

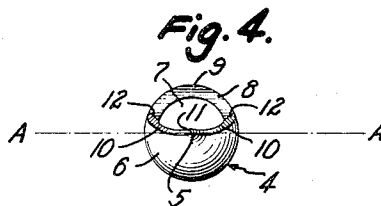
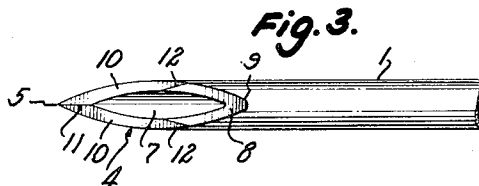
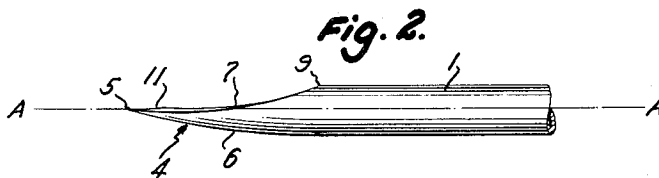
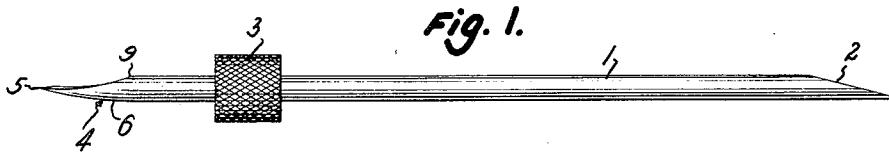
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NONCORING HYPODERMIC NEEDLE

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1

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NONCORING HYPODERMIC NEEDLE

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1 Claim. (Cl. 128—221)

This invention relates to a hypodermic needle and more particularly to the shape of the pointed end of the needle.

An object of the invention is to provide a non-coring needle which permits and does not restrict the free passage of fluid through the pointed end into and out of the lumen of the needle or passageway through the cannula.

A further object of the invention is to provide a needle in which the penetrating point is in the center line or axis of the cannula.

The invention is illustrated in the accompanying drawings in which

Fig. 1 is a side elevational view of a double pointed needle, the left hand pointed end of which is shaped and constructed in accordance with the invention,

Fig. 2 is an enlarged side elevational view of the left hand end of the needle shown in Fig. 1,

Fig. 3 is an enlarged plan view of the left hand end of the needle shown in Fig. 1 and

Fig. 4 is an enlarged end view of the left hand end of the needle shown in Fig. 1.

Referring to Fig. 1, 1 is the cannula which has right cylindrical outer and inner surfaces, 2 is any suitable pointed end such as the conventional end formed by cutting the straight cylindrical cannula on a plane which is oblique to the axis of the cannula, 3 is a knurled hub secured to the cannula and 4 is the pointed end in accordance with the invention.

As appears in Fig. 2, the penetrating point 5, i. e. the extreme end of the pointed end of the needle lies in the axis of the cannula as appears from its coincidence with the axis line A—A. The closed side 6 of the pointed end curves gradually from the cylindrical portion of the cannula 1 to the point 5 as appears in Figs. 1, 2 and 4 but does not extend outwardly with respect to the axis beyond an imaginary projection of the outer cylindrical surface of the cannula. The open side of the pointed end consists of the cylindrical surface 8 which extends forwardly toward the point 5 from the heel 9 and the bevel surfaces 10 which extend forwardly from the surface 8 to the point 5. The shape of the open side of the pointed end of the needle may be visualized by considering that it is formed by first bending the end of the cannula to produce the curvature of the closed side 6 as seen in Fig. 2, then cutting away the other side of the curved end to produce a substantially cylindrical surface curving inwardly toward the curved surface 6 and extending from the heel 9, which is at the point of intersection of the cylindrical outer surface of the straight portion of the cannula with said cut cylindrical surface, to a point adjacent the penetrating point 5 and finally beveling the cut wall of the cannula from the point 5 rearwardly on each side of the opening 7 to points about one half to three fifths of the length of the opening 7. The intersection of the resulting bevelled surfaces 10 with each other is at the line 11 and the intersections of the bevelled surfaces with the surface 8 are at the lines 12, 12. It is preferable to bevel the cut walls of the cannula so that the bevelled surfaces 10, 10 merge into the surface 8 with little or no

2

ridge at the intersection. The bevelled surfaces 10, 10 may extend all the way across the cut wall of the cannula as shown in Fig. 3 or only partly across said cut wall. The curved surface 8 and the curved bevelled surfaces 10, 10 do not dip substantially below the axis A—A.

The above described design provides a penetrating point which is at the axis of the cannula. The location of the penetrating point below the imaginary extension of the outer cylindrical surface of the cannula and the concave curvature of the surface 8, 10, 10 facilitate the unrestricted flow of liquid through the opening 7 because, due to the curvature of the surface 8, 10, 10 the surrounding tissue will not be tightly pressed against all portions, thereof particularly the middle portion of said surface. The penetrating point is formed by the converging surfaces 6 and 10, 10 so that as the point penetrates it will spread the penetrated tissue in all directions. This minimizes the force required for penetration. The opening cut by the point and the adjacent edges is spread substantially equally by the surface 6 on one side and the surfaces 8, 10, 10 on the other side. The location of the penetrating point at the axis of the cannula also reduces the tendency to coring by the forward edge of the surface 8. The shape of the point does not prevent the use of a cleaning wire because the cross section of the opening 7 is in alinement with a substantial part of the lumen of the cannula as appears in Fig. 4. The point design of the present invention possesses all of the advantages and wholly or partially eliminates the disadvantages of conventional needle points of the prior art in which the opening is either completely in alinement with the lumen as in the case of the point 2 described above or completely out of alinement with the lumen as in the case of a needle in which the plane surface surrounding the opening is tangent to the outer cylindrical surface of the cannula or in which the point is conical with the opening in the side wall thereof. The advantages of the needle point are attributed to the combination of the curvature of the surface 8, 10, 10 with the axial location of the penetrating point.

It is within the scope of my invention to make the surface 6 straight instead of curved and to omit the bevels 10, 10.

I claim:

A hypodermic needle comprising a cannula and an integral pointed end, said cannula having right cylindrical outer and inner surfaces, said pointed end having an open side, a closed side and a penetrating front located substantially in the longitudinal axis of the cannula, the median line of said closed side being curved outwardly with respect to a straight line extending from the penetrating point to the end of said outer cylindrical surface, said open side comprising a surface surrounding an opening communicating with the lumen of the cannula, the last named surface curving inwardly with respect to a straight line extending from the penetrating point to the end of said outer cylindrical surface of the cannula, the surface of said open side of said pointed end comprising a substantially cylindrical portion adjacent said outer cylindrical surface of the cannula and oppositely bevelled surfaces adjacent said penetrating point.

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