

June 7, 1932.

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1,861,634

CAN DUMPING MECHANISM

Filed April 19, 1930

3 Sheets-Sheet 1

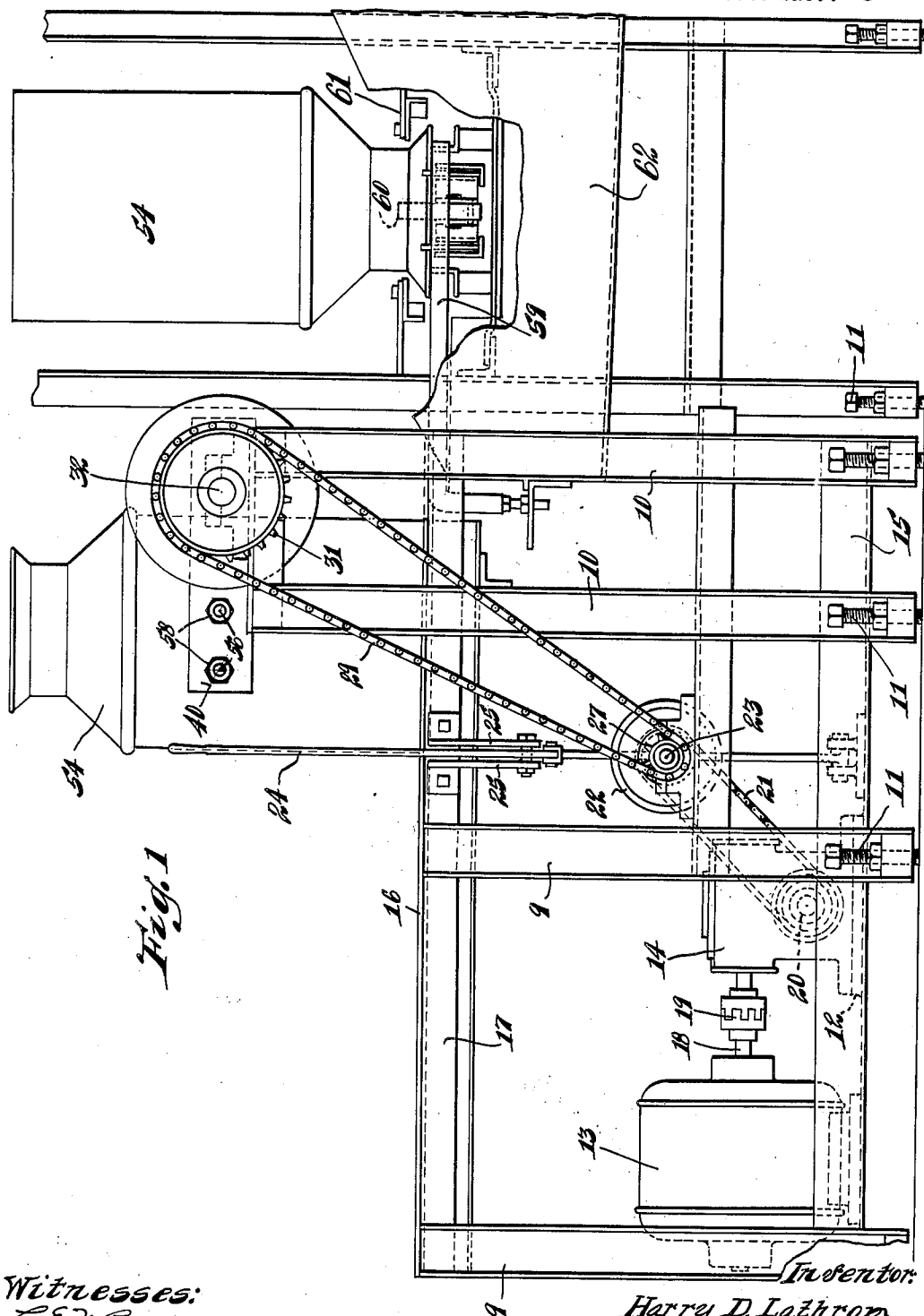


Fig. 1

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3 Sheets-Sheet 2

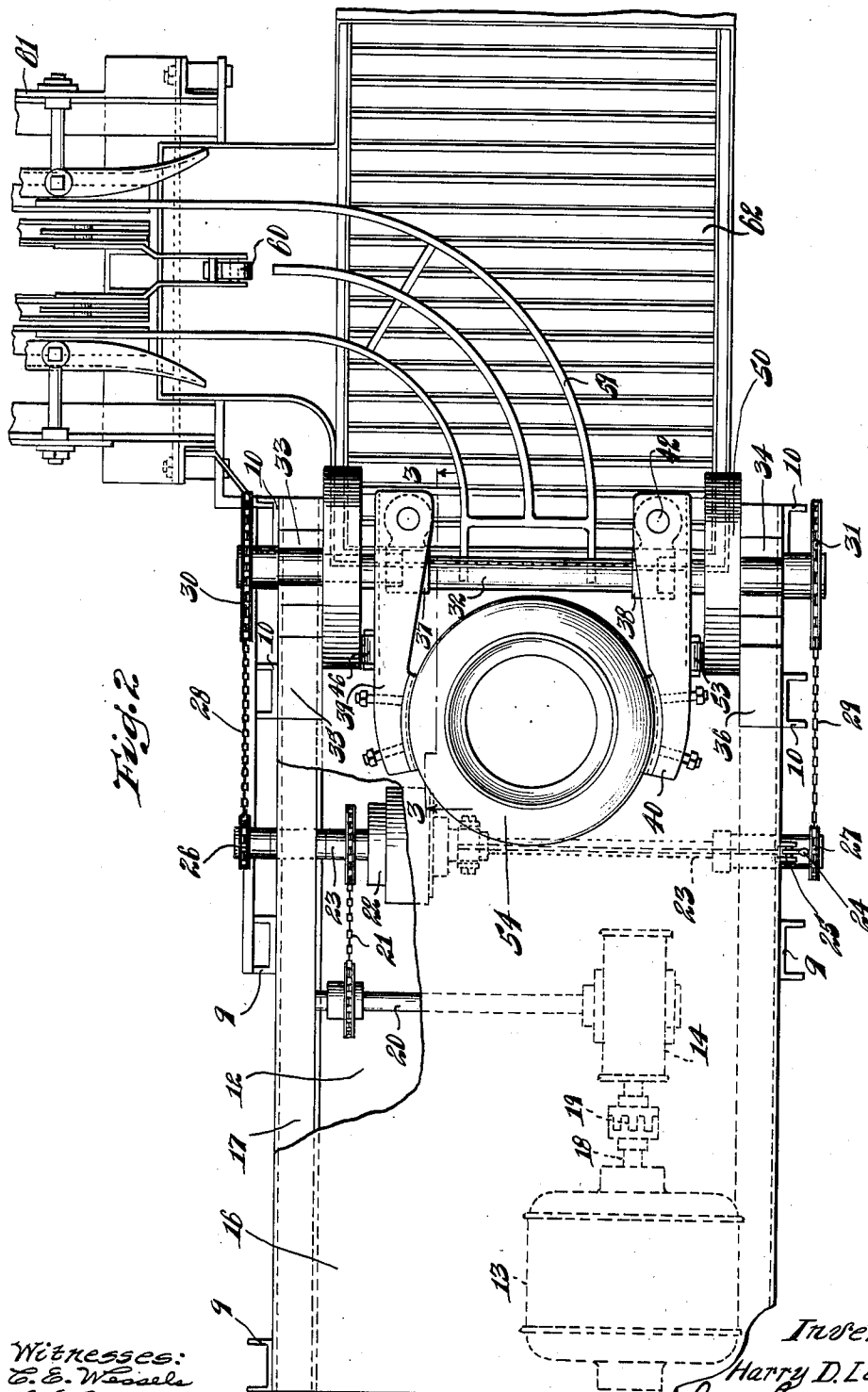


Fig. 2

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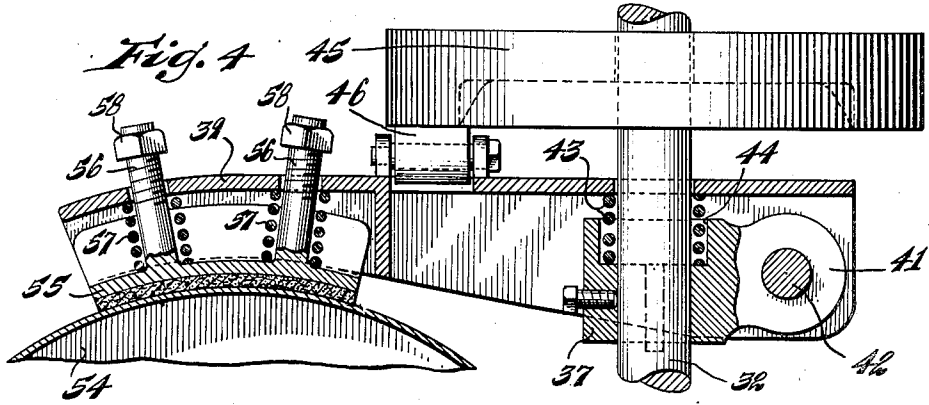
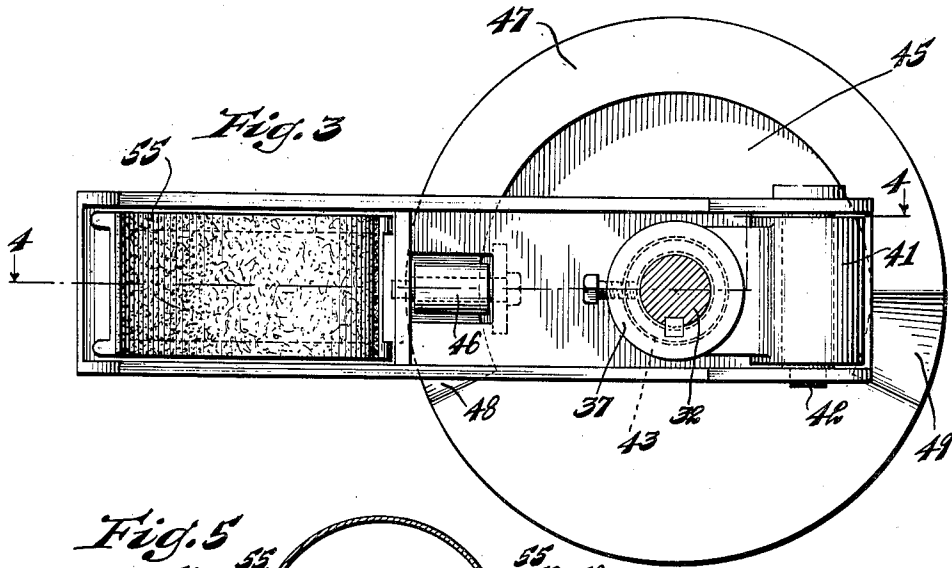
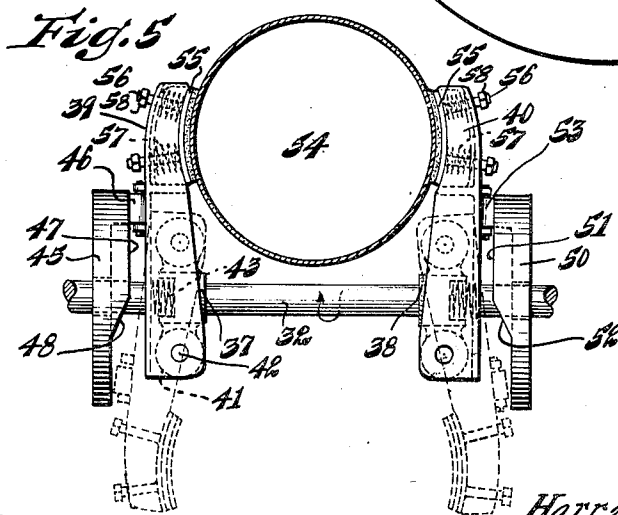
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CAN DUMPING MECHANISM

Filed April 19, 1930

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

HARRY D. LATHROP, OF CHICAGO, ILLINOIS

CAN DUMPING MECHANISM

Application filed April 19, 1930. Serial No. 445,813.

This invention relates to can dumping mechanism, especially designed for the mechanical engagement and manipulation of filled cans, or other receptacles of a like nature, to dump the contents thereof. An object of the invention is the provision of improved mechanism capable of engaging a receptacle such as a milk can or cream can deposited on a receiving platform, and transporting the same through an arcuate path, in which process the position of the can is inverted and the contents gradually discharged or dumped into a vat or similar container, after which the can or receptacle is deposited upon a discharge platform. As an additional object, the invention provides mechanism of the character indicated which is durable and efficient for the purpose, although comparatively simple in construction and operation, and relatively economical to manufacture and maintain in operation. A more specific object resides in the provision of mechanism for engaging, in a positive gripping action or manner, a milk or cream can in upright position, and rigidly maintaining a gripping engagement while the can or receptacle is transported through an arcuate path of substantially 180 degrees, during which travel the contents is discharged into a container and at the conclusion of which the can or receptacle is disengaged and deposited upon a discharge platform or conveyor.

Other objects will appear hereinafter.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings, forming a part of this specification, and in which:

Fig. 1 is a side elevational view of a typical apparatus, shown in operative association with a can washing machine;

Fig. 2 is a plan view of the machine as shown in Fig. 1;

Fig. 3 is a sectional view, taken substantially on the line 3—3 of Fig. 2, to illustrate one of the can gripping arms;

Fig. 4 is a horizontal sectional view, taken substantially on the line 4—4 of Fig. 3; and

Fig. 5 is a detail sectional view showing the relative positions of the receptacle and gripping arms at the uppermost point of travel, in which position the arms are disposed vertically and the can or receptacle horizontally.

As illustrated in the drawings, the preferred embodiment of the invention comprises a supporting framework having vertical standards 9 which may be of channel iron or similar construction, and four standards 10 adapted to extend to a greater height than the standards 9. The respective standards are provided with leveling bolts 11 and are adapted to support adjacent the lower extremities a bed plate 12, upon which is mounted driving motor 13 and reduction gearing assembly 14. Bed plate 12 is preferably secured to longitudinally extending angle irons 15, and an upper can receiving platform 16 may be similarly secured to and supported by longitudinally extending angle irons 17. It will be understood that in lieu of a stationary can receiving platform 16, a gravity or power driven conveyor may be employed.

Motor 13 is connected by shaft 18 and flexible drive connection 19 to reduction gearing assembly 14 containing suitable gearing to reduce the driving speed, and from which extends transverse drive shaft 20 which is connected by sprocket chain 21 to clutch mechanism 22 operatively associated with an intermediate shaft 23. By this construction and arrangement, while shaft 20 is adapted to continuously rotate in normal operation, operative engagement of shaft 23 is controlled by shipping lever 24 pivoted to bracket 25 and connected to clutch mechanism 22. Shaft 23 is adapted to rotate in a clockwise direction from the position shown in Fig. 1, and at the respective extremities thereof carries sprockets 26 and 27, connected by sprocket chains 28 and 29 to respective sprockets 30 and 31 mounted on the extremities of operating shaft 32, which is journaled in bearing blocks 33 and 34 mounted upon members 35 and 36, respectively, secured to standards 10 at each side of the machine.

Keyed or pinned to shaft 32 are a pair of spaced arm supporting blocks 37 and 38 adapted to carry revolving can gripping arms

39 and 40, respectively, and inasmuch as the construction, arrangement and mounting of arms 39 and 40 are identical except that they are arranged in opposed relation to each other, a description of gripping arm 39 by reference to Figs. 3 and 4 will suffice. Block 37, as shown in Fig. 4, has a projection 41 upon which arm 39 is pivotally mounted by means of pin 42, but arm 39 is arranged to extend on the opposite side of shaft 32 from projection 41, and therefore the arm is provided with an opening through which shaft 32 extends. A compression spring 43 disposed in recess 44 of block 37 is adapted to bear against the inner surface of arm 39 to normally force the latter outwardly, or in the direction of a stationary vertically disposed cam member 45, against the inner circular surface of which roller 46 on arm 39 is adapted to contact.

As shown in Figs. 3 and 5, the cam member 45 has an upper inwardly extending cam portion 47 adapted to force arm 39 inwardly, as shown in Fig. 5. An inclined plane portion 48 is engaged by roller 46 on the approach of arm 39 to cam surface 47, and similarly inclined portion 49 is engaged by roller 46 as arm 39 is carried beyond cam portion 47. Similarly, arm 40 operates in conjunction with stationary cam member 50 on the opposite side of the machine having an upper cam surface 51 and inclined portion 52 engageable by roller 53. Thus, it will be seen that as shaft 32 rotates in a clockwise direction from the position shown in Fig. 1, arms 39 and 40 are revolved and as they approach a horizontal position from the lower half of the revolution, they are forced toward each other into gripping engagement with the opposite sides of a can 54 which has been brought to the position shown in Figs. 1 and 2.

To afford a certain degree of resiliency in the gripping members and compensate for slight irregularities, each arm 39 and 40 carries a gripping shoe 55, the inner surface of which is curved to conform to the curvature of the milk can, and covered with leather, rubber or equivalent material. Each shoe 55 carries rearwardly extending bolts 56 which extend through openings in the arm and within coiled springs 57 normally adapted to force shoes 55 inwardly, the inward motion being limited by nuts 58. On the opposite side of shaft 32 from receiving platform 16 there is preferably arranged a discharge platform which, in the embodiment shown, is in the form of stationary curved rails 59 upon which the cans are adapted to be slid for engagement by a pawl 60 mounted on a reciprocating carriage associated with a can washing machine 61. A milk or cream receiving vat or container 62 is arranged below the rails 59. As shown in Fig. 1, can gripping arms when in horizontal position are disposed substan-

tially midway between the upper and lower extremities of the can whereby when the can is inverted to complete a dumping operation, disengagement will occur at the diametrically opposite position when a can has been deposited upon the rails 59. For this purpose the cam surfaces or portions 47 and 51 extend substantially above a horizontal plane through the cam members 45 and 50 for a distance of approximately 180 degrees.

The principle and mode of operation has been indicated to some extent by the foregoing description, but in further explanation, a filled milk can is brought to the position shown in Fig. 2, and as arms 39 and 40 revolve, engagement is effected by the arms being forced toward each other through the medium of the cam surfaces described to cause gripping engagement and rigid maintenance in this engagement during a revolution of approximately 180 degrees, after which the cam surfaces provide for disengagement by the spreading action of the arms. As the arms are disengaged on the discharge side they continue in their revolving travel to engage the next succeeding can brought to position, and as each can is deposited upon the discharge rails 59 it may be moved or shifted manually or mechanically, either to a conveyor or for direct introduction into a can washing machine, as shown.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. Milk can dumping apparatus of the character described comprising, in combination, a pair of revolvably mounted can engaging and transporting members, a pair of cylindrically curved can gripping shoes mounted upon said members and arranged to engage and grip a can on opposite sides, cam means for forcing said members toward each other into can engaging position, cam means for maintaining said engagement throughout the can dumping travel of said members, can means for releasing said members at the conclusion of said can dumping travel and operation, and spring means for normally maintaining said members in contact with said respective cam means.

2. Milk can dumping apparatus of the character described comprising, in combination, a pair of revolvably mounted can engaging and transporting members, a pair of yieldable cylindrically curved can gripping shoes

mounted upon said members and arranged to engage and grip a can on opposite sides, cam means for forcing said members toward each other into can engaging position, cam means for maintaining said engagement throughout the can dumping travel of said members, cam means for releasing said members at the conclusion of said can dumping travel and operation, and spring means for normally maintaining said members in contact with said respective cam means.

3. Milk can dumping apparatus of the character described comprising, in combination, a pair of revolvably mounted can engaging and transporting members, a pair of cylindrically curved can gripping shoes mounted upon said members and arranged to engage and grip a can on opposite sides, cam means for forcing said members toward each other into can engaging position, cam means for maintaining said engagement throughout the can dumping travel of said members, cam means for releasing said members at the conclusion of said can dumping travel and operation, and means for maintaining said members in contact with said respective cam means.

4. Milk can dumping apparatus of the character described comprising, in combination, a pair of revolvably mounted can engaging and transporting members, a pair of yieldable cylindrically curved can gripping shoes mounted upon said members and arranged to engage and grip a can on opposite sides, cam means for forcing said members toward each other into can engaging position, cam means for maintaining said engagement throughout the can dumping travel of said members, cam means for releasing said members at the conclusion of said can dumping travel and operation, and means for maintaining said members in contact with said respective cam means.

5. Milk can dumping apparatus of the character described comprising, in combination, a pair of revolvably mounted can engaging and transporting members, a pair of cylindrically curved can gripping shoes mounted upon said members and arranged to engage and grip a can on opposite sides, cam means for forcing one of said members toward the other into can engaging position, cam means for maintaining said engagement throughout the can dumping travel of said members, cam means for releasing said members at the conclusion of said can dumping travel and operation, and means for normally maintaining said members in contact with said respective cam means.

In testimony whereof I have signed my name to this specification.

HARRY D. LATHROP.