

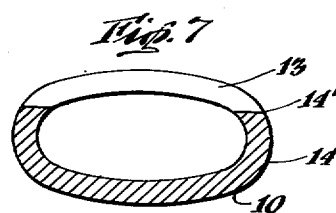
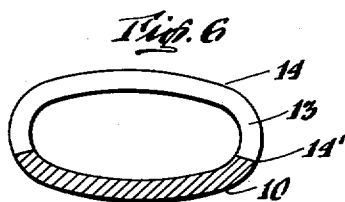
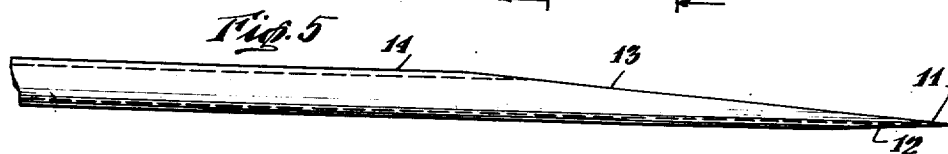
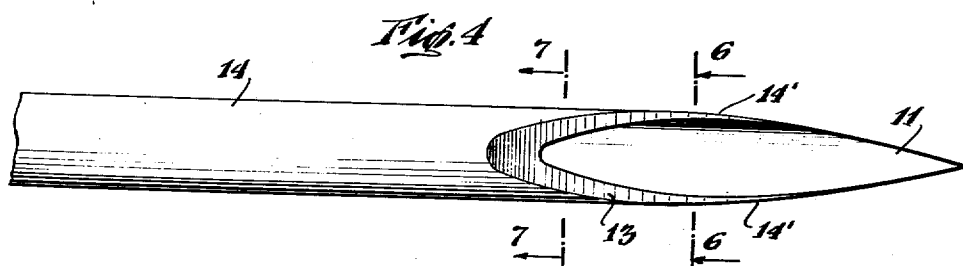
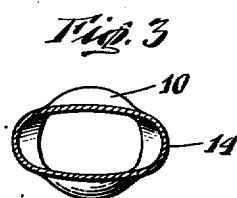
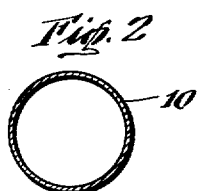
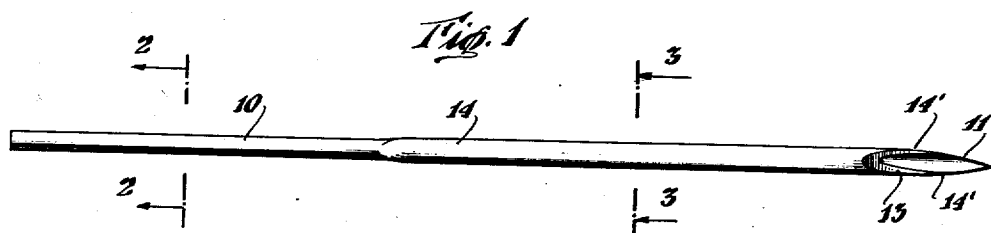
June 24, 1952

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2,601,580

HYPODERMIC NEEDLE

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2,601,580

HYPODERMIC NEEDLE

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2 Claims. (Cl. 128—221)

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This invention relates to a functionally and structurally improved needle of the hypodermic type and by means of which medicaments may be injected and fluids withdrawn from the body.

It is an object of the invention to furnish a unit of this type which may be used with minimum pain being experienced by the patient, aside from the fact that seepage will be reduced and there will be virtually no danger of cutting or punching a piece of tissue as the needle is caused to penetrate the epidermis and into layers below the same.

Among additional objects of the invention are those of furnishing a hypodermic needle in which the danger of irritation of the intima incident to the needle puncturing the vein will be minimized aside from the fact that when used for example in the treatment of diabetes, there will be no tendency of the skin, flesh or muscles to harden incident to frequent hypodermic injections within a given area. In addition to the reduction in scar tissue the physician or other technician will be able to effect penetration to the desired depth by employing only light pressure.

Still another object is that of furnishing a device of this character which may be manufactured at relatively small cost and according to quantity production techniques.

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

Fig. 1 is a plan view of a hypodermic needle; Figs. 2 and 3 are transverse sectional views taken respectively along the lines 2—2 and 3—3 and in the direction of the arrows as indicated in Fig. 1;

Fig. 4 is a fragmentary view in enlarged scale and showing the point or discharge end of the needle;

Fig. 5 is a view similar to Fig. 4 but with the needle rotated substantially ninety degrees around its axis in comparison with the former view;

Figs. 6 and 7 are transverse sectional views taken along the lines 6—6 and 7—7 respectively and in the direction of the arrows as indicated in Fig. 4; and

Fig. 8 is a view similar to Fig. 5 but showing a slightly different form of needle.

Referring primarily to Fig. 1 the numeral 10 indicates the body of the cannula to one end of which there may be secured any desired hub or mounting portion. The opposite end terminates

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in a point 11. This point will include the usual penetrating end adjacent which the ground surfaces 12 (see Fig. 5) extend to furnish cutting edge portions. The end of the cannula bore is defined in the usual manner within the zone of the end embracing point 11. As shown especially in Figs. 4 and 5 the surfaces 13 to each side of the bore end extend substantially in a straight line from the pointed outer end of the needle through to the tubular body of the same, and embrace adjacent their rear zone a heel portion.

This needle may be produced in accordance with any acceptable or conventional technique. After it is so produced it has imparted to it an oval cross sectional configuration. This is provided for example by employing rollers, pressing or otherwise so that the needle is flattened. While such flattening might extend throughout any desired portion or length of the needle from the pointed end and heel portion rearwardly it may be limited to the effective zone of the needle. In other words as shown at 14 the flattening may extend throughout a major portion of the needle from the point rearwardly. Even with maximum projection it is apparent that under these circumstances merely the flattened portion of the needle would penetrate into the tissue.

With such an oval cross section imparted to the needle it is apparent that the edges defined by the ground surfaces will project outwardly and, as shown especially in Fig. 6, these cutting edge portions 14' will extend in directions such that they will cooperate with maximum efficiency to effect such slitting of the tissues as is necessary to allow an effective penetration of the needle. As illustrated in Fig. 7 the edges will continue through to the heel portion but will, of course, be ineffective to cause any slitting action after the needle has once penetrated to a point where its maximum width is accommodated.

Again in the needle indicated by the reference numeral 15 in Fig. 8, there is present a cannula which includes a forward or penetrating tip 16 from which edges 17 extend at an angle across the axis of the cannula in a rearward direction. Adjacent their ends they provide the heel portion 18 which merges with the main tubular part of the needle. As shown in the preceding views, this needle, after grinding and other completing operations, is also flattened to provide for an oval configuration.

Regardless of the construction employed, it will be understood that in effect the flow of fluids through the cannula bore is in no wise restricted incident to the flattening or ovaling action in

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that these bores maintain the same cross sectional area. However, it has been found that far less pain is experienced by the patient in having a flattened needle penetrate the epidermis and tissues than a round needle or equivalent cross sectional area. Also, when the heel portion of the needle passes into the tissues, this is substantially imperceptible to the patient. It has been additionally found that the danger of punching a plug or piece of tissue is materially reduced when using a needle of this type and that seepage is also minimized. Especially in intravenous therapy difficulty has been heretofore experienced in the irritation of the intima caused by the needle puncturing the vein. Incident to the elliptical cross section of the present unit difficulty in this connection is substantially avoided because of the lessened height of the unit.

Moreover the muscles and skin are maintained soft and pliable even if frequent injections within a given area are resorted to. The fear of injection is materially reduced and the physician or other technician will find that far less pressure is necessary to effect penetration to the desired depth than has heretofore been necessary.

Thus, among others, the several objects of the invention as heretofore set forth are accomplished. Obviously numerous changes in construction and rearrangement of the parts might

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be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. A hypodermic needle comprising a cannula having a pointed outer end, a heel portion adjacent that end and a bore intervening such portion and the outer end, said needle being flattened to minimize its height from a point adjacent its outer end to a point to the rear of said heel portion.

2. A hypodermic needle comprising a cannula having a pointed outer end, a heel portion adjacent that end and a bore intervening such portion and the outer end, said needle being flattened to minimize its height from a point adjacent its outer end to a point to the rear of said heel portion and whereby to impart to said cannula an oval cross sectional configuration, said flattening terminating at a point short of the opposite end of said needle.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
2,409,979	Huber	Oct. 22, 1946