

Nov. 26, 1957

S. J. EVERETT

2,814,296

SURGICAL NEEDLES

Filed April 11, 1955

Fig. 1.

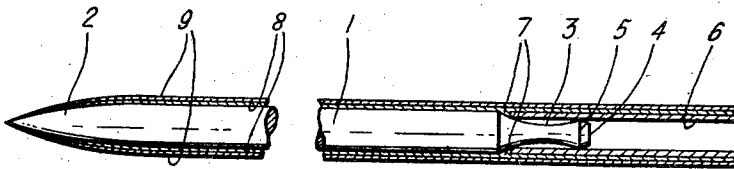
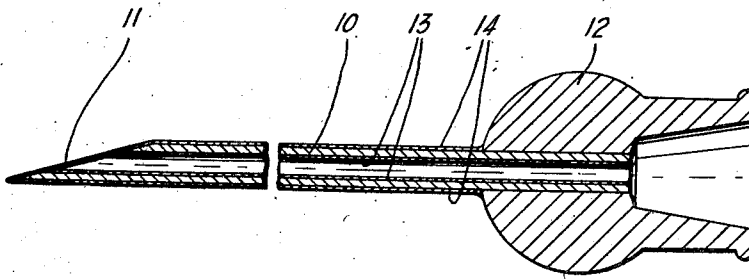


Fig. 2.



Inventor

SAMUEL JAMES EVERETT

By

Rosen & Whiting Attorney

1

2,814,296

SURGICAL NEEDLES

Samuel James Everett, Thornton Heath, England, assignor to S. & R. J. Everett & Company Limited, Thornton Heath, England, a British company

Application April 11, 1955, Serial No. 500,519

5 Claims. (Cl. 128—339)

This invention relates to surgical and like needles for medical purposes such as hypodermic needles and suture needles.

When using such needles considerable effort is sometimes required to overcome the resistance of the tissue to penetration and this of course increases the risk of bending or breaking the needle and also the discomfort of the patient as well as the effort which has to be expended in carrying out this operation.

The present invention decreases the frictional resistance encountered in forcing a needle through tissue or other material and thus mitigates all these disadvantages. The invention in effect provides a permanent lubrication and in the case of hypodermic needles also lubricates the bore, thus reducing the drag on the medicament passing through it. Moreover, in manufacturing such needles, one of the most costly processes is the production of a fine surface finish and this operation can be entirely eliminated by the invention, thus providing a needle of superior finish more economically. The surface coating also is such that particles of, for example, flesh, do not tend to adhere to it, thus making the needles easier to clean. The invention is therefore of particular value in the bores of hypodermic needles used for blood transfusion or for sticky medicaments, and for the eyes of suture needles.

According to the invention, a needle for medical purposes has at least a part of its surface coated with a polymerised halogenated ethylene such as polytetrafluoroethylene known as Fluon or polymonochlorotrifluoroethylene known as Hostafion. Preferably the coating is applied by spraying, painting or dipping the needles in a dispersion of Fluon or Hostafion, after which the coating is sintered. Needles are normally of stainless steel and, to prevent the coating from peeling, it may be necessary to use a priming coating of the dispersion before applying a final coating. Either the whole of the needle may be coated or, in the case of hypodermic needles, only the bores may be coated. In needles where interstices or changes of surface occur the coating may only be applied to protect and seal these interstices and provide a smooth fair surface. For most purposes Fluon gives a generally more satisfactory result than Hostafion.

Examples of needles according to the present invention is shown in the accompanying drawings, in which:

Figure 1 shows a suture needle, and
Figure 2 shows a hypodermic needle.

2

In Figure 1, the needle consists of a main shaft 1 pointed at 2 and with a shallow concave circumferential groove formed at its rear end, the extreme end having a conical taper 4. The diameter of the ridge 5 where the taper 4 and the concave annular groove 3 joins is somewhat less than the outside diameter of the shaft 1. To form an attachment for the suture, a sleeve 6, which is a tight fit over the ridge 5 is forced over the rear end of the needle until the front of the sleeve engages the shoulder formed by the concave groove at 7 and is thus held securely. The suture can then be inserted in the rear end of the sleeve into which it is secured by crimping or in some other way.

The gap between the front end of the sleeve 6 and the cylindrical surface of the shaft 1 of the needle forms an annular groove which represents a difficult sterilizing problem and is also likely to cause discomfort to the patient and damage to the tissue. To lubricate the whole of the surface of the needle and also to fill in this crevice and provide a smooth overall surface on the shaft which is not polished the whole of the needle is coated with Fluon by dipping the needle, as already described, in a dispersion of Fluon and then sintering the coating 8, thus forming a priming, after which a second coating 9 is applied giving a surface having a very low coefficient of friction and greatly reducing the irregularity at the groove between the sleeve 6 and the shaft 1, and smoothing out manufacturing irregularities in the surface.

In Figure 2, the shaft 10 of the needle pointed at 11 and secured in a mount 12, has its bore coated with a layer 13 of Fluon, and its outer surface also has a coating of Fluon 14.

I claim:

1. A needle for medical purposes having at least a part of the surface thereof coated with a thin adherent layer of polymerised halogenated ethylene, said coating serving as a permanent lubricant for the needle when passing through tissue.
2. A needle according to claim 1 in which an unpolished part of the needle surface is coated.
3. A needle according to claim 1 in which the coating extends over interstices in the surface of the needle.
4. A suture needle according to claim 1 in which the needle comprises a shaft having a portion of reduced diameter at the rear end thereof, a suture retaining sleeve fitting over the reduced portion, said coating extending over the junction of the surface of the sleeve and shaft.
5. A hypodermic needle according to claim 1 in which the bore of the needle is coated.

References Cited in the file of this patent

UNITED STATES PATENTS

1,613,206	Souttar	Jan. 4, 1927
2,607,342	Abel	Aug. 19, 1952
2,686,767	Green	Aug. 17, 1954
2,691,814	Tait	Oct. 19, 1954
2,702,037	Walter	Feb. 15, 1955