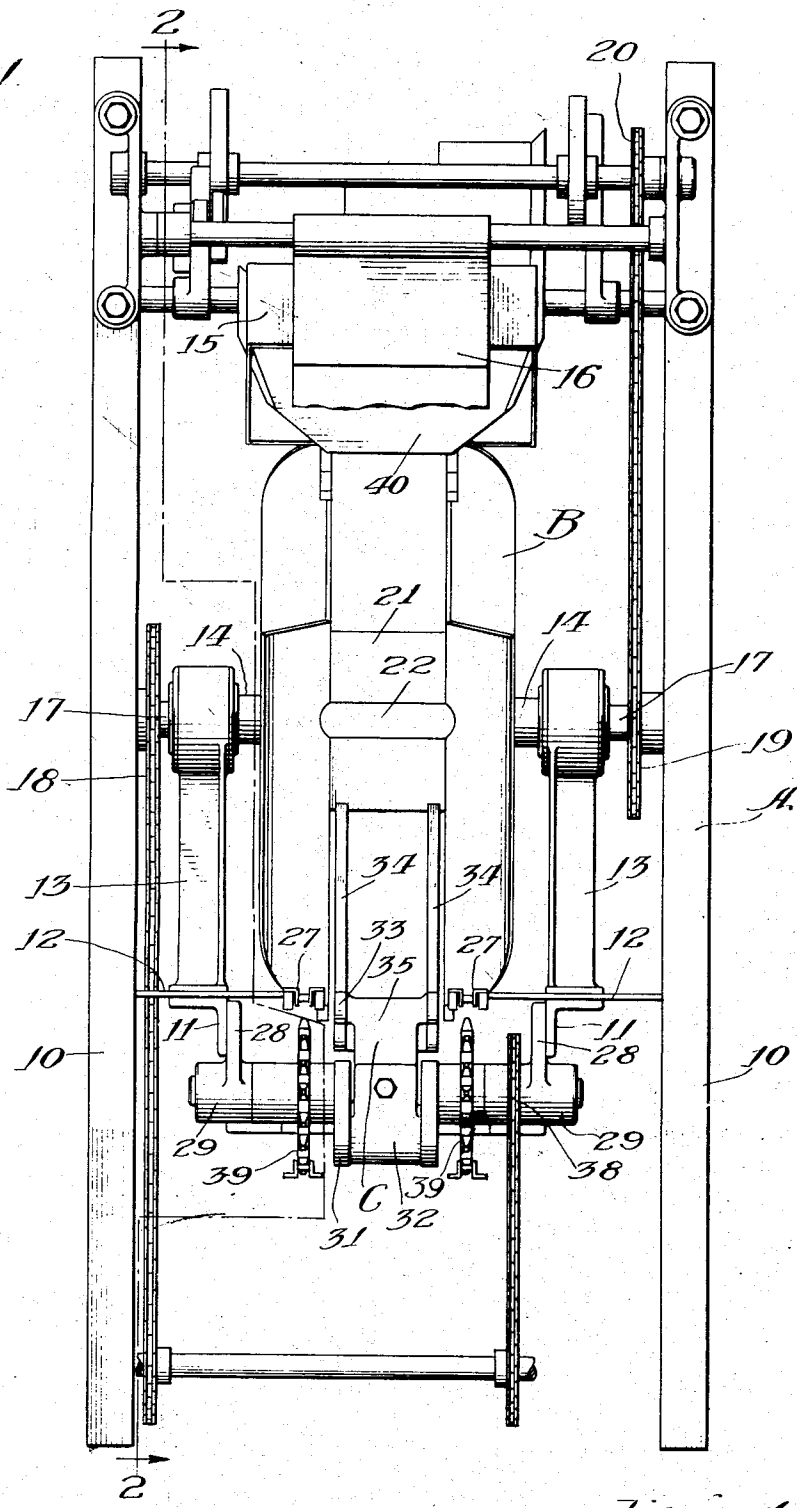
Oct. 11, 1938. O. B. RUFUS 2,133,044

CAN UPRIGHTING AND DISCHARGING MECHANISM

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Fig. 1.



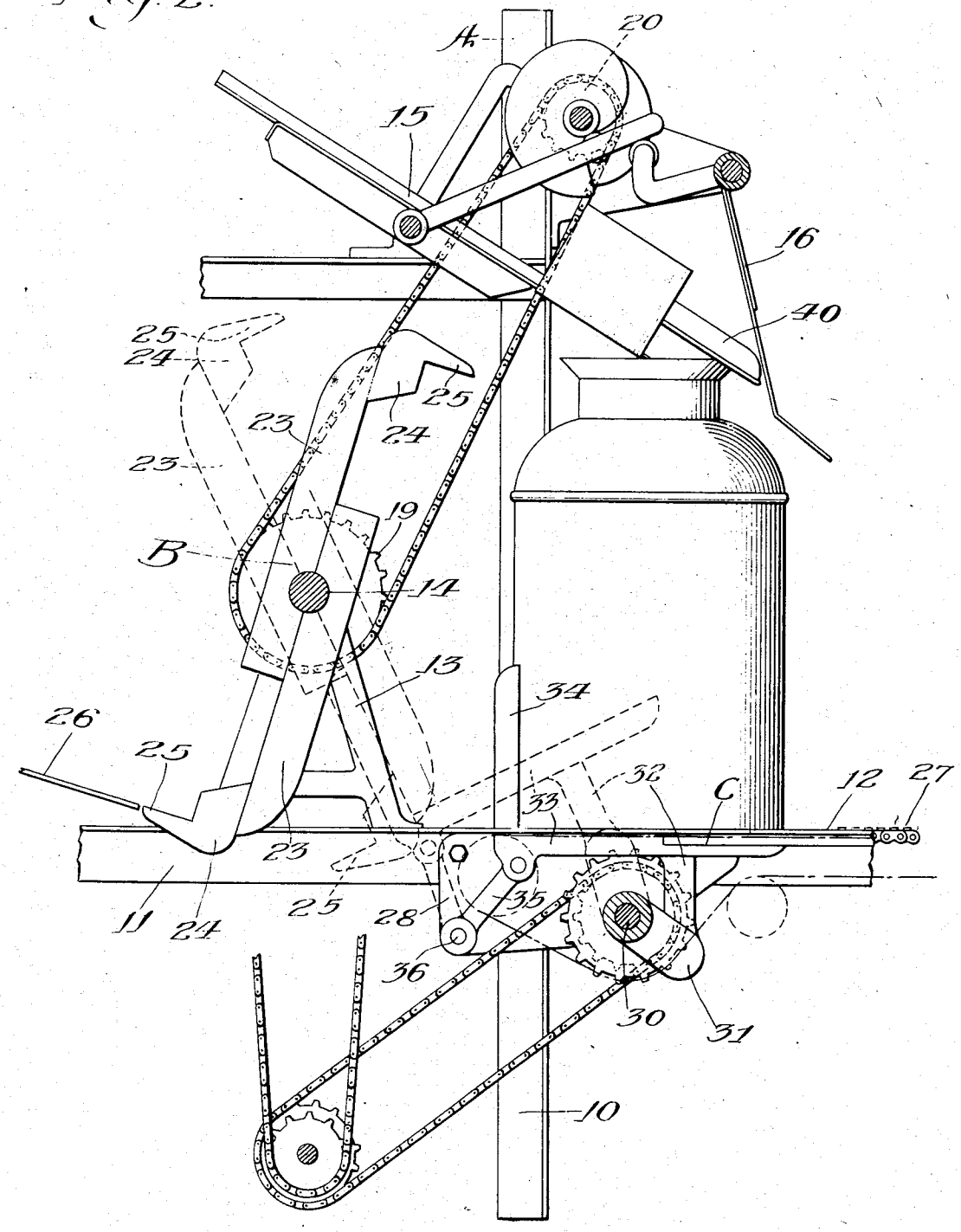
Inventor:
Otto B. Rufus,
By Dyer, Horth, Lee, Chilton & Wills
Attorneys.

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CAN UPRIGHTING AND DISCHARGING MECHANISM

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Fig. 2.



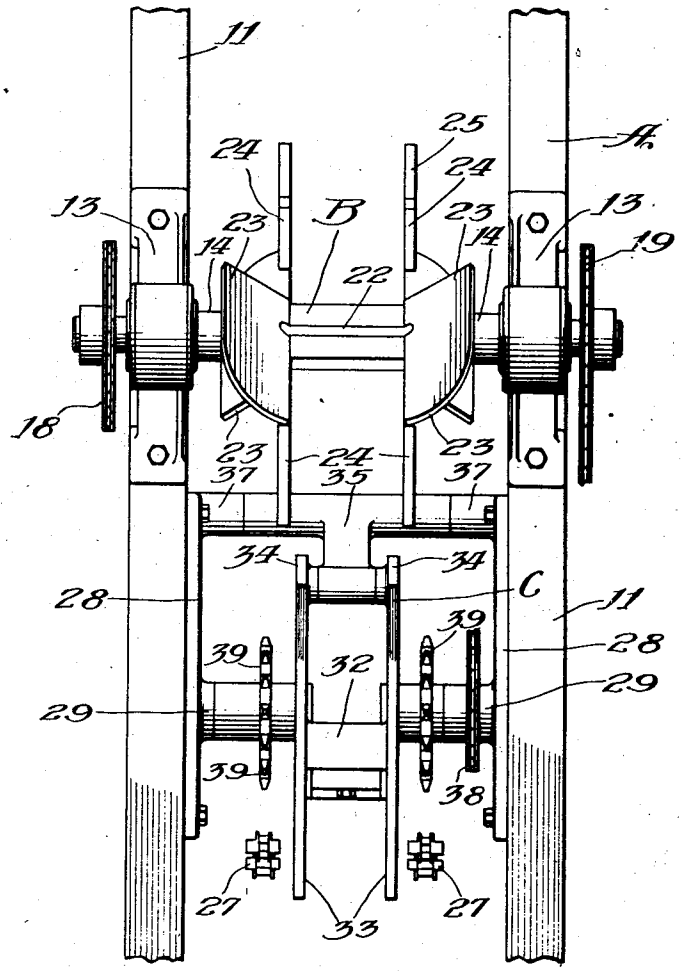
Inventor:
Otto B. Rufus,
By: Lyon, Lyon, Lee, Chilton & Wilkinson
Attorneys:

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CAN UPRIGHTING AND DISCHARGING MECHANISM

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Fig. 3.



Inventor:
Otto B. Rufus,
By Dyer, Tompkins, Lee, Christy & Wilson
Attorneys:

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UNITED STATES PATENT OFFICE

2,133,044

CAN UPRIGHTING AND DISCHARGING MECHANISM

Otto B. Rufus, Chicago, Ill., assignor to Lathrop-Paulson Company, Chicago, Ill., a corporation of Illinois

Application June 4, 1936, Serial No. 83,596

9 Claims. (Cl. 214—1)

This invention relates to can-uprighting and discharging mechanism, and more particularly to mechanism for turning over and discharging milk cans and the like.

An object of the invention is to provide simple, compact and efficient mechanism for rapidly turning over cans and discharging them in upright position, the operating parts being so arranged as to discharge cans without substantially any lost motion, and without damaging the cans. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a preferred embodiment, by the accompanying drawings, in which—

Fig. 1 is a rear end view in elevation of a can-washing machine showing my improved can-uprighting and discharging mechanism; Fig. 2, a side view in elevation, showing the can turn-over and can-discharging mechanism, a portion of the side framework being removed, and the view being taken as indicated at line 2 of Fig. 1; and Fig. 3, a broken plan view of the same, a portion of the side frame and the bed being removed.

In the illustration given, A designates a frame; B, a can turn-over supported by frame A; and C, can-discharging mechanism.

The frame A may be of any suitable construction. In view of the well-known framework employed for straightway can-washing machines of the type shown, it is believed that the frame need not be described in any great detail. The frame consists broadly of a number of vertical standards 10, which support angle-irons 11, upon which is carried a floor 12. Mounted upon the floor 12, are the supports 13, in which are journaled the can turn-over shafts 14. As will be described more fully hereinafter, the shafts 14 are secured to opposite sides of the turn-over member or cradle B.

The frame A supports, on its upper side, mechanism for advancing a can cover and for discharging the can cover onto the top of the can when the can is in the position shown in Fig. 2. Such cover-discharging mechanism is of well-known construction, no claim therefor being made herein. It is sufficient to designate the can cover-discharging mechanism generally by the numeral 15. A cover tap device 16, also of well-known construction, is also carried by the upper part of frame A and serves to press the cover securely into the neck of the can.

The can turn-over B is carried by the two shafts 14, the inner ends of which are welded to the turn-over, and the outer ends of which are journaled in the standard supports 13. The shafts 14 are provided with reduced extensions 17, to which are secured drive-wheels 18 and 19. The mechanism for driving wheel 18 is well known and need not be described herein. The drive-wheel 19 is connected to a drive-wheel 20, supported in the upper portion of frame A and employed for operating the cover-discharging mechanism 15 and cover-seating mechanism 16.

The can turn-over B is formed principally from two sheet metal parts having central web portions 21 welded together. The welded web portions 21 are provided centrally with a slot 22. The side walls of each member are turned forwardly to form wings 23, adapted to receive the sides of a milk can. As shown more clearly in Figs. 2 and 3, the wings 23 of the two sheet metal members diverge at their ends and, between the diverging sides, extend the shafts 14. The shafts 14 are welded at their ends to the sides 23. Welded to the rear wall of each of the sheet metal members, is a pair of depending arms 24, providing outwardly extending lips 25, adapted to receive the ends of a can neck. The can turn-over is driven by any suitable mechanism. Preferably, the mechanism is so constructed as to stop the can turn-over at the can-receiving position shown in Fig. 2, for a sufficient interval of time to enable a can to slide down the inclined discharge-plate 26 onto the can-receiving lip 25. The discharge-plate 26 is supported by the frame A and is of well-known construction, being located at the end of a conveyor, and being inclined to permit a can, discharged from said conveyor, to slide downwardly onto the pair of spaced arms 24.

It will be observed that the two-part can turn-over provides a double face for receiving cans, the arm 24, which is welded to the back of one of the sheet metal parts, co-operating with the wings 23 carried by the other metal part to form one receiving face, while the arm 24, welded to the back of the second sheet metal member, co-operates with the wings 23 of the first sheet metal part to form another can-receiving channel or face. Between the arms 24, is provided a space through which the can-discharging mechanism C, as will be now described, may operate.

The can-discharging mechanism C is preferably so constructed as to receive the end of the can, which is being uprighted, before it has reached the bed 12, and then lower it and advance it, without jarring, to the level of the bed, along which it is carried to any suitable point by

a conveyor chain 27, of well-known construction. Welded to the inner flanges of angle-irons 11, are flanges 28, having integrally formed therewith journals 29. A shaft 30 is supported in journals 29 and is provided centrally with a crank-arm 31. Secured to the crank-arm 31, is a pivotally mounted arm 32, having its upper end secured to the platform member 33. As shown more clearly in Fig. 3, the platform 33 consists of two spaced arms connected by the member 32. At the rear end, the spaced arms 33 are provided with vertically extending spaced arms 34. The rear portion of the platform 33 is pivotally connected to link-arm 35, the link-arm in turn having its other end receiving a shaft 36, which is journaled in bosses 37, formed integrally with plates 28. Shaft 30, carrying crank-arm 31, is provided with a drive-wheel 38, which is driven by well-known mechanism that need not be described. The shaft carries a pair of sprockets 39, which drive the chains 27 in a well-known manner. In view of the well-known construction of the sprockets and drive-chain, no detailed description will be given.

Operation

In the operation of the apparatus, a milk can is moved through a washing-machine (not shown) in inverted position, and at the end of the machine, is discharged by the conveyor of the washing machine onto the inclined plate 26. The can turn-over mechanism, as already described, is operated intermittently and is caused to stop, once in each half revolution, to bring one pair of can-receiving arms 24 into alignment with the inclined plate 26, as shown more clearly in Fig. 2. In this position, it receives the can, the lower end of the can neck being carried by lip 25, and the wings 23 receiving the sides of the can. The driving mechanism then rotates the can turn-over B a half revolution to bring the other pair of can-receiving arms 24 into alignment with plate 26. In making this half revolution, the can, which was first picked up, is uprighted, and the bottom portion of the can slides gently onto the can-receiving platform 33, the side walls of the can and the bottom being engaged almost simultaneously by the vertical arms 34 and horizontal arms 33. The can-receiving position of the platform is shown in dotted lines in Fig. 2. Further movement of the shaft 30 causes the platform, which is supported by link 35 and the arm 32, carried by crank 31, to move to the can-discharging position shown in solid lines in Fig. 2. In this position, the can is brought into engagement with the conveyor chain 27 and is moved away after the can cover 40 has been placed thereon and pressed into engagement with the can neck by the member 16. A second can is then moved down slide 26 onto the next pair of arms 24, and the cycle is repeated.

The double-face cradle described thus effectively discharges cans without any lost motion, two cans being uprighted in a single revolution of the cradle. The gear ratio of the can-discharging means C is such that a can is removed before it can be struck by the succeeding can. The platform, which describes an arcuate movement above the bed 12, moves into a position where it can receive the can before the can starts falling, so that there is substantially no jolting or jarring of the can when it is picked up by the platform. Also, after the can has been deposited onto the bed 12 in a position to be engaged by the conveyor chain 27, the movement of the crank-arm 32 causes the platform 33 to tilt downwardly out of engagement with the can bottom, and to pass rearwardly into position to receive the next can, thus leaving the first can free to receive the cover and then to be moved away by the conveyor chain 27.

While, in the illustration given, I have set forth certain specific constructions as satisfactory, it will be understood that many changes may be made in the constructions without departing from the spirit of my invention.

The foregoing detailed description has been given for clearness of understanding only and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

I claim:

1. In combination with a can turn-over, a tiltable can-supporting platform adapted to support the cans after they have been turned over to an inclined position by said turn-over, and means for moving said platform forwardly of said turn-over to discharge said cans therefrom, said means being effective also to tilt said platform to bring said cans into upright position.

2. In combination with a can turn-over, a tiltable can-supporting platform adapted to support the cans after they have been turned over to an inclined position by said turn-over, a discharge conveyor, and means for moving said platform forwardly of said turn-over and move them onto said conveyor, said means being effective also to tilt said platform to bring said cans into upright position.

3. In combination, a frame, a can turn-over rotatably mounted in said frame, a supporting platform adapted to receive cans after they have been inverted by said turn-over, a link for mounting said platform on said frame, said link having its one end pivotally attached to said frame and having its other end pivotally attached to said platform, and a crank rotatably mounted in said frame and pivotally connected to said member, said crank being adapted upon rotation thereof to move said platform to and away from said turn-over so as to discharge cans from said turn-over.

4. In combination, a frame, a can turn-over mounted in said frame, a supporting platform adapted to receive cans after they have been inverted by said turn-over, a member pivotally connected to said frame and to said platform, said platform having a rigid downward extension, a crank mounted in said frame and pivotally connected to said extension, and means for rotating said crank to move said platform forwardly and rearwardly for discharging cans from said turn-over.

5. In combination, a frame, a can turn-over mounted in said frame, a link pivotally connected at one end to said frame, a can supporting platform pivotally connected to the other end of said link, and means for moving said platform rearwardly into position to support a can inverted by said turn-over, said means being effective for controlling movement of said platform about its pivotal connection with said link and being effective also for moving said platform forwardly to discharge cans from said turn-over.

6. In combination, a frame, a can turn-over mounted in said frame, a can supporting platform movably supported in said frame, means for moving said platform rearwardly and to a raised position for receiving the can thereon,

and means for moving said platform forwardly and downwardly to discharge said can from said turn-over and to lower said can therefrom.

7. In combination, a frame, a can turn-over mounted in said frame, a conveyor for conveying cans away from said turn-over, a link member pivotally connected at its one end to said frame, a can-supporting platform pivotally connected at its rear portion to the other end of said link member, a crank rotatably mounted in said frame forwardly of said link member and having its crank arm pivotally connected with the forward portion of said supporting platform, said crank being effective to move said platform rearwardly and raise its forward portion so as to bring it into position for receiving a can in inclined position, said crank being effective also to move said platform forwardly and to lower its forward portion so as to discharge said can from said turn-over and deliver it in upright position to said conveyor.

8. In combination, a frame, a can turn-over rotatably mounted in said frame about a central axis, said turn-over being equipped with cradles on each side thereof, a can supporting platform movably carried in said frame, means for rotating said turn-over, means for delivering a can to said turn-over at intervals of approximately one-half revolution of said turn-over, means for moving said member rearwardly into a can-receiving position and forwardly to discharge a can from said turn-over at intervals of substantially one-half revolution of said turn-over.

9. In combination, a frame, a can turn-over mounted in said frame, a can-supporting platform movably carried in said frame, said platform having a horizontal portion adapted to engage the bottom of a can and having a vertical portion adapted to engage the rear side of said can, means for moving said platform rearwardly into position to support a can inverted by said turn-over, and means for moving said platform forwardly to discharge said can from said turn-over, said vertical portion of the platform being effective to maintain said can in position on said platform as the platform is moved forwardly.

OTTO B. RUFUS.