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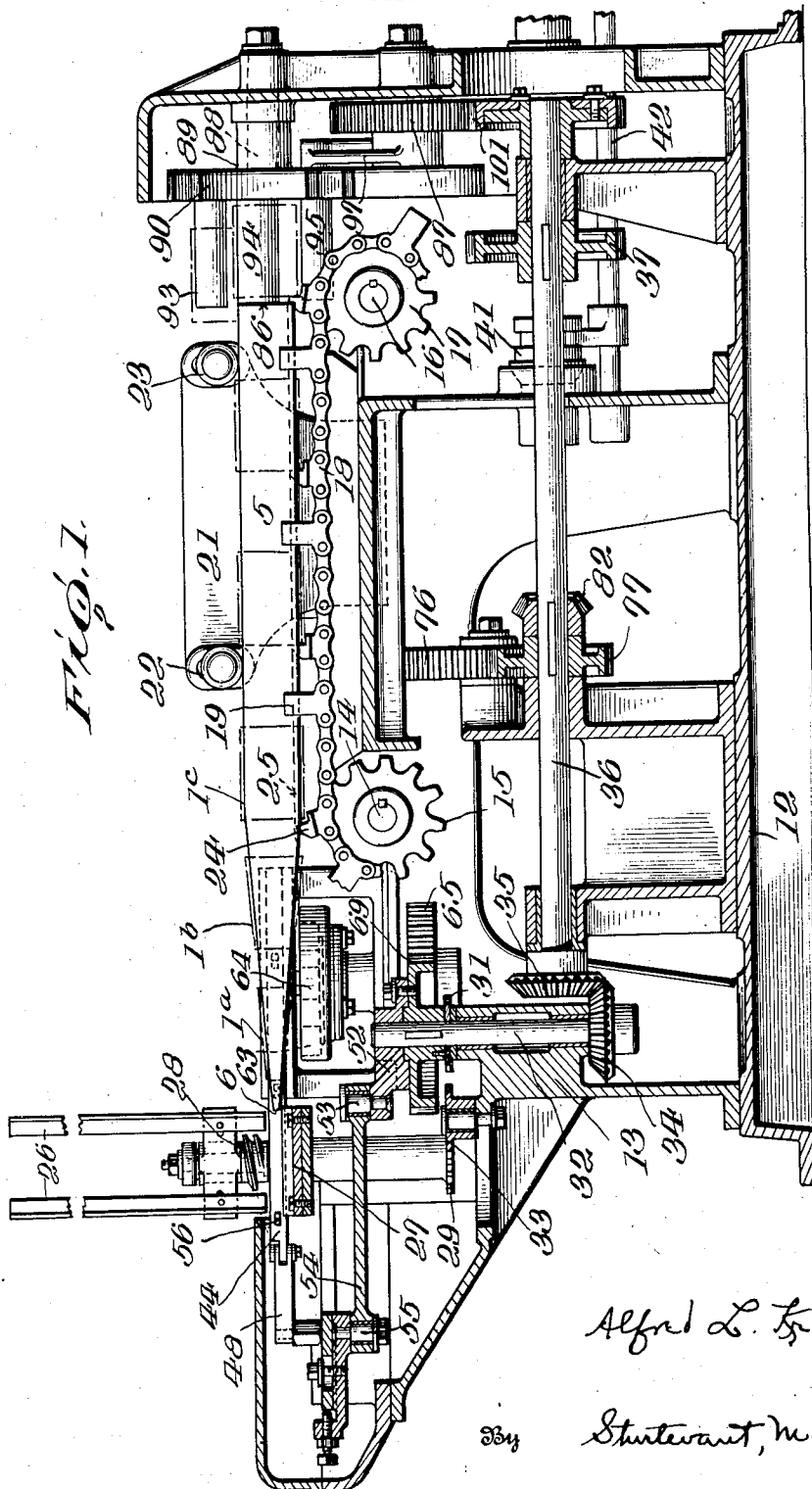
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MACHINE FOR SHAPING CAN BODIES INTO CYLINDRICAL FORM

Filed Nov. 28, 1932

4 Sheets-Sheet 1



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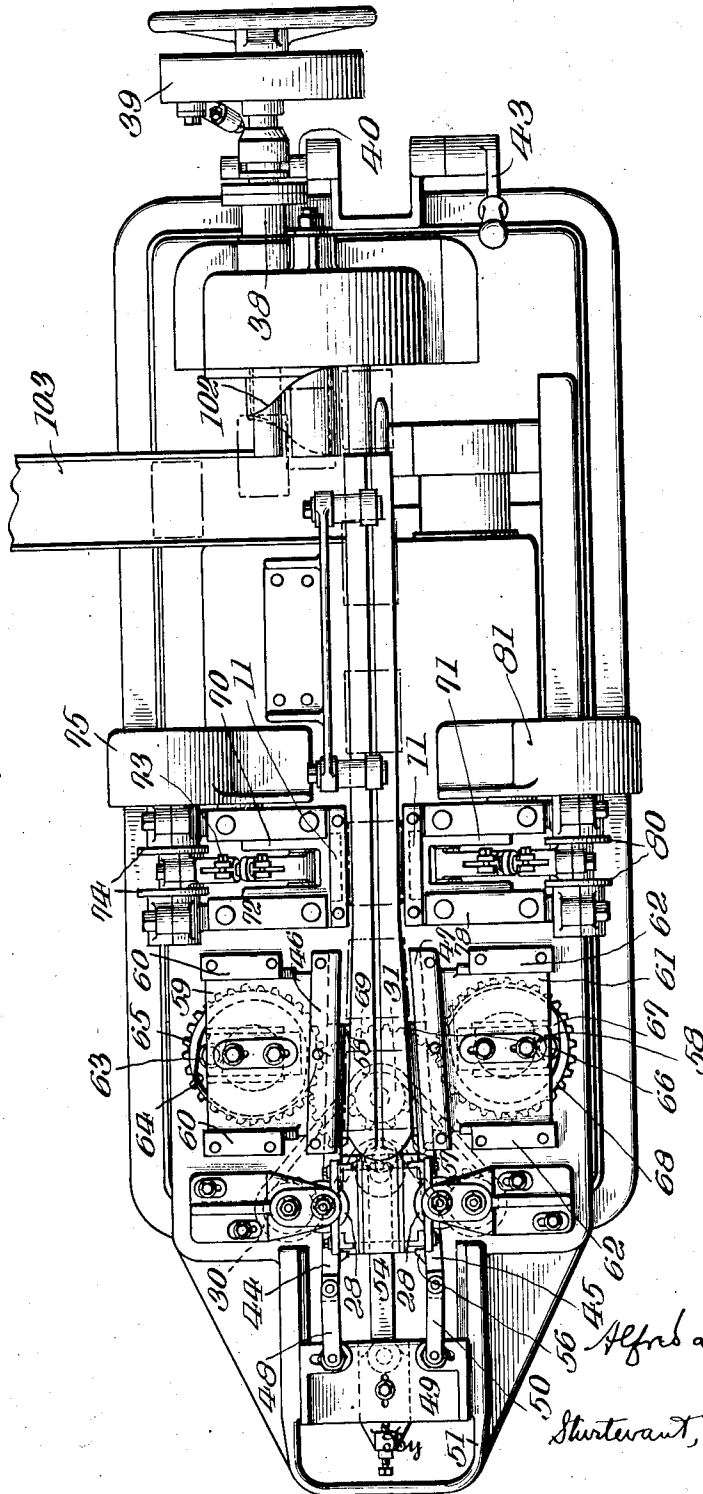
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Fig. 2.



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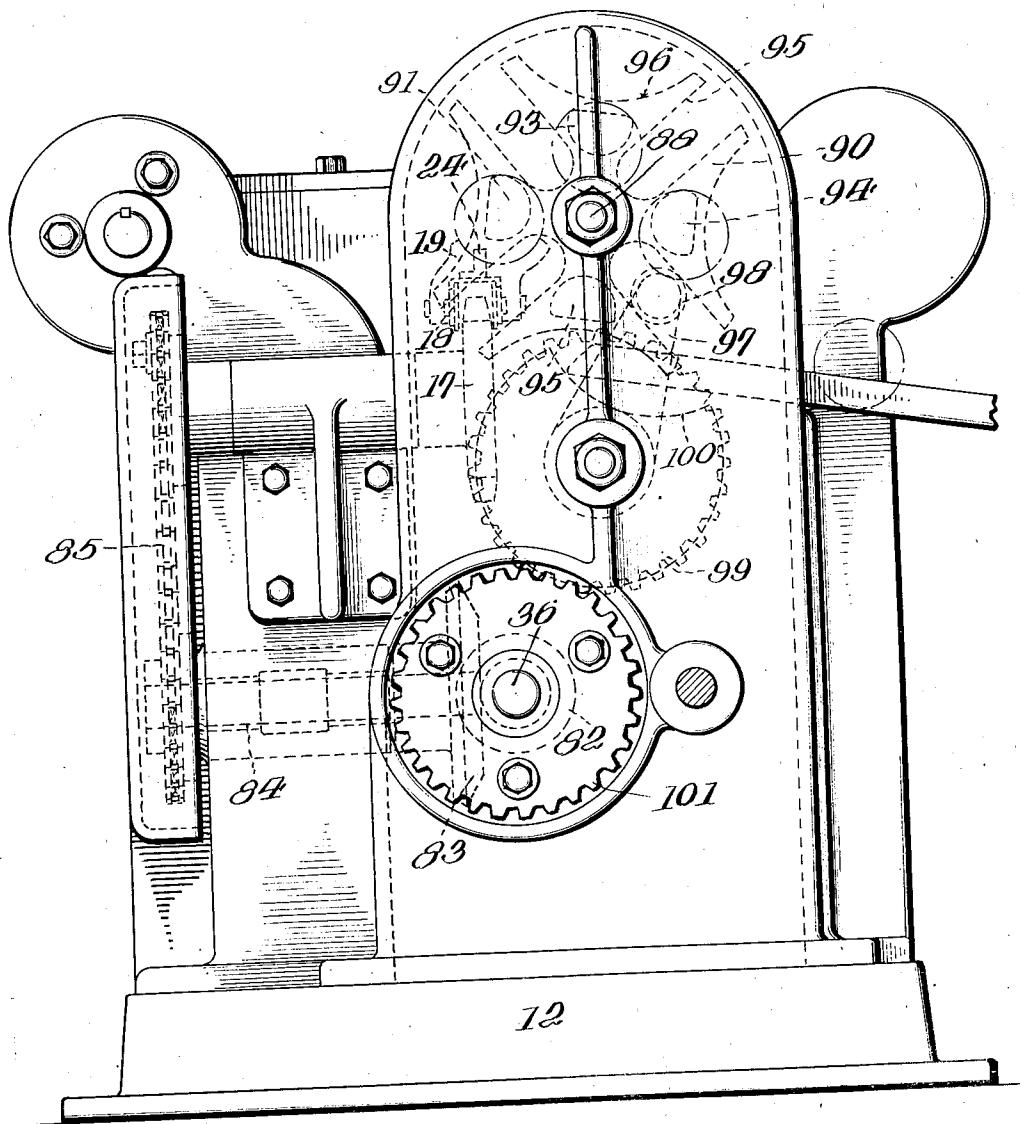


FIG. 3.

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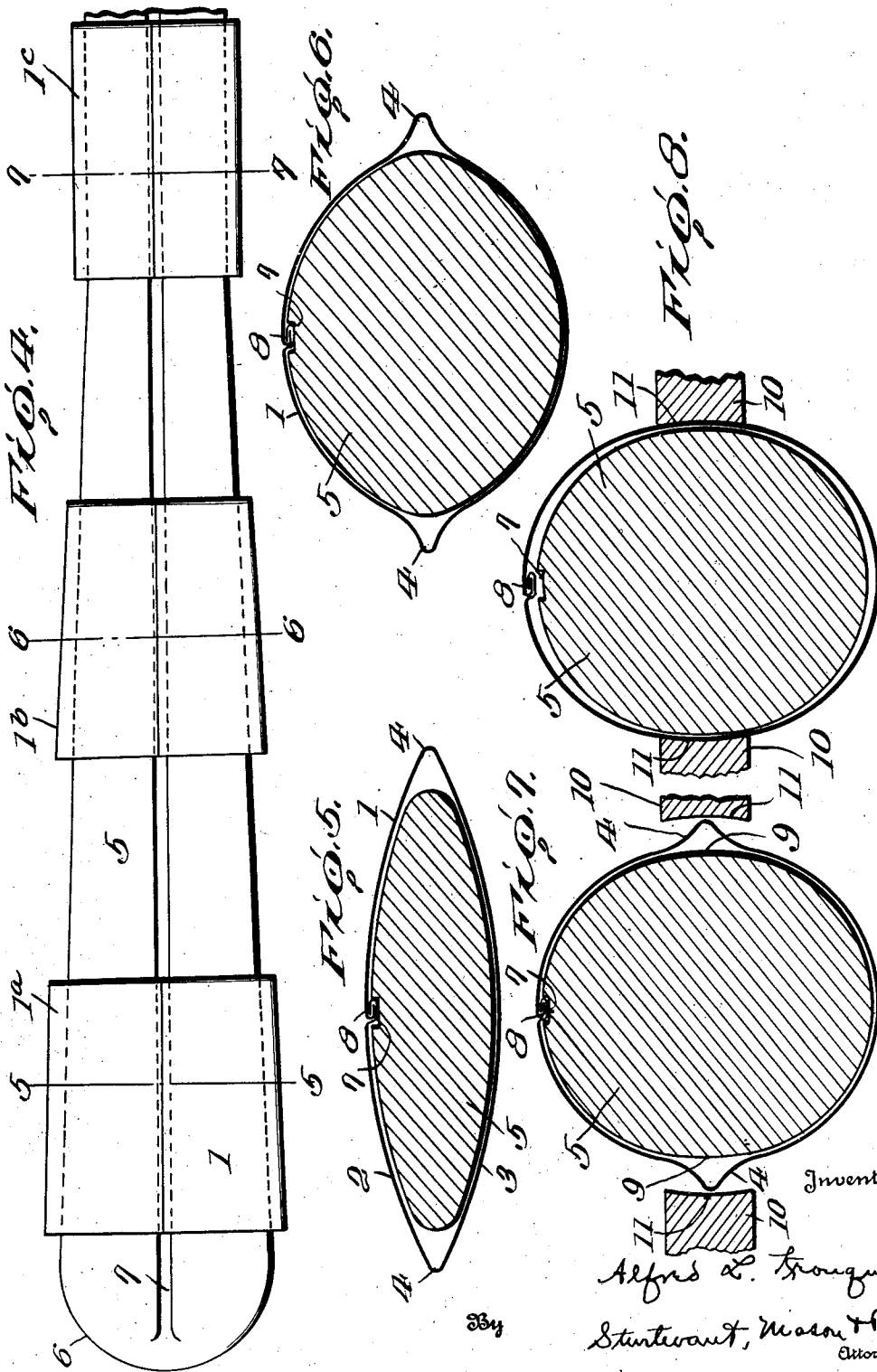
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4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

1,966,349

MACHINE FOR SHAPING CAN BODIES INTO
CYLINDRICAL FORM

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Application November 28, 1932, Serial No. 644,729

18 Claims. (Cl. 153—32)

In order to facilitate the shipping of cylindrical can bodies to distant points, it is customary to either construct the can body initially in substantially flat form or to bend the can body after it is formed into a flat substantially elliptical shape for storage during shipment. The present invention relates to a machine which is adapted to transform or shape a can body made flat or flattened for storage into cylindrical form.

5 An object of the invention is to provide a machine through which the can bodies may be passed in a continuous flow one after another and which is provided with means for expanding the flattened can body into substantially cylindrical form, and for bumping or squeezing the sharp curved side edge portions so as to complete the cylindrical shaping of the can body.

10 A further object of the invention is to provide a machine of the above type wherein the means for expanding the can bodies is in the form of a mandrel having a flat receiving end upon which the can body is placed and a cylindrical end from which the can body is delivered, said can body being transformed or shaped into cylindrical form as it passes along said mandrel.

15 A still further object of the invention is to provide a machine of the above type with means whereby the flat can bodies may be fed one at a time from a magazine in which they are stored on to the mandrel.

20 These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings—

25 Figure 1 is a side view of a machine embodying the improvements;

Figure 2 is a plan view of the same;

Figure 3 is a view of the machine from the discharge end thereof;

30 Figure 4 is a diagrammatic view showing a portion of the mandrel and the passing of a can body thereover;

Figure 5 is a sectional view on the line 5—5 of Fig. 4;

35 Figure 6 is a sectional view on the line 6—6 of Fig. 4;

40 Figure 7 is a sectional view on the line 7—7 of Fig. 4, at the bumping station, and before the bumping of the sharply curved side edges occurs, and

45 Figure 8 is a view similar to Fig. 7, but showing the bumping devices as having transformed the side edge portions of the can body into cylindrical shape.

50 The invention is directed to a machine which

is adapted to expand or shape a flat can body into cylindrical form. The flat can body may be made initially flat on a body maker, or it may be made into cylindrical form, and through the operation of devices thereon transformed into a flattened shape. In Fig. 5 of the drawings, the can body as shaped for storage is indicated at 1. Said can body has relatively flat sides 2 and 3, with sharply curved side portions 4, 4 joining the same. When in this shape, the can bodies may be placed one on another, and the flat sides 2 and 3 will be bent into contact with each other. This bending of the metal to bring the side portions 2 and 3 into contact when the can body is made in the form described, is accomplished without bending the metal beyond its elasticity, and therefore, when it is removed from its storage pressure, the walls will separate sufficiently to permit the entering of an expanding mandrel into the can body, or the passing of the can body on to an expanding mandrel. It is preferable to make the can body in the flat form, so that the metal between the sharply curved side portions can be readily expanded into cylindrical shape. This is not true of the can body when it is reduced to a flattened condition by pressure applied to the formed cylindrical body. The crushing of the cylindrical body produces a condition wherein it is essential to subject the entire surface of the cylindrical body to an ironing or rolling process in order to remove all wrinkles or markings therefrom. The can body after it is taken from storage, is passed over a mandrel indicated at 5 in the drawings. The mandrel at its receiving end is substantially flat in cross section, and the end is curved as indicated at 6, in order to permit the ready insertion of a can body on to the mandrel. There is a groove running lengthwise of the mandrel from the receiving end to the delivery end thereof, which is indicated at 7. This groove is for the purpose of providing a clearance space for the side seam of the can body which is indicated at 8. The side seam of a lock and lap seam can body usually projects inwardly from the face of the can body, and this groove in the mandrel will guide the seam and prevent the can body as it approaches cylindrical form from turning angularly on the mandrel. The mandrel is tapered so that when the can body is moved to the position indicated by the section line 6, 6, it has been expanded part way toward cylindrical form. The can body still has the projecting sharply curved portions 4, 4. Figure 7 is a sectional view on the section line 7—7, which is at the bumping station. At the bumping station, the mandrel is of its maximum diam-

eter vertically, so that the can body has been expanded slightly beyond its normal diameter. The side portions 9, 9 of the mandrel at the bumping station are curved on a larger radius than the normal radius of the cylindrical can body. The bumping devices are indicated at 10, 10. These bumping devices are moved into contact with the edge portions 4, 4 of the can body. The inner faces of the bumping devices 11, 11 are curved to conform to the curvature of the mandrel, and they will squeeze or bump these sharply curved edge portions so as to transform or shape the same into the same cylindrical form which has been given to the can body by the expanding of the same. This bumping operation completes the shaping of the can body, so that when it passes from the mandrel it will be of true cylindrical shape.

With this understanding of the shaping of the can body, the machine supporting the mandrel and the means associated therewith for moving the can body and bumping the same will be described in detail. The machine includes a supporting base 12 carrying a frame structure 13. Mounted in the frame structure is a cross shaft 14 carrying a sprocket wheel 15 and also a cross shaft 16 carrying a sprocket wheel 17. A sprocket chain 18 runs over these sprocket wheels. The sprocket chain 18 is provided with supporting brackets 19 at spaced intervals on which the mandrel 5 rests. These supporting brackets are disposed a distance apart slightly greater than the length of the can body. The brackets travel with the can bodies and engage the mandrel between the can bodies being operated upon so that a can body may pass on to the receiving end of the mandrel, and along the mandrel, and finally discharged from the delivery end thereof. The mandrel, in effect, floats on these supporting brackets. There is a bracket 21 carried by the frame structure 13 and rollers 22 and 23 are mounted in the bracket 21 so that they are free to move vertically. These rollers contact with the upper face of the mandrel and prevent its upward movement. The sprocket chain 18 is also provided with feed dogs 24 which are spaced a distance apart similar to the spacing of the brackets 19. These feed dogs travel in a groove or recess in the lower face of the mandrel indicated at 25. The dogs are adapted to engage the can bodies brought into range of movement of the dogs, and carries the can bodies along the mandrel, discharging the same from the delivery end thereof. The mandrel is tapered from a point adjacent the bumping station to the receiving end thereof, as has been described in connection with Fig. 1. The mandrel tapers to a rounded thin edge which is indicated at 6.

The can bodies are placed in a magazine 26 where they are stacked one on another. They are delivered one at a time from the magazine on to a supporting table 27 beneath the magazine by feed screws 28, 28, one at each side of the magazine. These feed screws are carried by vertical shafts, at the lower end of each of which is a sprocket wheel 29. A sprocket chain indicated in broken lines at 30, passes over these sprocket wheels and over a sprocket wheel 31 carried by a vertical shaft 32. There is also an idler sprocket 33 over which this chain travels. When the shaft 32 is rotated, it will rotate these feed screws and cause the can bodies to be released one at a time and drop on to the supporting table 27.

The shaft 32 carries a bevel gear 34 at the lower end which meshes with a bevel gear 35 on a

shaft 36. The shaft 36 carries a sprocket wheel 37 which meshes with a sprocket wheel on the main driving shaft 38. This shaft is operated by a belt wheel 39 and a clutch 40 connects the shaft 38 to the belt wheel. There is also a brake member on the shaft 38 which is indicated at 41 and said brake member is controlled by a rod 42. The clutch 40 is shifted by a hand lever 43, and when the clutch is shifted for disengaging the clutch member, the rod 42 is moved so as to bring the cone brake into fixed contact with the fixed braking surface.

The can bodies are removed from the table 27 and fed on to the mandrel by feed bars 44 and 45, one at each side of the magazine. These feed bars slide in guiding members 46 and 47, respectively. The feed bar 44 is connected by a link 48 to a crosshead 49. The feed bar 45 is connected by a link 50 to the crosshead 49. The connections between the links and the crosshead are adjustable transversely of the direction of movement of the crosshead. The crosshead slides in a direction parallel with the longitudinal axis of the mandrel and is guided in the supporting bracket 51. At the upper end of the shaft 32 is a disk 52 carrying a crank 53. A link 54 engages this crank 53 and also engages a pin 55 carried by the crosshead. As the shaft 32 rotates, it will move the crosshead back and forth, and this will move the feed bars in a direction lengthwise of the mandrel. The feed bars are each provided with a series of feed dogs 56, 57 and 58. The guiding member 46 in which the feed bar 44 slides extends along the tapered side of the mandrel and is substantially parallel therewith. The guiding members 46 and 47, therefore, incline toward each other. The guiding member 46 is mounted in a slide 59 which moves in guides 60, 60 in a direction at right angles to the longitudinal axis of the mandrel. This imparts to the guiding member 46 a movement transverse of the direction of the feed of the can bodies along the mandrel. The guide member 47 is carried by a slide 61 which moves in guideways 62, 62. These slides are timed in their movement so that they are at the inner ends of their stroke, when the feed bars are moving in a forward direction for conveying the can body on to and along the mandrel, and when the feed bars are retracted, then these slides are moved outward away from the mandrel, thus giving to the feed dogs a movement so that they can pass a can body on the mandrel. In other words, each feed bar has a four-motion movement. It moves toward the mandrel and then along the mandrel, for feeding the can body, then away from the mandrel and backward while it is away from the mandrel. The first feed dogs 56 engage a can body on the table 27 and move it on to the mandrel. The next movement of the can body is derived from the feed dogs 57, which, when they are retracted, move past the rear end of the can body and then toward each other until they are in position to engage the can body and move it along the mandrel. The can body is then taken by the feed dogs 58 and given another step movement along the mandrel, which brings the can body to the bumping station. In Figures 1 and 2 of the drawings, the can body 1^a has been entered on to the mandrel. The can body 1^b has been moved one feed step along the mandrel and partly expanded to the shaping shown in Fig. 6 of the drawings. The can body 1^c is at the bumping station and is shaped as indicated in Fig. 7 of the drawings, before bumping, and as indicated in Fig. 8, after bumping. The can body,

therefore, has an intermittent movement along the mandrel and will stop sufficiently long at the bumping station to permit the shaping of the same.

5 The slide 59 was moved toward and from the mandrel by a roller 63 running in a cam groove 64 in a disk 65 provided on its outer face with a gear. The slide 61 carries a roller 66 running in a cam groove 67 in a disk 68 also carrying a gear in its
10 outer face. These gears mesh with a gear wheel 69 fixed to the shaft 32.

The bumping devices 11, 11 are similar in construction. The bumping device 11 at one side of the mandrel is carried by a reciprocating slide
15 70, while the bumping device at the other side is carried by a reciprocating slide 71. The slide 70 moves back and forth in guides 72 and is reciprocated by means of a rod 73 engaging a pin on the slide at one end, and engaging a crank at
20 its other end. The crank is located between the disks 74, 74 formed on a shaft rotating about an axis parallel with the longitudinal axis of the mandrel. The shaft is driven by a gear disposed in a gear housing 75 and connected through an
25 intermediate gear 76 with a gear 77 on the shaft 36.

The slide 71 reciprocates in guides 78 and is moved back and forth by a rod 79 attached to a pin carried by the slide and cooperating with
30 a crank located between the disks 80, 80 carried by a short shaft which rotates about an axis parallel with the longitudinal axis of the mandrel. This shaft is driven by a gear in a gear housing 81, and meshes with an intermediate
35 gear also meshing with the gear 77.

The bumpers are so timed that they move into engagement with the sharply curved portions of the can body while the can body is at rest on the mandrel and shapes the same into the
40 cylindrical form desired. The can bodies are moved from the bumping station along the mandrel by the feed dogs 24 carried by the sprocket chain 18. The shaft 36 is provided with a bevel gear 82 which meshes with a bevel gear 83 shown
45 in dotted lines in Fig. 3. The bevel gear 83 is carried by a shaft 84 which drives the sprocket wheel over which the sprocket chain 85 runs. This sprocket chain 85 drives the sprocket wheel on the shaft 14 carrying the sprocket wheel 15.
50 Thus it is that the feed chain is driven from the shaft 36.

The end of the mandrel is indicated at 86. Mounted on the base 12 is a bracket 87 carrying a shaft 88 on which a sleeve 89 is mounted for
55 rotation. This sleeve 89 carries a supporting member 90 to which a series of chucks 91, 92, 93 and 94 are attached. This support is rotated intermittently so as to bring a chuck directly at the end of the mandrel and in alignment there-
60 with. While the chuck is thus positioned, the feed of the cans along the mandrel takes place, and the chuck prevents the mandrel from moving endwise. The feed chain will, therefore, feed the can body off from the mandrel on to one of
65 these chucks. The support 90 for the chucks is provided with radially extending guideways 95, and in between the radial guideways are curved faces 96. Cooperating with this supporting member 90 and intermittently turning the same,
70 is a crank 97 carrying a roller 98. The crank is carried by a disk 99 which has a cutaway portion 100. This is the ordinary Geneva stop movement, and it is not thought that further detail description is necessary. As this crank
75 rotates, the roller 98 passes into one of the radial

slots, and will move the member 90 through an arc of ninety degrees. The disk 99 releases the member 90 for rotation, and then locks it in a set position while the roller 98 is continuing its
80 rotation and entering another radial slot. The disk 99 is provided with a gear which meshes with a gear 101 which is secured to the shaft 36.

Overhanging the path of travel of the chucks 91, 92, 93 and 94 is a stationary cam plate 102. This cam plate will engage the can body on the
85 chuck, and as the chuck travels, it gradually shoves the can body off from the chuck and discharges the can body into a chute 103 along which the can bodies will roll out of the machine.

It is thought that the operation of the machine will be obvious from the description which has been given above. The can bodies in their flat-
90 tened condition are stacked one on another in the magazine and are released one at a time from the magazine so that they drop on to the supporting table beneath the same. The feed bars
95 44 will move the feed dogs carried thereby into engagement with the can bodies and will carry the bodies one at a time on to the mandrel and intermittently move the can body step by step
100 along the mandrel. The first portion of the mandrel is of tapered form so that the can body is gradually expanded or shaped into approximately cylindrical form. The completing of the
105 shaping of the can body is accomplished by the bumping devices. This all occurs in the first half length of the mandrel as shown in the drawings, and then the can body is fed step by step along the region of the mandrel where it is supported and finally delivered from the mandrel on to the
110 chuck which has been moved into alignment therewith, and the chucks deliver the can bodies into the chute or runway so that they may pass out of the machine. This provides a very simple
115 means for transforming or shaping a flattened can body which is shaped for storage for shipment into a cylindrical form for flanging and the attaching of the ends thereto. It is noted that the can bodies flow continuously one after
120 another through the machine, and this produces a machine which may be operated at very high speed. While one can body is receiving its final shape, other can bodies are being passed on to the mandrel and partly expanded. There are
125 five can bodies shown on the mandrel in Fig. 2 of the drawings. It is understood that the manner of feeding the can bodies along the mandrel and delivering the same therefrom, and also the means for supporting the mandrel may be greatly
130 modified without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters-Patent, is—

1. A machine for shaping can bodies having
135 flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass on to one end of the mandrel and off from the other end thereof,
140 said supporting means being movable endwise of the mandrel and having means for carrying the can bodies along the same, means for preventing endwise movement of the mandrel, said mandrel being substantially cylindrical in cross
145 section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, and means associated with the mandrel for engaging the
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sharply curved side portions for squeezing the same against the mandrel and completing the cylindrical form of the can body.

2. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass on to one end of the mandrel and off from the other end thereof, said supporting means being movable endwise of the mandrel and having means for carrying the can bodies along the same, means for preventing endwise movement of the mandrel, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, means associated with the mandrel for engaging the sharply curved side portions for squeezing the same against the mandrel and completing the cylindrical form of the can body, a magazine in which the can bodies are stored, and mechanism for feeding the can bodies from the magazine on to the mandrel and over the mandrel, delivering the same therefrom in cylindrical form.

3. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass on to one end of the mandrel and off from the other end thereof, said supporting means being movable endwise of the mandrel, means independent of the supporting means for preventing endwise movement of the mandrel, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, a magazine in which the can bodies are stored, feeding mechanism for feeding the can bodies one at a time from the magazine on to and along the mandrel, and bumping devices for engaging the sharply curved side portions for squeezing the same against the mandrel and completing the cylindrical form of the can body.

4. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, and means for supporting said mandrel so that the can bodies can pass on to one end of the mandrel and off from the other end thereof, said supporting means being movable endwise of the mandrel and having means for carrying the can bodies along the same, means for preventing endwise movement of the mandrel, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form.

5. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass on to one end of the mandrel and off from the other end thereof, said supporting means being movable endwise of the mandrel and having means for carrying the can bodies along the same, means for preventing endwise movement of the mandrel, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed

on to the mandrel will be expanded into substantially cylindrical form, and bumping devices associated with the mandrel for engaging the sharply curved side portions and completing the cylindrical form of the can body.

6. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass on to one end of the mandrel and off from the other end thereof, said supporting means being movable endwise of the mandrel, means independent of the supporting means for preventing endwise movement of the mandrel, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, a magazine in which the can bodies are supported, and a feeding mechanism for feeding the can bodies one at a time from the magazine on to and over the mandrel for expanding the can body.

7. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, a magazine for storing the can bodies, means for releasing the can bodies one at a time from the magazine, feed bars having feed dogs for engaging the can bodies and intermittently moving the same on to the mandrel and along the mandrel, a traveling device for supporting the mandrel, and feed dogs carried thereby for engaging the can bodies delivered thereto by the feed bars for intermittently feeding the can bodies along and off from the end of the mandrel.

8. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, a magazine for storing the can bodies, means for releasing the can bodies one at a time from the magazine, feed bars having feed dogs for engaging the can bodies and intermittently moving the same on to the mandrel and along the mandrel, a traveling device for supporting the mandrel, feed dogs carried thereby for engaging the can bodies delivered thereto by the feed bars for intermittently feeding the can bodies along and off from the end of the mandrel, and a series of chucks movable one after another into alinement with the mandrel whereby the chucks serve as an abutment to prevent endwise movement of the mandrel and receive the can body from the mandrel.

9. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross sec-

tion at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, a magazine for storing the can bodies, means for releasing the can bodies one at a time from the magazine, feed bars having feed dogs for engaging the can bodies and intermittently moving the same on to the mandrel and along the mandrel, a traveling device for supporting the mandrel, feed dogs carried thereby for engaging the can bodies delivered thereto by the feed bars for intermittently feeding the can bodies along and off from the end of the mandrel, and bumping devices operating upon the sharply curved side portions for completing the cylindrical form of the can body.

10. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, a magazine for storing the can bodies, means for releasing the can bodies one at a time from the magazine, feed bars having feed dogs for engaging the can bodies and intermittently moving the same on to the mandrel and along the mandrel, a traveling device for supporting the mandrel, feed dogs carried thereby for engaging the can bodies delivered thereto by the feed bars for intermittently feeding the can bodies along and off from the end of the mandrel, a series of chucks movable one after another into alignment with the mandrel whereby the chucks serve as an abutment to prevent endwise movement of the mandrel and receive the can body from the mandrel, and bumping devices adapted to engage the sharply curved side portions of the can body for rounding the same into cylindrical form.

11. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass on to one end of the mandrel and off from the other end thereof, said supporting means being movable endwise of the mandrel, means independent of the supporting means for preventing endwise movement of the mandrel, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, said mandrel having a groove extending lengthwise thereof for receiving the side seam of the can body whereby the can body is guided along the mandrel without turning, and bumping devices for engaging the sharply curved side portions for squeezing the same against the mandrel and completing the cylindrical form of the can body.

12. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, feed bars for feeding the can bodies on to the mandrel one at

a time and along the tapered portion of the mandrel, feed dogs carried by said feed bars, means for reciprocating said feed bars, and means for guiding the feed bars in their reciprocation whereby the feed dogs are moved away from the mandrel for the retracting movement thereof.

13. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, feed bars for feeding the can bodies on to the mandrel one at a time and along the tapered portion of the mandrel, feed dogs carried by said feed bars, means for reciprocating said feed bars, guides in which the feed bars reciprocate, and means for moving the guides toward and from the mandrel in timing so that the feed bars are moved away from the mandrel for their retracting movement.

14. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, means for moving the can bodies one after another, step by step, along the mandrel, means for guiding the can body and for preventing the same from turning on the mandrel, a bumping device at each side of the mandrel, and means for moving the bumping devices into engagement with the sharply curved side edge portions of the can body for pressing the same against the mandrel and completing the cylindrical form of the can body.

15. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, said supporting means for the mandrel including a traveling chain having a series of supports spaced a greater distance than the length of the can body, and a feed dog carried by said traveling chain for engaging the can body and positively moving the same along the mandrel.

16. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, means for moving the can bodies along the mandrel and off from the end thereof, a series of chucks adapted to be moved one at a time into alignment with the mandrel, said chucks serving as an abutment to prevent endwise movement of the floating mandrel and as a receiving means for the can body, said

chuck being spaced so that the chuck will continuously serve as an abutment for the mandrel.

17. A machine for shaping can bodies having flat sides and sharply curved connecting side portions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, means for moving the can bodies along the mandrel and off from the end thereof, a series of chucks adapted to be moved one at a time into alinement with the mandrel, said chucks serving as an abutment to prevent endwise movement of the floating mandrel and as a receiving means for the can body, said chuck being spaced so that the chuck will continuously serve as an abutment for the mandrel, and means for intermittently rotating the chucks in a plane at right angles to the longitudinal axis of the mandrel.

18. A machine for shaping can bodies having flat sides and sharply curved connecting side por-

tions into cylindrical form comprising a mandrel, means for supporting said mandrel so that the can bodies can pass over the same, said mandrel being substantially cylindrical in cross section and gradually tapering to a flat cross section at the receiving end whereby the can body passed on to the mandrel will be expanded into substantially cylindrical form, means for moving the can bodies along the mandrel and off from the end thereof, a series of chucks adapted to be moved one at a time into alinement with the mandrel, said chucks serving as an abutment to prevent endwise movement of the floating mandrel and as a receiving means for the can body, said chuck being spaced so that the chuck will continuously serve as an abutment for the mandrel, and means for intermittently rotating the chucks in a plane at right angles to the longitudinal axis of the mandrel, and a stationary cam disposed relative to said chucks so as to engage the can bodies thereon and strip the same from the chucks after the chuck has been moved away from alinement on the mandrel.

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