

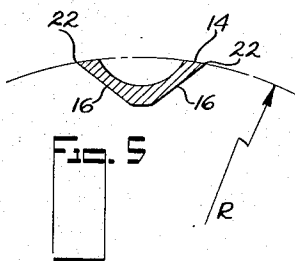
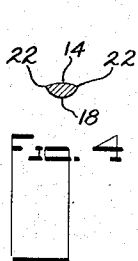
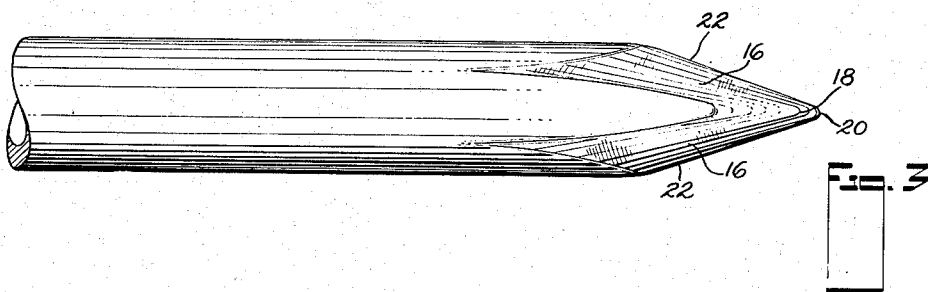
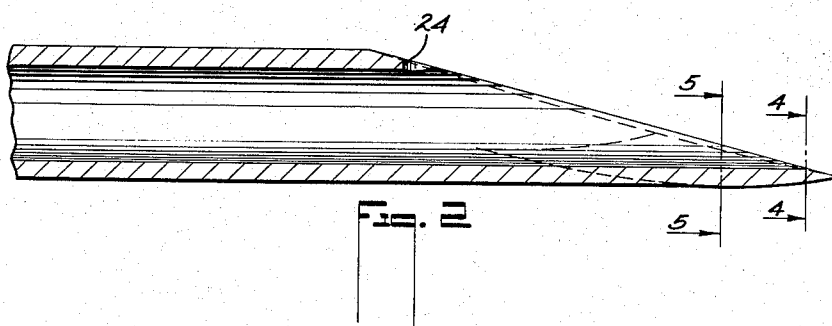
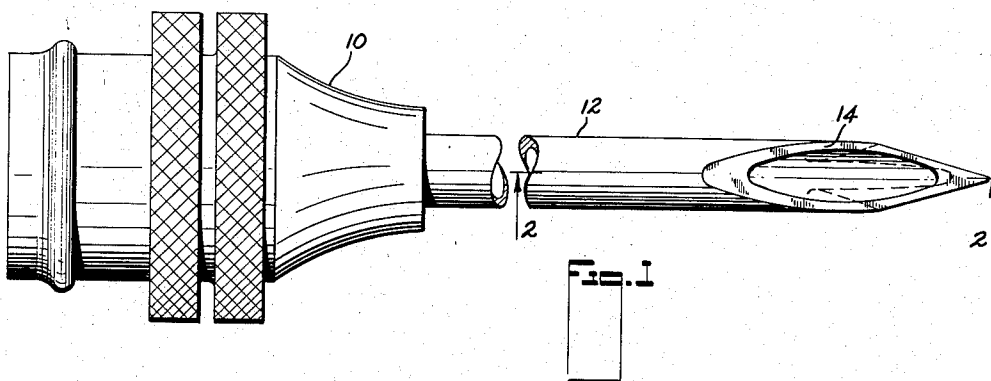
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G. W. JACOBY, JR

2,711,733

HYPODERMIC NEEDLE

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INVENTOR.
GEORGE W. JACOBY, JR.

BY

Pickney Watts
ATTORNEYS

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2,711,733

HYPODERMIC NEEDLE

George W. Jacoby, Jr., Wooster, Ohio

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4 Claims. (Cl. 128—221)

This invention relates to a hypodermic needle or cannula having a cutting point of a particular configuration which facilitates the insertion of the needle into human flesh with a minimum of damage to the tissue and pain to the patient.

The most important object of this invention is to provide a spade-like point on the tip of the hypodermic needle which has a knife-like cutting edge extending along the sides of the needle point and around the end of the point.

Another object of this invention is to provide a hypodermic needle which is ground on the outer surface of the needle point for obtaining a thin cross section and a sharper and more durable cutting edge at the end and sides of the point.

A further object of this invention is to provide a hypodermic needle having the rear portion of the needle opening dulled to prevent the cutting of a plug of tissue during insertion of the needle into flesh.

A still further object of this invention is to provide an improved hypodermic needle having a spade-like cutting edge which will pierce the skin and form an opening therein, for entry of the needle, which is clean-cut, thereby reducing the pain and the amount of damage to the tissue to a minimum.

Other objects and advantages more or less ancillary to the foregoing, and the manner in which all the various objects are realized will appear in the following description, which, considered in connection with the accompanying drawings, sets forth the preferred embodiment of the invention.

In the drawings:

Fig. 1 is a plan view of the needle;

Fig. 2 is a cross-sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a bottom view of the needle showing the bevel surfaces formed thereon;

Fig. 4 is a cross-sectional view taken along line 4—4 in Fig. 2 showing the shape of the tip of the needle; and

Fig. 5 is a cross-sectional view taken along the line 5—5 in Fig. 2.

Referring first to Fig. 1, a hypodermic needle is shown having a ferrule 10 suitable for attaching the needle to the standard syringe and a body portion 12 affixed thereto. The body 12 has a point formed thereon by cutting a cannula at an angle to the medial axis thereof to form an oblique end wall. The upper surface 14 of the end wall is curved and is produced by moving the needle through an arcuate path, while contacting the grinding wheel during the sharpening operation. The curvature of the surface 14 is indicated in Fig. 5 and extends from the needle point to the rearmost end of the end wall.

The outer surface of the body 12 is ground to produce a pair of flat bevel surfaces 16 thereon adjacent the needle point.

The surfaces 16 are obtained by holding the cannula stock in fixed relationship to the grinding wheel, while the material of the needle is cut away. The planes of each

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surface, respectively, intersect at some point beyond the end of the needle.

The surfaces 16 are joined by an arcuate surface 18 located intermediate the bevel surfaces 16 and tangent thereto. The arcuate surface 18 is produced by rotating the needle, while it is in contact with the grinding wheel. The intersection of the arcuate surface 18 and the curved surface 14 of the end wall is a curve which has a cutting edge 20 extending therealong. The cutting edge 20 is extended rearwardly by the cutting edges 22 which are at the intersection of the surface 14 and the bevel surfaces 16. The cutting edges 22 extend rearwardly to substantially the full diameter of the needle. The grinding of the needle at the arcuate surface 18 removes the thickness of material ordinarily found in hypodermic needles at the point, thereby producing a thin spade-like point which facilitates the entry of the needle through the skin of a patient.

At the rearmost portion of the opening in the end of the needle, a dulled heel 24 is formed by grinding the edge away. The heel 24 eliminates cutting or damaging the tissue that is drawn into the opening in the needle by the tension in the skin during the insertion thereof. The natural resiliency of the skin is sufficient to draw the flesh over the outside of the needle away from heel 24 as the needle passes into the flesh of the patient.

When the hypodermic needle is formed as disclosed in this application with the continuous cutting edge resulting from the cutting edges 22 and 20 being in alignment, a clean cut incision in the form of a line is made, rather than a ragged punctured hole which results from the use of the conventional needle structure. The dulled heel 24 cooperates with the cutting edges in facilitating the insertion of the needle with a minimum of pain to the patient and damage to the tissue.

A further use of this type of needle arises where the needle is incorporated in a set for transfusions of blood or plasma and is inserted through a relatively thick diaphragm or other closure layer ordinarily used for sealing a container against contamination. The spade-point cuts a clean slit through the bottle cover, and the heel 24 prevents the severing of a plug of material which would otherwise enter the interior of the bottle or continue into the lumen of the cannula where it would restrict or prevent flow through the needle. If the stopper material enters the bottle, the contents thereof become unfit for use and the entire set must be discarded. The needle point construction disclosed herein having the spade-point and the dull heel eliminates the possibility of loss of valuable materials.

It is to be understood that the specific nature of the present disclosure is not intended to be restrictive or confining and that various rearrangements of parts and modifications of design may be resorted to without departing from the scope or spirit of the invention as herein claimed.

I claim:

1. A flesh piercing needle having a longitudinal bore, a pointed end on the needle having a wall lying in a plane intersecting said bore at an angle, beveled surfaces formed on the outer portion of the needle adjacent the end, an arcuate surface joining said beveled surfaces, a cutting edge being formed at the intersection of the beveled and arcuate surfaces with the end wall.

2. A flesh piercing needle having a longitudinal bore, a pointed end on the needle having a wall lying in a plane intersecting said bore at an angle, beveled surfaces formed on the outer portion of the needle adjacent the end, an arcuate surface joining said beveled surfaces, a cutting edge being formed at the intersection of the beveled and arcuate surfaces with the end wall, and a dull heel portion at the intersection of the bore and the end wall opposite to the point for preventing cutting of material as the needle is inserted.

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3. A flesh piercing needle having a longitudinal bore, a pointed end on the needle having an end wall lying in a plane intersecting said bore at an angle, beveled surfaces formed on the outer portion of the needle adjacent the end, an arcuate surface joining said beveled surfaces, said end wall having an arcuate cross section, a cutting edge being formed at the intersection of the beveled and arcuate surfaces with the arcuate end wall, and a dull heel portion at the intersection of the bore and the end wall opposite to the point.

4. A flesh piercing needle having a longitudinal bore, a pointed end on the needle having an end wall lying in a plane intersecting said bore at an angle, beveled surfaces formed on the outer portion of the needle adjacent the end, and an arcuate surface joining said beveled surfaces, said end wall having an arcuate cross-section, a

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cutting edge being formed at the intersection of the beveled and arcuate surfaces with the arcuate end wall.

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