June 24, 1958 D. H. MOOSE 2,840,081

NAVEL CORD BANDER

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Fig. 1

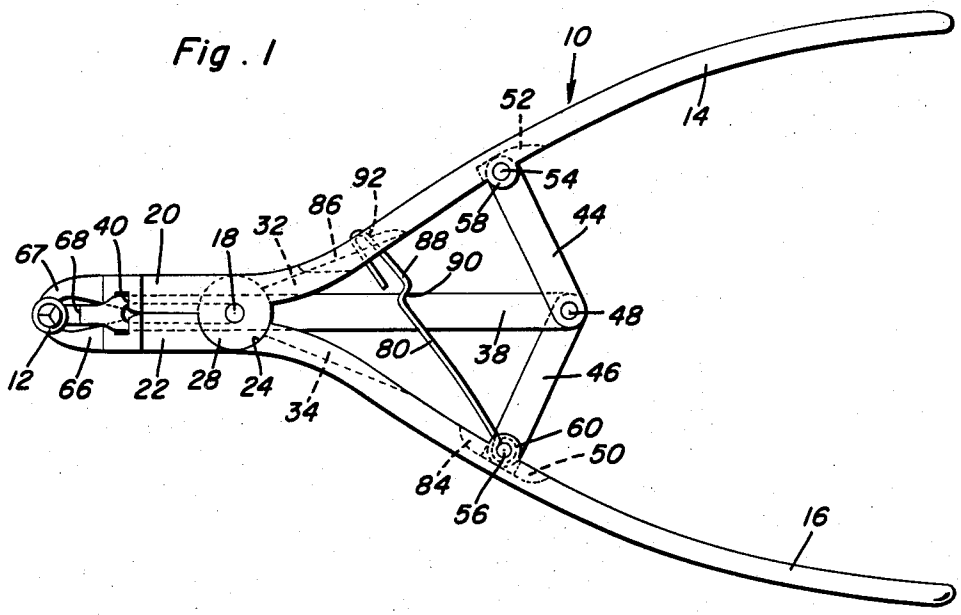
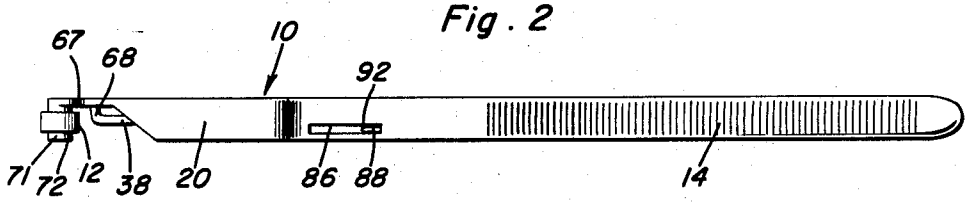


Fig. 2



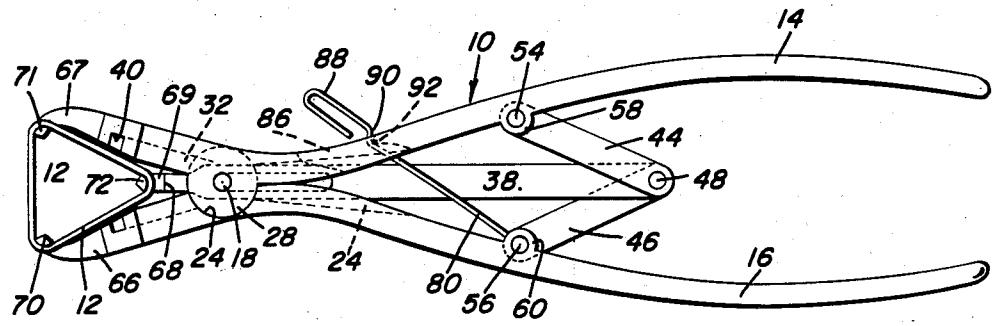


Fig. 3

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Fig. 4

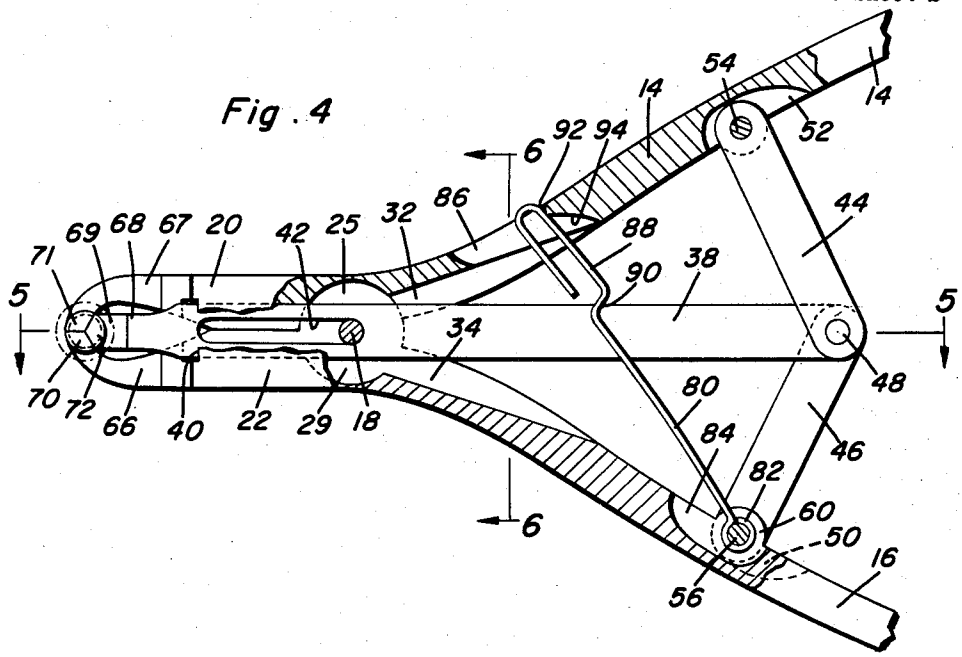


Fig. 5

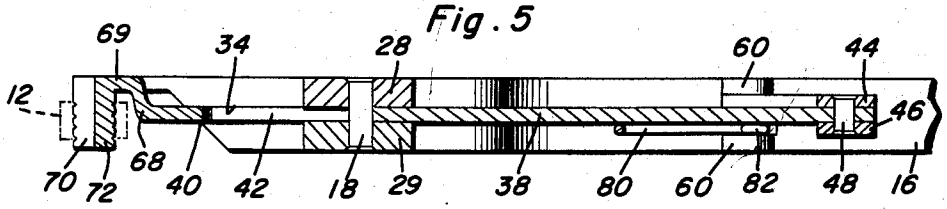


Fig. 7

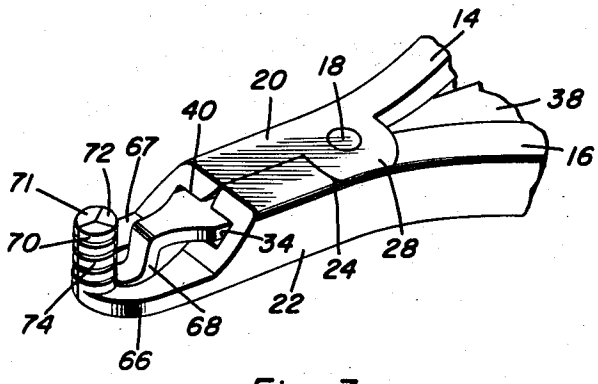
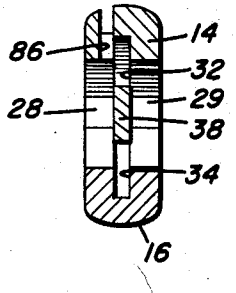


Fig. 6



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NAVEL CORD BANDER

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5 Claims. (Cl. 128—303)

This invention relates to surgical instruments and more particularly to an instrument which facilitates the tying of infants' navel cords by the application of an elastic band.

An object of the invention is to provide a surgical instrument which is capable of expanding an elastic band, as a rubber band of small diameter, and holding the rubber band in the expanded position with an unimpeded and unobstructed passage through the center thereof so that the navel cord of the infant may be passed through the central passage of the band with the aid of some other instrument and then slipped from the navel cord bander for disposition on the navel cord.

A more specific object of the invention is to provide a surgical instrument which has a pair of handles, each handle being provided with a jaw at the outer end thereof on which there are elastic band supporting fingers, there being in addition to this a reciprocatory arm that has a finger at one end adapted to nest with the fingers of the jaws so that there is a three-point contact within the circle of the elastic band, together with means connected to the reciprocating arm for operating the arm in unison with the handles.

Another object of the invention is to provide an instrument as described immediately above wherein there is a single elongated spring attached at one end to one of the handles and provided with a locking part at the other end engageable over a surface of the other handle. The function of the spring is to hold the handles releasably in a position to spread the band and hold the band spread and also to oppose the movement of the handles toward each other with a yielding force thereby automatically returning the handles to their spread position when the doctor releases his grip on the handles of the instrument.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an elevational view of a surgical instrument which is constructed in accordance with the principles of the invention;

Figure 2 is a side view of the instrument in Figure 1;

Figure 3 is an elevational view similar to Figure 1, but showing the instrument in the releasably locked, band spreading position;

Figure 4 is an enlarged, fragmentary, elevational view, parts being shown in section, illustrating the internal detail and construction of the instrument;

Figure 5 is a sectional view taken approximately on the line 5—5 of Figure 4;

Figure 6 is a transverse, sectional view taken on the line 6—6 of Figure 4; and

Figure 7 is a fragmentary, perspective view of one end of the instrument.

The instrument 10 is constructed to stretch elastic bands so that they may be effectively applied to the navel cords of infants and function as a tie for the cords. Rubber band 12 is a typical elastic band that may be used for this purpose.

The instrument 10 is composed of two handles 14 and 16 which converge toward pivot pin 18 and which have straight parallel ends 20 and 22 which function as jaws. Each of the straight parts 20 and 22 has a recess, there being a recess 24 in handle 16 and a recess 25 in handle 14. These parts of the handles have pivot plates 28 and 29 respectively interfitted in the recesses 24 and 25, thereby nesting the handles together for pivotal movement about the pivot pin 18 which is passed through aligned openings in pivot plates 28 and 29.

Confronting slots 32 and 34 respectively are formed in the handles 14 and 16, and these slots receive the flat arm 38. This arm is mounted for reciprocation in the slots 32 and 34 and passes through the open outer ends 40 (Figure 7) thereof. Slot 42 is formed longitudinally in arm 38 and has pivot pin 18 passed therethrough. The side walls of the slots 32 and 34 and the pin 18 passing through slot 42 constrain the movement of arm 38 so that it is capable of reciprocation only. Links 44 and 46 are attached at their confronting ends to the extremity of arm 38 by means of pivot pin 48. Recesses 52 and 50 are milled or otherwise formed in handles 14 and 16 and they accommodate the outer ends of links 44 and 46. The side walls of the recesses 50 and 52 are parallel and function as guides for the links, assuring that they are capable only of oscillation about pins 54 and 56. These pins are passed through aligned holes in ears 58 on handle 14 and ear 60 on handle 16, the ears of each handle extending inwardly from the confronting surfaces of the handles.

The outer ends of the jaws are formed with flat shanks 66 and 67, while the outer end of arm 38 has an offset 68 with a part 69 coplanar with shanks 66 and 67. Fingers 70, 71 and 72 respectively rise perpendicularly from shanks 66, 67 and the part 69 of the arm 38. These fingers have outer surfaces which are each in the form of a partial cylinder and which combine to form a cylindrical elastic band holder. The inner edges of each finger are arranged at approximately 120 degrees to each other so that when the instrument is closed (Figure 1), the band holder is in the form of a cylinder more easily receiving and accommodating the band 12. Scoring 74 is on the surface of the band holder in order to increase the frictional bond between the fingers and the band 12; however, this is an optional feature.

A one-piece spring 80 is formed with an eye 82 at one end through which the pivot pin 56 is passed. The eye is located between two of the three ears 60 and works in the recess 84 formed in the handle 16 parallel to recess 50. It is preferred that the spring 80 be made of wire, although other forms of spring material may be adopted. Passageway 86 extends through handle 14 between pivot pin 18 and pivot pin 54 and has the loop 88 on the outer extremity of spring 80 extended therethrough. This loop 88 has a shoulder 90 at the inner end thereof which coacts with surface 92 formed on one wall 94 of the passageway 86 in order to function as a latch to hold the handles in the retracted position (Figure 3). The bias of spring 80 is in such direction that one side of the loop 88 constantly presses against wall 94, pushing the handles 14 and 16 away from each other so that the normal position of the handles of the instrument is as shown in Figure 1. When the instrument has its handles squeezed together slightly, the movement of the handles in this direction is opposed yieldingly by the spring 80, the spring being of such strength that it is capable of returning the handles to the position shown in Figure 1. But, when the handles are moved to the

fully closed position (Figure 3), the shoulder **90** engages against the surface **92** of wall **94** and holds the handles together as shown in Figure 3. To overcome this latched condition, the handles are spread manually until the shoulder **90** rides over surface **92**, and then the stored energy in the spring returns the handles to the fully open position (Figure 1).

As the handles are moved from the fully open position to the closed position, links **44** and **46** slide reciprocating arm **38** rearwardly, thereby moving finger **72** away from the fingers **70** and **71**, while fingers **70** and **71** are spread from each other due to the pivotal motion of the handles **14** and **16**. This opens the fingers **70**, **71** and **72** to a triangular pattern (Figure 3) which spreads the elastic band so that the navel cord of the infant is easily slipped therethrough when handled with forceps or some other instrument. Then, the handles are opened slightly, thereby closing the jaws to an intermediate position and enabling the band **12** to be slipped from the fingers and onto the navel cord. Then, the instrument **10** is removed, sterilized, etc.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A surgical instrument for applying an elastic band to the navel cord of an infant, said surgical instrument comprising a pair of handles, means pivotally connecting said handles intermediate the ends of said handles, one pair of ends of said handles constituting jaws, band supporting and spreading fingers attached at approximately right angles to said jaws, a reciprocating arm, means attaching one end of said arm to said handles to reciprocate said arm in response to pivotal movement of said handles, said handles having grooves extending longitudinally therethrough in which said arm is disposed, and a finger at the end of said arm coacting with the first mentioned fingers to form a holder for the band, whereby said fingers are spread from each other simultaneously in response to pivotal movement of said handles in one direction.

2. A surgical instrument for applying an elastic band to the navel cord of an infant, said surgical instrument comprising a pair of handles, means pivotally connecting said handles intermediate the ends of said handles, one pair of ends of said handles constituting jaws, band supporting and spreading fingers attached at approximately right angles to said jaws, a reciprocating arm, means attaching one end of said arm to said handles to reciprocate said arm in response to pivotal movement of said handles, said handles having grooves extending longitudinally therethrough in which said arm is disposed, and a finger at the end of said arm coacting with the first mentioned fingers to form a holder for the band, whereby said fingers are spread from each other simultaneously in response to pivotal movement of said handles in one direction, said arm having an elongated slot through

which said pivot for said handles is passed in order to constrain the movement of said arm to reciprocatory motion, and said fingers when brought together having a generally cylindrical outer wall formation.

3. A surgical instrument for applying an elastic band to the navel cord of an infant, said surgical instrument comprising a pair of handles, means pivotally connecting said handles intermediate the ends of said handles, one pair of ends of said handles constituting jaws, band supporting and spreading fingers attached at approximately right angles to said jaws, a reciprocating arm, means attaching one end of said arm to said handles to reciprocate said arm in response to pivotal movement of said handles, said handles having grooves extending longitudinally therethrough in which said arm is disposed, and a finger at the end of said arm coacting with the first mentioned fingers to form a holder for the band, whereby said fingers are spread from each other simultaneously in response to pivotal movement of said handles in one direction, a spring attached to one of said arms and having a part which reacts on the other of said arms tending to hold said handles spread apart and yielding when said handles are brought together in order to open said fingers and expand the band.

4. A surgical instrument for applying an elastic band to the navel cord of an infant, said surgical instrument comprising a pair of handles, means pivotally connecting said handles intermediate the ends of said handles, one pair of ends of said handles constituting jaws, band supporting and spreading fingers attached at approximately right angles to said jaws, a reciprocating arm, means attaching one end of said arm to said handles to reciprocate said arm in response to pivotal movement of said handles, said handles having grooves extending longitudinally therethrough in which said arm is disposed, and a finger at the end of said arm coacting with the first mentioned fingers to form a holder for the band, whereby said fingers are spread from each other simultaneously in response to pivotal movement of said handles in one direction, a spring attached to one of said arms and having a part which reacts on the other of said arms tending to hold said handles spread apart and yielding when said handles are brought together in order to open said fingers and expand the band, said other of said handles having a passageway through which said part of said spring passes, a shoulder separating said part of said spring from the remainder thereof and adapted to seat on a wall surface of said passageway and hold releasably said handles pulled together whereby said fingers remain spread apart and the band is held opened to receive the navel cord.

5. The instrument of claim 1 wherein there is a combination handle biasing spring and releasable latch operatively connected with said handles.

References Cited in the file of this patent

UNITED STATES PATENTS

641,036	Pilling et al.	Jan. 9, 1900
1,250,690	Stallings	Dec. 18, 1917
2,528,508	Gabel	Nov. 7, 1950