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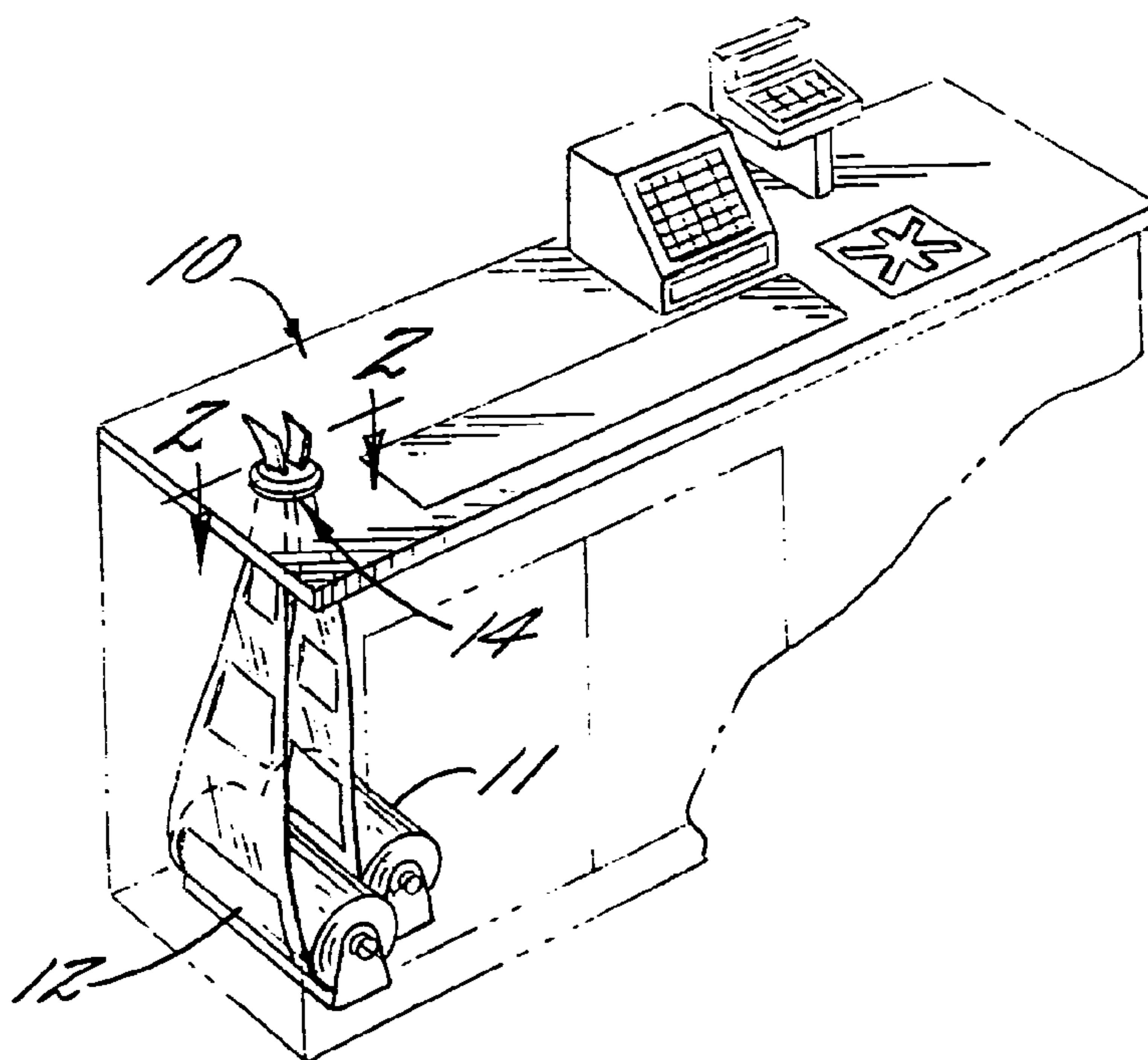
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(54) **DISTRIBUTEUR DE SACS EN PLASTIQUE SOUPLES**

(54) **APPARATUS FOR SERIALY DISPENSING FLEXIBLE  
PLASTIC BAGS**



(57) Cette invention concerne un dispositif distributeur de sacs plastiques ou autres matériaux d'emballage souples qui comprend une tête de distribution comportant au moins une fente longitudinale dont les deux grands côtés sont dentés, les deux dentures étant interdigitées pour que les sacs ne puissent passer par la fente librement. Chaque dent présente un sommet arrondi ou une section demi-cylindrique, vue du petit côté de la fente.

(57) An apparatus for serially dispensing flexible plastic bags or other flexible packaging material, and which includes a dispensing nozzle having at least one longitudinally extending slot extending therethrough. The slot includes a plurality of longitudinally spaced apart projections extending from opposing side edges of the slot. The projections of the two side edges are disposed in an interdigitated relationship so as to resist the free movement of bags therethrough. Each projection has an edge surface facing the opposite side edge of the slot and which is non-linear along its length when viewed in the longitudinal direction.

## APPARATUS FOR SERIALY DISPENSING FLEXIBLE PLASTIC BAGS

Abstract of the Disclosure

An apparatus for serially dispensing flexible plastic bags or other flexible packaging material, and which includes a dispensing nozzle having at least one longitudinally extending slot extending therethrough. The slot includes a plurality of longitudinally spaced apart projections extending from opposing side edges of the slot. The projections of the two side edges are disposed in an interdigitated relationship so as to resist the free movement of bags therethrough. Each projection has an edge surface facing the opposite side edge of the slot and which is non-linear along its length when viewed in the longitudinal direction.

## APPARATUS FOR SERIALY DISPENSING FLEXIBLE PLASTIC BAGS

### Field of the Invention

The present invention relates to an apparatus, commonly referred to as a nozzle, for serially dispensing flexible plastic bags of the type commonly utilized by grocery stores and the like to package purchased articles. The apparatus is also adapted for serially dispensing plastic film or other flexible packaging materials.

### Background of the Invention

Commonly owned U.S. Patent No. 4,930,385 to Wilfong, Jr. et al., and U.S. Patent No. Re. 34,324 to Haenni et al., describe dispensing nozzles for serially dispensing plastic grocery bags or the like from a supply roll, wherein the supply roll is composed of bags serially joined along perforated severance lines. The nozzle disclosed in the Haenni et al. patent includes an elongate slot having a zig zag configuration along its longitudinal length, together with a thread-up opening disposed along one side of, and in communication with, the slot. The nozzle disclosed in the Wilfong, Jr. et al. patent includes a pair of parallel elongate slots each having a zig zag configuration along their longitudinal lengths,

together with thread-up openings disposed at each end of each slot, each opening in communication with a respective slot.

5 The slots disclosed in each of these patents define opposing spaced apart side edges of sawtooth-like configuration wherein each side edge comprises alternating V-shaped projections and recesses. The projections of each side edge are laterally aligned with the recesses of an opposite side edge.

10 The nozzle in each of these patents is disclosed as being mounted in a bore in a grocery store checkout counter top, with the bag supply roll being mounted below the counter top. In use, the leading bag from a roll is manually threaded through a thread-up opening associated with a slot, and the leading edge is 15 then grasped and moved into the slot. Thereafter, bags may be individually delivered by pulling the bags upwardly and laterally outwardly. The zig zag configuration of each slot is designed to exert 20 sufficient resistance so as to cause a severing of the leading bag from the immediately following bag along the perforated severance line.

While the dispensing nozzles disclosed in each of the above-referenced patents represent a 25 significant advance in the art, each possesses certain limitations in use. Specifically, the sharp edges of the sawtooth-like configuration has a tendency to occasionally grab and tear bags being dispensed. Also, the sharp edges tend to resist any lateral movement of 30 bags over the teeth when the clerk pulls upon the bag in a lateral direction. This resistance to lateral movement also has the tendency to cause the bags to bind, and often tear as a result. Another disadvantage of the above-referenced sawtooth-like nozzles is that 35 it is necessary to maintain adjacent teeth in a close relationship in order for there to be sufficient resistance to cause the leading bag to sever from the

immediately following bag along the perforated severance line. Unfortunately, maintaining adjacent teeth in such a close relationship contributes to the  
5 wedging and binding of the bags between the teeth during pulling.

### **Summary of the Invention**

It is therefore an object of an aspect of the present invention to provide a plastic bag dispensing nozzle which overcomes the limitations of the  
10 above-described bag dispensing nozzles.

It is a more specific object of an aspect of the present invention to provide a plastic bag dispensing nozzle which permits the bags to be withdrawn without binding and tearing.

It is another object of an aspect of the present invention to  
15 provide a dispensing nozzle that can dispense a wide range of bag sizes and thicknesses and that can work equally well independent of the direction of pull.

These and other objects are accomplished, according to the present invention, by a nozzle for serially dispensing flexible plastic bags or  
20 the like from a package of bags sequentially joined along perforated severance lines. The bag dispensing nozzle includes a body member that is configured to be secured to the exterior surface of a store counter. The nozzle overlies a bore in the counter surface to enable flexible plastic bags which are stored within the counter to pass therethrough. The nozzle has at  
25 least one longitudinally extending slot extending through the body member, and the slot includes a plurality of longitudinally spaced apart projections extending from each opposing side edge of the slot. The projections of the two side edges are disposed in an interdigitated relationship so as to resist the free movement of bags therethrough. Also, each projection has an edge  
30 surface facing the opposite side edge of the slot that is non-linear along its length when viewed in the longitudinal direction. In specific embodiments, the edge surface of each projection is arcuately curved along its length, or the edge surface may include one or more inclined segments which extend away from the opposite faces of the body member.

According to an aspect of the invention, a dispensing nozzle adapted for serially dispensing flexible plastic bags or other flexible packaging material from a supply roll, and comprises:

- 5 a body member having opposite faces; and  
at least one longitudinally extending slot extending through the body member so as to intersect each of the opposite faces and so as to define opposite side edges which face each other in a transverse direction;
- 10 each side edge including a plurality of longitudinally spaced apart projections which extend in the transverse direction, with the projections of the two side edges being disposed in an interdigitated relationship, and wherein each of the projections defines an edge surface extending between the opposite faces of the body member and facing the opposite side edge of the slot, with the edge surface of each projection being arcuately curved along its length.

According to another aspect of the invention, an apparatus for serially dispensing flexible plastic bags or other flexible packaging material from a supply roll, the apparatus comprises:

- 20 a box-like enclosure which is sized to support at least one supply roll of flexible packaging material therein, with the enclosure including exterior surface portions;
- a bore through one of the exterior surface portions of the enclosure;
- and
- 25 a dispensing nozzle including a body member having opposite faces and means for retaining the body member to one of the exterior surface portions of the enclosure in an operative position overlying the bore;
- at least one longitudinally extending slot extending through the body member so as to intersect each of the opposite faces and so as to define opposite side edges which face each other in a transverse direction;
- 30 each side edge including a plurality of longitudinally spaced apart projections which extend in the transverse direction, with the projections of the two side edges being disposed in an interdigitated relationship so as to resist the free movement of the flexible packaging material therethrough, and

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wherein each of the projections defines an edge surface extending between the opposite faces of the body member and facing the opposite side edge of the slot, with the edge surface of each projection being arcuately curved along its length.

The present invention is advantageous because the non-linear and inclined edge surfaces of the projections allow bags to move laterally over the projections within the slot without binding or tearing. In addition, slots having interdigitated opposing projections in accordance with the present invention can be wider than slots having a zig zag configuration. Consequently, the interdigitated configuration of opposing projections provides positive snag-resistant means for separating bags while still allowing each bag to pull freely from the dispensing slot.

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#### **Brief Description of the Drawings**

**Fig. 1** is a perspective view of a grocery store checkout counter in which a bag dispensing nozzle, in accordance with the present invention, is mounted.

20 **Fig. 2** is a top plan view of the nozzle taken substantially along line 2-2 of **Fig. 1**.

**Fig. 3** is a sectional view of the nozzle taken substantially along the line 3-3 of **Fig. 2**.

25 **Fig. 4** is an exploded perspective view of the nozzle and its supporting unit.

**Fig. 5** is a perspective view of a bag dispensing nozzle having multiple dispensing slots therein, accordance with another aspect of the present invention.

30 **Fig. 6** is a sectional view of a nozzle illustrating another embodiment of the present invention wherein the projections have angled edge surfaces.

**Fig. 7** is a sectional view of a bag being dispensed through a nozzle mounted on the side of a counter, in accordance with the present invention.

**Fig. 8** is a plan view of the nozzle taken substantially along the line 8-8 of **Fig. 7**.

**Fig. 9** illustrates the rounded edge surfaces of the projections in the nozzle embodiment illustrated in **Fig. 7** and **8**.

#### Detailed Description of Preferred Embodiments

10 The present invention now is described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be  
15 construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

20 Referring now to **Fig. 1**, a conventional grocery store checkout counter 10 is illustrated. The counter 10 is adapted to selectively dispense plastic bags from each of two supply rolls 11,12. As is conventional, the bags of each roll may be in the form  
25 of T-shirt or handle bags, with the bags being serially joined along transverse perforated severance lines. Also, in the illustrated embodiment, the bags of the roll 12 are larger than the bags of the roll 11.

Referring now to **Fig. 4**, a bag dispensing  
30 nozzle 14, according to the present invention, is preferably of a molded rigid plastic construction, and comprises a generally flat circular plate 16 with opposite faces 16a,16b and an integrally joined depending tubular sleeve 18 having a central passage  
35 18a. The plate 16 has a diameter greater than that of the sleeve 18 so as to define a peripheral flange which

rests upon the upper surface of the counter 10. Also, the upper surface of the flange is beveled about its periphery at 19 so as to define a feather edge at its juncture with the top of the counter, to thereby minimize disruption of the flat counter surface. In the illustrated installation, the bag dispensing nozzle 14 is mounted in a bore 15 in the top of a counter 10, it being understood of course that the nozzle alternatively could be mounted in one of the vertical sides of the counter or in the wall of any suitable housing for one or more rolls of bags.

The depending tubular sleeve 18 is sized to be received in the bore 15, as illustrated in Fig. 3. To securely mount the nozzle 14 in the bore 15, the outer surface of the sleeve 18 is provided with a helical thread 20, and a threaded nut 22 is provided which is sized to threadingly engage the thread on the sleeve. As illustrated in Fig. 3, the nut 22 engages the under surface of the counter 10 to secure the nozzle 14 to the counter.

In the illustrated embodiment, the nozzle 14 also includes two elongate, generally parallel slots 21a, 21b extending through the plate 16, and in communication with the central passage 18a of the sleeve 18. The entrance portion of each slot 21a, 21b adjacent the central passage 18a of sleeve 18 is indicated as E (Fig. 3). The exit portion of each slot 21a, 21b is indicated as X (Fig. 3). Each slot 21a, 21b also includes a pair of thread-up openings in the form of open end portions 29a, 29b extending through the plate 16 and forming respective ends of each slot 21a, 21b. The two slots 21a, 21b are generally parallel to each other; however, the slots may have any of a variety of configurations relative to each other. Furthermore, more than two slots may be provided, or even a single slot may be provided, without departing from the spirit and intent of the present invention.

Referring now to Fig. 2, each slot 21a,21b has a plurality of spaced apart projections which are disposed in an interdigitated relationship. In particular, slot 21a is comprised of opposing longitudinal side edges 25a,25b. A plurality of spaced apart projections 24a extend outwardly from side edge 25a, and a plurality of projections 24b extend outwardly from side edge 25b, as illustrated. Opposing projections 24a and 24b are in interdigitated relationship. Similarly, slot 21b is comprised of opposing longitudinal side edges 27a and 27b. A plurality of spaced apart projections 26a extend outwardly from side edge 27a and a plurality of projections 26b extend outwardly from side edge 27b as illustrated. Opposing projections 26a and 26b are in interdigitated relationship.

As a specific non-limiting example, the plate 16 has an outer diameter of 4.0 inches, and the sleeve 18 has an inside diameter of about 2.5 inches. The transverse width A (Figure 2) of each slot is about .40 inches, and the projections have a maximum transverse length of about .275 inches and a width of about .125 inches. The projections are separated in the longitudinal direction about .125 inches as indicated at B, and the projections are spaced from the opposite side wall of the slot a distance of about .125 inches as indicated at C. Also, adjacent projections overlap by about .150 inches as indicated at D.

The overlap of the projections may vary depending on their outline, and preferably the maximum overlap is between about .150 and about .250 inches. The overlap preferably permits a significant transverse width of the slot to remain which helps prevent wedging and binding of the bags as they are pulled through the slot. Also, the interdigitated relationship and the significant slot width allows the dispensing nozzle to

dispense a wide range of bag sizes and thicknesses and to work equally well independent of the direction of pull.

In use, the leading bag from the roll 11 is manually threaded through either one of the end portions 29a,29b associated with the slot 21b and then moved longitudinally into the slot. Similarly, the leading bag from the roll 12 is manually threaded through either one of the end portions 29a,29b associated with the slot 21b and then moved longitudinally into the slot. The bags from either roll may then be serially dispensed, by drawing the leading bag upwardly and laterally outwardly in either direction, or side to side, with respect to the associated slot. As a bag moves upwardly, the resistance imparted thereon by the engagement of the interdigitated projections of each slot facilitates the severance of the pulled bag from the immediately following bag joined thereto along a severance line. Complete separation does not normally occur until the leading portion of the following bag passes through the slot, and such that the following bag is then in position to be grasped and withdrawn in the same manner. The presence of thread-up opening means at each end of each slot serves to facilitate the tracking of the bags centrally within each slot.

Referring now to Fig. 3, each illustrated projection 24a,24b and 26a,26b has an edge surface that is non-linear or arcuately curved along its length as illustrated. For example, the projections 24a,24b within slot 21a have arcuately curved edge surfaces 17a,17b, respectively. Similarly, projections 26a,26b within slot 21b have arcuately curved edge surfaces 17a,17b, respectively. In the illustrated embodiment, the arcuately curved edge surfaces 17a,17b are approximately semicircular. However, the edge surfaces of the interdigitated projections may have various

linear and non-linear shapes and configurations without departing from the spirit and intent of the present invention. For example, each projection may have an arcuately shaped edge portion adjacent the entrance **E** of each slot, while the edge surface of the projection adjacent the exit portion **X** remains generally parallel to the side edge from which the projection extends. Furthermore, the interdigitated projections may have edge surfaces that are angled in a variety of configurations as described below.

Referring now to **Fig. 5**, a dispensing nozzle **30** according to another embodiment of the present invention is illustrated. The dispensing nozzle **30** comprises a generally flat elliptical plate **31** and an integrally joined depending elliptical sleeve **32**. The sleeve **32** is adapted to be received within a similarly configured bore within a counter surface for the purpose of securing the nozzle **30** to the counter surface. The illustrated nozzle also includes three elongate slots **33a, 33b, 33c** extending through the plate in communication with a central passage of sleeve **32** for receiving differently sized bags therethrough. In the illustrated embodiment, slot **33c** is configured to receive larger bags than the other slots **33a, 33b**. However, as would be understood by those having skill in the art, various slot sizes and configurations may be provided on a dispensing nozzle depending on the size and number of bags to be dispensed. The plate **31** extends outwardly beyond the sleeve **32** so as to define a peripheral flange which rests upon the surface of a counter to which it is attached. In the illustrated embodiment, the upper surface of the flange is beveled about its periphery at **34** so as to define a feather edge at its juncture with the surface of a counter.

Referring now to **Fig. 6**, a slot having interdigitated projections **40** with angled edge surfaces is illustrated. Each projection **40** comprises an angled

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edge surface 41 adjacent the entrance portion E of the illustrated slot, and an angled edge surface 42 adjacent the exit portion X of the illustrated slot. Each projection 40 also has a medial segment 43 extending between the pair of angled edge surfaces 41,42 and which is generally parallel with the side edge 45 from which the projection extends. The resulting configuration of the projection 40 is somewhat similar to a trapezoid. This trapezoidal configuration permits side movement of the bags within a slot in a manner similar to the arcuate configuration described above. Angled edge surfaces 41,42 may be inclined relative to the side edge 45 in a variety of angles and are not limited to the illustrated angles. Furthermore, angled edge surfaces 41,42 may be inclined such that there is no medial segment therebetween. Also, significant functional benefits may be achieved with only an angled surface 42, or an arcuate surface, at the slot entrance E.

Referring now to Figs. 7-9, an alternative bag dispensing nozzle of the present invention is illustrated. The dispensing nozzle comprises a pair of spaced apart blocks 50a,50b which are secured to a supporting plate 57 having a slot 55 therein. The supporting plate 57 is in turn secured to a counter side surface 54. An individual block 50a is illustrated in Fig. 9 and comprises a generally rectangular rod having an edge portion 52 from which extend a plurality of spaced apart projections 53. As a specific non-limiting example, the projections have a transverse length A of about .50 inches, a width B of about .125 inches, and a longitudinal separation C of between about one-sixteenth to one-quarter inch (1/16"-1/4"), preferably about one-eighth inch (1/8"). Adjacent projections have an overlap of between about three-sixteenths of an inch and three-eights of an inch (3/16" - 3/8"), as indicated at D.

Each projection 53 has a generally arcuately curved surface 53a which is semi circular and has a radius of about .50 inches. A pair of blocks 50a, 50b are configured as shown in Fig. 8 such that the  
5 projections from each respective block 53, 54 have an interdigitated configuration. In the illustrated embodiment, blocks 50a, 50b are secured to supporting plate 57 via bolts 56 and the entire supporting plate and block assembly is secured to a counter surface via  
10 bolts 58. A bag is dispensed through the slot formed by the interdigitated projections and the slot 55 in the support plate 57 in the manner illustrated. Also, the projections terminate short of each end of the slot 55 to define a thread up opening 59.

15 The present invention is advantageous for a number of reasons over other bag dispensing nozzles. The arcuate or inclined edge surfaces of the projections of the present invention allow lateral movement of bags within a slot. The clearance between  
20 adjacent projections is approximately four times greater than between adjacent teeth in prior art nozzles. Consequently, bags are effectively prevented from becoming wedged or caught between adjacent projections. The interdigitated configuration of  
25 opposing projections provides positive snag-resistant means for separating bags while still allowing each bag to pull freely from the dispensing slot.

While the nozzle of the present invention has been illustrated and described as being adapted for  
30 mounting to a grocery store counter, it will be understood that the nozzle can be mounted to any suitable box-like enclosure or carton which is sized to house one or more rolls of bags. For example, a portable box-like enclosure can be provided which is  
35 fabricated from corrugated paperboard or similar material, and which encloses one or more rolls of the bags and mounts the nozzle in one side wall thereof.

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An enclosure of this type is illustrated for example in Figures 9-15 of U.S. Patent No. 5,207,368. Such an enclosure can be positioned at any location  
5 where it is readily accessible to a store clerk.

In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the  
10 following claims.

**CLAIMS**

- 5 1. A dispensing nozzle adapted for serially dispensing flexible plastic  
bags or other flexible packaging material from a supply roll, and comprising:  
a body member having opposite faces; and  
at least one longitudinally extending slot extending through said body  
member so as to intersect each of said opposite faces and so as to define  
10 opposite side edges which face each other in a transverse direction;  
each side edge including a plurality of longitudinally spaced apart  
projections which extend in the transverse direction, with the projections of the  
two side edges being disposed in an interdigitated relationship, and wherein  
each of said projections defines an edge surface extending between the  
15 opposite faces of the body member and facing the opposite side edge of the  
slot, with the edge surface of each projection being arcuately curved along its  
length.
2. The dispensing nozzle as defined in Claim 1 wherein the edge surface  
20 of each projection is arcuately curved along its length and so as to  
approximate a semi-circle.
3. The dispensing nozzle as defined in Claim 1 wherein the edge surface  
of each projection includes at least one inclined segment extending away from  
25 at least one of the opposite faces of the plate.
4. The dispensing nozzle as defined in Claim 3 wherein the edge surface  
of each projection includes a pair of inclined segments extending away from  
respective ones of the opposite faces of the plate, and a medial segment  
30 extending between the inclined segments in a direction substantially parallel  
to said opposite faces of the plate.

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5. An apparatus for serially dispensing flexible plastic bags or other flexible packaging material from a supply roll, said apparatus comprising:
- 5 a box-like enclosure which is sized to support at least one supply roll of flexible packaging material therein, with said enclosure including exterior surface portions;
- a bore through one of said exterior surface portions of said enclosure;
- and
- 10 a dispensing nozzle including a body member having opposite faces and means for retaining said body member to one of said exterior surface portions of said enclosure in an operative position overlying said bore;
- at least one longitudinally extending slot extending through said body member so as to intersect each of said opposite faces and so as to define
- 15 opposite side edges which face each other in a transverse direction;
- each side edge including a plurality of longitudinally spaced apart projections which extend in the transverse direction, with the projections of the two side edges being disposed in an interdigitated relationship so as to resist the free movement of the flexible packaging material therethrough, and
- 20 wherein each of said projections defines an edge surface extending between the opposite faces of the body member and facing the opposite side edge of the slot, with the edge surface of each projection being arcuately curved along its length.
- 25 6. The apparatus as defined in Claim 5 wherein the edge surface of each projection is arcuately curved along its length and so as to approximate a semi-circle.
7. The apparatus as defined in Claim 5 wherein the edge surface of each
- 30 projection includes at least one inclined segment extending away from at least one of the opposite faces of the plate.

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8. The apparatus as defined in Claim 7 wherein the edge surface of each projection includes a pair of inclined segments extending away from  
5 respective ones of the opposite faces of the plate, a medial segment extending between the inclined segments in a direction substantially parallel to said opposite faces of the plate.

