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S. L. ROGERS

1,630,031

UMBILICAL CORD CLAMP

Filed April 19, 1926

Fig. 1.

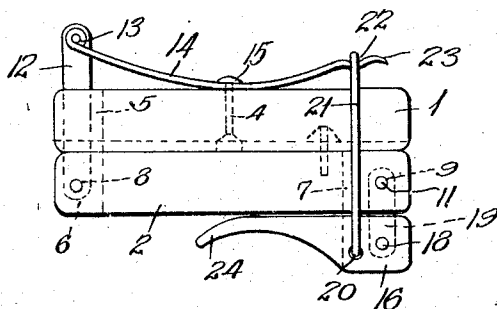


Fig. 2.

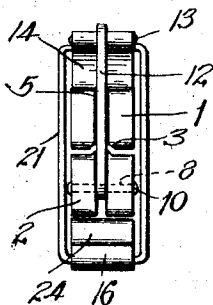


Fig. 3.

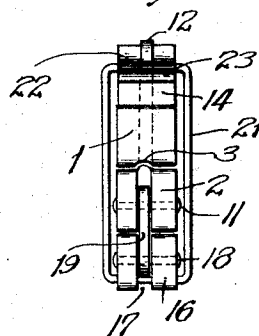


Fig. 4.

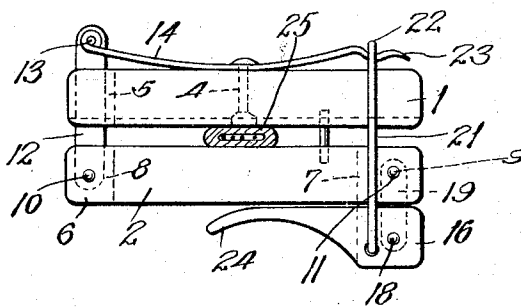
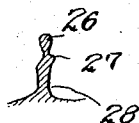


Fig. 5.



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UNITED STATES PATENT OFFICE.

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UMBILICAL-CORD CLAMP.

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This invention relates to umbilical cord clamps with the object in view to provide a funic clamp that is first of all practical and dependable, secondly, an instrument that is simple, durable, and incidentally inexpensive and easy to manufacture. Said clamp is adapted to be easily and quickly applied before severing the funis, which is small and light in weight, hence worn without inconvenience or injury to the infant and can be easily removed, constantly sterilized and used without impairment of utility.

Further objects and advantages of this improvement in umbilical cord clamps will appear in the following description:

In the accompanying drawings which illustrate the preferred embodiment of the invention, Figure 1, is a side view, Figures 2 and 3 are end views, and Figure 4 an elevation showing the improved clamp applied to the cord and Figure 5 a sagittal section of the cord after removal of instrument.

Similar reference characters indicate corresponding parts on all the figures of the drawings.

The instrument embodying my invention comprises the two compression blocks or gripping jaw members 1 and 2 provided on the approximated surfaces with any type of clamping faces so that the depressions of one matches elevations of the other, the drawing showing a longitudinal tongue and groove type as illustrated at 3 in Figure 3 which is easy to manufacture and found to be entirely satisfactory in present use of the instrument. In this modification a suitable element such as a peg on one face and seat on other as shown in Figures 1 and 2 may be used to prevent relative longitudinal movements of the compression members.

The block 1 is provided with aperture 4 extending from the grooved face to opposite surface, and a slot 5 as well shown in Figs. 1 and 2. The other compression member 2 is provided with similar slots in either end shown at 6 and 7. Apertures 8 and 9 are drilled, into which respectively pins 10 and 11 are riveted. Onto pin 8 is swung the arm or spring shackle 12 through the outer end of which the pin 10 passes transversely. To said pin a lever spring of suitable strength 14 is secured as indicated in the drawings.

The spring is also secured at its mid point

to the mid point of the clamp member 1 as shown, by a rivet through the aperture 4 provided as above.

A suitable compression lever as 16 that may be from the same stock as the compression members is also provided as shown in Figs. 1, 3, and 4. This likewise has a slot 17 with the aperture through which passes pin 18. A link 19 serves to hinge the compression lever 16 to the compression jaw 2.

A second aperture 20 in member 16 is drilled to receive the yoke 21 which is adapted to swing over the ends of the compression members and engage in the groove or seat 22 of the spring 14 at a distance from the pin 15 equal to the distance of pin 15 from pin 13. For convenience a lip 23 may be provided as is obvious. The width of the spring should be equal to that of the compression jaws and lever to make it rigid and to firmly receive the outer end of the yoke member 21 and to enhance the durability of the instrument.

The operation of device is as follows: Normally the parts occupy the position shown in Fig. 1. To apply, it is apparent that the compression lever 16 is swung outward by forces applied at the end 24 which in turn is so provided that the thumb and forefinger can easily grasp same. The principle of this type of release being common it is believed that further detail is unwarranted. Yoke 21 having been thus displaced from groove 22 and swung outward and away from the compression jaws 1 and 2 it is obvious that the said compression members may be separated widely to receive the unsevered cord through the hinge action of the spring 14 and its shackle 12.

The apparatus is now applied transversely to the umbilical cord close to the cutaneous surface, the yoke slipped over the lip 23 into the seat or groove 22 and brought back into place as shown in the applied drawing Fig. 4, and cord cut close to outer surface of the compression members. In practice a pad of aseptic gauze or cotton and sterile gauze binder are pinned in place over the instrument and contained funic stump.

It will be noted at once that the novel feature of this funic clamp is the fact that the compression members separate in parallel when the cord is placed between them and that as Wharton's jelly is squeezed out

the constant tension of the spring is exerted equally to all parts of the compressed stump, even though one side becomes more depressed than another due to position of umbilical arteries and vein or other variations in size or contour, thus absolutely preventing any danger of instrument becoming detached.

In twenty-four hours, all that remains of the stump is a thin ribbon of dry tissue, a sagittal cross section of which is shown in Fig. 5, 26 indicating the cut end, from which Wharton's jelly has exuded, while 27 indicates the impression caused by the tongue and groove of the compression jaws, all of which is clipped off, at the end of twenty-four hours at junction of stump and cutaneous margin.

It will be noted that this instrument is complete in itself, i. e. no accessory instruments are used in its application and that it is applied to the intact cord, it being found from experience that it is impossible to neatly apply a clamp to the slippery cut and bleeding cord. This factor together with the constant compression force exerted by the durable and strong lever spring acting at the mid point of the compression jaws is firmly believed to render a much needed clamp in the art and science of medicine especially one adapted to the care of the umbilical cord. By the old method of tying the cord it often takes ten days and not unusually much longer for the cord to slough off, and in the meantime there is grave danger of umbilical infection, not only because of an open wound but the presence of the large umbilical vessels serve as a portal of entrance. Further gradual absorption of the septic materials resulting from the necrosis of the stump is believed by many to be the exciting cause for such symptoms as jaundice of the new-born. Clamps now in the

art will not remain in position, are not easy to apply, and not durable.

The clamp designed, as pointed out, may be made of any material which will not corrode and is resistant to fluids and acids, but aluminum for the compression members and lever is preferred as it not only combines the above qualities but makes the instrument extremely light in weight, yet durable, and adds to the qualities of simplicity, ease of application, and positiveness of retention, that of ease of manufacture, and nondeterioration by sterilization.

Various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, I claim as new and desire to secure by Letters Patent:

1. An umbilical cord clamp provided with a lever spring swung from a shackle at one end and yoke at other, and said yoke exerting tension on the spring by its eccentric pivot action through a single lever hinged to one of the compression jaws.

2. An umbilical cord clamp provided with a lever spring swung from a shackle at one end and yoke at other, hence when under compression, exercising pressure on one compression member from the center, and from other compression member at either end.

3. An umbilical cord clamp consisting of two compression blocks which approach one to the other in parallel, said approach being brought about by a tension spring attached to one of said compression blocks at the center thereof, and attached to the other block by a link at one end, and through a yoke, compression lever and link to the other end thereof.

In testimony whereof I affix my signature.
SAMUEL LYLE ROGERS.