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B. H. JONES
SHORTENER CARRIER
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Fig. 1

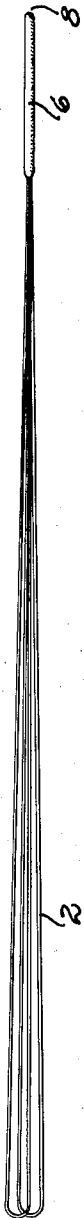


Fig. 2

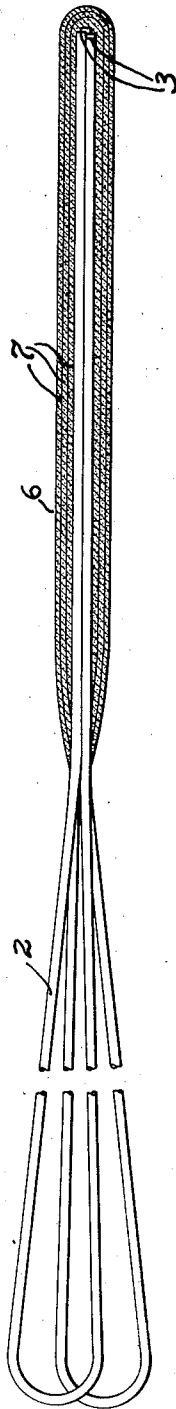


Fig. 3



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SHORTENER CARRIER

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7 Claims. (Cl. 128—303)

My invention relates to devices for holding a shortener while it is being used surgically, and an object of the invention is to provide a means for reenforcing and pointing the end of the material used for the shortener to facilitate its use.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of my invention. It is to be understood that I do not limit myself to this disclosure of species of my invention, as I may adopt variant embodiments thereof within the scope of the claims.

Referring to the drawing:

Figure 1 is a plan view of a four-strand shortener and carrier embodying my invention.

Figure 2 is a longitudinal sectional view through my carrier on a greatly enlarged scale.

Figure 3 is a plan view of the shortener and carrier showing the latter bent to facilitate its use.

In certain operations on the eye it is necessary to pass a shortener between selected tendon fibres. In one operation in ocular muscle surgery the technique of which has been highly developed by Dr. Roderic O'Connor of San Francisco, a group or bundle of fine surgical strands constituting the shortener is threaded through the chosen proper muscular fibres in such a way that when pulled taut the muscle fibres are looped upon themselves and thus shortened. The term "shortener" is herein used to designate a group of surgical strands of the character required for performing such operation; and which, when so threaded and tied, serves to effect a desired shortening of the muscular fibres of the human eye.

The individual strands or threads of the shortener are soft and pliable; and to facilitate passing them between the muscle fibres, which the surgeon has previously separated with a sharp instrument, the ends of the bundle are gathered together into a blunt carrier which holds them securely. By passing the carrier between the separated fibres, in the manner dictated by the skill of the surgeon the shortener follows, just as the thread in an ordinary needle follows the needle through cloth. The operation itself need not be further referred to here since Dr. O'Connor has fully described it in various medical publications available to medical men interested. My invention lies in the provision of the required shortener and carrier, which must not be bulky where they join. It is also preferable that the carrier be possessed of a certain degree of deformability or bendability so that it may be bent slightly. This permits it to be more readily directed within the

limited range of movement which the circumstances of its use imposes. Since surgical cleanliness is essential in the use of my invention the shortener and carrier must be such as to permit thorough sterilization; and since the way for the carrier is prepared for it, its leading end is blunt.

For the shortener strands 2 a silkworm gut or similar material may be used. Bauer & Black's dermal suture (medium) is satisfactory. For convenience the strands may be looped as shown. Four, six, eight or even more strands are useful.

The carrier of my invention is provided by gathering or bundling strands 2 together with their ends 3 approximately even; and then dipping the bundle so formed into a cellulose varnish to envelop or sheath the ends in a coating and allowing it to dry. This is repeated several times until the body 6 of the carrier is sufficiently built up with successive coats 7. I have used a cellulose compound sold under the trade-name "Duco," with success. After the first dip the ends of the strands are pressed together to pack them close and after permitting them to dry for 15 to 30 minutes, or long enough for the "Duco" to set, a second, and even a third coating is applied, also preferably by dipping. The treated ends are allowed to dry several hours and then preferably dipped in a cellulose compound sold under the name of "Metallic," which includes a bronzing powder. The whole is then allowed to dry thoroughly. The resulting carrier is a relatively long and slender body 6 with a rounded blunt point 8, and having a silver or metallic finish. The deformability is somewhat greater than when "Duco" alone is used to build up the body, which is only slightly larger than the bundle of strand ends embedded in it.

While I have found two coats of "Duco" and one coat of "Metallic" a satisfactory way to embed or envelop the ends in a sheath or carrier which readily takes the bend or curve required by the particular use to which it is put, it is obvious that the ends may be sheathed by treatment with any of the similar cellulose varnishes modified if necessary to a desired deformability by a plasticiser such as castor-oil. However on account of the complexity of the chemistry and manufacturing requirements of cellulose varnishes and compounds, I have found it convenient to use those named which are readily available.

However it is done, it is necessary that the carrier be not materially more bulky than the bundle of strands which form its core, that it be capable of being bent with the fingers to a desired curvature and that it retain the bent form, and finally

that it be capable of being rendered surgically clean.

I claim:

1. A surgical implement of the character described for shortening muscular fibres of the human eye comprising a plurality of strands having end portions only bundled in a deformable material binding said end portions firmly together to provide a relatively long and slender carrier for the strands, the opposite ends of said strands trailing from said carrier in freely separable relation.

2. The process of providing a carrier for a plurality of strands for shortening muscular fibres of the human eye which comprises grouping end portions only of the strands, and dipping the bundle thus formed into a liquid which will harden into a waterproof deformable sheath adhesively binding said end portions together and leaving the major portions of the strands trailing from one end of the sheath in freely separable relation.

3. A surgical implement of the character described for shortening muscular fibres of the human eye comprising a plurality of thin pliable strands having end portions bundled and bonded together to form a relatively stiff, bendable body from one end of which the major portions of the strands trail in freely separable relation, said body providing a carrier for threading the trailing portions of the strands into operative engagement with the ocular muscle fibres to be tied by the strands.

4. A surgical implement of the character described for shortening muscular fibres of the human eye comprising a plurality of thin pliable strands having end portions enclosed and adhesively bonded together by a coating of hardened film forming material to form a relatively stiff, bendable body from one end of which the major portions of the strands trail in freely separable relation, said body providing a carrier for thread-

ing the trailing portions of the strands into operative engagement with the ocular muscle fibres to be tied by the strands.

5. A surgical implement of the character described for shortening muscular fibres of the human eye comprising a plurality of thin pliable strands having end portions enclosed and adhesively bonded together by a coating of hardened cellulosic varnish to form a relatively stiff, bendable body from one end of which the major portions of the strands trail in freely separable relation, said body providing a carrier for threading the trailing portions of the strands into operative engagement with the ocular muscle fibres to be tied by the strands.

6. The method of preparing strand material for use in surgical tying operations performed upon the human eye for shortening ocular muscle fibres therefor which comprises grouping a plurality of long thin pliable strands with adjacent end portions of the strands substantially aligned and held together in a bundle, and applying to the bundled ends only a bendable covering enclosing and bonding the bundled ends together without materially increasing their bulk so that the bundled ends may serve as a carrier for threading the trailing strands into operative engagement with the ocular muscle fibres to be tied.

7. The method of preparing strand material for use in surgical tying operations performed upon the human eye for shortening ocular muscle fibres thereof which comprises grouping a plurality of long thin pliable strands together with ends substantially parallel and aligned, coating said ends only with a liquid film forming material having the property of hardening to enclose and bind together said ends, and maintaining the coated ends in an environment suitable for inducing hardening of the coating material until said coating has hardened to form a carrier for threading the strands through the ocular muscle.

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