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SPOOL FOR SURGICAL SUTURES

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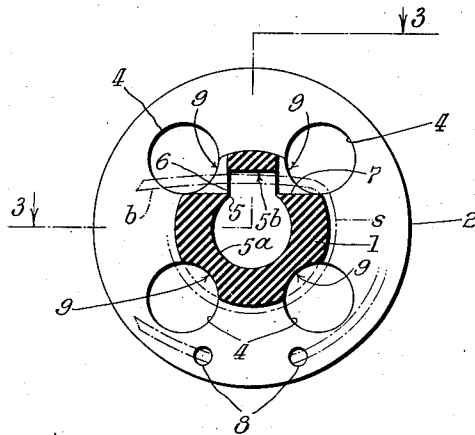


Fig. 2.

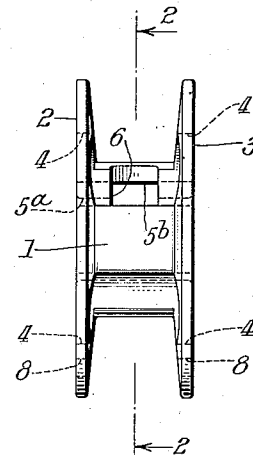


Fig. 1.

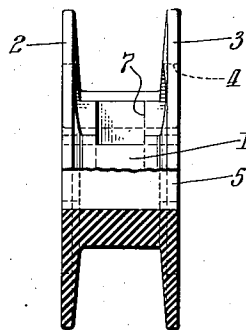


Fig. 3.

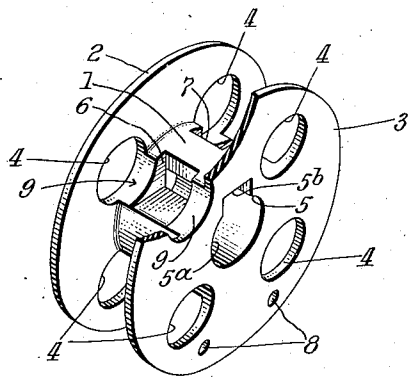


Fig. 4.

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SPOOL FOR SURGICAL SUTURES

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4 Claims. (Cl. 242—125)

This invention relates to suture spools for surgical stitching instruments and it has as an object to provide an inexpensive spool particularly adapted to hold relatively stiff suture such, for example, as catgut.

For convenience, the improved spool will hereinafter be referred to as a moulded spool but it is to be understood that the term "moulded" as used herein is intended to include spools made by other operations similar to moulding, such, for example, as by die-casting.

Because of the wiry nature of catgut it heretofore has been extremely difficult to secure the inner or beginning end of a catgut suture to the spool so that rotation of the spool will cause the catgut to be wound thereon. Likewise it has been difficult to prevent the catgut from unwinding itself from the spool after it has been wound thereon.

Heretofore it has been the practice to furnish, with each surgical stitching instrument, a limited number of relatively costly metallic suture spools, (e. g., four or six), made by a number of machining and assembling operations, and a spool-winding device by means of which the surgeon, or his assistant, may repeatedly rewind the spools. After the spools have been rewound, the spools and the suture thereon must be subjected to a sterilizing process to insure that the suture is absolutely sterile at the time of use.

This invention has as an object to provide a moulded spool adapted to hold both the beginning and finishing end of a suture wound thereon, which permits quick and complete sterilization of the suture thereon, and which is capable of being produced at such a nominal cost that it advantageously may be discarded after a single use.

Having rendered available such a spool, it becomes expedient and economically practicable for a surgeon to buy, in sealed ampoules, completely wound and sterilized spools of suture material ready for instant use in a surgical stitching instrument.

The above and other objects have been attained by the construction described in the following specification and illustrated in the accompanying drawing in which—

Fig. 1 is an edge view of a moulded spool embodying the present invention.

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of my improved

spool with a portion of one flange thereof broken away.

Referring more specifically to the drawing the invention is disclosed as embodied in a moulded spool comprising a substantially cylindrical hub 1 having formed integral therewith spaced circular flanges 2 and 3. Each flange is formed with a plurality of circular openings 4 which tend to reduce the weight of the spool and also permit sterilizing fluid to come into contact with the suture wrapped about the hub. The hub and each of the flanges is formed with a substantially key-hole shaped bore 5, the circular portion 5^a of which is adapted to receive the cylindrical spindle of a winding device, not shown.

Formed in opposite sides of the hub 1, substantially tangential to the circular portion 5^a of the bore 5 are moulded cavities 6 and 7 which break into the radially off-set substantially rectangular portion 5^b of the bore. Thus the cavities 6 and 7 and the portion 5^b of the bore afford a transverse opening through the hub and through which the inner or beginning end *b* of a suture *s* may be passed, thereby insuring that rotation of the spool will cause the suture to be wound upon the hub.

Adjacent its periphery, each spool flange is provided with two small openings 8 through which the outer or finishing end of the suture may be laced, as shown in dot-dash lines in Fig. 2, thereby to secure that end portion of the suture to the spool and prevent unwinding or spilling of the suture.

The hub 1 also is formed on its outer surface with four arcuate channels 9 which are aligned with the innermost portions of the openings 4 in the end flanges.

After the suture has been wound on the spool and the outer or finishing end has been laced through the small openings 8 in one of the flanges of the spool to prevent unwinding of the suture, the spool and the suture wound thereon may be placed in a conventional sterilizing apparatus. Thereupon the sterilizing medium is brought into contact with the wound suture not only through the outer layers thereof but also through the openings 4 in the flanges of the spool and through the channels 9 in the hub, thus effecting complete sterilization of the suture in a comparatively short time. The spool and the suture having been rendered sterile, they may be sealed in an ampoule and maintained sterile until ready for use.

Due to its construction, this spool readily may be made complete in a single and simple mould-

ing or die-cast operation in a suitable mould or die having one retractible part adapted to form the bore 5, other retractible parts adapted to form openings 4 and channels 9, other retractible parts designed to form the cavities 6 and 7, and still other retractible parts adapted to form the small openings 8. After the spool has been moulded or cast no machining or other finishing operations are required. Inasmuch as the mould or die and the method of making this spool form no part of this invention detailed illustration and description thereof is deemed unnecessary.

The spool may be made of any suitable material such, for example, as mouldable fibrous material, metal, or any suitable plastic material of which the thermo-setting phenolic condensation product known commercially as "Bakelite" is a good example.

Having thus set forth the nature of the invention, what I claim herein is:

1. A moulded spool for surgical suture comprising a hub and a pair of end flanges formed integral therewith, said hub and flanges having therein a longitudinal bore the major portion of which is substantially circular in cross section and a minor portion of which is offset from the major portion and extends outwardly therefrom, said hub also having therein a pair of opposed transverse cavities communicating with the off-set portion of said bore to form a transverse opening through said hub for the passage of one end of a suture to be wound about said hub.

2. A moulded spool for surgical suture comprising a hub and a pair of end flanges formed integral therewith, said hub and flanges having therein a longitudinal bore of substantially key-hole shape in cross-section, said hub also having therein two opposed transverse cavities aligned and communicating with the off-set por-

tion of said longitudinal bore, said cavities and off-set portion of said bore forming a transverse opening through said hub substantially tangential to the circular portion of said bore for the passage of one end of a suture to be wound about said hub.

3. A moulded spool for surgical suture comprising a hub and a pair of spaced end flanges formed integral therewith, said hub and flanges having therein a longitudinal bore of substantially key-hole shape in cross section, said hub also having therein a pair of opposed cavities communicating with the off-set portion of said bore to form a transverse opening through said hub for the passage of the beginning end of a suture to be wound about said hub, said flanges having therein a plurality of relatively large openings to permit sterilizing fluid to come into contact with suture wound upon said spool.

4. A moulded spool for surgical suture comprising a hub and a pair of spaced end flanges integral therewith, said hub and flanges having therein a longitudinal bore of substantially key-hole shape in cross-section, said hub having therein a pair of opposed cavities communicating with the off-set portion of said bore to form a transverse opening through said hub for the passage of the beginning end of a suture wound upon said hub, said flanges having therein a plurality of aligned relatively large openings to permit the passage of sterilizing fluid, said hub also having in its outer periphery a plurality of longitudinal channels aligned with the innermost portions of the openings in said flanges, to transmit to the suture wound upon the hub the sterilizing fluid passing through the openings in said flanges.

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