

Feb. 20, 1945.

W. E. AMBERG

2,369,933

CUP DISPENSER

Filed Feb. 14, 1942

Fig. 1

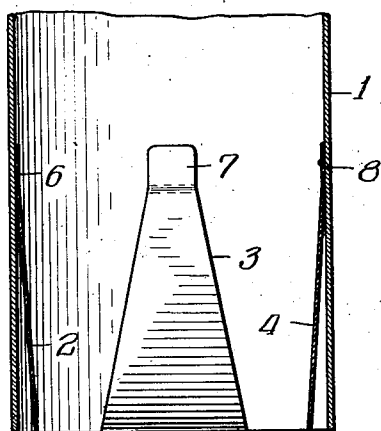


Fig. 2

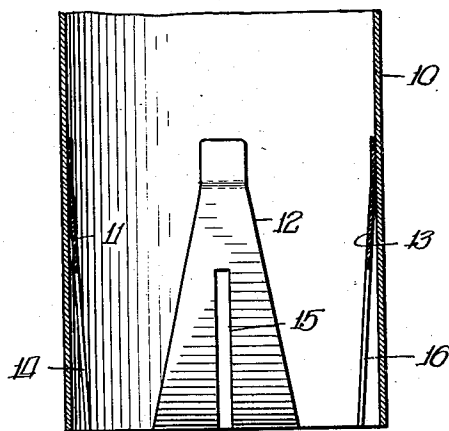


Fig. 3

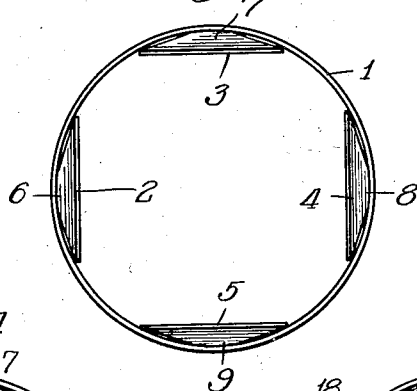


Fig. 4

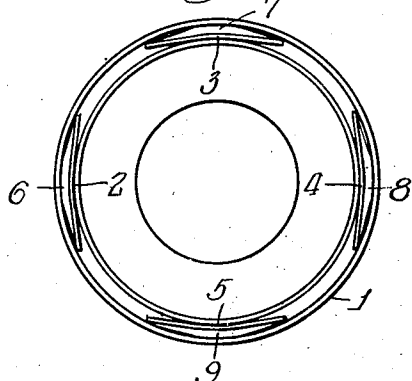
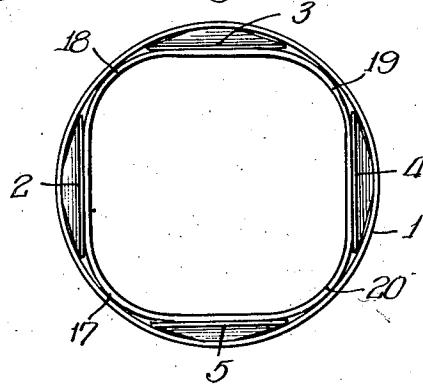


Fig. 5



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UNITED STATES PATENT OFFICE

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CUP DISPENSER

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Application February 14, 1942, Serial No. 430,849

3 Claims. (Cl. 312-43)

This invention relates to a new and improved dispenser suitable for dispensing paper cups and similar articles from a nest or stack thereof.

As is well known, paper containers such as paper cups are usually sold nested one within the other. It is common practice in the use of such cups to place them in a metal dispenser provided with suitable dispensing elements so that the cups can be withdrawn from the bottom of the stack one at a time. The dispensing of the cups involves a number of problems. In order to dispense the cups satisfactorily, the dispenser must be such that only a single cup is withdrawn from the bottom of the stack when the lowermost cup of the stack is grasped by the hand. It is also desirable that only a slight pull be required in order to remove the lowermost cup of the stack. Usually if a strong pull is necessary, the cup is likely to be damaged.

Heretofore it has been found that dispensers which are suitable for dispensing relatively flexible cups are not suitable for dispensing the stiffer types of cups. Furthermore, special types of dispensers are required for dispensing cups having beaded or rolled rims because in many instances the dispensing elements tend to unroll, distort or otherwise damage the rims of the cups.

One of the objects of the present invention is to provide a new and improved type of cup dispenser characterized by exceptional simplicity in its construction.

Another object of the invention is to provide a simple type of cup dispenser suitable for dispensing cups having beaded or rolled rims.

Still another object of the invention is to provide a new and improved type of cup dispenser suitable for dispensing flexible or stiff rimmed cups without modification or with a minimum amount of modification in the construction of the dispenser.

Other objects and advantages of the invention will be apparent by reference to the following description in conjunction with the accompanying drawing, in which:

Figure 1 is a cross-sectional elevational view of the lower end of a cup dispenser made in accordance with this invention;

Figure 2 is a cross-sectional elevational view similar to Figure 1, showing a modification of the invention;

Fig. 3 is a bottom plan view, looking up, of the dispenser shown in Figure 1;

Figure 4 is a bottom plan view of the dispenser shown in Figure 3, illustrating the action of the dispensing elements when a stiff rimmed cup is

being withdrawn from the bottom of the dispenser;

Fig. 5 is a bottom plan view, looking up, illustrating the dispensing action when a flexible rimmed cup is being withdrawn from the dispenser.

Referring to Figures 1 and 3, it will be seen that the dispenser illustrated therein comprises a tubular member 1 of circular cross-section, or of any other suitable cross-section such as square, octagonal, etc. The length of this member will vary, depending upon the number of cups or other nested articles which it is desired to dispense. In ordinary practice it may be anywhere from about 6 inches to 14 inches long. For the purpose of describing the present invention, only the lower portion of the tubular member 1 is shown because the tubular member itself merely serves to retain the stack of nested cups in alignment, usually in a vertical position. Ordinarily the cross-sectional area of the member 1 is such that a substantial clearance is permitted between the side of the stack and the inside of the tubular member.

Disposed around the bottom or emerging area of the tubular member are a plurality of blades indicated in Figures 1 and 3 by the numerals 2, 3, 4 and 5. These blades are spot welded or otherwise attached to the inside of the tubular member 1 at points 6, 7, 8 and 9, respectively.

The blades 2, 3, 4 and 5 may be relatively stiff or relatively flexible, depending upon the type of cup which is to be dispensed. In order to dispense a cup having a relatively stiff rim such as the so-called flat bottom cups having a beaded or rolled rim, it is preferable that the blades 2, 3, 4 and 5 be sufficiently flexible to give or yield resiliently as the lowermost cup of the stack is withdrawn in the manner shown in Figure 4. In this way it has been found that the weight of the stack is adequately supported and cups may be withdrawn from the bottom thereof one at a time without distorting, unrolling or otherwise damaging the rims and with relative ease.

It will be seen that the blades 2, 3, 4 and 5 have a generally triangular configuration and are so constructed that at least a portion of each of the sides thereof will normally rest or lie against the inside of the lower part of the tubular member 1 in the manner shown in Figure 3. In this way the inside of the tubular member 1 reinforces or supports the blades 2, 3, 4 and 5 and thereby assists in supporting the stack of cups which is relatively heavy. When each cup is withdrawn from the bottom of the stack, the inside of the

tubular member 1 also limits the movement of the lower edges of the blades 2, 3, 4 and 5 and assists in quickly returning them to their normal positions in order to thereby support the next to the lowermost cup of the stack after the lowermost cup has been dispensed and in this way to hold the entire stack in place and to keep more than one cup from being dispensed at a time.

The dispensing blades, as they are referred to herein, are preferably constructed of spring metal, such as, for example, spring steel, although any other material of construction having a similar flexibility may be employed. The tubular member 1 is preferably a metal tube, although it may be made from a stiff synthetic or plastic material such as a molded resin. Likewise it may be made of cardboard, fiber board or other similar fibrous materials.

In Figure 2 a modification of the invention is illustrated in which the tubular member 10 is provided with a plurality of dispensing blades 11, 12 and 13 having therein slits or openings 14, 15 and 16 for the purpose of increasing the flexibility of the dispensing blades. It will be understood that the use of a slit for this purpose is merely illustrative and that other expedients such as holes punched at intervals in the blades may be employed, the general purpose of any of these expedients being to weaken certain portions of the dispensing blades, particularly in the central areas thereof.

In Figure 5 the invention is illustrated in the dispensing of a cup having a flexible rim. A typical example of this type of cup is the cone-shaped cup. As will be observed from Figure 5, the blades 2, 3, 4 and 5 are sufficiently stiff to cause the rim of the cup to give or flex whereby the portions of the cup illustrated by the numerals 17, 18, 19 and 20 are caused to flex in an outward direction toward the inside wall of the tubular member 1 between the blades 2, 3, 4 and 5. Other portions of the tubular member 1 between the portions of the rim of the cup are in substantially a straight line contact with the lower edges of the blades 2, 3, 4 and 5 as the cup is withdrawn from the dispenser.

An important feature of the invention resides in the fact that the dispensing blades can be so constructed as to be sufficiently yielding or flexible to dispense stiff rimmed cups, as shown in Figure 4, and at the same time sufficiently stiff to dispense the more flexible type of cup, as illustrated in Figure 5.

One of the principal features of the invention is the provision of supporting and dispensing blades 2, 3, 4 and 5 which are longitudinally disposed with respect to the vertical axis of the dispenser or the stack of cups placed therein. These blades are also capable of yielding or flexing both longitudinally and circumferentially for dispensing cups having a stiff rim. Another feature of the invention which is important in conjunction with the provision of longitudinal supporting and dispensing blades is the construction of these blades in a generally tapering form, as shown in the drawing, and with the edges thereof normally lying adjacent or against the inside of the tubular member 1 so that the tubular member acts as a fulcrum for the edges of the supporting and dispensing blades during a dispensing operation. As will be observed, each blade in the preferred embodiment illustrated lies in

a plane which forms a chord with the inside of the tubular member 1 of varying length. As the taper of the blade increases in the direction of the emerging area of the dispenser, the contact between the edges of the blade and the inside of the tubular member causes the blade to slope downwardly and inwardly, thereby supporting the stack of cups from the lowermost cup in the stack.

It is preferable to employ four dispensing blades in the manner shown in the drawing. This number of blades enables the stack to be held in uniform vertical alignment and permits cups to be withdrawn therefrom in a uniform manner. It will be understood, however, that one or more blades may be employed. The principles described herein are especially adapted for dispensing paper cups having a mouth of circular cross-section, but it will be understood that the same principles of construction with slight modification may be employed in dispensing other types of cups.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A cup dispenser comprising a substantially cylindrical tubular member for holding a stack of cups and having an emerging area at one end thereof through which said cups may be dispensed from the bottom of the stack one at a time, and a longitudinal resilient cup supporting and dispensing blade secured to said tubular member in said emerging area, said blade having tapered edges with the wider part of the taper extending in the direction of the emerging area, and with said edges substantially throughout their length contacting the inner side of the wall of said tubular member when a cup is dispensed therefrom.

2. A cup dispenser comprising a substantially cylindrical tubular member for holding a stack of cups and having an emerging area at one end thereof through which said cups may be dispensed from the bottom of the stack one at a time, and a plurality of longitudinally disposed tapered spring blades fixed to the inner side of the wall of said tubular member in said emerging area, said blades being fixed to said wall at the tapered ends with the wider part of the taper extending in the direction of the emerging area without being fixed to said wall, and with the edges of said blades substantially throughout their length contacting the inner side of the wall of said tubular member when a cup is dispensed therefrom.

3. A cup dispenser comprising a substantially cylindrical tubular member for holding a stack of cups and having an emerging area at one end thereof through which said cups may be dispensed from the bottom of the stack one at a time, and a tapered spring blade affixed near the tapered end to the inner side of the wall of said tubular member with the wide part of the taper extending in the direction of the emerging area, and with the edges of said blades substantially throughout their length contacting the inner side of the wall of said tubular member when a cup is dispensed therefrom, said blade containing a weakened area adapted to increase its flexibility circumferentially.

WALTER E. AMBERG.

CERTIFICATE OF CORRECTION.

Patent No. 2,369,933.

February 20, 1945.

WALTER E. AMBERG.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 42, strike out "portions of the tubular member 1 between the"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22nd day of May, A. D. 1945.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.