Aug. 13, 1957 S. J. EVERETT 2,802,468

SURGICAL NEEDLES

Filed Dec. 19, 1955

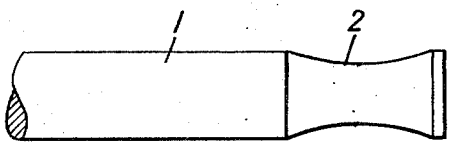

Fig. 1.

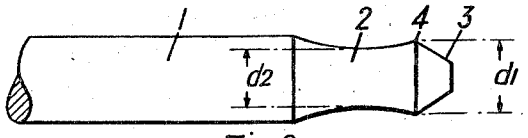

Fig. 2.

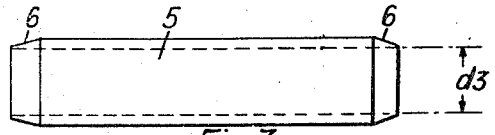

Fig. 3.

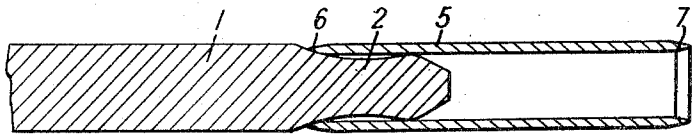

Fig. 4.

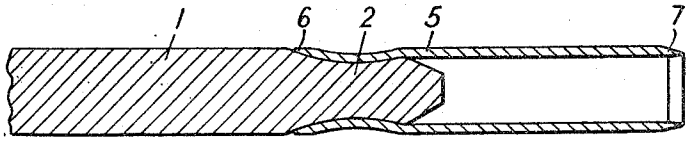

Fig. 5.

United States Patent Office 2,802,468 Patented Aug. 13, 1957

2,802,468

SURGICAL NEEDLES

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

Application December 19, 1955, Serial No. 554,059

Claims priority, application Great Britain December 24, 1954

5 Claims. (Cl. 128—339)

The present invention relates to sewing needles and particularly to surgical suture needles having a tubular socket at the rear end of the needle for the reception of the end of a suture.

According to the present invention, a suture needle is povided in which the walls of a tubular socket for the reception of the end of a suture are constituted by a tubular member gripping a neck formed at the rear end of the main portion of the needle. Preferably, the neck comprises a shallow annular grooved portion terminating in a chamfer, and the neck flares out towards the rear of the needle from its minimum diameter to a maximum diameter less than that of the main portion of the needle.

In order that the invention may be more clearly understood, reference will now be made to the accompanying drawings in which:

Figures 1 and 2 show the rear end of the main portion of a suture needle in two stages of its formation;

Figure 3 shows a tubular member;

Figure 4 shows the tubular member prior to locking on the main portion of the needle; and

Figure 5 shows the tubular member locked on the needle.

A suture needle according ot the present invention is made by first grinding the rear end **1** of the main portion of the needle to form a shallow annular grooved portion or neck **2** as shown in Figure 1. The end of the neck **2** is then ground to form a chamfer **3**, as shown in Figure 2, such that the neck **2** flares out from a minimum diameter *d***2** to a maximum diameter *d***1** at the ridge **4** between the groove and the chamfer **3**. A shape somewhat similar to an olive connection is thus produced at the rear end of the main portion of the needle.

A tubular member **5** for attachment to the rear end of the main portion of the needle is shown in Figure 3, both ends of the tube **5** being chamfered at **6**. For the purpose of illustration, the relative dimensions of the main and grooved portions of the needle and of the tube have been exaggerated, but in practice, the internal diameter *d***3** of the tube **5** may be approximately 10% less than the diameter *d***1** and 10% greater than the diameter *d***2**.

The tube **5** is secured to the rear end of the main portion of the needle by first forcing the tube over the ridge **4** and as far along the neck **2** of the main portion of the needle as is shown in Figure 4. The inclined surface of the groove will tend to flare the chamfered end **6** of the tube **5** in such a way that the outer surfaces of the main

portion of the needle and the tube **5** blend without a projecting burr. The punch or other tool used for this assembly process can be shaped in such a way that the other chamfered end of the tube for receiving the suture is also flared, as is shown at **7**. The tube **5** is finally locked on the main portion of the needle **1** by swaging or rolling it to the shape of the groove, as is shown in Figure 5. The outer surface of the suture needle so formed is thus relatively smooth and there is not an abrupt change of section to provide a point of weakness.

Although the diameter of the ridge between the grooved portion and the chamfered portion of the neck at the rear end of the main portion of the needle should always be somewhat greater than the minimum diameter of the grooved portion, the internal diameter of the tubular member may be equal to or greater than the diameter of the ridge. Although the outer diameter of the tubular member is shown as equal to the diameter of the main portion of the needle, it may be slightly greater than the diameter of the main portion of the needle and may then be swaged to give a smooth increase of section. The length of the tubular member may, of course, be varied, but in practice the length is sufficient to accommodate the shaped portion at the rear end of the main portion of the needle and between ⅛ and 3/16 of an inch of suture.

I claim:

1. A suture needle comprising a main portion and a tubular member for the reception of the end of a suture, said tubular member extending from the rear end of said main portion, said main portion being pointed at the front end and formed at its rear end with a shallow annular groove terminating in a chamfer and said tubular member gripping said groove and extending over said chamfer and beyond it.

2. A suture needle comprising a main portion and a tubular member for the reception of the end of a suture, said tubular member extending from the rear end of said main portion, said main portion being formed at its rear end with a neck terminating in a chamfer at the rear end of the main portion of the needle, said neck flaring out from a minimum diameter to a maximum diameter less than the diameter of said main portion of the needle, and said tubular member gripping said neck and extending over said chamfer and beyond it.

3. A suture needle according to claim 2, in which said tubular member has an internal diameter less than said diameter of said main portion of said needle.

4. A suture needle according to claim 2, in which said tubular member has an internal diameter less than said maximum diameter of said groove.

5. A suture needle according to claim 2, in which said tubular member has an outer diameter equal to said diameter of said main portion of said needle.

References Cited in the file of this patent

UNITED STATES PATENTS

1,613,206	Souttar	Jan. 4, 1927
1,960,117	Lydeard	May 22, 1934
1,981,651	Logan	Nov. 20, 1934

FOREIGN PATENTS

399,149	Great Britain	Sept. 25, 1933