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1,683,119

C. E. ZIEGLER

UMBILICAL CLAMP TOOL

Filed Sept. 21, 1927

Fig. 1.

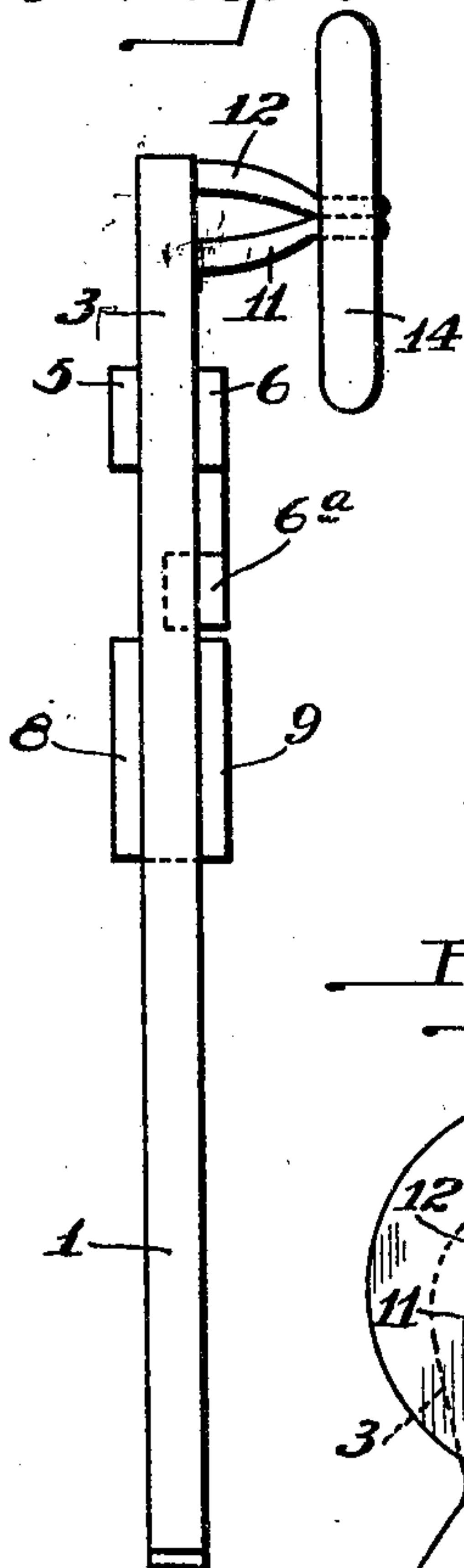


Fig. 2.

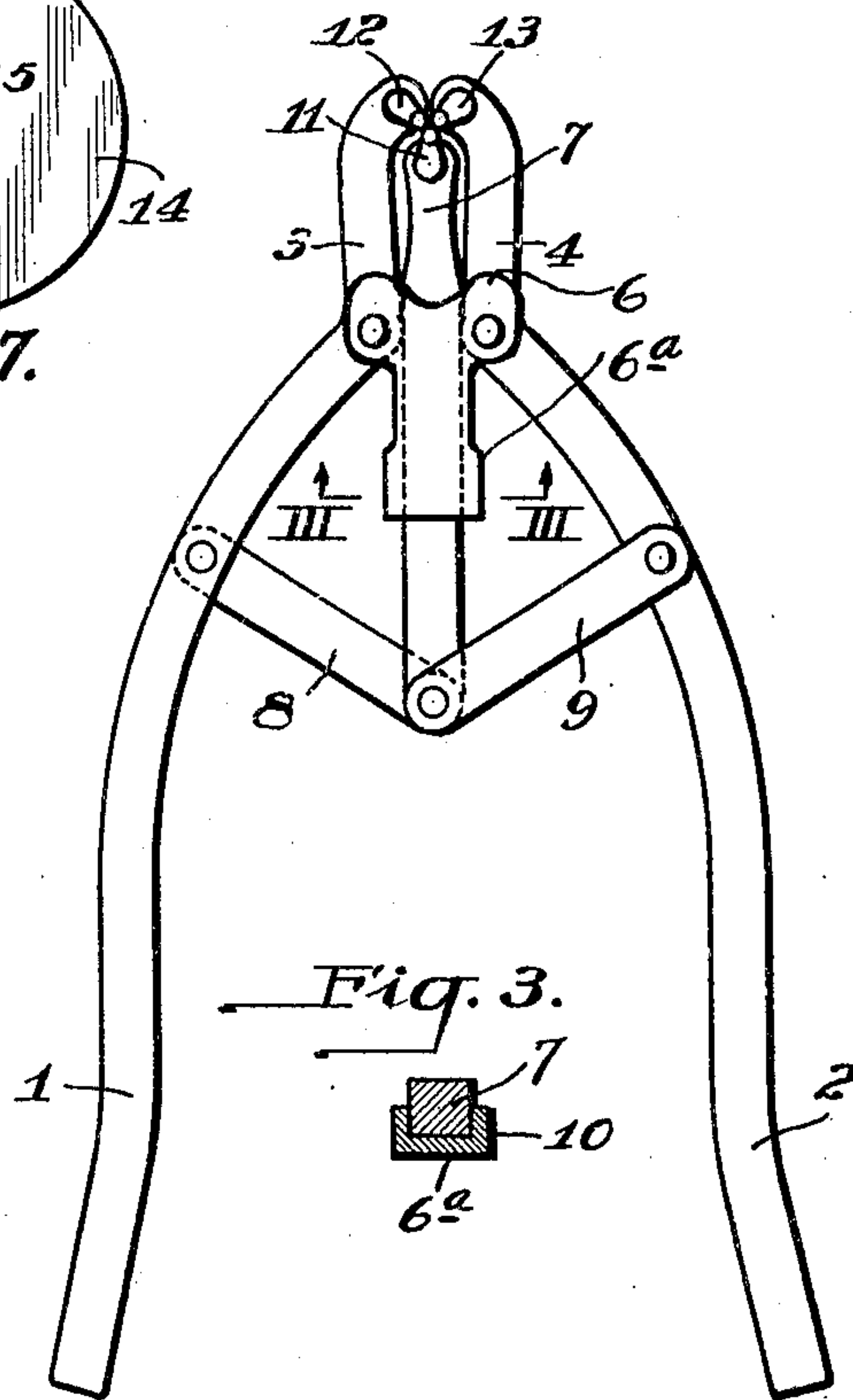


Fig. 7.

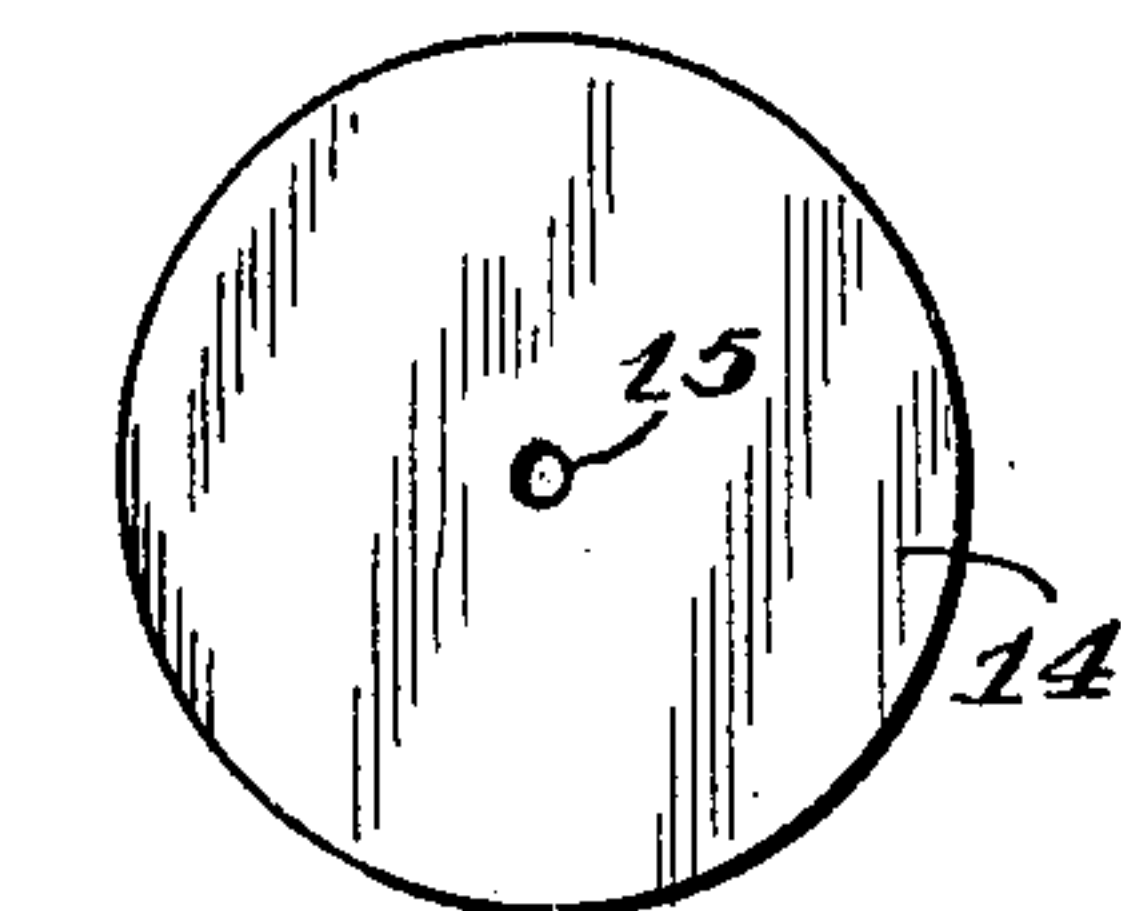


Fig. 8.

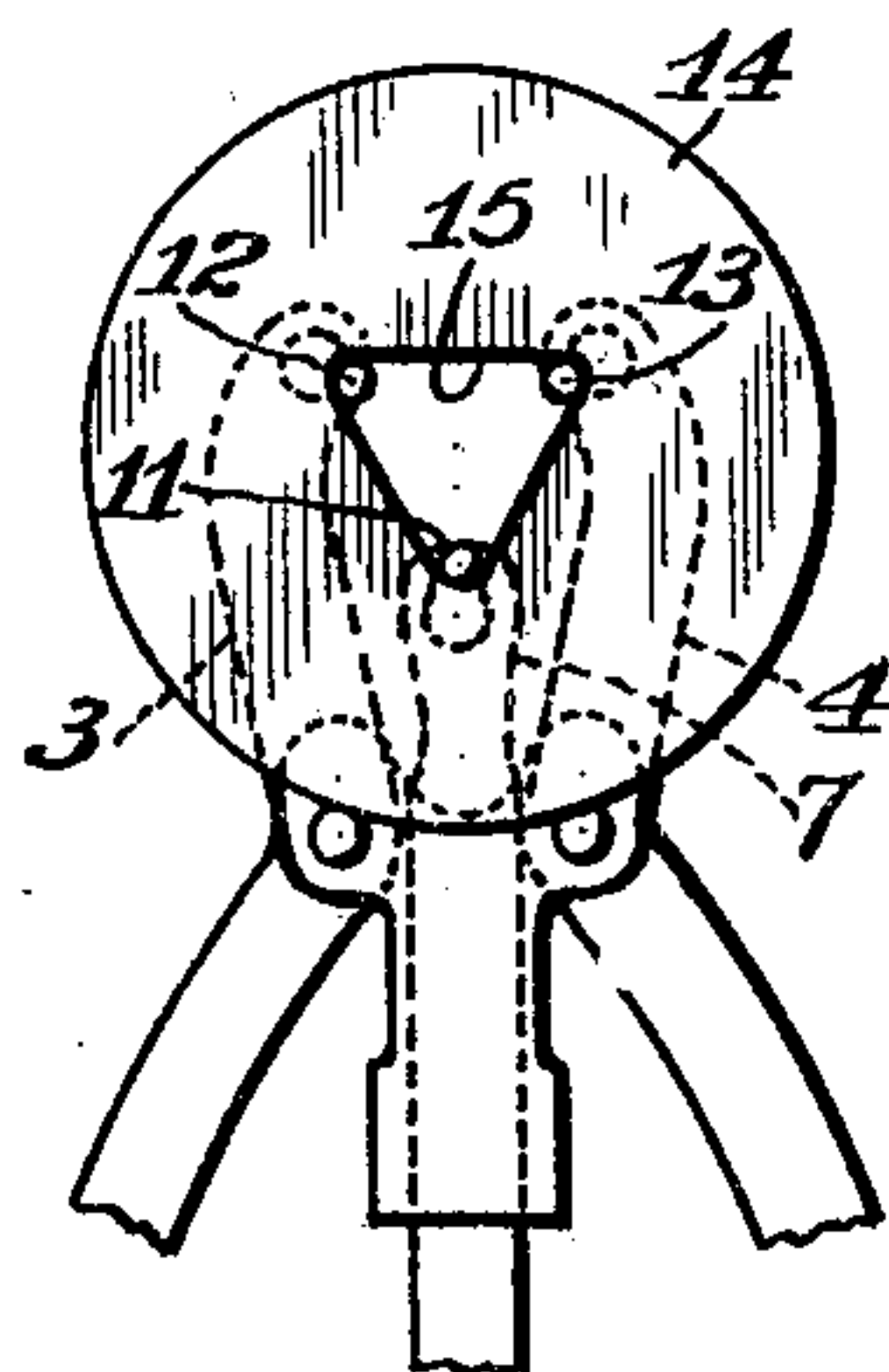


Fig. 3.

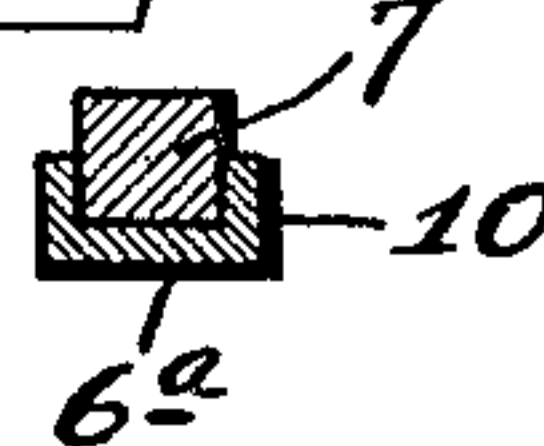


Fig. 4.

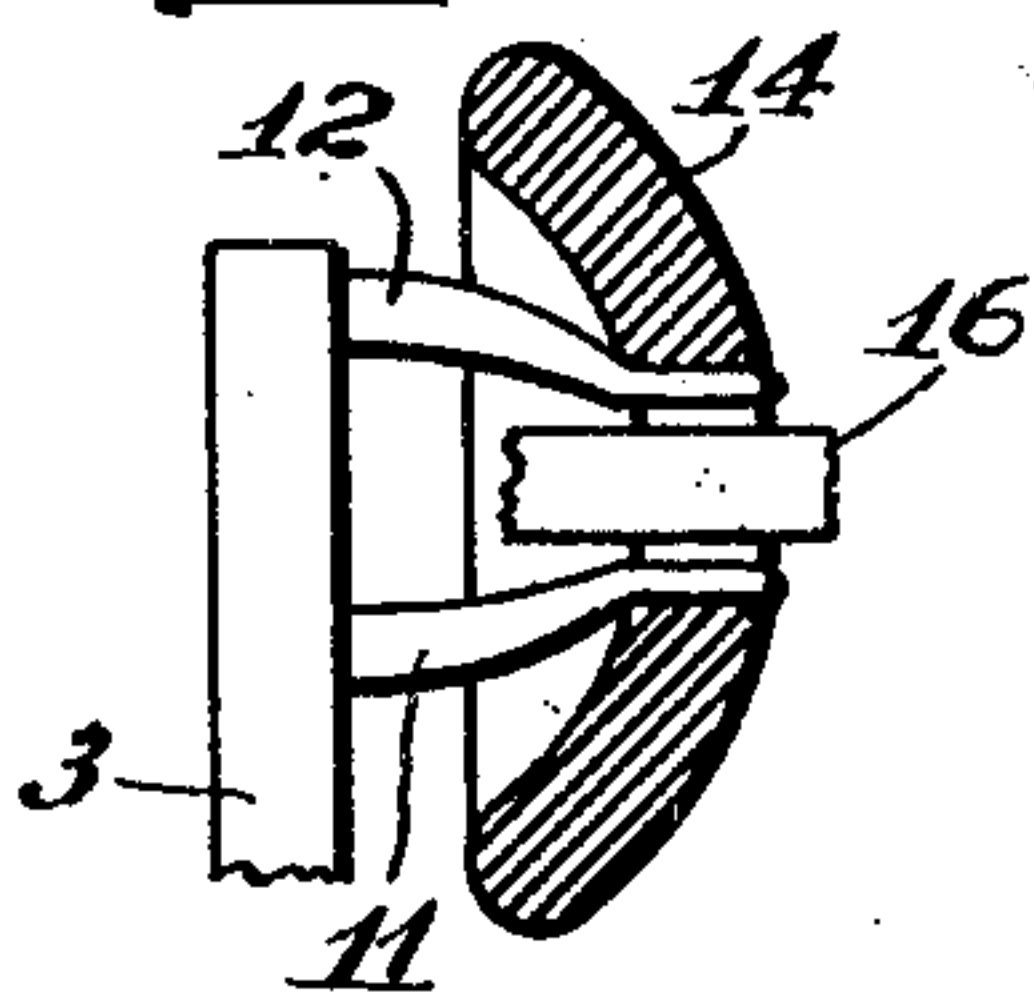


Fig. 5.

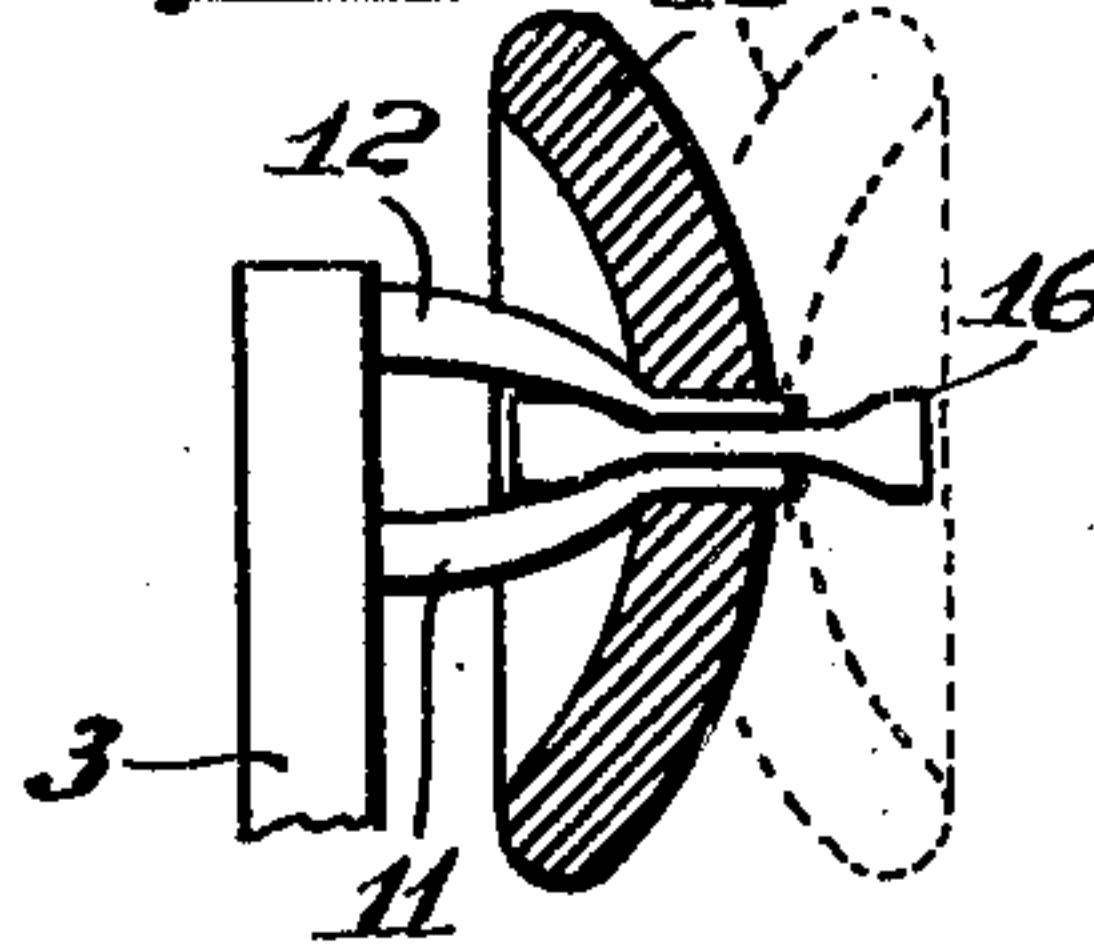
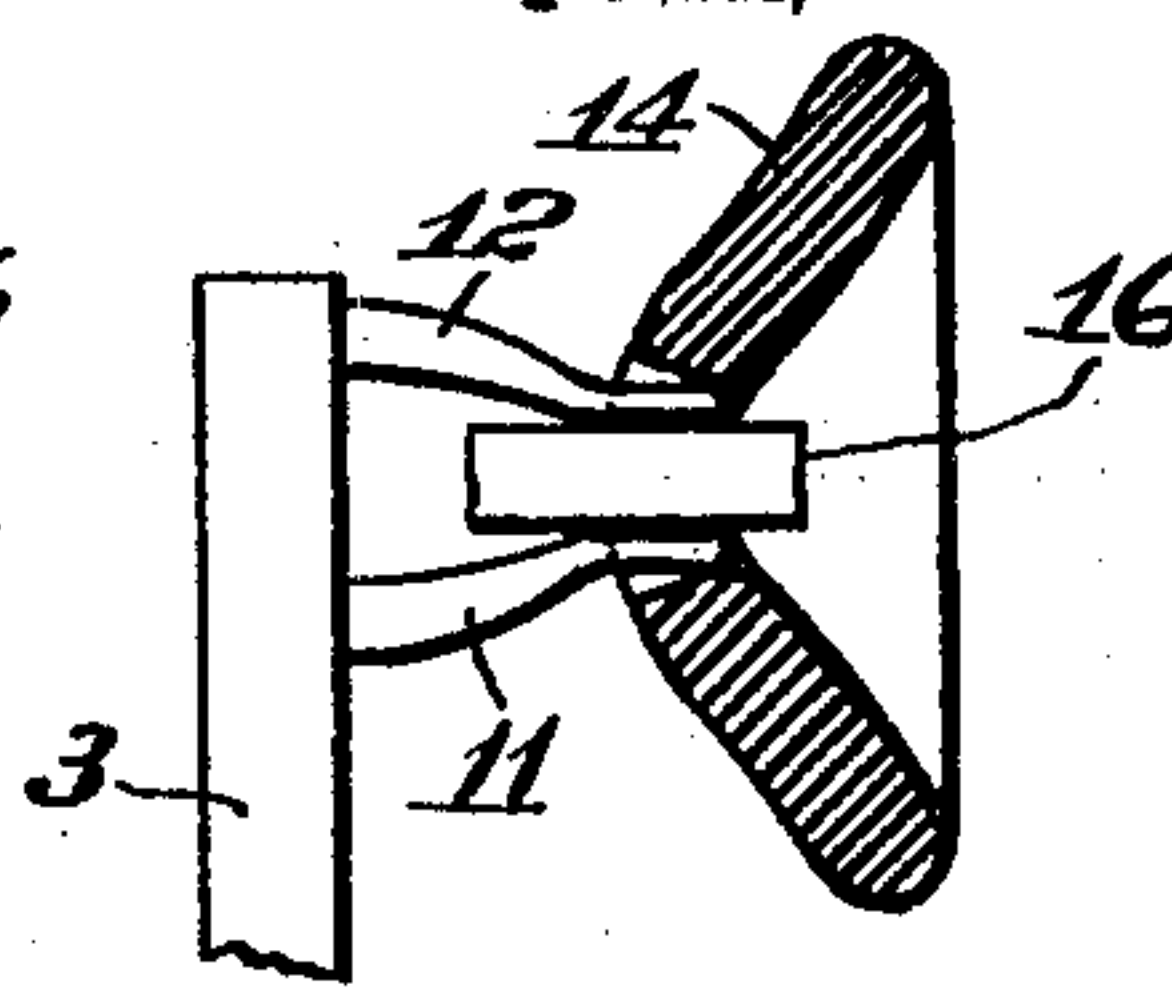


Fig. 6.



WITNESSES

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## UNITED STATES PATENT OFFICE.

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## UMBILICAL CLAMP TOOL.

Application filed September 21, 1927. Serial No. 220,915.

The invention relates to surgical instruments and especially to a device for compressing or clamping the umbilical cord of the new-born. The device consists of a rubber disc or button with a small hole in its center and an especially designed instrument by means of which the hole is distended sufficiently to receive the cord stump and the disc then automatically released to compress the stump at the exact place desired.

Obstetricians are pretty generally agreed that a mechanically acting clamp is more dependable and more effective than is the ligature when applied to the umbilical cord. The clamp eliminates all possibility of secondary hemorrhage and by rapidly removing all moisture from the crushed tissues hastens mummification and separation of the stump, while at the same time minimizing umbilical infection since without moisture bacterial growth is impossible. The clamp by narrowing the umbilical ring and acting as an umbilical compress also promotes ventral closure and the prevention of umbilical hernia in the new-born.

Rubber discs or buttons with an aperture therethrough for receiving the cord and heavy enough to exert the desired pressure upon the cord are among the means suggested for this purpose, because they are readily sterilized, inexpensive, capable of effectively performing the clamping and because they are not likely to produce mechanical irritation. Furthermore, when such a disc clamp is applied to a cord gauze may be readily packed between the disc and the body of the infant in such a manner as to effectively hold the severed end of the cord away from the body of the infant.

Such discs when strong enough to be effective are not readily applied to a cord, and the object of the invention is to provide a tool which can be used to expand the aperture in such a disc and after the cord has been inserted therein to automatically strip it from the tool onto the cord.

The invention is illustrated in the accompanying drawings, of which Fig. 1 shows a side view of the tool with a disc in place ready for expansion; Fig. 2 a front view of the tool; Fig. 3 a section on line III—III of the view shown in Fig. 2; Figs. 4 to 6 views illustrating the operation of the tool;

Fig. 7 a front view of a disc before application to the tool; and Fig. 8 a front view of the expanded disc shown in Fig. 4.

Referring to the drawings, the illustrative embodiment comprises a pair of handles 1 and 2, shaped to form jaws 3 and 4, which are pivoted in links 5 and 6. The pivoted jaws are formed to receive a reciprocating slidable jaw 7 connected at its opposite end between toggle joint links 8 and 9 attached respectively to handles 1 and 2. One of the jaw pivoting links is extended as shown in Fig. 2 to form an elongated shank portion 6<sup>a</sup>, the sides of which are formed to provide a guide channel and support 10 for jaw member 7, to prevent wobbling thereof. Disc-receiving prongs 11, 12, and 13 are provided on the jaws, preferably in such a manner that they are situated at the vertices of an equilateral triangle. The outer portions of the prongs are parallel to each other for a distance equal to the thickness of the discs so that a disc may be readily engaged by them, and the ends of the prongs are rounded or tapered inwardly so that a disc may be readily snapped from the prongs in the manner present to be explained. The disc is made from an elastic material, such as high grade rubber, and is designed to exert sufficient pressure upon the cord to accomplish its result. This effect is attained by making the disc of relatively heavy section, and by making the aperture sufficiently smaller than the cord which it receives that it will exert a heavy and constant pressure upon the cord.

The operation of the device is as follows: After a disc has been forced over the prongs, as shown in Fig. 1, the handles are compressed, expanding jaws 3 and 4 and depressing jaw 7, the prongs being uniformly extended from each other and simultaneously distending aperture 15, as shown in Figs. 4 and 8. As the aperture is being distended the disc buckles and its edges are forced by the operator's free hand to turn towards the base of the prongs, so that when opening 15 has been expanded sufficiently the disc is convex outwardly as shown in Fig. 4, and cannot spring from the prongs. The severed umbilical cord 16 is now passed through the distended aperture and the jaws returned to their closed position, resulting in the condition shown in Fig. 5. The edges of the disc are now pushed outwardly to the



position shown in dotted lines, and the handles compressed slightly to open the jaws, thereby setting up in the disc stresses which urge it toward the extended ends of the prongs, and these ends being rounded, the disc snaps off from the prongs and contracts around the infant's umbilical cord, a disc in the process of snapping off being shown in Fig. 6.

10 I claim:

1. A tool for applying an apertured disc umbilical cord clamp comprising in combination a pair of pivoted jaws, handles actuating said jaws, a third jaw adapted to reciprocate between said pivoted jaws, a toggle joint actuating said third jaw and connected to said handles, and prongs disposed on all of said jaws, said prongs having end portions parallel to each other for a distance equal to the thickness of said disc and adapted to engage the aperture therein and to maintain the disc thereon when deflected inwardly toward said jaws when said jaws are opened, and having rounded ends to effect removal of the disc upon a subsequent

jaw-opening movement after the disc has been deflected outwardly.

2. A tool for applying an apertured disc umbilical cord clamp comprising in combination a pair of handles, expanding jaws integral with the ends of said handles, a link pivotal connection between said jaws, a sliding jaw disposed between said expanding jaws, said link being formed to provide a guide for said sliding jaw, a toggle joint connected to said handles and to said sliding jaw for actuation of said jaw, and prongs disposed on all of said jaws, said prongs having end portions parallel to each other for a distance equal to the thickness of said disc and adapted to engage the aperture therein and to maintain the disc thereon when deflected inwardly toward said jaws when said jaws are opened, and having rounded ends to effect removal of the disc upon a subsequent jaw-opening movement after the disc has been deflected outwardly.

In testimony whereof I sign my name.

CHARLES E. ZIEGLER