

United States Patent

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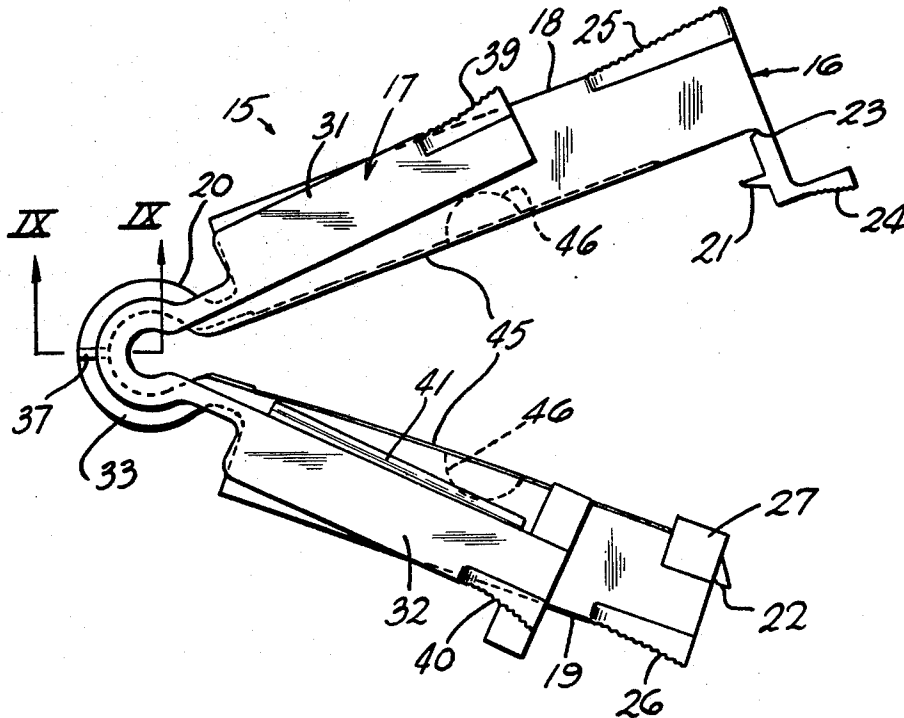
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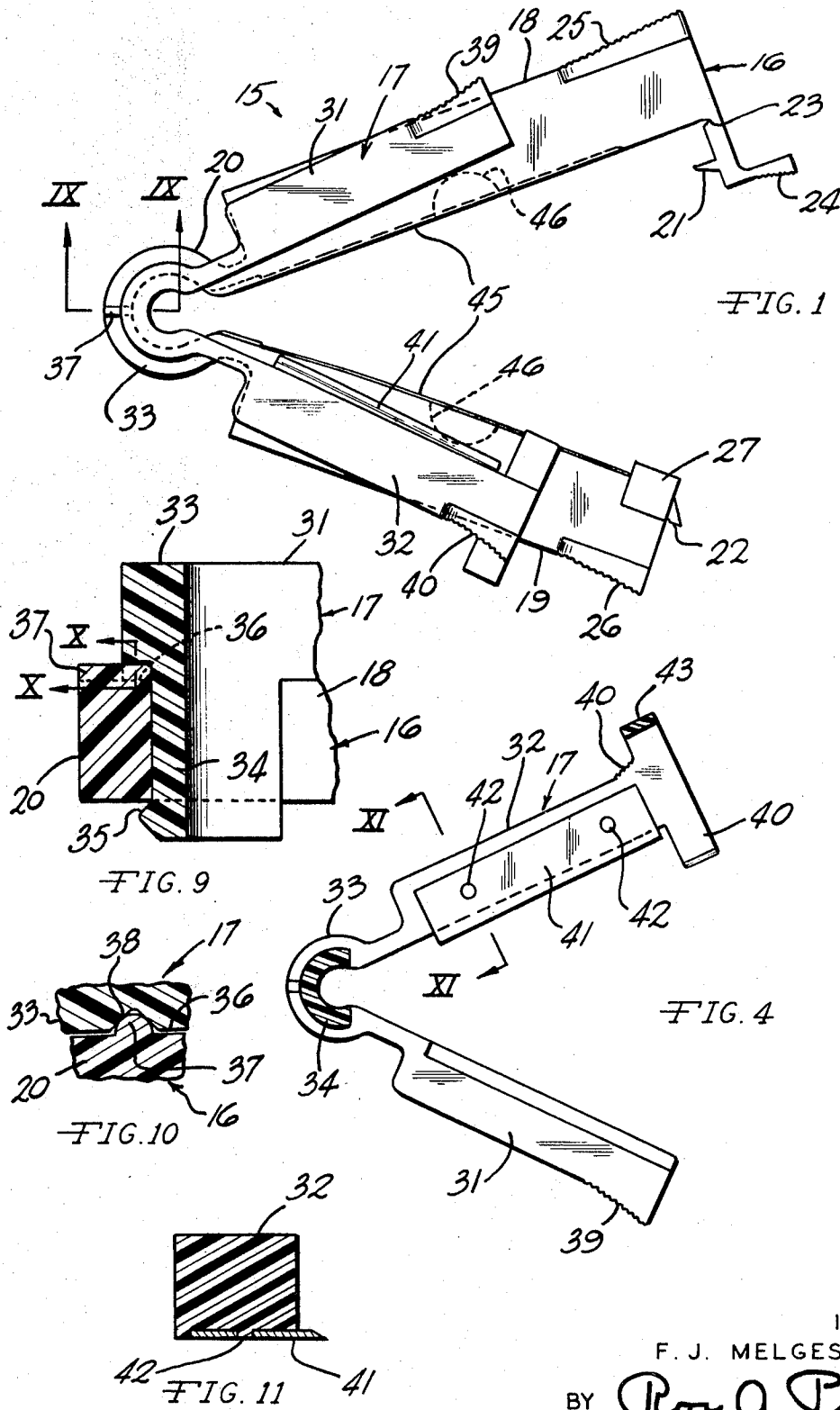
[54] **CIRCUMCISION INSTRUMENT**
 20 Claims, 11 Drawing Figs.

[52] U.S. Cl..... **128/305,**
 128/346, 128/319
 [51] Int. Cl..... **A61b 17/326,**
 A61b 17/08
 [50] Field of Search..... 30/134,
 233, 289; 128/305, 319, 346, 320

[56] **References Cited**
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ABSTRACT: This surgical instrument has a clamping and holding member of special construction especially suited for use in circumcision operations involving the use of conventional hospital instruments such as a probe, scalpel, and hemostat, for completing the circumcision operation, while in the preferred form the instrument will involve the use in combination of two main portions, with one of these being the clamping and holding member, and the other a cutting member, with the two members pivotally connected together and guided in cooperative operating position, and when the two main portions are principally formed of plastic, same can be discarded at the end of the operation without need of sterilization for reuse.





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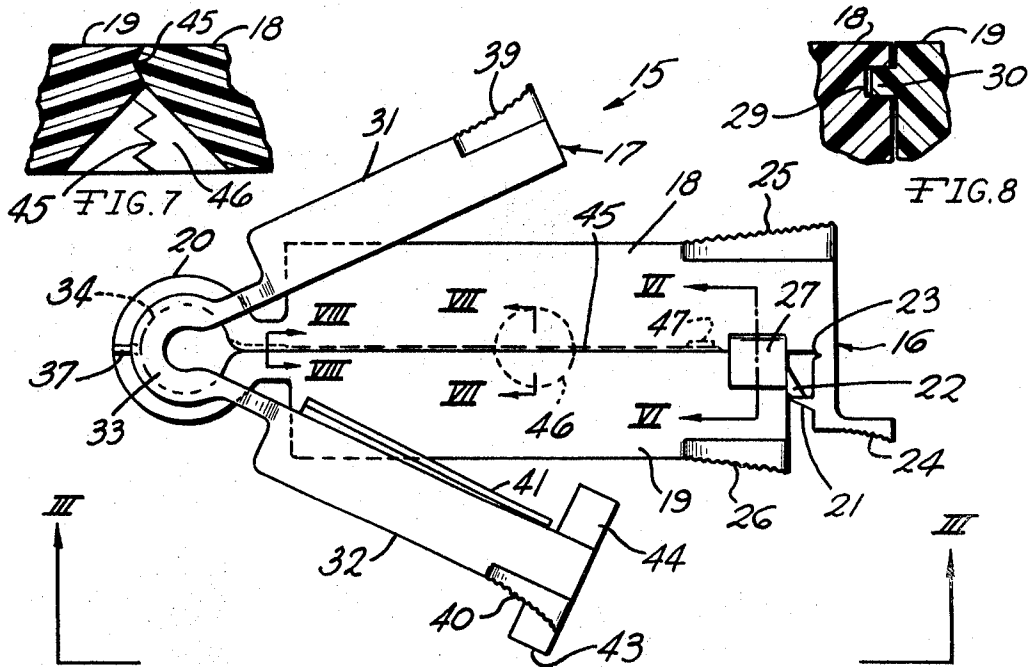


FIG. 2

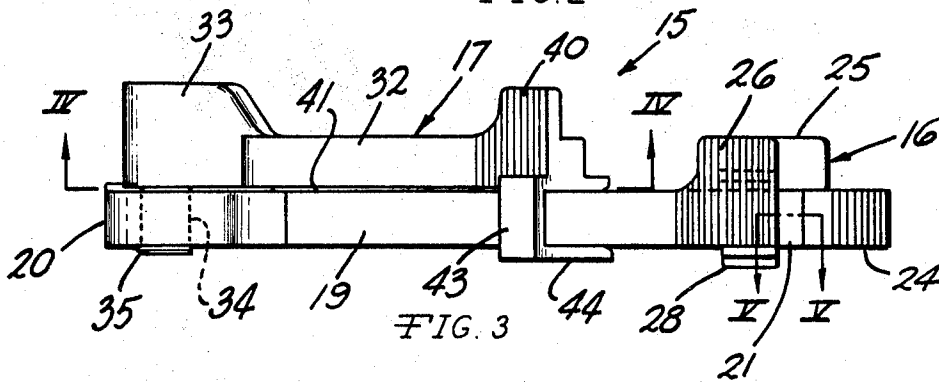


FIG. 3

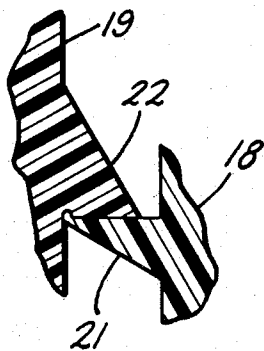


FIG. 5

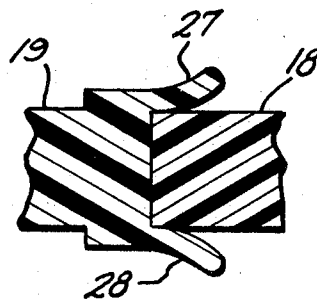


FIG. 6

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CIRCUMCISION INSTRUMENT

BACKGROUND OF THE INVENTION

The present invention deals broadly with a surgical instrument, and in its more specific phases with a disposable circumcision apparatus which may be in the form of a clamping and holding member alone, or in combination with a cutting member cooperatively and pivotally joined to same.

In carrying out circumcision operations the common practice is to use surgical scissors to shorten the boy baby's foreskin, a thing which almost invariably causes not only a rough and crude finished job, but often leads to bleeding and the need of stitches along the cut edge. A recognition that this was far from an ideal procedure led to the development of the circumcision instrument covered in U.S. Pat. No. 2,212,133 133 which was and has been up to the present time the most satisfactory instrument devised, although several other non-disposable steel instruments have been proposed. That instrument, however, was expensive to produce and keeping the blade sharp presented problems. The present invention is an improvement on the noted instrument and was devised with a view to solving the noted circumcision problems as well as others which are well known but for which there have been no instruments providing wholly satisfactory commercial solutions wherein the trimming is perfectly smooth and appears when healed, aside from a shortened foreskin and mucosa, to be the same as though no operation had been performed.

SUMMARY OF THE INVENTION

Accordingly, among the objects of the present invention is the provision of a wholly satisfactory, highly simplified, and easy to use circumcision instrument.

Another object is to produce a circumcision instrument which is capable of being manufactured at such a low cost, and easy initial sterilizability, that same can be used once and then discarded.

Another object is to provide a circumcision instrument with a portion which can be clamped shut to crush the foreskin at the desired point and seal the veins and arteries so as to eliminate bleeding and the need of using stitches, while at the same time the cutting portion, which is preferably part of the instrument, is pivotally mounted on the clamping portion, may be moved in like manner to the operation of the clamping portion and in doing so will sever the foreskin along the adjacent surface of the clamping portion at and outward of the crushed area.

A further object of this invention is to provide breakable latch means for the clamping and holding portion so that removing the instrument at the end of the circumcision operation will preferably require breaking this latch and thus destroying the instrument so that for the next circumcision operation a new and thoroughly sterile instrument assembly will be used, thus doing away with cleaning and resterilizing of the used instrument assembly, and wherein the blade of a new instrument assembly will always be unused and sharp.

A further object of the invention is to provide the cutting portion of the instrument at its end remote from its hinge end with guide means which hold same in proper shearing position relative to the clamping and holding portion.

A further object is to provide the hinged end of the cutting portion with an extension which closely fits and passes through the hinge end of the clamping portion, and wherein the outer end of said extension has an outward tapering wedge portion which binds the hinge end of the cutting portion onto the adjacent side of the clamping portion for improved, close fit, cutting action.

A further object of this invention is to provide the hinge end of the clamping and cutting portions with means for normally holding them in symmetrical relation to each other for stability and ease of efficiently operating the surgical instrument.

A further object of this invention is to provide the clamping and holding portion with a central depression or beveled por-

tion on its under side for the reception of the end of the glans penis while avoiding any injury to same during the foreskin clamping and holding step.

A further object of this invention is to provide the clamping portion with means adjacent its hinge end to hold the side members in alignment while at the same time stopping the side edge of the foreskin from flowing under clamping pressure into the hinge portion out of shearing position.

Still further objects and advantages of the invention will appear as the description proceeds.

BRIEF DESCRIPTION OF DRAWINGS

To the accomplishment of the foregoing and related ends, the invention, then, consists of the surgical instrument hereinafter fully described and particularly pointed out in the claims, the annexed drawings and the following description setting forth in detail certain illustrative embodiments of the invention, such disclosed embodiments illustrating, however, but several of the various ways in which the principle of the invention may be used.

In the annexed drawings:

FIG. 1 shows a top assembly view of a preferred form of the surgical instrument of the present invention in open position;

FIG. 2 shows a top assembly view similar to FIG. 1, but with the clamping and holding portion closed and latched;

FIG. 3 is a side view of the surgical instrument assembly as taken along line III-III of FIG. 2, looking in the direction of the arrows;

FIG. 4 is a bottom or under side view of the cutting portion of the surgical instrument assembly shown in FIGS. 1 and 2, as taken along line IV-IV of FIG. 3, looking in the direction of the arrows.

FIG. 5 shows in enlarged fragmentary cross section view of a preferred form of the latching members of the clamping portion of the surgical instrument as taken along line V-V OF FIG. 3, looking in the direction of the arrows;

FIG. 6 shows in enlarged fragmentary cross section view the alignment portion for the opposite side members of the gripping and holding portion of the surgical instrument, as taken along line VI-VI of FIG. 2, looking in the direction of the arrows;

FIG. 7 shows an enlarged fragmentary cross section view of the central bottom portion of the clamping portion of the surgical instrument as taken along line VII-VII OF FIG. 2, looking in the direction of the arrows;

FIG. 8 shows an enlarged fragmentary cross section of the clamping portion of the surgical instrument adjacent the hinge end of same as taken along line VIII-VIII of FIG. 2, looking in the direction of the arrows;

FIG. 9 shows an enlarged fragmentary cross section view of the assembled hinge portion of the surgical instrument as taken along line IX-IX of FIG. 1, looking in the direction of the arrows;

FIG. 10 shows an enlarged fragmentary cross section view of the portion which centers the cutting portion on the clamping and holding portion of the surgical instrument, as taken along line X-X of FIG. 9, looking in the direction of the arrows;

FIG. 11 shows an enlarged fragmentary cross section view of a preferable construction including the cutting blade as taken along line XI-XI of FIG. 4 looking in the direction of the arrows.

DESCRIPTION OF THE SPECIFIC EMBODIMENTS

Referring more particularly to FIGS. 1, 2 and 3, it will be noted that this is a preferred form of the surgical instrument assembly 15 which has a clamping and holding member 16 with a cutting member 17 mounted on top of same. Clamping member 16, which is preferably made from a tough but resilient plastic, has a pair of side members 18 and 19 unit joined together by means of an open side ring-shaped hinge member 20, while at the opposite end of side member 18 there

is a hook latch member 21, FIGS. 2 and 5, adapted to engage latch member 22 on the outer end of side member 19, which is shorter than side member 18 to facilitate hooking engagement of latching members 21 and 22, FIG. 5. Hook latch member 21 is part of an extension of side member 18, FIG. 2, and is provided with a weakening notch 23 and a breaking ear 24 so that the portion carrying hook latch 21 can be broken off to remove the clamping member at the end of the operation as will be hereinafter set forth in further detail. At least one of the adjacent faces of side members 18 and 19 is preferably slightly bowed, preferably full length of same, toward the other side member to provide a strong clamping action offsetting any tendency for the side members to twist or spring outward under conditions of use and not provide a firm clamping or tissue crushing action. At the latching end of the clamping member 16 side members 18 and 19 are provided with oppositely disposed enlarged and preferably corrugated finger grip members 25 and 26, FIG. 2, to facilitate applying pressure for locking latch members 21 and 22 together under conditions of use. To stabilize side members 18 and 19 as they closely approach each other and are locked together, side member 19 is preferably provided with a pair of opposite guide ears 27 and 28, FIG. 6. At the opposite end of side members 18 and 19 adjacent ring-shaped hinge member 20, one of the side members is preferably provided with a short recess 29, FIG. 8, and the other with an aligned short tongue 30, to stabilize the positioning of that end of side members 18 and 19 relative to each other while at the same time forming a stop for a purpose to be hereinafter explained. A recess and tongue combination 47, similar to 29—30, is preferably used at the opposite side of conical recess 46, FIG. 2, as a stop member, especially when foreskin severing with a scalpel is to be done, as hereinafter described.

The cutting member 17, except for the cutting blade, is preferably made from a tough but resilient plastic and has a pair of side members 31 and 32 connected together at one end with a partial ring-shaped member 33, FIGS. 1, 2 and 4, with this ring-shaped member having an extension 34, FIG. 9, closely fitting within the open side, ring-shaped, member 20, and having on its lower or free end an outward tapering wedge portion 35, which holds cutting member 17 tight against the top or cutting member-engaging face of clamping member 16. The upper end of extension 34 ends at shoulder 36 of member 33 and cooperates with said wedge portion 35 in accomplishing said tight and stabilized fit. Preferably said open side, ring-shaped, hinge member 20 is provided at its midpoint with a radial upstanding rib 37, FIG. 10, fitting into a radial groove 38 in partial ring-shaped member 33. This combination of rib and groove substantially symmetrically centers cutting member 17 on clamping member 16 to facilitate operation of the surgical instrument assembly 15 of the clamping and cutting members as will be hereinafter set forth. At the outer end of side members 31 and 32, FIGS. 1 and 2, they are preferably provided with enlarged finger grip members 39 and 40, respectively, which are preferably corrugated to facilitate stabilized gripping under conditions of use. Side member 32 has on its under face a cutting knife 41, fastened thereto in conventional manner such as by the use of plastic rivets 42, FIG. 11, together, if desired, with any suitable adhesive. To hold cutting knife 41, which may be in the form of a single edged razor blade, in shearing position tight against the top face of side members 18 and 19 of clamping member 16 under conditions of operation, FIG. 3, a support arm 43 for a guide ear 44 of side member 32 is preferably provided and passes and closely fits under side member 19. For ease of use, clamping member 16, in its free unlatched position, will stand open preferably in the range of 40° to 55°, and cutting member 17 in its free open position is preferably about 5° to 10° more open than the actual opening of clamping member 16 as shown typically in FIG. 1.

Side members 18 and 19 of clamping member 16 are preferably provided on their gripping adjacent edges with close spaced interengaging longitudinal grooves 45, FIGS. 1, 2

and 7. Also at the central portion of side members 18 and 19 of clamping member 16, as shown in FIGS. 2 and 7, the under portion of said side members is provided with a relatively wide angle, preferably about 40° to 60° flaring substantially conical recess 46 for reception of the end of the glans penis for a purpose to be hereinafter set forth.

OPERATION OF THE CIRCUMCISION INSTRUMENT

A disposable paper draping kit (not shown) including an outside protective wrapper is preferably used, with this outside wrapper used to drape the instrument table (not shown) with the sterile inside face of same up. Inside the draping kit is a first sterile sheet (not shown) which is used to drape the baby receiving table (not shown). The baby boy is placed back down on this sheet and is held on the table by the nurse who lightly keeps her elbows on the baby's shoulders with the baby's head between them. Her hands hold the baby's legs down and spread so that the operator can readily perform the circumcision procedure. The hospital circulating nurse adds the "preparation" solution to the disposable medicine cup (not shown), which is part of the draping kit components along with the circumcision instrument. She also supplies the necessary hospital instruments to the instrument table, namely a probe, a hemostat, and scissors; optionally there may be tissue forceps, and a needle holder, as well as a suture and needle.

The operator then prepares the baby's penis with the sterile solution and drapes the baby using a second sterile circumcision sheet (not shown) having a suitable hole, through which the penis is passed and the baby is then ready for the actual circumcision operation which is carried on as follows: The operator grasps the penis and with the probe separates the excess prepuce from the glans penis. If necessary, a small dorsal slit is made in the foreskin anteriorly in order to facilitate the separation from the glans and pushing it back over the corona. After this has been done, the foreskin is returned to its previous extended position. A light is preferably used behind the penis so as to reflect the shadow of the glans penis in the foreskin. The foreskin is then grasped at right angles to the penis with a hemostat (not shown) and stretched anteriorly. With the foreskin thus stretched the clamping member 16 is applied with the glans penis fitting into the conical recess 46 but not extending above it, whereupon the clamping member 16 is closed and latched in that position. This conical recess 46 pockets and prevents injury to the glans penis. Then the cutting member 17 is manually closed, and in so doing the cutting knife or blade 41 severs the excess foreskin without injuring the glans penis which safely fits in the conical recess 46 on the underside of the clamping member 16. The cutting member 17 is then allowed to return to its open position, and if desired may be broken at its hinge and removed. After about a minute the clamping member 16 is released, preferably by breaking off the hook latch member 21 at the weakening notch 23, whereupon the whole surgical instrument assembly 15 is free to be discarded.

In carrying out this procedure the skin, mucus membrane, and all blood vessels of the foreskin over the glans penis have been sealed together by the crushing action of the clamping member, with resultant sealing preventing bleeding. The sealed edge foreskin, after the circumcision instrument has been removed, is then pushed back over the corona by using the index finger and thumb of both hands. It is held in this position for a moment until the mucus membrane swells slightly causing the foreskin to remain in this position. Whether a circumcision dressing is applied, or a small piece of gauze is placed on the penis on which baciguent, or other sterile ointment, has been applied, is optional. Actually no dressing is required as there is very little, or no, bleeding. However, ointment is desirably used since it prevents the cut edge of the foreskin and the glans penis from adhering to the baby's diaper. Stitches are seldom necessary, and the entire procedure normally takes less than three minutes and all

materials are disposable except for the sterilizable instruments which have been supplied by the hospital.

By omitting cutting member 17, the clamping member 16 can be used alone, in the manner described above, and the severing of the extending foreskin can be done by the surgeon by passing a sharp scalpel along the upper face of the clamping member 16 while stretching the foreskin with the hemostat. The clamping member is removed about a minute later and the other steps followed as previously described. This provides a less costly instrument which may appeal to some producers, although it does not provide the same fully disposable instrument and requires sharpening of the scalpel and autoclaving of same for sterilization between times of use.

While but two forms of the invention have been shown and described, other forms within the spirit and scope of the invention will now be apparent to those skilled in the art. Therefore, the embodiments shown in the drawings are to be considered as merely setting forth the surgical instrument invention for illustrative purposes, and are not intended to limit the scope of the invention herein described, shown and claimed. It is further to be noted that while directional terms have been used, same are not to be construed as a limitation of the invention since such use has been availed of to better describe the invention as used and illustrated in the drawings.

I claim:

1. A surgical instrument of the character described particularly adapted for use in the conducting of circumcision operations, which comprises a clamping member having two substantially parallel arms with faces longitudinally abutting each other and joined at one end by a hinge member and also joinable by a latching means at the other end, said arms having close-spaced, small, longitudinal interengaging grooves on their abutting faces with said grooves tightly fitting each other at least throughout the central portion of said arms when they are in latched position, at least one of said arms of said clamping member being slightly bowed at the central portion toward the other arm at said central portion with said other arm being so shaped as to contact said bowed portion to facilitate tight clamping said arms also having on one pair of mutually coplanar faces substantially in the central portion of same and on the junction of said abutting faces of same, a relatively wide angle deep recess with approximately half of same in each arm but not extending wholly through same.

2. A surgical instrument as set forth in claim 1, wherein at least one of said arms has guide means for holding said arms in parallel alignment during the final closing and latching of same.

3. A surgical instrument as set forth in claim 2, wherein said guide means is a pair of guiding ears on the opposite sides of one of said arms adjacent said latching means, for guiding said arms into proper position for latching.

4. A surgical instrument as set forth in claim 1, wherein stop means are provided adjacent at least one end of said arms in their abutting faces.

5. A surgical instrument as set forth in claim 1, wherein stop means are provided adjacent both ends of said arms in their abutting faces.

6. A surgical instrument as set forth in claim 2, wherein stop means are provided adjacent at least one end of said arms in their abutting faces.

7. A surgical instrument as set forth in claim 3, wherein stop means are provided adjacent both ends of said arms in their abutting faces.

8. A surgical instrument of the character described particularly adapted for use in the conducting of circumcision operations, which comprises a clamping member having two substantially parallel arms with faces longitudinally abutting each other and joined at one end by a hinge member and also joinable by a latching means at the other end, said arms also having one one pair of mutually coplanar faces substantially in the central portion of same and on the junction of said abutting faces of same, a relatively wide angle deep recess with approximately half of same in each arm but not extending wholly

through same, wherein there is a cutting member with means pivotally mounting same on said clamping member at the hinge end of same, said means pivotally mounting said cutting member comprising an extension fitting and extending through the hinge member of said clamping member and having an outward tapering portion which firmly and tightly presses said cutting member onto the cutting member-engaging face of said clamping member.

9. A surgical instrument of the character described particularly adapted for use in the conducting of circumcision operations, which comprises a clamping member having two substantially parallel arms with faces longitudinally abutting each other and joined at one end by a hinge member and also joinable by a latching means at the other end, said arms also having on one pair of mutually coplanar faces substantially in the central portion of same and on the junction of said abutting faces of same, a relatively wide angle deep recess with approximately half of same in each arm but not extending wholly through same, wherein there is a cutting member with means pivotally mounting same on said clamping member at the hinge end of same, and said cutting member includes two arms jointed by a partial ring-shaped member and with said pivotal mounting means including an extension of said partial ring-shaped member fitting and extending through said hinge member of said clamping member.

10. A surgical instrument as set forth in claim 9, wherein said cutting member carries a cutting knife on one of its arms in position for closely fitting and movable over the cutting knife-engaging edge of the abutting faces of the arms of said clamping member to shear anything projecting from same.

11. A surgical instrument as set forth in claim 9, wherein said extension has on the outside of its free end an outward tapering portion which firmly and tightly presses said cutting member onto the cutting member-engaging face of said clamping member.

12. A surgical instrument as set forth in claim 9, wherein said clamping member and said cutting member have interengaging means at their hinge end for holding said cutting member substantially symmetrically located over said clamping member.

13. A surgical instrument as set forth in claim 10, wherein said extension has on the outside of its free end an outward tapering portion which firmly and tightly presses said cutting member onto the cutting member-engaging face of said clamping member.

14. A surgical instrument as set forth in claim 10, wherein said clamping member and said cutting member have interengaging means at their hinge end for holding said cutting member substantially symmetrically located over said clamping member.

15. A surgical instrument as set forth in claim 9, wherein: said cutting member carries a cutting knife on one of its arms in position for closely fitting and movable over the top edge of the abutting faces of the arms of said clamping member to shear anything projecting from same; said extension has on the outside of its free end an outward tapering portion which firmly and tightly presses said cutting member onto the cutting member-engaging face of said clamping member;

said clamping member and said cutting member have interengaging means for holding said cutting member substantially symmetrically located over said clamping member; and

at least one of said arms of said clamping member is slightly bowed a major portion of its length toward the other arm to facilitate tight clamping substantially full length of same.

16. A surgical instrument as set forth in claim 15, wherein: at least one of said arms of said clamping member has guide means for holding said arms in parallel alignment during the final closing and latching of same; wherein stop means are provided adjacent at least one end of said arms in their abutting faces; and

wherein said cutting member arm carrying said cutting blade has adjacent its free end a guiding means engaging said clamping means for stabilizing and holding said blade in shearing position adjacent the blade-engaging face of said clamping member.

17. A surgical instrument as set forth in claim 1, wherein said deep recess is substantially conical.

18. A surgical instrument as set forth in claim 9, wherein said deep recess is substantially conical.

19. A surgical instrument as set forth in claim 8, wherein the arms of said clamping member are provided with close-

spaced, longitudinal interengaging grooves on their abutting faces with said grooves tightly fitting each other at least throughout the central portion of said arms when they are in matched position.

5 20. A surgical instrument as set forth in claim 9, wherein the arms of said clamping member are provided with close-spaced, longitudinal interengaging grooves on their abutting faces with said grooves tightly fitting each other at least throughout the central portion of said arms when they are in matched position.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,566,873 Dated March 2, 1971

Inventor(s) Frederick J. Melges

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 17, cancel "133".
Column 5, line 38, cancel "at said central portion";
line 39, after "bowed portion" insert ---at said
central portion---.
Column 6, line 21, cancel "jointed" and insert ---joined---

Signed and sealed this 25th day of April 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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