No. 753,966.

PATENTED MAR. 8, 1904.

D. L. EUSTICE.

MACHINE FOR MANUFACTURING CANS.

APPLICATION FILED MAR. 27, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

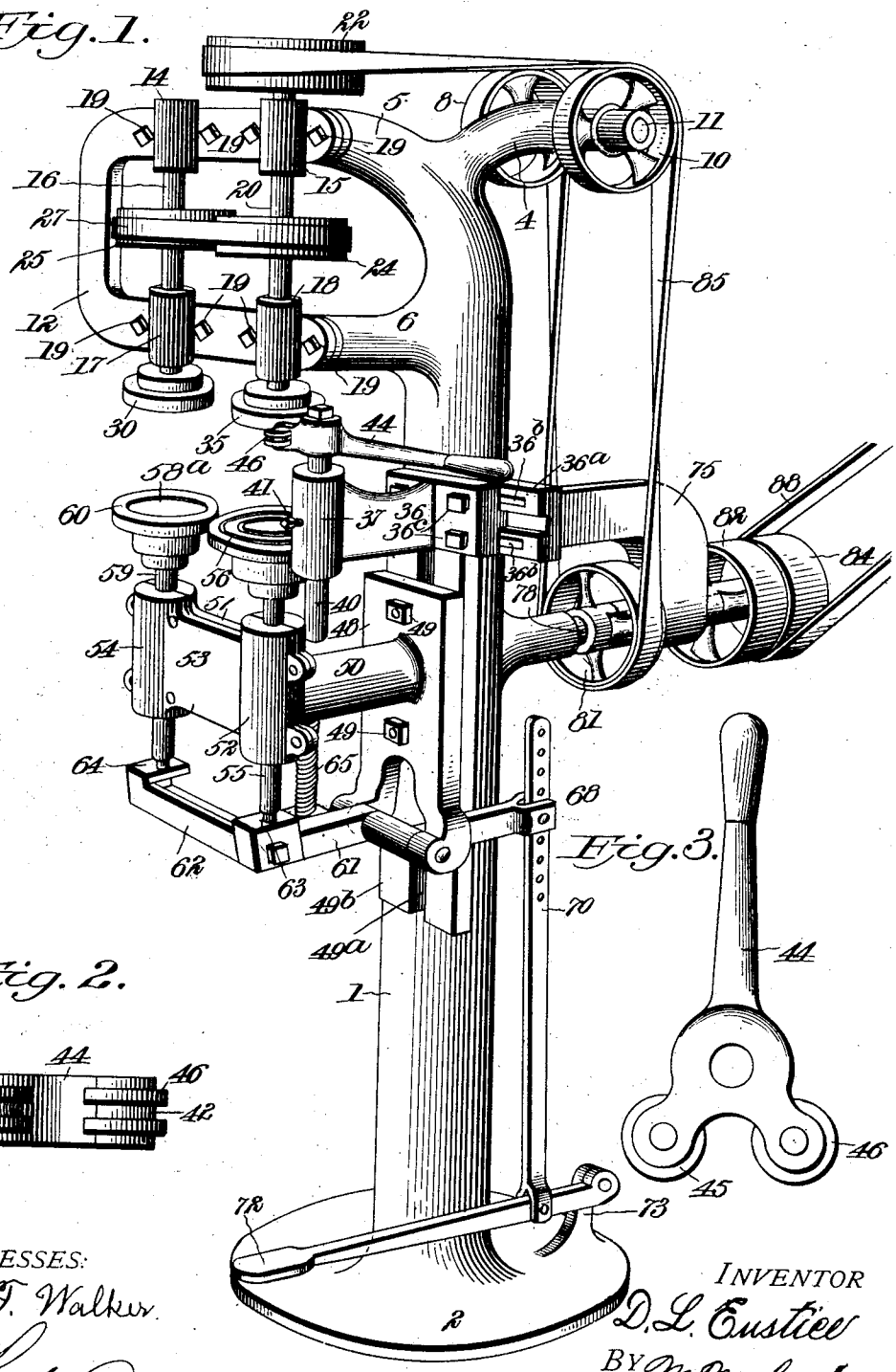


Fig. 3.

Fig. 2.

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Fig. 4.

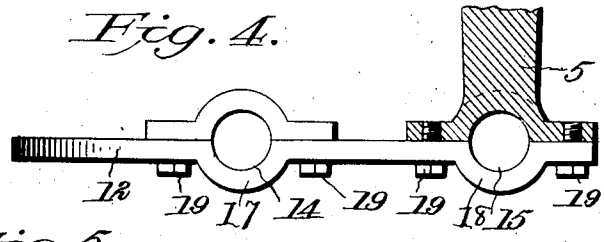


Fig. 6.

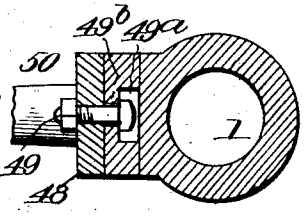


Fig. 5.

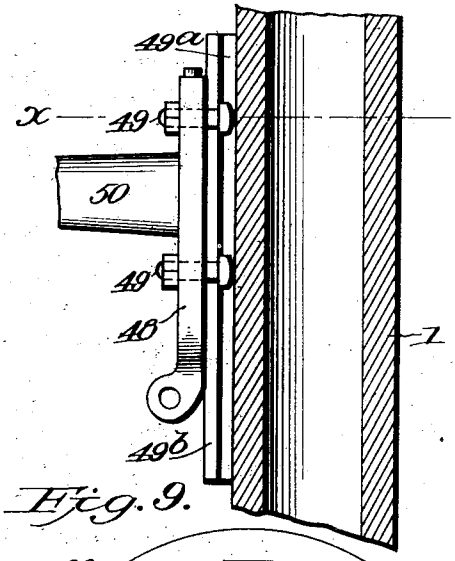


Fig. 7.

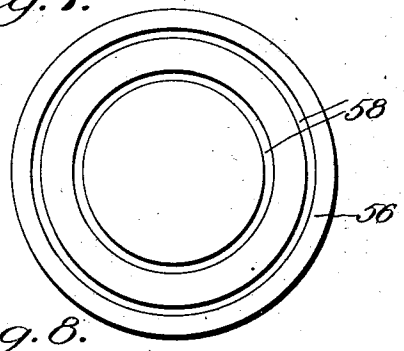


Fig. 8.

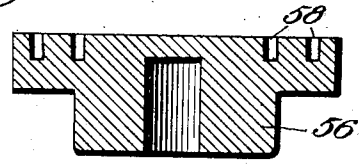


Fig. 9.

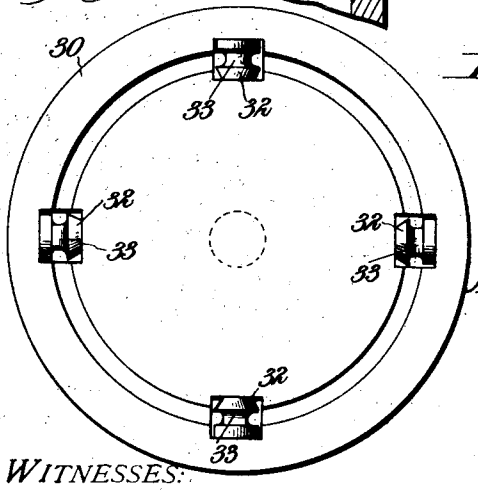
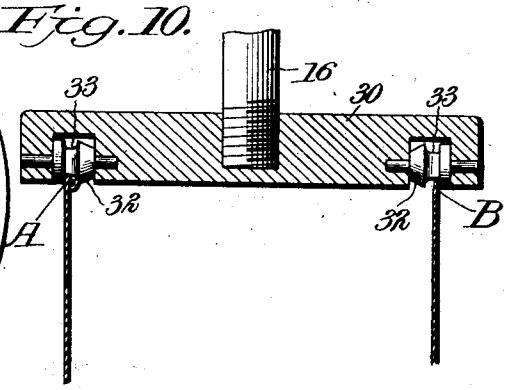


Fig. 10.



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No. 753,966. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

DANIEL L. EUSTICE, OF GALENA, ILLINOIS.

MACHINE FOR MANUFACTURING CANS.

SPECIFICATION forming part of Letters Patent No. 753,966, dated March 8, 1904.

Application filed March 27, 1902. Serial No. 100,157. (No model.)

To all whom it may concern:

Be it known that I, DANIEL L. EUSTICE, a citizen of the United States, residing at Galena, county of Jo Daviess, and State of Illinois, have invented certain new and useful Improvements in Machines for Manufacturing Cans; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for the construction of cans, and more especially to machines for securing the bottoms to the cans and for rolling the tops of the cans; and one of the objects is to hold the can in a given and determined position whereby an inexperienced and unskilled operator can bottom the cans readily and at the same time make tight joints and uniform cans.

Another object is to save the expense of extra handling of the can in its various details in construction.

The manner in which these objects and others of less moment are accomplished is set out in detail in the following specification when taken in connection with the drawings accompanying the same.

Figure 1 is perspective view of the machine complete. Fig. 2 is an end elevation of the lever and its grooved rollers, which are used for uniting the bottom to the sides of a can. Fig. 3 is a plan view of the lever shown in Fig. 2. Fig. 4 is a plan view of the U-shaped frame, showing the journal-boxes for the rotating shafts and showing the upper arm of the standard in section. Fig. 5 is a detail, partly in section and partly in elevation, of the adjustable connection for the can-supporting frame. Fig. 6 is a transverse section on the line *x x* of Fig. 5. Fig. 7 is a plan view of one of the can-supporting plates or disks. Fig. 8 is a vertical section of Fig. 6. Fig. 9 is a bottom view in elevation of the plate and rollers for rolling the can and beading the top edge of the can; and Fig. 10 is a vertical section of the plate illustrated in Fig. 9, showing the position of the can when operated upon.

Similar reference-notations indicate corresponding parts appearing in the several illustrations.

Referring to the drawings, 1 represents the upright frame, and 2 its base, formed integral therewith. There is also cast with the frames three arms 4, 5, and 6. To the arm 4 are pivoted two pulleys 8 and 10, mounted upon a common shaft 11, and to the front edges of the arms 5 and 6 is secured a U-shaped frame 12.

The frame 12 is of U shape, and there is cast integral with its upper arm half of two boxes or bearings 14 and 15, in which the two shafts 16 and 20, presently to be described, rotate. With the lower arm are cast half of the two boxes 17 and 18, in which the same shafts 16 and 20 also rotate. The other halves of the boxes 14 and 17 are bolted to the rear sides of the arms by bolts 19, forming complete boxes for the shaft 16, while the other half of the boxes 15 and 18 are formed on the ends of the arms 5 and 6 and have matching relation therewith to form bearings with the shaft 20.

On the top of the shaft 20 is rigidly secured a driving-pulley 22, and upon the same shaft 20, between the arms of the frame 12, is fastened another pulley 24. Upon the shaft 16, between the arms of the frame 12 and in the same horizontal plane as the pulley 24, is a pulley 25. These two pulleys are connected together by an endless belt 27. By this mode of construction whenever the shaft 20 is rotated the shaft 16 will also be rotated.

Upon the lower end of the shaft 16 is secured a plate 30. (Shown in Figs. 9 and 10.) In the under side of this are pivoted bead-forming rollers 32, which are beveled and provided with grooves 33. By means of this construction whenever the plate 30 is rotated by the shaft 16, with the upper edge of the can in the grooves 33, the edge of the can will be rolled over on the inside of the can, forming a rim on the top of the can. In Fig. 10 the can is shown with a bead formed on one side, as at A, while on the other side the edge of the can is shown engaged by the outer edge of the groove in the roller, as at B, which is its position prior to the formation of the bead. To the lower end of the shaft 20 is attached a plate 35, which has a flat under sur-

face against which the bottom of the can is brought to bear.

Extending from the upright 1 beneath the arm 6 is a grooved guideway 36[a], having slots 36[b], through which bolts 36[c] extend. An arm 36 is pierced and held to the guideway by these bolts 36[c], and by this construction the arm 36 may be adjusted transversely with respect to the upright, so that the arm may be moved toward or from the plate 35. The outer end of the arm 36 terminates in a cylinder or box 37, in which is fastened the shaft 40 by the screw 41. On the upper end of the shaft 40 is pivoted a lever 44, carrying two grooved wheels 45 and 46 for bending and securing the bottom of the can to the sides thereof. In the periphery of the wheel 46 is a groove 42 and in the wheel 45 a different-shaped groove 43, (both shown in Figs. 2 and 3,) the object of which will presently appear.

Against the front side of the frame 1 below the arm 36 is adjustably fastened a plate 48 by the bolts and nuts 49, the heads of the bolts fitting in the longitudinal groove 49[a] of a plate 49[b], whereby the plate 48 may be adjusted vertically by unscrewing the nuts and releasing the heads of the bolts from binding engagement with the walls of the slot, as will be clear by reference to Figs. 5 and 6 of the drawings. Integral with the plate is a cylindrical arm 50, which projects out at right angles to the plate 48 and terminates in a lateral extension 51, in which are formed semicircular longitudinally-disposed bearing portions. Bolted to this lateral extension is a plate 53, which has similar bearing portions arranged in matching relation with the first-named bearing portions and which form journal-boxes 52 and 54.

Mounted in the journal-boxes 52 and 54 are rotary longitudinally-movable shafts 55 and 59, each of which has can-supporting plates 56 and 60 attached to their upper ends. In the plate 56 are a plurality of annular grooves 58, in which the end of the can is inserted when the can is to be bottomed. These grooves are of such depth and width as to permit the sides of the can to extend a short distance therein and be snugly embraced at the sides around the edges, so that the cans are accurately centered and are prevented from becoming displaced during the bottoming thereof, while at the same time the edges are prevented from being distorted by pressure. The plate 60 is formed with an annular depressed portion, as at 58[a], so that when the can has been bottomed it may be placed on the supporting-plate 60, with its bottomed end in the depressed portion, and the annular flange formed by such depression insures a proper centering of the can. It will be understood that if it be desired to roll the top edge of the can before bottoming it a plate with grooves similar to the plate 56 may be substituted for the plate 60, so that the side edges of the can may rest in grooves while the opposite edge thereof is being beaded by the rollers 32.

The plate 48 can be adjusted vertically for the purpose of adapting the machine to operate upon cans of different heights. This is accomplished by raising or lowering the plates 56 and 60, and thus varying the space between these plates and the plates 30 and 35.

The plate 48 is bifurcated at its lower end, and between the arms is pivoted a lever 61, one arm of which extends forward of the frame and to which is bolted a rest 62, upon which set the shafts 55 and 59 in sockets 63 and 64. Between the arm 50 and the forward arm of the lever 61 is placed a spring 65, which normally holds the lever and rest depressed. Another arm 68 of the lever 61 extends in the rear, and to it is adjustably pivoted a connecting-bar 70. This connecting-bar runs down and is pivoted to a foot-lever 72, which lever is pivoted to a fulcrum 73, attached to the base 2. There is also cast integral with the rear of the frame a bracket 75, extending down parallel with the frame and forming at its lower end a bearing for the driving-shaft 78. This shaft 78 also has another bearing in the rear of the frame. On the shaft 78 are mounted two active pulleys 81 and 82 and an idle pulley 84. The pulley 81 is connected with and operates the pulley 22 by an endless belt 85, which passes over the pulleys 8 and 10. The pulley 82 may be connected to the driving power by a belt 88.

The manner of operating my device is substantially as follows: The power is applied to the pulley 82 by the belt 88. This will rotate the pulley 81 and the pulley 22. As the pulley 24 is upon the same shaft as the pulley 22, it will also rotate this pulley and pulley 25 and the plates 30 and 35. When these pulleys are rotated, the operator takes the body of an inverted can with the bottom loosely upon the body and places it in one of the grooves 58 on the top of the plate 56. He then places his foot upon the lever 72 and draws down the arm 68, which forces up the rest 62 and with it the can upon the plate 56 against the revolving plate 35. It will be seen that the can is then rigidly held between the plates 35 and 56 and will rotate with the plate 35. He then draws the lever 44 toward him, which brings a groove 42 in the wheel 46 in contact with the edge of the bottom and bends it over. Then he reverses the lever 44 and brings the groove 43 in the wheel 45 on the other arm of the lever in contact with the rim on the bottom of the can, and this finishes the bottoming of the can. The operator then releases his foot from the lever 72, and the spring 65 forces the rest 62 downward, and with it the plate 56. The operator then places the can right side up on the plate 60. The upper edge of the can resting upon the plate 60 will come in contact with the wheels 32 in the plate 30 and roll the edge of the can inward, and

thus form a rolled top to the can, as shown in Fig. 10.

It will be seen that it will not require skilled workmen to operate this machine, as the grooves 58 in the plates 56 and 60 always will determine where the cans should be placed. The can will also always remain in that position with reference to the plate above it, and all that is necessary for the operator is to place the cans in the groove and draw the lever 44 toward him or reverse it, and in rolling the edge of the can there is nothing for him to do except steady the can in its position. Besides, the can is brought up by the lever and only one handling of the cans is necessary. Where great rapidity is desired, two operators may be used to good advantage, the one operating the can in bottoming it and the other taking the can and rolling it and placing it in the package.

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

1. In a machine of the class described, an upright having arms at its upper end, a U-shaped frame secured to the arms and provided with journal-boxes, a pair of shafts mounted in the journal-boxes of the frame and each having plates on their lower ends, bead-forming rollers journaled in one of the plates to roll the top of the can, means on the upright adjacent the other plate, coöperating with the plate to bottom the can, vertically-movable supports for the can adjacent each of the upper plates, means formed in the supports to center the cans, and means for rotating both of the shafts synchronously.

2. In a machine of the class described, an upright frame having a pair of rotating shafts journaled therein and provided with plates on their lower ends, bead-forming rollers carried by one of said plates, means coöperating with the other plate for bottoming the cans, a plate vertically adjustable on the upright and having a lateral extension formed with bearing portions, a plate secured to the lateral extension and having bearing portions in matching relation with the first-mentioned bearing portions to form journal-boxes, longitudinally-movable rotary shafts mounted in the journal-boxes and provided with can-supporting plates, and a movable rest for said shafts carried by the adjustable plates and capable of operating upon both shafts simultaneously to bring the cans in engagement with the upper plates, substantially as specified.

3. In a machine of the class described, an upright frame having a longitudinally-grooved plate secured thereto, a second plate carrying bolts adapted to slide in the groove, an arm extending from said last-mentioned plate and having a lateral extension provided with semicircular bearing portions, a plate secured to said lateral extension and having semicircular bearing portions in matching relation with the first-mentioned bearing portions, longitudinally-movable shafts mounted in said bearings and having can-supporting plates on their upper ends, a lever pivoted to the adjustable plate and having rests to engage the ends of the shafts, and means operating on said lever for raising the can-supporting plates.

4. In a machine of the class described, an upright having arms 5 and 6, a U-shaped frame secured to said arms, an upper pair of shafts journaled in said U-shaped frame, plates on the end of each shaft for bottoming and rolling the top of the can, a pair of lower shafts provided with can-supporting plates movable relatively to the upper pair of shafts, grooves in the lower plates for centering the cans, and means between the arms of the U-shaped frame for synchronously rotating both pairs of shafts.

5. In a machine of the class described, an upright having arms at its upper end, a U-shaped frame secured to the ends of the arms, journal-boxes formed in the frame and arms, rotary shafts mounted in the journal-boxes and having plates on their lower ends, bead-forming rollers journaled in one of said plates, a laterally-adjustable arm mounted on the frame, a lever journaled in the arm and having grooved rollers adapted to coöperate with the other plate to bottom the can, vertically-adjustable journal-boxes mounted beneath the arms of the upright, shafts having can-supporting plates mounted in the journal-boxes and capable of vertical movement independently of the latter, and means for rotating the shafts simultaneously.

6. In a machine of the class described, an upright having arms, a U-shaped frame secured at its ends to said arms and provided with journal-boxes, a plurality of shafts journaled in said boxes and provided with plates for bottoming and rolling the tops of the cans, means between the arms of the U-shaped frame for rotating the shafts synchronously, combined with a plurality of can-supporting plates, and means for simultaneously operating on said plates to throw the cans into engagement with the first-mentioned plates.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL L. EUSTICE.

Witnesses:
JOSEPH M. NACK,
W. A. SMITH.