

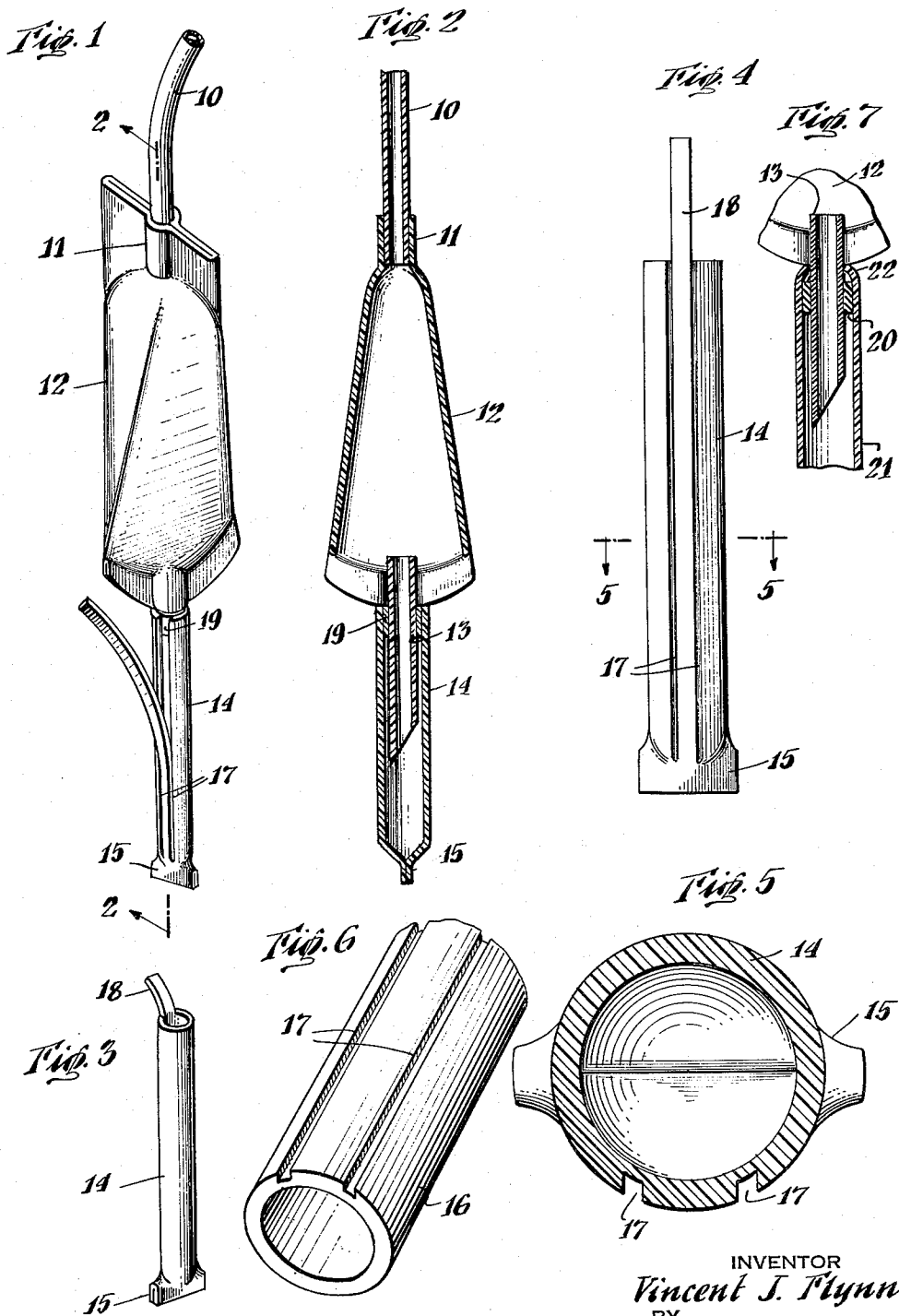
Aug. 22, 1961

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2,997,043

PROTECTIVE CANNULA SHEATH

Filed Aug. 17, 1954



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1

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PROTECTIVE CANNULA SHEATH

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Filed Aug. 17, 1954, Ser. No. 450,349
8 Claims. (Cl. 128—214)

This invention relates to a structurally and functionally improved sheath primarily intended for the protection and maintenance of appliances used in the practice of medicine although the present invention may be employed to advantage as a sheath or protecting member in numerous different associations where a covering is to be used to maintain parts contained therein free from contamination and/or the liability of damaging engagement with adjacent surfaces or units.

It is a primary object to furnish a sheath of this nature which may readily be positioned or applied and which will remain against all probability of accidental detachment in such applied position for indefinite periods of time; the sheath nevertheless being capable of substantially immediate removal from a unit when it is desired to obtain access to the latter.

A further object of the invention is that of furnishing a sheath for a medical appliance such as a cannula and by means of which that cannula will be adequately protected from damage or contamination. However, when desired, the sheath may quickly be stripped from the cannula so that the latter will be ready to be used for its intended purpose.

Still another object is that of providing a sheath structure which may be readily and economically manufactured by quantity production methods and machinery and without the use of skilled labor.

With these and other objects in mind, reference is had to the attached sheet of drawings illustrating one practical embodiment of the invention and in which:

FIG. 1 is a perspective view of one end of an administration set with the sheath in process of removal therefrom;

FIG. 2 is a sectional side view taken along the line 2—2 in the direction of the arrows as indicated in FIG. 1.

FIG. 3 is a perspective view of the sheath prior to its association with the set;

FIG. 4 is a side elevation of a sheath;

FIG. 5 is a transverse sectional view in enlarged scale taken along the line 5—5 in the direction of the arrows as indicated in FIG. 4;

FIG. 6 is a perspective view of a section of tubing from which the sheath or covering is formed; and

FIG. 7 is a fragmentary sectional view of an alternative form of structure.

Referring primarily to FIGS. 1 and 2, the numeral 10 indicates the end of a tubing of flexible character which is connected to and sealed in contact with the hub surface 11 of the body 12 defining a drip chamber. The opposite ends of that body may be similarly formed to mount a piercing cannula 13 provided with a pointed outer end. Preferably, all of these elements are formed of a plastic such as vinyl tubing. Specifically, a polyvinyl chloride may be utilized.

Similarly the sheath may be formed of identical material. That sheath will embrace a tubular body 14, the outer end of which may be closed and sealed as at 15. It is in many respects preferred that the tube furnishing the sheath be formed by extrusion. This, however, is not essential. In any event and as shown especially in FIG. 2, the sheath will enclose the surface of cannula 13 and its piercing point. The inner or rear edge of the sheath should be in intimate contact with the face of the

2

cannula adjacent the juncture of its base portion and the outer end of the body 12 defining the chamber. Obviously, the parts may be spaced to a greater or lesser extent for purposes of sterilization. To this end, the outer end of the sheath may even be left open. Ordinarily, however, its outer end will be closed as at 15. A collar such as 19—for example of semi-rigid vinyl—may encircle cannula 13 and be heat sealed at this point. By such a structure space is furnished so that sterilizing vapors may flow around this element.

Frequently the sheath adheres to the cannula. This difficulty is overcome by the present teaching in that as shown particularly in FIG. 6, the tubing 16 is formed with axially extending spaced grooves 17 on its outer face. These grooves define between them a tear strip which is bounded by the lines of weakening provided by the grooves 17. In the formation of the sheath or covering member, a projecting part 18 results from the severance of the tube body at a predetermined point and in line, or in a zone co-extensive with the area of the tear strip. Thus, a tab is furnished.

This tab will in no way interfere with the assembly as shown, for example, in FIG. 2. Rather, it will lie adjacent the surfaces defining the outer end of body 12. The same will be true if the sheath or covering is employed in connection with other apparatus or units. However, an operator, by simply grasping and pulling the projecting portion or tab 18, may readily remove the tear strip so that its side edges defined by the lines of weakening 17 clear the body of the tube as shown in FIG. 1. As shown in FIGS. 1 and 4, grooves 17 terminate in the area of the closed end 15. Thus, as the free end of the tear strip is pulled beyond the closed end of the sheath, it will normally remain connected to that sheath to completely remove or dismount the latter. Otherwise the tube will open or expand so that it is readily peeled or stripped from the cannula 13 or equivalent unit. Of course, in lieu of extruding tube 16 with grooves 17 formed in its outer face, other manufacturing procedures may be resorted to.

In FIG. 7, an alternative structure is shown. In this the collar 20, encircling cannula 13, is spaced from the heat seal existing between the sheath 21 and the adjacent surface of body 12. To this end, the sheath is constricted as at 22 beyond the collar. The tear strip feature, as aforescribed, will obviously function in the same manner.

Thus, among others, the several objects of the invention as specifically aforesaid are achieved. Obviously numerous changes in construction and rearrangements of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. In combination a cannula having a piercing point and a base portion, a sheath formed of flexible and tearable material comprising a tubular body enclosing said cannula point and engaging against the surfaces adjacent said base portion and said sheath being formed with a line of weakening along which its body may be separated to open said sheath and thus enable its removal from said cannula.

2. In combination a cannula having a piercing point and a base portion, a sheath formed of flexible and tearable material comprising a tubular body enclosing said cannula point and engaging against the surfaces adjacent said base portion and a tear strip defined by lines of weakening extending longitudinally of said sheath whereby the latter may be opened by moving the strip out of the plane of the sheath body to enable its removal from said cannula.

3. In combination a cannula having a piercing point

3

and a base portion, a sheath formed of flexible and tearable material comprising a tubular body enclosing said cannula point and engaging against the surfaces adjacent said base portion and a tear strip defined by lines of weakening extending longitudinally of said sheath whereby the latter may be opened by moving the strip out of the plane of the sheath body to enable its removal from said cannula and said strip extending beyond one end edge of said sheath to provide a tab portion.

4. In combination a cannula having a piercing point and a base portion, a sheath formed of flexible and tearable material comprising a tubular body enclosing said cannula point and engaging against the surfaces adjacent said base portion, said sheath being formed with a line of weakening along which its body may be separated to open said sheath and thus enable its removal from said cannula, said line of weakening extending to a point adjacent that at which one end of said sheath engages the base portion of the cannula and the opposite end of said sheath being closed.

5. In combination a hollow piercing needle having a base portion, a protecting sheath enclosing said needle and connected to the same adjacent said portion to maintain the effective parts of said needle in sterile condition and means forming a part of said sheath whereby the latter may be destructively stripped from the base portion of the needle to expose the latter.

4

6. In a combination as specified in claim 5, a layer of material interposed between said needle and the adjacent portion of said sheath and said layer forming a part of the connection between said sheath and needle.

7. In the combination as specified in claim 6, said layer comprising a collar encircling said needle and an edge zone of said sheath being constricted at a point beyond said collar towards the surface of said needle.

8. In combination a hollow needle having a pointed outer end, a hollow member connected to the inner end of said needle, a protecting sheath enclosing said needle and having an open end disposed in non-detachable sealing relationship with the surfaces of said needle adjacent its inner end to maintain said needle free from contamination and means forming a part of said sheath whereby it may be destructively separated from association with said needle.

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