

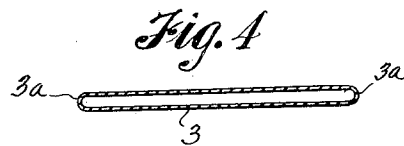
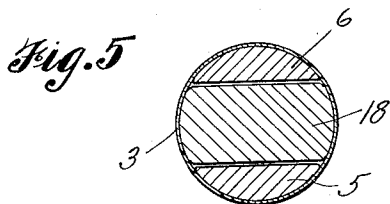
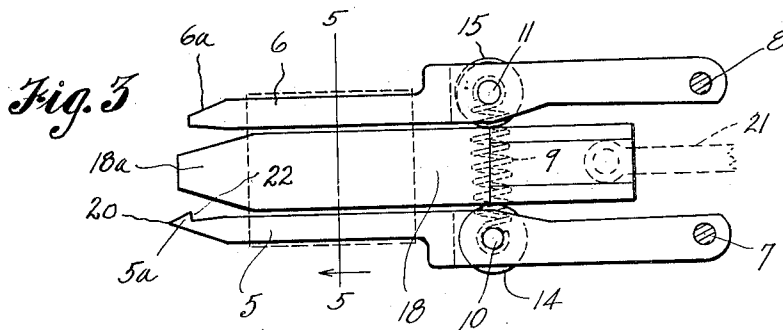
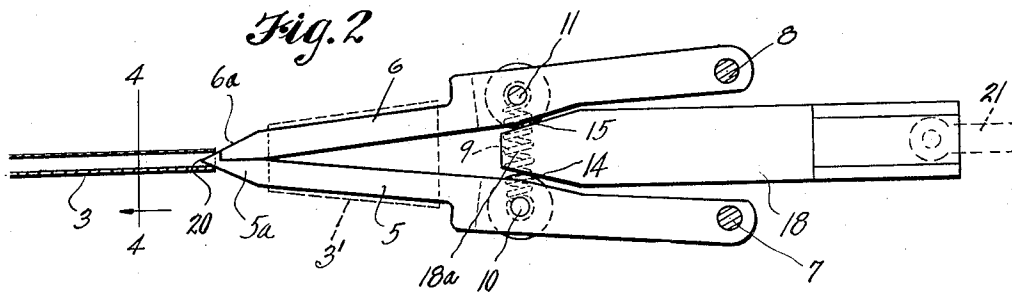
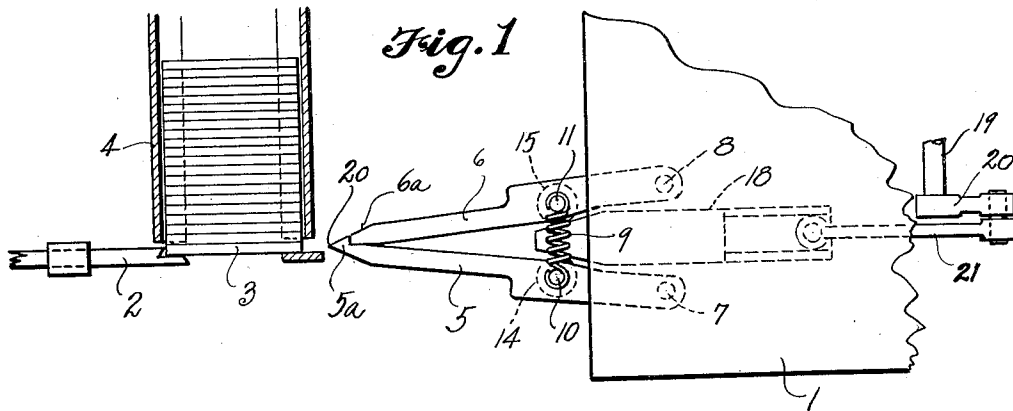
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C. HANSEN

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MANDREL FOR CAN SHAPING MACHINES

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INVENTOR
CHRIS HANSEN
BY
Cook + Robinson
ATTORNEY

UNITED STATES PATENT OFFICE

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MANDREL FOR CAN SHAPING MACHINES

Chris Hansen, Seattle, Wash., assignor to Continental Can Company, Inc., New York, N. Y.,
a corporation of New York

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4 Claims. (Cl. 153—32)

This invention relates to can body expanding means and it has reference more particularly to improvements in can body expanding mandrels as used in machines of that character illustrated and described in the application of M. M. Sedwick, filed January 12, 1931, under Serial No. 508,347.

In order to facilitate the shipping, or storage of can bodies, it is desirable to initially form them in a flattened form permitting them to be packed together in a relatively small space. The machine of the Sedwick application, above mentioned, is designed for expanding and shaping these flattened can bodies into their final cylindrical form and it includes a plurality of shaping mandrels, each comprising a pair of complementary, half-round sections pivotally mounted and adapted to be closed together in such manner as to provide a sort of wedge onto which a flattened can body may be loaded, and then to be opened apart to expand and cylindrically shape the body.

Explanatory to the present invention, it will be stated here that the two pivoted sections of the body shaping mandrel, as used in the Sedwick machine, have their ends so tapered that when they are closed together in wedge form they engage each other in a joint at the receiving end of the mandrel and delays and difficulty is sometimes experienced by reason of one or both walls of a flattened can body entering the joint between the sections instead of the body passing about these sections.

In view of the above it has been the principal object of this invention to so improve the construction of the can body expanding mandrel as to eliminate the possibility of the flattened cans entering between the sections of the mandrel when they are loaded thereonto.

More specifically stated, the objects of the present invention reside in the provision of a mandrel of the above character comprising a pair of complementary, pivotally mounted jaws adapted to be closed together to give the mandrel a wedge like form onto which a can body may be loaded and which may then be spread apart to expand the flattened body to cylindrical form; one of the jaws of the mandrel being provided with a wedge like end portion adapted to easily enter the can between the side walls thereof; this wedge like portion being cut away at one side, at a distance

back from the point, to provide a shoulder back of which the end of the other jaw may be closed to receive the can bodies thereover after they have been opened by the wedge like end portion of the other jaw.

Other objects of the invention reside in the various details of construction and in the combination of parts, as will hereinafter be described.

In accomplishing these objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawing wherein—

Fig. 1 is a fragmental view, partly in section, illustrating certain parts of a can body expanding machine that is equipped with an improved form of mandrel embodying the present invention.

Fig. 2 is an enlarged, side view of the mandrel with the jaws thereof closed together for the loading of a flattened can body thereonto.

Fig. 3 is a similar view, showing the jaws opened apart for expanding the can body.

Fig. 4 is a cross section on the line 4—4 in Fig. 2.

Fig. 5 is a cross section taken on line 5—5 in Fig. 3.

Referring more in detail to the drawing—

One form of machine with which the present invention is applicable is that disclosed in the previously mentioned application of M. M. Sedwick, wherein there is disclosed a rotating turret mounting a plurality of expandable mandrels which, incident to rotation of the turret, are successively brought into alignment with a loading means whereby flattened can bodies are loaded thereon. During the rotary action of the turret, certain mechanisms cause the mandrels to be expanded, thereby to expand the can bodies which have been loaded thereon, to cylindrical form. Subsequently, the mandrels are collapsed and the expanded bodies are removed therefrom, leaving each mandrel in readiness for the loading of another body thereon when it reaches the loading station.

In Fig. 1 I have illustrated only those parts of the Sedwick machine thought necessary for an explanation of the present invention. In this view, 1 designates an intermittently rotating turret and 2 a reciprocating feed slide, whereby the flattened can bodies, designated at 3, may be de-

livered, one at a time, from a storage hopper 4 onto the mandrels mounted by the turret; it being understood that the rotative movement of the turret is accurately timed with the action of the feed slide and this may be accomplished by mechanism as illustrated in Sedwick's application, or by other suitable means.

Each of the can bodies 3, when delivered from the hopper, has a flattened cross sectional form as disclosed in Fig. 4, with opposite side walls substantially flat and parallel and joined by rather sharply rounded edges as at 3a.

Each of the body expanding mandrels of the machine, comprises a pair of complemental, jaw like sections 5 and 6, arranged in co-extensive relation and aligned with the direction of advancement of the can bodies thereto. The ends of the two sections farthest from the hopper are spaced apart and are pivotally mounted in the turret on parallel pivot pins 7 and 8, respectively, and they are joined forwardly of the pivots by coiled springs 9 connected at their opposite ends with the outer ends of attaching pins 10 and 11 extended through the jaws. These springs are under tension and yieldingly retain the swinging ends of the jaw sections closed together in wedge like relation for reception of the flattened bodies thereon.

Mounted on the pins 10 and 11 are rollers 14 and 15 which project slightly beyond the inner faces of their respective mounting sections. Contained between the two pivoted sections of the mandrel there is a reciprocally movable central section 18 having a tapered forward end 18a adapted, by a forward adjustment of the part, to enter between the rollers thereby to swing the sections apart and effect the expanding of a can body that has been loaded thereon. The means for reciprocally actuating the slide 18 may be of any suitable construction and whereby the action of this part 18 is properly timed with the action of the turret and loading mechanism. As illustrated in Fig. 1 there is a shaft 19 mounted to rotate with rotary action of the turret, and this mounts a crank arm 20 connected by a link 21 with the slide 18 so that incident to rotation of shaft 19, the slide will be reciprocally actuated.

At its forward end the mandrel section 5 is provided with a symmetrically tapered wedge like point 5a forming a sharpened edge 20 adapted to enter between the opposite side walls of a can body when the body is advanced thereagainst by the feed slide. At one side and spaced somewhat within the edge portion 20, the pointed end portion is cut away to provide a shoulder 22 that faces away from the point. The forward end portion of the jaw section 6 terminates short of the end of section 5 and closes against the latter back of this shoulder and it has an inclined outer surface 6a that will come flush with, or fall slightly below the continuing surface of the point 5a.

With the device so constructed, its operation is as follows:

In accordance with the intended operation of the machine, the turret 1 rotates intermittently to successively bring the mandrels into alignment with the feed slide. During periods of rest of the turret, the feed slide operates to advance the lowermost can from the hopper onto the mandrel aligned therewith. To receive the cans, the two sections of the mandrel are closed together, as shown in Fig. 2 and the can body is loaded thereon by passing first over the pointed end of the lower jaw section 5, then onto the two jaws. As

the can body advances, the opposite side walls pass about the jaws 5 and 6 and the final disposition of the can is that indicated by dotted lines at 3' in Fig. 2. Following the loading of the can body onto the mandrel, the central portion 18 of the mandrel is advanced from retracted position as shown in Fig. 2 to the position of Fig. 3 and incident to this advancement, it enters between the rollers 14 and 15 and thus causes the jaws 5 and 6 to be opened apart to expand the can body to the cylindrical form as illustrated in Fig. 5.

It will be mentioned here that after the body has thus been expanded it is desirable that a bumping mechanism be actuated against opposite side edges of the can to remove the creases; such a mechanism is fully described in the Sedwick application, but not herein illustrated. After the can has thus been expanded, and bumped, the central section 18 is retracted and the springs 9 draw the jaws together thus releasing them from the can body and it is extracted from the mandrel before the mandrel again reaches the loading station.

It is apparent that by providing one of the mandrel sections with the point and then forming it at a distance spaced from the point with the rearwardly facing shoulder back of which the end of the complemental section may rest, the difficulty experienced in the construction of the Sedwick machine is overcome since it is then impossible for the can bodies, as fed to the mandrel, to enter between the jaws.

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

1. In a can body expanding mechanism, an expandable mandrel comprising two complemental sections adapted to be closed together for the loading of a can body thereonto, one of said sections having a wedge shaped end adapted to enter the end of a can body between the side walls thereof, and the other section having its receiving end terminating short of the first section and countersunk therein with its outer surface continuing flush with the surface at that side of the wedge shaped end.

2. In a can body expanding mechanism, an expandable mandrel comprising two complemental sections adapted to be closed together for the loading of a can body thereonto, one of said sections having a wedge shaped end portion for entering the end of a can body between the side walls, and having a countersink spaced from the end at one side; the other section terminating short of the first section and adapted to rest against the first section within said countersink with its outer surface continuing flush with the surface at that side of the wedge shaped end.

3. In a can body expanding mechanism, an expandable mandrel comprising two complemental sections with ends pivotally mounted and with their opposite ends adapted to be closed together in a converging relation, one of said sections having a wedge shaped end portion adapted to enter the end of a can body between the side walls thereof and having a countersink at one side spaced from the end and forming a shoulder facing away from the end; the other section having a truncated end terminating short of the pointed end of the complemental section and adapted to be disposed back of said shoulder to cause its outer surface to come flush with the surface at that side of the wedge shaped end.

4. In a can body expanding mechanism, the combination with can body feed mechanism and

a mandrel support, of a body expanding mandrel comprising two complementary opposite side sections with ends spaced apart and pivotally mounted in said support and their opposite ends adapted to be closed together in alignment with the body feed mechanism for the loading of can bodies thereonto; one of said sections having a wedge shaped end portion adapted to enter the end of a can body between the side walls thereof and having a countersink at one side spaced from the end and forming a shoulder facing away from the end; the other section having a truncated end terminating short of the pointed end of the complementary section and adapted to be disposed back of said shoulder to cause its outer surface to come flush with the surface at that side of the wedge shaped end, means connecting said sections to draw them together for loading of the can bodies thereonto, and means for moving them apart for expanding the bodies.

CHRIS HANSEN. 85

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