

Nov. 25, 1930.

E. FROEHLICH
OBSTETRICAL EXTRACTOR

1,782,814

Filed Jan. 3, 1927

2 Sheets-Sheet 1

Fig. 1.

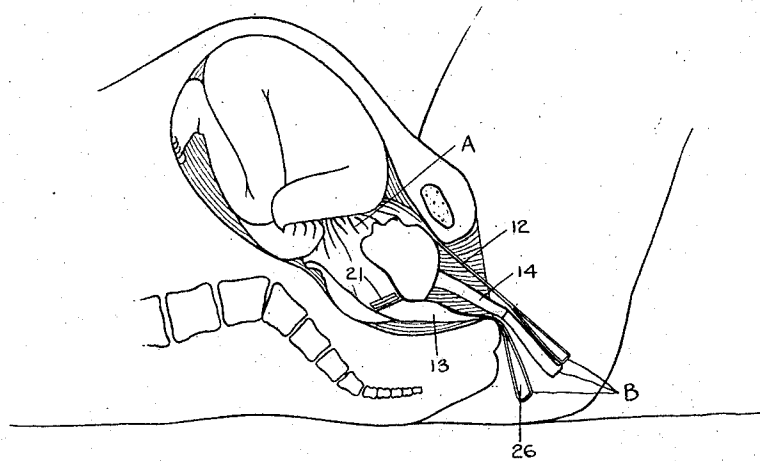


Fig. 2.

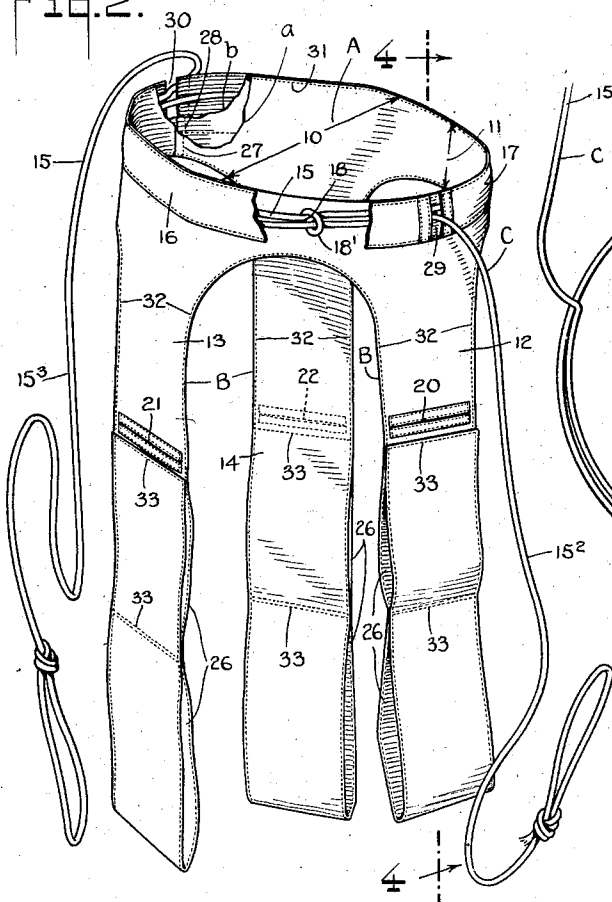
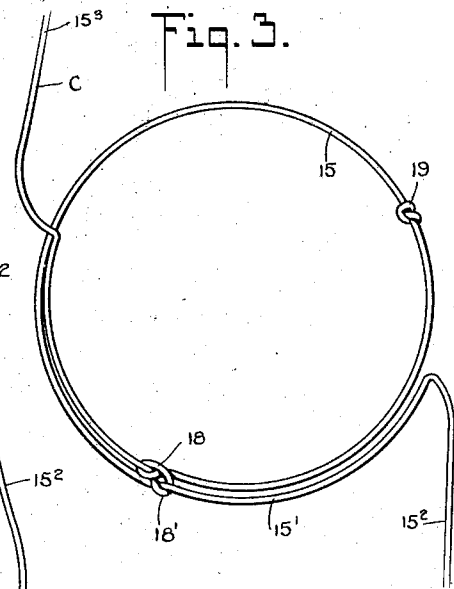


Fig. 3.



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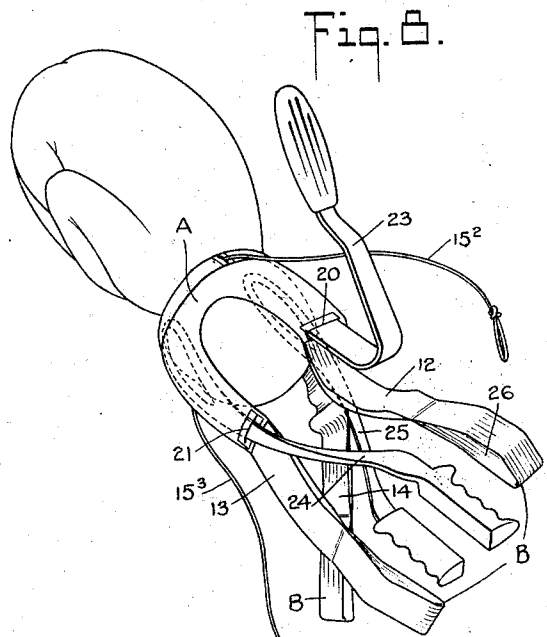
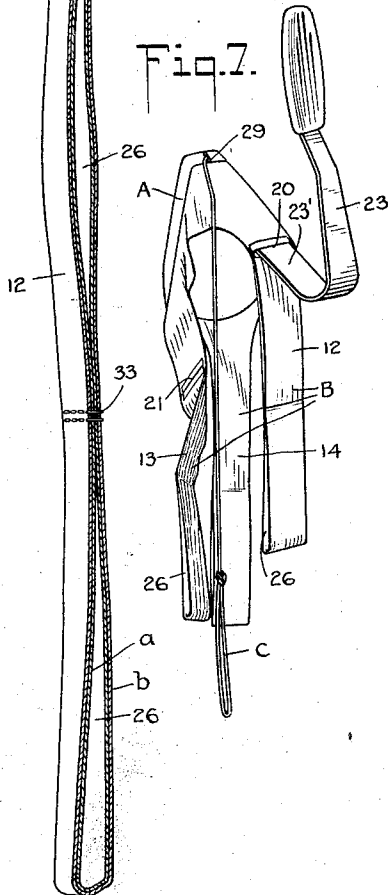
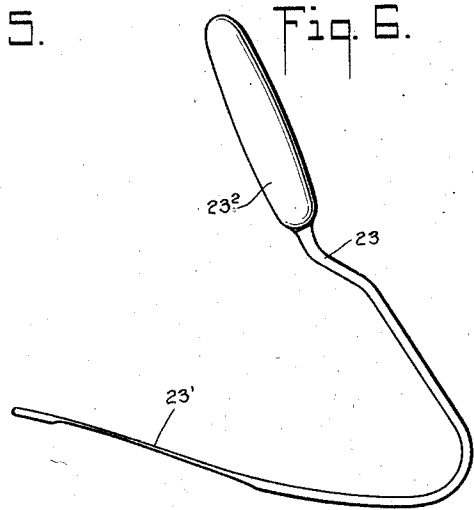
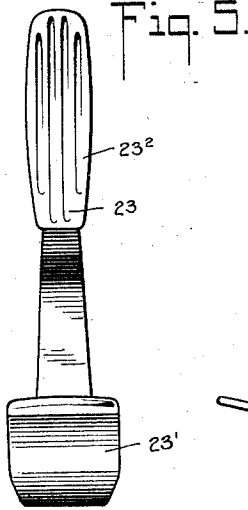
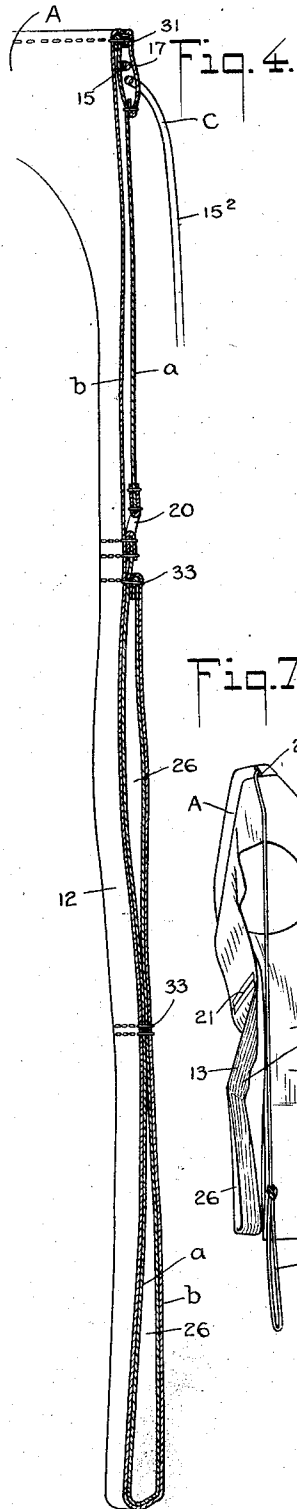
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OBSTETRICAL EXTRACTOR

Application filed January 3, 1927. Serial No. 153,490.

This invention relates to an obstetrical extractor.

As is well known, in difficult labor cases where the child is high up in the abdomen and for some mechanical reason, such as slight contraction of the pelvis or large size of the child, or weakness of the mother, normal spontaneous birth cannot take place, it has been the practice heretofore to employ a forced method of delivery by means of forceps. High forceps delivery, however, is attended with many difficulties and serious disadvantages, because of the serious physical dangers that such method of delivery entails both to the child and to the mother.

To overcome the disadvantages incident to high forceps delivery, delivery by Cæsarian section has come into preference and at present is almost universally employed. Cæsarian section, however, while having many advantages, has among others, the disadvantage of requiring a repetition of the same in most cases at every childbirth once it has been performed, on account of the danger of subsequent rupture of the uterus. Moreover, some of the cases with only slight dystocia should not require a Cæsarian section in every pregnancy.

A prime desideratum of my present invention centers about the provision of an obstetrical extractor adapted to be employed for methods of forced delivery in which the disadvantages incident to the use of prior methods of forced delivery are effectively obviated.

One of the major reasons why high forceps is objectionable and ill-adapted to handle or manipulate the fetus is because the axis of traction employed with forceps is not the proper one to employ. This objection has been partly overcome by the use of the so-called "axis traction forceps", which although improving the axis of traction, does not yield and is incapable of yielding the true axis through which the child's head must travel in the process of delivery. The correct axis of traction is in a line lying in the pelvic plane about 45° to the horizontal; and it has been impossible by the means heretofore used to approximate or attain this axis of traction.

A principal object of my present invention, therefore, comprehends the provision of an obstetrical appliance designed and constructed so as to permit with great facility the withdrawal of the child in the true axis of traction, and a corollary object of my present invention relates to the provision of an obstetrical extractor of this nature capable of affording a variety of different leverages and the possibility of using traction in any direction, permitting thereby the optimum freedom of manipulation of the child.

Other disadvantages found in the use of forceps or similar appliances have their origin in the difficulty of using such forceps or similar appliances for effecting flexing or extending of the child's head, depending upon its position of presentation. Assuming, as in most cases, that the child presents itself in normal or left occipito-anterior position and that the child's head is above the rim of the pelvis and not yet engaged, it is impossible with the use of prior known instruments to bring the child's head down into the pelvis while at the same time flexing the same, concomitant movements which are highly desirable in facilitating forced delivery.

A further prime object of my present invention relates to the provision of an obstetrical extractor which is made throughout of a flexible, yieldable and soft material capable of being readily applied to the maternal parts and the baby, and manipulated and withdrawn without causing harm or injury, temporary or permanent, to mother or child.

To the accomplishment of the foregoing and such other objects as will hereinafter appear, my invention consists in the elements and their relation one to the other, as hereinafter more particularly described and sought to be defined in the claims; reference being had to the accompanying drawings which show the preferred embodiment of my invention, and in which:

Fig. 1 is a view showing the manner of using the obstetrical extractor embodying the principles of my present invention,

Fig. 2 is a perspective view of the extractor with parts shown in section and other

parts broken away to disclose the relation between the parts of the same,

Fig. 3 is a view showing the manner of threading the contracting means forming part of the extractor,

Fig. 4 is an enlarged fragmentary view taken in cross-section in the plane of the line 4-4, Fig. 2, depicting the manner of constructing the extractor,

Figs. 5 and 6 are front and side elevational views respectively of an applicator employed in the use of the extractor, and

Figs. 7 and 8 are views showing in sequence steps employed for applying or placing the extractor in position in the employment of the same.

Referring now to the drawings and having reference first to Fig. 2 thereof, the obstetrical appliance of my invention comprises a structure made wholly of a flexible, yieldable and soft material adapted to be applied over so as to preferably envelop the child's head, said envelope structure comprising a contractible head receiving section A and a tractor section B attached to and depending from said head receiving section A, the said head receiving and tractor sections being designed and constructed so as to produce a bag-like appliance which may be applied onto the child's head and manipulated with ordinary skill so as to secure or render possible a variety of different leverages and traction in any desired direction, and so as to permit of obtaining the functions of flexing, extending and rotating of the child's head with a substantial degree of freedom.

The head receiving and tractor sections A and B respectively are preferably made integral in a manner to be described hereinafter; and for the purpose of permitting the flexibility of operation desired and of eliminating all metal parts which may tend to result in bodily injury to the child or the maternal parts, the same are made of soft, flexible and yieldable fabric, such as silk or the like. In its more specific aspects the head receiving section A comprises a band having a diameter 10 sufficient in length to permit the placement of the band over the child's head, the width 11 of the band being selected so that the said band may be lodged when in contracted condition around the neck of the child's head to form a receptacle or envelope for the head, with the soft portions of the head engaged to permit tractive force to be applied to the whole head as distinguished from any portion thereof. The tractor section B in the preferred construction comprises three or more tractor legs 12, 13 and 14 disposed relatively to the head receiving section A and relatively to one another so as to permit the variety of leverages desired to effect suitable traction and other manipulation. More specifically, these tractor legs are so disposed, referring now to Figs. 1, 2

and 8, that the tractor leg 12 is attached to the head receiving section A at a region which is to be applied anteriorly to the head presentation, while the pair of additional tractor legs 13 and 14 are attached to the head receiving section at regions which are to be applied posteriorly and laterally to the head presentation and arranged at opposite sides of the tractor leg 12.

For contracting the head receiving section A there is provided a contracting means in the form of a draw string generally designated as C which is provided with a loop 15 seated in a channel defined by a pair of bands 16 and 17 attached exteriorly to the base of the head receiving section A, the said loop being provided with means for limiting the degree or extent of contraction of the neck to a predetermined amount, such means consisting of a knot 18 having an open loop 18' receiving one end 15' of said loop 15, which open knot 18 cooperates with a fixed knot 19 in said loop 15 and located at a predetermined distance from the open knot 18. As will be readily seen from Fig. 3 of the drawings, when the opposite ends 15² and 15³ of the draw string are pulled, the loop will be contracted until the knot 19 is stopped by the knot 18, a predetermined degree of contraction being thereby effected, this for the purpose of fixing the enveloping neck receiving band A at the base and about the neck of the child's head, as shown in Fig. 1 of the drawings.

For assisting in placing the extractor in operative position, the extractor is provided with a plurality of pockets, each preferably located in the traction legs 12, 13 and 14 and extending to the base of the head receiving section A, the said pockets being formed between the plies of the material from which the appliance is fashioned, as will be seen further hereinafter, the said pockets being shown as beginning at the slits or openings 20, 21 and 22 provided in the traction legs 12 to 14 and terminating at the top or base of the head receiving section A, said pockets being adapted for receiving positioning applicators 23, 24 and 25 or for manual application (see particularly Figs. 7 and 8) to be explained more in detail hereinafter. In the preferred construction the traction legs 12 to 14 are provided with hand grasp means formed by folding up the bottom ends of the traction legs and attaching the same to mid portions of said legs so as to form one or a plurality of openings 26 through which the hands of the doctor may be inserted for securely grasping the traction legs in the manipulation of the instrument.

To construct the obstetrical extractor of my invention economically, I prefer to use the following method: Two pieces of silk or other soft, strong but thin material *a* and *b* (see Figs. 2 and 4 of the drawings)

are first cut to the desired configuration, producing in each the band and traction leg sections, and the opposite ends of each of these pieces are sewed together by lines of stitching, as at 27 and 28 respectively, to form two tubular sections. To the section or piece *a* the pair of channel defining bands 16 and 17 are then sewed, leaving openings 29 and 30 at spaced points in the head receiving band A through which the ends 15² and 15³ of the draw string 15 are threaded, and these ends may be suitably finished off as shown in the drawings. The two tubular sections A and B are then laid one within the other and are sewed together by sewing the top by the line of stitching 31, and all the meeting edges of the traction legs by the lines of stitching 32. The slits 20 to 22 are then cut for forming the pockets defined by the multiply layers *a*, *b* (see particularly Fig. 4) and said openings may then be suitably finished. The lower ends of the traction legs 12 and 14 are then folded or turned up and sewed by one or more horizontal lines of stitching 33, 33 to form the hand grasp openings 26. The draw string C is applied by first taking a silk cord and threading the same through the channel defined by the bands 16 and 17, both ends of the cords being brought out at one end of the openings, such as 30. The knot 19 is then tied on either part of the cord that is extending out of the channel close to the opening of the channel. The other end of the cord is then pulled and the loop knot 18 formed thereon at a point in the loop 15 located at a predetermined distance, such as ten inches, from the knot 19. The free end of the cord on which the knot 19 is tied is then pulled through the loop 18' of the knot 18, which loop should be large enough to permit the cord to be pulled therethrough but small enough to prevent the knot 19 from being pulled therethrough. The end of the cord 15² is then pulled through the opposite opening 29, the final arrangement of the parts being as depicted in Figs. 2 and 3 of the drawings.

Referring now to Figs. 7, 8 and 1, I show sequential steps exemplifying the manner of applying and using the obstetrical extractor of my invention. A suitable preferably flexible applicator 23 of my own design shown particularly in Figs. 5 and 6 of the drawings is first slipped into the slit 20 and into the pocket of the traction leg 12, as is clearly shown in Fig. 7 of the drawings, the said applicator comprising in the preferred construction a very flexible pocket receiving portion 23' and an upturned handle portion 23², producing the assembly shown in Fig. 7 of the drawings. This assembly is then introduced through the vaginal canal into the uterus over that part of the child's head presenting anteriorly the same being

then held in this position by the physician or an assistant. Then either manually or by means of suitable lateral applicators such as forceps the right or left blade of the lateral applicators 24 and 25 being introduced into the pocket of either the traction leg 13 or 14 according to the choice of the operator, and with that leg applied over the child's head the blade of the other forceps is introduced after a little manual adjustment into the pocket of the third traction leg and into the uterus on the other side and over the child's head. The parts so applied produce the assembly generally shown in Fig. 8 of the drawings. Now with the applicator and two forcep blades in this position, the ends 15² and 15³ of the draw string are pulled until predeterminedly stopped by the meeting of the knots 18 and 19, after which the forceps 24 and 25 and the applicator 23 are removed and the appliance is in the position as shown in Fig. 1 ready for traction.

With the parts of the extractor in the position shown in Fig. 1 of the drawings, traction may then be applied in any suitable and in the proper direction, according to the position of the child's head. It will now be readily seen that the construction of the extractor characterized by its envelope formation, the surrounding receptacle support for the child's head at the base thereof, and the three defined points of application or traction, and characterized by the flexibility and yieldability thereof, permits such utilization of leverages as occasion demands and permits the use of the correct axis of traction 45° to the horizontal, as shown in Fig. 1 of the drawings. Where the presentation is in the normal or left occipito-anterior position, it becomes possible by suitably applying differential forces to the three traction legs 12 to 14 to bring the child's head down into the pelvis while at the same time flexing the same. When the presentation occurs in an abnormal position, it will be readily evident that it is possible by means of my appliance to bring the head down into the pelvis and by proper manipulation rotate or aid in rotating the same. These possibilities of securing the correct axis of traction, flexing, extending, and rotating the head are rendered possible without the employment of any metallic elements and with the utilization only of a soft and flexible material which obviates the possibilities of causing any harm or injury, temporary or permanent, to mother or child.

The manner of making and using the extractor of my invention and the many advantages offered thereby will in the main be fully apparent from the above detailed description thereof. It will be further apparent that while I have shown and described my invention in its preferred form, that many changes and modifications may be

made in the structure disclosed without departing from the spirit of the invention, defined in the following claims.

I claim:

- 5 1. An obstetrical extractor comprising a flexible envelope structure adapted to be applied over the child's entire head and chin, said envelope structure including a section contractible about the base of the child's head and forming an enveloping receptacle for said head, and a tractor section connected to and depending from said head receiving section. 70
- 10 2. An obstetrical extractor comprising an envelope structure made wholly of a flexible, yieldable and soft material adapted to be applied over and envelope the child's entire head and chin, said envelope structure including a section contractible about the base of the child's head and forming an enveloping receptacle for said head, and a tractor section connected to and depending from said head receiving section, said envelope structure having a plurality of pockets adapted for receiving applicators to position the said head receiving section entirely over the child's head. 75
- 15 3. An obstetrical extractor comprising an envelope structure made of a flexible and yieldable material adapted to be applied over the child's entire head and chin, said envelope structure including a section, a tractor section contractible about the base of the child's head and forming an enveloping receptacle for said head, connected to and depending from said head receiving section and means independent of said tractor section for contracting the head receiving section under the chin to envelope the entire head of the child. 80
- 20 4. An obstetrical extractor comprising a flexible envelope structure adapted to be applied over the child's head, said envelope structure including a neck enveloping and head receiving section and a plurality of tractor elements connected to said neck enveloping and head receiving section at at least three spaced points thereabout. 85
- 25 5. An obstetrical extractor comprising an envelope structure made wholly of a flexible, yieldable and soft material adapted to be applied over a child's head, said envelope structure comprising a contractible neck receiving section, an enveloping head receiving section, a plurality of tractor elements connected to said head receiving section at a plurality of points spaced thereabout, the said head receiving section and tractor elements all lying in a substantially tubular surface, and means for contracting the neck receiving section. 90
- 30 6. An obstetrical extractor comprising a flexible envelope structure adapted to be applied over a child's entire head and chin, said envelope structure comprising a band contractible about the base of the child's head and a plurality of tractor legs connected to said neck receiving band at at least three points spaced thereabout, the said neck receiving band and tractor legs all lying in a tubular surface and adapted to envelope the full head of the child when placed thereon and means for contracting the neck receiving band to a predetermined degree. 95
- 35 7. An obstetrical extractor comprising an envelope structure made wholly of a soft and yieldable fabric adapted to be applied over a child's head, said envelope structure comprising a contractible head receiving band and a plurality of tractor legs fixedly connected to said head receiving band at a plurality of points spaced thereabout, the said tractor legs being provided with pockets extending to the base of said band for receiving applicators to position the head receiving band over the child's head and a draw string having a loop threaded through and circumferentially about said band for contracting the same, the said draw string including means for limiting the degree of contraction thereof. 100
- 40 8. An obstetrical extractor comprising a structure made wholly of a soft and yieldable material, the said structure including a head receiving section having a part adapted to be placed over and surround the child's head at the base thereof and a part for enveloping the said head, a tractor section attached to said head receiving section at a region which is to be applied anteriorly to the head presentation, and a pair of additional tractor sections attached to the said head receiving section at regions which are to be applied posteriorly and laterally to the head presentation and arranged at opposite sides of the first-mentioned tractor section. 105
- 45 9. An obstetrical extractor comprising a structure made wholly of a soft and yieldable material, the said structure including a contractible head receiving section having a part adapted to be placed over and surround the child's head at the base thereof and a part for enveloping the said head, a tractor section attached to said head receiving section at a region which is to be applied anteriorly to the head presentation, and at least a pair of additional tractor sections attached to the said head receiving section at regions which are to be applied posteriorly to the head presentation and arranged at opposite sides of the first-mentioned tractor section, and means for predeterminedly contracting the head receiving section. 110
- 50 10. An obstetrical extractor comprising an envelope structure made wholly of a soft and yieldable material adapted to be applied over the child's head and contractible at the base thereof, said envelope structure comprising a contractible head receiving band, a plurality of tractor legs attached to and integral with said head receiving band, the said tractor legs being each provided with a longitudinal 115
- 55 60 65

nally arranged pocket extending to the base of said head receiving section for receiving positioning applicators, means on said head receiving section defining a circumferential draw string channel, a draw string having a loop in said channel, said draw string being provided with means for limiting the degree of contraction of said head receiving section, and means on said tractor legs adapted to be grasped by the hand for traction purposes.

11. An obstetrical extractor comprising a multiply envelope structure made wholly of a soft and yieldable fabric adapted to be applied over the child's head and contractible at the base thereof, said envelope structure comprising a contractible head receiving band, a plurality of tractor legs attached to and integral with said head receiving band, the said tractor legs being each provided with a longitudinally arranged pocket extending to the base of said head receiving section for receiving positioning applicators, means around the base of the head receiving section defining a draw string channel, a draw string having a loop in said channel, said draw string being provided with means for limiting the degree of contraction of said head receiving section, and integral means on said tractor legs adapted to be grasped by the hand for traction purposes, the said band and legs all arranged to lie in a tubular surface.

Signed at New York city in the county of New York and State of New York, this 24th day of December, A. D. 1926.

EUGENE FROEHLICH.

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