

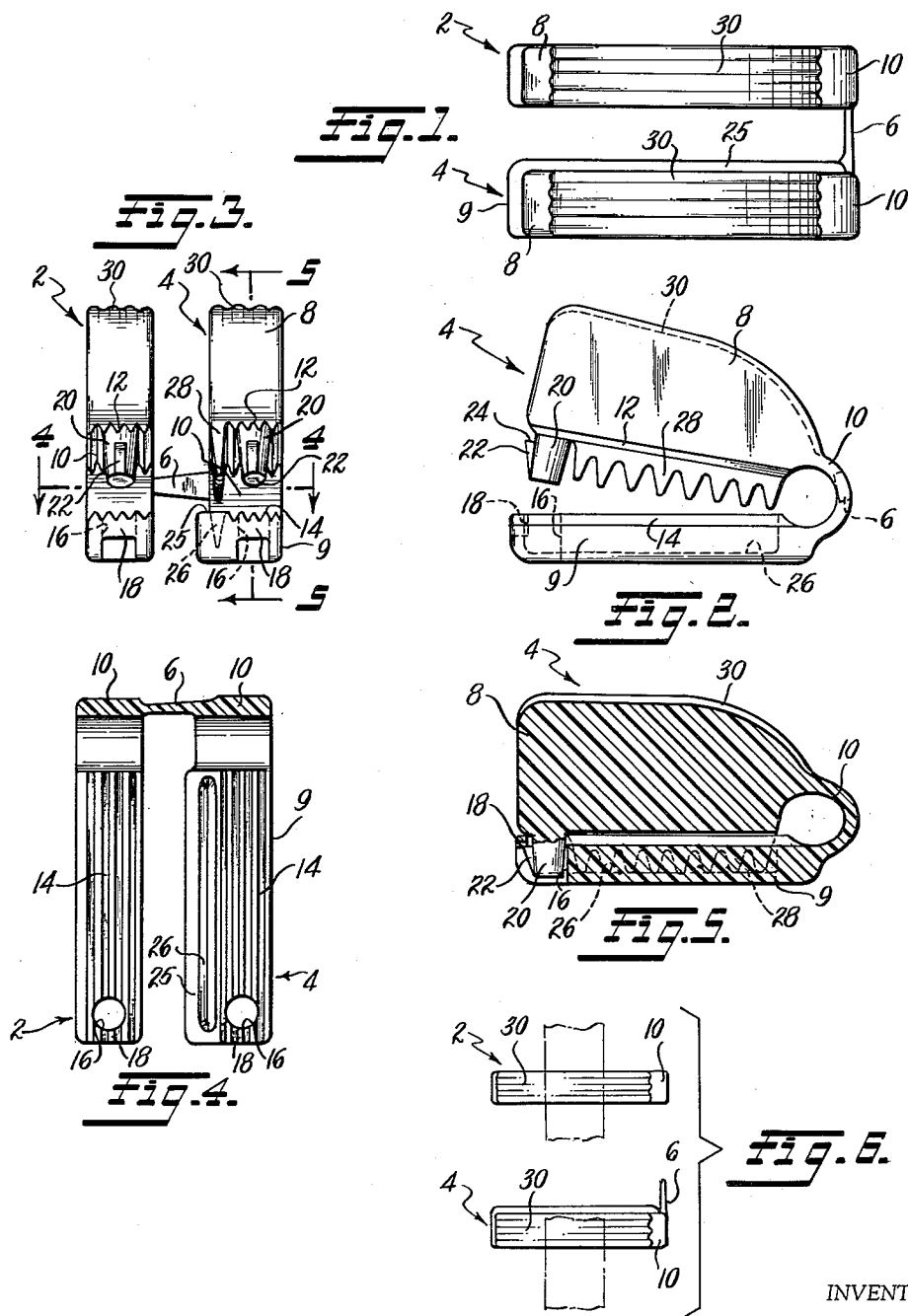
Oct. 15, 1963

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3,106,919

UMBILICAL CLAMP

Filed July 26, 1962



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3,106,919

UMBILICAL CLAMP

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Filed July 26, 1962, Ser. No. 212,527

1 Claim. (Cl. 128—346)

This invention relates to an umbilical clamp and a combined clamp and cutter to ligate the umbilical cord and to simultaneously cut the cord wherein the segments are separated and clamped.

In brief, the invention comprises a pair of parallel clamps connected together temporarily whereby they may be simultaneously applied to the umbilical cord to clamp spaced portions thereof. One of the clamps is provided with cutting means to sever the cord between the clamped portions simultaneously with setting of that clamp. The means temporarily connecting the two clamps is readily separable, as by breaking or the like, so that the clamps and severed ends of the cord may then be readily separated. Additional novel features reside in the structure of the clamps and the cutting device and particularly wherein, in a preferred embodiment, the entire device is molded as a one-piece integral structure from a suitable material which is sterilizable by boiling or otherwise and which material is neither irritating nor sensitizing to the skin. By way of example only, a suitable material would be a linear polyethylene resin. Such materials may have sufficient rigidity to function properly as a clamp and to maintain a cutting edge while yet being sufficiently flexible to provide for relative hinging and latching of the clamp elements, as will be described.

It is, therefore, an object of this invention to provide an umbilical clamp device comprising spaced clamps for clamping spaced points of an umbilical cord and associated means to simultaneously sever the cord between the clamped portions.

Another object of the invention is to provide a clamp device of the type set forth constructed as an integral unit of lightweight material and which is inexpensive to produce yet reliable in operation.

Still another object is to provide a clamp for an umbilical cord which clamp comprises two relatively movable portions integrally joined by a resilient hinge and having latching means for holding them in clamping position.

A further object is to provide a clamp of the type described having means thereon for simultaneously clamping and cutting an umbilical cord.

An additional object is to provide a clamp device which when set is completely secure, not subject to slipping and not subject to inadvertent release.

Further and additional objects and advantages will become apparent to those skilled in the art as the description proceeds with reference to the accompanying drawings wherein:

FIG. 1 is a top plan view of a pair of joined clamps according to the present invention;

FIG. 2 is a side elevational view of the structure shown in FIG. 1;

FIG. 3 is an end view of the clamps of FIG. 2, as seen from the left side of that figure;

FIG. 4 is a horizontal sectional view taken substantially along the line 4—4 of FIG. 3;

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FIG. 5 is a vertical sectional view taken substantially along the line 5—5 of FIG. 3 but showing the elements latched in clamping position; and

FIG. 6 is an exploded view showing the clamping device applied to an umbilical cord which has been severed thereby and further showing the clamps in separated position.

The drawings illustrate a preferred embodiment of the invention which is shown therein on rather enlarged scale. In actual practice the device would be much smaller than illustrated, being of the order of 1½" to 2" in length.

The complete device comprises a pair of clamps 2 and 4 and a connecting bridge or spacer 6. The clamp 4, for example, comprises an upper element or jaw 8 and a lower element or jaw 9 joined together at one end by an integral band or strip of resilient material 10 serving as a hinge whereby the elements 8 and 9 are hingedly connected at one end. The opposed faces of the elements 8 and 9 are provided with longitudinal corrugations 12 and 14. The corrugations extend longitudinally of the opposed faces and are arranged with the crests of the corrugations 12 opposite the depressions in the corrugations 14 so that the corrugations will nest in mating relation when the clamp is closed. The crests of all corrugations are preferably rounded or blunted so as to clamp the umbilical cord without cutting or injuring the same. By extending the corrugations longitudinally of the elements 8 and 9, those corrugations can extend transversely across the clamped umbilical cord as shown in FIG. 6, and the clamping is thus secure without danger of slipping.

As best seen in FIGS. 2 and 5, the ends of the elements 8 and 9 opposite the resilient hinge 10 are provided with cooperating latch members comprising an opening 16 in the end of element 9 and extending through the corrugated face thereof. The opening 16 also extends forwardly below the corrugated surface so as to leave only a relatively small overhanging portion 18 at the forward edge of the opening 16. Since the material of which the clamps are made is somewhat resilient, the overhang 18 can be deflected slightly. The upper clamp element 8 is provided with a projection 20 at its outer end in position to enter the opening 16 when the clamp is closed. At its forward edge the projection 20 carries a protuberance 22 having a shoulder 24 thereon. When the clamp is closed, the protuberance 22, being tapered, deflects or distorts the overhang 18 until the shoulder 24 engages thereunder and the clamp is thus latched in closed position as shown in FIG. 5.

The clamp 4 is further provided with a cutting arrangement. As seen in FIG. 2, the lower element 9 of the clamp 4 extends laterally to the left beyond the corresponding edge of the upper clamp element 8 to define a ledge 25. The edge portion of element 9 is further provided with a longitudinal groove 26 positioned directly opposite a cutter blade 28 formed at the edge of the upper clamp element 8. As shown in FIG. 6 the cutter blade 28 is serrated, having sharpened lower edges and points adapted to readily penetrate and sever the umbilical cord. Obviously, however, the cutter blade 28 may be a straight but sharpened edge and could comprise one blade of a shear, the other blade of which would be defined by an edge of a corresponding groove in the clamp element 9. The integral hinge 10 is so formed

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that it normally holds the clamp elements in the open position shown in FIG. 2 whereby they are always ready for immediate application.

The clamp 2 may be identical in all respects to the clamp 4 except that it has no groove 26, ledge 24 or cutter blade 28. It is merely and simply a clamp held by the spacer 6 in spaced parallel relation to the clamp 4. As shown in the drawings the spacer 6 is tapered from the clamp 4 toward the clamp 2 so that its juncture with the clamp 2 defines a reduced cross sectional area portion which is the weakest part of the structure and at which it may be broken away to separate the clamps after application, as also shown in FIG. 6. Other spacing or holding means could be provided, for example, the spacer 6 could comprise frictionally engageable members whereby the clamps may be readily separated but again joined for later reuse. It will be apparent that the use of the clamp device of the present invention is a very simple and easy matter since both clamps are normally held in spaced parallel relation adjacent each other and both are normally in the open position. It is only necessary to slip both clamps over the umbilical cord to put them in operative position. Preferably, the clamp 2, which is usually applied to the new-born stump, is closed first and then clamp 4 is closed, which effects simultaneous clamping of the maternal stump and simultaneous severing of the cord between the clamps. It is then a simple matter to separate the clamps in the manner already described. After closing the clamp 2 the cord extends across the ledge 25 adjacent the cutter groove 24 and subsequent closing of the clamp 4 would result in clean cutting of the cord without its being creased or distorted at the cut portion.

Preferably, at least the upper clamp element 8 of each pair is provided with a non-slip formation 30 on its upper edge to facilitate grasping the same securely. The clamps may be disposed of after one use or may be re-

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covered, sterilized and reused either for humans or animals having umbilical cords.

While a single specific embodiment of the invention has been shown herein, it is to be understood that the same is merely illustrative, that the invention may be incorporated in other embodiments falling within the scope of the appended claim.

I claim:

An umbilical clamp device comprising: two clamps, each comprising a pair of elongated clamp elements having opposed faces provided with mating corrugations; resilient hinge means integrally joining said elements together at one end for movement of said corrugated faces toward and from each other, said hinge means normally holding said faces apart; and cooperating latch means at the other ends of said elements for holding said faces together with their corrugations in mating relation; means separably holding said two clamps in fixed side-by-side relation for simultaneous actuation; one of said clamps having a cutter adjacent that edge thereof nearest the other clamp, said cutter being permanently fixed to its clamp whereby said clamps may be simultaneously applied to an umbilical cord, simultaneously closed and latched to thereby cut and clamp said cord, and then separated and left in place on the cut ends of said cord.

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