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[54] **NEEDLE COVER AND BEVEL GUARD**
5 Claims, 4 Drawing Figs.
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ABSTRACT: A combined needle cover and bevel guard for intravenous catheterization units. The device has a tubular body having a flat base and a longitudinally slotted top, the bore of this tube being formed adjacent one end with a first diameter to engage the needle hub and adjacent the opposite end with a second diameter to engage the catheter when the latter is extended. The second diameter is smaller than the first diameter, and the diameter of the tube intermediate its ends is greater than the diameter of the needle contained therein.

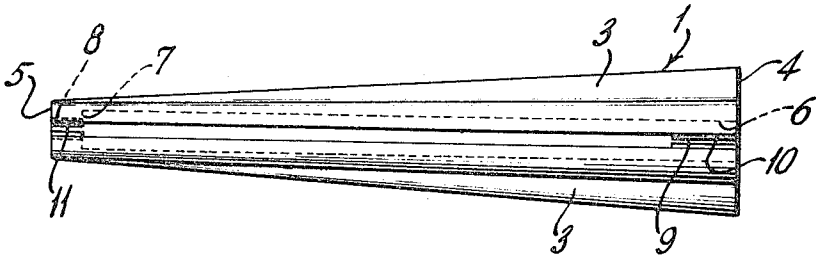


Fig. 1.

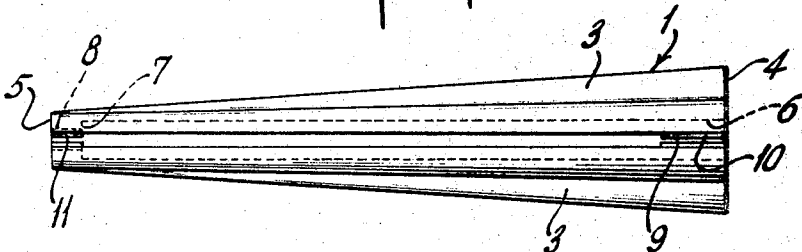


Fig. 3.

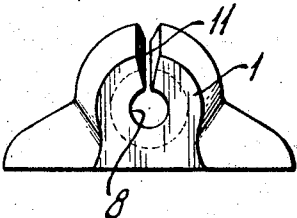


Fig. 2.

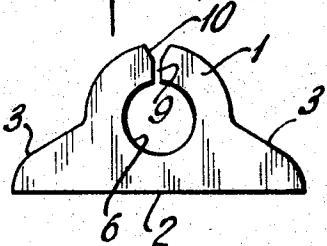
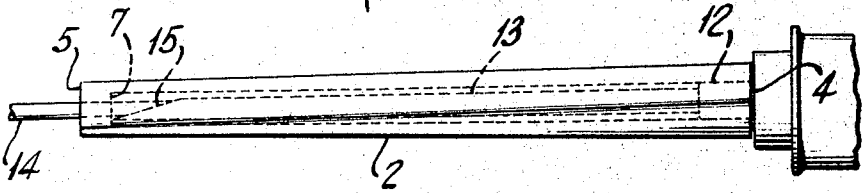


Fig. 4.



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NEEDLE COVER AND BEVEL GUARD

When it is necessary to administer parenteral liquids, such as in intravenous feeding and the like, it is common to make a venipuncture with a needle and then to thread a sterile plastic catheter through the needle and into the vein. The needle is then withdrawn from the vein and taped to the patient's body proximate the entry point, and administration apparatus is attached to the catheter. In such surgical and hospital procedures, it is extremely important to avoid contamination of the intravenous catheter and needle unit prior to use. It is also important that the needle be maintained in axial alignment with said catheter after it has been withdrawn from the patient to prevent the accidental cutting of the catheter by the sharp edges of the needle bevel.

Existing methods for effecting these dual purposes are not entirely satisfactory. One method utilizes a tubular sleeve which fits onto the needle, fully enclosing it, for preuse sterility maintenance and utilizes an annular band which fits firmly around the needle and is slid axially so that it extends over the sharp end of the needle thereby maintaining the catheter in axial alignment with the needle. To achieve proper annular band positioning axial force is required. This often results in the axial displacement of the catheter and this movement is undesirable. In addition, since the annular band is small, manipulation of it is often difficult.

Another method utilizes a symmetrical two portion needle guard which is integrally formed with the needle hub. This method is complex and therefore expensive and impractical since it is desirable to dispose of the catheter assembly after initial usage.

Accordingly, it is an object of the present invention to provide a needle bevel guard which will serve to maintain the sterile discipline of the needle and catheter assembly after the assembly has been removed from the protective envelope in which it is shipped to the consumer.

It is also an object to provide a means whereby the catheter is protected from the sharp edge of the needle bevel while it is extending therethrough.

It is a further object to provide a needle guard which can be positioned without applying any axially oriented force to the catheter-needle assembly.

It is also an object to provide a guard which can be utilized without the need of relying on complicated and detailed instructions.

It is a further object to provide a guard which can be manufactured at little cost, and is therefore disposable after use.

It is also an object to provide a guard which is operable with little inconvenience or discomfort to the patient and with little difficulty to the person effecting the intravenous connection.

A practical embodiment of the invention is shown in the accompanying drawing wherein:

FIG. 1 represents a top plan view of the needle cover and guard;

FIG. 2 represents an end elevation taken from the right of FIG. 1;

FIG. 3 represents an end elevation taken from the left of FIG. 1;

FIG. 4 represents a side elevation of the needle cover and guard, with needle in place and catheter extended.

Referring to the drawing, the needle cover and bevel guard comprises an elongated tubular body 1 formed integrally with a base having a flat bottom surface 2, sloping sides 3 which intersect the sides of the body 1 about midway of the latter's height, and a tapering (elongated "delta") outline from a width about twice the outside diameter of the body 1 at one end 4 to a width the same as the diameter of the body at the other end 5.

The bore 6 of the tubular body is cylindrical from the end 4 to a point 7 near the end 5 where its size is reduced in a short zone 8, the diameter of the cylindrical portion being determined by reference to the diameter of the needle hub with which the guard is to be used, and the diameter of the zone 8 being slightly less than the outside diameter of the catheter in

said needle.

Along its upper side the tubular body 1 is provided with a longitudinal slot 9 the upper edges of which may be beveled adjacent the end 4, as indicated at 10. In the vicinity of the zone 8 the edges 11 of the slot lie in radial planes (FIG. 3). Between the beveled edges 10 and radial edges 11 the slot may be widened somewhat, as illustrated in FIG. 1, or the bevels may be continued throughout the length of the slot.

In use, the needle cover is preferably supplied assembled on the needle of an intravenous catheterization set, the needle hub being frictionally engaged in the bore 6 and the needle extending freely into said bore. In this condition the needle is protected from contamination with any nonsterile surface even after removal from the protective envelope in which such sets are customarily packed. When the patient has been prepared, the needle cover is removed (as by sliding it axially off the hub), the venipuncture, advancement of the catheter and withdrawal of the needle are effected in the usual manner, and the needle cover is then reassembled with the needle and catheter to constitute a bevel guard, as shown in FIG. 4. Such reassembly is made possible by the provision of the slot 9, the needle hub 12 being pressed into the slot past the beveled edges 10, the needle 13 moving easily through the slot, whether enlarged or beveled, into the bore 6, and the extended catheter 14 being pressed downward past the edges 11 into the constricted zone 8 where it is frictionally engaged. Although the needle 13 is free to move somewhat in the bore 6, its bevel 15 cannot cut the firmly held catheter 14, and also cannot come in contact with the patient. The flat base 2 of the bevel guard, resting against the patient's arm, causes no discomfort and can be taped in place with minimum possibility of accidental dislodgement.

While the elongated opening 9 is referred to as a "slot" which is suitable for easy insertion of the needle and catheter, it will be understood that its walls may, throughout at least part of its length and/or depth, be disposed closely enough to each other to constitute a "slit". The frictional engagement of the zone 8 with the catheter results conveniently from the reduced diameter of said zone, as described, but an effective reduction of diameter may be achieved by the provision of one or more inwardly projecting lugs, fingers, tabs or the like. In either case axial movement of the catheter is resisted, both during shipment and in use.

I claim:

1. A combined needle cover and bevel guard for use with an intravenous catheterization assembly of the type which includes a hollow needle having a beveled point and a hub and a plastic catheter movable through said needle to project beyond said point, comprising a tubular body of flexible plastic and a flat base integral with said body, the tubular body being provided with a slot extending from end to end, and the bore of said body having a first diameter at one end sufficient to frictionally engage the needle hub, also having a second diameter at the other end and smaller than said first diameter to frictionally engage the catheter and having a third diameter intermediate the ends thereof and greater than the diameter of said needle, to envelope freely the needle.

2. A combined needle cover and bevel guard according to claim 1 in which the walls of the slot are beveled at least in the regions adjacent each end, to facilitate entry therethrough of the needle hub and projecting catheter.

3. A combined needle cover and bevel guard according to claim 1 in which the first and third bore diameters of the body are of substantially uniform size from the said one end to a point near said other end, the length of said uniform portion being at least equal to the total length of the needle and hub.

4. A combined needle cover and bevel guard according to claim 1 in which the flat base has a width adjacent the hub engaging end of the tubular body at least approximately twice the width of said body at the catheter-engaging end.

5. A combined needle cover and bevel guard according to claim 4 in which the flat base has a width adjacent the catheter-engaging end of the tubular body approximately equal to the width of said body at the catheter-engaging end.