H. B. COOLEY.

DISPENSING APPARATUS.

APPLICATION FILED FEB. 16, 1921.

1,396,995.

Patented Nov. 15, 1921.

3 SHEETS—SHEET 1.

Fig. 1.

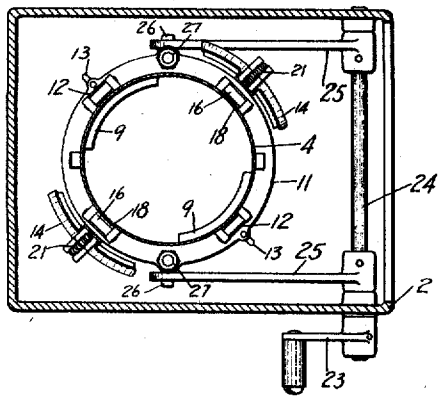



Fig. 2.

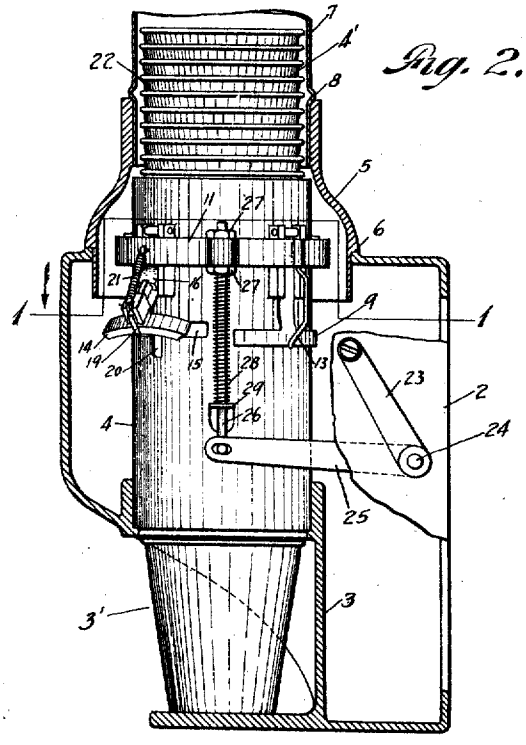
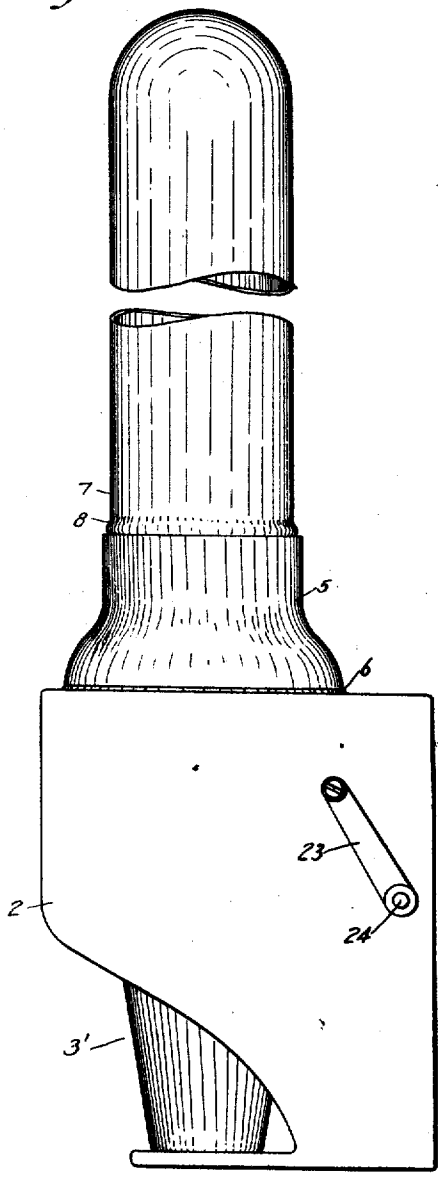



Fig. 3.




H. B. Cooley INVENTOR.

BY

Hutt Sutherland ATTORNEY.

H. B. COOLEY.

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3 SHEETS—SHEET 2.

Fig. 4.

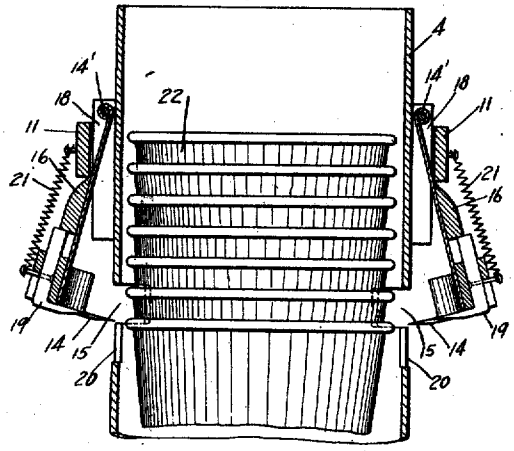



Fig. 5.

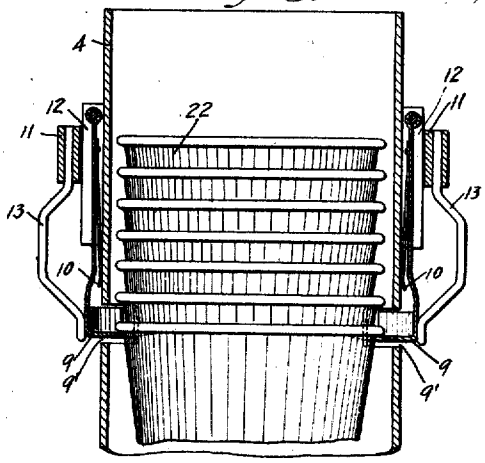
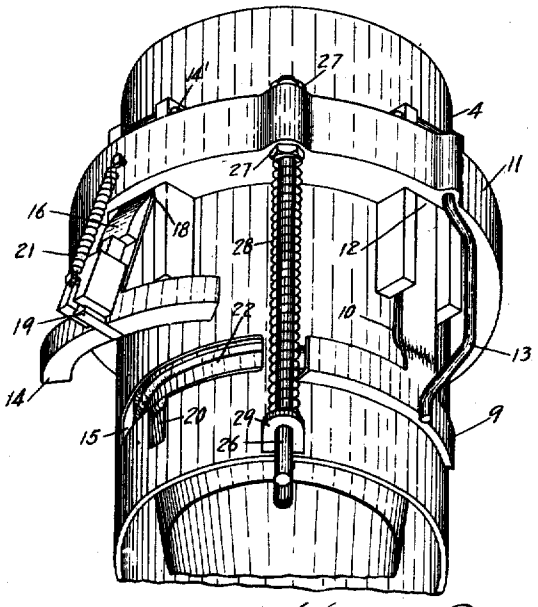



Fig. 6.




H. B. Cooley INVENTOR.

BY

Hunt Lothrop & Hunt ATTORNEY.

H. B. COOLEY.

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**Patented Nov. 15, 1921.**

3 SHEETS—SHEET 3.

*Fig. 7.*

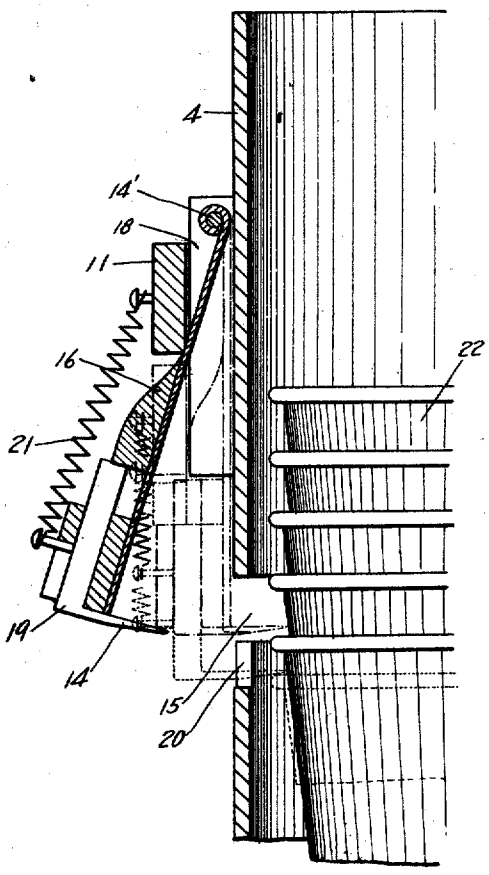
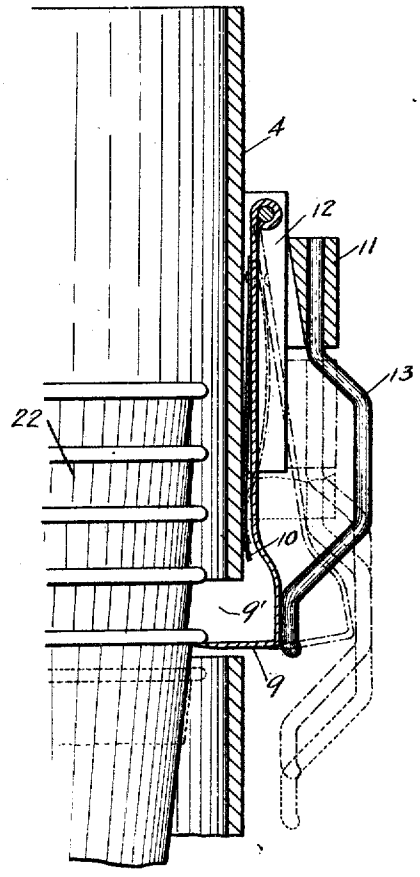



*Fig. 8.*




H. B. Cooley INVENTOR.

BY

Hart Fitzpatrick ATTORNEY.

# UNITED STATES PATENT OFFICE.

HENRY B. COOLEY, OF KENSINGTON, CONNECTICUT, ASSIGNOR TO THE AMERICAN PAPER GOODS COMPANY, OF KENSINGTON, CONNECTICUT, A CORPORATION OF NEW JERSEY.

## DISPENSING APPARATUS.

1,396,995. Specification of Letters Patent. Patented Nov. 15, 1921.

Application filed February 16, 1921. Serial No. 445,347.

*To all whom it may concern:*

Be it known that I, HENRY B. COOLEY, a citizen of the United States, residing at Kensington, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Dispensing Apparatus, of which the following is a specification.

This invention relates to a dispensing apparatus. The improvements may be either incorporated in a free dispenser by which an article or articles can be obtained from the machine without the intervention of a coin, or in a machine in which such article or articles can be had only by the introduction of a coin or something of an equivalent character, into the machine. While it is conceivable that the several features of the invention may be embodied in machines of either type for vending various commodities, it is of especial utility when associated with a machine for vending drinking cups which are supported in a stack of nested cups and one or more of which may be obtained in either of the ways to which I have referred.

I have a number of objects in view among them being the provision of means of an effective character which is susceptible of easy action and by which one or more of the cups can be delivered to the individual desiring the same in a positive and certain manner. The machine possesses many other features of novelty and advantage which with the foregoing will be set forth fully in the following description wherein I will outline in detail that one of the several forms of embodiment of the invention which I have selected for illustration in the drawings accompanying and forming part of the present specification, this disclosure being sufficient to enable those skilled in the art to practise the invention. It will of course be clear that I am not restricted to such disclosure. I may depart therefrom in a number of respects within the scope of the invention defined by the claims following said description, it being understood that the invention embodies certain rather broad relations.

Referring to said drawings:

Figure 1 is a horizontal section on the line 1—1 of Fig. 2 and as seen from above.

Fig. 2 is a vertical sectional side elevation as viewed from the right side of the machine or that appearing at the front in Fig. 4, of the lower portion of said machine.

Fig. 3 is a right side elevation of the machine.

Fig. 4 is a vertical sectional view of the upper portion of the barrel and the two opposite shelves and the ejectors carried by the shelves.

Fig. 5 is a view corresponding to Fig. 4, the plane of the section however being at right angles or practically so and showing the other two diametrically-opposite shelves.

Fig. 6 is a perspective view of the barrel with the parts carried thereby.

Figs. 7 and 8 are vertical sectional views of the upper portion of the barrel showing respectively the shelves and the parts associated therewith, the full and dotted lines illustrating respectively a cycle of action.

Like characters refer to like parts throughout the several views which are on different scales.

The supporting mechanism for the operative parts of the machine may be of any suitable character. As shown it consists of a casing 2 usually of metal. Within the casing is a wall 3 in which a cup is discharged and when it is discharged it rests on the bottom of the casing so that it can be reached through the opening 3′ in the forward side of the casing. There is a receiver for the stack of nested drinking cups and while the same will be of any suitable nature it is shown as consisting of a barrel 4 of practically cylindrical form and somewhat elongated to receive the stack, the circumferential portions of the cups 4′ being somewhat adjacent to but not necessarily touching the inner surface of the receiver or barrel 4. Fitted in an opening in the top or roof of the casing 2 is an upwardly tapered sleeve 5 the lower or enlarged end of the sleeve being fitted in said opening and the sleeve having an external shoulder 6 to rest on said top. The upper reduced end of the sleeve 5 receives within it the tube 7 generally of glass and having near its lower end the external bead 8 which rests on the upper edge of the sleeve 5 all as clearly shown in Fig. 2. The glass tube receives initially the upper portion of the stack which may be inspected at any time when the stack is high enough to per-

mit this. As the stack is depleted the upper end passes below the upper edge of the sleeve 5 and subsequently below the upper edge of the barrel 4. These are detail points and more or less common for which reason they have not been thoroughly described. The invention in point of fact is rather basic in nature.

The machine involves primary and secondary stack supporting means which desirably act upon the stack at superposed planes. The primary stack supporting means when in operative or active relation which is the normal condition when the machine is at rest, engages the lowermost cup of the stack, usually under the bead at the upper edge thereof. The secondary stack supporting means when in operative relation engages the stack at a higher point generally the second cup from the bottom of the stack under the bead thereof. Usually the secondary stack supporting means is in operative relation before the primary stack supporting means is moved to inoperative or stack releasing position. When however the primary stack supporting means is in stack releasing position, I provide means for separating the lowermost portion of the stack from the remainder thereof, this action naturally occurring when the primary stack supporting means is in inoperative relation. Usually only one cup, the lowermost one, is thus removed from the stack and this is desirably done by means which follows a direction coinciding with the longitudinal axis of the stack which in the present case and any other of which I can conceive, is vertical.

The primary stack supporting means in the construction shown comprises two shelves such as 9. The shelves are practically L or angular form in cross section, the horizontal flanges thereof presenting the stack-supporting means. Attached to the outer sides of the vertical or upright flanges of the respective shelves are outwardly-bowed springs 10 somewhat elongated and connected as shown at their upper ends to the upper portion of the shelves 9 the spring exerting a constant tendency to swing the respective shelves 9 outwardly which is resisted in a manner I will hereinafter set forth.

There is shown as slidable on the upper portion of the receiver or barrel 4, the annulus or ring 11 constituting part of the operating mechanism as will be hereinafter explained, and which has a sliding motion down and up on the receiver or barrel 4. As represented this ring 11 has at diametrically opposite places the apertures 12 to receive the two shelves 9. I have shown attached to the annulus or ring 11 the butts of the outwardly bowed fingers 13 the free rounded lower end portions of which when the ring 11 is in its upward position engages against the shelves when the ring 11 is at the limit of its upward motion. It will be assumed that the ring 11 is moved downward and I will describe hereinafter how this may be accomplished. On this particular motion the free ends of the fingers 13 will pass clear of the shelves 9 and on this action the shelves 9 will be swung outward through the action of the springs 10 and cause the shelves to enter the arched intermediate parts of the fingers 13 so that the shelves 9 will wholly free the stack but not free it desirably until the secondary stack supporting means, also usually consisting of shelves, has assumed its operative or stack-restraining position. On the upward movement of the ring 11 the fingers 13 will be carried therewith and will ride up onto the exteriors of the shelves 9 and will cam the same inward so that the horizontal flanges of the shelves 9 will be projected well into their appropriate slots 9′ and get under the external bead of what is now the lowermost cup and what was before this the second cup in the stack.

The secondary stack supporting means consists desirably also of shelves 14 which like the shelves 9 are of L-shape in cross section or angular in form, the operative portion of the shelves being intended to pass through slots as 15 in the receiver or barrel 4, diametrically opposite each other and in alinement with one another yet a trifle higher as shown, than the diametrically opposite slots 9′. The shelves 14 have fastened to their outer sides the shanks which rise therefrom, said shanks being pivoted as at 14′ at their upper ends to suitable bearings externally of the receiver or barrel 4. When the machine is at rest, or it might be considered its normal relation, the secondary shelves 14 are held in their retracted or backward positions usually by spring means as I will hereinafter explain. They are projected inwardly or toward their operative positions in the construction shown, through the primary agency of the ring 11 which for such purposes has diametrically opposite apertures 18 in which the respective shanks 16 lie. As the ring 11 is lowered in the manner to which I have hereinbefore referred, it traverses the shanks 16 and swings the same and hence the shelves 14 inward, they reaching their extreme innermost positions and under what is for the time being in the construction shown, the second lowermost cup of the stack being fully projected usually and desirably under said second lowermost cup just about the time the primary shelves 9 commence their described backward movement so that in such event the stack is not released. As the ring 11 rises the secondary shelves 14 are of course automatically returned to their original and retracted positions. I should note at this point that about the time the two secondary

shelves 14 or equivalent means are in operative or stack supporting position. the means by which the lowermost portion of the stack is caused to operate to positively separate the lower portion of the stack from the remainder thereof, this as I have noted being as shown the positive separation of the lowermost cup from the stack.

The cup separating means as represented comprises two fingers or ejectors 19 slidingly supported by the shanks 16 for movement longitudinally of said shanks. The ejectors or fingers consist as shown of L-shaped pieces, the body or shank of each piece being somewhat longer than the other or attaching branch which extend inwardly at an angle to the respective bodies so that they can be projected over the top of the lowermost cup and afterward moved bodily downward so as to positively separate the lowermost cup from the stack. The slots 15 have as shown between their ends the branch slots 20 extending downward from the lower walls thereof and practically centrally between the ends thereof, these branches being intended to accommodate the active portions or feet of the ejectors or fingers 19. As shown there extends between each ejector or finger 19 and the ring or band 11, springs as 21 represented as being of coiled form, the lower ends of the springs being connected with the respective feet of the ejectors or fingers 19 and their upper ends being connected with the ring 11.

It will be assumed that the parts are at a state of rest. In this event the stack of drinking cups 22 will be upheld by the two lower shelves 19. As the ring 11 is moved downward, the diametrically opposite upper shelves 14 are moved inward through the action of the mechanism already described and when said upper shelves are virtually in their operative positions the two lower shelves 9 are concurrently moved outward and free the stack. About the time the stack is released by said lower shelves 9 the ring 11 strikes the upper or butt ends of the ejectors or fingers 19 and thereby moves the ejectors or fingers downwardly as the ring 11 continues its downward movement. The ejectors or fingers 19 as has been explained are carried by the secondary shelves 14 and when the latter are in stack-engaging position the hooks or toes of the fingers will be over the upper edge of the lowermost cup so that as the ring continues its downward movement the ejectors or fingers 19 will be moved bodily downward and will bodily pull the lowermost cup from the stack. As the ring rises the two ejectors or fingers 19 will be returned to their initial positions and on the continued upward movement of said ring the secondary shelves 14 will be moved outwardly toward inoperative positions and the primary shelves moved inwardly toward operative positions so that the stack can settle and permit what is now the lowermost cup thereof to rest on the flanges of the lower shelves 9.

The machine desirably involves an actuator such as the manually operable lever or handle 23 fastened to the end of the shaft 24 sustained for rocking movement in the casing or housing 2. Fastened as by pinning to the rock shaft are arms 25 having a loose connection at their forward ends with pins 26 extending through the ring 11 at diametrically opposite points and furnished with stops such as nuts 27 engaging the upper and lower surfaces of the ring. Around the upper portions of the rods 26 are coiled springs 28 bearing at their upper ends against the lower nuts 27 and at their lower ends against lugs or ears as 29 usually struck out from the barrel 4. When therefore the handle or lever 23 is swung downward in the direction of the arrow applied thereto in Fig. 2 the two rods 26 are drawn downward to impart an advancing movement to the ring 11, to effect the dispensing of a cup in the manner I have hereinbefore described. On this downward movement of the ring the springs 28 are conditioned to effect an upward movement of the ring when the lever 23 is released to thus return the parts to their primary positions.

What I claim is:

1. A machine of the class described, comprising a barrel to receive a stack of nested drinking cups, primary stack supporting means, secondary stack supporting means, the primary and the secondary stack supporting means simultaneously engaging the stack at superposed points when respectively in operative positions, a band around the barrel, means operable at will for causing a movement in one direction of said band, automatic means for causing an opposite movement of the band, means actuated by the band on its forward movement for moving the primary stack supporting means into inoperative position and on said forward movement for moving the secondary stack supporting means into operative position, and ejecting means for the lowermost part of the stack, actuated by the band on the last part of the advancing movement thereof, and after the primary stack supporting means is in stack-releasing position for reversing said actions on the retractive movement of the band.

2. A machine of the class described, comprising a barrel to receive a stack of nested drinking cups, primary stack supporting means, secondary stack supporting means both said supporting means being sustained by said barrel and acting to simultaneously engage the stack at superposed points when respectively in operative positions, a band around the barrel, means

for causing a forward and a backward movement of the band, means actuated by the band on its forward movement for moving the primary stack supporting means into inoperative position and on said forward movement for moving the secondary stack supporting means into operative position, and ejecting means for the lowermost part of the stack, actuated by the band on the last part of the advancing movement thereof, and after the primary stack supporting means is in stack-releasing position for reversing said actions on the retractive movement of the band.

3. A machine of the class described, comprising a barrel to receive a stack of nested drinking cups, primary stack supporting means, secondary stack supporting means, the primary and the secondary stack supporting means simultaneously engaging the stack at superposed points when respectively in operative positions, a band around the barrel, means for causing a downward movement of the band, a rod connected with the band the barral having a lug to slidingly receive the rod, a spring between the band and the lug the spring being compressed on the downward movement of the band whereby when the band is released the spring will cause the band to move upwardly, means actuated by the band on its downward movement for moving the primary stack supporting means into inoperative position and on said downward movement for moving the secondary stack supporting means into operative position, and ejecting means for the lowermost part of the stack, actuated by the band on the last part of the downward movement thereof, and after the primary stack supporting means is in stack-releasing position for reversing said actions on the upward movement of the band.

4. A machine of the class described, comprising a barrel to receive a stack of nested drinking cups, primary stack supporting means, secondary stack supporting means, the primary and the secondary stack supporting means engaging the stack at superposed points when respectively in operative positions, a band around the barrel, means for causing a forward and a backward movement of the band, means actuated by the band on its forward movement for moving the primary stack supporting means into inoperative position and on said forward movement for moving the secondary stack supporting means into operative position, and ejecting means for the lowermost part of the stack, supported for sliding movement by the secondary stack supporting means and actuated by the band on the last part of the advancing movement thereof and after the primary stack supporting means is in stack releasing position, and when the secondary stack supporting means is in operative position.

In testimony whereof I affix my signature.

HENRY B. COOLEY.

Witnesses:
THOS. W. EMERSON,
ENGNAR JOHNSON.