

[54] NEEDLE DISPENSER

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[51] Int. Cl. **B65d 83/02, B65d 85/24**

[58] Field of Search **221/70, 25, 308; 206/56, 206/58, 66, 389, 390, 409, 403, 380, 383, 42, 820; 225/51, 52**

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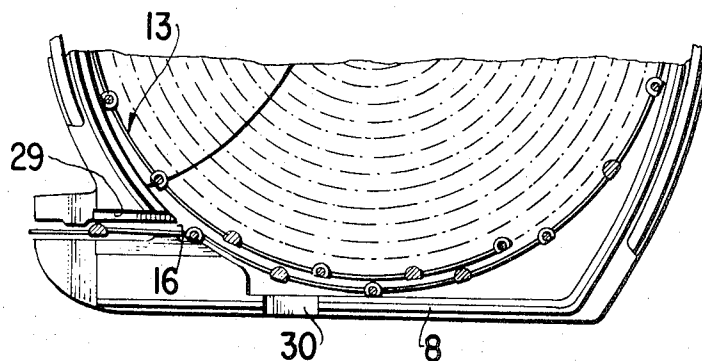
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[57] ABSTRACT

A dispenser for needles and other shanked articles which are prepackaged in a continuous strip formed of a plurality of individual packages. The dispenser comprises a two section housing joined together by pressure sensitive means for storing a roll of strip. Each housing section has half of a dispensing channel integral therewith. The channel has two throats which constrict the passage of the needle shanks. The walls of the channel elastically yield when a force is applied to the throats, the throats yielding therewith. A pulling force applied to the leading end of the strip acts to force a needle shank against each throat which causes the throats to yield to allow a packaged needle to pass therethrough. The throat closest to the housing storage section also acts to prevent a needle from receding into said section when the leading needle package is detached from the strip.

9 Claims, 9 Drawing Figures



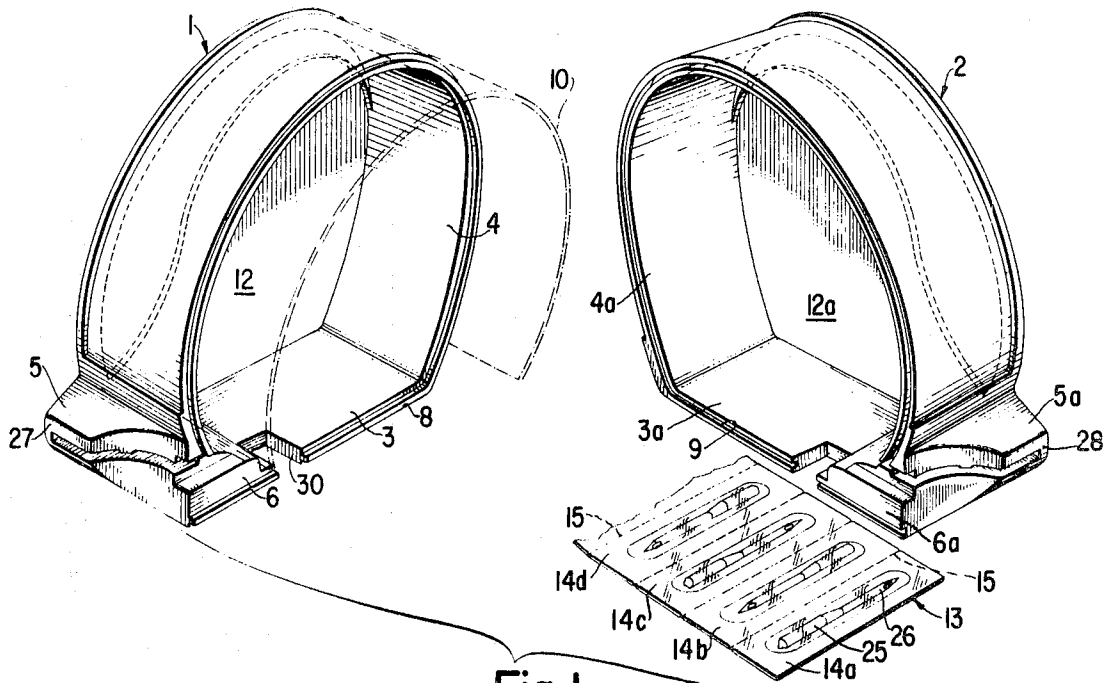


Fig. 1

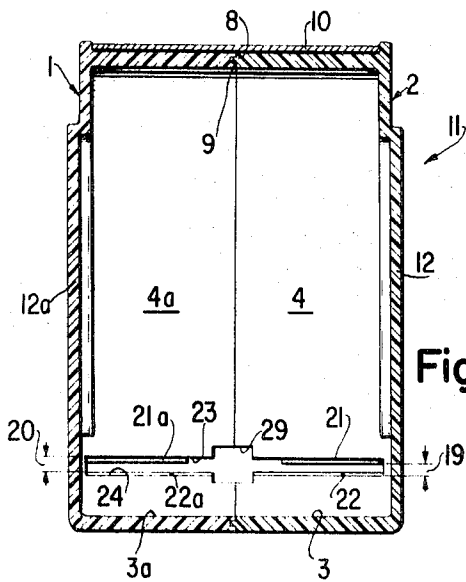


Fig. 3

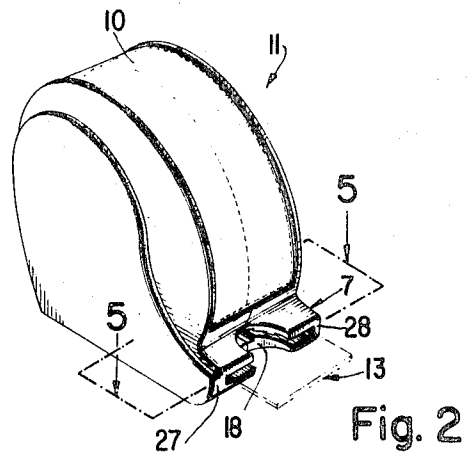


Fig. 2

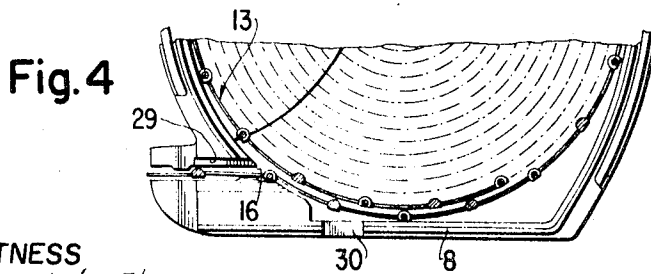


Fig. 4

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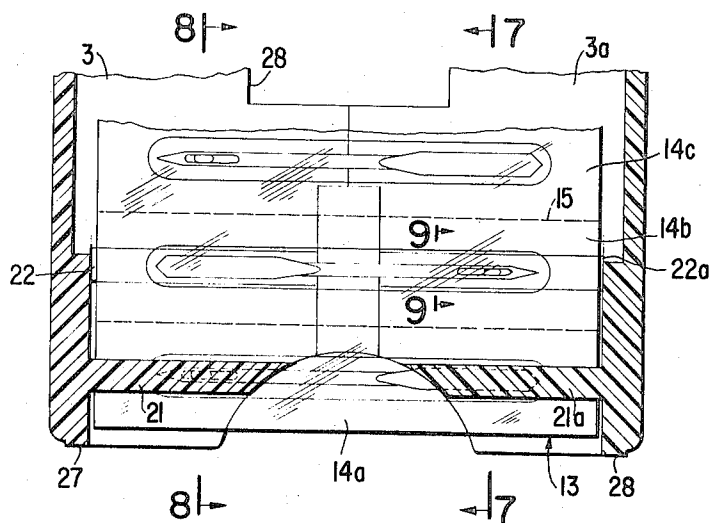


Fig. 5

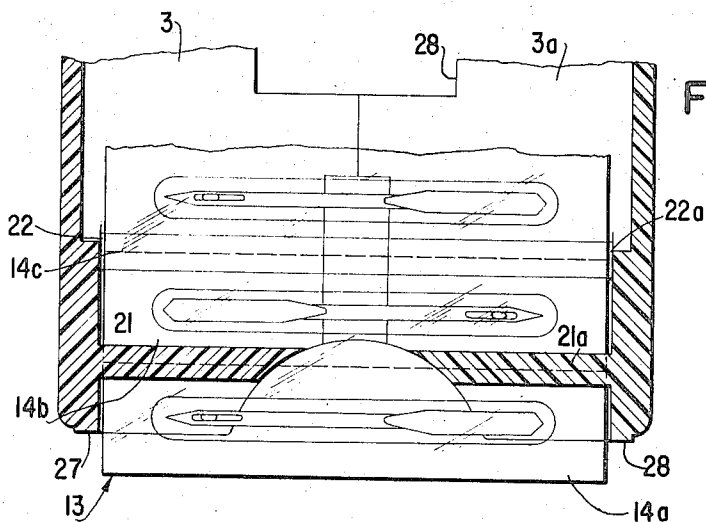


Fig. 6

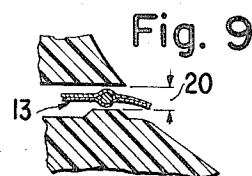


Fig. 9

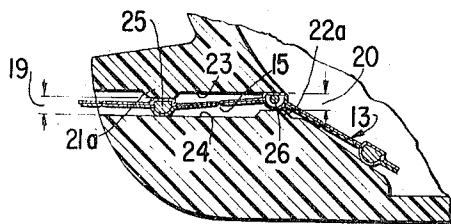


Fig. 7

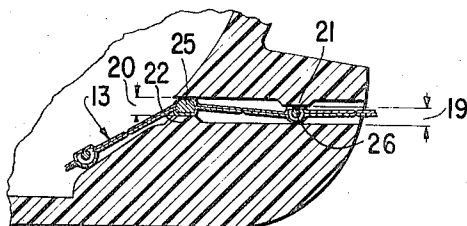


Fig. 8

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NEEDLE DISPENSER

SUMMARY

This invention relates to a prepackaged articulated dispenser and more particularly to a dispenser for needles, drill bits, ball point pens and other elongated shanked articles which are or may be prepackaged in a continuous strip formed of a plurality of individual packages.

In the preferred embodiment the invention will be described in relation to the dispensing of sewing machine needles which in the past have been packaged in an envelope usually containing three needles to the envelope. The needles are sold in the envelope and a customer is limited to the purchase of needles in multiples of three. Furthermore, the space required for storing such envelope packages is relatively large since the packages, made of cardboard and plastic, must be stacked.

It has been proposed to package such needles in a continuous strip by placing the needles between two continuous strips of plastic film material which are then sealed around the needles to form flexible atmosphere-impervious packages separated one from the other at transverse regions along the continuous strip by perforations defining tear lines. This packaging concept allows a single package to be detached from the strip to be sold to a customer desiring only one needle or allows any number of needles to be so detached and sold. Furthermore, since the strip is flexible it can be formed into a roll for compact storage. A container for storing a strip of approximately 500 such needles takes up no more space than 20 of the prior art envelope packages, or 60 needles so packaged. A strip of needles stored in such a container must be extracted therefrom so that individual needle packages may be detached from the leading end of the strip. It is the primary object of the present invention to provide a simple, easily manufactured, inexpensive dispenser for this purpose.

A further object of the invention is to provide a dispenser for needles and other shanked articles prepackaged in a strip formed of a plurality of packages which allows a single package to be dispensed at a time.

Another object of the invention is to provide a novel dispenser for needles and other shanked articles prepackaged in a strip formed of a plurality of packages which has a constricted throat to deter the shank of an article from passing therethrough and which yieldably enlarges the constriction when a pulling force is applied to the leading end of the strip to allow a needle to pass therethrough.

A further object of this invention is to provide a novel dispenser for dispensing needles and other shanked articles prepackaged in a strip formed of a plurality of packages which has a housing for storing the strip and includes two constrictive throats in a dispensing channel which act to deter a needle from passing therethrough in the withdrawal direction until the throats yieldably enlarge their constrictions upon application of a pulling force to the leading end of the strip and in which one of the throats further acts to prevent the strip from receding into the housing when the leading needle package is withdrawn from the channel and detached from the strip.

A still further object of the invention is to provide a dispenser of this type having constrictive nozzle means in a dispensing channel including side walls which yield to allow the nozzle means to enlarge the constriction

when a force is applied to the nozzle means and wherein said channel is formed integral and continuous with a strip storage housing; the housing and channel comprising two shells which register with each other through flange and groove means and are detachably locked together.

Other objects will be apparent from the specification and claims which follow taken in connection with the appended drawings wherein:

FIG. 1 is an exploded perspective view of the dispenser of this invention showing a portion of a strip of needle packages.

FIG. 2 is a perspective view of the assembled dispenser and illustrating in phantom a strip of needle packages projecting from the channel.

FIG. 3 is a cross-sectional view taken vertically through the dispenser of the invention looking outwardly through the exit channel.

FIG. 4 is an elevational view of the bottom portion of one of the shells of the dispenser of this invention showing a stored roll of strip projecting into the exit channel.

FIG. 5 is an enlarged cross-sectional view of the exit channel portion of the dispenser taken substantially along plane 5—5 of FIG. 2 showing the needle packages at the instant of passage between the throats of the channel.

FIG. 6 is a view similar to FIG. 5, but at an instant after the needles have passed beyond the throats, and showing one needle package protruding out the dispenser channel portion.

FIG. 7 is a fragmentary section along line 7—7 of FIG. 5 illustrating passage through the channel of a strip of needles with the flat portion of the needle shanks all facing in the same direction.

FIG. 8 is a view similar to FIG. 7 but along line 8—8 of FIG. 5 showing a strip with the needle shank flats alternating between needle packages.

FIG. 9 is a fragmentary section along line 9—9 of FIG. 5 showing the blade portion of a needle during passage through a throat.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the drawings, the dispenser of this invention in its preferred embodiment comprises two shells 1 and 2 which are preferably composed of plastic and can be inexpensively molded or cast. In many respects the shells 1 and 2 are the mirror image of each other and where the shell portions are alike the same reference character will be used, with the portions of the shell 2 being indicated by the suffix a. Each shell has a flat base portion 3, 3a so that the assembled dispenser may rest on a table, sales counter or the like. Rising from the base is an upstanding curved surface 4, 4a joined at the front of the shell in a forward projecting extension 5, 5a which together with a thickened raised portion 6, 6a of the base 3, 3a forms a channel 7 when the shells are assembled.

The two shells register with each other through a peripheral flange 8 formed on shell 1 which mates with a peripheral groove 9 in the shell 2. The shells are held or locked together preferably by a pressure sensitive tape 10, shown in FIGS. 2 and 3, and in phantom in FIG. 1. It is to be understood that any well known locking means may be used in place of the preferred means. The assembled shells define a housing 11 enclosing a cavity between the base 3, 3a, the curved surfaces 4,

4a, and sides 12, 12a within which a rolled strip of needles 13 is stored, as shown in FIG. 4.

As illustrated in FIG. 1, the strip is formed of a plurality of packages of needles 14a, 14b, 14c, 14d etc., spaced in succession, and joined at transverse regions by perforations or tear lines 15. The needles are shown aligned differently in succeeding packages but the dispenser of this invention will function as well where all the needles are aligned in the strip in the same direction. The needles should, however, be aligned transversely of the length of the strip. The strip is preferably composed of two sheets of flexible plastic between which the needles are placed prior to the plastic sheets being bonded together. A length of such strip containing a quantity of needle packages can be rolled to fit within a dispenser housing designed for that quantity and the size of the housing required will be relatively small in relation to other needle packing arrangements.

Prior to assembling the shells the leading end of the strip is led from the housing cavity into a passageway 16 through the dispensing channel 7. The shells are then mated and locked together by tape 10. The strip projecting through the passageway 16 can then be seized by a sales person or a customer by placing the thumb and index finger into a finger recess 18 formed in the channel 7.

In order to allow single needle packages to be dispensed and to prevent the strip from being withdrawn through the channel in an uncontrolled manner when the leading end of the strip is seized and pulled, the channel has a unique passageway containing two throats 19 and 20 providing constrictions in the passageway. As can be clearly seen in FIGS. 7 and 8, the throats are formed by transverse ribs 21, 21a and 22, 22a protruding into the passageway 16. Preferably the ribs 21, 21a are integral with and extend downwardly from internal surface 23 of the extensions 5 and 5a while the ribs 22, 22a are spaced therefrom along the passageway 16 and extend upwardly from internal surface 24 of the raised base portion 6, 6a. It is to be understood, however, that both ribs 21, 21a and 22, 22a may extend from the same surface to form the throats. The size of the passageway at the constrictive throats is smaller than the shank 25 of a needle, which, as shown, is of larger cross section than the blade 26 of the needle. Thus, a needle package is prevented from passing through the throats of the channel at the shank portion. The remainder of the needle, as shown in FIG. 9 is smaller than the constrictive throat and can pass freely therethrough. It is therefore apparent that for a package to be withdrawn from the channel mouth a pulling force must be applied to the leading end of the strip and that the constrictive throats must then open to allow the shank to pass therethrough.

The channel 7 at each side of the passageway 16 is formed with walls 27 and 28 which, preferably, are integral and continuous with the sides 12, 12a of the housing. The walls 27 and 28 join the respective extension 5, 5a and the raised base portions 6, 6a to form the structure of the channel. The walls 27 and 28 are relatively thin so that a small force applied at the constrictive throats causes the walls 27 and 28 to elastically yield and the passageway to enlarge. This is especially true where, as preferred, the material of the dispenser comprises a plastic of limited elasticity. The spacing between the throats along the passageway 16 is equal to the spacing between two packaged needles in the strip;

therefore, a pulling force applied to the leading end of the strip is transmitted through the strip and acts substantially simultaneously at both throats. This force will thus cause the walls 27 and 28 to yield, thereby enlarging the throat constrictions to allow a packaged needle to pass through each throat. The needle in the lead package is thus made available beyond the mouth of the passageway where it can be detached along the tear line from the remainder of the strip.

The relation between the needle and throat spacing is clearly shown in FIGS. 7 and 8 at a time when the needles are passing the throats. FIG. 7 shows a strip having all the shank flats aligned on one side while FIG. 8 shows a strip with the flats alternately placed in the strip or randomly placed therein. It is immaterial to this invention as to how the needles are placed in the strip as long as they are transverse thereto. The needles are shown having a flat portion on the shank which aids in inserting same into a sewing machine, but it is to be understood that this invention applies equally to needles or other articles that do not have flats on the shank. The invention also contemplates needles or other articles having generally constant cross section. In that case the throat opening would be of smaller cross section than the entire article.

As the strip is tightly rolled while it is in the housing, there is a tendency for the strip to spring back and recede into the housing after one package has been pulled through throat 19 and has been detached from the strip. Throat 20, besides aiding in controlling the withdrawal of a needle, acts to prevent the needle succeeding the detached needle from springing back and receding into the housing. This situation would require either unlocking the shells to realign the strip into the passage or guiding the strip forward with the shells locked as will be presently described. The needle succeeding the detached needle will have past throat 20, but will not have past throat 19. Because the needle shank is larger than the constriction it is prevented from receding back past throat 20 and the strip can usually still be seized at the finger recess.

In the event the needle succeeding the detached needle recedes to the throat 20, but not beyond it, and the leading edge of the strip, for some reason such as an improper tearing of the previous needle, does not project out the passage at the finger recess, there is provided an enlarged access opening 29 in the finger recess so that a tool means, such as a knife, screwdriver, pin, etc., may be inserted to seize the leading end of the strip and guide it out the passageway where it can be seized by the operator. Another access opening 30 in the bottom of the housing cavity is provided to insert a tool means such as a knife or screwdriver to aid in guiding the strip back into the channel passage in the event that the strip for some reason or another recedes past the throat 20 and into the cavity.

It is thus seen that a simple and inexpensive dispenser has been described which may be embodied in other forms without departing from the spirit and scope of the invention.

Having thus set forth the nature of this invention, what is claimed herein is:

1. A dispenser for elongated articles separately pre-packaged in a strip formed of a plurality of packages spaced in succession and detachably joined at transverse regions, comprising, a housing for storing a length of said strip, a dispensing channel in strip-receiving re-

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lationship with said housing through which a leading end of said strip is adapted to project for withdrawal from said housing, first and second throats spaced apart within said channel a distance equal to the spacing between packaged articles in said strip, one of said throats being located within the channel in advance of the second of said throats in the direction of withdrawal from the housing, each throat providing a constriction for preventing passage of said articles therethrough, each throat readily yieldable to enlarge the constriction and allow one article to pass therethrough upon application of a force to said leading end of strip, whereby one package is withdrawn through said channel to be detached along a transverse region from the remainder of said strip, the second throat providing a constriction for preventing passage therethrough in a direction opposite to withdrawal from said housing of an article that has not been withdrawn through said first throat upon withdrawal through said first throat and detachment from said strip of a preceding packaged article.

2. The dispenser defined in claim 1, wherein said articles to be dispensed are needles, each of said needles having a shank comprising a cross section larger than the remainder of the needle, each said needles being disposed transverse of the strip, each throat providing a constriction in a plane normal to the strip and extending transverse thereto, each said constriction being smaller than a needle shank and larger than the remainder of said needle, whereby the shank is prevented from passing therethrough until the throat yields to enlarge the constriction.

3. The dispenser defined in claim 1, wherein said channel includes yieldable wall means, each of said throats comprises ribs projecting from internal surfaces of said channel, said internal surfaces being yieldable with said wall means, whereby upon application of a force to said leading end of the strip an article forcibly engages each throat to yieldably enlarge each constriction.

4. The dispenser defined in claim 2, wherein said channel includes yieldable wall means, each of said throats comprises ribs projecting from internal surfaces of said channel, said internal surfaces being yieldable with said wall means, whereby upon application of a force to the leading end of the strip the shank of a nee-

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dle forcibly engages each throat to yieldably enlarge each constriction.

5. The dispenser defined in claim 4, wherein said channel is integral and continuous with said housing, said housing including said channel comprising first and second shells, flange means on and located substantially peripherally of said first shell, groove means in and located substantially peripherally of said second shell, said flange means adapted to interlock with said groove means for registering said first shell with said second shell to define a cavity therebetween for storing strip, said cavity opening into said channel for transferring strip thereto, and means for locking said shells in a registration maintaining relationship.

6. The dispenser defined in claim 5, wherein said channel includes recess means extending intermediate said first and second throats for enabling an operator to seize and apply a force to the leading end of the strip to withdraw a needle from said channel.

7. The dispenser defined in claim 6, including means in said housing for allowing insertion of a tool into said cavity to aid said strip into said channel in the event that the strip recedes into said cavity in a direction opposite to withdrawal.

8. The dispenser defined in claim 6 including means in said channel recess for allowing insertion of a tool into said channel to aid said strip to the first throat to allow the leading end to be seized in the event the strip recedes in the channel in a direction opposite to withdrawal to the second throat.

9. A dispenser for articles separately prepackaged in a strip formed of a plurality of packages spaced in succession and detachably joined at transverse regions comprising a housing formed from two recessed sections secured together having a common dispensing channel for dispensing the packages therefrom, said channel having first and second spaced inwardly projecting yieldable portions restricting passage of only one packaged article dispensed therethrough upon application of a force to the end of the strip from the housing, said first and second spaced portions forming a retention chamber for at least one packaged article in the strip as they are dispensed therefrom.

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