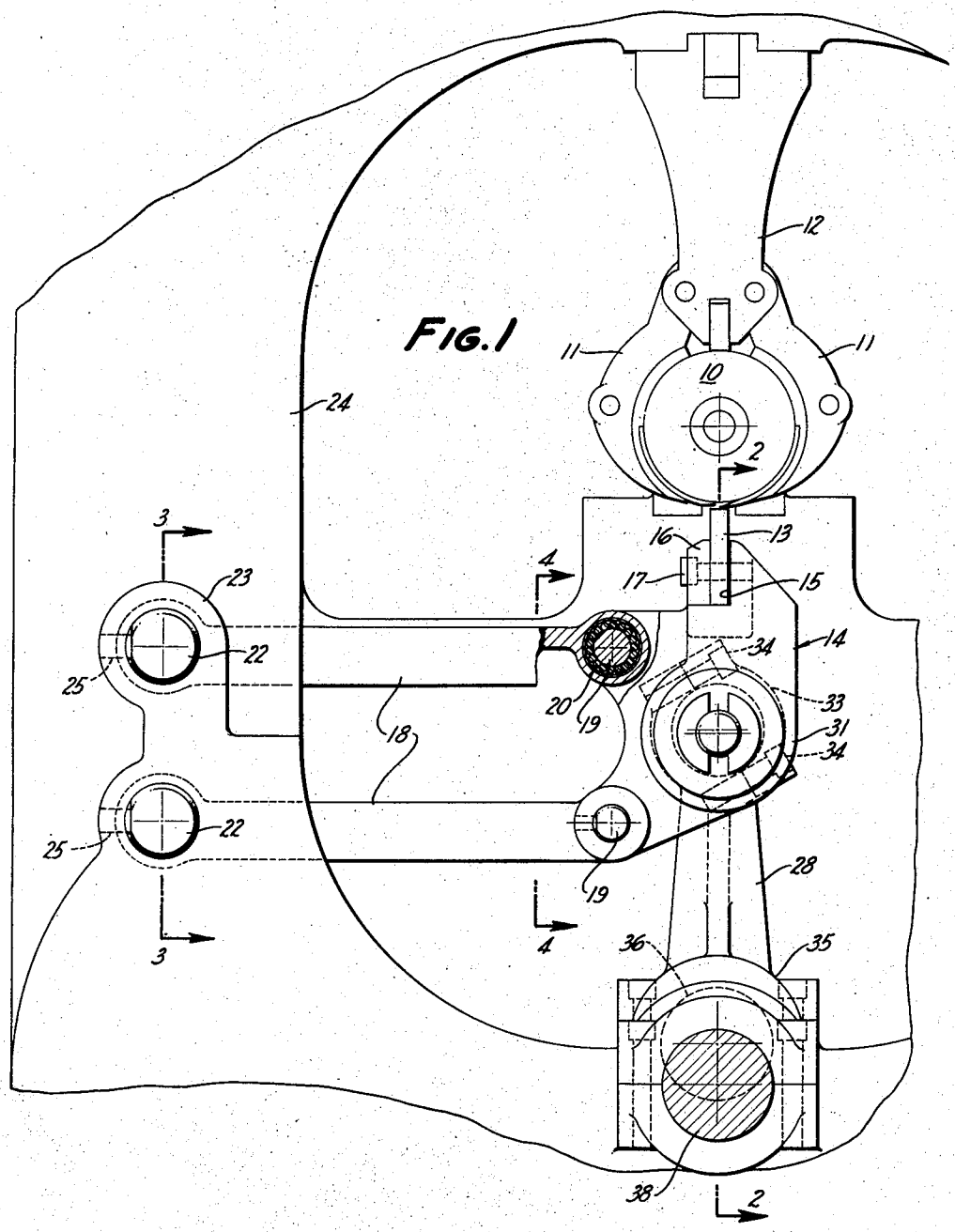
Sept. 20, 1949. E. LAXO 2,482,678

CAN BODYMAKER SIDE SEAM FLATTENING APPARATUS

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FIG. 1



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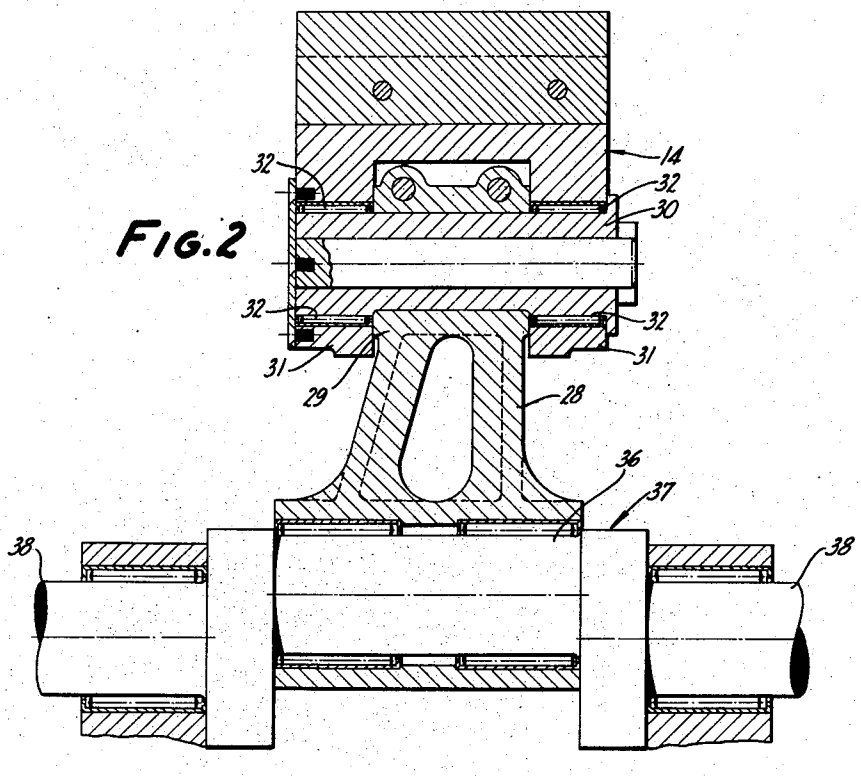
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CAN BODYMAKER SIDE SEAM FLATTENING APPARATUS

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FIG. 2



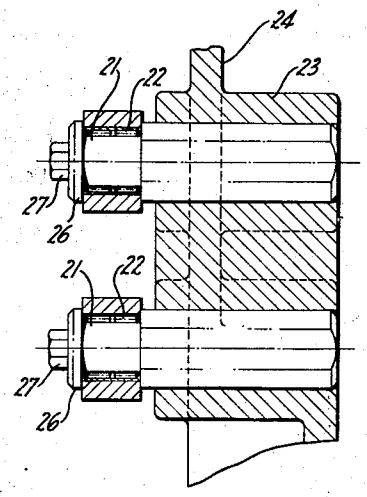


FIG. 3

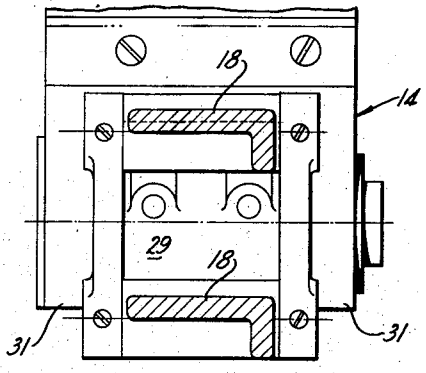


FIG. 4

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Patented Sept. 20, 1949 2,482,678

UNITED STATES PATENT OFFICE

2,482,678

CAN BODYMAKER SIDE SEAM FLATTENING APPARATUS

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Application August 1, 1947, Serial No. 765,487

2 Claims. (Cl. 113—12)

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The present invention relates to can bodymakers, and is more particularly directed to apparatus for flattening can body sideseams, after the can bodies have been formed and the elements of the sideseams interleaved with each other.

Heretofore, the bumper of a bodymaker for flattening sideseams has been mounted for straight line slidable reciprocation in a guideway. The running clearance between the bumper and guideway has been necessarily excessive to compensate for the sticky flux which drips from the can body hooks on to the bumper slide and guideway. As a result, it is difficult for the bumper to strike the sideseam with an evenly distributed blow, increasing the production of faultily seamed containers. In addition, the flux hardens rapidly on the bumper mechanism and its guide, acting as an abrasive and introducing wear on the moving parts, which further adversely affect the formation of uniformly flattened sideseams.

Accordingly, it is an object of the present invention to provide a bumper mechanism for flattening can body sideseams which is operable over extended periods with close running clearances between the working parts, thus insuring the striking of a uniform blow along the entire length of the sideseam.

Another object of the invention is to provide a sideseam bumper mechanism, in which flux and other foreign substances are prevented from entering the clearance spaces between the relatively movable parts of the mechanism.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a transverse view through the apparatus.

Fig. 2 is a vertical section taken generally along the line 2—2 on Fig. 1.

Fig. 3 is a partial section taken along the line 3—3 on Fig. 1.

Fig. 4 is a partial section taken along the line 4—4 on Fig. 1.

The bumper mechanism, constituting the present invention, forms part of a can bodymaker and is positioned at the forming station where the body blanks with hooks already folded on their sides and flux already applied thereto are formed around a cylindrical mandrel 10 in any suitable fashion, as by means of a pair of opposed forming wings 11 pivotally mounted on an anvil bracket 12 extending above the mandrel and

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adapted to swing to a position closely adjacent the mandrel to interlock the hooks on the body blank with one another. Immediately thereafter, a bumper bar or steel 13 moves upwardly to flatten the hooks against the mandrel 10 and thus securely interlock them with each other. The operation of the forming wings 11 and the interlocking of the hooks constitute no part of the present invention. Further details concerning one specific apparatus for performing this operation may be found in my patent, No. 2,277,519, for "Can body forming apparatus."

In the embodiment of the invention disclosed in the drawings, the bumper steel 13, which extends longitudinally and parallel to the mandrel 10, is secured to a bumper block 14, being mounted within an L-shaped recess 15 in the latter and held securely to the block by being pressed against the vertical leg of the recess 15 by a clamp plate 16 and cap screws 17 extending through the plate and bumper steel 13 for threaded reception within the block. The bumper steel 13 extends a substantial distance above the upper end of the block 14 to enable its replacement with bumper steels of different vertical heights, depending upon the diameter of the can body and the mandrel about which it is formed. Because of such replaceability of the bumper steel, the operating mechanism to be described below can be used for various diameters of can bodies without change.

The bumper block 14, with the bumper steel or flattening member 13 secured thereto, is mounted for vertical movement to and from the mandrel 10 on a pair of parallel links 18. The bumper block has a pair of vertically spaced pins 19 secured to it to one side of the bumper steel 13, the inner ends of parallel links 18 being oscillatably mounted on each pin, preferably through the agency of anti-friction roller bearings 20. These links extend outwardly from the bumper block for pivotal mounting on a pair of upper and lower studs 21, through the intermediary of roller or other anti-friction bearings 22, the studs being received within bosses 23 formed in the frame 24 of the bodymaker, to which they are suitably locked, as by means of set screws 25. The outer ends of the links are appropriately held on the studs 21 by retainer collars 26 and cap screws 27 extending therethrough and threaded into each stud.

The links 18 are parallel to one another and are of the same length in order to maintain the vertical disposition of the bumper steel 13 below the mandrel 10 upon upward and downward move-

ment of the bumper block 14. Such parallel motion occurs because of the equal lengths of the parallel links and also because of the fact that the distance between the axes of the studs 21 is equal to the distance between the axes of the pins 19.

The bumper block 14 and bumper steel 13 are reciprocable toward and from the mandrel by a crank and connecting rod mechanism, including a connecting rod 28 whose upper end 29 is clamped to a pin 30 extending between the depending legs or bearing bosses 31 of the bumper block. This pin is oscillatable within the bosses 31 on roller or similar anti-friction bearings 32. For the purpose of assembling the rod on the pin 30, its upper end 29 may be formed in two parts with the cap portion 33 bolted to the main body portion of the rod by cap screws 34.

The lower or big end 35 of the connecting rod is mounted upon the crank pin 36 of a crank 37 secured to a drive shaft 38. Rotation of the shaft 38 reciprocates the connecting rod 28 and moves the bumper block 14 and its steel 13 to and from the mandrel 10, the bumper block and parallel links 18 being so arranged that when the steel 13 engages the sideseam it is disposed substantially in the same vertical central plane as the axis of the mandrel 10, giving it a direct blow and uniformly pressing the sideseam along its full length against the mandrel, to effect its flattening squarely and evenly, thus insuring the production of a good can body sideseam.

The various pin connections 19, 30 between the parallel links 18 and the blocks 14, and between the bumper block and the connecting rod 28 may be readily protected against ingress of flux that might drip from the body hooks, and from other foreign substances. Accordingly, such pin connections may be made with relatively close running clearances, providing practically no play in the parts and insuring the movement of the bumper steel 13 along a predetermined path over extended periods of time. Looseness is, therefore, avoided in the mechanism, in view of the close running clearances, thus insuring the striking of a uniform blow against the sideseam. Moreover, this looseness does not increase as a result of wear due to the abrasive action of foreign substances entering the clearance space between the working parts, since such substances cannot readily engage the various operating surfaces of the mechanism.

As is known in the art, the drive shaft 38 is rotated in timed relation with the action of the forming wings 11 in such manner that the body blank is formed around the mandrel 10 and the hooks interleaved just prior to upward movement of the bumper block 14 and its bumper steel 13 toward the mandrel, to produce the flattening operation. Continued rotation of the drive shaft 38 obviously then leaves or withdraws the bumper block and steel from the mandrel and permits the cylindrical body blank to be shifted to the next work station, as the soldering station upon outward swinging and release of the wings 11 therefrom.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made in its construction by those

skilled in the art without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A can body making machine comprising a frame, a horizontal mandrel supported thereby for supporting a can body with hooked ends thereof inter-engaged, a bumper member for bumping said hooked ends and forming and flattening a seam, means for supporting said bumper member underneath and in vertical alignment with said mandrel and for actuating the same, said means comprising a shaft, a crank operable by said shaft and a crank pin secured to said crank, said bumper member being mounted to rotate on said pin, and guide means for guiding said bumper member into vertical alignment with said hooked ends and seam, said guide means comprising a pair of parallel links each pivotally supported at one end by said frame and pivotally connected at the other end to said bumper member, the pivotal frame supports of said links being in vertical alignment and the pivotal connections thereof with said bumper member being also in vertical alignment, said shaft, crank, crank pin and bumper being aligned when said bumper is in said seam flattening position, whereby substantially no impact forces are imposed upon or transmitted by said guide means.

2. A can body making machine comprising a frame, a horizontal mandrel supported thereby for supporting a can body with hooked ends thereof inter-engaged, a bumper member for bumping said hooked ends and forming and flattening a seam, means for supporting said bumper member underneath and in vertical alignment with said mandrel and for actuating the same, said means comprising a shaft, a crank operable by said shaft and a crank pin secured to said crank, said bumper member being mounted to rotate on said pin, and guide means for guiding said bumper member into vertical alignment with said hooked ends and seam, said guide means comprising a pair of parallel links each pivotally supported at one end by said frame and pivotally connected at the other end to said bumper member, the pivotal frame supports of said links being in vertical alignment and the pivotal connections thereof with said bumper member being also in vertical alignment, said shaft, crank and crank pin being so disposed that, when said bumper member is in contact with said hooked ends and seam, said crank, shaft and crank pin are in substantial vertical alignment therewith whereby substantially no impact forces are imposed upon or transmitted by said guide means.

ED LAXO.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,798,439	Seaholm	Mar. 31, 1931