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HYPODERMIC NEEDLE

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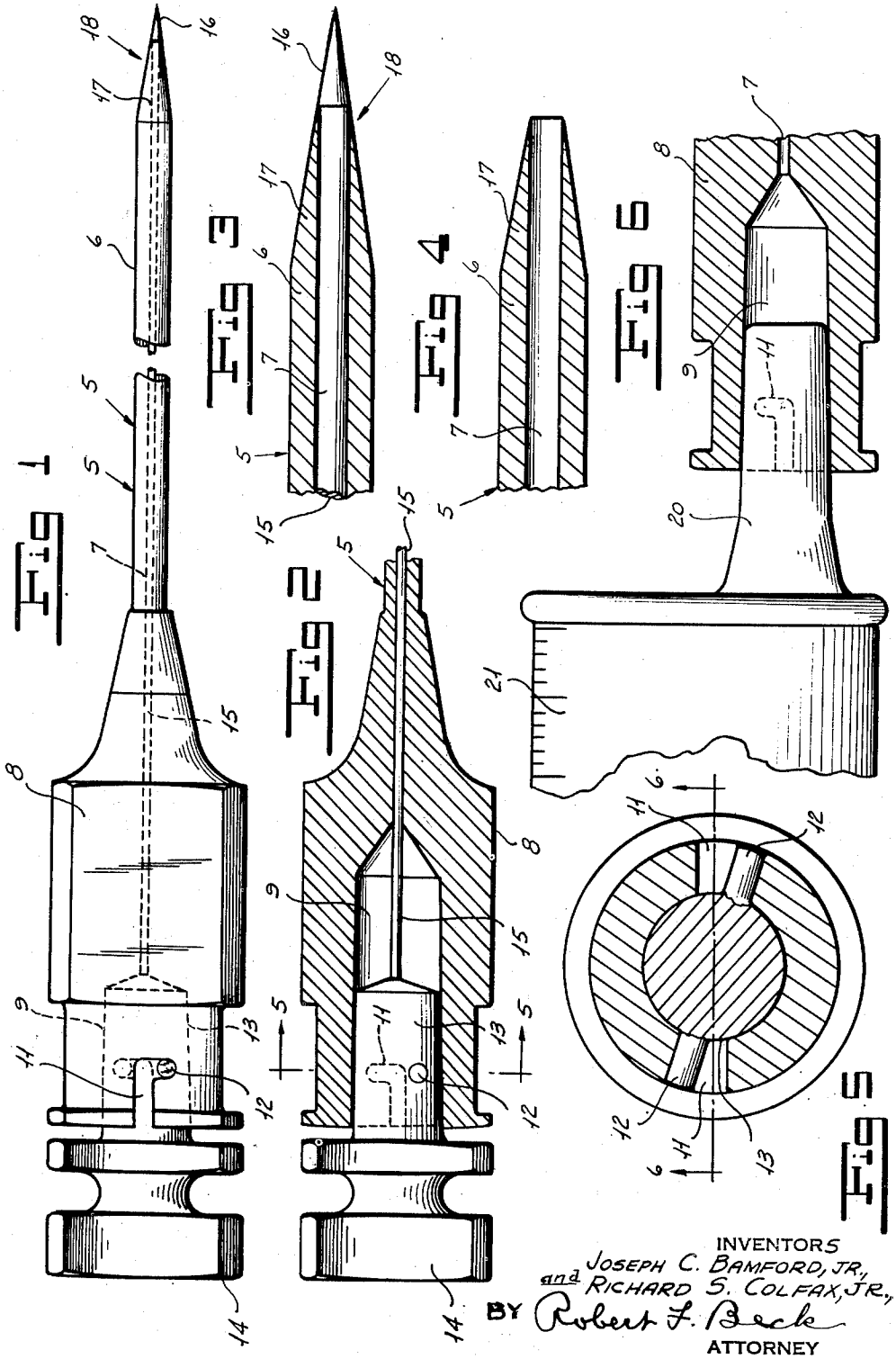

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HYPODERMIC NEEDLE

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Our invention relates to hypodermic needles and more particularly to those employed in spinal application.

The injection of fluid into the body is usually performed without injurious effects, however, where relatively large hypodermic needles are employed, for instance, in the administering of spinal anesthesia, procuring spinal fluid, introducing dyes for use in diagnosis through X-ray etc., injury may possibly occur by reason of nerve fibers being severed by the relatively large needle points during insertion of the needle into the body. Needles of this type, which are assembled with stylets for initial penetration, are each formed at the point with a relatively large bevelled end face defined by a somewhat elliptical cutting edge and a similar shaped opening in which is positioned the end face of the stylet in flush relation therewith. Obviously, when the needle assembly is inserted, the point may possibly sever nerve fibers disposed within the penetrated area due to the large cutting edge inherent in the point of needles of this character. Our invention overcomes the foregoing disadvantages and undesireable features, it being one of the objects thereof to provide a needle assembly provided with a relatively sharp and small penetrating point in lieu of the relatively large cutting edge.

Another object of our invention is to provide a needle assembly of the foregoing described character wherein the stylet of the assembly is employed for effecting initial penetration of the needle within the body.

A further object of our invention is to provide a needle assembly of the foregoing described character wherein the penetrating points of the stylet and needle coact to provide a smooth tapered section for body insertion and which functions to force body tissues away from the needle as distinguished from a severance thereof.

An important object of our invention is to provide a needle assembly of the foregoing described character which is simple in construction, durable in use, efficient in operation, economical in manufacture and capable of being utilized in connection with hypodermic syringes already in use without substantial modification.

With the above and other objects in view, as will hereinafter appear, the invention consists in the combination and arrangement of parts hereinafter set forth and illustrated in the accompanying drawings from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

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Referring to the drawings wherein like reference characters designate like parts throughout the several views:

Figure 1 is a side elevation of a needle assembly constructed in accordance with the present invention.

Figure 2 is a sectional view of the head of the assembly.

Figure 3 is a sectional view of the penetrating point of the assembly.

Figure 4 is a detail sectional view of the needle point with the stylet removed.

Figure 5 is a detail sectional view taken on the line 5—5 of Figure 2.

Figure 6 is a detail sectional view taken on the line 6—6 of Figure 5 and illustrating the nipple of a hypodermic syringe in connected relation with the head of the needle.

In practicing our invention, as illustrated in the drawing, we provide a hypodermic needle 5 comprising a cylindrical shank 6 formed with a bore 7. One end of the shank 6 is provided with a head 8 having a bore 9 of a greater diameter than the bore 7 and communicating with the latter. The head 8 is formed with a pair of diametrically arranged bayonet slots 11 for receiving pins 12 extending radially therein from the neck or plug 13 of a head 14 secured to one end of a stylet 15.

The opposite end of the stylet 15 terminates in a conical section 16, the latter extending beyond the opposite end of the tubular shank 6 when the stylet is disposed within the bore 7 and maintained in fixed relation therein through the instrumentality of the pins 12 and slots 11. The opposite end of the tubular shank 6 is formed with a frustum-shaped section 17 having nadiral and zenithal ends with the zenithal end being disposed distal with respect to the head 8 and postjacent the base end of the conical section 16 whereby the sections 16 and 17 coact to provide a conical point 18 for penetration within the body for receiving the injection. The outer end of the section 17 merges with the inner end of the section 16 to form a smooth conical surface between the outer and inner ends of the sections 16 and 17 as clearly illustrated in Figure 3 of the drawing.

In use, the stylet 15 is fitted within the needle 5 as illustrated in Figure 1 with the pins 12 being disposed in the slots 11 to maintain the section 16 immediately prejacent the section 17 to form the point 18 with a smooth conical surface. When the parts are thus positioned, the point 18 is inserted into the body for receiving the injection and as the sections 16 and 17 penetrate,

they will function to force body tissues away from the assembly and preclude severance or cutting of nerve fibers. When the needle has thus been inserted in the body for receiving the injection, the head 14 is slightly rotated with respect to the head 8 to permit withdrawal of the pins 12 from the slots 11 and subsequent withdrawal of the stylet 15 from the needle 5. When the stylet is withdrawn from the needle, the nipple 20 of a hypodermic syringe 21 is inserted into the bore 9, as illustrated in Figure 6, and the contents of the syringe 21 injected into the body, for receiving the injection, through the bore 7 whereupon the needle is removed.

From the foregoing, it will be apparent that I have provided a simple and effective medium for preventing or materially reducing the severance, cutting or inflicting of damage to the minute cord fibres or nerves surrounding the point of penetration of the needle and which means, due to its limited scope of incision, permits relatively quick healing of the wound.

Without further elaboration, the foregoing will so fully explain the invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. Moreover, it is not indispensable that all the features of the invention be used conjointly since they may be employed advantageously in various combinations and subcombinations.

It is obvious that the invention is not confined to the herein described use therefore as it may be utilized for any purpose to which it is adaptable. It is therefore to be understood that the invention is not limited to the specific construction as illustrated and described, as the same is only illustrative of the principles involved which are capable of extended application in various forms, and the invention comprehends all construction within the scope of the appended claims.

What we claim is:

1. In combination, a hypodermic needle having a tubular shank formed with a frustum-shaped body penetrating end section terminating in a sharp edge, a stylet detachably mounted in said shank and formed with a conical body penetrating end section disposed prejacent said first mentioned section and having a base with an outside diameter identical with the diameter of said edge to thus provide a smooth conical shaped portion between the distal ends of said sections for effecting penetration of a nervose and living body.

2. In combination, a hypodermic needle having a tubular shank formed at one end with a frustum-shaped body penetrating section and at its other end with a head, a stylet mounted in said shank and provided at one end with a head and formed at its other end with a conical body penetrating section disposed prejacent to and in continuous relation with said first mentioned section, the adjacent ends of said sections being of

coincident diameters and coacting together to provide a smooth conical shaped portion extending between the distal ends of said sections for effecting the penetration, and means connecting said heads together for maintaining said sections in fixed relation for said penetration.

3. In combination, a hypodermic needle having a shank provided with a bore extending throughout its length, said shank terminating at one end in a frustum-shaped body penetrating section having nadiral and zenithal ends, a stylet arranged in said bore of said shank and formed with a conical body penetrating section having a base disposed prejacent said zenithal end and being of an identical outside diameter as the outside diameter of said zenithal end to provide a smooth conical shaped portion extending between the distal ends of said sections for effecting penetration of a nervose and living body, said stylet being entirely removable from said shank to permit a hypodermic injection into said body through said bore.

4. A hypodermic needle of the class described, comprising an elongated tubular shank provided at one end with a head and at the other end with a frustum-shaped body penetrating section having nadiral and zenithal ends with the zenithal end of the section being distal with respect to said head, said shank adapted to detachably mount therein a stylet formed with a conical body penetrating end section extending without said first mentioned section and provided with a base having an outside diameter coincident with the outside diameter of said zenithal end to coact with said first mentioned section to provide a smooth conical shaped portion forwardly of said nadiral end for effecting the penetration, said head being provided with means adapted to secure said stylet thereto in fixed relation and thus maintain said sections in position for penetration.

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