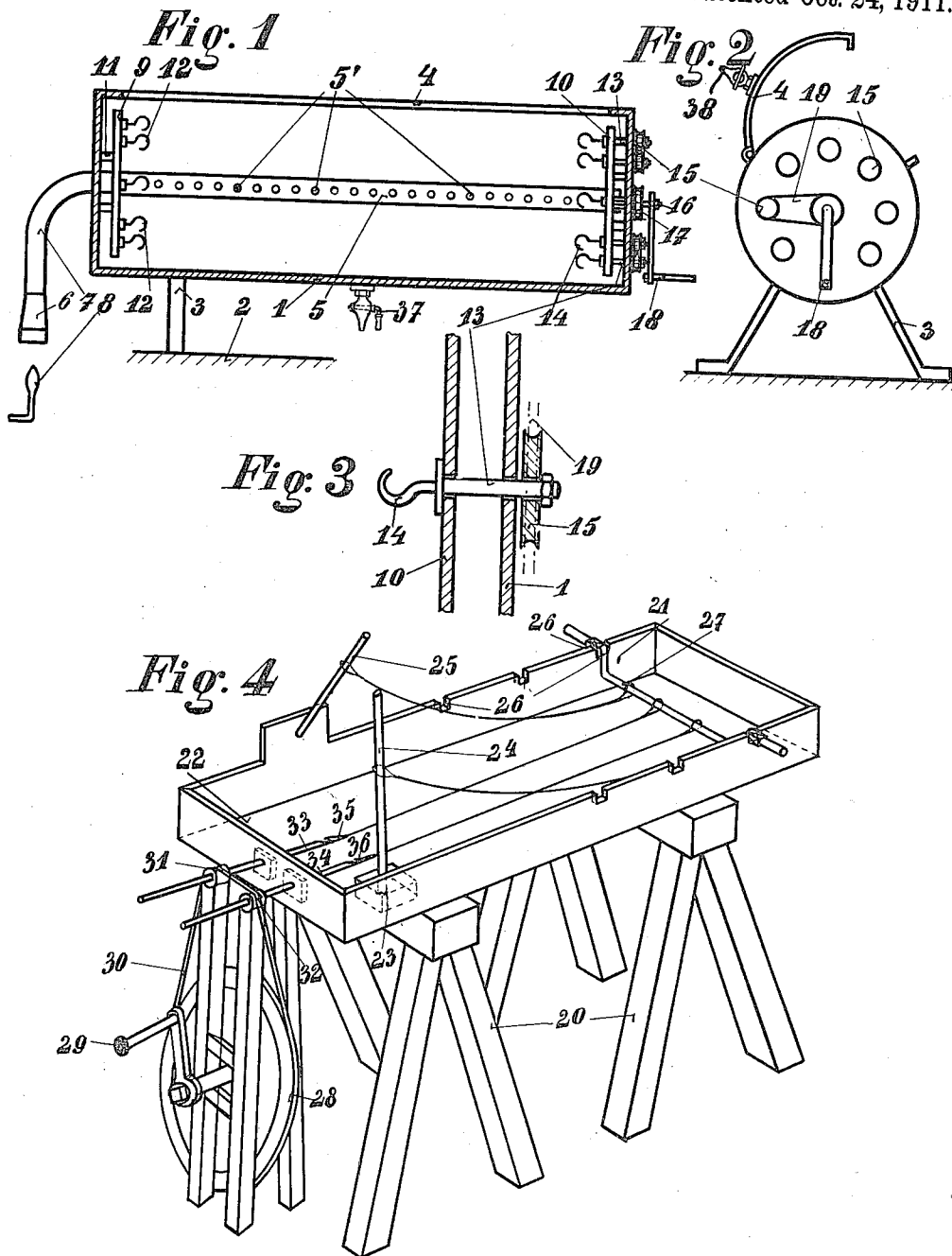


F. KUHN.
MANUFACTURE OF STERILE CATGUT.
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1,006,854.

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MANUFACTURE OF STERILE CATGUT.

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Specification of Letters Patent.

Patented Oct. 24, 1911.

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To all whom it may concern:

Be it known that I, FRANZ KUHN, a subject of the German Emperor, residing at Cassel, Germany, have invented certain new and useful Improvements in the Manufacture of Sterile Catgut, of which the following is a specification.

The present invention relates to improvements in the manufacture of cat gut, and relates more especially to a method for rendering catgut, such as is used for surgical purposes, sterile while working it up into the well known threads or cords, and the invention essentially consists in handling the catgut material solely mechanically within a suitable receptacle filled with a protective medium.

Catgut cords for surgical purposes are now obtained by treating the thin skins or guts in potash, slinging several of them over a hook and twisting them together by means of suitable device into a cord. During this process the material is freely handled by the operator and is readily exposed to other septic infection or contagion.

According to the present invention the material, *i. e.* the loose gut skins, as well as the finished article, the twisted, tough cord, is treated solely mechanically within a receptacle filled with a disinfecting medium, either liquid or gaseous, and if desired also with a dressing or tanning solution, separately or in combination with the disinfectant.

In order to make my invention more readily understood, I will now describe it with reference to the accompanying drawing, which shows apparatus suitable for handling the catgut according to my new method.

Figure 1 represents a vertical section through a sterilizing and drying device; Fig. 2 shows an end view thereof, and Fig. 3 a detail, on an enlarged scale; Fig. 4 represents a perspective view of another form of sterilizing apparatus.

Referring to the construction illustrated in Fig. 4, the shallow basin 21 is supported on horses 20 and is of a length greater than that of the longest catgut threads to be turned out. A glass rod 24 is removably held in a block 23 within the basin, and a similar glass rod 25 finds its support in the basin wall. Notches 26 are provided in the opposite longitudinal walls of the basin for receiving the suitably cranked glass rods

27. In one end wall 22 are water-tightly journaled the shafts or spindles 33, 34 carrying hooks 35, 36 and small pulleys 31, 32 respectively, which latter are driven from the big pulley 28 with handle 29 by means of the cord or belt 30. The basin is to be filled with a disinfecting liquid or with a liquid which disinfects and tans at the same time. For the former purpose the following solution may be used to advantage:—

Chlorid of sodium	10 parts
Mercuric chlorid	1 "
Water	1000 "

and for the combined tanning and disinfecting process:—

Iodid of potassium	4 parts
Pure iodine	2 "
Water	1000 "

If by the described means catgut cords are to be spun, the ends of the skins are looped and placed over the glass rod 27 at the one side and over the glass rod 25 at the other side. Without manual handling the loops are then singly removed from the glass rod 25 and distributed over the hooks 35, 36 (of which obviously there may be more than the two shown). By turning the crank handle 29, the spindles 33, 34 are rotated and the cords twisted together. The looped ends of the finished cords are then slid over the glass rod 24 and this latter and the rod 27 removed into a drying chamber.

The device shown in Figs. 1-3 serves not only for spinning the threads, but also for drying the finished product. It consists mainly of the drum 1 resting on a support 2 with feet 3, and provided with a gas- and watertight cover 4. The central tube 5 is perforated, extends externally as at 7 and runs out into a funnel 6. A source of heat 8, of any suitable construction, is arranged below the funnel, the hot air entering the tube 7, 5 and issuing through perforations 5' into the drum. The used air escapes through suitably provided openings 38. At the one end of the drum is secured at 11 a disk 9 provided with a number of hooks 12. A similar disk 10 is provided at the other end of the drum, whose hooks 14 form the ends of short shafts 13, journaled in the disk 10 and the adjacent drum head and carrying on the other, projecting ends small pulleys 15. Upon the stud 16 is secured the larger pulley 17 with crank handle 18. An elastic

belt 19 runs over the central pulley and one or several of the smaller pulleys. Obviously, any other suitable driving means may be used for the purpose of revolving one or more of the shafts 13.

The loop-ended catgut threads are attached to the hooks 12, 14 and are twisted together by manipulation of the crank handle. The drum may be filled with a suitable disinfecting medium, which may be liquid or gaseous. After formation of the cords, the liquid may be run off through cock 37, or the gas is allowed to escape through the vents 38 in the cover 4, and hot air is turned into the drum for drying the product.

The material throughout its treatment is not exposed to manual touch or other septic influences and is rendered absolutely and lastingly sterile, the sterilizing medium being forcibly squeezed in between the twists or turns, so to speak.

It will readily be understood that my invention is not necessarily restricted to the use of the particular construction of devices shown and described, but it may be similarly carried out with the same effects in apparatus of other construction.

What I claim is:—

1. The hereindescribed method for manufacturing sterile catgut ligatures, consisting in mechanically working-up the material

within a disinfecting medium, substantially as set forth.

2. Method for manufacturing sterile catgut cords, consisting in twisting the material together to form a cord within a disinfecting medium, substantially as set forth.

3. Method for manufacturing sterile catgut cords, consisting in mechanically working-up the material within a disinfecting and tanning medium, substantially as set forth.

4. Method for manufacturing sterile catgut cords, consisting in twisting together the material within a suitable protective medium, removing the excess of the latter and then suitably drying the product, substantially as set forth.

5. Method for manufacturing sterile catgut cords, consisting in twisting together the material within a suitable disinfectant, removing the excess of the latter, and then drying the product, all within the same receptacle, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANZ KUHN.

Witnesses:

ADOLF SCHMIDT,
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