

April 11, 1939.

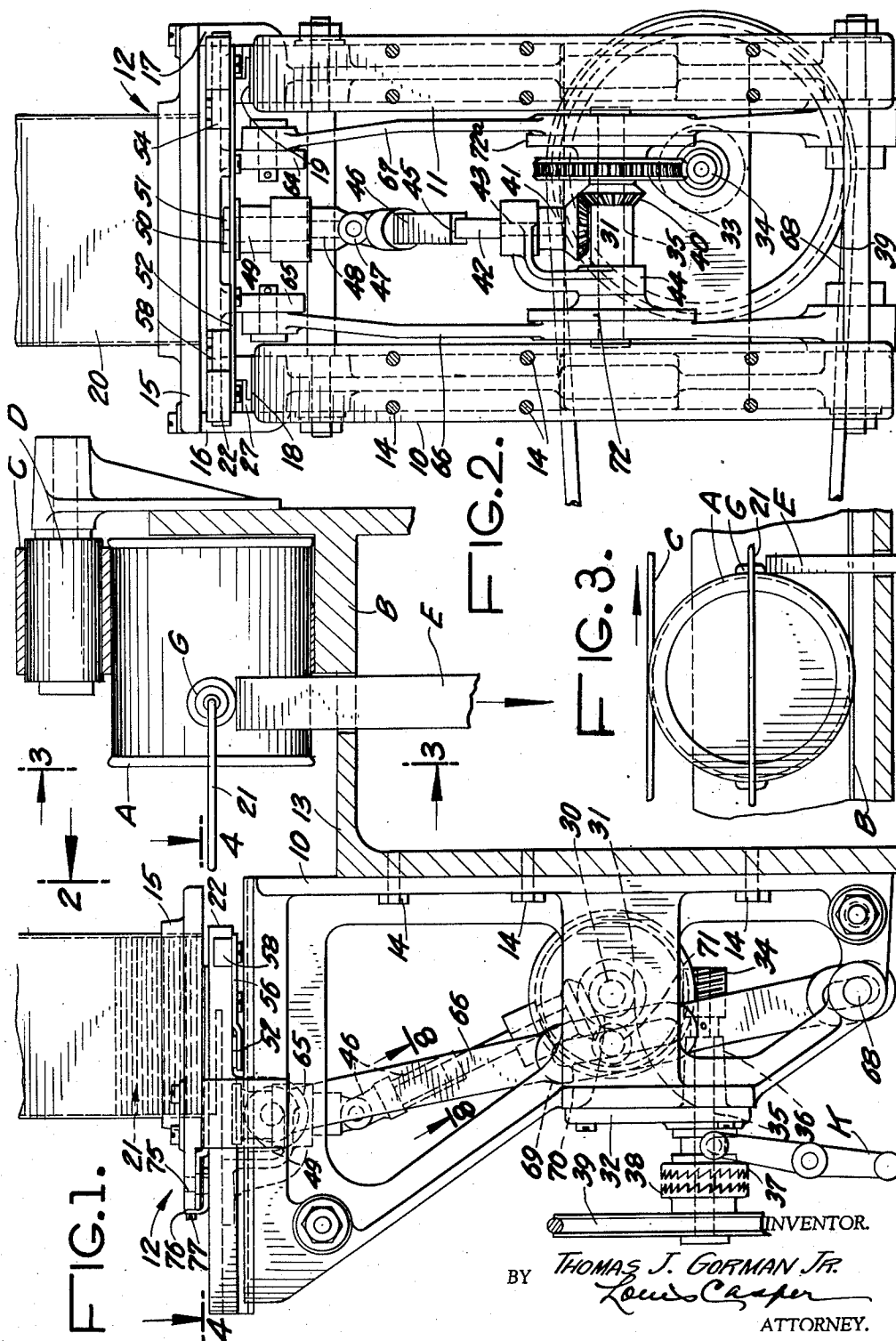
T. J. GORMAN, JR

2,154,071

MACHINE FOR ATTACHING BAILS TO CANS

Filed June 10, 1937

4 Sheets-Sheet 1



April 11, 1939.

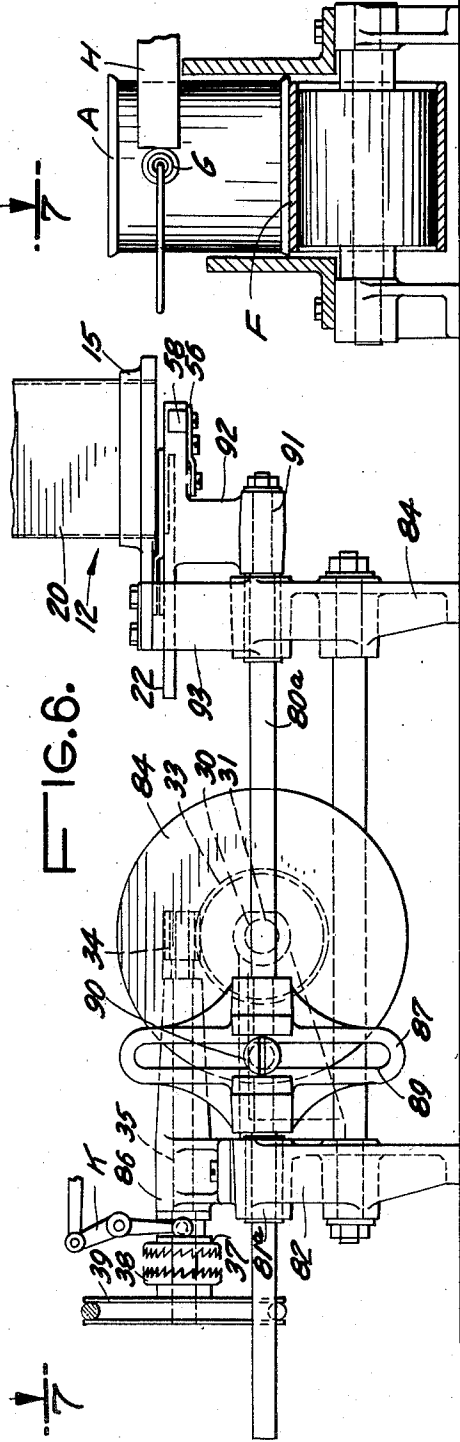
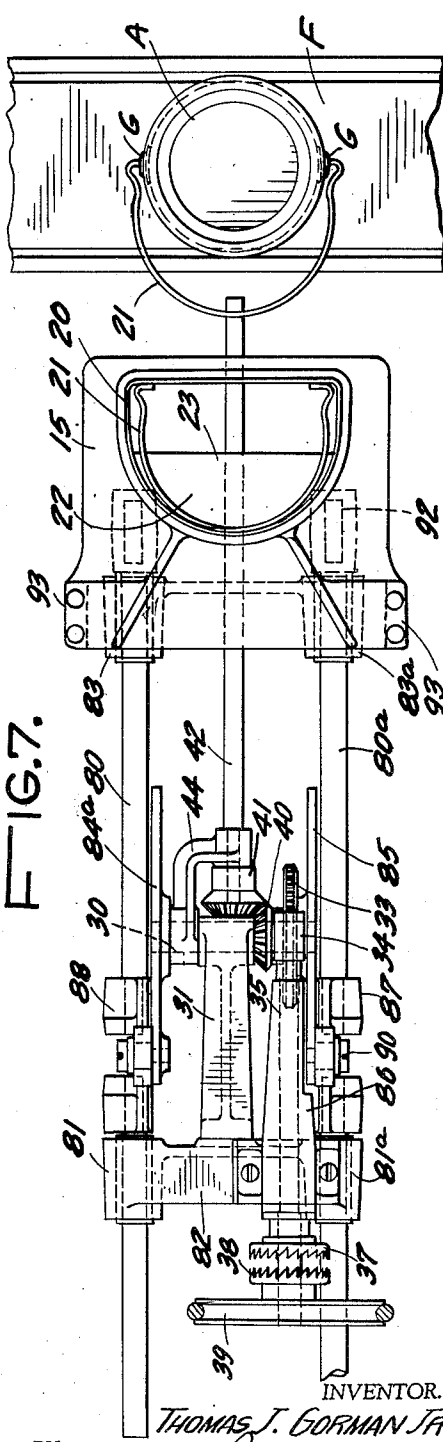
T. J. GORMAN, JR

2,154,071

MACHINE FOR ATTACHING BAILS TO CANS

Filed June 10, 1937

4 Sheets-Sheet 3



BY

INVENTOR.
THOMAS J. GORMAN, JR.
Law Casper
ATTORNEY.

April 11, 1939.

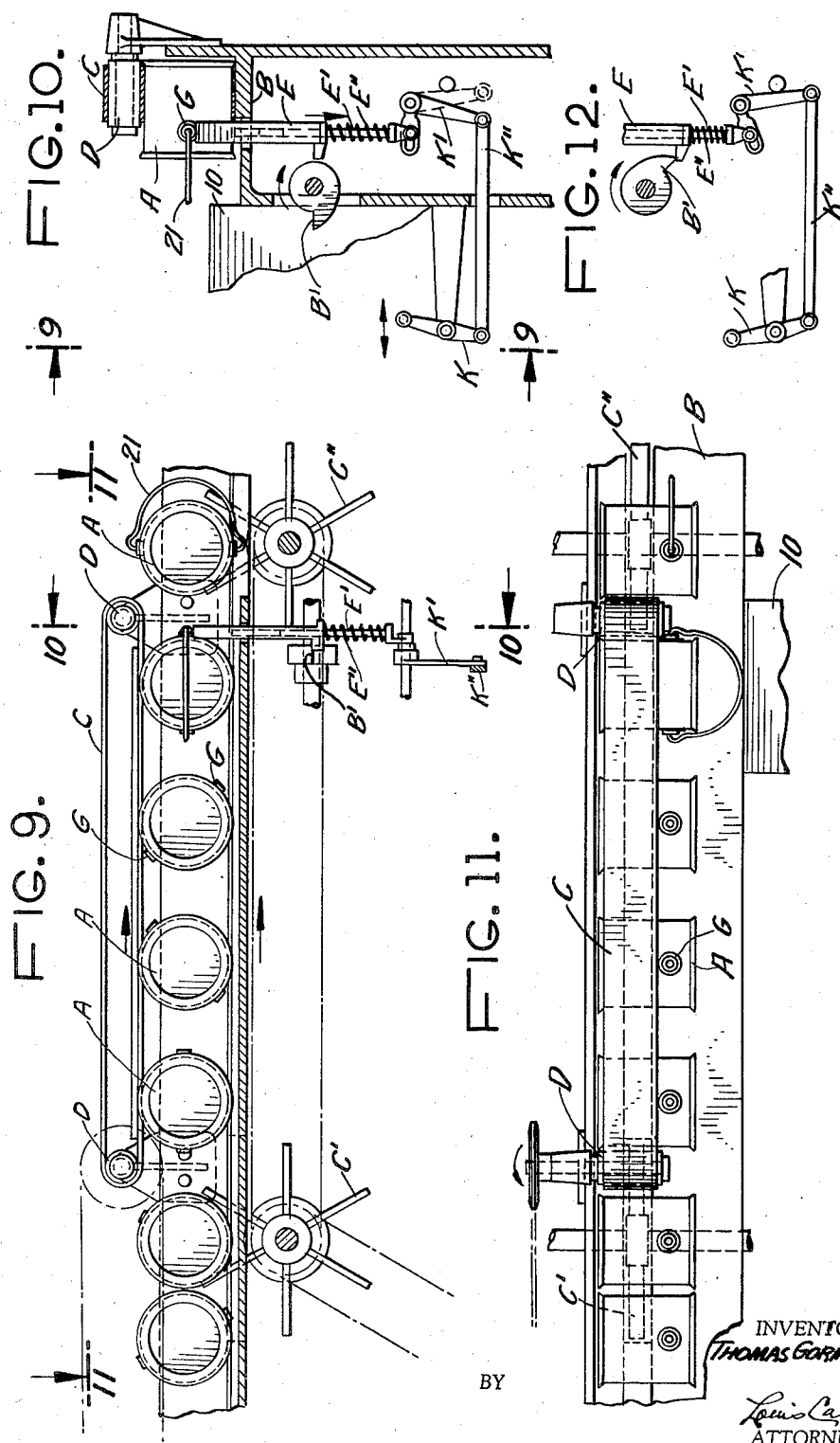
T. J. GORMAN, JR.

2,154,071

MACHINE FOR ATTACHING BAILS TO CANS

Filed June 10, 1937

4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

2,154,071

MACHINE FOR ATTACHING BAILS TO CANS

Thomas J. Gorman, Jr., Newark, N. J.

Application June 10, 1937, Serial No. 147,471

8 Claims. (Cl. 140—93)

This invention relates to the type of machines for placing bails on cans automatically.

An object of this invention is to provide a machine which will store a group of wire bails or handles, said machine selecting from said stored group one handle or bail at a time and affixing the same upon a can.

A further object of this invention is to provide a machine for fixing bails on cans while said cans are in either an upright or in horizontal positions during the process of affixing handles upon the cans aforesaid.

Referring to the figures—

Fig. 1 is a side view of a machine for placing bails upon cans, said bails being delivered to said machine in horizontally parallel position.

Fig. 2 is a front view of the machine shown in Fig. 1 taken on a line 2—2 of Fig. 1.

Fig. 3 is a view of a can taken on a line 3—3 of Fig. 1, said figure showing the stopping arrangement for said can and a conveyor belt that delivers said can to the machine.

Fig. 4 is a sectional plan view taken on a line 4—4 of Fig. 1, said figure showing the mechanism which places the wire bails on the cans, the non-operative position of said mechanism being indicated in full line, and the operative position being shown in broken lines.

Fig. 5 is a side view taken on a line 5—5 of Fig. 4. The aforesaid view is turned to a 90° angle from the plane of which the drawing is shown.

Fig. 6 shows a modified arrangement of the machine to that shown in Fig. 1, said machine being used when said cans are delivered in upright position to the bail placing machinery.

Fig. 7 is a plan view taken on a line 7—7 of Fig. 6.

Fig. 8 is a section taken through 8—8 of Fig. 1.

Fig. 9 is taken on a line 9—9 of Fig. 10 and shows the manner the cans A are delivered to the bail placing machine. Fig. 10 is a detail of the can stopping mechanism. Fig. 11 is a top plan view of the machine taken on a line 11—11 of Fig. 9. Fig. 12 is a detail view of the can stopping device showing its position at the time of said can release.

Referring to Fig. 1, the numerals designated as 10 and 11 are the side frames which support the mechanism 12 of the bail placing machine; said frames also serve to secure said machine to the body 13 of the can filling machine through the medium of screws 14.

The casting 15 is secured to extension ears 16 and 17 of the side frames 10 and 11, said frames protruding above the surfaces 18 and 19 of the

casting 10 and 11. The casting 15 serves to support a bail basket 20.

A number of bails 21 is placed inside the bail basket 20 by the operator of the machine. The wire bails 21 due to their gravity drop upon a casting 22. The casting 22 is provided with a shelf 23 which is sunk into the casting 22 so that when one of the bails 21 drops upon said shelving, said bail will not protrude above the top surface of the casting 22. The casting 22 is secured to a pair of leg shaped members 24 and 25, said members being secured to said casting by means of screws 26.

A further pair of leg shaped members 27 and 28 are reversibly secured to the surfaces 18 and 19 of the side frames 10 and 11 by means of screws 29.

In this manner the casting 22 is enabled to slide reciprocally through the medium of the leg shaped members 24 between the surfaces 18 and 19 and the reversibly mounted leg shaped members 27 and 28.

A shaft 30 is held by means of bearings 31, said bearings extending from a casting 32. A worm gear 33 is pinned on said shaft 31. A worm 34 is secured to a shaft 35 which rotates in a bearing 36 of the casting 32. A toothed clutch 37 is slidably mounted at the opposite end of the shaft 35.

A similar toothed clutch 38 that is secured to a pulley belt 39 rotates freely upon the shaft 35.

When the gear clutch 37 is connected to the gear clutch 38, the worm 34 which is secured to the shaft 35 rotates the worm gear 33. A bevel gear 40 which is in engagement with the bevel gear 41, turns a square shaped shaft 42. The bevel gear 41 is held in place by means of the bearing 43, said bearing being also held by means of the shaft 35, said shaft projecting through the bearing 44. The square shaped shaft 42 is placed into a square opening 45 of the member 46, said member 46 being secured to a flexible coupling 47 which in turn is secured to a shaft 48. Said shaft 48 is secured to a disc hub 49. The disc hub 49 (see Fig. 4), has a tooth shaped member 50 secured to it. A similar tooth shaped member 51 is secured to an L-shaped bracket 52. One leg 53 of the bracket 52 is secured to a slidably mounted member 54. The opposite leg 55 of the bracket 52 is pivoted to a hinging arm 56 that hinges at the point designated as 57. The hinging arm 56 is secured to a slidably mounted member 58.

A set of pins 59 and 60 are secured to both members 54 and 58. When the wire bail 21, (see Fig. 4), drops out of the bail basket 20 on the

shelf 23 the ends 21^a and 21^b of said wire ball locate themselves in the space between pins 59 and 60 of the slidably mounted members 54 and 58.

5 A pair of pins 61 and 62 serve to hold the bracket 52 below the casting 22 in such a manner that the bracket 52 can be slid due to the pins 61 and 62 being located in slots 63 of the bracket 52.

10 The casting 22 is provided with a pair of ears 64 and 65. A pair of oscillating arms 66 and 67, is hinged at one end on a shaft 68, and the opposite ends of said arm are secured to the ears 64 and 65 of the casting 22.

15 A section 69 of the oscillating arms 66 and 67 has a slot 70. A pin 71 is placed into said slot 70 and is secured to a rotating disc 72 on one side of the machine and to a disc 72^a on the opposite side of said machine. The discs 72 and 72^a are secured to the shaft 30 and rotate with it.

20 A pair of hinged plates 73 and 74 are hinged by means of the pin 75, said pin being secured to the casting 15. Said plates are forced into the position shown in dotted lines illustrated in Fig. 4 by means of spring 76, the latter being secured to said casting 15 by means of the screw 77.

25 A pair of pins 78 are secured to the casting 22, said pins serve to open the plates 73 and 74 and then into the position shown in Fig. 4 when the casting 22 returns from its position shown in broken lines. A spring 79 serves to hold the bracket 52 in the position shown in Fig. 4.

30 Referring to the modification shown in Fig. 6, the mechanism 12 for placing the bails to the cans is similar to the arrangement described in Fig. 1.

35 In this particular case, instead of using two oscillating arms 66 and 67 as shown in Figs. 1 and 2, there are provided a pair of sliding shafts 80 and 80^a. The shaft 80 slides into the bearing 81 of the casting 82 and a bearing 83 of the casting 84. The shaft 80^a slides into a bearing 81^a of the casting 82, and into a bearing 83^a of the casting 84. A pair of discs 84^a and 85 similar to that of discs 72 and 72^a which are incorporated in the machine shown in Figs. 1 and 2 are also used in the machine shown in Fig. 6. The mechanism for driving discs 84^a and 85 is similar to that of the mechanism described in Figs. 1 and 2; in this particular case, however, the worm gear 50 84 is rotated by the shaft 35, said shaft being rotated in a casting 86.

45 A pair of castings 87 and 88 are secured to the shafts 80 and 80^a. The castings 87 and 88 are provided with slots 89. A pair of pins 90 are slidably mounted in slots 89. Said pins are also rigidly secured to the discs 84^a and 85. The end section 91 of the shafts 80 and 80^a are secured to the casting 22 by means of the ears 92. The casting 15 in this instance is held in place by the protruding members 93 of the casting 15.

50 Referring to Fig. 1, the can A is delivered to the bail placing machine on the track B and is rolled along by means of the belt C, said belt being moved by means of the rollers D in the direction shown by the arrow in Fig. 3.

55 A stopping bar E is provided on the can filling machine 13 to arrest the movement of said can when said can shall have arrived exactly at the position as shown in Fig. 3, the aforesaid position of said can being necessary to enable the bail 21 to be affixed upon said can.

70 In Fig. 6, the can A is delivered to the bail placing machine in an upright position through the medium of the conveyor belt F. In this in-

stance the can is held in the necessary precise position for placing said bails upon said cans by means of an arm H which is operated by the can filling machine 13.

5 The stopping arms E and H are required to be operated in such a manner that when the mechanism 12 of either machines returns for the next following wire ball, said stopping arm is cleared out of the path of the can A in order that a new can may be brought forward. Immediately after the can A leaves the machine, the stopping arms E and H are brought into position and in readiness to hold the can in place and for the placing of the next oncoming bail. The clutches 37 and 38 are brought into operation in conjunction with the stopping arms E and H so that when there is no can on the machine the clutch 37 remains disconnected from the clutch 38.

10 Referring to Fig. 9. When a can A is delivered to the bail placing machine said can stops against the stop E. The ear of the can depresses the stop E which in turn operates the moving arm K thereby causing the operation of the clutch 37, 38 shown in Fig. 1.

15 When the bail placing machine returns to receive another bail the cam B' pushes the stop E to its downward limit thus releasing the can upon which the bail has become affixed, and also permits a new can to be delivered against the stop E. The shaft E and the spring E' and the spring E'' serve to take up the play of the stop E. The bar K' of the forked arm K' connects said arm to the centrally pivoted arm K.

20 The operation of the machine is as follows: When the can A is brought into position shown in Fig. 1, the stopping arm E will stop the can from rolling further, said stopping arm placing itself directly in the path of the can. Since the conveyor belt is in continuous operation in the direction shown in Fig. 3, the can A, although prevented from rolling, continues to turn on its circumference until the ear G of said can A stops against the stop E. Due to the movement of the aforesaid belt C, the ear G of the can A is forced against the stop arm E and presses against said stop arm toward said arm in the direction as shown, the movement aforesaid automatically operating an arm K, said arm connecting the toothed clutch 37 to the toothed clutch 38. The leather bet 39 is continuously rotating and is driven by the motor of the filling machine 13.

25 Immediately after the connecting operation of the clutches 37 and 38, the mechanism 12 becomes activated in the following manner: The worm 34 turns on the worm gear 33, said gear being secured to the shaft 35 and operates the oscillating arms 66 and 67 through the medium of the discs 72 and 72^a. The arms 66 and 67 cause the casting 22 to slide reciprocally as shown in Fig. 4. During the aforesaid operation, the bevel gear 40 engages the bevel gear 41 which in turn operates the square shaped shaft 42, said shaft 42 being slidably mounted on the flexible coupling 47 and which turns the disc 49. The toothed shaped member 50 that is secured to the disc 49 rotates with said disc.

30 The tooth shaped member 51 being secured on the slidably mounted L-shaped bracket 52 is placed into the path of the rotating member 50. As soon as said bracket 52 contacts with members 51, said member 51 is carried along thus compelling the L-shaped member to move in the direction shown by the arrow. By that time the leg 53 of the L-shaped member 52 shall have 75

forced the slidably mounted member 54 so as to be moved into the position shown by the arrow. The slidably mounted member 58 also moves into the position shown by the arrow, due to the hinging movement of the arm 56.

The movement of both the casting 22, moving forward in the direction shown by the arrow, and the movement of the slidably mounted members 54 and 58 are timed in such a manner that when the casting 22 arrives at the position shown by the broken line in Fig. 4, the contact between the tooth shaped members 50 and 51 is completed. The operation aforesaid is due to the rotation of the member 50 at the time the end sections 21^a and 21^b of the wire ball 21 are free to locate themselves into the respective openings of the ears G of the can A. After the completion of the operation aforesaid the casting 22 returns to its original position as shown in Fig. 4. During the period of the operation of said machine, the hinging arms 73 and 74 are brought to the position shown by the broken lines due to the force of the spring 76. This latter operation tend to support the balance of the stored wire balls 21, said balls being held in the basket 20 and are prevented from dropping out therefrom when the casting 22 shall have completed the return to its original position, and at which time the pins 78 open the hinging arms 73 and 74 thus allowing a new wire ball to drop upon the shelf 23 in readiness for the next delivery to the can A.

The operation of the machine shown in Figs. 6 and 7 is similar to the manner of operation with reference to the description of Figs. 1 and 2. Instead, however, of employing oscillating arms 66 and 67 the shafts 80 and 80^a cause the movement of the casting 22 due to the pins 90 which rotate with the discs 84 and 85, said pins sliding into the slot 89 of the casting 87. The aforesaid movement of the pin causes the shafts 80 and 80^a to slide into the bearings 81 and 81^a, and 83 and 83^a and which cause the reciprocal movement of the casting 22.

It is understood that the particular machine described above is intended to be illustrative and limitative of the invention, since it is obvious that the invention may be effected by machines arranged in other different ways, within the scope of the claims.

Now, having described my invention what I claim is:

1. In a machine for affixing balls or handles upon cans or like containers, said machine having means therein for storing a plurality of said balls, said storing means having means in conjunction therewith for releasing and delivering one of said balls at a time to reciprocally operating arm means for affixing said ball upon a can, said reciprocally operating arm means contained in said machine, a plurality of said cans being conveyed and fed into said machine and discharged therefrom after said balls shall have been affixed upon said cans, and tripping means in said machine for stopping the operation of said machine when said cans have ceased to be delivered therein, said tripping means being released upon the resumption of the delivery of said cans to the machine aforesaid.

2. In a machine of the class described comprising a frame having storage means therein for storing a plurality of balls or handles, a slidably movable member included in said frame for receiving one ball at a time from said storage means, oscillating arms in operable conjunction

with said slidably movable member, said arms causing said single ball to be affixed upon a can set in position in the machine aforesaid.

3. In a machine for affixing a wire ball or handle upon a can or like container, said machine operating in conjunction with a can filling machine; conveyor means for delivering one can at a time from said can filling machine to said wire ball affixing machine; and tripping means to render said wire ball affixing machine inoperative when the delivery of said cans upon said conveyor means shall have ceased from said can filling machine, said tripping means operable through the medium of the movement of said cans upon said conveyor means, said can movement causing reoperation of said ball affixing machine upon the resumption of the delivery of said cans into the machine aforesaid.

4. In a machine of the class described for affixing a ball or handle upon a can or like container, said machine including a frame, said frame having a slidable member therein for extracting one ball at a time from a ball storing receptacle, means in said frame for impelling a reciprocating movement to said ball extracting member; and oscillating arm means operating in conjunction with said ball extracting member for affixing said single ball upon a can; and tripping means provided to render said wire ball affixing machine inoperative when no cans are being delivered to said wire ball affixing machine from said can filling machine, said tripping means being operated through the medium of the can body thereby causing the reoperation of said ball affixing machine when said cans resume delivery into the machine aforesaid.

5. In a machine for affixing balls or handles upon cans or like containers having ears thereon, said ball affixing machine having a frame, said frame having means therein for causing a reciprocating movement to a slidable movable member, said member having a pair of slidably movable fingers, said fingers for the purpose of extracting one ball at a time from a ball storing receptacle within said frame and conjoining said ball to the ears of said cans, said reciprocating movement being impelled through the medium of a pair of oscillating arms, said arms operating in conjunction with said slidably movable member; and tripping means provided in said frame for discontinuing the oscillating movement of said oscillating arms when the delivery of said cans shall have been suspended, said means comprising an arm operated by the ears of said can when said can is brought into alignment with the ball affixing machine aforesaid.

6. In a machine for affixing balls upon cans or like containers, said ball affixing machine affixing one of said balls upon each one of said cans while said cans are in either horizontal or vertical position preparatory to having said balls affixed thereon; means for delivering said cans to said ball affixing machine, said means including an endless belt or like conveyor operatively connected with a can filling machine, said ball affixing machine and said can filling machine operating in timed relation; and tripping means provided whereby said ball affixing machine remains inoperative while no cans are being delivered over said conveyor to said ball affixing machine, said tripping means being released upon the resumption of the delivery of said cans to the ball affixing machine aforesaid.

7. In a machine for affixing balls or handles upon cans or like containers, conveyor means for

- delivering said cans to said machine, means for stopping the operation of said machine when the delivery of cans upon said conveyor means shall have ceased, said stopping means including stopping arms, said arms contacting with said cans, said stopping arms in operable connection with clutch connecting means, said clutch connecting means included in said machine and in operable engagement with said conveyor means while said cans are being delivered to said machine, and the disengagement of said clutch means from said conveyor means upon the discontinuance of the delivery of cans into the machine aforesaid.
8. In combination, a machine for placing bails upon cans or like containers, conveyor means contiguous to said machine for delivering cans

thereto, said machine including a frame, a holder supported by said frame for storing a plurality of said bails, said holder also having oscillating arm means in connection therewith for releasing one of said stored bails at a time to slidably operative member means, said slidably operative member means affixing said bail upon a can; said slidably operative member means included in said machine; and tripping means contiguous to and operating in connection with said machine to render said machine inoperative when no cans are being delivered thereto from said conveyor, said tripping means being released upon the resumption of the movement of said cans upon the conveyor means aforesaid.

THOMAS J. GORMAN, JR.