

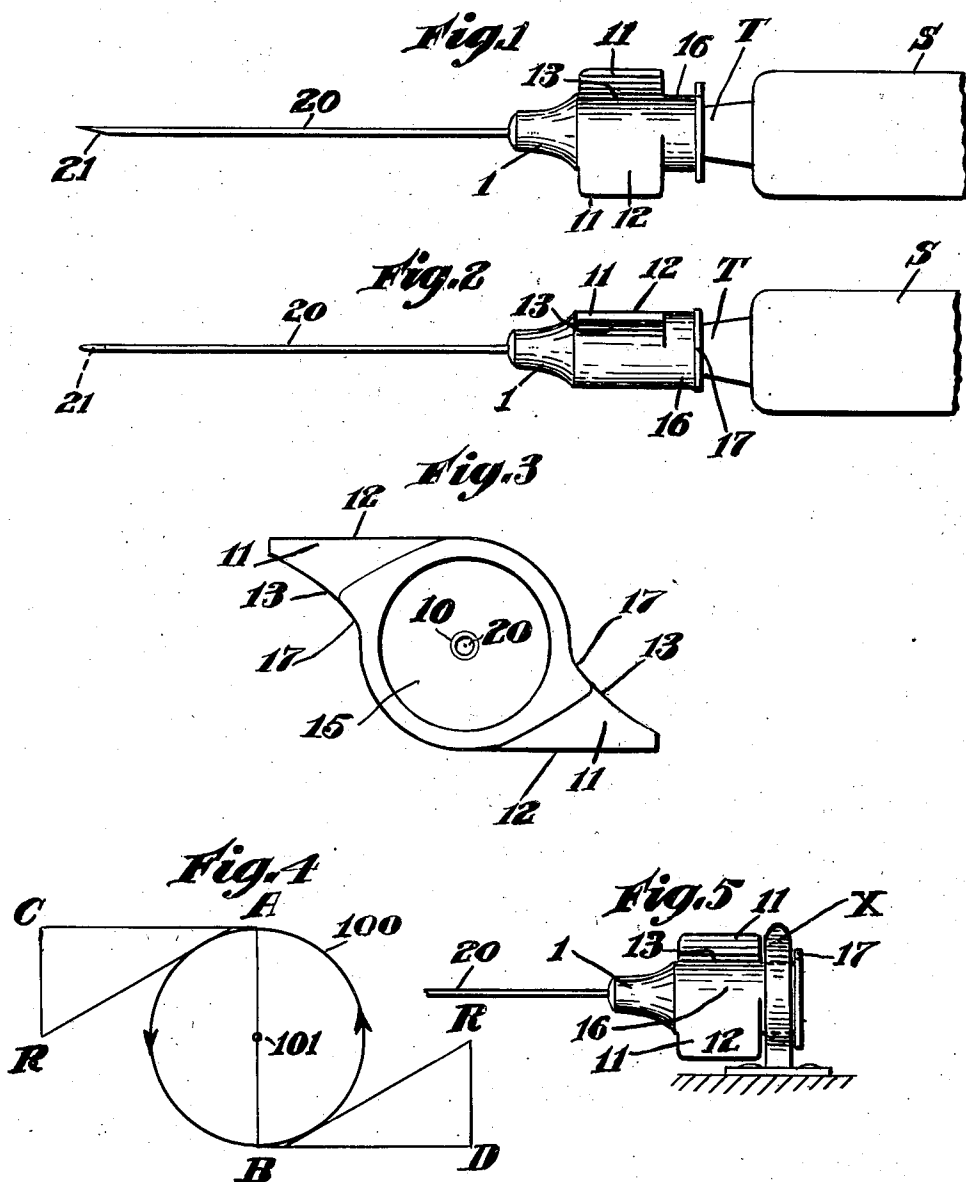
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HYPODERMIC NEEDLE AND NOVEL HUB FOR THE SAME

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HYPODERMIC NEEDLE AND NOVEL HUB
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In the development of the hypodermic needle and particularly those for use with the Luer type of syringe, the hub has become an element of increasing importance. In such use the assembly is effected by finger pressures applied axially of the syringe and with a certain amount of rotative movement by which frictionally to engage the needle hub on the barrel tip.

Our present invention relates to a novel type of needle and particularly its hub. Our concept is that of an improved distribution of the components of the rotative pressures used in assembly. These advantages will be apparent to those skilled in this art and are further disclosed and discussed in the following specification. Our construction also includes means whereby the syringe may be securely held in a U-shaped clip affixed in the usual carrying case.

In supplement thereto we show in the accompanying drawing an embodiment illustrative of a needle in accordance with our invention. In the drawing:

Fig. 1 is a general view of a hypodermic needle in accordance with our invention as assembled on the tip of a Luer type glass syringe.

Fig. 2 is an enlarged side view of the same viewed at right angles thereto.

Fig. 3 is a more enlarged end view of the hub.

Fig. 4 is a diagrammatic view illustrative of the components of assembly forces, and

Fig. 5 is a view showing the hub held in a clip as in a carrying case.

Referring to the drawing as a basis of our disclosure we call attention first to the general structure as indicated in Fig. 1. In this we have indicated at S the outline of a syringe end which may be considered as of the Luer type. Such a syringe has a tip T drawn out from the end of the barrel tube. It is an important but critical member in the art as it is fragile and easily fractured. For such a syringe tip we provide a needle having a hub 1. This may be of any general outer contour suitably related to the hub center which may be taken as the center bore 10. This bore is enlarged at its base end as in a conic 15 adapted to fit frictionally or otherwise the end tip T. As shown this is a conic but it might be of other conformation. The connections may be variably combined by threaded or other connections but the friction or conic fit is so characteristic as to be predominantly indicated in the present problem.

The attaching end having the conic bore 15 is reduced to form a cylindrical neck 16. At the extreme end we leave projections as at 17 so

that the hub can be securely held by a U-shaped clip as in a carrying or other case in which the needle is protected as indicated in Fig. 5.

The base or hub 1 is of a generally elongated cylindrical body. It is provided with wings or flanged ribs 11. These are set in generally tangent planes. They spring from diametrically opposed lines on the hub periphery so as to afford opposite movement—results upon application of finger pressure in assembling the hub 1 on the tip T of the barrel end of the syringe S.

These flanged tangential ribs 11 have surfaces 12 which are the true finger contact surfaces and the recipients of the finger pressures applied to the hub 1.

These flanged ribs may be undercut as by the grooved surface at 13 to induce rotative effort in proper direction and to lighten and make symmetrical the weight and give balance to the hub 1 in the fingers of the operator.

In the end of bore 10 at the opposite end from our assumed back for attachment at 15 is set a cannula 20. This is usually the tubular needle of surgical usage. It may be of any type or manufacture but has a definite incisor point 21. This point must be fixed and sustained in correct axial alignment with the axis of the syringe S.

In penetration of fleshy tissues this alignment is important and its hub backing is an essential factor in operative function.

The technique of operation includes the assembly of the needle i. e. the cannula 20 and hub 1 on the tip or end teat T of the barrel S. In this the surgeon or his assistant takes a sterile needle and syringe and assembles the needle by pressing the hub 1 on the teat T. As before suggested this has proved to be necessarily a combined rotary and axially compressive operation even though one of simple, manual or digital manipulation.

Considering now the analysis of the concept and the embodiment shown and referring to the diagrammatic study of Fig. 4 we have indicated circle of rotative force 100 about a longitudinal axis 101. Analyzing this on the basis of transverse axis A, B we have components C, A and B, D. These in effect under finger pressures induce resultant forces generally as A—R and B—R. These are the generative finger pressure components as indicated in Fig. 4 in which the general circle of rotation for the periphery of the hub 1 is indicated as at 100.

By this it will be seen that a needle applied by finger pressure on its hub 1 may be seated on a teat

or tip member T with a maximum of security and safety.

It will be understood that the diagrammatic study of Fig. 4 is necessarily approximate but when it is considered that the pressures are applied through human finger tips which are tender and not very firm the actual possibilities will be better appreciated. The relatively large finger surfaces have to conform to the relatively small hub surfaces to grip it. The axial pressure must be accompanied by a rotary trend in one definite direction. This is actually what happens even where the needle is seated hurriedly and often with only subconscious guidance. This is because the sensitive finger tips actually feel the directional disposition of the hub surfaces and the natural tendency is for the fingers to press selectively against the planes A, C and B, D (the surfaces 12 of Fig. 3) and to assert a major tendency A—R and B—R. This means that the finger contact at 13 becomes naturally of delicately minor effect.

It will, of course, be understood that "finger" as herein used means digit or digital and includes the thumb which is usually a very important member in the act of assembling a needle hub on its syringe.

Various modifications in type of syringe, in

connection and in contours of flanges of our hub may be made within the limits of the appended claims.

What we therefore claim and desire to secure by Letters Patent is:—

1. A cannula hub for rotative assembly on a syringe tip, including a tip receiving center aperture and reversed finger contact portions having surfaces extending oppositely from the hub periphery at opposed diametric points and disposed in planes tangent to the circle of rotation on the syringe tip, whereby resultant reversed finger pressures in assembly are rotatively effective as to all rotative included components of the finger pressure.

2. A cannula hub for a syringe needle including oppositely disposed fin-like members tangential to the hub circumference and extending from the perimeter of the hub at diametrically disposed points.

3. A cannula hub for a syringe including fin-like members tangential to the hub circumference and extending from the perimeter of the hub in opposing directions and disposed at points on opposite portions of the hub circumference.

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