Dec. 7, 1965 ED LAXO 3,221,690

BUMPER STABILIZER FOR A CAN BODY SIDE SEAMER

Filed May 3, 1962 2 Sheets-Sheet 1

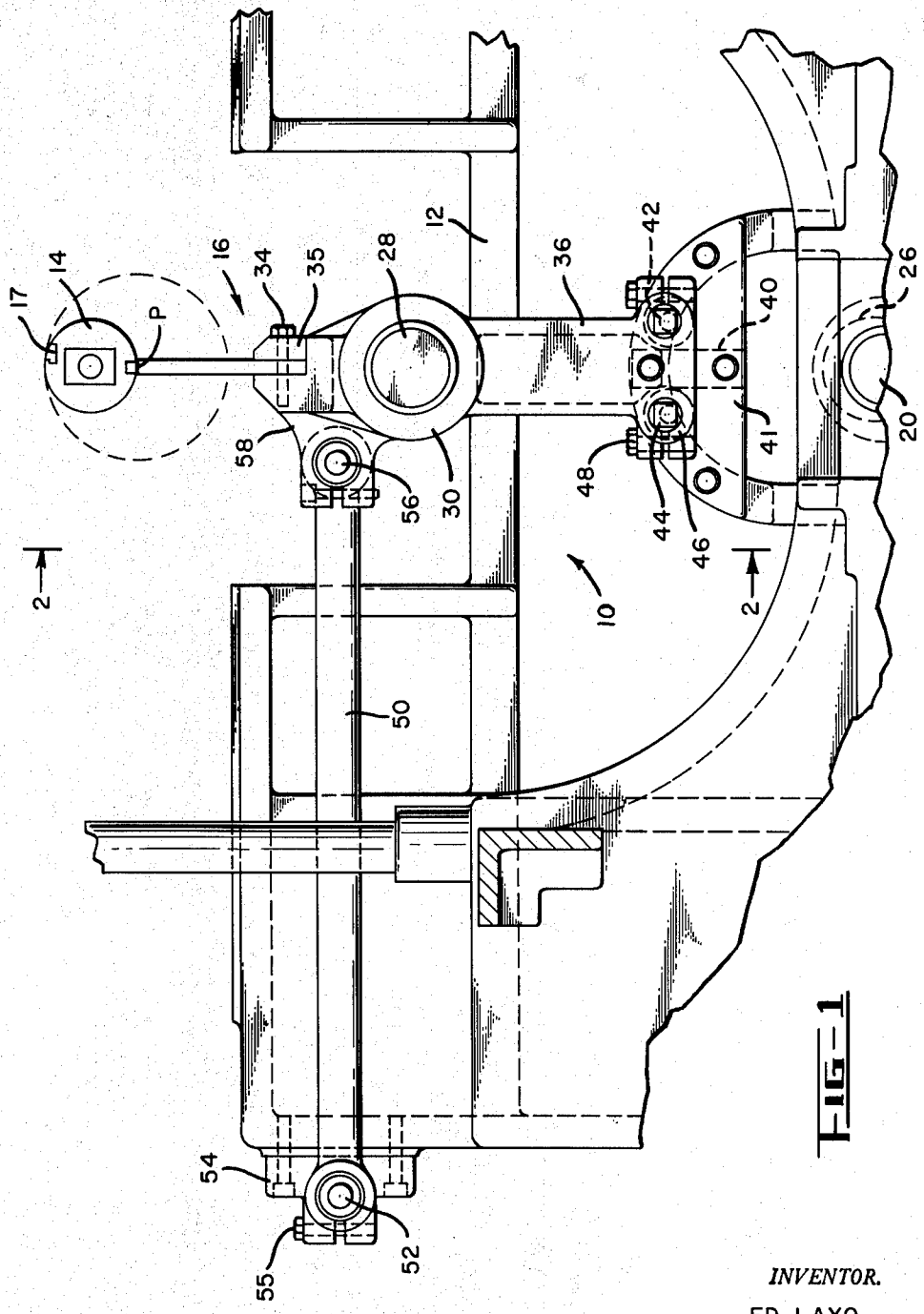


FIG-1

INVENTOR.

ED LAXO

BY Edward B Gregg

ATTORNEY

Dec. 7, 1965 ED LAXO 3,221,690

BUMPER STABILIZER FOR A CAN BODY SIDE SEAMER

Filed May 3, 1962 2 Sheets-Sheet 2

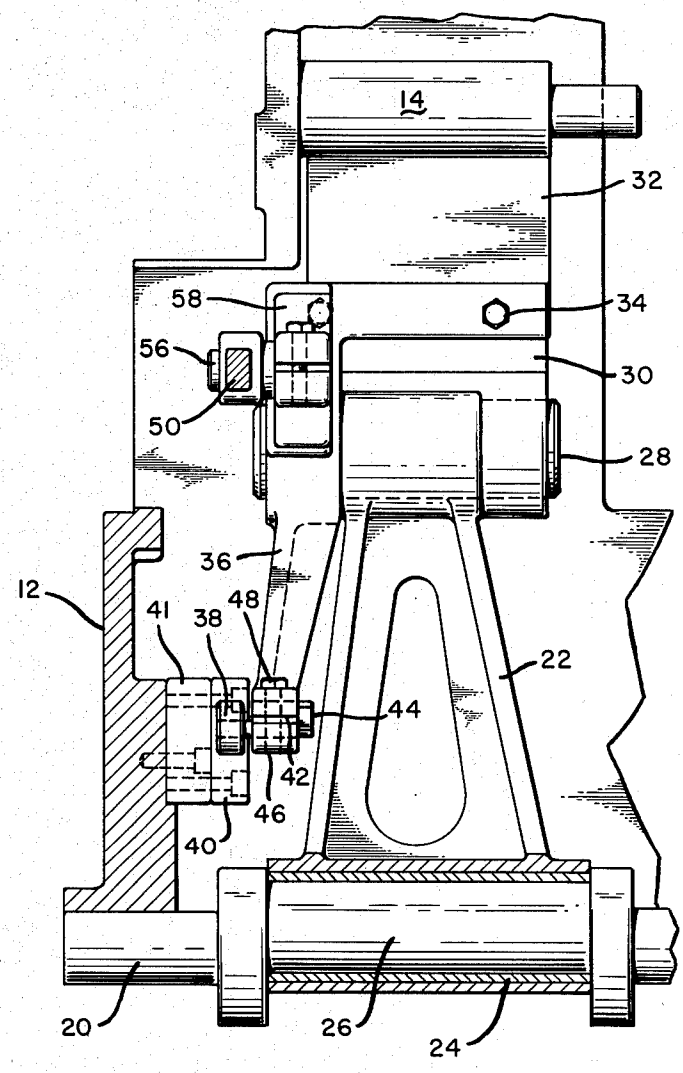


FIG-2

INVENTOR.
ED LAXO
BY Edward B Gray
ATTORNEY

United States Patent Office 3,221,690 Patented Dec. 7, 1965

3,221,690

BUMPER STABILIZER FOR A CAN BODY SIDE SEAMER

Ed Laxo, 27690 Orlando Ave., Hayward, Calif.; Thelma E. Laxo, executrix of said Ed Laxo, deceased, assignor to Thelma E. Laxo

Filed May 3, 1962, Ser. No. 192,139
11 Claims. (Cl. 113—12)

This invention relates to a bumper stabilizer for a can body side seamer and, more particularly, to a device for controlling the motion of the bumper element which delivers an impact to the interlocked edges of a can body blank in order to form the side seams of the can body.

In operation of high speed production can body makers, the can body side seams are formed by positioning can body blanks in rapid succession on a forming mandrel or horn, wrapping the blank about the horn to interlock hooks which were previously formed along the edges of the blank, and then hammering the interlocked hooks to form the side seam. Some hammers which have been employed for this purpose are mounted on slides which are reciprocable in accommodating slideways to deliver a blow during each stroke. Although such slides and complementary slideways provide a closely controlled motion, problems of lubrication have arisen from their use, primarily because of the tendency of flux applied to the can body blanks to drip onto the slide and foul it. Other bumpers have been mounted on rotary members wherein the impact is delivered along an arcuate path. However, in such case there arises a problem in eliminating any substantial horizontal component of motion at the instant of impact which might cause an undesirable shearing of the side seams.

It is, therefore, an object of this invention to provide improved means for guiding and stabilizing the connecting rod and the bumper steel carried thereby so that there will be no appreciable horizontal component of movement at the instant of impact.

It is a further object of this invention to provide means for guiding the bumper steel along a rectilinear path which means do not include slidably associated members.

In carrying out this invention, the cross head on which the bumper steel is carried is pivotally connected to the upper end of a connecting rod which, in turn, is reciprocated by a crank mounted on a crank shaft. Mounted on a depending portion of the cross head are a pair of rollers which engage and roll along parallel surfaces of a vertical member so that the cross head is guided along a vertical path to the forming horn and maintained in a vertical disposition. In cooperation with the vertical guide member is a long control arm which is pivoted to the frame of the machine and to the cross head to prevent any deviation of the cross head from its intended path so that the point of impact will be precisely where intended. The control arm is mounted so that at impact it is perpendicular to the vertical path of the cross head so that in the short arc through which the end of the arm travels there is no appreciable horizontal component of motion.

Other objects and advantages of this invention will become apparent from the description following when read in conjunction with the accompanying drawings wherein:

FIG. 1 is a view in end elevation of a can body side seamer employing a rectilinear stabilizing and guiding member in accordance with this invention; and

FIG. 2 is a side view in section taken along line 2—2 of FIG. 1.

Now referring to the drawings with greater particularity the machine, which is generally designated by

the reference numeral **10** includes a frame structure **12** on which is carried the forming horn **14** and operating mechanism for the bumper **16** hereinafter to be described. The forming horn or mandrel **14** is of known construction and includes a slot **17** to accommodate a reciprocable stripper which removes the formed can body.

The operating mechanism for the bumper includes a crank shaft **20** driven from any suitable source of power (not shown). A connecting rod **22** is rotatably mounted on a bushing **24** which in turn is rotatably carried on the crank pin **26** of the crankshaft **20** (FIG. 2). The upper end of the connecting rod **22** carries a pin **28** on which is rotatably mounted a cross head **30**. A bumper steel **32** is secured at the upper end of the cross head by any suitable means such as cap screws **34** and clamping block **35** (FIG. 1). Thus, it will be apparent that as the crankshaft **20** rotates the connecting rod **22** will cause the cross head to reciprocate between a position spaced below the mandrel **14** upwardly to impact against the mandrel to crimp the interlocked edges of the can body. As indicated in phantom in FIG. 1 a narrower bumper steel is provided for can body blanks of larger diameter so that the stroke of the connecting rod and cross head **30** imparted by the crankshaft will function to seam cans of various diameters.

At one end of the cross head **30**, a roller carrier member in the form of a depending arm **36** rotatably supports a pair of rollers **38** which straddle a vertically disposed guide member or block **40** of hardened steel or the like secured to a mounting plate **41** bolted to the frame **12**. The guide rollers **38** are rotatably mounted on pins **42** (FIG. 1) which are eccentrically carried on square adjustment members **44** secured within split sleeves **46** on the cross head extension member **36**. Thus, the cap screws **48** may be loosened and the square adjustment members turned to vary the location of the roller axes and, thus, adjust the clearance between the rollers **38** and the guide block **40**. Desirably, the rollers **38** are adjusted when the connecting rod **22** is in its lowermost position, so as snugly to embrace the guide block. As so adjusted, the sides of the block will closely guide the movement of the cross head with just a slight tolerance permitted, as will hereinafter be explained. The guide block **40** is disposed in vertical alignment with the axis of the cross head pivot pin **28** so that snug engagement of the rollers **38** astride the block **40** maintain the cross head in vertical disposition and as the rollers traverse the vertical sides of the block **40** the cross head is constrained to traverse a vertical path.

If desired, the eccentric mountings may be adjusted differentially so that, with the connecting rod **22** disposed in its uppermost position, the bumper steel is at a slight angle to the vertical. This is desirable in some cases to deliver a harder blow on one side of the overlapped seam in order to assure a tight seal. It should be noted that, even with the bumper steel at a slight angle, the blow is still delivered vertically.

In cooperation with the guide rollers **38** and block **40**, there is provided a control or guide arm **50** pivotally mounted at one end on a pin **52** carried on a mounting block **54** secured to the frame **12** by any suitable means such as the cap screws **55**. The control arm **50** is pivoted at its other end to a pin **56** carried on a mounting block **58** carried on the cross head. The arm **42** constrains movement of the cross head **30** to a fixed path and establishes the point of impact P precisely. The pivot pin **52** is positioned so that when the cross head **30** reaches the point of impact P with the forming horn **14**, the arm **42** will be horizontally disposed. Consequently, the tangent to the arc through which the pin **56** swings is a vertical line and the cross head itself has substantially no horizon-

tal component of motion. Additionally, the arm swings through a very small angle in the order of four degrees. Therefore, since the arc of travel of the pin **56** is very short, the amount of deviation of the pin from a perfectly vertical path is infinitesimal. Thus, the control over clearance between the rollers **38** and the guide block **40** provided by the eccentric mounting **42**, **44** and because of the rolling contact between the guide rollers and block, this slight variation from vertical can be absorbed.

Again as shown in phantom in FIG. 1, when seams are to be formed on cans of a different diameter only the bumper steel need be changed. Bumper steels of different width are installed when there is a change in the size of cans, so that the same operating mechanism, including the crankshaft **20** can be employed. This, of course, simplifies machine set-up and, additionally, avoids the necessity of swinging the arm **42** through an arc large enough to introduce appreciable horizontal components.

While a preferred embodiment of this invention has been illustrated and described, it is apparent that modification and changes therein may be made by those skilled in the art without departing from the spirit and scope of this invention as defined by the claims appended hereto.

What is claimed as invention is:

1. In a can body side seamer having a machine frame, and a horn for supporting a can body blank thereon with hooks along opposite edges of said blank interlocked, means for delivering an impact to said interlocked edges comprising:

a driven crankshaft,

a connecting rod having one end portion thereof mounted on said crankshaft,

a cross head pivotally mounted adjacent the other end portion of said connecting rod,

a guide member having opposite sides parallel to a diameter of said crankshaft at the rotational axis thereof,

a roller carrier member, and

a pair of guide rollers on said carrier member each being disposed in rolling engagement with one of said parallel sides,

one of said members being carried by the machine frame with the other member being carried by the cross head.

2. The combination defined in claim **1** comprising a pivotable guide arm pivotally connected to said cross head and to said machine frame,

said guide arm being disposed generally normal to said diameter of said crankshaft.

3. In a can body side seamer having a machine frame and a horn for supporting a can body blank thereon with hooks along opposite edges of said blank interlocked, means for delivering an impact to said interlocked edges comprising:

a driven crankshaft,

a connecting rod having one end portion thereof mounted on said crankshaft,

a cross head pivotally mounted adjacent the other end portion of said connecting rod,

a guide block member having opposed sides disposed parallel to a diameter of said crankshaft at the rotational axis thereof,

a roller carrier member,

roller means on said carrier member disposed in rolling engagement with said guide block parallel sides,

means for mounting one of said members to the machine frame with the other member being mounted to the cross head, and

a guide arm pivotally connected to said cross head and to said machine frame,

said guide arm being disposed generally normal to said diameter of said crankshaft.

4. In a can body side seamer having a machine frame, and a horn on said frame for supporting a can body blank thereon with hooks along opposite edges of said blank interlocked, means for delivering an impact to said interlocked edges comprising:

a driven crankshaft,

a connecting rod having one end portion thereof mounted on said crankshaft,

a cross head pivotally mounted adjacent the other end portion of said connecting rod,

a guide member having parallel opposite sides symmetrical with the vertical diameter of said crankshaft at the rotational axis thereof,

a roller carrier member, and

a pair of guide rollers on said carrier member each being disposed in rolling engagement with one of said parallel sides,

one of said members being secured to the machine frame with the other member being mounted to the cross head.

5. The combination defined in claim **4** comprising:

means for adjustably positioning the relative location of the axes of said guide rollers and said parallel sides transverse to said parallel sides.

6. The combination defined in claim **4** comprising:

eccentric mounting means supporting said rollers for adjustably positioning said rollers transverse to said parallel sides.

7. The combination defined in claim **4** comprising,

a horizontal guide arm pivotally connected at opposite ends to said machine frame and to said cross head.

8. In a can body side seamer including a machine frame, and a horn on said frame for supporting a can body blank thereon with hooks along opposite edges of said blank interlocked, means for delivering an impact to said interlocked edges comprising:

a driven crankshaft,

a connecting rod mounted at one end on said crankshaft,

a cross head pivotally mounted at the other end of said connecting rod,

a guide block fixed to said frame and having parallel opposite sides thereof disposed symmetrical with the vertical diameter of said crankshaft at the rotational axis thereof, and

a pair of guide rollers on said cross head each in rolling engagement with one of said parallel sides.

9. The combination defined in claim **8** including,

eccentric mounting means for each of said guide rollers, and

means for adjustably positioning said mounting means angularly to adjust the position of said each roller transverse of said parallel sides.

10. The combination defined in claim **8** including,

a horizontal guide arm pivotally connected at opposite ends to said frame and to said cross head.

11. The combination defined in claim **10** wherein the stroke of said cross head produced by rotation of said crankshaft is limited so as to pivot said guide arm through an arc of less than ten degrees.

References Cited by the Examiner

UNITED STATES PATENTS

299,553	6/1884	Kellogg	74—25
1,239,804	9/1917	Mitchell	74—25
2,482,678	9/1949	Laxo	113—12

CHARLES W. LANHAM, *Primary Examiner.*

NEDWIN BERGER, *Examiner.*