April 15, 1930. H. M. HENDERSON 1,754,271

CUP DISPENSING MECHANISM

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Fig. 1.

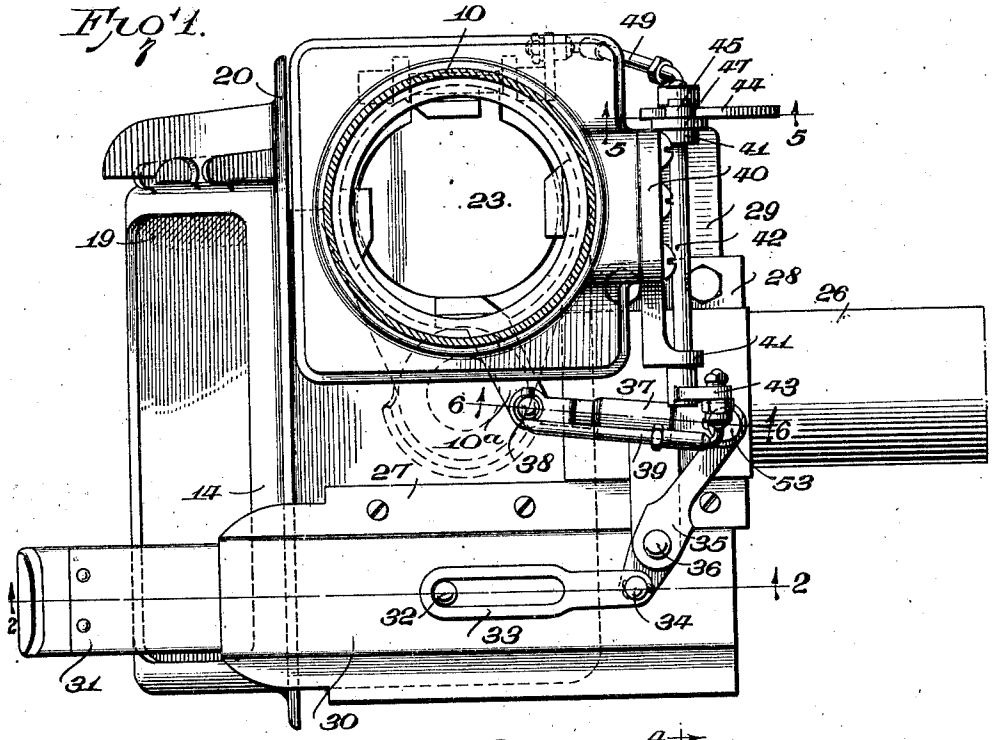
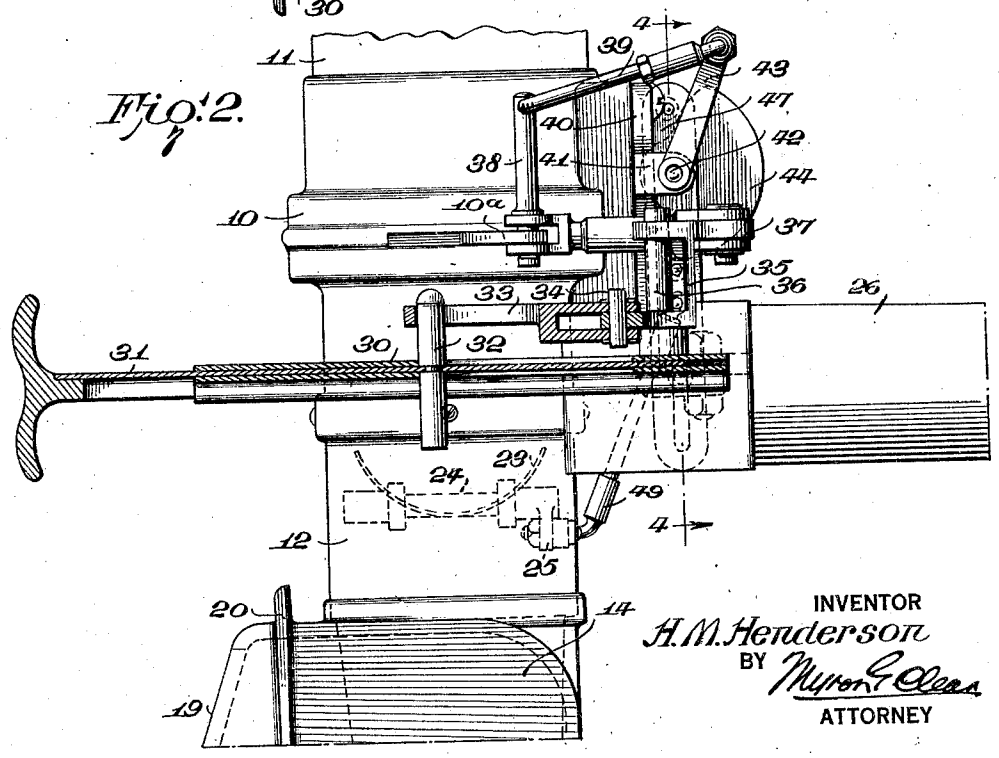


Fig. 2.



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Fig. 3.

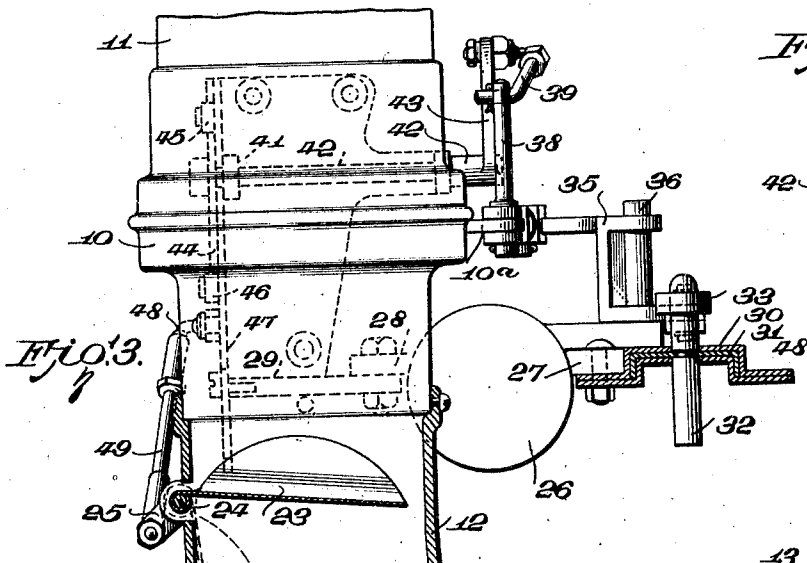


Fig. 5.

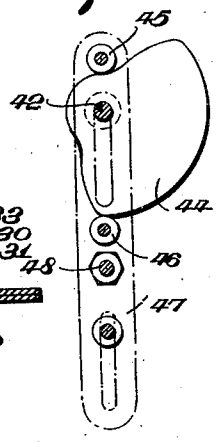
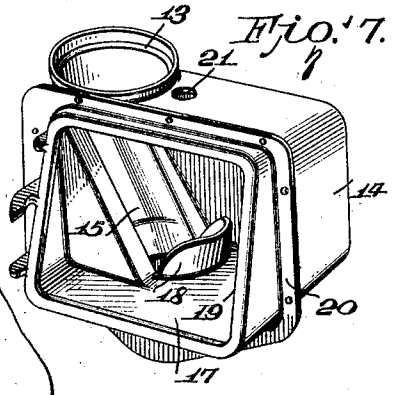


Fig. 7.



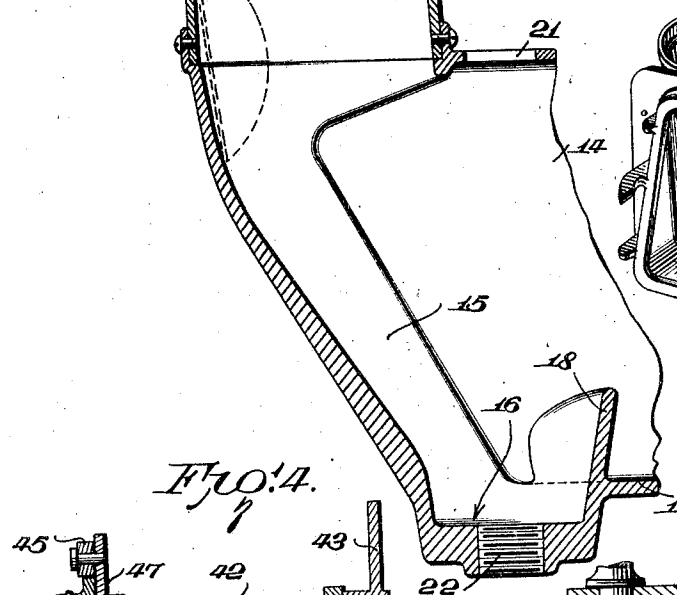


Fig. 4.

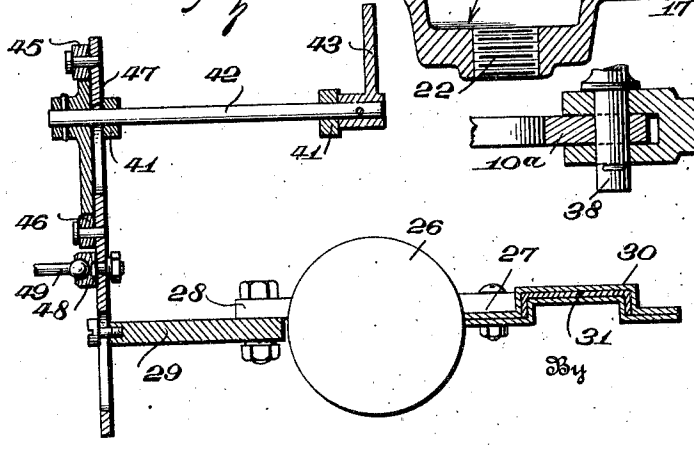
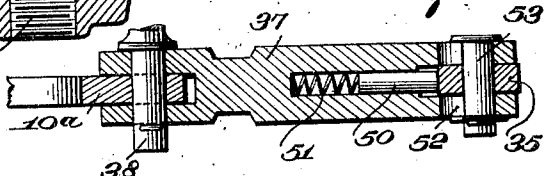


Fig. 6.



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Patented Apr. 15, 1930 1,754,271

UNITED STATES PATENT OFFICE

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CUP-DISPENSING MECHANISM

Application filed December 9, 1927. Serial No. 238,815.

My present invention relates generally to dispensing apparatus, and more particularly to apparatus for dispensing paper cups as used in practise for the reception of drinking fluid, such as orange beverage, my object, among others, being the provision of an apparatus embodying a cup receptacle having means to position a cup therein properly to receive a liquid.

A further object of my invention is to dispense cups from a holder into a receiving receptacle from which the dispensed cups may be manually removed, and to prevent manual removal of cups from the holder except by operation of the dispensing mechanism.

A still further object is the provision of a dispensing mechanism which lends itself readily to mounting and removal as a unit, and which provides in this manner for the ready, easy repair and substitution of parts.

With the above general objects in mind, further and more specific objects, as well as the resulting advantages of my invention, may be readily understood by reference to the following description in connection with the accompanying drawings, which form a part of this specification, and in which,

Figure 1, is a sectional top plan view of my improved cup dispensing apparatus.

Figure 2, is a vertical sectional view taken therethrough, on line 2—2 of Figure 1.

Figure 3, is a view taken at right angles to Figure 2, and partly in elevation and partly in section.

Figure 4, is a sectional view taken on line 4—4 of Figure 2.

Figures 5 and 6, are sectional details taken respectively on lines 5—5 and 6—6 of Figure 1, and

Figure 7, is a detail perspective view of the cup receiving receptacle.

Referring now to these figures, I have, in Figures 1, 2 and 3 in particular, shown at 10, a conventional form of cup releasing mechanism, actuated by a crank 10^a, for releasing paper cups, one at a time, from a holder 11, at the lower end of which the cup releasing mechanism is mounted. This holder in practise is of vertically elongated form to hold a considerable number of nested cups in a stack, the lower portions of the cups depending through the mechanism 10.

According to my invention, the cups, as they are individually released, fall into and through a discharge tube 12, secured to the lower portion of the cup releasing mechanism, and forming an extension thereof to guide the cups downwardly into the upper receiving aperture 13, of a cup receptacle 14. This receptacle has, below its receiving aperture 13, a laterally and downwardly inclined semi-cylindrical cup guiding channel 15, at the base of which a circular cup receiving pocket 16, is formed in the base of the receptacle. Each cup, as it slides down the channel 15, is thus caught at its lower end in the pocket 16, and straightened into an upright position, with the assistance of a flange 18, upstanding from the base 17, of the receptacle, and curved around the opposite side of the pocket 16, with respect to the channel 15.

The receptacle 14, as shown in Figure 7, has an open front 19, in order that a cup seated in the cup receiving pocket 16, may be easily and conveniently reached by the hand. In the act of removal, the cup is lifted over the flange 18. The surrounding edge of the open front 19, is preferably cut upon a forward and downward incline so as to provide in practise for a gravity closing door (not shown). Rearwardly of the open front 19, the receptacle preferably has an outstanding flange 20 exteriorly therearound, for convenient attachment to any suitable casing which may be employed to house the cup dispensing mechanism.

The upper wall of the receptacle 14, has an opening 21, alined axially above the cup receiving pocket 16, for the introduction of a fluid into the cup after it has been properly seated in said pocket, and the base 17, of the receptacle has a discharge opening 22, centrally of the pocket 16, in order to drain from the pocket any fluid which may be spilled from the cup in the careless removal thereof from the pocket and especially as it is lifted over the flange 18.

Since, for practical purposes, the front 19, of the receptacle 14, is open, and since therefore the cups depending within the cup re-

leasing mechanism 10, might be easily reached and removed by hand, I preferably avoid and prevent such unwarranted removal of the cups by providing the discharge tube 12, with a closure member 23, of the concavo-convex form best shown in Figure 3. This shutter-like closure 23, which in its normal position, extends in an approximately horizontal position across the discharge tube 12, as in Figure 3, so as to prevent the insertion of the hand upwardly into the cup releasing mechanism, is fixed at one point to a rock shaft 24, journalled in the side wall of the discharge tube 12, and provided with an outstanding crank arm 25. This crank arm upon actuation, as hereinafter described, throws the closure 23, downwardly to the dotted line position of Figure 3, its shape permitting it to conform to the inner surface of the discharge tube 12, so as to allow a cup to drop freely through the tube 12, when released by actuation of the cup releasing mechanism 10.

As shown in Figures 1, 3 and 4, a support 26, has oppositely outstanding side pieces 27, and 28, the latter secured to a horizontal bracket 29, at the rear of the cup releasing mechanism 10, and the former elongated at one side of said mechanism and above the receptacle 14 to securely hold the guide 30, of an operating plunger 31. Inward or rearward movement of this plunger 31, actuates the cranks 10^a and 25, through certain connections to be presently described. In practise, the plunger 31, is controlled by a coin-operated mechanism which forms the subject matter of my copending application, Serial Number 238,816, filed December 9, 1927, the fluid dispensing parts being also included in a second co-pending application, Serial Number 238,817, filed December 9, 1927.

Intermediate its ends, the plunger 31, has an upright operating pin 32. The upper end of this pin 32, works in a slotted arm 33, whose rear end is pivoted at 34, to one end of a lever 35, fulcrumed upon an upstanding pin 36, and having its other end pivotally connected to the rear end of a connecting arm 37. The forward end of this connecting arm 37, is pivotally connected to the crank arm 10^a, of the cup releasing mechanism, as most plainly shown in Figure 2, and has an upstanding pin 38, to the upper end of which the forward end of a connecting rod 39, is joined.

Across the rear portion of the cup releasing mechanism a bracket 40, is securely fastened thereto, and to the before-mentioned horizontal bracket 29. The bracket 40 has at its opposite sides bearings 41, for a shaft 42, provided at one end with a crank 43, to which the rear end of connecting rod 39, is joined. The other end of shaft 42, carries a cam 44, disposed between, and operating against, the vertically spaced rollers 45, and 46, of a vertically movable slide plate 47, supported by the bracket 40. The slide plate 47, has a socket member 48, in which one end of a connecting rod 49, is engaged. The other end of this connecting rod 49, engages a socket member on the crank arm 25, of the cup protecting member 23, so that in the rearward movement of the plunger, at the time the cup releasing mechanism is actuated, the member 23, will be shifted downwardly to its inactive position shown in dotted lines in Figure 3.

By reference to Figure 6, it will be noted that in order to effect a complete stroke of the cup releasing crank 10^a, without shock or undue strain, the connecting arm 37, has at its rear end an axial socket in which a pin 50, is slidable. This pin engages the adjacent portion of lever 35, and is held thereagainst by a spring engaging the inner end thereof, and compressed within the inner end of the socket. The connecting arm 37, also has slots 52, in which the pivot pin 53, connecting the same with lever 35, works, and thus provision is made for yielding of the parts in order to adapt the same to inequalities or varying lengths of stroke of the cup releasing mechanism.

It is obvious from the foregoing that my invention provides a simple, strong and durable apparatus for the purpose set forth, as well as one capable of installation and removal as a unit, thus greatly facilitating repair and substitution of parts in use as well as assembly and adjustment in the first instance.

Having thus fully described my invention, what I claim is:

1. A cup dispensing apparatus including a cup holder, a cup releasing mechanism below said holder, a discharge tube depending from said mechanism, a pivoted closure member within, and normally extending across said discharge tube, said closure member being curved to fit the inner surface of the tube and adapted to conform thereto in inactive position, an operating means for said mechanism including a spring-controlled yielding part, and connections from said operating means for shifting said closure member to and from inactive position.

2. In a cup dispensing apparatus, a cup releasing mechanism, a cup receptacle having an aperture at the upper portion of one side to receive cups from said mechanism, said receptacle having a front opening and a cup receiving pocket in its base rearwardly of said opening, an inclined cup guide at one side of said pocket, and a cup holding flange upstanding from the base around the other side of the pocket.

3. In a cup dispensing apparatus, a cup receptacle having a cup receiving aperture in its top at one side and having a front opening through which cups may be manually withdrawn, an inclined cup guide in the receptacle depending from said aperture to a

point rearwardly of said opening, said receptacle having a pocket in its base at the lower end of said guide, and an upstanding flange around a portion of said pocket diametrically opposite to said guide.

4. In a cup dispensing apparatus, a cup releasing mechanism having an operating crank, operating connections extending to said crank, a discharge tube for the released cups, a closure member pivoted in said tube, and connections between said closure member and said crank including a slide plate connected to the former and having spaced apart rollers, an oscillating shaft in connection with the crank, and a cam on said shaft extending between, and engaging, said slide plate rollers.

In testimony whereof I affix my signature.

HARRY M. HENDERSON.