C. D. McDONALD AND C. E. ENNES.

CAN END FEEDING MECHANISM.

APPLICATION FILED JUNE 14, 1920.

**1,408,617.** **Patented Mar. 7, 1922.**

7 SHEETS—SHEET 1.

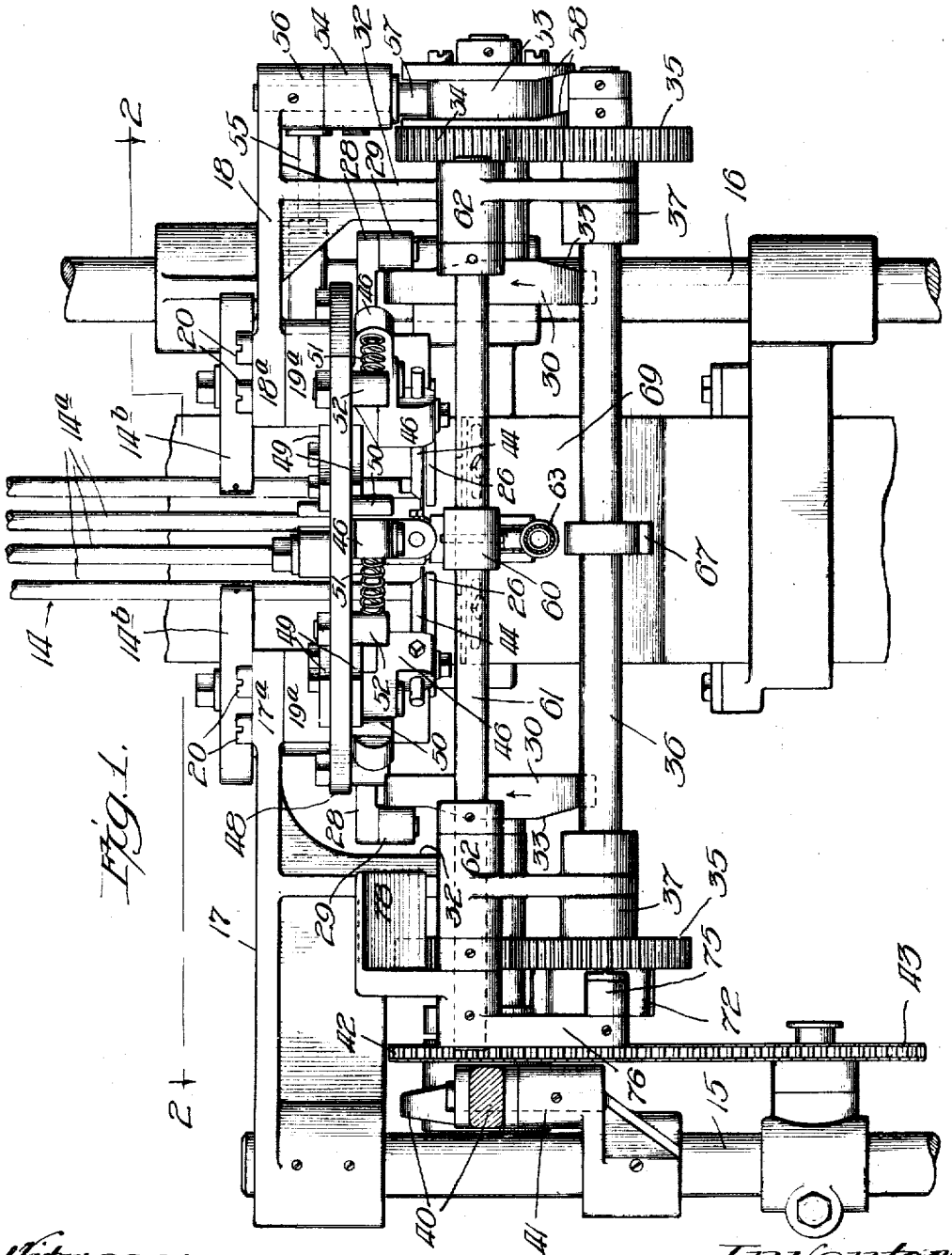

Fig. 1.

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by Charles O. Shirley Atty

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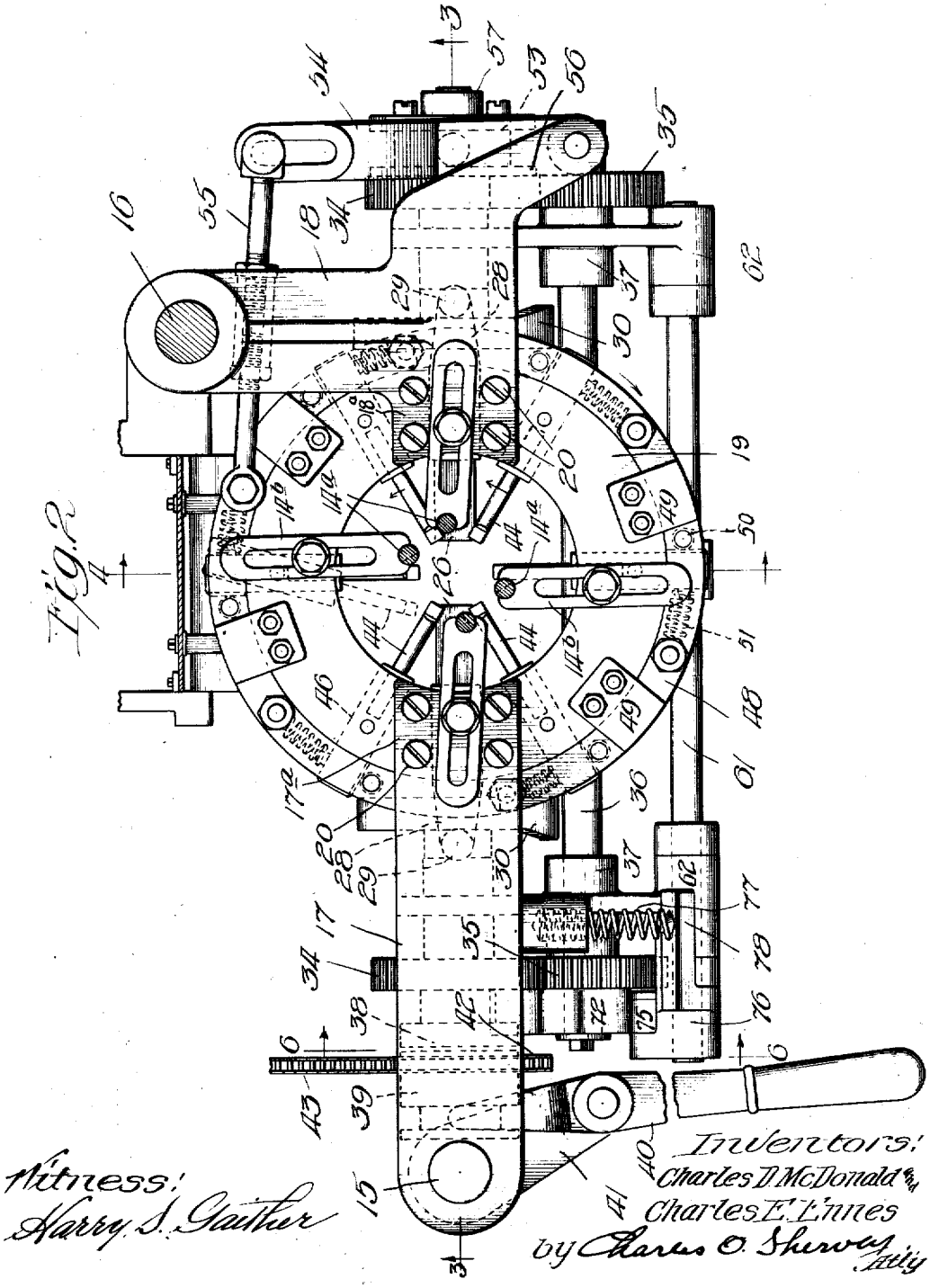

Fig. 2

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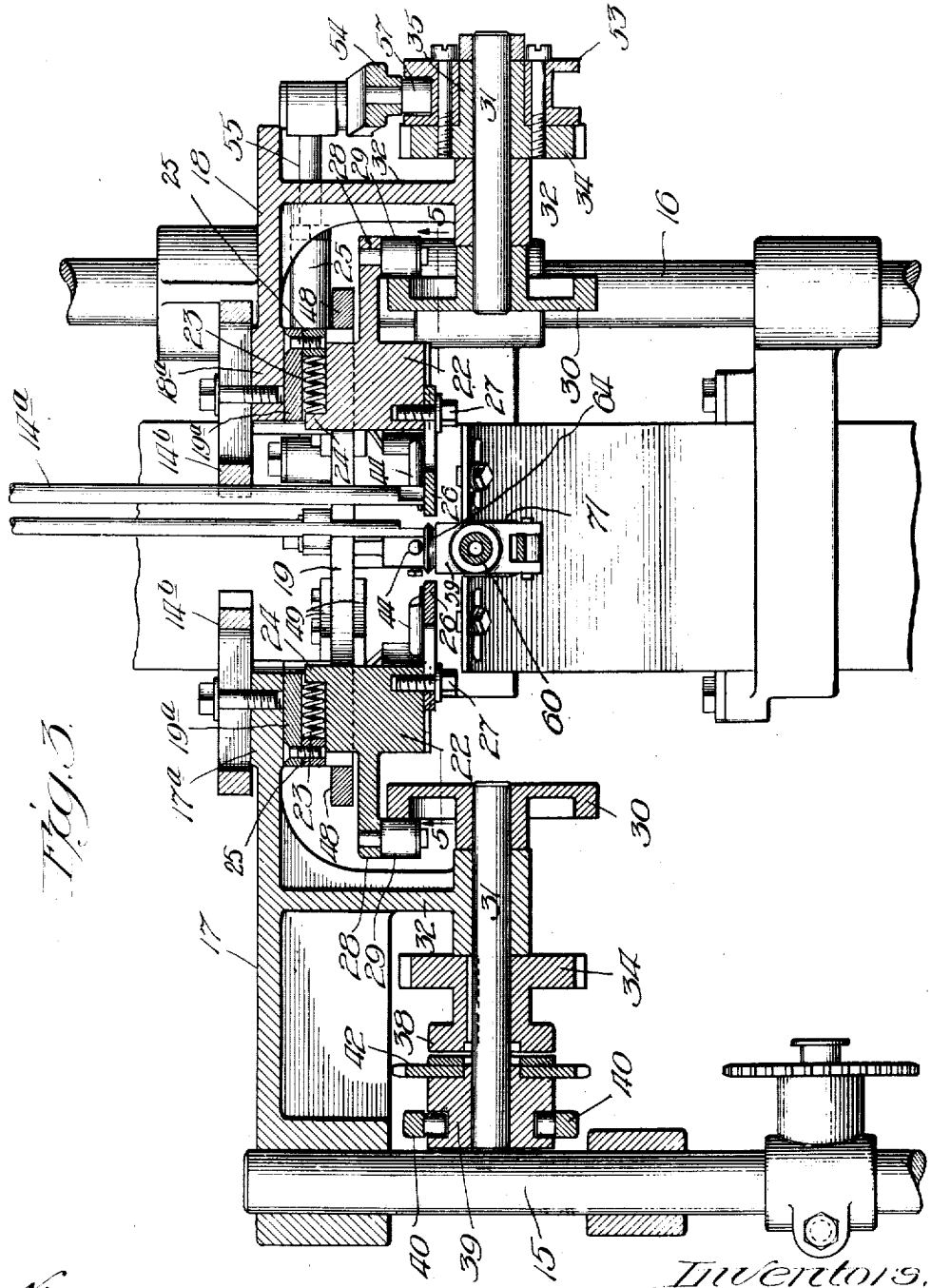

Fig. 5.

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Fig. 4.

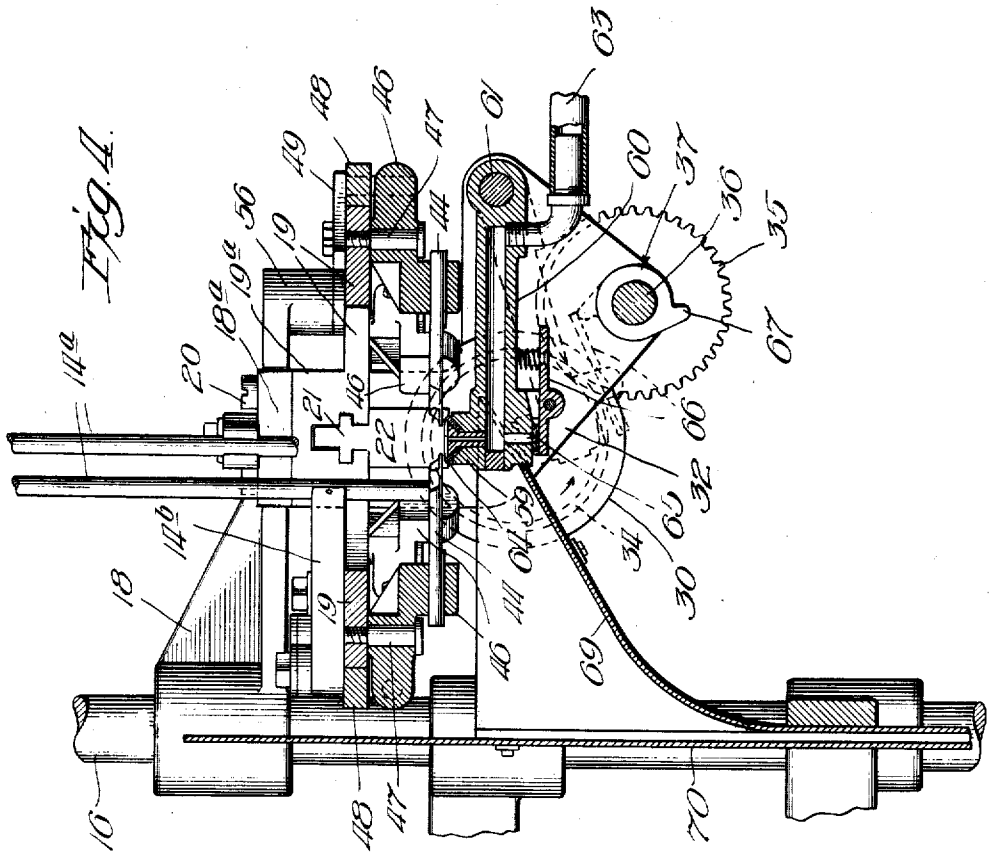


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Fig. 11.

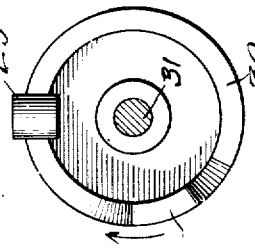


Fig. 12.

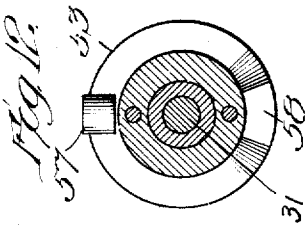


Fig. 13.

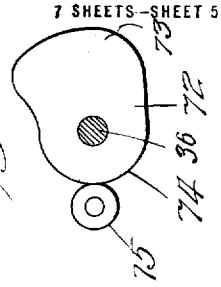


Fig. 5.

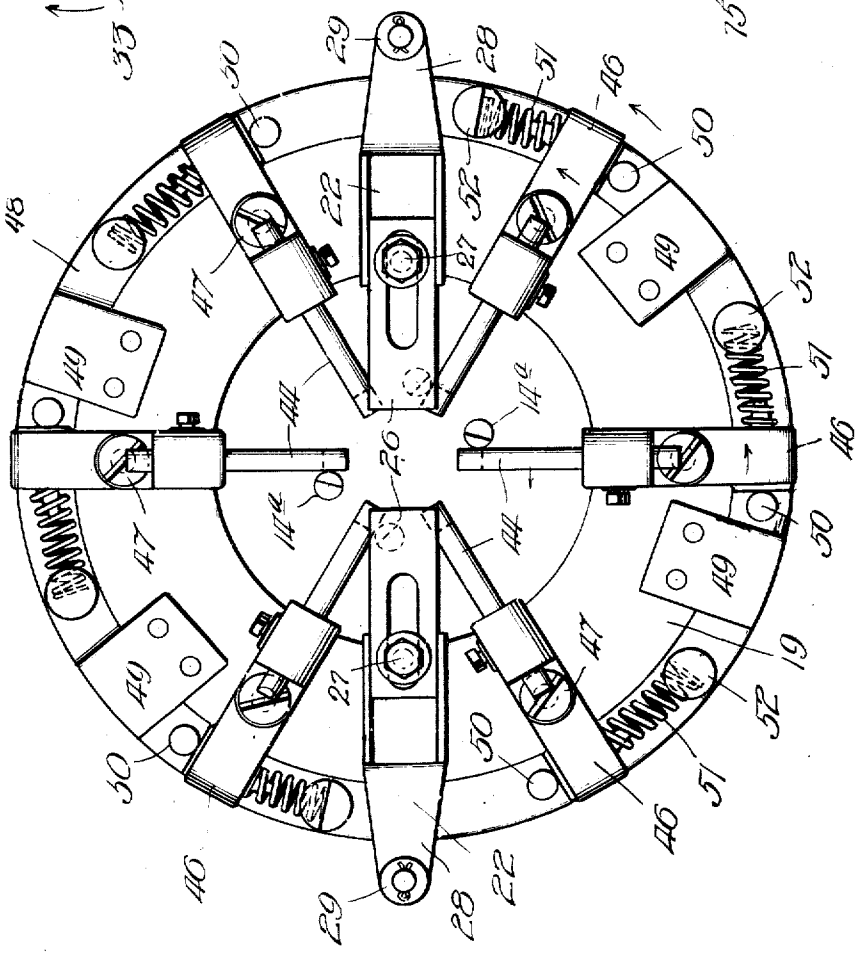


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Fig. 7.

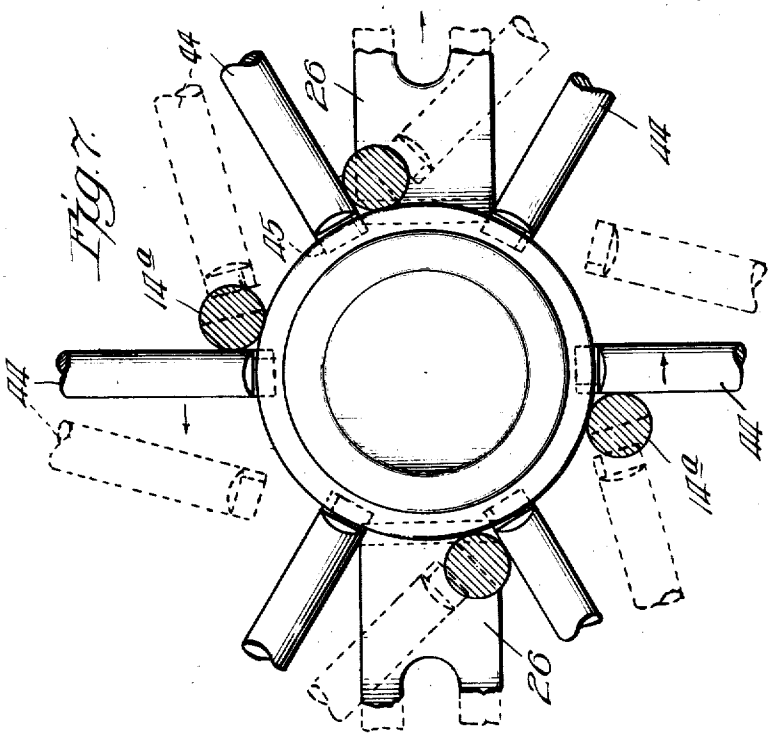
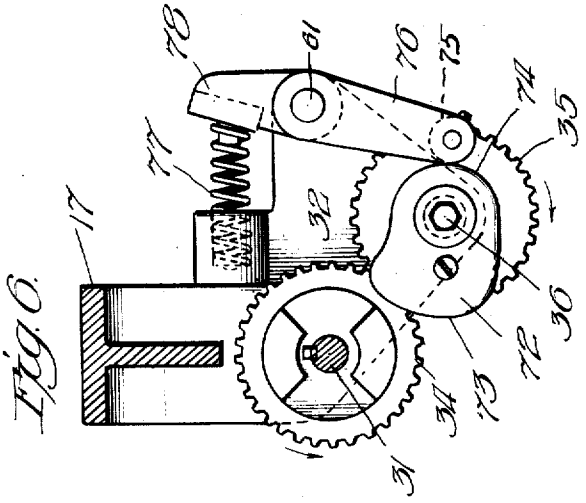



Fig. 6.

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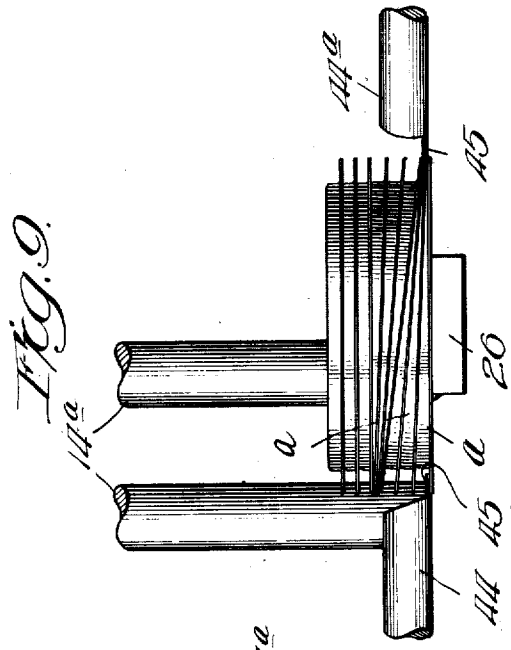


Fig. 9.

Fig. 10.

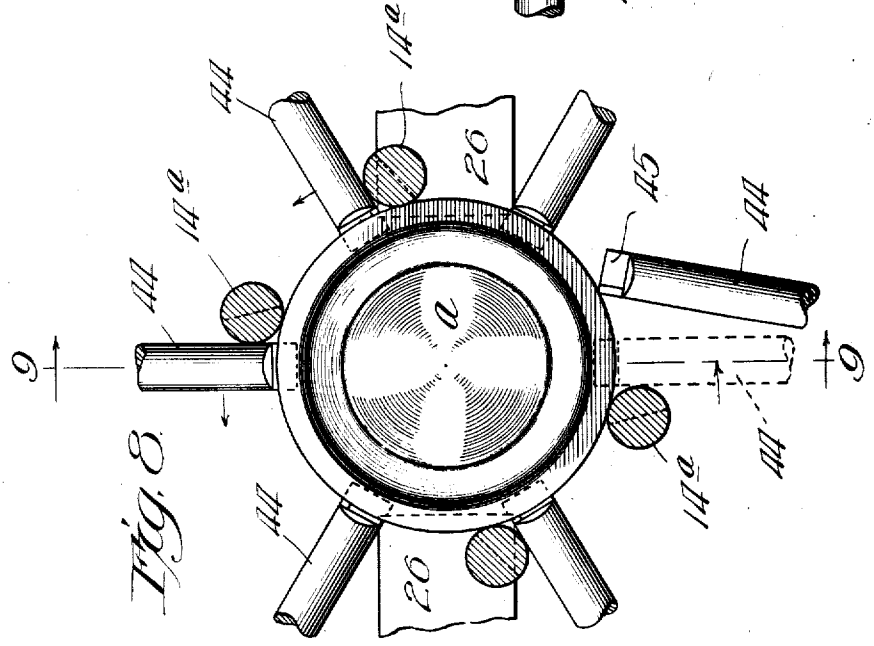


Fig. 8.

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# UNITED STATES PATENT OFFICE.

CHARLES D. McDONALD AND CHARLES E. ENNES, OF CHICAGO, ILLINOIS, ASSIGNORS TO THE McDONALD MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## CAN-END-FEEDING MECHANISM.

1,408,617. Specification of Letters Patent. Patented Mar. 7, 1922.

Application filed June 14, 1920. Serial No. 388,965.

*To all whom it may concern:*

Be it known that we, CHARLES D. McDONALD and CHARLES E. ENNES, citizens of the United States, and residents of Chicago, Cook County, and State of Illinois, have invented certain new and useful Improvements in Can-End-Feeding Mechanism, of which the following is declared to be a full, clear, and exact description.

This invention relates to can end feeding mechanism, and its principal object is to provide automatically operating mechanism of improved construction for feeding can ends, one at the time, from a stack of can ends and delivering them to other mechanism for a subsequent operation. The invention has particular reference to mechanism for feeding the ends of tin cans which comprise the bottoms of the cans, and it has been designed more especially for use in feeding can bottoms that have flat edge portions. One of the principal difficulties encountered in feeding can bottoms of this type is that when stacked, the can bottoms are apt to lie in uneven and irregular condition so that oftentimes the edges of two or more are in contact, thus interfering with the proper stripping or separating of the endmost can bottom from the remainder of the stack. The present mechanism has been designed to overcome this difficulty and to insure a continuous and uninterrupted feed of can bottoms from the stack to the mechanism that performs a subsequent operation thereon. Other objects and advantages will appear in the course of the following specification, and with all of the said objects and advantages in view, this invention consists in the several novel features of construction, arrangement and combination of parts hereinafter fully set forth and claimed.

The invention is clearly illustrated in the accompanying drawings, in which Fig. 1 is a front elevation of a can end feeding mechanism embodying a simple form of the present invention, certain parts of the frame, hopper rods and operating lever being broken away. Fig. 2 is a view, partly in plan and partly in horizontal section, the line of section being indicated at 2—2 in Fig. 1. Fig. 3 is a vertical, longitudinal section taken on the line 3—3 of Fig. 2. Fig. 4 is a vertical cross section taken on the line 4—4 of Fig. 2. Fig. 5 is a view, looking from below, of the mechanism which supports the stack and separates the endmost can bottom from the remainder of the stack. Fig. 6 is a detail view, partly in vertical cross section and partly in end elevation, of certain mechanism for actuating a certain suction cup arm, the line of section being indicated at 6—6 in Fig. 2. Fig. 7 is a detail plan of fragments of the stack supporting fingers and stripping fingers, and showing a can bottom in place, the hopper rods being shown in horizontal section. Fig. 8 is a view similar to Fig. 7 but showing one of the stripping fingers in a position in which it is obstructed by a can bottom. Fig. 9 is a detail, vertical, cross section taken on the line 9—9 of Fig. 8. Fig. 10 is a cross section through a can bottom. Fig. 11 is a face view of a supporting-finger cam. Fig. 12 is a view of a stripping-finger cam, and Fig. 13 is a face view of a suction arm actuating cam.

Referring to said drawings, the reference characters 15, 16 designate two upright members of a main supporting frame, which members may conveniently comprise rods. Said rods may be supported by any suitable structure, as for instance the frame or body of a machine that performs a subsequent operation on the can bottoms. Rigidly secured to said frame members 15, 16 are supporting brackets 17, 18 which form the supports for the operating mechanism. To the under sides of the end portions $17^a$, $18^a$ of said brackets 17, 18, is secured a ring-like member 19 which is formed with oppositely-disposed, upwardly-projecting lugs $19^a$ that are fastened to the brackets 17, 18 by screws 20. Said lugs $19^a$ are formed with oppositely-disposed guideways for the reception of slides 21 of slide blocks 22 (see Figs. 3 and 4), said slide blocks being mounted in the guideways to move toward and away from each other. Said slide blocks are yieldingly pressed toward each other by springs 23 provided in said guideways between shoulders 24 on the slide blocks and stationary abutments 25 fastened to the lugs $19^a$ by screws or otherwise. Adjustably supported by said slide blocks 22 are can bottom supporting fingers 26 which project toward each other and act to releasably support the stack of can bottoms. Said supporting fingers 26 may be adjustably secured to the slide blocks 22 by bolts 27 passing through lengthwise-extending slots in the supporting fingers and

threaded in the slide blocks (see Fig. 3). The supporting fingers 26 normally support a stack of can bottoms, and during the operation of separating the lowermost can bottom from the stack, the supporting fingers are moved away from each other sufficiently to permit said can bottom to pass between their ends.

A hopper 14 is provided for holding the stack of can bottoms above the supporting fingers, which hopper may comprise the usual hopper rods $14^a$ which may be supported on the brackets 17, 18 by hopper fingers $14^b$ adjustably mounted on the brackets. The hopper rods $14^a$ are grouped around a common center and extend down to the supporting fingers.

The mechanism which operates the supporting fingers 26 will now be described. The slide blocks 22 are provided with arms 28 (see Figs. 1, 2 and 3), which support rollers 29, that engage with cams 30 mounted upon cam shafts 31 that are journaled in bearing brackets 32 which may be formed on and project down from the main brackets 17 and 18. Said cams 30 have cam faces 33 disposed at the outer sides of the cams 30 which are shaped and arranged to engage with and move the rollers 29, and therewith the slide blocks 22 and supporting fingers 26, outwardly or away from the center of the ring each time that the cam faces 33 engage the rollers 29. The springs 23 act to continuously hold the rollers 29 in engagement with the cams 30 and operate to return the slide blocks and fingers 26 to their position under the can bottoms supporting the stack as soon as the cam faces 33 have passed by the rollers 29. The cam shafts 31 are driven to rotate in the direction of the arrows shown on the cams 30 in Figs. 1, 4 and 11, and are driven to rotate at the same speed so as to simultaneously bring each cam face 33 into effective engagement with the rollers 29 to thereby simultaneously retract the supporting fingers 26. The simple means shown for accomplishing this purpose comprises pinions 34 fast upon the cam shafts 31 which mesh with pinions 35 fast on a counter-shaft 36 which is journaled in bearings 37 that may be formed on the lower ends of the brackets 32. One of the pinions 34 (see Fig. 3) may be provided with one member 38 of a clutch, the other clutch member 39 of which is slidably mounted upon the shaft 31 and is the driving element of the mechanism. A starting or operating lever 40, pivotally supported on a bracket 41 mounted on the frame rod 15, engages the clutch member 39 by the usual pin and groove connection and provides means for clutching and unclutching the members 38, 39 of the clutch. The clutch member 39 may be suitably driven, and it is shown as having a sprocket wheel 42 secured upon it, which has a sprocket chain 43 trained around it that may be driven from any suitable source of power. Obviously, any other gearing may be provided for continuously rotating the clutch member 39, but the one shown forms a simple power transmitting mechanism.

The stripping fingers and mechanism for operating them will now be described. The stripping fingers 44 are grouped around a common center and are located immediately above the plane of the supporting fingers 26, and their effective ends are reduced in thickness so as to form thin blade-like ends 45 (see Figs. 8 and 9) which, in the operation of the machine, are arranged to be inserted between the lowermost can bottom (*a*) and the one (*a*) next above the same, as is seen in Fig. 9. Said stripping fingers 44 are adjustably mounted in oscillatory arms 46 which, in the form of the invention illustrated, are rotatively mounted upon pins 47 (see Fig. 4) that project down from the ring-like member 19. In the operation of the machine said arms 46 with their fingers 44 are oscillated upon the pins 47, for the purpose of inserting the blades of the fingers 44 between the lowermost can bottom and the one immediately above it, as will be hereinafter described. Said arms 46 and stripping fingers 44 are oscillated in unison to engage and disengage them from the can bottoms; and the means for oscillating them comprises an oscillatory, stripping finger, actuating ring 48 which surrounds the ring-like member 19 and is rotatably carried thereby and guided thereon by brackets 49 secured to the upper and lower faces of the ring-like member 19 and projecting above and below the stripping finger ring 48. Lugs 50 projecting down from the stripping finger ring 48 and engaging with one side of each stripping finger arm 46 act to move said arms 46 in the direction of the arrows thereon in Figs. 2, 5 and 7, when the ring 48 is turned in one direction, to thereby swing the stripping fingers out of engagement with the can bottoms, and coiled compression springs 51 interposed between lugs 52 and the other sides of the arms 46 act to yieldingly move the arms 46 and therewith the stripping fingers in the opposite direction to insert them between the lowermost can bottom and the one next above it when the ring 48 is turned in the opposite direction. The yielding connections are provided between the ring 48 and arms 46 to permit of an independent movement of the ring 48 and any one or more of the arms 46, in case the stripping finger carried by it happens to encounter the marginal edge of one or more of the can bottoms, as may happen in case the flat edges of two or more of the lowermost can bottoms happen to lie close together, as is clearly indicated at the right-

hand of Fig. 9 which shows the stripping finger at the right in engagement with the marginal edge of the lower can bottoms. This position of said finger is also shown in full lines in Fig. 8 at the lower end of the figure.

It will be observed that a multiplicity of stripping fingers is used, and that they are circumferentially arranged around the can bottoms. Six fingers are shown and more or less may be used, but we have found that by using a multiplicity of fingers a majority of them will always enter the space between the edge portion of the lowermost can bottom and the one next above it, and thereby support the stack of can bottoms when the supporting fingers are retracted.

Simple means are provided for oscillating the ring 48 and stripping fingers 44 in timed relation to the movement of the supporting fingers, and the means here shown comprises a stripping finger box cam 53 (see Figs. 1, 2, 3 and 12) mounted on one of the cam shafts 31, an oscillatory, stripping finger, actuating lever 54 and a link 55, connecting the lever 54 with the ring 48. The lever 54 is pivotally supported by an arm 56, formed on the bracket 18, and has a roller 57 which runs in a peripheral cam groove in the cam 53. In the sides of the cam groove are cam faces 58 formed and arranged as shown to move the roller 57 back and forth once during each revolution of the cam 53, and thereby rock the lever 54 and therewith the ring 48 and stripping fingers in timed relation to the movements of the supporting fingers. The cams 30, 53 are so timed with respect to each other that the stripping fingers are moved out from the can bottoms while the supporting fingers are at rest and supporting the stack of cans, and the supporting fingers are moved out from beneath the can bottoms while the stripping fingers are in position to support them. In other words, the supporting fingers and stripping fingers alternately support the stack, the stripping fingers supporting it while the lowermost can bottom is being detached or removed from the remainder of the stack.

After the lowermost can bottom has been separated from the stack, it is positively detached from the remainder of the stack and conveyed to a feed chute which delivers it to a machine for performing a subsequent operation thereon. The means for accomplishing this will now be described.

Below the stack of can bottoms is a suction cup 59 (see Fig. 4) which is carried upon one end of a hollow, oscillatory, suction cup arm 60 which is fixedly mounted on a rock shaft 61 journaled in bearings 62 formed on the brackets 32, and connected to any suitable, closely situated vacuum pump (not shown) by a flexible tube 63. A rubber cup 64 is provided in the suction cup 59 which makes a seal between the suction cup and can bottom when the cup is brought into contact therewith. An air vent 65 leads out through the wall of the arm 60 and is normally closed by a suction relief valve 66. An abutment or stop 67 is provided below the suction relief valve 66 with which the valve 66 contacts when the arm 60 reaches its lower position, and is thereby swung into open position, breaking the vacuum seal. An inclined wall 69 of a feed chute 70 extends up across the suction cup end of the arm 60, and is formed with a notch 71 through which the arm oscillates. Said notch is of less width than the diameter of a can bottom, thereby permitting the arm 60 to pass through freely, but the wall 69 around the notch intercepts the can bottom while it is being carried down by the suction cup, and the vacuum seal having been broken, the can bottom slides down the inclined wall 69 and out through the feed chute 70.

The stop 67 is shown as secured on the counter-shaft 36, but this is merely as a matter of convenience. By mounting it on the shaft, however, it engages the suction relief valve momentarily, thus permitting the valve to close quickly, whereby the suction pump may maintain a constant low pressure in the suction cup arm.

The suction cup arm 60 is oscillated in timed relation to the movements of the supporting fingers so as to engage the lowermost can bottom before the supporting fingers are retracted; and the means for oscillating said arm may comprise a cam 72 (see Fig. 6) fast on the counter-shaft 36 and having a high part 73 and a low part 74 that engage a roller 75 on a suction arm lever 76, which is secured on the rock shaft 61. The lever 76 is spring-pressed toward the cam by a spring 77 interposed between the upper end 78 of the lever 76 and bracket 17. Said spring 77 also acts to swing the suction cup arm up against the can bottoms.

In operation a stack of can bottoms is placed in the hopper 14 and allowed to rest on the fingers. If both stripping and supporting fingers are in supporting position, the stack will rest on the stripping fingers. (Assuming, however, that the stack is resting on the supporting fingers, with the stripping fingers inserted between the edge portions of the two lower can bottoms, and the suction cup arm is in lowered position as seen in dotted lines in Fig. 4.) The clutch being thrown in, the mechanism is set in motion. In this position of the parts, the high place of the cam 72 is in engagement with the roller 75 of the vacuum arm lever 76, the cam faces 33 of the supporting finger cam 30 are approaching the rollers 29, and the cam faces 58 of the stripping finger cam 53 are approaching the rollers 57, but

they do not reach said rollers 57 until the cams 30 have performed their work. These several parts operate with following sequence. First, the cams 30 retract and return the supporting fingers 26, releasing the lowermost can bottom, the remainder being temporarily supported by the stripping fingers 44. Simultaneously with the retraction of the supporting fingers 26, the low place of the cam 72 reaches the roller of the vacuum arm lever, the spring 77 swings back the uper end of said lever, turning the rock shaft 61, swinging up the suction cup arm 60 and bringing the rubber suction cup thereof into contact with the lower side of the lowermost can bottom, and because of the partial vacuum created in the suction cup arm, the lowermost can bottom is firmly taken hold of by the suction cup. As soon as the low place of the cam 72 leaves the roller 75, the arm 60 starts down, the suction relief valve engages the stop 67, the air vent 65 is opened as the can bottom reaches the inclined wall 69, is forced off the suction cup and slides down the inclined wall. After the suction cup arm starts down, the cam faces 33 run off the rollers 29, the springs 25 return the slide blocks and therewith the supporting fingers under the can bottoms, and directly thereafter the cam faces 58 engage the roller 57, rock the stripping finger arm 54, which in turn oscillates the ring 48 which swings the stripping fingers from beneath the bottom of the stack of can bottoms to the position shown in dotted lines in Fig. 7, permitting the stack to drop upon and rest on the supporting fingers 26, and then swings the fingers back between the lowermost can bottom and the one next above it.

If at any place around the margin of the can bottoms two or more are in close contact, preventing the thin portions of one or more of the stripping fingers 44 from entering the space between the edge portions of the can bottoms (see Figs. 6 and 7), that finger will yield under the influence of its spring and bear against the marginal edge or edges of the can bottoms which obstruct it, thereby preventing injury to the can bottoms or to the mechanism. The remaining fingers effectively support the stack when the supporting fingers are again retracted.

It sometimes happens that the can bottoms are wedged together along portions of their edges. With the use of the multiplicity of stripping fingers combined with a suction or vacuum device engaging the lower face of the lowermost can bottom, the latter is effectively detached from those above and discharged into the feed chute.

More or less variation of the exact details of construction is possible without departing from the spirit of this invention; we desire, therefore, not to limit ourselves to the exact form of the construction shown and described, but intend, in the following claims, to point out all of the invention disclosed herein.

We claim as new and desire to secure by Letters Patent:

1. In can end feeding mechanism, the combination of a hopper for holding a stack of can ends, movable, supporting fingers therebelow for supporting a stack of can ends, a multiplicity of movable, circumferentially-arranged, stripping fingers located above the plane of the supporting fingers for supporting all of the stock except the lowermost can end, operating mechanism for moving said supporting fingers and stripping fingers in timed relation to each other, a movable suction cup device having a suction cup arranged to engage and detach the lowermost can end when released by said supporting fingers, and mechanism for actuating said suction cup device in timed relation to the movements of the supporting fingers.

2. In can end feeding mechanism for feeding can ends from a stack of can ends, the combination of reciprocatory supporting fingers for supporting the stack of can ends, a multiplicity of oscillatory, circumferentially-arranged stripping fingers having ends arranged to enter the space between the lowermost can end and the one next thereabove, operating mechanism for actuating said supporting fingers and stripping fingers in timed relation to each other, an oscillatory suction cup device having a suction cup arranged to contact with and carry down the lowermost can end when released by said supporting fingers, and means for oscillating said suction cup device in timed relation to the movements of the supporting fingers.

3. In feeding mechanism for feeding can bottoms from a stack of can bottoms, the combination of reciprocatory supporting fingers for supporting said stack of can bottoms, a multiplicity of oscillatory, circumferentially-arranged stripping fingers having ends arranged to enter the space between the lowermost can bottom and the one next thereabove, means for reciprocating the supporting fingers and oscillating the stripping fingers in timed relation to each other, an oscillatory suction cup device having a suction cup arranged to contact with the lowermost can bottom when released by said supporting fingers and carry it down when the suction cup device is swung down, and means for oscillating said suction cup device in timed relation to the movements of the supporting fingers.

4. In can bottom feeding mechanism for feeding can bottoms from a stack of can bottoms, the combination of supporting fingers, means for reciprocating said fingers,

a multiplicity of circumferentially-arranged stripping fingers having ends arranged to enter the space between the lowermost can bottom and the one next thereabove, means for actuating said stripping fingers in timed relation to the movements of the supporting fingers, said means including yielding connections for moving the stripping fingers towards the can bottoms, a vacuum cup device movable toward and away from the lowermost can bottom and adapted to engage and carry down the lowermost can bottom when separated from those above it, and means for actuating said vacuum cup device in timed relation to said supporting fingers.

5. In can bottom feeding mechanism for feeding can bottoms from the bottom of a stack of can bottoms, the combination of can bottom supporting fingers, means for reciprocating said fingers, a multiplicity of oscillatory stripping fingers having ends arranged to enter the space between the lowermost can bottom and the one next thereabove, a support for said fingers, a ring operatively connected to said fingers and arranged to rock said fingers when turned on its axis, means for rotating said ring to oscillate the fingers in timed relation to the movements of the supporting fingers, an oscillatory suction cup device having a suction cup for engaging the lower face of the lowermost can bottom and carrying down said lowermost can bottom, and means for oscillating said suction cup device in timed relation to the movements of said supporting fingers.

6. In can end feeding mechanism for feeding can ends from the bottom of a stack of can ends, the combination of reciprocatory can end supporting fingers, a multiplicity of oscillatory, circumferentially-arranged stripping fingers having ends arranged to enter the space between the lowermost can end and the one next thereabove, operating mechanism for actuating said supporting fingers and stripping fingers in timed relation to each other, an oscillatory suction cup device having a suction cup arranged to contact with the lower face of the lowermost can end and carry down said lowermost can end, means for oscillating said suction cup device in timed relation to the movements of the supporting fingers, said suction cup device having an air vent, a suction relief valve closing said air vent, and means for actuating said relief valve to uncover the air vent and permit discharge of the can bottom from the suction cup.

7. In can bottom feeding mechanism, the combination of a supporting member, can bottom supporting fingers slidably carried thereby, means for reciprocating said supporting fingers, a multiplicity of circumferentially-arranged stripping fingers mounted upon said supporting member, a ring slidably carried by said supporting member and having stripping-finger-actuating means, means for actuating said ring to move the stripping fingers in timed relation to the movements of the supporting fingers, a suction cup device having a suction cup arranged to contact with the bottom face of the lowermost can bottom and detach said lowermost can bottom from the remainder of the stack, and means for actuating the suction cup device in timed relation to the movements of the supporting fingers.

8. In can bottom feeding mechanism, the combination with supporting fingers and means for actuating the same, of a multiplicity of circumferentially-arranged, oscillatory, stripping fingers, a support therefor, an actuating ring for said fingers having yielding connections with said fingers whereby the latter may yield when encountering the edge of a can bottom, means for oscillating said ring and an oscillatory vacuum cup device for detaching can bottoms released by said supporting fingers.

9. In can bottom feeding mechanism, the combination with supporting fingers and means for reciprocating the same, of a multiplicity of circumferentially-arranged, oscillatory, stripping fingers spring-pressed in one direction, a support therefor, an actuating ring for said fingers having means for positively moving said fingers in the opposite direction, means for oscillating said ring a vacuum cup device arranged to engage and detach can bottoms released by the supporting fingers, and actuating mechanism for said suction cup device.

10. In can bottom feeding mechanism for feeding the lowermost can bottom from a stack of can bottoms, the combination of reciprocatory supporting fingers spring-pressed in one direction, cam shafts, cams and operative connections between the cams and supporting fingers for moving them in the opposite direction, a multiplicity of stripping fingers having ends adapted to enter the space between the edge portion of the lowermost can bottom and the one next thereabove, an actuating ring operatively-connected to said stripping fingers, a stripping finger actuating cam mounted on one of said cam shafts, operative connections between said last mentioned cam and ring, an oscillatory suction cup arm having a suction cup adapted to contact with and detach the lowermost can bottom, and cam-operated mechanism for oscillating said suction cup-arm.

11. In feeding mechanism for feeding can bottoms from the bottom of a stack of can bottoms, the combination of stack supporting fingers, means for reciprocating said supporting fingers, a multiplicity of circumferentially-arranged stripping fingers hav-

ing portions adapted to enter the space between the edge portion of the lowermost can bottom and the one next thereabove, and thereby support the remainder of the stack above the supporting fingers when the supporting fingers are retracted, means for actuating said supporting fingers and stripping fingers in timed relation to each other, a suction cup arm having a suction cup adapted to contact with the lower face of the lowermost can bottom and detach said lowermost can bottom when released by said supporting fingers, and means for actuating said suction cup arm in timed relation to the movements of the supporting fingers.

12. In feeding mechanism for feeding can bottoms from the bottom of a stack of can bottoms, the combination of stack supporting fingers, cam-operated means for reciprocating said supporting fingers, a multiplicity of circumferentially-arranged stripping fingers having portions adapted to enter the space between the edge portion of the lowermost can bottom and the one next thereabove, and thereby support the remainder of the stack above the supporting fingers when the supporting fingers are retracted, cam-operated means for actuating said supporting fingers and stripping fingers in timed relation to each other, a suction cup arm having a suction cup adapted to contact with the lower face of the lowermost can bottom and detach said lowermost can bottom when released by said supporting fingers, and cam-operated means for actuating said suction cup arm in timed relation to the movements of the supporting fingers.

13. In feeding mechanism for feeding can bottoms from a stack of can bottoms, the combination of stack supporting fingers, means for reciprocating said supporting fingers, a multiplicity of circumferentially-arranged stripping fingers having portions adapted to enter the space between the edge portion of the lowermost can bottom and the one next thereabove, and thereby support the remainder of the stack above the supporting fingers when the supporting fingers are retracted, means for actuating said supporting fingers and stripping fingers in timed relation to each other, the means for actuating the stripping fingers having yielding connections with the stripping fingers whereby they may yield in coming in contact with a can edge, a suction cup arm having a suction cup adapted to contact with and detach the lowermost can bottom when released by said supporting fingers, and means for actuating said suction cup arm in timed relation to the movements of the supporting fingers.

14. In feeding mechanism for feeding can bottoms from the bottom of a stack of can bottoms, the combination with actuating mechanism, of stack supporting fingers and a multiplicity of stripping fingers arranged circumferentially around the lower end of the stack of can bottoms and cooperating with the stack supporting fingers to separate the lowermost can bottom from the remainder of the stack, and a downwardly tiltable can bottom detaching device arranged to engage the lower face of the lowermost can bottom and detach and carry down said lowermost can bottom when separated from the remainder of the stack.

15. In feeding mechanism for feeding can bottoms from the bottom of a stack of can bottoms, the combination with actuating mechanism, of stack supporting fingers and a multiplicity of yielding stripping fingers arranged circumferentially around the lower end of the stack of can bottoms and cooperating with the stack supporting fingers to separate the lowermost can bottom from the remainder of the stack, and an oscillatory, tiltable can bottom detaching arm arranged to engage the lower face of the lowermost can bottom and detach and carry down said lowermost can bottom when separated from the remainder of the stack.

16. In can bottom feeding mechanism, the combination with actuating mechanism, of supporting fingers and stripping fingers, cooperating to separate the lowermost can bottom of a stack of can bottoms from the remainder of the stack, and a vacuum suction cup device arranged to engage the lower face of the lowermost can bottom and carry away said lowermost can bottom when separated from the remainder of the stack.

17. In can bottom feeding mechanism, the combination with actuating mechanism, of stack supporting fingers and stripping fingers cooperating to support the stack and separate the lowermost can bottom from the remainder, and a suction cup arm having a suction cup arranged to engage the lower face of the lowermost can bottom and detach said lowermost can bottom when separated from the remainder of the stack.

18. In can bottom feeding mechanism, the combination with actuating mechanism, of stack supporting fingers and stripping fingers cooperating to support the stack and separate the lowermost can bottom from the remainder, a suction cup arm having a suction cup arranged to engage the lower face of the lowermost can bottom and detach said lowermost can bottom when separated from the remainder of the stack, and means for discharging the can bottom from said suction cup.

19. In can bottom feeding mechanism, the combination with actuating mechanism, of stack supporting fingers and stripping fingers cooperating to support the stack and separate the lowermost can bottom from the remainder, and a suction cup arm having a suction cup arranged to engage the lower face of the lowermost can bottom and detach

said lowermost can bottom when separated from the remainder of the stack, said arm having also a suction relief valve operating to release the can bottom when detached from the stack.

20. In can bottom feeding mechanism, the combination with actuating mechanism, of reciprocatory, stack supporting fingers and oscillatory stripping fingers cooperating to support the stack and separate the lowermost can bottom from the remainder, and an oscillatory suction cup arm having a suction cup arranged to engage the lower face of the lowermost can bottom and detach said lowermost can bottom when separated from the remainder of the stack.

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