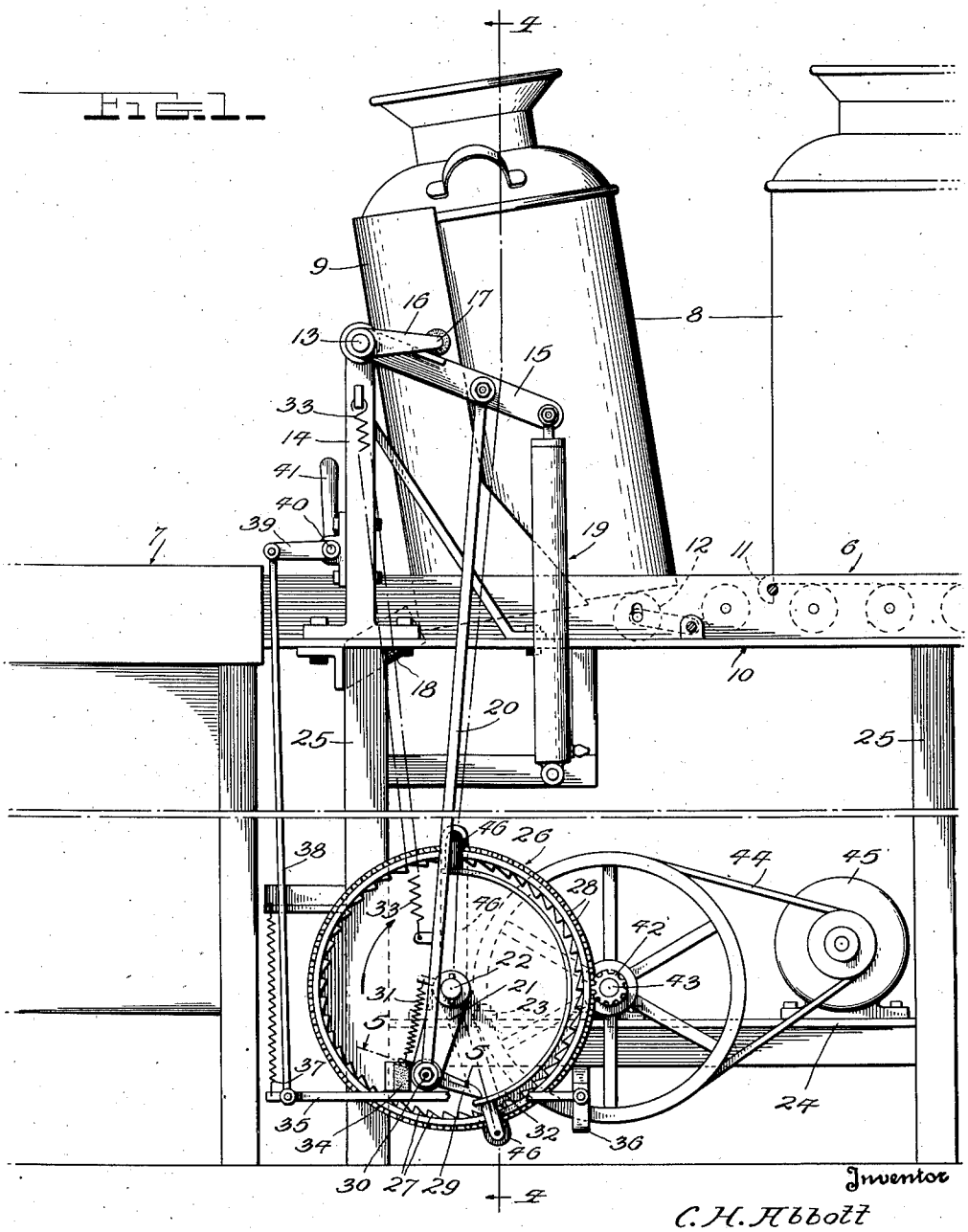
Jan. 7, 1947. C. H. ABBOTT 2,413,900

CAN DUMPING MECHANISM

Filed March 20, 1945 4 Sheets-Sheet 1

FIG. 1



Inventor

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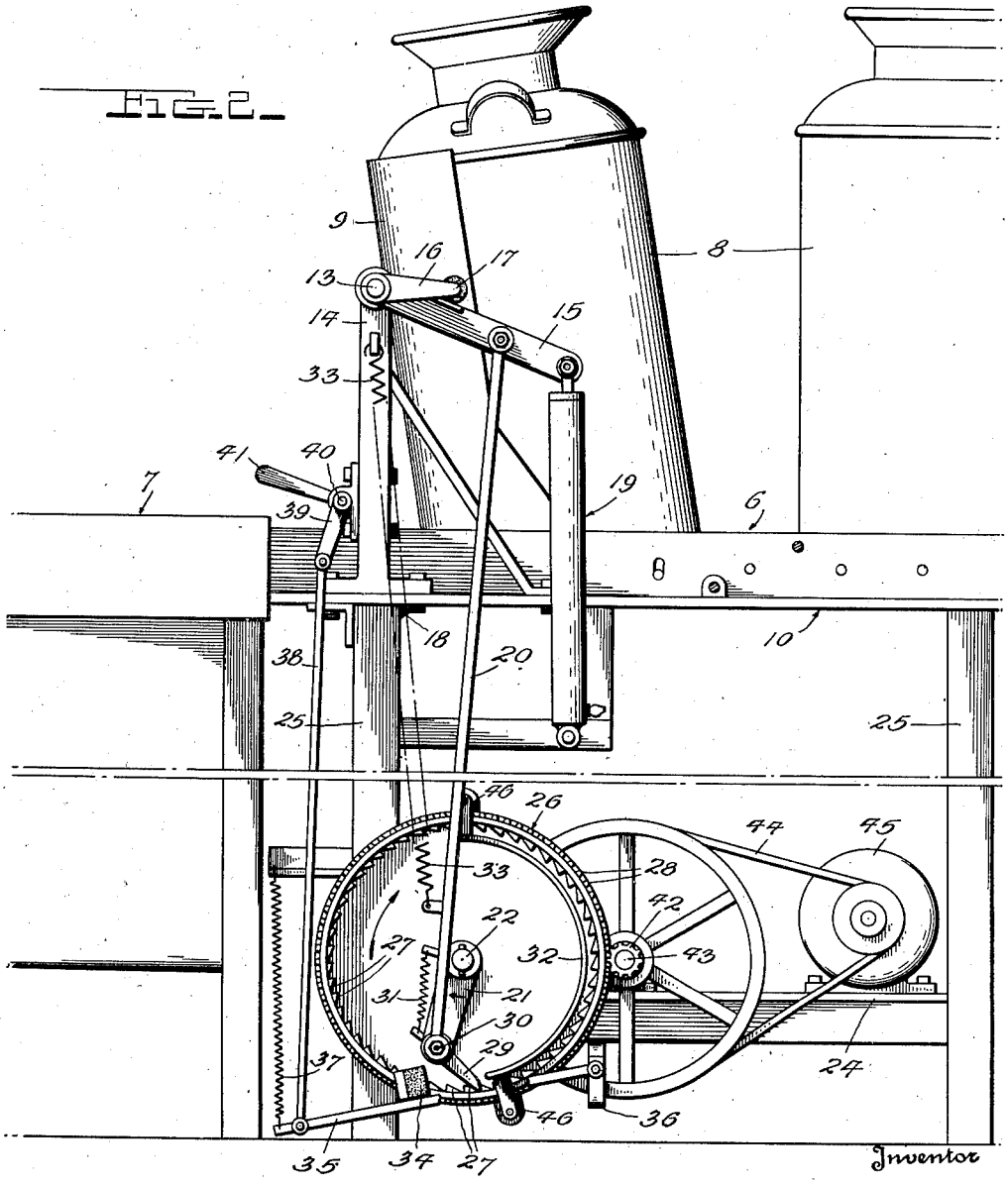
By H. Brewilleson & Co. Attorney

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CAN DUMPING MECHANISM

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FIG. 2



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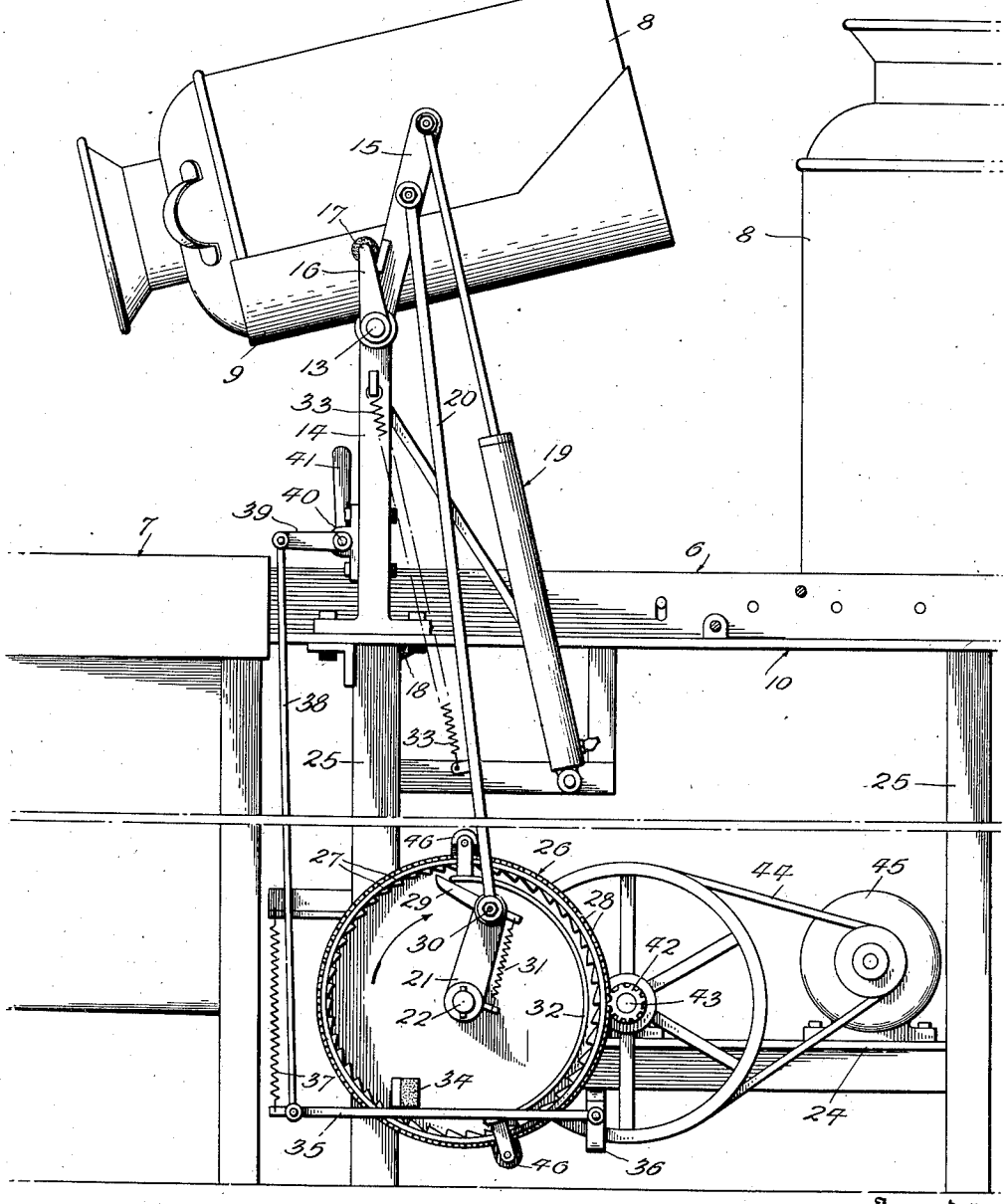
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FIG. 3.



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CAN DUMPING MECHANISM

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FIG. 4

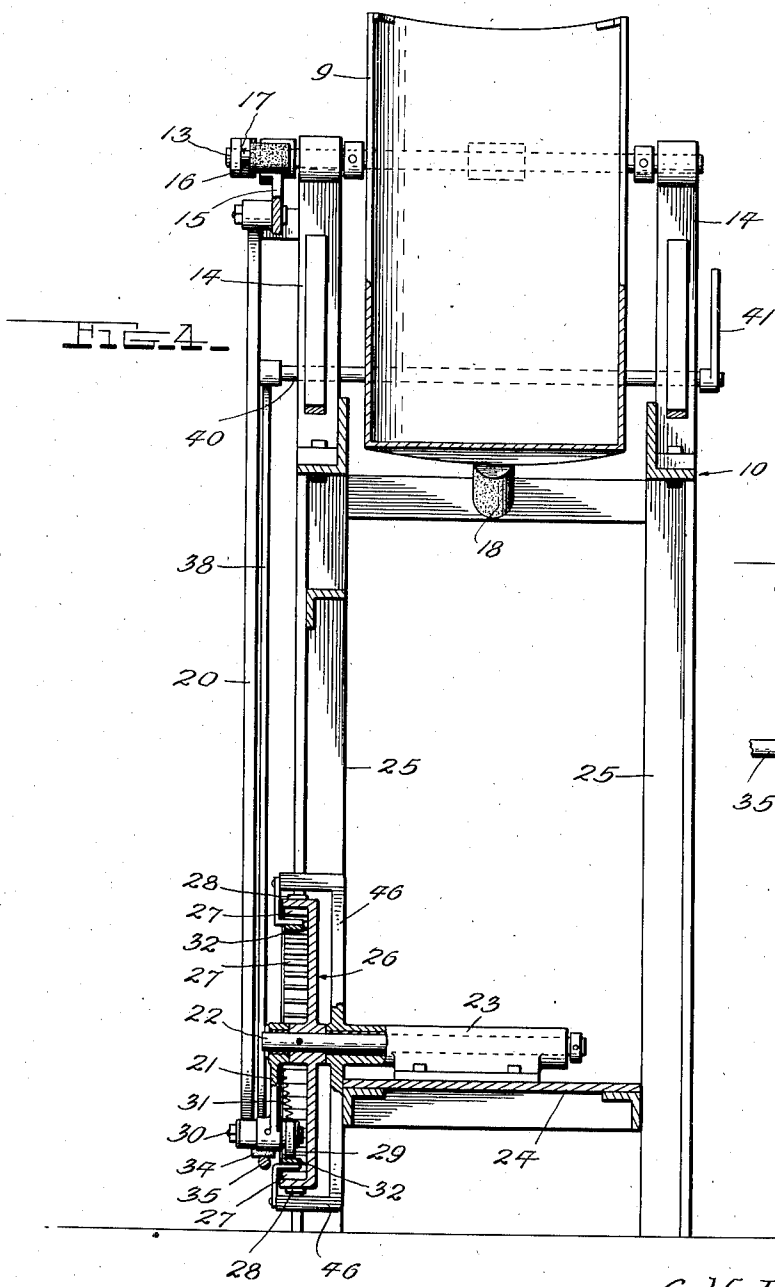
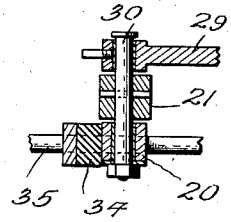


FIG. 5



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Patented Jan. 7, 1947

2,413,900

UNITED STATES PATENT OFFICE

2,413,900

CAN DUMPING MECHANISM

Claude H. Abbott, Astoria, Oreg.

Application March 20, 1945, Serial No. 583,709

5 Claims. (Cl. 214—1.1)

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In my U. S. Patent 2,351,731 of June 20, 1944, a milk can dumping mechanism is shown for use in dairies, to be operated by water pressure. I found, however, that frequently the available pressure was not sufficient to operate the machine effectively. It was, therefore, the object of the present invention to provide an improved machine efficiently operable by electric power, and this object has been attained in an expeditious manner by means of the mechanism herein disclosed.

Figure 1 of the accompanying drawings is a side elevation showing a can in the cradle in readiness for dumping.

Figure 2 is a view similar to Fig. 1 but showing the dumping mechanism starting to effect the can-dumping operation.

Figure 3 is a side elevation showing the mechanical can-dumping operation completed and the parts in readiness for return to normal position when final can-dumping is effected by hand and the can removed from the cradle.

Figure 4 is a vertical transverse sectional view on line 4—4 of Fig. 1.

Figure 5 is a detail horizontal section on line 5—5 of Fig. 1.

The form of construction selected for illustration, will be rather specifically described, with the understanding, however, that within the scope of the invention as claimed, variations may be made.

A roller conveyor 6 is shown extending to a receptacle 7 into which the contents of milk cans 8, are to be discharged. A cradle 9 is pivotally mounted upon the frame 10 of the conveyor 6 for movement from the can-receiving position of Fig. 1 to the can-dumping position of Fig. 3. When the cradle reaches this Fig. 3 position, its mechanical movement is terminated. The cradle and can are then further tilted by hand to completely discharge the can contents, the can is removed from the cradle, and both the cradle and its operating mechanism then return to the position of Fig. 1, by gravity. A can stop 11 is shown in dotted lines in Fig. 1 to arrest the next succeeding can while any can is being dumped, and at 12 a depressible roller has been shown to be depressed by any can entering the cradle 9, to effect operative positioning of said stop 11. The stop and its operating means, however, form no parts of the present invention and are disclosed in my U. S. Patent #2,399,087 of April 23, 1946.

The cradle 9 is suitably secured to a horizontal shaft 13 mounted in appropriate bearings at the

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upper ends of two posts 14 which are secured to the frame 10 near the receptacle 7. Loosely pivoted for vertical movement upon the shaft 13, at one side of the cradle 9, is an arm 15. Secured to the shaft 13 at one side of this arm 15, is an arm 16 having a lateral projection 17 disposed over said arm 15, said projection being preferably rubber-covered for silence. The arm 16 and its projection 17 establish a one-way driving connection between the arm 15 and the shaft 13 of the cradle 9, whereby after mechanical movement of the arm 15 to the can-dumping position of Fig. 3, the can and cradle may be further tilted to the left to complete emptying of the can and to permit its removal from the cradle. The cradle then returns by gravity to the can-receiving position of Fig. 1. Any suitable stop means (not shown) may of course be employed to limit the can-dumping movement of the cradle, and any appropriate means, such as the rubber bumper 18, may be employed to limit the return movement of said cradle. It is also preferable to employ a pneumatic check 19 to cushion the return movement of the cradle and associated parts.

A pitman 20 is pivoted to the arm 15 and extends downwardly therefrom, the lower end of said pitman being pivoted to a crank 21 which is free to rotate upon a transverse shaft 22. In the present disclosure, this shaft is rotatably mounted in a bearing 23 secured upon a shelf or the like 24 secured to the legs 25 of the frame 10. Secured to the shaft 22 is a peripherally flanged wheel 26 having internal teeth 27 and external gear teeth 28. The complete circle at the peripheries of these teeth 28 is explained by the fact that helically pitched teeth have been shown. A crank-driving pawl 29 is pivotally mounted upon the crank pin 30 of the crank 21, and this crank pin preferably extends outwardly from the arm of the crank for connection with the pitman rod 20, and inwardly from said arm of the crank (see Fig. 5) to carry the pawl 29. This pawl 29 is urged toward the teeth 27 by means of a suitable spring 31 but is normally (see Fig. 1) prevented from engaging said teeth by means of a fixed arcuate track 32 which is substantially semi-circular. When the pawl 29, however, is permitted to engage the teeth 27 (Fig. 2), the rotating wheel 26 which is constantly driven, turns the crank 21 to the position illustrated in Fig. 3, thus effecting can dumping. At the completion of this mechanical can-dumping operation, the pawl 29 strikes the upper end of the arcuate track 32 (Fig. 3) and is thus released. When this occurs, the pitman 20, arm 15, and

crank 21 are held in the raised positions of Fig. 3 by means of a spring 33 connected at its lower end with said pitman 20 and connected at its upper end with one of the posts 14, said spring and pitman diverging upwardly as shown. While arm 15, pitman 20 and crank 21 are thus held in raised positions by spring 33, the cradle and can are completely dumped by hand and the can is taken off and sent to the washer. The cradle 9 then returns by gravity until the projection 17 of the arm 16 strikes the arm 15, whereupon the weight of the cradle downwardly swings arm 15, pitman 20 and crank 21, the pawl 29 in the meantime sliding along the track 32 until the parts reach the positions shown in Fig. 1. The movement of these parts is arrested, however, while the pawl 29 is still on the track 32, as seen in Fig. 1. This is accomplished by means of a bumper or stop 34 disposable into and out of the path of the crank 21. This bumper or stop, in the present disclosure, is mounted upon a lever 35 which is fulcrumed to a J-shaped bracket 36 secured to the table or the like 24, said lever being normally raised to operatively position the stop or bumper 34, by means of a suitable spring 37. A rod 38 is pivoted to and extends upwardly from the lever 35, said rod being pivoted to an arm 39 on a cross shaft 40 mounted in bearings on the post 14. This cross shaft is provided with an operating handle 41 and when this handle is depressed, as seen in Fig. 2, it effects downward swinging of the lever 35, thus moving the stop or bumper 34 out of the path of the crank 21, as seen in Fig. 2. When this occurs, the spring 33 which was tensioned by descent of the pitman 20 after the prior can-dumping operation, pulls said pitman to the left, giving an initial turn to the crank 21, sufficient to pull the pawl 29 from the track 32, permitting said pawl to engage one of the teeth 27 of the wheel 26, with the result that this wheel again swings the crank 21 upwardly to produce another mechanical can-dumping operation which operation is terminated by release of the pawl 29 by means of the track 32 as shown in Fig. 3.

While the teeth 27 are shown in the form of ratchet teeth, they could obviously be abutments of any other desired sort on the wheel 26, and it is not necessary that the crank-driving member 29 be of the pawl shape herein disclosed, it being sufficient that this crank-driving member establish a driving connection between the wheel 26 and the crank 21 when permitted to do so. In some instances, a mere frictional engagement of a crank-driving member with the wheel might well be relied upon.

A gear head motor could of course be employed for rotating the wheel 26 which preferably turns about 20 revolutions per minute. Should the wheel then be directly secured to the driven shaft of the gear head motor, the external gear teeth 28 on said wheel would not of course be necessary. In the present disclosure, however, for illustrative purposes, the teeth 28 mesh with a pinion 42 on a shaft 43 mounted on the shelf or the like 24, said shaft being driven by a belt drive 44 from an electric motor 45.

From the foregoing, taken in connection with the accompanying drawings, it will be seen that novel and advantageous provision has been made for attaining the desired end. While excellent results can be obtained from the general construction shown and described, attention is again invited to the possibility of making variations within the scope of the invention as claimed.

For mounting the track 32, arms 46 are shown secured to the bearing 23.

I claim:

1. In a mechanism of the class described, a driven wheel and a crank mounted coaxially for relative rotation, a crank-driving member movably mounted on said crank and engageable with said wheel to drive said crank, a fixed arcuate track in the path of said crank-driving member for releasing the latter when said crank has been driven part of a revolution, said track being also effective to hold said crank-driving member released while said crank is being otherwise turned for the remainder of said revolution, a relatively stationary shiftably mounted stop for arresting this turning movement of said crank before said crank-driving member leaves said track, means for releasing said stop when said crank is to be driven, and means operative upon release of said stop for initially turning said crank until said crank-driving member leaves said track and engages said wheel.

2. A structure as specified in claim 1; said means for initially turning said crank comprising a spring exerting a turning force thereon.

3. A can-dumping machine comprising a pivotally mounted cradle, a vertically swingable normally lowered arm mounted near said cradle, a one-way connection from said arm to said cradle for tilting the latter to a predetermined can-dumping position when said arm is moved from said normally lowered position to a predetermined raised position and for then permitting further and final can-dumping movement of said cradle by hand without further moving said arm, a pitman connected with and extending downwardly from said arm, spring means for holding said pitman and said arm against descent during said final hand-effected movement of said cradle, said cradle when returned to its can-receiving position serving to again lower said arm and pitman and to stress said spring means, a crank connected with said pitman for raising it to move said arm to said predetermined raised position, a driven wheel coaxial with said crank, a crank-driving member movably mounted on said crank and engageable with said wheel to establish a driving connection from said wheel to said crank to raise said pitman, a fixed arcuate track concentric with said wheel and cooperable with said crank-driving member to release this member when the can-dumping movement of said crank is complete, said track being also effective to hold said crank-driving member in released position while said crank and pitman return to lowered position, a stop for arresting the return movement of said crank before said crank-driving member leaves said track, and means for releasing said stop when a can-dumping operation is to be started, the aforesaid spring means when stressed exerting a force tending to turn said crank in can-dumping direction, whereby upon release of said stop said spring means will impart an initial movement to said crank in a direction to move said crank-driving member from said track for reengagement with said wheel.

4. A structure as specified in claim 3; said spring means consisting of a spring connected with said pitman and acting obliquely thereon when stressed, to exert both an upward force and a crank-turning force on said pitman.

5. In a mechanism of the class described, a driven wheel and a crank mounted coaxially for relative rotation, a crank-driving member movably mounted on said crank and engageable with

said wheel to drive said crank, a fixed arcuate track in the path of said crank-driving member for releasing the latter when said crank has been driven part of a revolution, said track being also effective to hold said crank-driving member released while said crank is being otherwise turned for the remainder of said revolution, and a relatively stationary stop for arresting this turning

movement of said crank before said crank-driving member leaves said track, said stop being releasable when said crank is to be driven, whereby an initial turn of said crank will then move said crank-driving member from said track for reengagement with said wheel.

CLAUDE H. ABBOTT.