Oct. 7, 1924. 1,510,616

C. H. WILD

CAN SORTING MACHINE

Filed Dec. 10, 1923 4 Sheets-Sheet 1

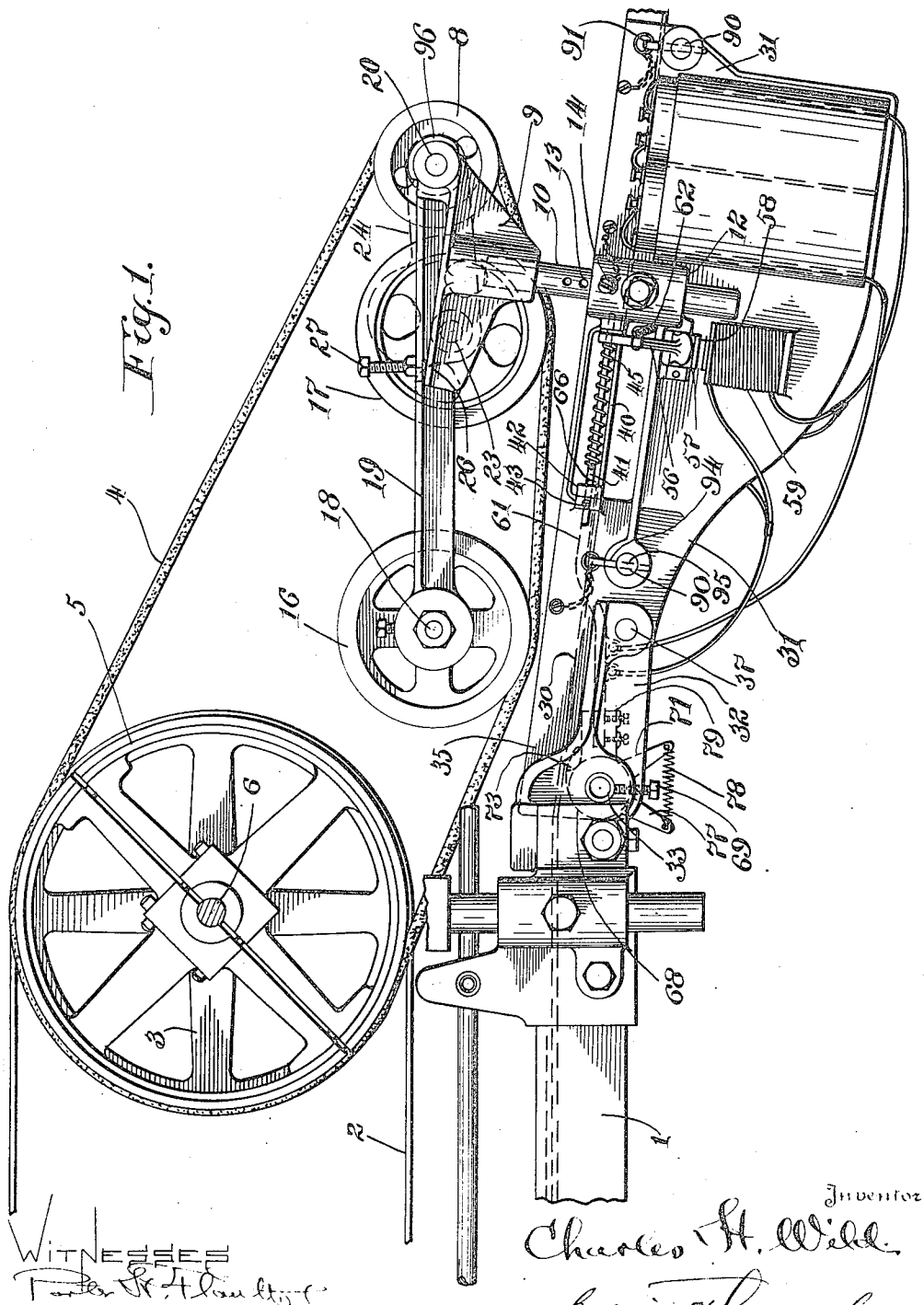


Fig. 1.

Witnesses

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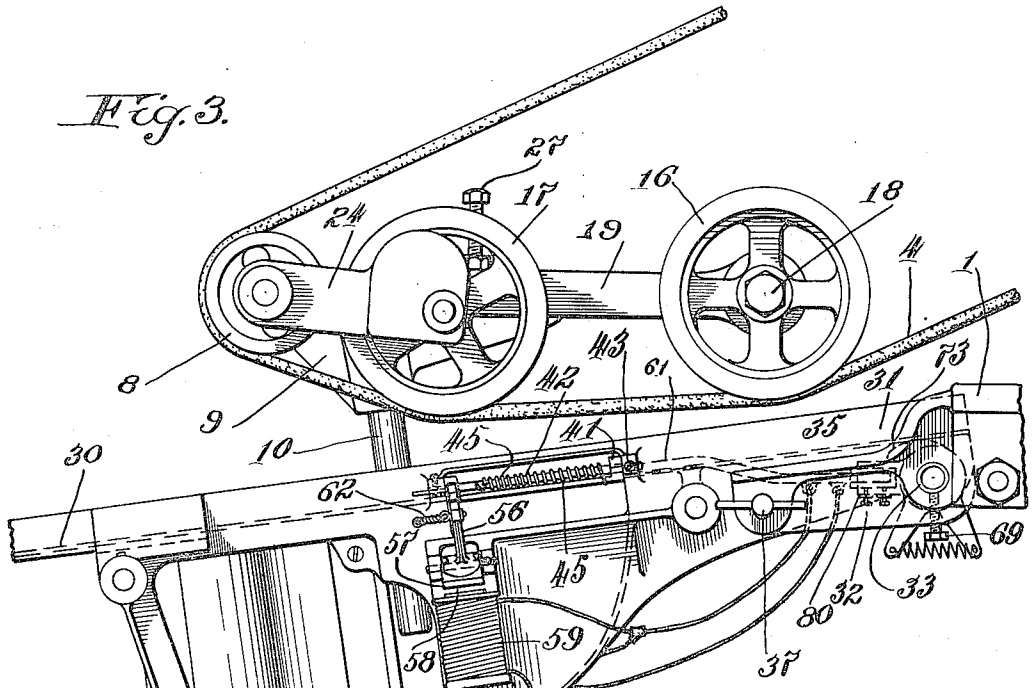
Oct. 7, 1924. 1,510,616

C. H. WILD

CAN SORTING MACHINE

Filed Dec. 10, 1923 4 Sheets-Sheet 2

Fig. 3.



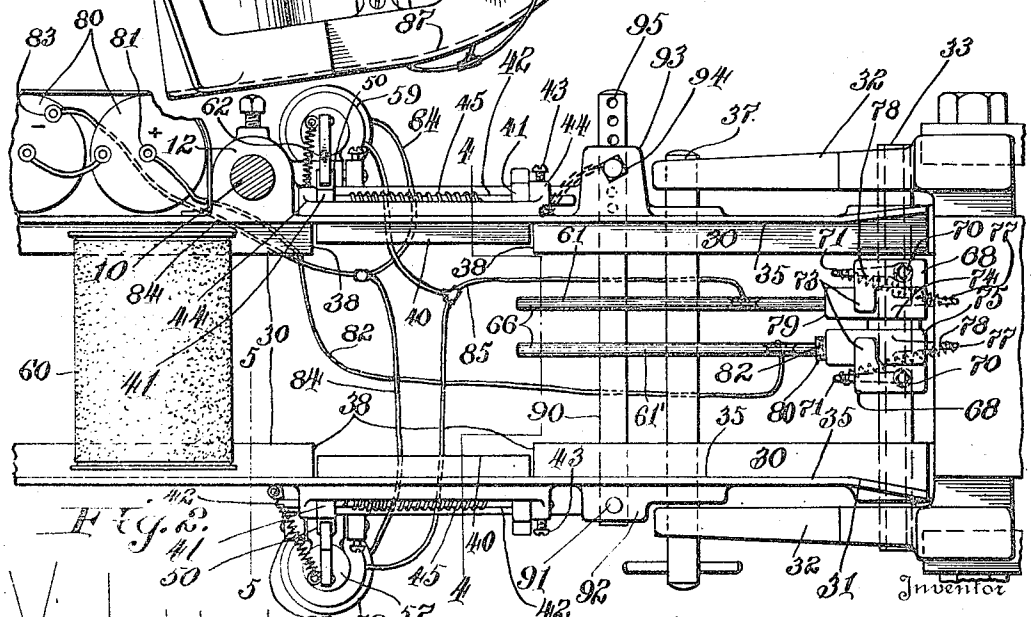


Fig. 2.

WITNESSES

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Oct. 7, 1924. 1,510,616

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CAN SORTING MACHINE

Filed Dec. 10, 1923 4 Sheets-Sheet 3

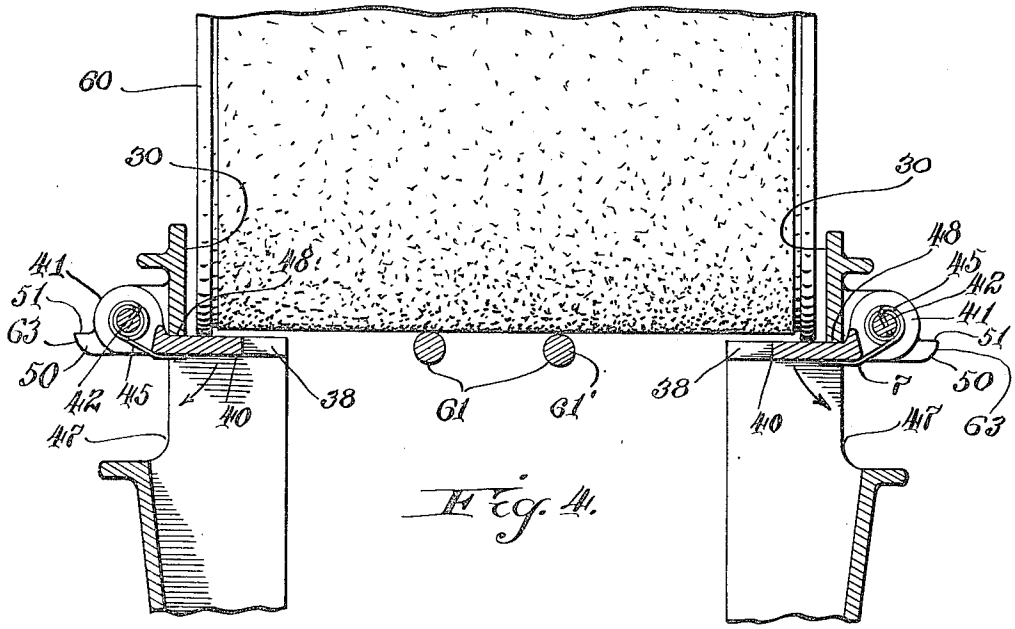


Fig. 4.

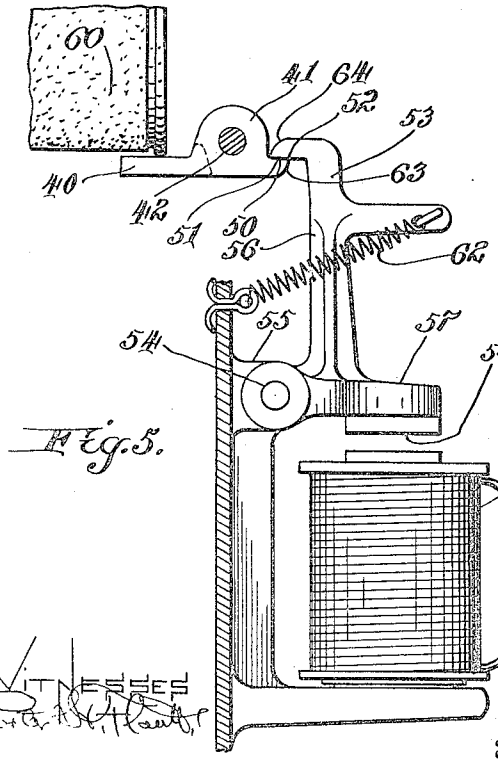


Fig. 5.

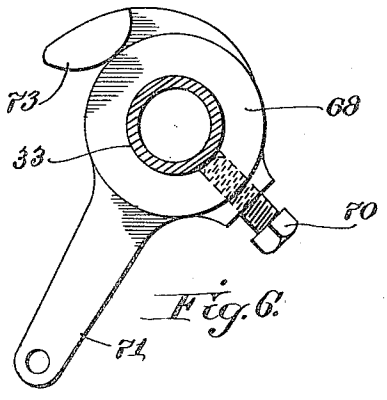


Fig. 6.

Witnesses

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Oct. 7, 1924. 1,510,616

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CAN SORTING MACHINE

Filed Dec. 10, 1923 4 Sheets-Sheet 4

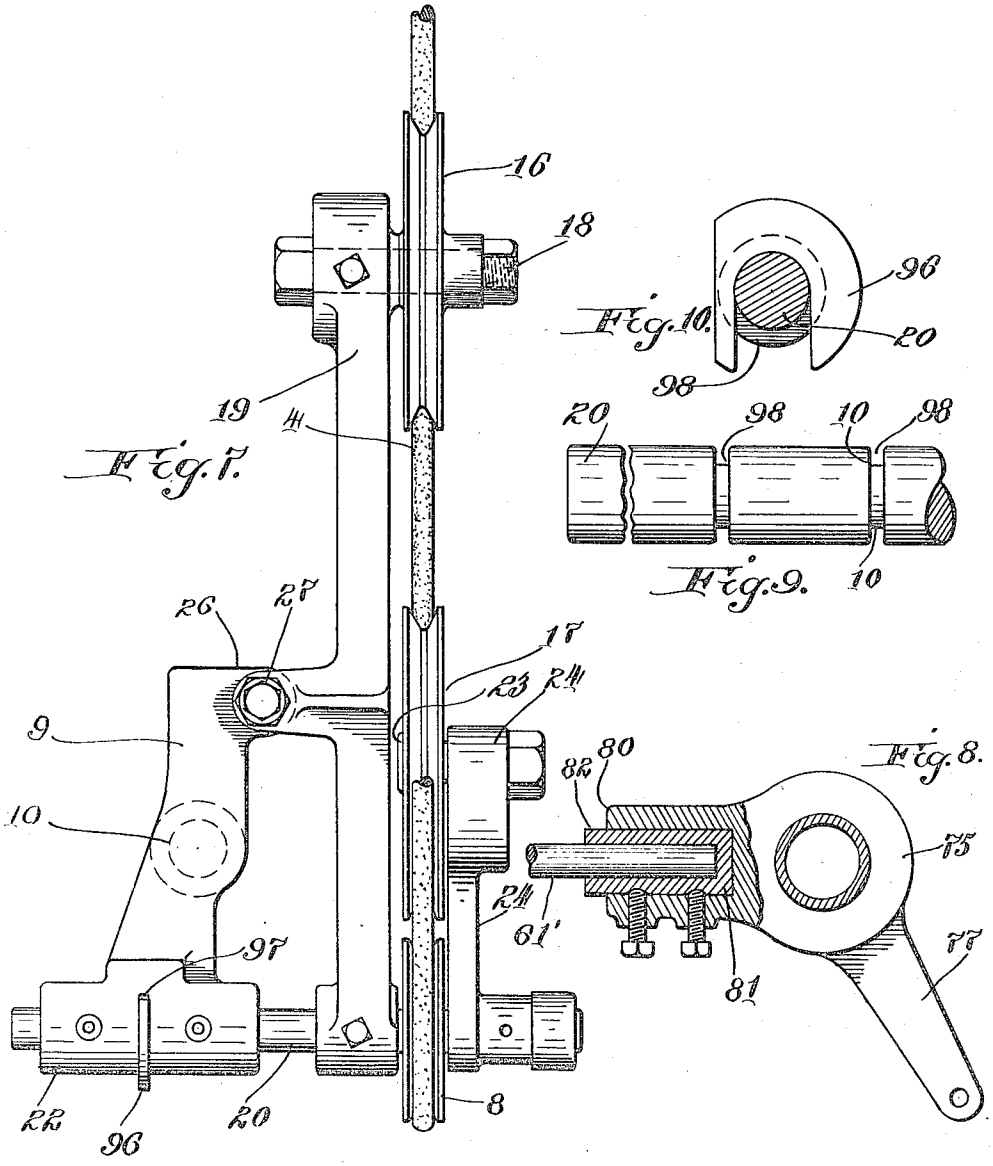


Fig. 7.

Fig. 10.

Fig. 9.

Fig. 8.

Witnesses

Inventor

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Patented Oct. 7, 1924. 1,510,616

UNITED STATES PATENT OFFICE.

CHARLES H. WILD, OF BALTIMORE, MARYLAND, ASSIGNOR TO BURT MACHINE COMPANY, INCORPORATED, A CORPORATION OF MARYLAND.

CAN-SORTING MACHINE.

Application filed December 10, 1923. Serial No. 679,660.

To all whom it may concern:

Be it known that I, CHARLES H. WILD, a citizen of the United States of America, residing in the city of Baltimore, State of Maryland, have invented certain new and useful Improvements in Can-Sorting Machines, of which the following is a specification.

The invention relates to can labelling machines, or more particularly to machines for handling or conveying labelled or wrapped cans, the function or purpose of the device of the present invention being to detect and discard cans which have been missed in the labelling or wrapping operation.

In every lot of labelled cans there are apt to be a few cans which have been missed in this way and come through the machine without the label or wrapper, so that there is nothing to indicate the nature, origin, etc. of the contents. In this condition they are not acceptable to the retailer or to the consumer, and must be detected and removed in order that the product may be one hundred per cent perfect and acceptable.

In many large canneries the cans are packed in cartons or boxes by automatic or semi-automatic machinery under conditions which make detection and separation of the unwrapped cans during the packing operation so difficult as to necessitate the employment of additional help to sort the cans and remove those which are unlabelled or partially labelled.

The object of the present invention is to provide an automatic detecting and sorting device whereby the unlabelled or unwrapped cans are located and rejected, dispensing with the necessity for inspecting or handling the cans by human agency for this purpose. This device may be in the nature of an attachment to a labeller or wrapper, or it may be a separate machine inserted in any convenient point in the conveyor system.

Described in general terms, the device consists of a runway for the cans, a portion of the runway being mounted to yield to the weight of the cans or otherwise to open and release the cans, the movable portion of the runway being normally locked in position to support the cans and pass them forward in the direction of the feed, the apparatus also including electrical means for releasing said lock, the circuit of said electrical means being normally open and having spaced contact members in the path of the cans, which contact members are electrically connected, closing the circuit, releasing the lock and the movable portion of the ways whenever an unwrapped or unlabelled can passes along the ways, engaging said contact members, the exposed metal of the can serving to connect them electrically and close the circuit whereby the latch supporting the removable portion of the ways is released, dropping the unwrapped or unlabelled can as aforesaid.

Preferably the apparatus includes means for feeding the cans and holding them in close contact with the ways and contact fingers, and making the operation of the machine positive.

In the accompanying drawing I have illustrated a detecting apparatus embodying features of my invention in the preferred form. In the drawing—

Figure 1 is an elevation of the detector shown as an attachment to a can labelling machine, the view being taken from the side of the machine.

Figure 2 is a plan of the same.

Figure 3 is an elevation, taken from the side of the machine opposite to Figure 1.

Figure 4 is a transverse section taken on the line 4, 4 of Figure 2.

Figure 5 is a section through the frame of the machine on the line 5, 5 of Figure 2, showing the latch controlling the movable portion of the ways, said movable portion, and the electrical element for releasing said latch.

Figure 6 is an elevation showing the stationary detector spring arm and stop.

Figure 7 is a plan of the detector feed and presser belt and pulleys, the drive pulley for the same and a portion of the belt being removed for convenience of illustration.

Figure 8 is a fragmentary elevation of the base of one detector finger and detector spring arm, the detector shaft being shown in section, and the hub carrying the finger and arm being broken away to illustrate the manner of insulating the base of the finger.

Figure 9 is a plan of one end of the detector feed belt pulley shaft, and

Figure 10 is a section through said shaft on the line 10, 10 of Figure 9 illustrating the manner of locking said shaft in adjusted position.

Referring to the drawings by numerals, each of which is used to indicate the same or similar parts in the different figures, I have illustrated the detecting attachment or detector of the invention as supported upon the delivery end of a can labelling machine 1 and extending forwardly therefrom in the direction in which the cans are fed.

The illustration in Figure 1 includes a fragment of the can feed belt 2 of the labeller, and the can feed belt pulley 3 which carries the labeller feed belt 2. The can feed and presser belt 4 of the detector mechanism is driven by and from a pulley 5, which is in turn driven from the can feed belt 2 of the labeller, the pulley 5 being shown in the drawing as secured to a shaft 6, to which the pulley 3 carrying the can feed belt is likewise secured, it being obvious that the driving connection referred to may be made to equal advantage in various ways.

The detector feed and presser belt 4 is led from drive pulley 5 over presser belt pulley 8 mounted in an adjustable bracket 9 known as the presser belt pulley bracket. This bracket 9 is carried on a stud 10 mounted for vertical adjustment in a boss 12 on the detector frame, the stud 10 being provided with a series of spaced holes 13 to be engaged by a pin or screw 14 passed through a corresponding hole in the boss 12. The adjustment provides for a considerable variation as to the diameter of the cans handled by the detector. The bracket 9 further provides means for applying tension to the belt 4 and pressure to the cans. In the present instance, as illustrated, this means is in the form of gravity controlled agencies consisting of two pulleys 16 and 17 engaging the lower span of the belt 4 from above, as indicated, at spaced points of contact, the can engaging elements of the detector, i. e., the detector fingers and the movable portions of the ways to be described, being beneath the portion of the belt 4 between the said points of contact, the function of the belt 4 being not only to provide a uniform feed of the cans, in some instances checking their speed as they roll down the inclined ways, but to hold them in close contact with the detector mechanism and to apply a downward pressure which will insure the discharge of detected cans, preventing displacement and bouncing of the cans, giving good contact and overcoming the resistance of the parts.

The pulley 16, it being understood that both pulleys 16 and 17 are in the nature of idlers or tension pulleys, is mounted to rotate on a stud 18, which stud is seated in the swinging end of an arm 19 of comparatively heavy construction and of considerable length. This arm is pivoted on the presser belt shaft 20, which carries the presser belt pulley 8 already described, and which is in turn mounted in a boss 22 on the bracket 9. The other tension pulley 17 is mounted on a stud 23 carried in the end of a swinging arm 24, also mounted at its opposite end on the shaft 20 to swing about the same, the swinging end of the shaft 24 being enlarged or weighted as shown to increase the tension applied to the belt, the extra length of the arm 19 giving sufficient weight and pressure to be applied by the pulley 16. Both arms 19 and 24 swing downward by gravity, applying pressure to the belt. The spacing of the pulleys 16 and 17 results from the difference in length of the arms 19 and 24, the arm 19 being the shorter.

To prevent bumping and undue resistance to the advance of the cans by the portion of the belt beneath the pulley 16, in case the belt 4 should stretch, unduly, lowering the position of the pulley 16, I have shown a stop surface 26 on the bracket 9 and a stop screw 27 seated in the arm 19 and adjustable to determine the bottom position of the arm.

The detecting apparatus further comprises ways 30 mounted in detector frame 31, which frame in the form of the invention shown is supported on the delivery end of the labeller frame, the detector frame being supported on spaced brackets 32 projecting from the labeller frame and secured thereto in any suitable manner.

In the preferred construction shown the detector frame is secured to the brackets 32 by means of a transverse shaft 33 which passes through the brackets 32 near the end of the labeller and through the longitudinal members 35, 35 of the detector frame. The detector frame is mounted on the shaft 33 to swing vertically and is supported in the position shown by means of a transverse pin 37 passed through the brackets 32 at the extreme outer ends thereof and through registering holes in the longitudinal members 35 of the detector frame. When the pin 37 is withdrawn the detector frame swings downward into a depending or vertical position, reducing the space occupied by the combined labeller and detector.

Normally, that is, in the operative position of the detector, the ways 30 are inclined downwardly and forwardly in the direction of the feed, so that the cans tend to roll through the detector in the direction of the labeller feed even in the absence of the feeding motion imparted to them by the belt 4, which by means of the adjustment 10, 12, 13 and 14 described, is spaced above the ways by a distance slightly less than the diameter of the cans being handled. Near the center of the detector ways and

beneath the span of the feed belt between the pulleys 16 and 17, the ways 30 are discontinued for a space of several inches indicated by reference character 38, the space being sufficient to provide for the downward passage through the ways of cans of the greatest diameter intended to be treated in the machine in question. The space 38 thus formed is spanned by hinged supports or bridges 40, one for each way normally in alignment with the ways and bridging the space 38. These hinged supports or bridges 40 are shown in transverse cross-section in Figure 4 and in plan in Figure 2.

Each bridge member 40 is in the form of a plate preferably of a width and thickness corresponding to the ways. Each bridge member 40 is provided with ears 41 outside the line of the ways, the said ears being apertured in alignment to receive a hinge pin 42, one for each bridge member passing longitudinally through both ears. There are also ears 44 projecting from the frame on each side and apertured to receive the pins 42 whereby the bridge members are pivotally mounted on the detector frame. The shaft or pin 42 is preferably secured in the ears 44 as by set screw 43. A coil spring 45 encircles each pin 42, being secured at one end to the pin which is stationary and bearing at the other end against the corresponding bridge member 40, tending to maintain them normally in horizontal position as shown in Figure 4. In this figure it will also be noted that the detector frame members 35 are apertured at 47 on each side to permit the bridge members to swing through the frame about the pins 42, and that the top edge 48 of this opening serves as a stop to determine the upper or horizontal position of the bridge members in which they are normally held by the springs 45.

Normally the bridge members 40 are locked in position in alignment with the ways, so that the perfectly labelled or wrapped cans pass along the ways and over the bridge members without interruption, the presence of the detecting apparatus having no effect on these cans other than adding a few inches to the length of the path they travel in passing through the apparatus. When an unwrapped or unlabelled can enters the detector, however, it completes the electric circuit referred to by contacting both detector fingers, releasing the bridge members in a manner now to be described, so that it is permitted to drop through the opening 38 in the ways on to the discard chute or into a suitable receptacle.

The ears 41 on the bridge members are illustrated in detail in Figure 5. These with the pins 42 and ears 44 on the machine frame form the hinges on which the bridge members swing. The electrically controlled latch to which reference has been made, consists of a detent 50 on each of the bridge members, which detents are shown as integral with the ears 41 and each detent projecting from the ear oppositely to the corresponding bridge member as illustrated in Figure 5. This detent 50 has a flat engaging surface 51 disposed in the direction of the turning moment applied to the bridge member by the weight of the cans 60, said turning moment being taken about the hinge pins 42, and this flat engaging surface is normally engaged by an oppositely disposed flat engaging surface 52 on the pivoted latch member 53, the said pivoted latch member 53 being pivotally mounted on the detector frame by means of a pin 54 passing through the latch member and through ears 55 projecting from the frame. As shown the latch member 53 is in the form of a bell crank having two arms substantially at right angles to each other, comprising an upright arm 56 from which the engaging surface 52 projects at right angles, and a horizontal arm 57 which carries an armature 58 which co-operates with an electromagnet 59 supported on the frame and normally spaced from the magnet by a short interval corresponding to the throw of the latch, i. e., the motion of the swinging latch lever 53 required to move the engaging surfaces out of contact and release the latch.

From the description immediately foregoing, it will be apparent that when the electromagnet 59 is energized, drawing the armature 58 into contact therewith, that the engaging surfaces 52, 51 will be thrown out of contact, releasing the bridge members which are normally rigidly supported by the latch. There is, however, a tension sufficient to support the bridge members themselves in normal position imparted to them by the springs 45 which encircle the hinge pins 42, but this tension is not sufficient to support the can which encounters the bridge members the instant the latch is released. The weight of the can or this weight plus the pressure of belt 4 on the contrary is sufficient to turn the bridge members downward to vertical position, in which position the can is released and discarded, being disposed of or separately retained in any suitable manner as hereinafter described.

As soon as the can has passed out of contact with the bridge members, the springs 45 swing them backward toward normal position. By reference to Figure 5 it will be apparent that in releasing the can, the detent 50 shown therein is swung upward in left-handed rotation, and that when the can is released, it will swing backward in right-handed rotation, the corresponding members on the opposite side of the machine move oppositely.

It will also be apparent from examination of Figure 2 that the contact members

or fingers 61, 61′, already referred to, terminate near the rear end of the bridge members, i. e., the end first encountered by the cans as fed, so that the can is out of contact with these members and the latch controlling circuit is broken prior to the return of the bridge members to normal or supporting position.

Under these circumstances the swinging latch member 53, propelled by the exceedingly light spring 62, will have returned to normal position prior to the return of the bridge member and latch, wherefore the curved rear surfaces 63 of the detent and 64 of the latch will come into contact, and the spring 45, being sufficient to overcome the spring 62, will force the swinging latch 53 backward, causing these surfaces to pass and permitting the latch to re-engage as shown in Figure 5.

The contact fingers referred to consist of two rods or wires 61, see Figures 2 and 4, which rods form spaced terminals of the electric circuit to be described. These fingers normally lie between and slightly above the ways, as shown in Figures 1, 2, 3 and 4. These fingers are further pivotally mounted at their rear ends and spring supported in the normal position in which they are shown in the figures referred to, to give uniform contact with the exposed metal surface of the unlabelled cans. The forward ends 66 of the fingers are curved upward into the path of the cans and the forward portion is turned in the direction of the ways to extend the path of contact with the cans.

The springs which support the fingers not only permit the fingers to yield so that the cans rest on the ways during contact of the fingers with the cans, but permit the fingers to further yield and swing downwardly in response to the pressure of the detected cans when released and dropped from the ways, but in the form of the invention shown this additional yielding as the cans are dropped is limited as the fingers extend but a short distance into the path followed by the detected cans as they are dropped.

Having more specific reference to the structure illustrated, there are four collars or two pairs of collars comprising part of the detector finger mechanism mounted on the shaft 33. Two of these collars 68, 68 are non-rotatably secured to the shaft 33 which is in turn clamped within the bracket 32 by a set screw 69, see Figure 1. These collars 68 are in the form of the invention shown secured to the shaft by set screws 70, and each of these collars 68 is provided with a projecting spring arm 71 extending downward and forward in the direction of the feed, and a stop member 73 spaced upwardly from the arm by an arc of about 60°. The collars of the other pair 74, 75 are free to rotate about the shaft 33 and each is provided with a radially placed arm 77 extending downwardly and backwardly in a direction opposed to the feed and connected at its extreme outer end by a helical spring 78 with the corresponding end of the corresponding arm 71 on the adjacent stationary collar 68. Each of the collars 74, 75 is also provided with a radially projecting boss 79, 80, each said boss having a radially extending aperture to receive the end of the corresponding finger 61, 61′. The boss 80 of the collar 75 differs, however, from the boss 79 of the collar 74 in that the aperture 81 therein is enlarged so that it considerably exceeds the diameter of the end of the finger rod 61, the excess space being occupied by an insulating sleeve or thimble 82 of hard rubber or other suitable insulating material. While both fingers may be thus insulated, the insulation of one finger 61′ only is necessary.

It will be apparent that the tension of the springs 78 tends to rotate each finger upwardly or in a righthanded direction about the shaft 33, as seen in Figure 1, bringing the bosses 79, 80 each into contact with the corresponding stops 73, holding the detector fingers in the normal position illustrated in Figure 1.

The detector circuit which operates the bridge latch described and illustrated, particularly in Figure 5, comprises any suitable source of electricity 80 shown in the form of a battery. In accordance with the illustration the plus terminal of the battery 81 is connected by a wire 82 to one of the detector fingers. In the illustration the plus terminal 81 is connected by the wire 82 to the insulated finger 61′. The minus terminal 83 of the battery is as shown connected by wires 84 to one end of the coil of each magnet 59, the other end of each magnet coil being connected by wire 85 to the other detector finger 61. The fingers 61, 61′ form terminals of the circuit which are normally out of contact, the circuit shown being normally open.

It will be apparent that with the mechanism described, the wrapped or labeled cans may be passed along the ways over the detector fingers and delivered in the usual manner, the bridge members spanning the openings 38 in the ways, remaining locked in position, the wrapper or label serving as insulation, which prevents the fingers 61, 61′ from becoming electrically connected as the cans pass over them, but when and if an unwrapped or unlabelled can is passed along the ways, the contact of the two fingers with the metal walls of the can serves to complete the circuit which is normally broken at the fingers by the spacing of the fingers and the insulation 82 in the boss 80, insulating the finger 61′ from the

frame of the machine. Under these circumstances the magnets 59 are energized, the latch is released, the bridge members 40 swing downward impelled by the weight of the can or by the weight of the can plus the pressure of the belt 4, to which the springs 45 yield, and the can is dropped. As soon as the can passes the fingers, the electrical connection is broken, the swinging latch 53 is released and returns to normal position, and as soon as the can is dropped the bridges 40 are likewise returned to normal position by the springs 45 which are sufficiently strong, the springs 62 being also sufficiently light to permit the curved surfaces 63, 64 to pass impelled by spring 45, returning the latch surfaces 51 and 52 to engaging position as shown in Figure 5.

The belt 4, while it assists in feeding the cans through the detector mechanism, checking undue speed of the cans in rolling down the ways, also serves the important function of maintaining uniform contact of the cans with the detector fingers 61, giving a good electrical connection serving to effect a positive release of the latches supporting the bridge members whenever an unlabelled or unwrapped can passes along the ways. It also serves to press the cans uniformly in contact with the bridge members, overcoming the resistance of the spring 45 and opening the bridge members when the latch is released, so that the actuation of the parts need not be dependent upon the weight of the cans, the belt being in a way an equalizing agency, giving uniformity and dependability of operation.

Beneath the detector ways 30 and particularly beneath the discard opening 38 and the bridges 40, I have shown a second set of ways known as discard ways 87 on to which the cans are dropped by the bridge members when released and by which they may be delivered to any suitable receptacle.

I have described an adjustment of the pulleys 8, 16 and 17 or rather of bracket 9 carrying these pulleys toward and from the ways to provide for handling cans of different diameters. The device also includes a provision for adjusting the detector frame members 35 laterally to provide for the accommodation of cans of various lengths. It will be noted by examination of Figures 1 and 2 that these side frame members are spaced and held in their relation to each other by transverse rods 90 pinned or otherwise permanently secured at one end in one frame member by means of a pin 91 passing through the rod 90 and boss 92 on the frame member, and adjustably secured in a boss 93 on the other side of the frame, the pin 94 being passed through a suitable hole in the boss and a registering hole in the rod, the said hole in the rod being one of a series of spaced holes 95 provided for the purposes of the said adjustment, the frame members being moved back and forth and the pins placed in the corresponding holes to accommodate cans of various lengths.

It will likewise be observed that the collars 68 which control the position of the collars 74 and 75, carrying the detector fingers, are likewise capable of lateral adjustment, and that the shaft 20, see Figure 7, carrying the pulley 8 and the levers 19 and 24, which in turn carry the pulleys 16 and 17, is adjustable laterally, i. e., in the direction of the length of the shaft in the boss 22 on the bracket 9, the boss being slotted at 97 to admit slotted lock washer 96 which engages circular grooves 98 in the shaft, see Figure 9, the engagement of the lock washer with the grooves 98 and the slot 97 serving to hold the shaft in adjusted position, and the spacing of the grooves 98 giving a series of positions of adjustment. This adjustment provides for suitable alignment of the belt with the centers of the cans in the various positions of the side frames 35, it being apparent that the pulley 5 which drives this belt, see Figure 1, may be likewise adjusted along the shaft 6.

The operation of said adjustments and the relation of the same to the sizes of the cans being handled, have been fully explained.

I have thus described specifically and in detail a single embodiment of my invention in order that the nature and operation of the same may be clearly understood, however, the specific terms herein are used descriptively rather than in their limiting sense, the scope of the invention being defined in the claims.

What I claim and desire to secure by Letters Patent is:

1. In a sorting apparatus for detecting and discarding unwrapped or unlabelled cans, ways along which the cans may be passed, said ways being discontinued at an intermediate point for a space exceeding the diameter of the cans being handled, movable means for bridging said space, means for supporting said bridging means in position to span the opening in the ways, and carry the cans across said opening, and means actuated by the passage of an unwrapped or unlabelled can for removing the support for said bridging means, releasing the same and dropping the can from the ways through said opening.

2. In a can sorting machine for discarding unwrapped or unlabelled cans, ways for the cans, said ways being discontinued intermediately, forming a space through which the cans may pass after having traversed a part of the ways, movable bridging means for said opening, a latch normally supporting said bridging means in alignment with the ways, and electrically actuated means in-

cluding a circuit having spaced terminals in the path of the cans whereby each unlabelled or unwrapped can as it passes changes the circuit, releasing the latch and removing the support from the bridging means, permitting the latter to be displaced diverting the can from the ways.

3. In a machine for sorting wrapped or labelled cans, ways along which the cans may be passed, said ways having an opening through which the cans may be released from the ways intermediate of the length of the ways, movable means normally closing said opening, means supporting said closing means in closed position, spanning the opening and confining the cans to the ways, electrical means controlling said closing means including a circuit having circuit changes means extending into the path of the cans whereby the unwrapped cans as they pass change the condition of the circuit, releasing the supporting means and the said closing means, causing the said unwrapped or unlabelled cans to be diverted from the ways.

4. In a sorting apparatus for handling wrapped or labelled cans and separating unwrapped or unlabelled cans therefrom, ways for the cans having an opening intermediate their length for releasing part of the cans, diverting them from the ways, bridging means for spanning said opening, means tending to maitnain said bridging means in position spannng said opening, a latch normally locking said bridging means in spanning position, electrical means controlling said latch including a circuit, and circuit controlling means extending into the path of the cans whereby some of the cans in passing change the condition of the circuit, releasing said latch, permitting the said cans to displace the bridging means whereby they pass through the said opening and are diverted from the ways.

5. The combination with a can labelling machine of can detector mechanism having a runway, means pivotally supporting the runway on the end of the can labeller, and means in addition to said pivot for supporting the detector runway in operative position, said latter means being removable, permitting the detector to swing downward into depending position.

6. In a machine for sorting wrapped or labelled cans, ways along which the cans may be passed, said passage having a delivery and a discard opening, movable means normally bridging said opening, means normally locking said bridging means in position to bridge the opening, electrical means controlling said lock, said electrical means including a circuit having circuit changing means extending into the path of the cans whereby the unwrapped cans as they pass change the condition of the circuit, releasing the bridging means, causing the said unwrapped or unlabelled cans to be admitted to the discard opening.

7. In a sorting apparatus for sorting wrapped or labelled cans and detecting and removing unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means bridging said opening and movable to and from bridging position, electrical means controlling said bridging means, said electrical means including a circuit with circuit changing means in the path of the cans adapted to be actuated by the unwrapped cans to actuate said control and release the unwrapped can.

8. In a sorting apparatus for sorting wrapped or labelled cans and detecting and discarding unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means normally bridging said opening and movable to and from bridging position, means for locking said bridging means in bridging position, and electrical means controlling said lock, said electrical means including a normally open circuit having spaced terminals in the path of the cans whereby the circuit is closed by each unwrapped or unlabelled can as it passes, actuating said control and releasing the can.

9. In a sorting apparatus for sorting wrapped and labelled cans, and detecting and discarding unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means closing said opening and movable to and from closed position, and electrical means controlling said closing means, said electrical means including a normally open circuit and spaced terminals in the path of the cans whereby the circuit is made by the unwrapped cans as they pass, and means for pressing the cans against and holding them in contact with said terminals.

10. In a sorting apparatus for sorting wrapped and labelled cans, and detecting and discarding unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means closing said opening and movable to and from closed position, and electrical means controlling said closing means, said electrical means including a normally open circuit having spaced terminals in the path of the cans whereby the circuit is made by the unwrapped cans as they pass, and means for pressing the cans against and holding them in contact with said terminals and assisting in the operation of said bridging means.

11. In a sorting apparatus for detecting and discarding unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the

ways, means bridging said opening, electrical means controlling said bridging means, said electrical means including a circuit and circuit changing means in the path of the cans whereby the circuit is changed by the unwrapped cans as they pass, and means for pressing the cans downward and holding them in contact with said terminals and said bridging means, said pressing means being in the form of a belt, means for driving said belt, and gravity actuated means including a pulley pressing downward upon said belt.

12. In a sorting apparatus for detecting and discarding unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means bridging said opening and movable to and from bridging position, and electrical means controlling said bridging means, said electrical means including a circuit and circuit changing means adjacent the path of the cans whereby the circuit is changed by the unwrapped cans as they pass, and means for pressing the cans downward and holding them in contact with said terminals and said bridging means, said pressing means being in the form of a belt, means for driving said belt, and gravity actuated means including a plurality of pulleys pressing downward upon said belt at points spaced apart and spanning the electric terminals and the bridging means.

13. In a can detector, ways having a discard opening, bridging means normally closing the discard opening, a hinge for said bridging means, a spring tending to swing the bridging means into alignment with the ways to support the cans over the discard opening, a detent on said bridging means, a latch normally engaging said detent, a spring holding said latch in engagement with said detent whereby the bridging member is locked in bridging position, an electromagnet adjacent said swinging latch member, the latter having a portion adapted to be attracted by said magnet, a circuit including a source of electricity connected to said electromagnet, and a plurality of spaced terminals in said circuit at which said circuit is normally broken, said terminals being in the path of the cans adjacent said discard opening whereby unwrapped or unlabelled cans as they pass engage said terminals, closing the circuit and energizing the electromagnet whereby the latch is released and the pressure of the cam on the bridge overcomes the resistance presented, thereby swinging the bridge out of the discard opening and causing the can to enter the same.

14. In a sorting apparatus for detecting and removing unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means bridging said opening and movable to and from bridging position, electrical means controlling said bridging means, said electrical means including a circuit with circuit changing means in the path of the cans adapted to be actuated by the unwrapped cans, a belt over the ways for pressing the cans downward against the ways and holding them in contact with the circuit changing means, and the bridging means, means providing for adjustment of the belt toward and from the ways to provide for handling cans of varying diameters.

15. In a sorting apparatus for detecting and removing unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means bridging said opening and movable to and from bridging position, electrical means controlling said bridging means, said electrical means including a circuit with circuit changing means in the path of the cans adapted to be actuated by the unwrapped cans, a belt over the ways for pressing the cans downward against the ways and holding them in contact with the circuit changing means, and the bridging means, means providing for adjustment of said belt toward and from the ways to provide for handling cans of varying diameters, and means providing for adjustment of one of the ways toward and from the other to provide for handling cans of different lengths.

16. In a sorting apparatus for detecting and removing unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means bridging said opening and movable to and from bridging position, electrical means controlling said bridging means, said electrical means including a circuit with circuit changing means in the path of the cans adapted to be actuated by the unwrapped cans, a belt over the ways for pressing the cans downward against the ways and holding them in contact with the circuit changing means, and the bridging means, and means providing for adjustment of the belt laterally and for adjustment of one of the ways toward and from the ways to provide for handling cans of varying diameters, and means providing for adjustment of one of the ways toward and from the other to provide for handling cans of different lengths.

17. In a sorting apparatus for detecting and removing unwrapped or unlabelled cans, ways along which the cans may be passed, a discard opening leading from the ways, means bridging said opening and movable to and from bridging position, electrical means controlling said bridging means, said electrical means including a circuit with circuit changing means in the path of the cans adapted to be actuated by the unwrapped cans, means for securing one way

in a plurality of positions to provide for lateral adjustment thereof, and permit the handling of cans of different lengths.

18. In a sorting apparatus for detecting and sorting unwrapped or unlabelled cans, and separating them from the wrapped cans, ways along which the cans may be passed, a discard opening leading from the ways, means normally bridging said opening movable to and from bridging position, electrical means controlling said bridging means, said electrical means including spaced terminals in the path of the cans whereby the circuit is made by the unwrapped and unlabelled cans as they pass, said terminals being in the form of fingers between the ways and projecting along the ways, said fingers being pivotally mounted to swing downward, yielding means tending to maintain the fingers in the path of the cans and permitting them to swing downwardly in response to the pressure of the cans.

19. In a sorting apparatus for detecting and sorting unwrapped or unlabelled cans, and separating them from the wrapped cans, ways along which the cans may be passed, a discard opening leading from the ways, means normally bridging said opening movable to and from bridging position, electrical means controlling said bridging means, said electrical means including spaced terminals in the path of the cans whereby the circuit is made by the unwrapped and unlabelled cans as they pass, said terminals being in the form of fingers between the ways and projecting along the ways, said fingers being pivotally mounted to swing downward, yielding means tending to maintain the fingers in the path of the cans and permitting them to swing downwardly in response to the pressure of the cans, one of said fingers being insulated from the frame of the machine.

20. In a machine for sorting wrapped or labelled cans, ways along which the cans may be passed, said passage having a delivery and a discard opening, movable means normally bridging said opening, means normally locking said bridging means in position to bridge the opening, electrical means controlling said lock, said electrical means including a circuit having circuit changing means extending into the path of the cans whereby the unwrapped cans as they pass change the condition of the circuit, releasing the bridging means, causing the said unwrapped or unlabelled cans to be admitted to the discard opening, means for supporting one of the ways in a plurality of positions providing for lateral adjustment thereof to accommodate cans of different lengths.

21. In an apparatus for sorting wrapped or labelled cans, and detecting and removing unwrapped or unlabelled cans, ways along which the cans may be passed, a passage leading from the ways, means for closing said passage movable to and from closed position, electrical means controlling said closing means, said electrical means including a circuit with circuit-changing means in the path of the cans adapted to be actuated by the unwrapped cans to move said closing means, and means for pressing the cans into close engagement with said circuit-changing means.

Signed by me at Baltimore, Maryland, this 30th day of November, 1923.

CHARLES H. WILD.

Witnesses:

CHAS. H. RUTLEDGE,

G. M. ALBRIGHT.