April 6, 1926. 1,579,612

O. C. HOFFMAN ET AL

MACHINE FOR REMOVING CONTENTS OF PAPER CUPS

Filed Dec. 3, 1925 2 Sheets-Sheet 1

FIG. 2.

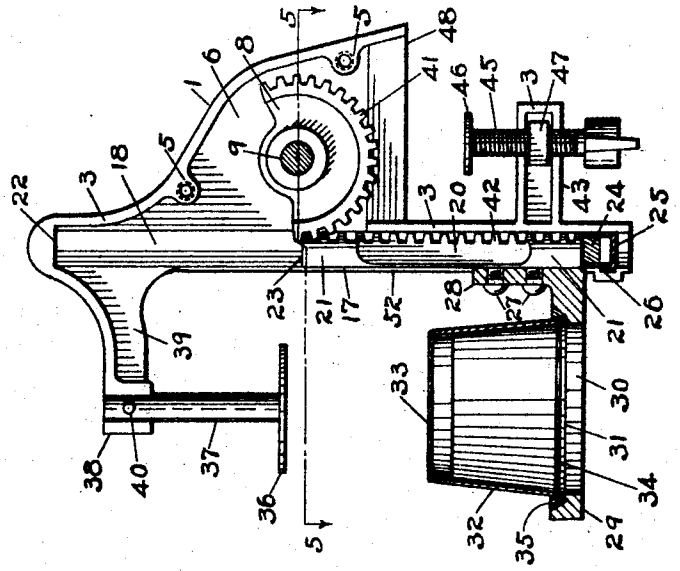
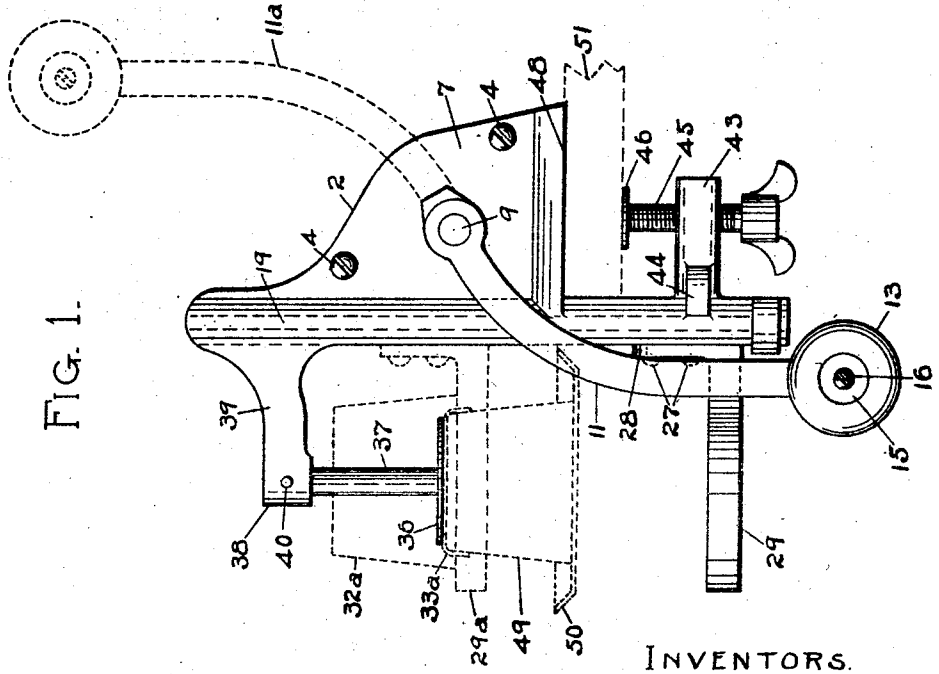


FIG. 1.



WITNESSES.

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FIG. 3.

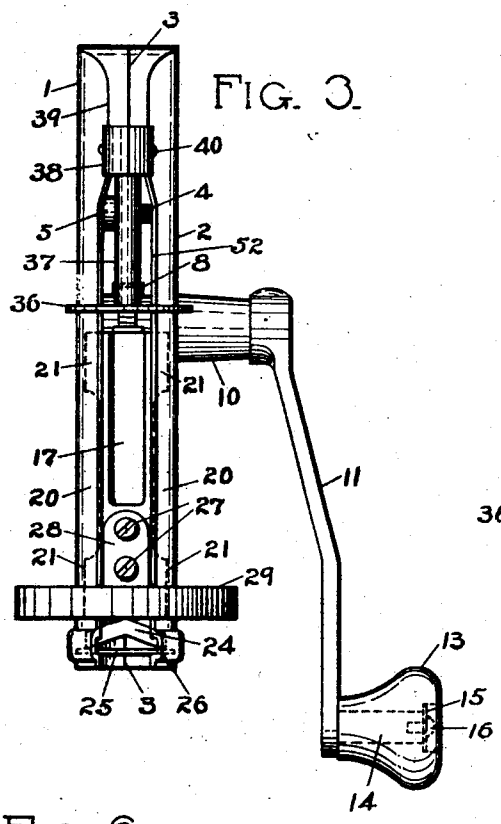


FIG. 4.

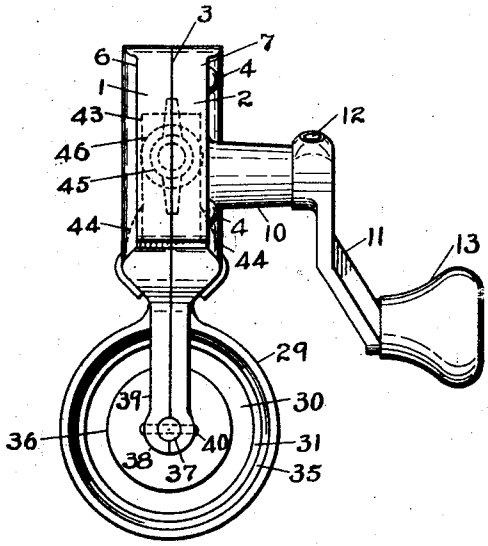


FIG. 6.

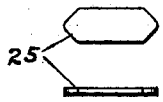


FIG. 7.

FIG. 8.

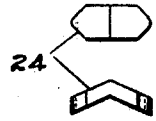
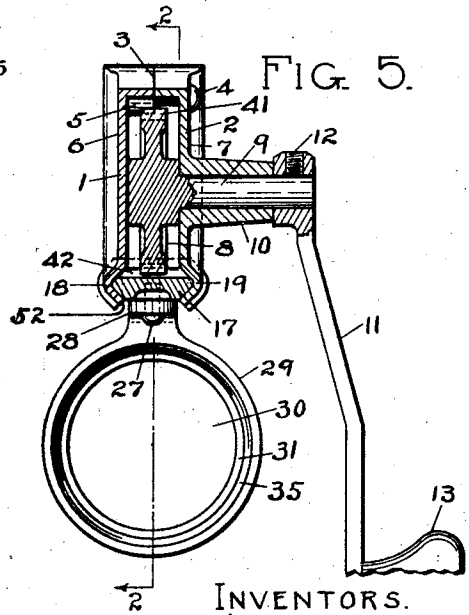


FIG. 9.

FIG. 5.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR REMOVING CONTENTS OF PAPER CUPS.

Application filed December 3, 1925. Serial No. 72,942.

To all whom it may concern:

Be it known that we, OTTO C. HOFFMAN and JOHN J. DUNN, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented or discovered certain new and useful Improvements in a Machine for Removing Contents of Paper Cups, of which the following is a specification, reference being had to the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views.

This invention relates to machines for emptying paper cups of their contents and more particularly to removing ice cream from paper cups.

The principal object of the invention is to provide a simple means of removing the contents of a paper cup by forcing the bottom of said cup through the top and thereby carrying the contents of said cup with the said bottom. Another object is to furnish means for supporting said cup by its rim and in an inverted position whereby the contents of said cup when forced out may be caught by a receptacle held beneath said cup. Another object is to furnish means to carry and raise a loaded and inverted cup up against a stationary disk to remove the contents of said cup and whereby the weight of said carrying means will return it to the starting position when released.

With these objects in view, the invention consists in certain features of novelty in the construction, combination and arrangement of parts by which the said object and certain other objects which will hereinafter appear are attained, the invention being more particularly pointed out in the claims.

In the drawings, Figure 1 is a vertical side elevation of our improved machine for removing contents of paper cups and showing the parts when in its normal and stationary position and a dotted position of the operating handle in its extreme upper position and also a dotted paper cup and its contents at the position corresponding to said raised handle. Fig. 2 is a vertical side elevation of our machine, showing the carrier ring in section on line 2—2 of Fig. 5 and the handle-half of the machine removed. Fig. 3 is a front elevation of Fig. 1. Fig. 4 is a top view of our machine. Fig. 5 is a sectional plan of our machine on line 5—5 of Fig. 2. Figs. 6 and 7 are plan and side view of means for holding an elastic stop. Figs. 8 and 9 are plan and elevation of the elastic stop.

In the figures, 1 is one-half of the frame of the machine and which is joined on line 3 to the second half 2 of the machine. The contact line 3 of Figs. 3, 4 and 5, shows as a narrow contact surface in Fig. 2 and extends over the top of the machine and down the back to the surface 48 and also vertically at the back of the gear teeth 42 of the rack 17 and around the boss 43, leaving an open slot in the front in which the flange 28 can travel. The main body of the machine has vertical parallel sides and the two halves 1 and 2 are held together by the screws 4 and 4 which project through the half 2 and screw into the bosses 5 and 5 in the half 1. 6 and 7 are parallel sides of the frame 1 and 2 between which is housed the sector 8 with gear teeth 41 and having a shaft 9 journalled in the bearing 10. A handle 11 is fastened on said shaft 9 by means of a set screw 12. 13 is a grip attached to the end of handle 11 by being loosly mounted on stud 14 and retained by means of washer 15 and screw 16. Handle 11 is curved as shown in Fig. 1 to clear the counter 51 when in its normal bottom position and offset sideways as shown in Figs. 3, 4 and 5 to avoid the ring 29 with plenty of clearance when raised to 11^a in Fig. 1.

Slidably mounted between guides 18 and 19 formed in the frames halves 1 and 2 is a rack 17 having teeth 42 which mesh with teeth 41 on sector 8. The guides 18 and 19 form V shaped grooves in which the rack 17 slides up and down. The rack 17 is cut away on the sides as shown at 20 and 20 so it bears in the groove guides 18 and 19 only at its upper and lower corners, 21, 21, 21, 21. The top of the frame parts 1 and 2 is covered over to conceal the sector 8 and rack 17, and the surface 22 at the upper end of the groove guides 18 and 19 forms a stop 23 of the rack 17 when it is at the upper end of its travel. The rack 17 as shown in Fig. 2 is in its normal position at rest at the bottom of its travel and in this position rests on a bumper or stop 24 which is preferably made of a piece of rubber and formed in an inverted V shape as shown in detail in Figs. 8 and 9. 25 is a plate for supporting the stop 24, formed as shown in detail in Figs. 6 and 7 and held

in a groove 26 (Figs. 2 and 3). The bumper 24 being made of rubber and formed of two parts meeting at an angle to make an inverted V shape as shown has the double resiliency of springing of the parts to recover its form and the springing of the rubber to recover its shape.

Fastened to the bottom of the front surface of the rack 17 by means of screws 27, 27 is a vertical flange 28 which has a horizontal ring portion 29 extending at right angles to said flange 28. The body halves 1 and 2 are spaced apart at their front vertical surface to leave an opening 52 through which the flange 28 projects and in which it can travel up and down. Ring 29 has an opening 30 above which is a surface 31 for holding an inverted paper cup 32. The surface 31 is below the top surface of the ring 29 and connected to it by a suitable inclined surface 35 which assists in centering the cup over the opening 30. For convenience 35 is then called a groove for holding a cup 32. 33 is the bottom of the paper cup 32 and is turned up at the edge and of such a size and shape as to be pressed and held in position, as shown, by friction. The groove 34 in the opening or top of the cup 32 is for the purpose of holding a paper cover (not shown) which is pressed into position when the cup 32 is filled and can be easily removed by the fingers before placing the cup in our machine for pressing out its contents.

36 is a disk held stationary and in a position central over the opening 30 of ring 29 by means of a rod 37 mounted in a boss 38 on the arm 39 which latter is attached to the frame parts 1 and 2 at their top. The arm 39 and boss 38 is formed in halves, one half being fastened to frame part 1 and one half being fastened to the frame part 2 and being in contact on the surface line 3. The rod 37 is fastened to the boss 38 by means of a pin 40.

43 is a hollow boss with a brace 44 on each part of the halves 1 and 2, one half of 43 on frame part 1 and one half on frame part 2 and matched to hold a nut 47 through which a thumb screw 45 passes. On the upper end of thumb screw 45 is revolvably held a disk 46 between which and the horizontal surface 48 may be clamped the horizontal top of a counter or table 51 (shown dotted) for firmly holding the machine in an upright position as shown in Figs. 1, 2 and 3.

In Fig. 1, 11^a shows handle 11 raised to its extreme upper position when the ring 29 is in a position 29^a and the paper cup 32 is in the position 32^a. The bottom 33 of the cup 32 will then be at 33^a while the contents of the cup will be at 49 on the plate 50.

The operation of the machine is as follows: A paper cup 32 filled with ice cream has its cover removed from the groove 34 and is then inverted and placed in the groove 35 on the ring 29 as shown in Fig. 2. Operating the handle 11 to a position 11^a (Fig. 1) raises the ring 29 to a position 29^a through the medium of the sector 8 and rack 17 (Fig. 2). When the bottom 33 of the paper cup 32 contacts with the disk 36 it is in the position 33^a where it remains while the cup 32 continues up to the position 32^a forcing it away from its contents which is left at 49 on a plate 50. The plate 50 is placed beneath the ring 29 and carried up with it by hand to receive the ice cream 49 as it passes through the opening 30 of said ring 29. The cup 32 is preferably larger at its open top and tapers towards its bottom so its contents when loosened from the inside of the cup 32 readily passes through its top. When the plate 50 with its ice cream 49 and cup bottom 33^a is removed from the machine a cup bottom 33^a is lifted off. The handle 11^a is then released and is returned to its normal position at 11 by the weight of a ring 29, rack 17 and its own weight after it passes over the center of the shaft 9.

It is to be understood that variations of the form, arrangement and construction of the invention herein shown and described may be made as will remain within the spirit of the invention and the scope of what is claimed.

Having thus described the invention, what is claimed as new is:

1. In a device of the character described, a body in halves having vertical parallel sides fastened together on a central contacting line, vertical guides in said body with an opening in front of said guides, a rack having rearwardly extending teeth and adapted to slide in said guides, a sector mounted to the rear of said rack and having teeth to mesh with the teeth in said rack, a ring having a flange fastened to said rack and adapted to be operated through said front opening, a stationary disk mounted above and central over the opening of said ring and handle means to be given an upwards circular motion to operate said sector and rack and raise said ring towards said stationary disk.

2. In a device of the character described, a body having vertical parallel sides, the front part of said body forming a vertical V shaped guide open at the front, a rack having rearwardly extending teeth and adapted to be operated in said guide, a gear sector located between said body sides and having teeth meshed with the teeth in said rack, a ring for carrying a loaded and inverted paper cup, said ring attached to said rack and extending through said front opening, a stationary disk mounted above and

central over said ring, means to operate said sector and rack and raise said ring towards said stationary disk whereby the contents and bottom of said cup may be pushed through said ring and whereby the weight of said rack and ring will return them to their normal starting position.

3. In a device of the character described, a body having a front vertical guide, a rack adapted to be operated vertically in said guide, a sector adapted to operate said rack, a ring having a cup centering groove and attached to said rack and adapted to be operated through the front of said guide, and stationary means above said ring to contact with said cup whereby said cup may be emptied by pushing its bottom and contents through the top of said cup.

4. In combination, with a paper cup having a removable bottom, means for expelling the contents of said cup, said means consisting of a ring with a central opening, a groove for centering said cup with said central opening, a stationary disk above said ring opening and means to raise said ring and cup whereby the contents of said cup may be expelled through said ring.

5. In a device of the character described, a body formed in halves with vertical parallel sides fastened together on a central contacting line, the front of said body forming a vertical guide, a vertical tooth rack in said guide, a tooth sector meshed with said rack and located between said parallel sides and to the rear of said rack, said body having a horizontal supporting surface to the rear of said guide, a screw clamp to cooperate with said supporting surface, a ring attached to said rack and carrying a loaded and inverted cup, said ring having a central opening therethrough, a stationary disk above said opening and means to operate said sector and rack and raise said ring towards said disk whereby said cup may contact with said stationary disk and the contents of said cup emptied through the opening of said ring.

6. In a device of the character described, a body having a vertical guide, a rack adapted to be operated in said guide, a geared sector adapted to operate said rack, means to fasten said body in a vertical position on a horizontal surface, a ring attached to said rack and adapted to be operated therewith through an opening in the front of said guide, a stationary disk held central over said ring by means attached to the top of said guide, handle means to raise said ring and rack through the medium of said sector towards said stationary disk, the weight of said rack and ring adapted to return said ring to its starting position and resilient means to form a stop for said rack at said starting position.

7. In a device of the character described, means for expelling the contents of a paper cup, said means consisting of a ring adapted to hold a loaded and inverted cup over a central opening, a stationary disk mounted above said opening, and means to raise said ring and cup whereby the bottom of said cup contacts with said stationary disk to expel the contents of said cup through said ring.

8. In a device of the character described, a body in two pieces fastened together on a central contacting line to enclose a geared rack and sector, said rack adapted to be operated in a vertical guide by means of said sector and a handle, said body having a front vertical slot into said guide, a vertically movable cup holding ring external to said body and having a flange extending through said slot to fasten to said rack, and a disk attached to the top of said body and held stationary over the said ring.

In testimony whereof we have signed our names.

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JOHN J. DUNN.