to lift the roller 6 from the roller 8 while the can is being placed on the latter and to then drop to contact with the can body which is thus gripped between the rollers 6 and 8.

A stripper 102 is provided for the purpose of stripping the can body from the roll 8. It consists of a curved plate supported by the frame 13 and located with its edge in contact with said roll 8. As the can body turns with the roll 8 the said edge 103 of the stripper plate enters under the can body, through the longitudinal slit therein, and strips the same from the roll. Said stripper plate has curved side edges 104, and as the can body is forced over the plate it is somewhat flattened, its edges engaging under the curved flanges 104 to hold it to the plate. From the plate it passes between shear rollers 7 and W, the former being mounted on a shaft 5 driven by gears T and V from the shaft 3. Said roller 7 is provided at opposite ends with shear blades 7^a which co-operate with the ends of the roll W to shear off the rims or corner seams at the ends of the can body. From these shearing rolls the body passes to a train of rolls and brushes 15 and 16 mounted in the frame, said train being substantially identical with that shown in my pending application No. 520704, for the purpose of flattening and cleaning the body plates which pass between the rolls in the manner described in my said application and are finally delivered therefrom.

For feeding the cans to the carriers H chute 19 is provided. The cans slide down this chute endwise, and they are dropped out one by one by means of a hinged leaf 32 at the lower end of the chute, the hinge being indicated at 31. This leaf is operated by a lever 26 which is fulcrumed at 33 and connected by a link 27, lever 28, link 29 and lever 31^a to the leaf. The front end of the lever 26 projects into the path of the carriers H. When a carrier strikes said lever it lifts the same and lowers the leaf 32, allowing a can to slide down endwise into the carrier which is then approaching at a corresponding inclination along the forward curve of the track 11, and being gradually closed to grip said can as it passes between the jaws of the carrier. Succeeding cans in the chute are meanwhile stopped by means of a yoke 50 fastened to the inner end of a rod 51 which telescopes in a sleeve 52 and is held in place by a pin working in a slot 53, with a coiled spring 54 between the yoke and the sleeve. When the upper end of the lever 26 swings down the yoke strikes or presses upon the second can in the chute and

holds the same while the first can drops into the carrier, and when the lever 26 passes off the carrier the lever returns to its normal position and the yoke is lifted to release the line of cans for the next operation.

Recapitulating the operation of the machine, it may be said that the cans are fed from the chute 19 into the carriers and travel therewith around the track, and while so carried the heads are cut out by the blades 42 on the front end of the mandrel 41, the scrap heads being ejected by the plunger 13, after which the can bodies are positioned by the pins 90 to bring the longitudinal seams of the cans on top of the mandrel, where they are cut out by the cutters 10, after which the bodies are carried along and placed on the roll 8 from which they are stripped by the stripper 102, whence they pass to the shear roll 7 to cut off the ends or corners of the body, after which they pass through the cleaning rolls, leaving the body sheets in clean condition for commercial use.

The invention is not limited to the exact mechanism shown, and no limitation in this respect is implied. The mandrel above described is suitable for round cans. Inasmuch as cans are sometimes square or otherwise angular in shape, in Figs. 8, 9 and 10 I show a modification in which the cutters 42^a of the mandrel are arranged in rectangular position at the end of the mandrel. These operate to cut out the can heads as above described. To then press the angles out of the can bodies I provide a pair of rollers 120 which coöperate with a roller 121 located on the mandrel behind the blades 42^a. The diameter of this roller 121 is not greater than the shortest diameter of the cutting head, and after the can body passes the cutter head and between the rollers 120 and 121 the latter are dropped to contact therewith, being carried at the end of a lever 122 fulcrumed at 123 on a suitable frame and operated by any suitable timing mechanism to be pressed to contact with the can body which will then be spun around between the rollers 120 and 121 and flattened as it passes along the mandrel. While it is spinning or rotating on the mandrel the longitudinal seam is found and located at the top line of the mandrel by one or the other of the seam finders 124 and 125. The former consists of a finger projecting from an extension of the lever 122 in position to rest upon the outside of the can. The latter consists of a spring finger located in a recess in the mandrel and arranged to press against the inner surface of the can body, and as the can comes around one or the other of these finders will strike the longitudinal seam and thus stop the turn of the can with the seam at the upper position, or on top of the mandrel, after which the body will be carried along to the shears 10 and 19 for further operation as

above described. For oblong cans or cans of other shapes the shape of the head 42^a may be varied accordingly.

What I claim as new is:—

1. In a machine for removing the heads of cans or the like, the combination of a can carrier, and a mandrel provided with a cutter at the end, the carrier and mandrel being relatively movable, to pass the mandrel lengthwise through the can.

2. In a machine for removing the heads of cans or the like, the combination of a traveling can carrier, and a mandrel provided with a cutter at the end located in the line of travel of the can to pass lengthwise through the same.

3. In a machine for removing the heads of cans or the like, the combination of a track, a can carrier movable along the same, and a mandrel supported adjacent and parallel to the track, in position to pass endwise through a can in the carrier, said mandrel having a cutter at its head.

4. In a machine for removing the heads of cans or the like, the combination of an endless track, can carriers movable along the same, and a mandrel supported and extending parallel and adjacent to the track, in position to pass endwise through cans in the carrier, said mandrel having a cutter at its head.

5. In a machine for removing the heads of cans or the like, the combination of a traveling can carrier having means to grip a can therein and to advance the same endwise, a cutter supported in the line of travel of the carrier, in position to pass endwise through a can in the carrier, and means to release the can from the carrier.

6. In a machine for removing the heads of cans or the like, the combination of a traveling can carrier constructed to advance a can endwise, and means to cut out the heads of cans carried thereby.

7. In a machine for removing the heads of cans or the like, the combination of a traveling can carrier, means to cut out the heads of cans carried thereby, and means to slit the body of the cans so carried.

8. In a machine for removing the heads of cans or the like, the combination of a traveling can carrier, a mandrel provided with a head-cutter at the end thereof and located in the line of travel of the can to pass through the body thereof, and means to slit the body of the can as it travels along the mandrel.

9. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a traveling can carrier, means to automatically feed cans to said carrier, means to automatically release the cans from the carrier, and means to cut out the heads and seams of a can while in the carrier.

10. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a traveling can carrier, means to automatically feed cans thereto, means to cut out the heads and longitudinal seam of cans carried by the carrier, including a mandrel which passes lengthwise through the cans, and means to release the cans from the carrier after the heads and seams have been cut out.

11. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a traveling can carrier, a mandrel located in the line of travel of the carrier, to pass through a can carried thereby, a cutter at the end of the mandrel adapted to cut out the heads of the can, means to turn the can on the mandrel to locate the longitudinal seam in a certain position, and cutters located adjacent to the mandrel and arranged to cut out the longitudinal seam.

12. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a traveling can carrier, a mandrel located in the line of travel of the carrier to pass lengthwise through a can, means at the head of the mandrel to cut out the heads of the cans, and an ejector mounted on the head of the mandrel to dislodge the heads so cut out.

13. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a traveling can carrier, a mandrel supported in the line of travel of the carrier to pass endwise through a can therein, a cutter mounted on the front end of the mandrel, to cut out the heads of the can, and means to automatically turn the cutters to shear the heads as the cutter passes through the same.

14. In a machine for removing the longitudinal seams of cans, the combination of a traveling can carrier, a mandrel supported in the line of travel of the carrier, in position to pass endwise through the same, means to automatically turn the can on the mandrel to locate the longitudinal seam in a certain position, and shears one member of which is mounted on the mandrel, and constructed to slit the can on opposite sides of the seam, as it passes along the mandrel.

15. In a machine for removing the longitudinal seams of cans, the combination of a traveling can carrier, a mandrel located in the line of travel therein, means to turn the can on the mandrel to locate the seam in a certain position, said means including a pin engageable with the seam as the can passes along the mandrel, and means to cut out the seam, after it is turned to such position.

16. In a machine for removing the longitudinal seams of cans, the combination of a traveling can carrier, a mandrel supported in the line of travel of said carrier and ar-

anged to pass endwise through a can therein, said mandrel having a spiral slot, a pin mounted on the mandrel and traveling in said slot and arranged to engage the seam of the can to turn the same to a certain position as the can passes along the mandrel, and means to shear out said seam after it is turned to such position.

17. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a traveling can carrier, a mandrel supported in the line of travel in said carrier to pass endwise through the can, a head cutter mounted at the end of the mandrel, means located on the mandrel behind said cutter to automatically turn the can thereon to locate the said seam in a certain position, and shears located adjacent to the mandrel and behind said means and constructed to slit the can body on opposite sides of said seam.

18. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of an endless track, a belt traveling parallel thereto, a can carrier attached to the belt and traveling on the track, and a mandrel extending parallel to the track, in the line of travel of the carrier and arranged to pass endwise through a can therein, said mandrel being provided with a cutter at the end thereof, to cut out the heads of the can.

19. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of an endless track having opposite rails, a belt moving between said rails, a can carrier attached to the belt and having opposite members which travel on the respective rails, and a mandrel between the rails, in the line of travel of the carrier to pass through a can held therein, said mandrel having a head cutter at the end, to cut out the heads of the can as it is carried along the mandrel.

20. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a track having opposite rails, said rails being shaped to approach and diverge from each other at different places, a can carrier having opposite members mounted on the respective rails and arranged to move toward and from each other in consequence of the variation of distance between the rails of the track, means to move the carrier along the track, and means to cut out the heads of the can in the carrier as the latter moves along the track, said members acting to grip the can when they move toward each other and to release the can when they move from each other.

21. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of an endless track having opposite rails curved toward and from each other at different places, a belt running par-

allel to the track, a can carrier having opposite members pivotally connected to the belt and traveling on the respective rails of the track, said member being movable toward and from each other in consequence of the curvature of the rails of the track, to grip and release a can at different positions respectively along the track, and means to cut out the heads of a can in the carrier as it travels along the track between the gripping and releasing positions.

22. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of an endless track having upper and lower runs, said track consisting of opposite rails with converging portions approaching the upper run and diverging portions at the end of said run, a carrier traveling on the track and having opposite members mounted on the respective rails and movable toward each other where the rails converge and from each other where the rails diverge, to grip and release a can at the respective positions, and means to cut out the heads of the can and slit the same lengthwise as it is carried along the upper run of the track.

23. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a track, a can carrier traveling along the same, a mandrel supported in the line of movement of the carrier and provided with a head cutter, said mandrel being arranged to pass through the can lengthwise, means located behind the head cutter to cut out the longitudinal seam of the can body, and means to cut off the seams at the ends of the can body.

24. In a machine for removing the heads and longitudinal seams of cans or the like, the combination of a track, a can carrier traveling along the same, a mandrel supported in the line of movement of the carrier and provided with a head cutter, said mandrel being arranged to pass through the can lengthwise, means located behind the head cutter to cut out the longitudinal seam of the can body, and means to cut off the seams at the ends of the can body, said means including rotary shears and devices to deliver the can bodies thereto from the mandrel.

25. In a machine for cutting out the heads of cans or the like, the combination of a traveling can carrier, a mandrel located in the line of travel of the carrier and provided with a yielding cutter head at its front end, said head having a spiral slot, a pin mounted on the mandrel and projecting in said slot, whereby the head is turned to shear the can heads when they are pressed against the cutters, and means to cause travel of the can carrier along the mandrel.

26. In a machine for removing the heads of cans or the like, the combination of a can carrier and a mandrel movable relative to

each other, the mandrel being provided with a cutter head at the end and arranged to pass lengthwise through the can, a spring supported ejector plunger at the end of the mandrel and arranged to yield lengthwise under pressure of the can head, means to automatically lock the ejector plunger in its retracted position, and means to automatically release said plunger, to eject the heads, after the cutter passes through the same.

27. In a machine for cutting out the heads and longitudinal seams of cans or the like, the combination of a traveling can carrier, a spirally-grooved mandrel supported in the line of travel of the carrier, to pass lengthwise through a can therein, a head cutter supported at the front end of the mandrel, means on the mandrel to turn the can to locate its longitudinal seam in a certain position, said means including pins movable in the spiral grooves in the mandrel, and a sleeve slidable on the mandrel and having slots through which the pins project to pass within the can and engage the seam therein, and shear members located behind the rear end of the spiral grooves, one member being mounted on the mandrel, and arranged to cut out the longitudinal seam.

28. The combination of a pair of cooperating rolls, means to feed a slitted tubular article onto one of the rolls, a stripper having an edge resting against the last mentioned roll and arranged to enter the slit and strip the article from the roll, and rotary shears adjacent the stripper to receive the article therefrom and shear the edges thereof.

29. The combination of a pair of cooperating rolls, a traveling can-body carrier arranged to deliver slitted can-bodies onto one of said rolls, shears located beside said rolls and constructed to shear the edges of can bodies, and means to strip the bodies off of said roll and deliver the same to the shears.

30. The combination of a pair of cooperating rolls, one of which is constructed to receive a slitted can-body thereon, a stripper comprising a plate having an edge presented toward said roll and arranged to enter the slit and strip the can body therefrom, and also having overhanging flanges at the opposite side edges to confine and flatten the body as it passes across the plate, and shears located to receive the body from said plate and constructed to shear the edges of said body.

31. The combination of a pair of cooperating rolls one of which is a receiving roll constructed to receive a slitted can body thereon and the other of which is a pressure roll movable toward and from the former, means to feed can bodies onto the receiving roll when the pressure roll is moved therefrom, shears located beside said rolls, means to strip a can body from the receiving roll

and guide the same to the shears, and means to move the pressure roll toward and from the receiving roll.

32. In a machine for shearing the heads, longitudinal seam and end seams of cans, the combination of a mandrel arranged to pass lengthwise through a can, a can carrier movable lengthwise along the mandrel, means associated with the mandrel to cut out the heads and longitudinal seam of a can in the carrier, shears located adjacent to the rear end of the mandrel and constructed to cut off the end seams of the can, and means to deliver the can body from the mandrel to said shears.

33. In a machine for shearing the heads, longitudinal seam and end seams of cans, the combination of a mandrel arranged to pass lengthwise through a can, a can carrier movable lengthwise along the mandrel, means associated with the mandrel to cut out the heads and longitudinal seam of a can in the carrier a pair of cooperating rolls one of which is located in line with the rear end of the mandrel to receive a can body therefrom, means to strip the body from said roll, and means to shear the end seams at the edges of said body, after it is stripped from said roll.

34. In a machine for shearing the heads, longitudinal seam and end seams of cans, the combination of a mandrel arranged to pass lengthwise through a can, a can carrier movable lengthwise along the mandrel, means associated with the mandrel to cut out the heads and longitudinal seam of a can in the carrier a pair of cooperating rolls one of which is located in line with the rear end of the mandrel to receive a can body therefrom, a yielding finger traveling with the carrier and engaging behind the can body to force the same from the car-

rier onto said roll, means to strip the body from said roll, and means to subsequently shear the end seams from said body.

35. The combination with a traveling can carrier, of a mandrel located in the line of travel thereof to pass endwise through a can in the carrier, a head cutter at the front end of the mandrel, a spring-pressed sleeve slidable on the mandrel, seam finders carried by the sleeve, means to move the finders around the mandrel to engage the longitudinal seam of the can and turn the same to certain position, and means to shear out the longitudinal seam after it is turned to such position.

36. The combination with a traveling can carrier, of a mandrel located in the line of travel thereof to pass endwise through a can in the carrier, a head cutter at the front end of the mandrel, a spring-pressed sleeve slidable on the mandrel, the mandrel having spiral and longitudinal grooves, and the sleeve having semi-circular slots, on opposite sides thereof, pins located in said spiral grooves and slots and arranged to slide in said spiral slots and engage the longitudinal seam of the can and turn the same to certain position, arms projecting rearwardly from the sleeve and slidable in the longitudinal grooves and having catches at their rear ends engageable with the mandrel to hold the sleeve against retraction by the spring, said catches projecting into the path of the can to be struck and released thereby, and means to shear out the longitudinal seam of the can after it is turned to said position.

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

CLARENCE COSBY.

Witnesses:

W. A. CHILDRESS,
M. F. POLLARD.