

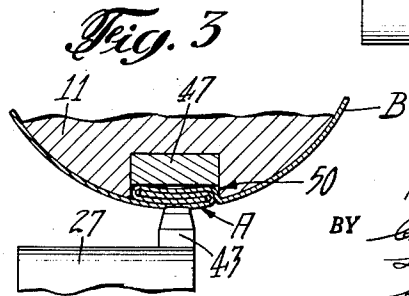
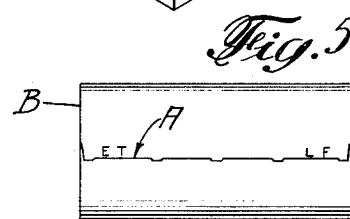
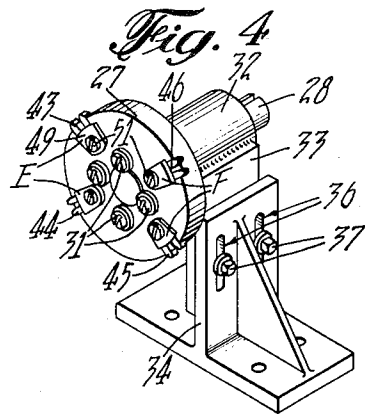
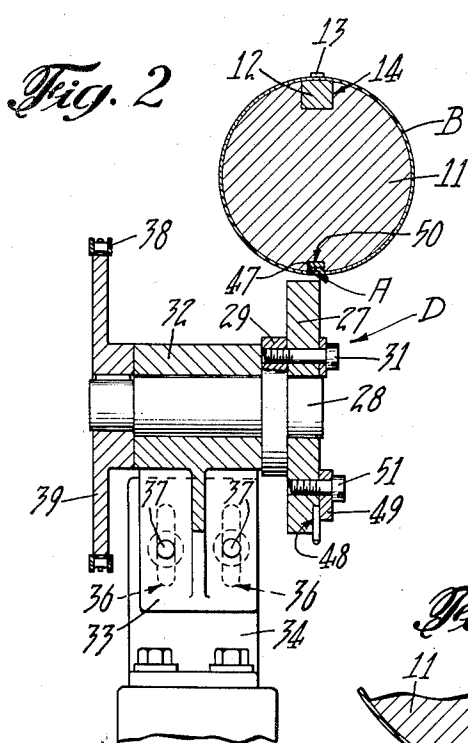
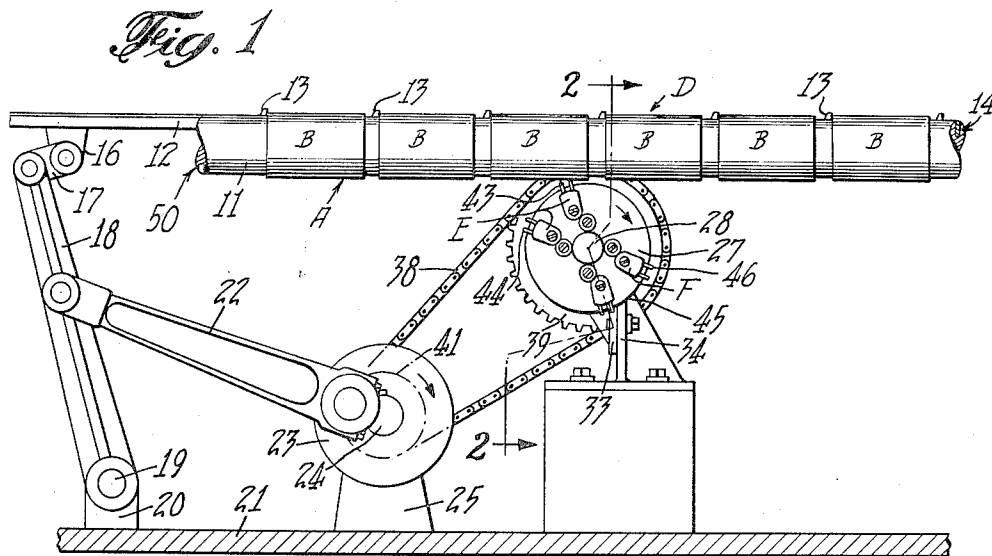
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2,734,451

MARKING DEVICE FOR CAN BODIES

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MARKING DEVICE FOR CAN BODIES

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5 Claims. (Cl. 101—5)

The present invention relates to a marking mechanism and has particular reference to a rotary marking device for stamping identifying data on the side seams of container or can bodies.

In certain can making installations it is desirable to mark can bodies with identifying code information. For example, in the manufacture of beer cans it may be advantageous to mark the day, month and year in which the can was made or the factory in which it was made or to identify the vat from which the beer was taken. These identifying marks by themselves usually offer no information to the general public and can be read or interpreted only by a person having a knowledge of the code used. Therefore it is desirable to place these marks in a position on the body which will be inconspicuous and will not weaken or mar the body but yet may be readily found for inspection purposes.

This is accomplished by the instant invention wherein a simple and novel rotary marking device is provided for clearly marking the can bodies, preferably while they are being made on a can body making machine and in a manner which places the marks at a certain predetermined position viz., in the restricted side seam area of the bodies adjacent and in spaced relation to both ends of the seam where they can be easily found and decoded by those having a knowledge of the code used.

It is an object of the invention to provide a device for marking identifying data in the restricted side seam area of can bodies located in association with other can making devices and synchronized with them.

It is a further object to provide a rotating marking device having a series of interchangeable stamping dies which are adapted to clearly and distinctly mark the side seams without distortion.

Another object is to provide a device which can be removed and replaced with a minimum of lost time in production.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a side view of a portion of a can body making machine illustrating the principal parts of the machine embodying the marking mechanism of the instant invention, parts being broken away;

Fig. 2 is a vertical sectional view taken substantially along lines 2—2 of Fig. 1, and showing certain details of construction;

Fig. 3 is a fragmentary vertical sectional view showing the parts in marking position;

Fig. 4 is a perspective view of the marking device embodying the instant invention; and

Fig. 5 is a side view illustrating a body as marked at the side seam by the device of the instant invention.

As a preferred or exemplary embodiment of the instant invention the drawings illustrate a mechanism for stamp-

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ing or marking coded data on side seams A (Figs. 1, 4 and 5), preferably lock and lap side seams, of sheet metal tubular can bodies B. The can bodies preferably are made from flat blanks on a conventional can body forming machine for example, of the character disclosed in United States Patent 1,770,041, issued July 8, 1930, to John F. Peters on Roll Bodymaker.

A portion of such a machine is illustrated in Fig. 1 and comprises a stationary horn or mandrel 11 around which the flat blanks are formed and on which the formed bodies are supported and advanced during subsequent operations. The formed bodies are advanced along the horn 11 to the various working stations in a step-by-step or intermittent motion by a reciprocating feed bar 12 carrying spaced spring held feed dogs 13 (see also Fig. 2) which engage behind the trailing end edges of the bodies. The feed bar 12 is located in a longitudinal groove 14 formed in the top of the horn so that the upper outer surface of the feed bar 12 is flush with the curved surface of the horn 11.

Reciprocation of the feed bar 12 preferably is effected through a crank-lever mechanism which includes a lug 16 secured to the underside of the bar 12. The lug 16 is connected by a link 17 to an oscillating lever 18 pivoted or fulcrumed on a shaft 19 journaled in suitable bearings 20 secured to a frame 21 which is part of the main frame of the machine. Oscillation is imparted to the lever 18 and feed bar 12 by a pitman 22 connected to the lever 18 and to a crank 23 secured to a shaft 24 journaled in a bearing bracket 25 secured to the frame 21. Continuous rotation of the shaft 24 causes the feed bar 12 to reciprocate in the groove 14 through a forward (toward the right in Fig. 1) or feeding stroke and thence through a return stroke to intermittently feed the can bodies along the horn. The shaft 24 is the main drive shaft for the marking device of the present invention and may be driven in any suitable manner.

The stamping of the coded identifying data on the side seam A of the can bodies B preferably is effected while the bodies are moving through a feeding stroke and are supported on the horn 11 and after the side seam hooks are interengaged and bumped together at the bumping station to close the body. For this purpose the feed bar 12 advances a bumped can body B through a cam marking or stamping station D (Fig. 1).

The stamping of the identifying marks on the restricted area of the side seam A of a can body is effected by a rotating die holder, carrier member or disc 27 as the can body is advanced through the stamping station D by the feed bar 12. The die holder 27 is carried on a shaft 28 mounted below the horn 11. The holder 27 is secured by screws 31 to a collar 29 (see Fig. 2) formed integral with or secured to the shaft 28. The shaft 28 is rotatably mounted in a bearing 32 having a depending leg extension 33 formed thereon which is adjustably secured to a bracket 34. The bracket 34 is provided with a pair of vertical slots 36 (Fig. 4) through which screws 37 extend into the leg extension 33 for securing it in place and for adjusting it for height relative to the horn 11.

The rotating die holder 27 carries a plurality of marking dies, the number of dies depending on the number of marks to be impressed upon the side seam area and upon the inherent limitations of the mechanism. In the present instance two cans are fed past the marking position or station D for each revolution of the holder 27. For this purpose the shaft 28 is driven at one half the speed of the shaft 24.

The shaft 28 is driven in synchronism with the shaft 24 so that they will always rotate in the same timed relation to rotate the marking dies into proper cooperative action for stamping identifying marks at two places on the side seam A while the can body B is in motion. For this purpose the shaft 28 is driven by an endless chain

38 which operates over a sprocket 39 keyed to the shaft 28. The chain 38 in turn is driven by a sprocket 41 secured to the shaft 24 hereinbefore mentioned as the main drive shaft for the present device.

It will be noted that the driven sprocket 39 is approximately twice the size of the drive sprocket 41. In order to insure clear sharp markings the ratio of the parts is such that the holder 27 travels at a peripheral speed equal to the linear speed of the moving can bodies at the marking station D to prevent any imperfect markings that would otherwise occur.

With this driving arrangement two sets of dies E and F are located in the disc holder 27 diametrically opposite each other. The die sets E and F are alternately rotated to the marking position so that each set of dies mark alternate can bodies at the leading and trailing edge portions of the side seam A as the bodies B advance along the horn 11 on the forward strokes of the feed bar 12.

By way of example the set of dies E preferably consists of two die elements 43, 44 (Fig. 4) and similarly the set of dies F comprises two die elements 45, 46. However, any number of die elements may be included in each set. The dies of each set may have different code markings but the dies diametrically opposite each other in the holder are provided with the same markings so that every can body will have the same marks. For instance the dies 43 and 45 will have the same markings while the dies 44 and 46 will have a second or different marking. With this arrangement the dies 43 and 45 are used for marking the leading edge of the side seam while the dies 44 and 46 are used for marking the trailing edge of the side seam of all can bodies to be marked.

The die elements 43, 44, 45 and 46 preferably are made of hardened steel, and cooperate with an anvil or spline 47 (Fig. 3) embedded in the under side of the horn 11 in a longitudinal groove 50. The groove extends the full length of the horn and is used to guide the side seam and hold the can body against rotation on the horn. The die elements are positioned in radial recesses 48 formed in the rotating die holder 27 adjacent its outer periphery and are held in place by plates 49 secured to the holder 27 by screws 51. By removing the plates 49 the die elements 43, 44, 45 and 46 can be readily interchanged and/or new ones substituted depending on the code to be used or the data required. It is also possible with the above mentioned construction to simply replace the entire disc die holder 27 by removing the screws 31.

In operation the feed bar 12 on its forward stroke advances a body through the marking station D during which time the die holder 27 rotates one quarter of a revolution and the first set of dies 43 and 44 mark the side seam A adjacent the leading and trailing edges thereof as shown in Fig. 5. Upon the return stroke of the bar 12 and while the die holder 27 continues to rotate through its next or second quarter of a revolution the can bodies are stationary on the horn 11 on each side of the station D. On the next forward stroke of the feed bar 12, it advances the second can body toward and through the marking station D as the holder 27 continues to rotate through its third quarter of its revolution and thus advances the dies 45, 46 into position against the side seam A of this body in the same manner as effected by the dies 43, 44 during marking of the first body. Thus as each body passes through the marking station D its side seam is clearly and differently marked in two localities (Fig. 5) and the body thence passes on to subsequent operations.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its mate-

rial advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. Mechanism for marking the side seams of can bodies, comprising a longitudinally extending horn for internally supporting tubular can bodies, means for intermittently advancing the can bodies in end to end spaced relation along said horn with the side seams disposed beneath the horn, a die holder rotatable on a horizontal axis beneath said horn at a marking station, said holder being disposed in substantial parallel and tangential relation to said can body side seams and carrying a plurality of peripherally spaced radially projecting die elements for marking the can body side seams at said station, and means for actuating said advancing means and for continuously rotating said die holder in timed relation, whereby on a forward feeding stroke of said advancing means to feed a can body through said marking station a said die element is engaged in rolling contact with such body to mark the side seam thereof, and thereafter on an idle movement of said feeding means through a return stroke said can bodies are momentarily at rest on said horn while the rotation of said die holder is continued to position another die element for similarly marking the side seam of the succeeding can body on the next forward feeding stroke of said advancing means.

2. Mechanism as defined in claim 1 wherein said horn is provided with a longitudinal groove for receiving and maintaining said side seams in longitudinally aligned position beneath said horn, said groove having an elongated anvil spline therein to back up said can body side seams during the marking operations thereon by said die elements.

3. Mechanism for stamping identifying markings on the side seams of can bodies, comprising a longitudinally extending horn for internally supporting cylindrical can bodies, reciprocating means for intermittently advancing the can bodies in end to end spaced relation along said horn with the side seams disposed therebeneath, a cylindrical die holder rotatable on a horizontal axis beneath said horn at a marking station, said holder being disposed in substantial parallel and tangential relation to said can body side seams and carrying a plurality of peripherally spaced radially projecting sets of die elements respectively for marking the leading and trailing ends of the side seams of successive can bodies at said station, means for reciprocating said advancing means through a forward feeding stroke and thence through a return stroke the former to advance a can body through said marking station, and means connected to said advancing means for continuously rotating said die holder at the same peripheral speed as the lineal speed of said can bodies, whereby on each forward feeding stroke the die elements of a set thereof are successively engaged in rolling contact with a moving can body to mark the leading and trailing ends of the side seam thereof, the return stroke of said advancing means leaving said can bodies momentarily at rest on said horn while continuing the rotation of said die holder in the same direction to rotatively position a succeeding set of die elements for similarly marking the side seam of the immediately following can body on the next forward feeding stroke of said advancing means, the respective lineal and rotative speeds of said advancing means and die holder being such that a plurality of can bodies is advanced through said marking station for a stamping operation on the side seams thereof for each complete revolution of said die holder.

4. In a can body forming machine, the combination of a stationary horn for supporting can bodies having side seams for advancement in spaced end to end relation along a straight line path of travel, a die holder mounted in vertical relation to said horn for rotation in the plane of the side seams of said bodies, a plurality of sets of marking dies projecting radially in circumferentially spaced relation from the outer periphery of said

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die holder, reciprocating feeding means operable through a forward feeding stroke and thence through a return stroke for intermittently feeding can bodies along said horn in rolling contact with said marking dies on the feeding stroke of said feeding means, means for reciprocating said feeding means, and drive means connected to said actuating means for continuously rotating said die holder at a speed less than that of the reciprocation of said feeding means, first for marking the side seam of one can body with one set of said marking dies by rotatively engaging the same with said seam on the forward stroke of said reciprocating feeding means, and thereafter for positioning another set of said dies for similarly marking a succeeding can body by continuing the rotation of said die holder during the return stroke of said reciprocating feeding means.

5. Mechanism as defined in claim 3 wherein said can body advancing means is in part rotatable and is timed to rotate said die holder for one complete revolution for each two revolutions of said advancing means, said die holder carrying two sets of die elements on the periphery thereof thereby to mark the leading and trailing ends of

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two adjacent can body side seams projected through the marking station during two feeding strokes of said reciprocating advancing means.

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