

Jan. 20, 1942.

E. L. FLINT

2,270,428

CAN-SORTING MACHINE

Filed July 8, 1939

2 Sheets-Sheet 1

Fig. 1.

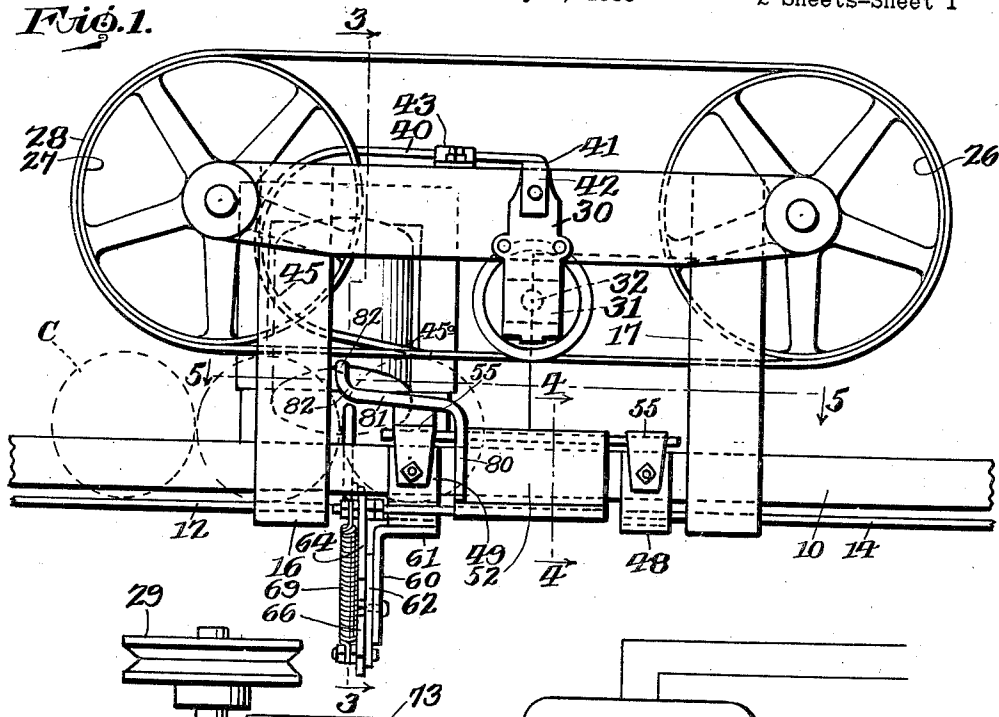
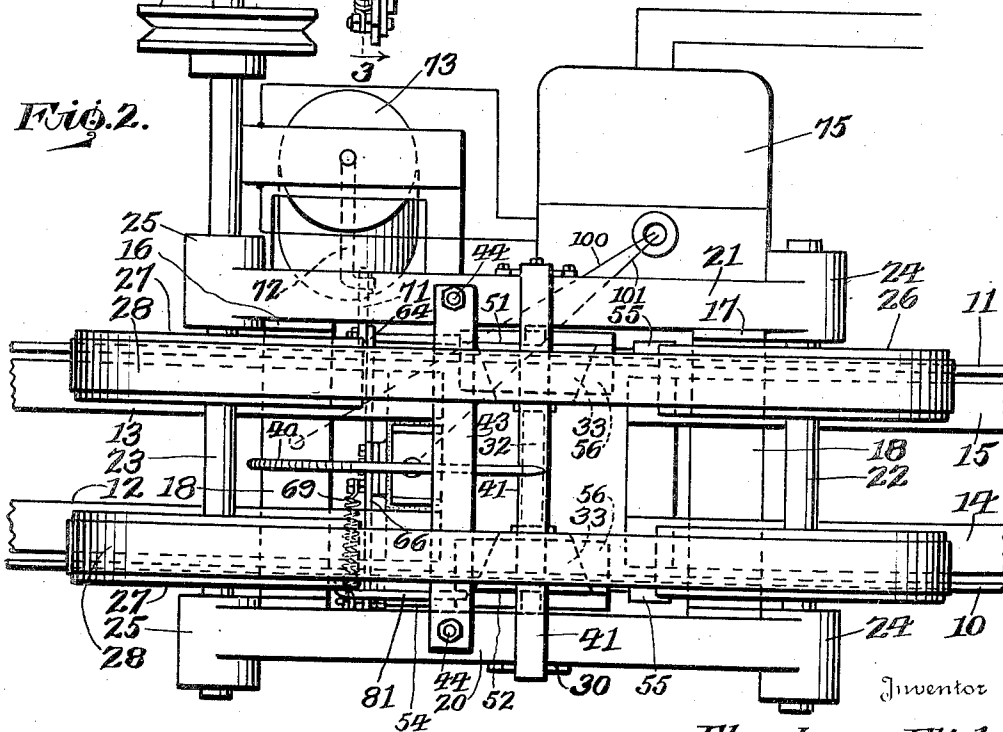


Fig. 2.



Inventor

Eber Leroy Flint

By Munn, Anderson & Liddy
Attorneys

Jan. 20, 1942.

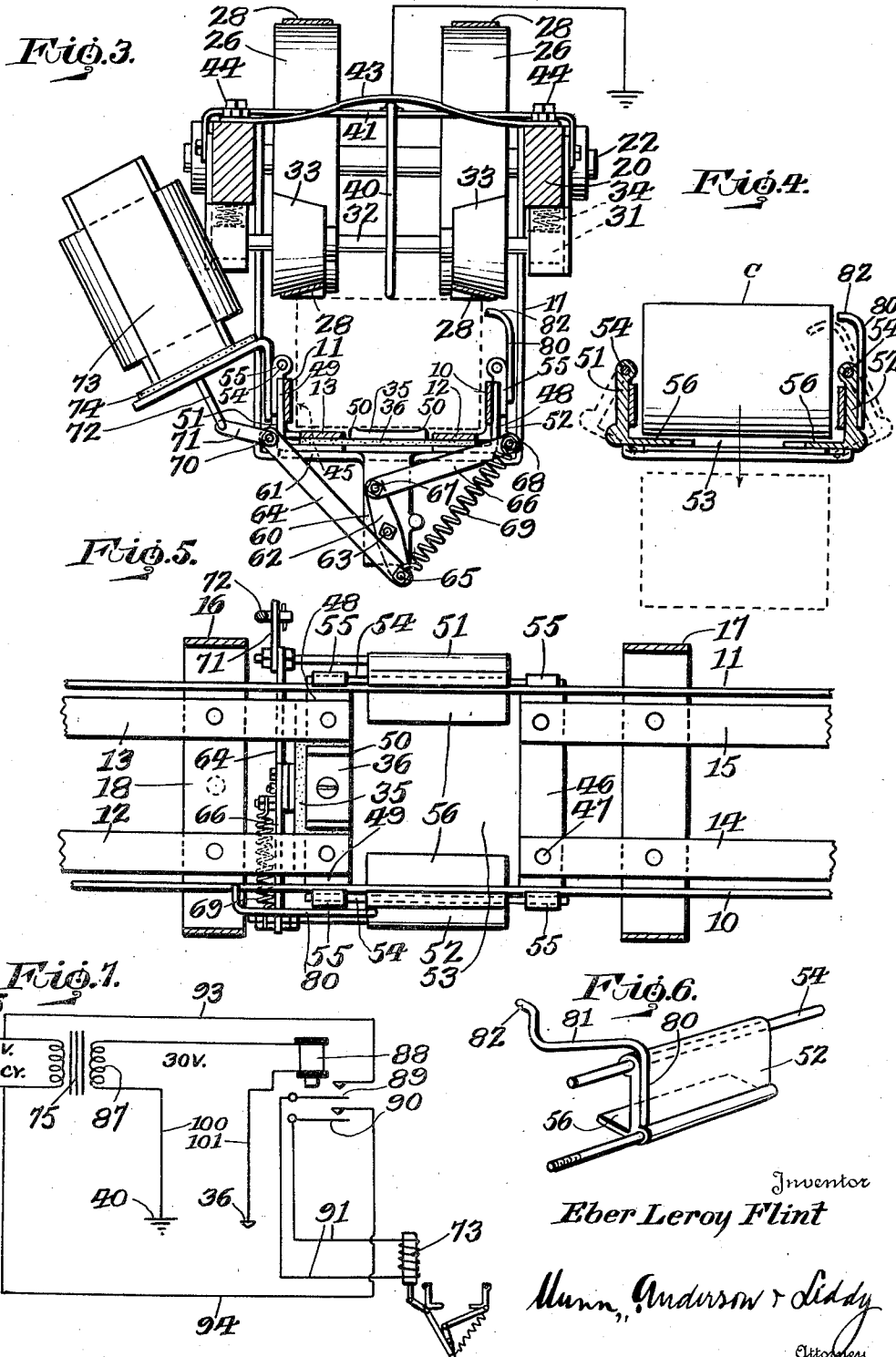
E. L. FLINT

2,270,428

CAN-SORTING MACHINE

Filed July 8, 1939

2 Sheets-Sheet 2



Inventor
Eber Leroy Flint

Munn, Anderson & Liddy
Attorneys

UNITED STATES PATENT OFFICE

2,270,428

CAN-SORTING MACHINE

Eber Leroy Flint, Sheridan, Mich.

Application July 8, 1939, Serial No. 283,482

2 Claims. (Cl. 209—81)

This invention relates to a can-sorting apparatus.

It has been proposed to provide can-sorting machines in connection with labeling machines but such sorting machines contain complicated mechanism and such machines are not always effective for eliminating only the unlabeled cans but also discharging those cans in which the labels may be slightly shifted so that the pair of electrical contacts are frequently bridged by a labeled can whereby the can is discharged and therefore it is necessary to employ workmen to take care of the deficiency in these can-sorting machines.

An object of the invention is the provision of a simple and efficient apparatus for removing cans from a track when labels have not been applied to the cans after the cans have left a labeling machine, the apparatus functioning in such a manner that unlabeled cans will be discarded rapidly at a predetermined point in their travel while the oncoming cans will be held against movement during the elimination so that no labeled cans will be discarded and therefore it is unnecessary to employ a special operator to see that all of the labeled cans are passed on to a predetermined point.

Another object of the invention is the provision of a can-sorting machine in which those cans which have failed to obtain a label after leaving the labeling machine will be eliminated rapidly by the operation of a quick-acting trap which is controlled by an electrical device in circuit with a pair of spaced contacts between which the can must travel, the oncoming cans being held against discharge when an unlabeled can is being eliminated from a track.

A further object of the invention is the provision of a can-sorting machine in which unlabeled cans are eliminated from a track extending from a labeling machine, an opening being provided in the track for the discharge of unlabeled cans but being bridged by a rapidly acting movable means for bridging the opening so that labeled cans may pass beyond the opening, the bridging means being operated by an electrical device which is placed in circuit with a source of current when an unlabeled can reaches the discharge opening with contacts spaced above and below the rolling cans whereby all of the cans which are labeled, whether the labels are slightly off center or not, are passed over the opening without elimination.

This invention will be best understood from a consideration of the following detailed descrip-

tion, in view of the accompanying drawings forming a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications as define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a side view in elevation of a can-sorting machine constructed in accordance with the principles of my invention,

Figure 2 is a plan view of the same,

Figure 3 is a transverse vertical section taken along the line 3—3 of Fig. 1,

Figure 4 is a fragmentary transverse vertical section taken along the line 4—4 of Fig. 1,

Figure 5 is a horizontal section taken along the line 5—5 of Fig. 1,

Figure 6 is a view in perspective of one of the can-releasing means, and

Figure 7 shows more or less diametrically the electrical circuit for controlling the can-releasing means.

Referring more particularly to the drawings, 10 and 11 designate a pair of rails forming the side bars of a way, the bars being adapted to prevent lateral displacement of the cans as they are moved along the way after being discharged from the labeling machine (not shown). A pair of tracks 12 and 13 are disposed in a horizontal plane between the rails 10 and 11 and below the lower edges of said rails. The rails and these tracks form an extension of the way which is associated with the labeling machine.

A second pair of tracks 14 and 15 are disposed in the same plane as the tracks 12 and 13 and have their inner ends spaced from the inner ends of the tracks 12 and 13.

A pair of U-shaped brackets 16 and 17 have their bight portions 18 secured respectively to the underface of the tracks 12, 13 and 14, 15 with the legs of the U-shaped members extending vertically upwardly from the tracks and in spaced relation with the outer faces of the rails 10 and 11.

Bearing bars 20 and 21 are secured in any approved manner to the outer faces of the legs of the U-shaped brackets. A pair of shafts 22 and 23 are mounted in bearings 24 and 25, respectively, formed at the ends of the bars 20 and 21. Spaced wheels 26 are secured to the shaft 22 while spaced wheels or drums are secured to the shaft 23. These wheels or drums have substantially the same diameter and belts 28 are trained on pairs of the wheels 26 and 27 located adjacent

each bar 20 or 21 and are adapted to engage the edges of the cans beyond the edges of the labels for moving the cans along the way as will be presently described. A grooved pulley 29 is secured to the outer projecting end of the shaft 23 and is adapted to be driven by a belt in any approved manner.

A plate 30 is connected at its upper end to each of the bars 20 and 21 and depends below said bars and is provided with a bearing 31 for supporting the ends of a shaft 32 which extends transversely of the way and between pairs of the wheels 26 and 27. A pair of cone-shaped pulleys 33 are secured to the shaft 32 in a position to press downwardly upon the belts 28. The belts at this point are inclined at an angle to the horizontal so that merely the opposite edges of the cans will be engaged by the belt for causing the belt to contact with the cans only at these points while the belt will be maintained out of engagement with the labels on the cans to prevent marring of the labels. Springs 34 press upon the bearings 31 of the shaft 32 so that the pulleys 33 may be automatically raised as the cans pass beneath said pulleys.

A plate 35 formed of insulating material is secured to the underface of the inner ends of the tracks 12 and 13. An electrical contact member 36 is secured to the upper face of the member 35 with the ends of the member 36 spaced from the inner edges of the tracks 12 and 13. This contact is in a position to come in contact with the intermediate portions of unlabeled cans just before the cans reach the opening formed by the spacing of the inner ends of the tracks 12, 13 and 14, 15. Thus it will be seen that the contact 36 is insulated from the machine.

A metallic rod 40 has one end secured to a horizontally disposed bar 41 which has its ends 42 connected to the outer faces of the bars 20 and 21 adjacent the member 30. This bar is bent slightly upwardly and is maintained in position by means of a strap 43 connected at its ends to the upper edges of the bars 20 and 21, as shown at 44. The rod 40 extends rearwardly between the wheels 27 and is then curved downwardly and inwardly, as shown at 45, so that its free end 45a will be directly above the contact 36 located substantially in a vertical plane disposed midway between the rails 10 and 11. The member 43 maintains the free end of the arm 40 in a predetermined position so that it will engage the side walls of the cans C when the cans are moved under the free end of the arm.

A transverse bar 46 may or may not be formed of insulating material and is connected to the inner ends of the tracks 14, 15, as shown at 47. The ends of the bar 46 are connected by means of brackets 48 with the rails 10 and 11. The strip of insulating material 35 is connected by means of brackets 49 to the rails 10 and 11.

The contact member 36, which is also connected to the insulating strip or bar 35, is provided with upstanding ribs 50 at its ends so that when the can reaches the contact 36 these ribs will raise the can above the tracks 12 and 13 in order to prevent a short circuit as will be presently explained.

A pair of L-shaped members 51 and 52 are located adjacent the lateral ends of an opening 53 in the way which is formed by the spacing of the inner ends of the tracks 12, 13 and 14, 15 from each other. These L-shaped members are pivotally mounted on rods 54 which have their

ends mounted in bearings 55 secured to the rails 10 and 11. The members 51 and 52 are each provided with right angularly disposed plates 56 which normally extend inwardly of the opening 53 and complete the way across the opening and are located in horizontal alignment with the tracks 12, 13 and 14, 15 so that labeled cans will pass along the way without being discharged through the opening 53.

A bracket 60 depends vertically from a transversely disposed bar 61 which has its ends secured to the underface of the horizontal portions of the L-shaped brackets 48 and 49 just below the insulating strap 35.

A lever 62 is pivotally mounted on a bolt 63 carried by the depending bracket 60. A link 64 is pivotally connected on a bolt 65 on the lower end of the lever 62. A link 66 is pivotally connected on a bolt 67 carried by the upper end of the lever 62. A rod 68 is secured to the member 52 and projects laterally therefrom at a point where the member 56 joins the member 52. The outer end of the link 66 is pivotally connected on the rod 68. A spring 69 has one end connected with the rod 68 while the other end is connected to the bolt 65.

A rod 70 extends laterally from one end of the member 51 where the member 56 joins the member 51. The upper end of the link 64 is pivotally mounted on the rod 70 as is one end of a link 71. The last-mentioned link is preferably formed of copper or some non-magnetic material and it may be in the form of a chain.

An armature 72 projects from a solenoid 73 carried by a bracket 74 which is secured to an arm of the U-shaped member 16.

A transformer 75 is suspended from the bar 21 in any approved manner.

A vertically disposed arm 80 is secured to the member 52 and is bent rearwardly, as shown at 81, and then inwardly, as shown at 82, towards the track 12 and is adapted to be projected inwardly to engage a can moving along the way when the member 52 is oscillated to the dotted line position as shown in Fig. 4.

Referring more particularly to Fig. 7 it will be seen that the transformer 75 is connected with the ordinary house current by the wires 85 and 86. The secondary coil 87 of the transformer is connected with a relay 88. The relay and the coil 87 are respectively connected with the rod 40 which is represented as a ground and the contact member 36. A pair of switches, designated generally by the numerals 89 and 90 which are connected together and operated by the relay 88 closes the circuit to the solenoid 73 by means of wires 91 and 92 and through the wires 93 and 94 with the usual house current indicated by the wires 85 and 86 so that while the relay 88 is actuated by thirty volts, the solenoid is influenced by 110 volts directly from the house current. A wire 100 connected the coil 87 with the rod 40 while wire 101 connects the relay 88 with contact 36.

The operation of my device is as follows: After the cans leave the labeling machine (not shown) they will continue along the tracks 12 and 13 and if all the cans are labeled they will pass along the members 56 and onto the tracks 14 and 15 and be conveyed to the proper point for use.

If an unlabeled can moves onto the tracks 12 and 13 this can will pass over the ribs 50 of the contact member 36 and will be raised above the tracks 12 and 13 and will engage the free end

45a of the ground contact 40 and the circuit will be closed to the relay 88 and the switches 89 and 90 will be closed so that the circuit to the solenoid 75 will also be closed. When this happens the armature 72 draws on the links 71 and 64, thereby operating the lever 62 whereby the members 56 at each side of the opening 53 will be withdrawn rapidly from the opening so that the unlabeled can will be discharged immediately through the opening. When the members 52 and 51 are moved outwardly from their upper hinged points 54 the arm will likewise be moved to the dotted line position shown in Fig. 4 whence the free end 82 of the arm 80 will engage the can preceding the unlabeled can and retain the oncoming cans from movement while the unlabeled can is being discharged.

Due to the fact that the contacts 49 and 35 are located directly above and below the can there is no danger of a labeled can being discharged through the opening 53 where the label is slightly misplaced on the can.

The cone-shaped rollers 33 will cause the belt 28 to engage the outer edges of the cans and maintain the cans in a predetermined position so that at the time that a can is moving over the contact member 36 the opposite ends of the can will not engage the rails 10 and 11.

It will be noted from Fig. 3 that the ribs 50 are located on the contact member 35 for raising the cans above the tracks 12 and 13. These ribs may be dispensed with where the contact member 35 is made sufficiently thick to raise the cans above the tracks.

The unlabeled cans are discarded very rapidly through the opening 53 so that only a momentary electrical impulse is required to move the member 56 away from the opening and as soon as the can leaves the contacts 36 and 40 the members 56 are returned by the spring 69 to their normal operative position.

I claim:

1. In a can-sorting machine, ways for conducting cans along a definite path and provided with an opening through which unlabeled cans are discharged, L-shaped members located at opposite sides of the opening, each L-shaped member including a vertically disposed leg and a horizontally disposed leg integrally formed with the vertical leg, means for pivotally mounting the upper end of each vertical leg of the L-shaped

member above the way, the horizontally disposed leg of each of the L-shaped members normally projecting into the opening for completing the way to permit labeled cans to pass over the opening, means for positively swinging the L-shaped members outwardly from the opening and including a lever pivoted intermediate the ends thereof below the way, a rod projecting laterally from an end of each L-shaped member where the legs of said members are joined, a link connecting one end of the lever with a rod on one L-shaped member, a bell crank secured to the rod on the other member, the free end of one arm of the bell crank being connected to the other end of the first lever and an electrically operated means for causing oscillation of the other arm of said bell crank and returning the levers and L-shaped member to normal position, contacts connected with the electrically operated means and with a source of current and adapted to be bridged by an unlabeled can.

2. In a can-sorting machine, ways for conducting cans along a definite path and provided with an opening through which unlabeled cans are discharged, L-shaped members located at opposite sides of the opening, each L-shaped member including a vertically disposed leg and a horizontally disposed leg integrally formed with the vertical leg means for pivotally mounting the upper end of each vertically disposed leg of the L-shaped members above the way, the other leg of each of the L-shaped members normally projecting into the opening for completing the way to permit labeled cans to pass over the opening, means for positively swinging the L-shaped members outwardly from the opening and actuated by the passage of an unlabeled can for causing the unlabeled can to drop through the opening, an arm extending from the upper end of the vertical leg of one L-shaped member and having a finger located at a right angle to the arm, said finger adapted to be moved transversely of the path of the cans for retaining the oncoming cans against movement when the L-shaped members are swung outwardly and when the unlabeled can is falling through the opening, and means for causing the L-shaped members to be returned to operative position in the opening after the unlabeled can has dropped through said opening.

EBER LEROY FLINT.