Nov. 4, 1941. S. N. HOPE 2,261,880

DISPENSING DEVICE

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FIG. 1

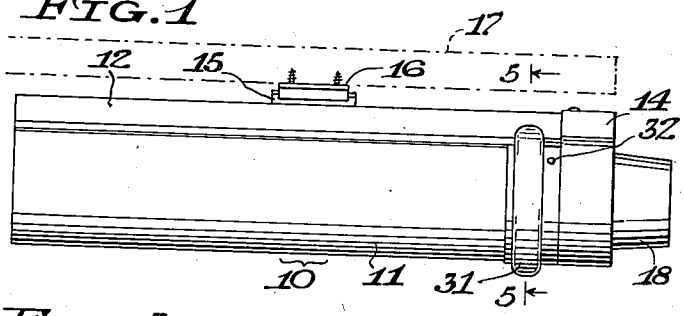


FIG. 2

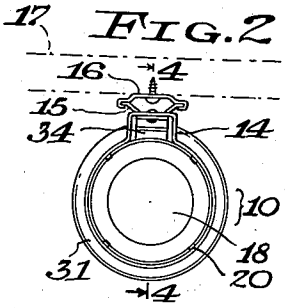


FIG. 3

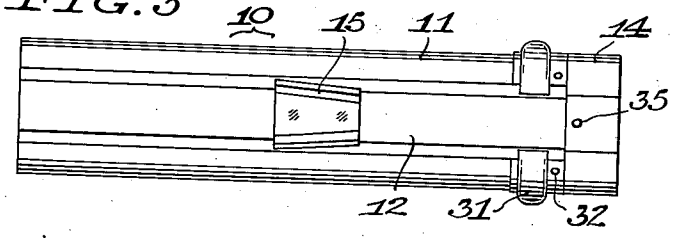


FIG. 6

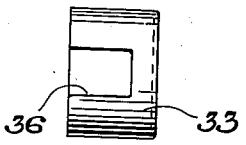


FIG. 4

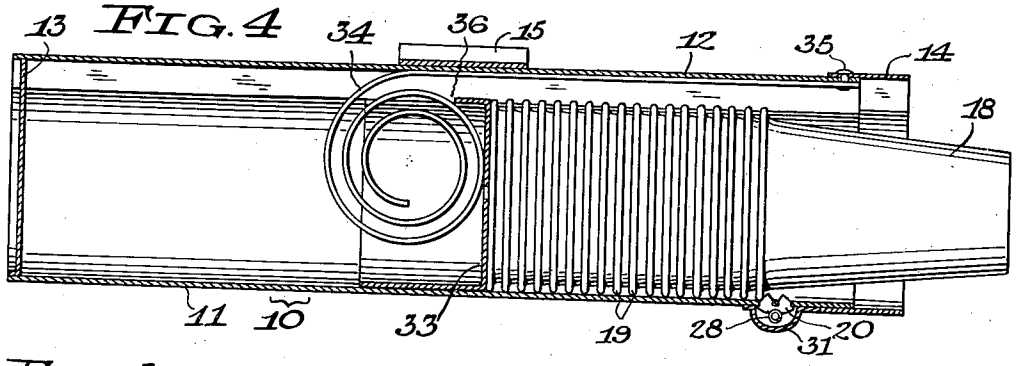
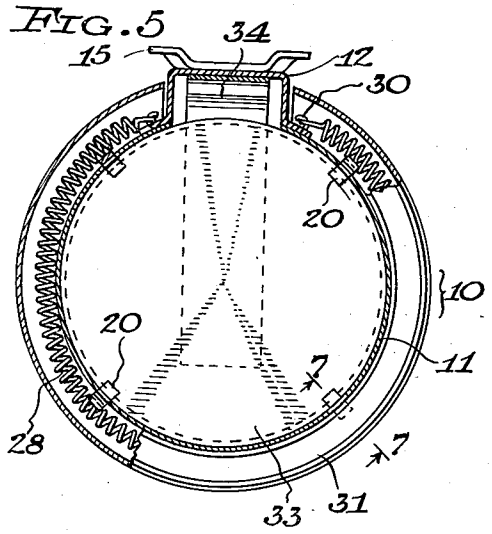


FIG. 5



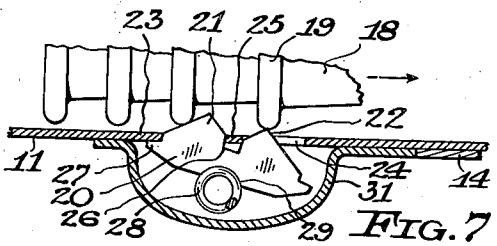


FIG. 7

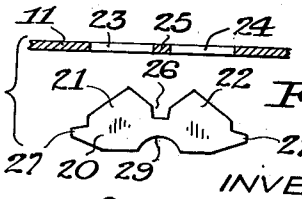


FIG. 8

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DISPENSING DEVICE

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FIG. 9

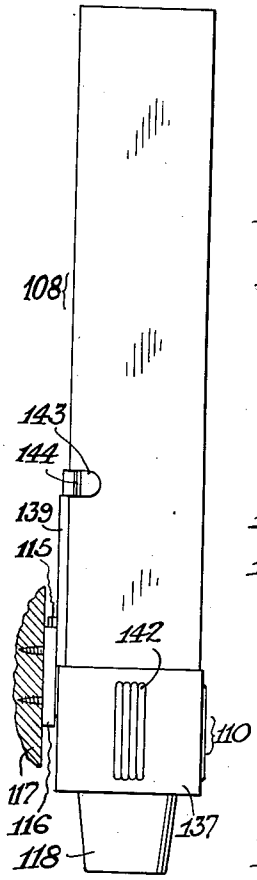


FIG. 11

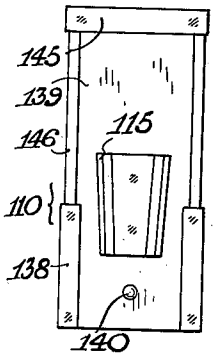


FIG. 18

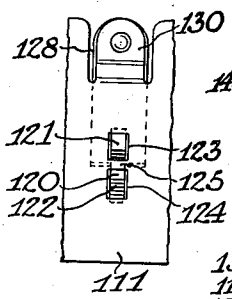


FIG. 12

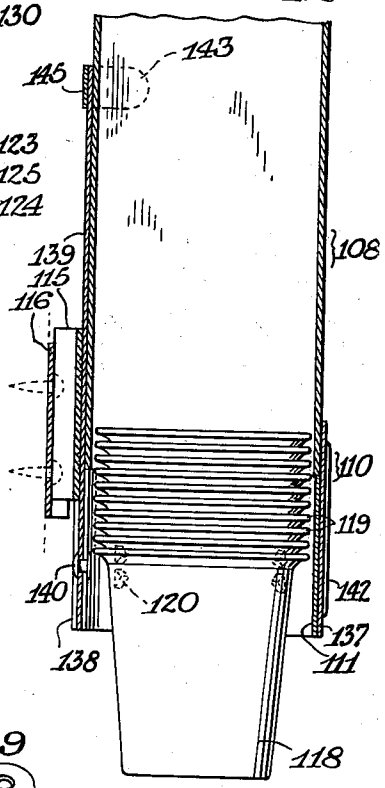


FIG. 10

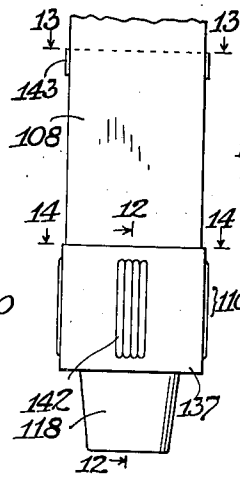


FIG. 15

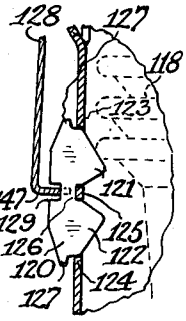


FIG. 19

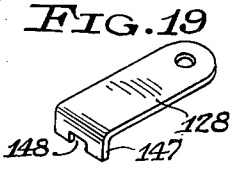


FIG. 16

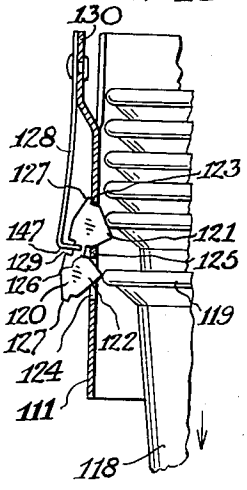


FIG. 17

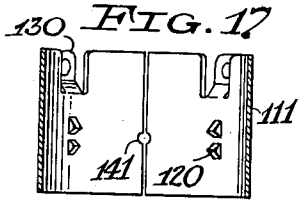


FIG. 13

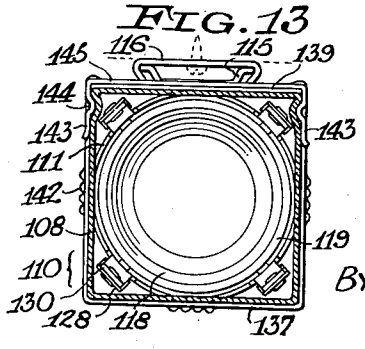
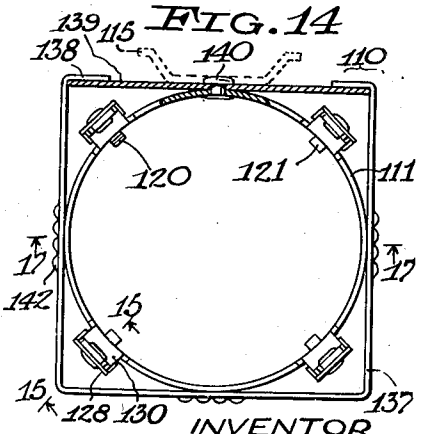


FIG. 14



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Patented Nov. 4, 1941

2,261,880

UNITED STATES PATENT OFFICE

2,261,880

DISPENSING DEVICE

Samuel N. Hope, Wauwatosa, Wis., assignor to Griffith-Hope Company, West Allis, Wis., a corporation of Wisconsin

Application December 9, 1939, Serial No. 308,418

10 Claims. (Cl. 312—43)

The present invention relates to devices for dispensing paper cups and other articles.

It is customary to dispense various kinds of articles, such as paper cups, from a forwardly movable stack or pack, the foremost article thereof being withdrawn as needed. In some instances the successive articles of the stack or pack, especially when disposed in nested relation, tend to cling to each other, such tendency being particularly pronounced in the case of waxed paper drinking cups after exposure to heat.

An object of the invention is to provide an improved dispensing device having simple but effective means for retaining a stack or pack of articles although permitting ready withdrawal of the foremost article and causing release thereof from the succeeding article, notwithstanding possible adhesion between the articles.

Another object is to provide a dispensing device which is capable of economical manufacture and which is reliable in operation.

A further object is to provide a dispensing device which can readily be filled through the dispensing opening of the device.

A still further object is to provide a dispensing device which will facilitate the mounting thereon of a magazine-forming carton or package containing the articles.

The invention further consists in the novel features hereinafter described and claimed.

In the accompanying drawings, illustrating certain embodiments of the invention:

Fig. 1 is a side elevation of a dispensing device of the horizontal type, a cup projecting from the device in dispensing position;

Fig. 2 is a front elevation of the device;

Fig. 3 is a plan view;

Fig. 4 is a sectional elevation taken generally along the line 4—4 of Fig. 2;

Fig. 5 is a transverse sectional elevation, taken generally along the line 5—5 of Fig. 1, the cups being omitted;

Fig. 6 is a detail plan view of a cup follower;

Fig. 7 is a detail sectional view taken generally along the line 7—7 of Fig. 5, showing cups mounted in the casing of the device, and the foremost cup being partially withdrawn;

Fig. 8 is a detail view of a cup-retaining dog and a cooperating portion of the casing, the latter being shown in section;

Fig. 9 is a side elevation of another form of dispensing device constructed in accordance with the invention, a cup carton or package being mounted on the device, and a support for the device being shown in section;

Fig. 10 is a front elevation of the dispensing device of Fig. 9, the upper portion of the cup carton being broken away;

Fig. 11 is a rear elevation of the dispensing device of Fig. 9, the cup carton being omitted;

Fig. 12 is a sectional elevation taken generally along the line 12—12 of Fig. 10;

Fig. 13 is a transverse sectional view taken generally along the line 13—13 of Fig. 10;

Fig. 14 is a transverse sectional view taken generally along the line 14—14 of Fig. 10;

Fig. 15 is a detail sectional elevation taken generally along the line 15—15 of Fig. 14;

Fig. 16 is a view similar to Fig. 15, but showing the foremost cup being withdrawn;

Fig. 17 is a detail sectional view of a dog-carrying casing sleeve before assembly into the device, and taken generally along the line 17—17 of Fig. 14;

Fig. 18 is a fragmentary detail view of the inner side of the casing sleeve, showing one of the cup-retaining dogs, and

Fig. 19 is a perspective view of a dog-pressing spring.

In that form of the invention shown in Figs. 1 to 8, 10 designates a tubular casing which comprises a cylindrical sheet metal shell 11 of C-shaped cross-section bridged by a longitudinally extending outwardly flanged sheet metal channel member 12, and closed at its rear end by a flanged sheet metal end plate 13, the channel member and end plate being rigidly secured to the shell, as by spot welding. At its front end the casing is provided with a sheet metal extension collar 14 spot welded to the shell and channel member. The casing is suitably supported, preferably in horizontal position with the channel member uppermost. A flanged wedge plate 15 is rigidly secured to the channel member and is wedgingly engageable in a mounting bracket 16 secured to the underside of a horizontal support 17, such as a soda fountain counter, the casing being drawn forwardly to a wedging position.

The casing is adapted to house therein a succession of articles, which in the present instance are shown to be in the form of paper cups 18 arranged in nested relation and having beaded or outwardly flanged rims 19, the closed end or bottom of the foremost cup projecting from the casing, and the beaded rims of the cups fitting loosely in the cylindrical shell 11.

The cups are releasably retained in the casing by a plurality of spring-pressed dogs 20 mount-

ed in the shell 11, four peripherally spaced dogs being shown in the present instance. Each dog consists of an elongated block, preferably of metal, extending longitudinally of the casing and having a pair of longitudinally spaced, pointed teeth or projections 21 and 22 which extend respectively through a pair of aligned slots 23 and 24 formed in the shell, there being a fulcrum-forming bridge 25 between these slots loosely fitting in a flat-bottomed notch 26 formed in the dog between the teeth. The dog pivotally bears on the bridge to permit a limited rocking movement of the dog, the opposite ends of the dog having stop projections 27 which are engageable with the outer surface of the shell beyond the ends of the slots 23 and 24. The dogs 20 are held in the slots by a coiled tension spring 28 extending about the shell and fitting in central notches 29 formed in the outer edges of the dogs, the ends of the spring being anchored on hooks 30, Fig. 5, struck up from the flanges of the channel member 12. The spring and dogs are housed in an arcuate sheet metal cover 31 of channel cross-section extending about the shell 11 and secured thereto by rivets 32. The dogs are preferably symmetrical about a central transverse plane, thus facilitating assembly.

A cup-shaped follower 33 slidably fits in the shell 11 and has an end wall bearing on the rim portion of the innermost cup. A spirally wound leaf or ribbon spring 34 has a portion extending in the channel member 12 and is rigidly secured at its front end to the extension collar 14, as by a rivet 35. The spirally wound spring extends into the shell and has its outer convolution bearing on the inner side of the end wall of the cup-shaped follower 33, the latter having a notch 36 in its side wall to admit the spring. The spirally coiled spring tends to roll up toward the open front end of the casing and thus urges the follower 33 and the cups 18 toward this end. The flange of the foremost cup, however, engages the teeth 21 of the spring-pressed dogs 20, thus restraining movement of the cups.

When a cup is to be dispensed, it is grasped in the fingers and pulled outwardly, the rim portion of the cup displacing or depressing first the rear teeth 21 and then the front teeth 22 of the dogs 20 and causing the dogs to pivot on the bridges 25. the rear teeth 21 of the dogs being thus urged against the second cup in front of its beaded rim 19 to restrain movement of this cup. Continued outward movement of the foremost cup causes the front teeth 22 of the dogs to become further depressed against the action of the coiled springs 28, as seen in Fig. 7, the dogs then pivoting on their rear end portions 27, and the central notched portions of the dogs being displaced outwardly out of pivotal engagement with the respective bridges 25. The rim portion of the foremost cup finally passes over the front teeth 22 of the dogs, permitting removal of the cup from the casing, the following cup being retained in the casing by the rear teeth 21 of the dogs. Succeeding cups are withdrawn in the same manner, the nested cups being urged forwardly by the spirally coiled feeding spring 34. When the last cup is withdrawn the follower 33 is retained by the dogs. The yielding mounting of the rockable dogs permits the foremost cup to be withdrawn without injury, while still providing the desired gripping and restraining action on the following cup. An advantage for the feeding spring 34 is that the feeding pressure on the cups remains substantially uniform whether the casing is full or has only a single remaining cup. The portion of the spring extending from the anchorage 35 to the coiled portion is substantially flat and bears on the web of the channel member 12 out of the path of the cups.

To load the casing, it is only necessary to push a stack of nested cups into the casing, the spring-pressed rockable dogs 20 being forced outwardly by the rim portions of the cups as the cups pass into the casing. The yieldable mounting of the dogs permits both the front and rear projections of the dogs to be depressed simultaneously, thus avoiding injury to, or jamming of, the cups during the loading operation. This mounting also permits the follower 33 to be inserted into the casing through the dispensing opening after the dogs are installed.

It will be obvious that the feeding spring can be used in other types of dispensers, such as napkin dispensers. The feeding means forms the claimed subject-matter of my copending application for Cup dispensing device, Serial No. 273,628, filed May 15, 1939. The use of feeding means permits the dispenser to be mounted in various positions including an up-feed vertical position.

In that form of the invention shown in Figs. 9 to 19, 110 designates a holder-forming casing in which is detachably mounted the lower end portion of a cardboard cup package or carton 108 of a well-known type, the package enclosing therein a stack or succession of nested paper cups 118. The package is here shown to be of the usual square cross-section and sometimes bears suitable advertising or other indicia (not shown) on one or more of its sides. The lower end wall of the package is opened to permit the dispensing of the cups bottom end foremost.

The casing 110 comprises a sheet metal band or plate 137 bent to form a front wall and side walls and having inturned rear flanges 138 which are rigidly secured, as by spot welding, to the rear face of a back plate 139, thus forming a hollow square structure within the upper portion of which the lower end of the cup package 108 is adapted to fit. The casing further includes an inner sleeve or shell 111 which is formed by bending a sheet metal band to cylindrical shape and which fits within the hollow square portion of the casing. The sleeve is secured to the back plate 139 by a rivet 140 passing through registering notches 141, Fig. 17, in the longitudinally split rear portion of the sleeve, the fastening of the rivet serving to expand the split sleeve into snug engagement with the inner wall surfaces of the hollow square portion of the casing. The upper edge of the shell or sleeve 111 is spaced downwardly from the upper edge of the casing band 137 and forms a stop for the open bottom end of the cup package. The front and opposite side walls of the casing band 137 are embossed with vertical stiffening ribs 142 which also serve to provide ornamentation. The cup package forms, in effect, an upward extension of the casing.

The back plate 139 extends somewhat above the casing band 137 and at its upper end carries opposite forwardly projecting resilient ears 143 which are bent to present vertical ribs 144 at the inner sides thereof to engage and indent the resilient side walls of the cup package, as seen in Fig. 13, thus firmly holding the package in

position on the casing. The retaining ears facilitate the mounting of the package and avoid obscuring any indicia that may be present on the front and side walls of the package. The ears 143 are here shown to be formed on the ends of a sheet metal strap 145 which is secured, as by spot welding, to the rear face of the back plate. The opposite side edges of the back plate are beaded or doubled on themselves at 146 to avoid sharp edges and to provide stiffness.

A flanged wedge plate 115 is rigidly secured to the rear face of the back plate 112 and is wedgingly engageable in a mounting bracket 116 secured to a vertical supporting wall 117, the holder being urged downwardly to a wedging position.

The cups 118 descend from the cup package or carton into the cylindrical sleeve or shell 111 below which the lowermost cup extends, and are releasably retained in the shell by a plurality of spring-pressed dogs 120 mounted in the shell, four peripherally spaced dogs being provided in the present instance. The dogs are similar to those of the device of Figs. 1 to 8, and each consists of an elongated block, preferably of metal, extending longitudinally of the shell and having a pair of longitudinally spaced, pointed teeth or projections 121 and 122 which extend respectively through a pair of vertically aligned slots 123 and 124 formed in the shell, there being a fulcrum-forming bridge 125 between these slots fitting in a flat-bottomed notch 126 formed in the dog between the teeth. The dog pivotally bears on the bridge to permit a limited rocking movement of the dog, the opposite ends of the dog having stop projections 127 which are engageable with the outer surface of the shell beyond the ends of the slots 123 and 124. The dogs extend outwardly of the shell into the open corner spaces of the casing and are held in their slots by respective leaf springs 128 extending longitudinally of the shell, the upper ends of the springs being secured, as by riveting, to respective tongues 130 struck up from the shell. Each spring has an inturned lower free end 147 which is urged inwardly and which bears in a notch 129 formed in the outer edge of the corresponding dog, the notch being somewhat wider than the thickness of the spring so as not to interfere with the rocking of the dog. The inturned end of the spring has a central notch 148 to admit the notched outer edge of the dog and thus maintain the spring in operative engagement with the dog, the notch 148 being slightly wider than the thickness of the dog. The spring normally holds the dog in the position shown in Fig. 15. During manufacture, the dogs and their springs are readily applied to the sleeve or shell 111, which then forms a conveniently handled subassembly. After the sleeve is incorporated into the casing, the outer walls of the casing conceal the dogs and springs.

When the device of Fig. 9 is in use, the stack of cups is urged downwardly by gravity, the bead or rim portion 119 of the lowermost cup being supported on the upper teeth 121 of the retaining dogs 120, as seen in Figs. 12 and 15. When a cup is to be dispensed, it is grasped in the fingers and pulled downwardly, the rim portion of the cup depressing first the upper teeth 121 of the dogs and then the lower teeth 122 and causing the dogs to pivot on the bridges 125. The operation is substantially the same as that of the device of Figs. 1 to 8. Fig. 16 shows the lowermost cup passing the lower tooth of one of the dogs. At this stage the upper end 127 of the dog pivots on the outer wall of the sleeve or shell, although in some instances the inwardly urged upper tooth 121 of the dog may pivot on the rim portion of the second last cup. Although the cups may adhere to each other to some extent, the cup which follows the one being withdrawn will be prevented by the inwardly urged upper teeth of the retaining dogs from leaving the casing. The rim portions 119 of the cups may be relatively stiff, but the yielding dogs will readily permit the passage of the lowermost cup.

When the cup package is exhausted, it is lifted out of the casing and is replaced by a new package, the cups thereof descending into the casing until the rim portion of the lowermost cup rests on the upper teeth of the retaining dogs.

The construction of each form of dispensing device insures withdrawal of only one article at a time, thus avoiding waste.

What I claim as new and desire to secure by Letters Patent is:

1. In a dispensing device for successively arranged articles, article-retaining means yieldable to permit the withdrawal of the foremost article, said retaining means including a shiftable actuating part engageable with the foremost article and further including a shiftable article-restraining part operatively connected to said actuating part, said actuating part adapted to be controlled by said foremost article during the withdrawal thereof to cause said restraining part to grip the following article.

2. In a dispensing device for successively arranged articles, article-retaining means yieldable to permit the release of the foremost article therefrom, said means comprising a dog having front and rear projections in the path of the articles and having a pivotal mounting the axis of which is at a region intermediate said projections, said rear projection being normally engageable with the foremost article to restrain the movement of the articles and being depressible by the foremost article during the withdrawal of said article, said front projection being depressible by the foremost article during withdrawal of said article to turn said dog on its pivotal mounting and thus increase the restraining effect of said rear projection on the following article.

3. In a dispensing device, a casing adapted to receive therein a succession of articles to be dispensed, said casing having an apertured side wall, a plurality of article-retaining members movably extending through said side wall in peripherally spaced relation and pivotally engaging said side wall, and a spring-tensioned member extending about said casing for yieldably urging said retaining members inwardly to article-retaining position and for yieldably holding said members in pivoted engagement with said side wall.

4. In a dispensing device, a casing adapted to contain a succession of nested articles and having a filling and dispensing opening, an article-retaining member having longitudinally spaced projections in the path of the edge portions of said articles, and resilient means for yieldingly holding said member in article-retaining position, said member being rockable about an axis intermediate said projections during the filling and dispensing of said articles and also being yieldable outwardly as a whole during said filling and dispensing operations to permit said longitudinally spaced projections to be simultaneously depressed, said member being yieldable out-

wardly against the pressure of said resilient means.

5. In a dispensing device, a casing adapted to contain a succession of articles and having an apertured wall, an article-retaining member having longitudinally spaced projections extending through said wall into the path of said articles and having a pivotal bearing on said casing, the pivotal axis being intermediate said projections, and resilient means for yieldingly holding said member in pivotal engagement with said wall, said member being rockable about its pivotal axis during the withdrawal of the foremost article, and said member having an end portion pivotally engageable with said wall when the intermediate pivot portion of said member is urged away from said wall.

6. In a dispensing device for successively arranged articles, article-retaining means comprising front and rear projections in the path of the articles and yieldable to permit the withdrawal of the foremost article, said yieldable rear projection being normally engageable with the foremost article to restrain the movement of said articles and being depressible by said foremost article during the withdrawal of said article, and said front projection being operatively connected with said rear projection and being displaceable by the foremost article during its withdrawal to cause said rear projection to grip the following article.

7. In a dispensing device for successively arranged articles, article-retaining means yieldable to permit the release of the foremost article therefrom, said means comprising a rockably mounted dog having front and rear projections in the path of the articles and having a pivotal axis at a region intermediate said projections, and a spring arm for urging said dog inwardly toward article-retaining position and acting on said dog at a region adjacent to said pivotal axis, said dog being yieldable outwardly against the pressure of said spring arm to permit simultaneous depression of said projections.

8. In a dispensing device for a package of substantially square cross-section enclosing a succession of articles and having resilient walls, a casing having a portion adapted to have the lower end of said package detachably seated therein in open condition, said casing having a back portion with a pair of opposed forwardly projecting ears spaced above the package-seating portion and engageable with the opposite side walls of the package, said ears having surfaces on their inner walls for indenting the side walls of the package adjacent to the rear wall of the package, and article-dispensing means carried by said casing.

9. In a dispensing device for a package of substantially square cross-section enclosing a succession of articles, an outer casing member having a generally square opening adapted to have the lower end of the package detachably seated therein, a tubular inner member secured in said outer member and forming a stop for the lower end of the package, and yieldable article-retaining means carried by said inner casing member adjacent to the corner portions of the outer member.

10. In a dispenser for successively arranged articles, an outer casing member, a longitudinally split expansible tubular inner casing member extending within said outer member and adapted to receive the articles therein, securing means for said inner casing member expanding said member into snugly fitting engagement with the inner walls of said outer member, and yieldable article-retaining means carried by said inner casing member.

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