

A. L. DUNCAN AND C. E. FORRY.
CAN END FEED.
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Patented Dec. 5, 1922.
2 SHEETS—SHEET 1.

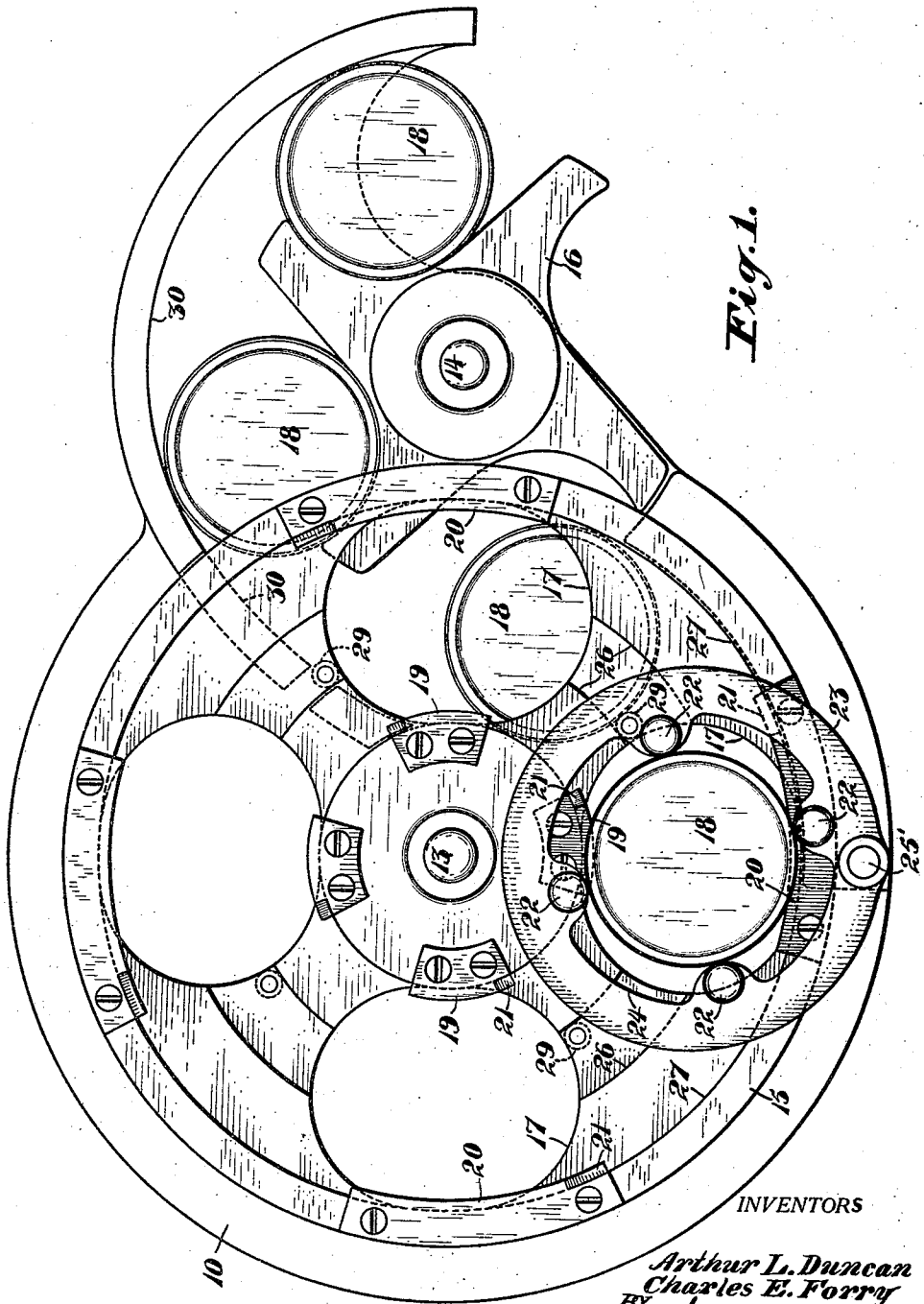


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

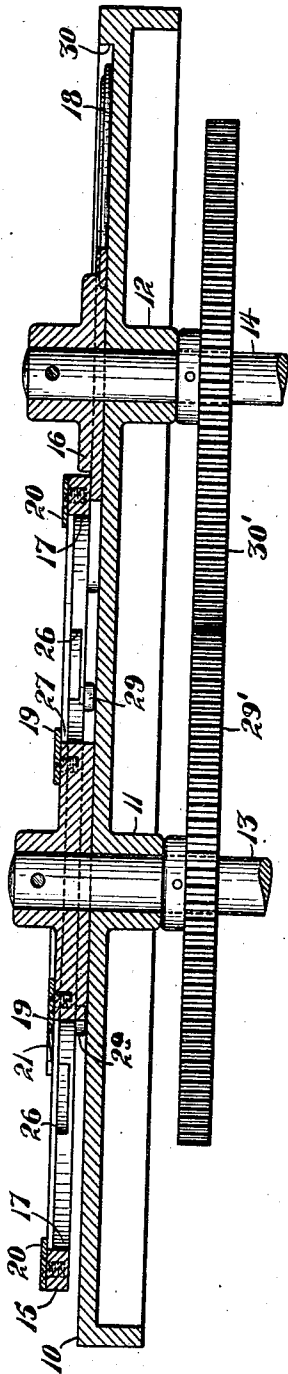
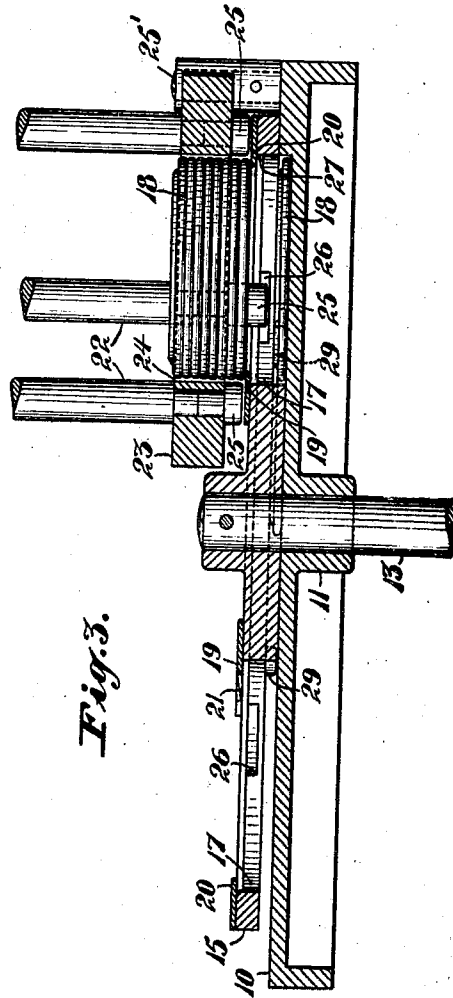


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CAN-END FEED.

Application filed June 30, 1920. Serial No. 393,205.

To all whom it may concern:

Be it known that we, ARTHUR L. DUNCAN and CHARLES E. FORRY, citizens of the United States, residing at 5414 Genoa St., Oakland, in the county of Alameda and State of California, have invented a new and useful Improvement in Can-End Feed, of which the following is a specification.

This invention relates to can machinery and particularly pertains to a can cap feed.

Heretofore it has been common practice to provide reciprocating feed means for can ends or caps although there is always considerable wear and difficulty in connection with the reciprocating members. It is the principal object of the present invention to have a rotary can end feed which will operate with greater rapidity than the reciprocating mechanisms and will insure that the machine may operate continuously with a minimum amount of wear and with certainty in the feed operation even though the mechanism is functioning at a very high rate of speed.

The present invention contemplates the use of a can and stacker beneath which a rotary disk is disposed carrying blades by which the lowermost end in the stack may be cut from the stack and thereafter delivered onto a feed table where it is engaged by a positive feed member of the rotating disk and then delivered to a star wheel operating in synchronism with the disk.

The invention is illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is an enlarged view in plan illustrating the complete mechanism and disclosing one can end being fed from the stacker to the star wheel.

Fig. 2 is a view in transverse section through the feed disk and the star wheel mechanisms showing the relation of these rotating members to the feed table.

Fig. 3 is a view in transverse section through the stacker and the feed disk, more clearly disclosing the manner in which the lowermost can end is cut from the stack.

Referring more particularly to the drawings, 10 indicates a feed table which is disposed in a horizontal plane and may be supported upon any suitable subframe structure. This table is provided with two vertical bearings 11 and 12 through which a feed disk shaft 13 and a star wheel shaft 14

are disposed. The shaft 13 projects upwardly through the table and receives a feed disk 15 rigidly keyed thereto. The shaft 14 projects upwardly through the table parallel to the shaft 13 and receives a star wheel 16 by which the can ends are carried from the machine.

Referring more particularly to Fig. 1 of the drawings, it will be seen that the feed disk 15 is formed with a plurality of elongated openings 17. These openings are substantially elliptical, the width being slightly greater than the diameter of can ends 18 while the length of the openings are sufficient to permit the can ends to fall through the openings without being engaged by the disk even though it is moving at a very high rate of speed. Secured upon the upper face of the disk and along the outer and inner edges of the feed openings are separating blades 19 and 20. These blades have beveled portions 21 adapted to pass between the lowermost can end 18 and the remainder of the can ends in the stack, thereby having an action to slightly elevate the stack of can ends while causing the lowermost can end to drop through the opening 17 as this opening moves into register with the bottom of the stack. Referring to Fig. 3 it will be seen that the portion of the disk traveling beneath the stack of can ends is spaced from the feed table to permit one can end to pass beneath the disk and along the feed table and also to allow the arms of the star wheel 16 to pass beneath the disk and engage the can tops moving along the table.

The can ends are maintained in a stack between vertical guide posts 22. These posts extend upwardly from a supporting ring 23. This ring has a central opening 24 therethrough of substantially the same diameter as the can ends. An extension is formed on the side of the ring to receive a pin 25 which secures the ring in rigid relation to the table 10 and permits it to overhang the disk 15 so that the stack of cans will be superimposed above and in register with the openings 17 in the disk at certain intervals in the rotation thereof. Lower extending pins 25 project from the under face of the ring 23 and from continuing guides for the can stack so that they will be held in proper relation to be engaged by the knives 20 and 21 of the rotating disk. The pin 25 upon the side of the ring towards which the disk

travels extends downwardly and into a circumferentially extending slot 26 formed on the top face of the disk. This downward extension acts to guide the can ends directly through the openings 17 of the disk when in register therewith and to hold the lowermost can end within a groove 27 on the top face of the disk until an opening 17 registers with the can end.

10 In operation of the present invention the can ends are stacked between the vertical rods 22 and the lowermost end caused to rest within the groove 27 of the rotating disk 15. The two shafts 13 and 14 may thereafter be driven in synchronism by means of gears 29' and 30' or other power transmission mechanism. As the knives encounter the stack of cans, the beveled forward ends thereof pass between the lowermost can end in the stack and the can ends thereabove thus elevating the stack of cans onto the knives and cutting the lowermost can end from the stack to fall into the adjacent opening 17 of the rotating disk. The can end is held in this position as the disk rotates by encountering the pin 25 in the path of travel of the can. When the opening 17 comes into register with the can end, this end will fall through the opening and onto the fixed floor 10 where it will stand momentarily until caught by a pin 29, one of which extends downwardly from the under face of the rotating disk and directly in front of each of the openings 17. This pin will carry the can end forwardly until it strikes a deflecting member 30 where it will be engaged by one of the concaved arms of the star wheel 16 and thereafter moved around against the deflecting member 30 and out of the machine. As the sets of knives 19 and 20 successively encounter the stack of can ends they will each successively cause the lower can end to fall through one of the openings 17 and to thereafter be fed to the star wheel and carried away.

It will thus be seen that the mechanism here disclosed is direct in its action and will insure that can ends may be rapidly fed from a stack to any desired machine.

50 While we have shown the preferred form of our invention as now known to us, it will be understood that various changes in the combination, construction and arrangement of parts may be made by those skilled in the art without departing from the spirit of the invention as claimed.

Having thus described our invention, what we claim and desire to secure by Letters Patent, is,:

60 1. In a can end feed mechanism, a stacker, a rotary feed member having a circular series of can end receiving openings, an inner and an outer circular series of knives rigidly carried by the member and arranged with the knives of each series extending into

the respective openings so that each opening has a pair of knives associated therewith to remove the lowermost can end.

2. A can end feed mechanism including a stacker, a rotary feed member associated with the stacker and having a series of openings to receive the can ends there-through, a circular track intersecting the openings and receiving the stack of can ends therein, a series of can end removing means on the member associated with the respective openings to successively remove the lowermost can end from the stack and means to hold the removed can end stationary on the track until the adjacent opening registers with the removed can end to permit the latter to drop through said opening.

3. A can end feed mechanism including a stacker, a rotary feed member associated with the stacker and having a series of openings to receive the can ends there-through, means to successively separate the lowermost can end when the openings register with the stacker, and a star wheel having movement beneath the member and across parts of the openings thereof to move the can ends away from beneath the member.

4. A can end feeding mechanism comprising a stacker within which a plurality of can ends are disposed in superimposed relation to each other, a rotary disk having a series of openings mounted beneath said stacker and upon which the stack of cans normally rest, a feed table below the disk, means carried by the disk and extending into the openings from opposite sides thereof for separating the lowermost can end from the stack and delivering it to the feed table and means carried by the disk and projecting therebelow for positively engaging the can end thus lowered and to move it along the feed table and beneath the disk.

5. A can end feed mechanism including a stacker, a rotary feed member associated with the stacker and having a series of openings to receive the can ends there-through, means to remove the lowermost can end from the stack to permit same to drop through an opening of the member, means to hold said can end stationary until an opening of the member registers therewith, and means carried by the member and located therebelow for moving said can end forwardly after the latter has passed through and beneath the member.

6. A can end feeding device comprising in combination, a stacker within which can ends are stacked, a disk rotatable in a horizontal plane beneath the stacker and upon which the stack of can ends normally rests, a plurality of feed openings formed through the disk, a feed table below the disk and onto which the can ends may fall from the

stacker, a pair of diametrically opposed knives for each feed opening and extending thereinto for separating the lowermost can end from the stack to permit it to fall through one of said openings and positive means carried by the disk to engage the can end which has fallen through the opening in the disk and to move it along the feed table.

7. A can end feed mechanism including a stacker, a rotary feed member associated with the stacker and having an opening to receive a can end therethrough, means to remove the lowermost can end from the stack to permit same to drop through an opening of the member, means to hold said can end stationary until said opening registers therewith, and means located below the feed member to move the can end forwardly after the latter has passed through the opening of said member and beneath the latter.

8. A can end feed mechanism comprising a horizontal feed table, a can end stacker disposed above said feed table and adapted to receive a plurality of superimposed can ends, a continuously rotating disk moving horizontally over the face of the feed table and beneath the stacker, said disk being formed with a guideway upon which the stack of cans may normally rest, a plurality of escapement openings formed through the disk and at intervals therearound of sufficient diameter to permit a can end to pass therethrough and of greater length than the diameter of the can end whereby a can end may fall free of the escapement disk and onto the table, a pair of separating knives disposed along the opposite sides of the openings in the disk to separate the lowermost can end from the stack, means for holding said separated can against movement with the rotary disk upon which it rests until in register with one of said openings and positive means for moving the can end which has dropped through one of said openings along the feed table.

9. A can end feed mechanism comprising a horizontal feed table, a can end stacker disposed above said feed table and adapted to receive a plurality of superimposed can ends, a continuously rotating disk moving horizontally over the face of the feed table

and beneath the stacker, said disk being formed with a guideway upon which the stack of cans may normally rest, a plurality of escapement openings formed through the disk and at intervals therearound of sufficient diameter to permit a can end to pass therethrough and of greater length than the diameter to permit a can end to fall free of the escapement disk and onto the table, a pair of separating knives disposed along the opposite sides of the openings in the disk to separate the lowermost can end from the stack, means for holding said separated can against movement with the rotary disk upon which it rests until in register with one of said openings and positive means for moving the can end which has dropped through one of said openings along the feed table, and a star wheel moving in synchronism with the rotary disk for successively carrying away the can ends as they are moved along the table by the disk.

10. In a can end feed mechanism, a stacker, a rotary feed member having a circular series of can end receiving openings, an inner and an outer circular series of knives rigidly carried by the member and arranged with the knives of each series extending into the respective openings so that each opening has a pair of knives associated therewith to remove the lowermost can end, a circular guide way on the member to receive and support the stack of can ends, means to hold the can ends stationary until registry therewith of the adjacent opening to allow the can end to pass through the latter, and means to advance the can ends after passing through the member.

11. In a can end feed mechanism, a feed table, a stacker thereabove, a rotary feed member beneath the stacker having a can end receiving opening, said member having a circular can end receiving groove on its upper face and a circular slot, and a stationary pin extending downwardly into the circular slot to guide the can end into the opening of the feed member and onto the feed table and to prevent same from riding up out of said opening.

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