United States Patent

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[72] Inventor **Leonard E. Laufe**
Pittsburgh, Pa.

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[73] Assignee **Western Pennsylvania Hospital Foundation For Medical Eduction and Research**

[54] **OBSTETRICAL FORCEPS**
4 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **128/323**
[51] **Int. Cl.** **A61b 17/44**
[50] **Field of Search** 128/321, 323, 324, 361

[56] **References Cited**

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Primary Examiner—L. W. Trapp
Attorney—Buell, Blenko and Ziesenheim

ABSTRACT: Obstetrical outlet forceps of the divergent type including a pivot lock at one end of the shanks thereof and lateral finger grips extending from the region of the pivot lock. With the forceps closed, the shanks abut each other forwardly of an enlargement formed between them adjacent the pivot lock. The shanks are also formed with a smooth perineal curve.

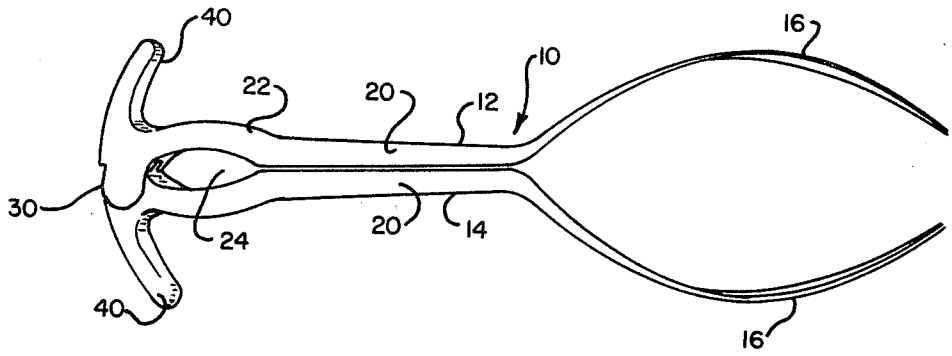


Fig. 1.

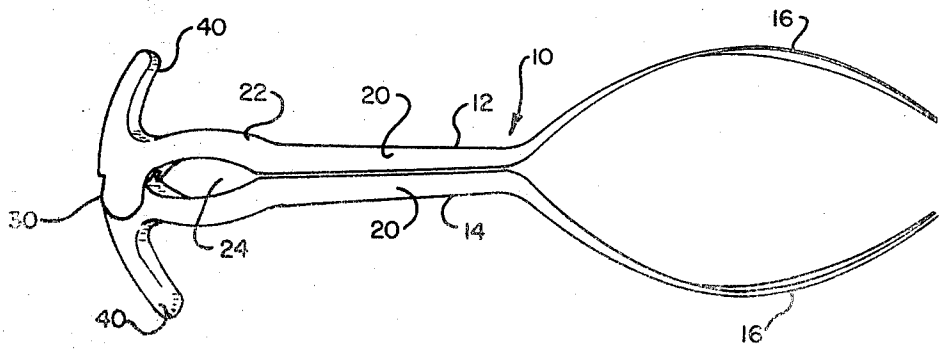


Fig. 2.

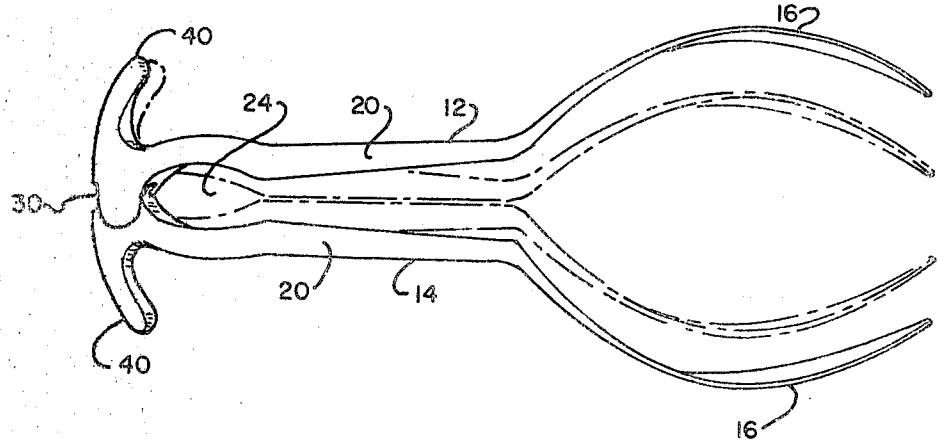
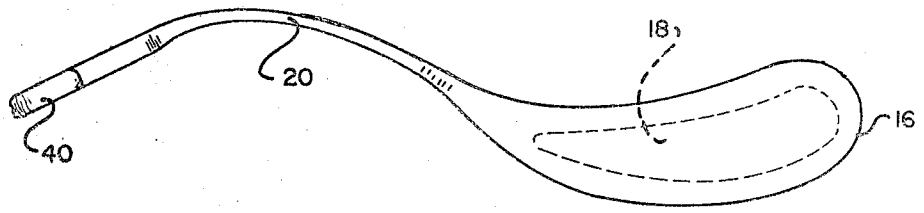


Fig. 3.



INVENTOR

Leonard E. Laufe

By Buell, Blenko & Ziesenheim
his Attorneys

Fig. 4.

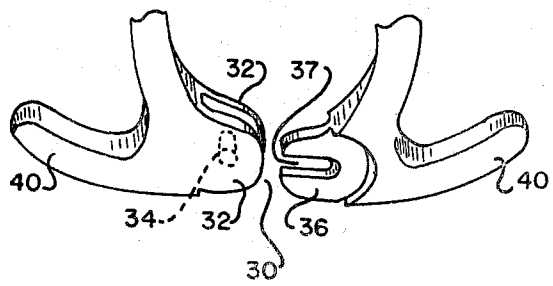


Fig. 5.

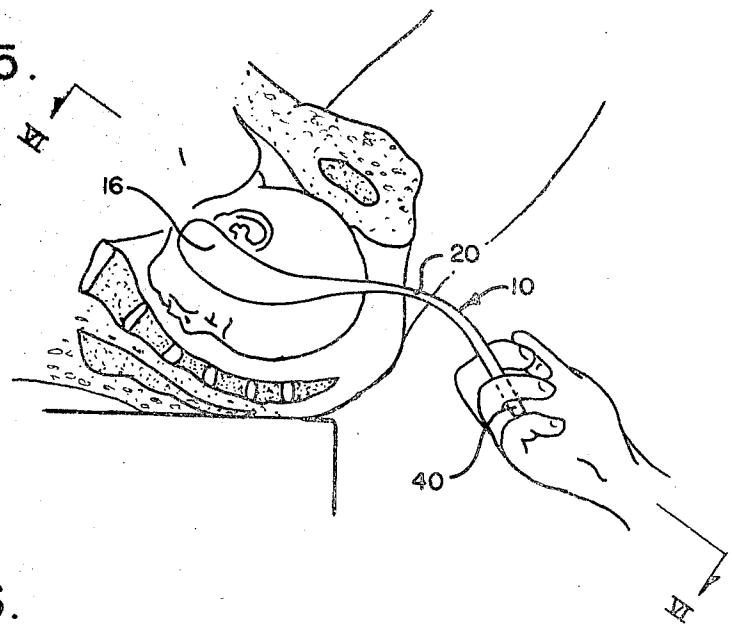
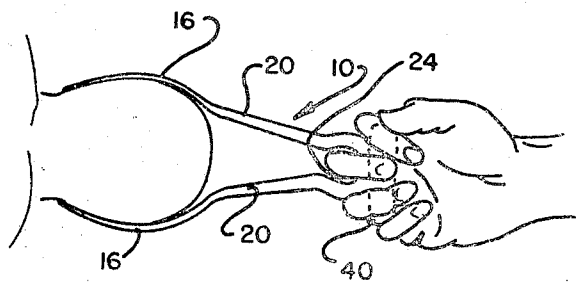


Fig. 6.



INVENTOR

Leonard E. Laufe

By Fidell, Pleasts & Zeichheim

his Attorneys

OBSTETRICAL FORCEPS

This invention relates to obstetrical forceps and particularly to improved outlet forceps.

Most obstetrical outlet forceps in common use are the crossed or scissor type with the fulcrum or pivot point of the shanks located at an intermediate point along the shanks. A major disadvantage of this type of forceps is that a compressive force is applied by the user to the fetal head. This force can cause serious and irreparable damage if caution is not carefully exercised. It was observed around **1907** by one Boerma that the use of a divergent-type forceps would eliminate the danger of transmission of compressive forces to the fetal head as in the case of the crossed forceps. Boerma's forceps, however, never gained universal acceptability. One possible reason for this may have been that his forceps had shanks which were spaced from each other when the forceps were in the closed position. Such arrangement of the shanks limited the amount of divergence of the forceps and caused considerable pain to the mother when the forceps were used.

Another drawback of the commonly used crossed forceps is the need of an axis traction handle in their use. Alternatively to an axis traction handle, certain operating techniques are used with the forceps which apply hand force of the operator along the axis of the maternal pelvis. The axis traction handle results in complicating the forceps while the hand-operating techniques are subject to the disadvantages of human error. These axis traction disadvantages are eliminated by providing the shanks of the forceps with a perineal curve. In this way the axis of the maternal pelvis lies substantially on the plane of the hand of the operator. Shanks having perineal curves have been used with divergent outlet forceps prior to my invention.

My present invention provides an outlet forceps which eliminates the application of harsh forces to a fetal head while at the same time avoids undue irritation to the maternal vaginal soft parts, and additionally is simple to use since it does not require an axis traction handle or any special operating technique. My outlet forceps provide these advantages by combining preferably, a pair of elongated members pivotably connected to each other at one end thereof; each of the members having finger grip portions extending laterally from the pivot, a shank portion extending from the finger grip portion to an intermediate point, with the shank including a longitudinally extending recess along the inner surface thereof and adjacent the finger grip portion, a blade portion extending forwardly from the shank portion and having a contoured fetal head engaging shape; each of the shank portions having a longitudinal shape such that they longitudinally abut each other along their respective inner surface forwardly from their respective recesses when the members are pivotably closed with respect to each other; and each of the shank portions have perineal curves such that the axis of traction of a maternal pelvis lies substantially on the plane including the finger grip portions when the forceps are being used.

Other details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment proceeds.

In the accompanying drawings I have shown a present preferred embodiment of the invention in which:

FIG. **1** is a top plan view of the outlet forceps of this invention in a closed disposition;

FIG. **2** is a top plan view similar to that of FIG. **1** showing the forceps in an open disposition;

FIG. **3** is a side elevation view of the outlet forceps of this invention showing the perineal curve of the shank portion thereof;

FIG. **4** is a perspective view of the pivot arrangement of the outlet forceps of the invention;

FIG. **5** is a sectional view through a maternal pelvis and a perspective view of a hand of an operator using the outlet forceps of the present invention to assist fetal delivery;

FIG. **6** is a view taken along the line VI–VI of FIG. **5**.

Referring now to the drawings wherein like reference numerals refer to like parts throughout the various FIGS., **10** generally represents my new divergent outlet forceps. The forceps **10** include a pair of elongated members **12** and **14** pivotably connected to each other at one end thereof for movement with respect to each other as shown in FIGS. **1** and **2**. Each of the members **12** and **14** has a blade **16** at the forward portion thereof, which blade **16** has a contoured fetal head-engaging shape. Each of the blades **16** is also provided with a contoured indentation **18**, as shown in FIG. **3**, on the inner surface thereof. Blades **16** extend rearwardly to smooth curving shank portions **20**. The particular curvature of the shank portions **20** is what is known as the obstetrical forceps art as a perineal curve. By having a perineal curve the forceps **10** permit an operation condition, illustrated best in FIG. **5** whereby the pull of an operation on the forceps is along the axis of the maternal pelvis. Stated differently, the perineal curve of the forceps **10** results in the operator pulling along the axis of traction of the maternal pelvis. Shank portions **20** are also provided at the rear end sections thereof with laterally outwardly extending portions **22** which together define an enlargement **24** between the inner surfaces of shank portions **20**. Enlargement **24** is sufficiently sized to receive a large sized middle finger, in the manner shown in FIG. **6**.

Shank portions **20** are pivotably connected to each other at their respective rear ends by a pivot lock generally designated as **30**, as shown in FIG. **4**. Pivot lock **30** includes bifurcated ears **32** extending laterally inwardly of member **12** with a pin **34** extending between the ears at a generally central portion thereof. A tab **36** extends laterally inwardly from member **16** and is provided with a slot **37** sized to snugly fit in the space between ears **32**. The surface of member **14** in the vicinity of tab **36** is suitably shaped to receive the free ends of ears **32** such that a continuous surface is formed at the rear end of the forceps as shown in FIGS. **1** and **2**.

The rear ends of the shank portions **20** are provided with laterally outwardly extending finger grips **40** suitably sized and shaped to accommodate the index finger and the third finger of an operator in the manner illustrated in FIGS. **5** and **6**.

The operation of the forceps **10** is partially illustrated in FIGS. **5** and **6**. FIG. **5** as noted earlier, also illustrated the inherent axis traction principle of the forceps due to the shank portion **20** being provided with perineal curves. With the operator holding the forceps **10** in the manner shown the fetal head will not be given a positive force. Rather, the operator actually urges the forceps in an open direction since he exerts opening force on the finger grips **40** as he pulls along the axis of traction. Thus, the forceps act as an interface between the fetal head and the pelvic walls, and the compressive force on the head is derived from the maternal pelvis.

The enlargement **24** between the shank portions **20**, as well as providing a convenient accommodation for the operator's middle finger, serves as a safety feature in that the operator's middle finger will prevent inadvertent squeezing of the forceps by the operator. Enlargement **24** of the size described is not absolutely necessary but is very desirable.

It should be noted that the forceps **10** of this invention are smaller and more compact than the commonly used crossed-type forceps.

While I have shown and described a present preferred embodiment of the invention it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. Obstetrical outlet forceps comprising: a pair of elongated members pivotably connected to each other adjacent one end portion thereof and freely movable relative to each other when pivotably connected; each of said members having:

a. a finger grip portion extending laterally thereof from said one end portion;

b. a shank portion extending from said finger grip portion to an intermediate point of said member, and shank portion including a longitudinally extending recess along the inner surface thereof and adjacent said finger grip portion;

c. a blade portion extending forwardly from said shank portion and having a contoured fetal head-engaging shape; and each of said shank portions having a longitudinal shape such that the shank portions longitudinally abut each other along their respective inner surfaces forwardly from their respective recesses when said members are pivotably closed with respect to each other.

2. Obstetrical outlet forceps as set forth in claim 1 wherein said recesses define an enlargement between said shaft portions with said enlargement being sufficiently sized to receive a large size middle finger of an operator.

3. Obstetrical outlet forceps as set forth in claim 1 wherein said members are separable from each other.

4. Obstetrical outlet forceps as set forth in claim 1 wherein each of said shank portions having a perineal curve along a major portion thereof such that the axis of traction of a maternal pelvis lies substantially on the plane including said finger grip portions when the forceps are being used.