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R. J. NITZ ET AL

3,007,472

HUB STRUCTURE

Filed April 22, 1957

Fig. 1

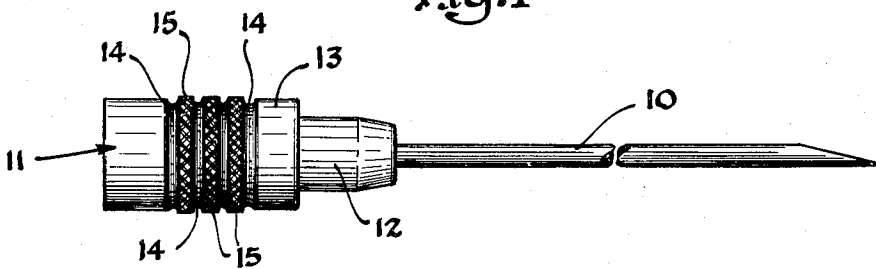


Fig. 2

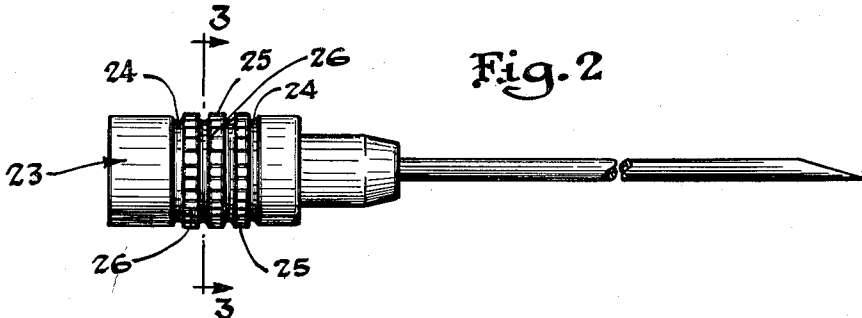


Fig. 3

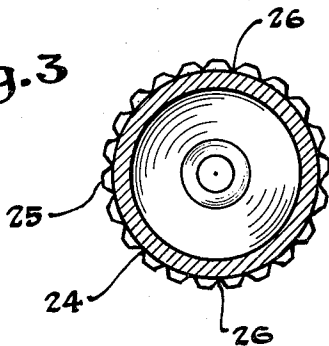
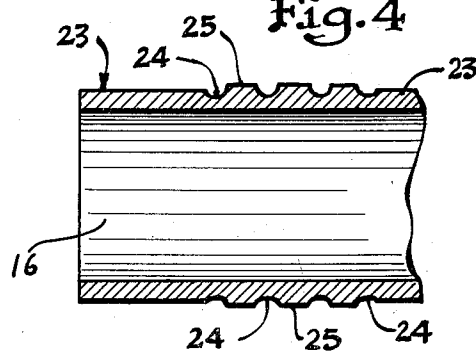


Fig. 4



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HUB STRUCTURE

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1 Claim. (Cl. 128—221)

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The present invention relates to improved needle hub means and more particularly to an improved needle hub structure and the method of making said improved needle hub structure.

In the manufacture of needles which are used to administer, parenterally, drugs and solutions from a container or otherwise, it has been generally considered necessary to provide the hub of the needles with a knurled surface in order to facilitate gripping the needle for penetration through the patient's skin or container closure. The knurled surface is most readily formed on the needle hub by a conventional "knurling tool" which is forced into rolling contact with the cylindrical hub surface so as to cut very small grooves in the surface of the hub. The very fine slivers or threads of metal thus cut by the knurling tool, create a difficult problem for the needle manufacturer, since the slivers of metal are very hard to remove from the metal surface and are frequently ground into the grooves making the job of cleaning the needles more difficult and expensive. It is frequently impossible to completely remove the excess metal slivers from the hubs, and a safety hazard is created.

It is therefore an object of the present invention to provide an improved needle hub from which metal slivers formed by a knurling tool can be readily removed by conventional cleaning methods.

It is a further object of the present invention to provide a needle hub with an improved gripping surface which facilitates the insertion thereof into a patient or sealed container.

Other objects of the present invention will be apparent from the detailed description and claim to follow.

The manner by which the present invention attains the above and other objects of this invention will be apparent from the following specification taken in conjunction with the complete drawing and claim.

In the drawing:

FIGURE 1 is an enlarged side elevation view of a needle hub assembly showing one embodiment of the present invention.

FIGURE 2 is an enlarged side elevation view of a needle hub assembly showing a slightly modified embodiment of the invention.

FIGURE 3 is a vertical sectional view along the line 3—3 of FIGURE 2.

FIGURE 4 is a partial longitudinal sectional view of the needle hub shown in FIGURE 2.

The objects of the present invention are achieved by providing the hub of a venoclysis or hypodermoclysis needle with a plurality of circumferential longitudinally spaced grooves extending the length of the knurled surface of the needle hub. It has been found that a needle hub having the longitudinally spaced circumferential grooves extending the length of the knurled surface can be readily cleaned by the conventional cleaning methods so that the usual slivers of metal cut by the knurling tool are not left on the needle hub surface or within the needle as frequently occurs with the prior art type of knurled needle hubs.

In FIGURE 1 of the drawing, the pointed cannula 10 has mounted on the other end thereof, a hub member 11 with the inner surface thereof adapted to engage a conventional fitting (not shown) communicating with a source of a drug or solution to be administered. The

hub 11 is formed with a smaller diameter forward section 12 which frictionally engages the said other end of the cannula 10 and with a larger diameter cylindrical end section 13 which has preferably on the inner surface thereof, means 16, such as a female luer tapered section, for engaging a fitting in communication with a source of a drug to be administered. The section 13 has on the outer surface intermediate the ends thereof, a plurality of longitudinally spaced transversely extending circumferential grooves 14 which interrupt the continuity of the cylindrical surface 13. Between each pair of adjacent grooves 14 is a substantially flat ring section 15 having provided on the outer surface thereof a plurality of fine diagonal lines or grooves which are cut in the hub surface as by a knurling tool and which generally extend only slightly below the surface 15, depending on the type of knurling employed.

In FIGURE 2 of the drawing is shown a modified form of the invention set forth in FIGURE 1, wherein the cylindrical hub section 23 is provided with a plurality of longitudinally spaced circumferential grooves 24 which define between adjacent grooves, a plurality of transverse ring sections 25. A plurality of general V-shaped serrations 26 extending below the surface of the ring sections 25 are disposed longitudinally about the entire circumference of the said ring section 25 substantially parallel to the longitudinal axis of the needle hub 23.

The hub structures of the present invention can be conveniently manufactured on a multiple or semi-automatic screw machine in accordance with the usual procedure simply by the addition of a step by which the longitudinally-spaced grooves are formed in the surface of the hub. Thus, the desired bar stock is placed in a suitable screw machine where it is sized to specification, drilled, and formed to provide the hub exterior with the larger longitudinally-spaced grooves. The formed part is then cut from the solid stock and the hubs with the formed rings, are placed in contact with any desired knurling tool in the usual manner to provide the hub with the improved gripping surface of the present invention.

The hubs of the present invention are generally fabricated of metal, but it should be understood that they can be made of plastic or other similar non-corroding material.

Others may readily adapt the invention for use under various conditions of service, by employing one or more of the novel features disclosed or equivalents thereof. As at present advised with respect to the apparent scope of our invention, we desire to claim the following subject matter.

We claim:

A method of fabricating a needle hub having thereon a knurled surface which comprises the steps of forming on the surface of a hub member a plurality of spaced circumferential grooves extending substantially below the surface thereof to interrupt the continuity of the said surface of the hub and to form a plurality of spaced circumferential rings, and cutting in the outer surface of the said rings by means of a knurling tool a plurality of generally V-shaped spaced serrations extending transversely across the entire circumference of the ring sections and intersecting the said circumferential grooves, said serrations being disposed substantially parallel to the longitudinal axis of the needle hub, whereby cleaning said hub of the material from said serrations is facilitated.

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