W. J. PHELPS.

CAN SEAMING MANDREL OR HORN.

APPLICATION FILED APR. 14, 1919.

1,370,556. Patented Mar. 8, 1921.

Fig. 1.

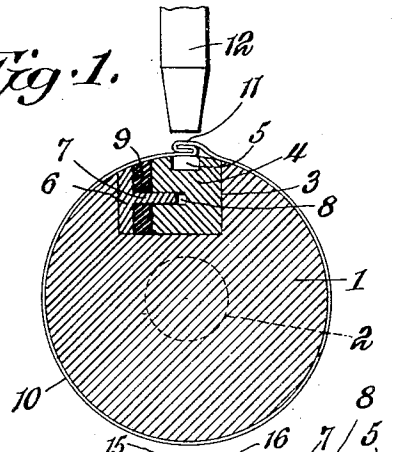


Fig. 2.

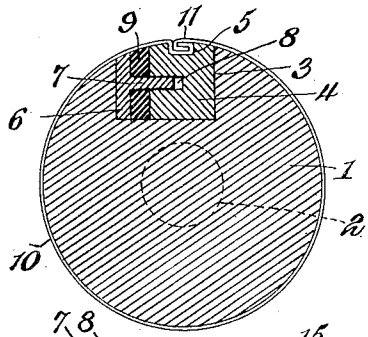


Fig. 3.

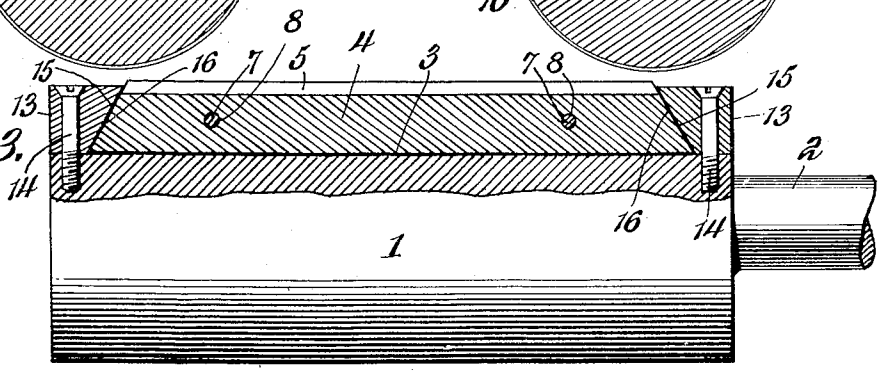


Fig. 4.

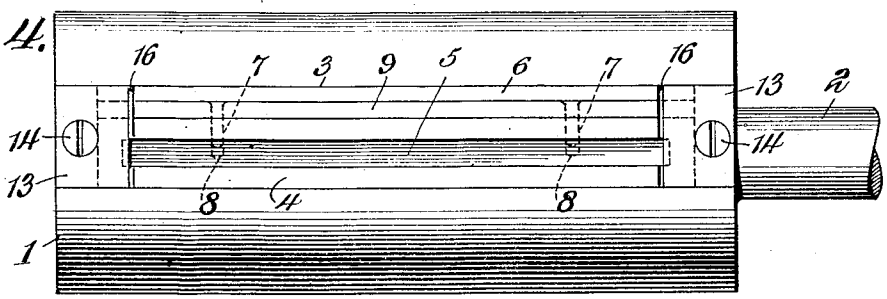


Fig. 5.

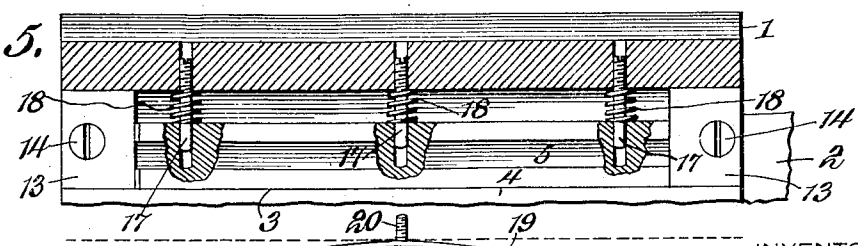


Fig. 6.

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CAN-SEAMING MANDREL OR HORN.

1,370,556. Specification of Letters Patent. Patented Mar. 8, 1921.

Application filed April 14, 1919. Serial No. 289,772.

To all whom it may concern:

Be it known that I, WALTER J. PHELPS, a citizen of the United States, residing at Baltimore, State of Maryland, have invented a new and useful Can-Seaming Mandrel or Horn, of which the following is a specification.

This invention has reference to can seaming mandrels or horns, and its object is to provide means which will automatically accommodate itself to seams in can bodies when the blanks from which the can bodies are made are not absolutely true.

With locker horns as heretofore made, the lock seam is forced into a groove and there finished. If the blank from which the can body is made is out of true, an imperfect seam will result and at times the metal of the seam would be sheared to an extent greatly weakening the seam.

In accordance with the invention the groove or die in which the lock seams are made is so constructed as to give laterally, that is, in the direction of the circumference of the can body, in such manner that compensation is provided for conditions where the blank is out of true and the seam instead of being parallel with the longitudinal axis of the can is out of parallelism therewith. By the use of the invention, such lack of parallelism of the seam is immaterial because the die in which the lock seam is seated will readily yield and so avoid any liability of shearing action, the seam being as perfectly formed as though the blank was cut true.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a cross section of a locker horn with the invention applied thereto and showing a can body circling the horn with the seam formed and about to be seated in the die.

Fig. 2 is a view similar to Fig. 1, but showing the seam seated in the die.

Fig. 3 is a longitudinal elevation of the horn with certain parts in longitudinal section, but with the can body omitted.

Fig. 4 is a plan view of the structure shown in Fig. 3.

Fig. 5 is a view of the structure as it appears in Fig. 4, but illustrating a modified form of the yieldable devices employed.

Fig. 6 is a detail view of another form of yieldable member from that shown in Fig. 5.

Referring to the drawing, there is shown a mandrel or horn 1 having a supporting arm or spindle 2 at one end, such horn being similar to those ordinarily used in the manufacture of can bodies or other devices of like nature. It will be understood that the invention may be used for the production of seams in other devices than can bodies, but for simplicity of description it will be hereinafter assumed that the invention is for the purpose of producing can bodies without, however, limitation to such particular devices.

Extending longitudinally of the horn 1 is a groove 3, which may be open at the ends and may further be of generally rectangular cross section without, however, limitation to such particular shape in cross section. Seated in the groove 3 is a spline or die 4 having a longitudinal groove or seat 5 on the outer face. The spline or die 4 is of less width than the groove 3 and, in the structure of Figs. 1 to 4, the groove 3 also receives an elongated binder strip 6 with pins 7 projecting laterally from one face thereof and entering pin-receiving holes or sockets 8 in the neighboring face of the spline 4. Between the binder strip 6 and the spline 4 there is lodged a rubber strip 9 serving as an elastic member. The spline 4 and strip 7 are caused to approach by a suitable force, more or less compressing the rubber strip 9, and the parts are then introduced into the groove 3, being there held in place by the resilient re-action of the rubber strip 9.

In use, a can body 10 formed of a blank rolled or pressed into shape and with the meeting edges formed into a lock seam 11, is applied to the mandrel or horn 1 in the usual manner, with the seam 11 in position to be forced into the groove 5 by means of a follower 12 forming part of the can-seam-

ing machine but needing no particular description, since such devices are common in can-seaming machines and form no part of the present invention.

The spline or die 4 as well as the binder strip 6 and rubber strip 9 are further held at the ends by blocks 13 secured to the body of the locker horn by screws 14. The meeting faces of the blocks 13 and ends of the parts held thereby are beveled, as indicated at 15, 16 respectively, the spline and associated parts being outwardly beveled at the ends and the blocks 13 where engaging them being inwardly beveled or undercut, whereby the spline and associated parts are firmly seated and supported without danger of movement except the capability of yielding laterally of the spline 4. The holding blocks 13 may be somewhat lower than the spline so that the grooved portion thereof rises slightly above the blocks 13, it being understood that the spline or die 4 is arranged at the top of the locker horn.

It is feasible to substitute other forms of elastic mounting for the strip 9, as, for instance, in the structure shown in Fig. 5, where pins 17 are screwed through the locker horn in a direction to enter the sockets 8, and coil springs 18 are carried by the pins 17 between the spline or die and that wall of the groove 3 in which the pins 17 are mounted. Or a curved spring 19 of sufficient spread is substituted for the pins 17 and springs 18, being held in the groove 3 by a screw 20 or other suitable means. This last described yieldable or elastic means is shown in Fig. 6.

When the can body 10 is properly mounted upon the horn 1 with the seam 11 over the groove 5, the follower 12 is caused to operate to force the seam 11 into the groove, thus changing the position of the seam with relation to the can body from the outside of the can body, as indicated in Fig. 1, to the inside thereof, as indicated in Fig. 2, the groove or seat 5 permitting this change of position. So long as the blanks, from which the can bodies are made, are true the seams will match the groove 5 and consequently there need be no functioning of the invention. Suppose, however, that because of untrue cutting of the blanks, or for some other reason, the seam 11 does not truly follow the course of the groove or die 5, then when the follower 12 is actuated to force the seam 11 into the groove the spline 4 will readily yield to conform with the lengthwise position of the seam 11, since the spline 4 is yieldably held with respect to sidewise strains, and there is no liability of shearing or otherwise impairing the can body on the side of the seam where such shearing usually occurs. The result is that with can bodies having slight irregularities due to the blanks being out of square, a close made seam may be produced without danger of shearing or swaging.

The blocks 13 hold the spline or die loosely enough to permit the necessary side movement and the cushioning of the block may be due to either a rubber cushion or a coil or flat metal spring.

What is claimed is:—

1. In a can seaming machine, a mandrel or locker horn provided with a laterally yieldable die having means for accommodating out-of-true locking seams.

2. In a can seaming machine, a mandrel or locker horn having a longitudinally arranged groove, a longitudinally disposed spline or die in the groove having means constituting a side abutment for a seam, and elastically yieldable means in the groove between one long side of the die and the corresponding long side of the groove, whereby the die may yield laterally to conform to imperfectly formed seams in the can.

3. In a can seaming machine, a mandrel or locker horn having a longitudinally arranged groove at the surface, a spline or die in the groove of less width than said groove and provided with a side abutment for a seam, and elastic means in the goove at one side of the spline or die, whereby to conform to and receive locker seams imperfectly formed in a can body.

4. In a can seaming machine, a mandrel or locker horn having a surface groove formed lengthwise thereof, a spline or die adapted to the groove and provided with a side abutment for a seam, said spline or die being of less length than said groove and also having beveled ends, blocks in the groove overlapping the beveled ends of the spline and provided with means for holding the blocks in the groove to thereby prevent the escape of the spline and said spline being narrower than the width of the groove, and elastic means between the spline and one side of the groove, whereby the spline may yield laterally to conform to out-of-true seams in the cans.

5. In a can seaming machine, a mandrel or locker horn having an elongated seat thereon, an elongated spline or die in said seat provided with means to constitute a side abutment for a seam, and elastic means also in the seat and bearing against one long side of the die, whereby the die may yield laterally to accommodate out-of-true seams in can bodies.

6. In a can seaming machine, a mandrel or locker horn having an elongated seat thereon, an elongated spline or die in said seat provided with means to constitute a side abutment for a seam, and elastic means and guide pins associated therewith, with the guide pins entering one side of the spline and the elastic means being located on the same side of the spline as the pins.

7. In a can seaming machine, a mandrel or locker horn having an elongated seat thereon, an elongated spline or die in said seat with an elongated groove to receive a can seam, and elastic means and guide pins associated therewith, with the guide pins entering one side of the spline and the elastic means being located on the same side of the spline as the pins, said elastic means comprising coiled springs surrounding the pins.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

WALTER J. PHELPS.

Witnesses:
J. I. McHENDRY,
JAS. A. BOWERS.