Aug. 2, 1960 E. A. STORZ 2,947,305

SURGEON'S MOUTH GAG

Filed July 10, 1958

FIG. 1.

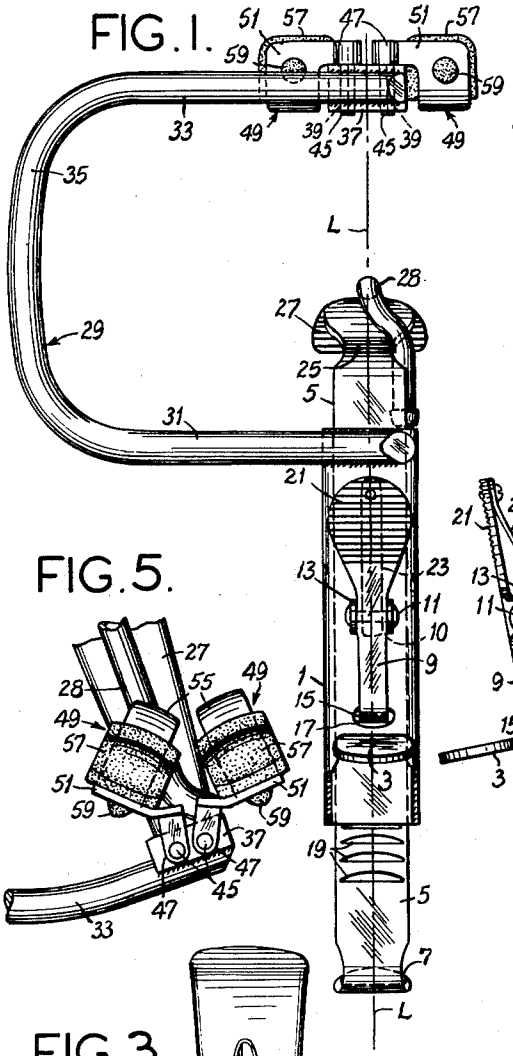


FIG. 2.

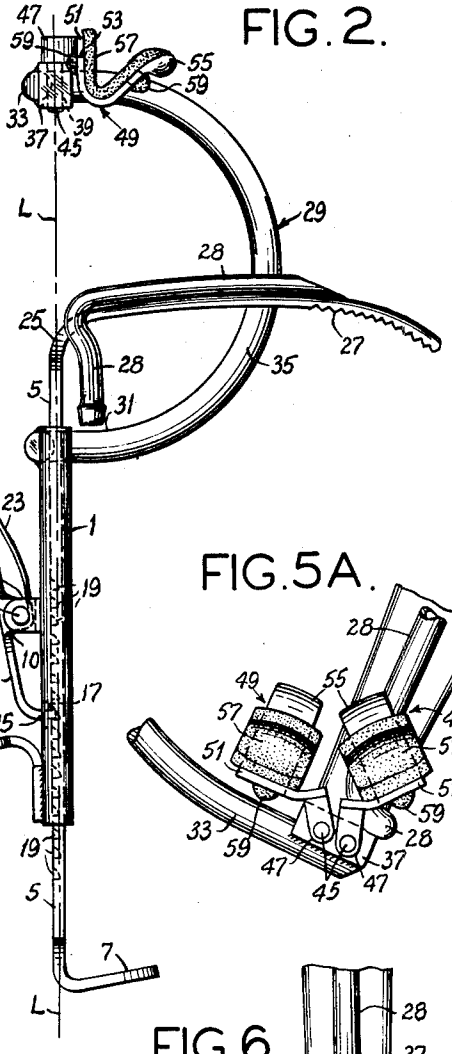


FIG. 5.

FIG. 5A.

FIG. 3.

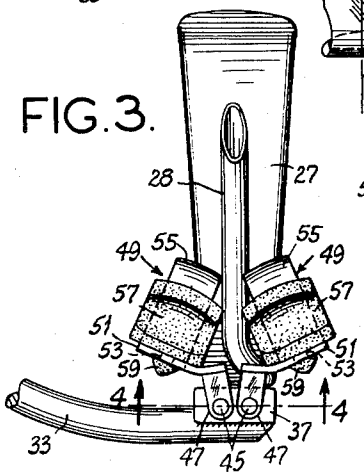


FIG. 4.

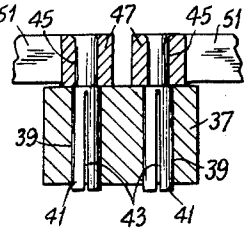
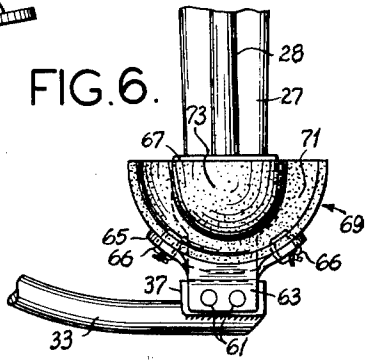


FIG. 6.



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SURGEON'S MOUTH GAG

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11 Claims. (Cl. 128—12)

This invention relates to surgical instruments, and more particularly to mouth gags.

Among the several objects of the invention may be noted the provision of a mouth gag adapted to hold the mouth open and the tongue depressed for examinations and surgical operations in and beyond the oral cavity; the provision of a gag of the class described having an improved adjustable form of bite, permitting flexible application of the gag into the most appropriate position for the examination or surgical operation to be performed; the provision of a gag of the class described which has an improved interchangeable means for mounting bites thereon of both swiveling and rigid types; and the provision of a gag of this class in respect to which interchange of various forms of bites may conveniently be accomplished. Other objects and features will be in part apparent and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structures hereinafter described, and the scope of which will be indicated in the following claims.

In the accompanying drawings, in which several of various possible embodiments of the invention are illustrated,

Fig. 1 is a front elevation of the mouth gag showing certain swivel bites in symmetrical operating positions of near maximum spread;

Fig. 2 is a right side elevation of Fig. 1;

Fig. 3 is a fragmentary top plan view of Fig. 1 but showing said bites in symmetrical positions at a near minimum spread;

Fig. 4 is an enlarged cross section taken on line 4—4 of Fig. 3;

Figs. 5 and 5A are fragmentary views similar to Fig. 3, showing the bites in opposite unsymmetrical positions; and,

Fig. 6 is a view similar to Fig. 5, showing the application of a rigidly mounted form of bite.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now more particularly to Figs. 1 and 2, numeral 1 indicates a handle having a finger piece 3 attached at its lower end, said handle 1 forming a guide for a slider 5. The slider is provided at its lower end with a finger piece 7. At 9 is shown a rocker having a clevis 10 pivoted by pin 11 to a clevis 13 mounted on the handle 1. The rocker 9 is bent at its lower end to form a pawl 15, movable through an opening 17 in the handle 1. This is for engagement with ratchet-forming notches 19 in the slider 5. At its upper end, the rocker 9 is formed as a finger plate 21, beneath which is attached a leaf spring 23. The free end of spring 23 engages between the legs of the clevis 13 in order to bias the rocker 9 so that the pawl 15 is normally driven toward engagement with one of the notches 19. The upper end

of the slider 5 is curved at 25 to form a tongue depressor or blade 27. On the blade is optionally mounted an anesthetic tube 28. Attached as by soldering to the upper end of the guide 1 is a horizontal U-bar 29, having two transverse legs 31 and 33 connected by a rearwardly curved loop 35. The parts thus far described are conventional.

Attached as by soldering to the end of the leg 33 is a block 37. The block is located in approximately the plane of movement of the tongue blade 27. Block 37 mounts the swiveling bites 49 each comprising a rigid portion of V shape having downwardly converging sides 51. One of sides 51 is longer horizontally than the other and has a laterally projecting lug 47 provided at its end with a depending trunnion or prong 41 journaled in an individual hole 39 in block 37. Each prong is shouldered to provide an upper portion 45 of reduced diameter. Preferably prongs 41 are split as shown at 43 and have a spring action which provides snug fits for the insertion and removal of the prongs and for their rotary adjustments in holes 39.

Each bite swivels independently of the other bite and about a separate axis. Hence the bites may assume a multitude of different angular and spaced relations to each other and may freely adjust automatically to different dental curvatures to which the device is applied. One side 51 of each bite member is enlarged and smoothly rounded at 55 to provide an upwardly facing surface for bearing against the hard palate and prevent undue pressure on the front teeth. Both sides 51 of each bite member contain holes 53. Cushion strips 57, of rubber or the like, have integral headed buttons 59 inserted through holes 53 and hold strips 57 in position as bite liners.

Operation of the gag thus far described is as follows:

The plate 21 is depressed to withdraw the pawl 15 from notches 19 and the slider 5 is raised by pushing up on the finger piece 7. The tongue depressor 27 is then inserted into the patient's mouth, part 29 being outside of the mouth. At this time the strips 57 of members 49 are pushed up over appropriate ones of the patient's upper front teeth. The strips 57 adjust their positions to the curvature of the tooth arch, as illustrated in Fig. 3 for a small arch. Then the slider 5 is pulled down, so as to force the blade 27 down against the tongue to clear the oral cavity to the extent desired.

Before, during or after application, the whole assembly may be rocked on vertical axis L and the members 49 placed in relatively unsymmetrical positions, as illustrated by Figs. 5 and 5A. This is made possible by reason of the turning permitted to each pocket member 49 by rotation of its prong 41 in its respective hole 39. Consequently, the operator may freely locate the gag in the most convenient position for the examination or surgical operation with which he is concerned. In so doing, the blade 27 may be angled into any desirable sidewise position, as suggested by Figs. 5 and 5A. Likewise, the anesthetic tube, if employed, will be directed sidewise. The rocked positions selected in Figs. 5 and 5A have not been chosen for any particular tooth arch to be accommodated but to show various articulations possible. Upon application of the strips 57 to the teeth, the proper positions to match the tooth arch curvatures are assumed automatically.

If desired, the members 49 may be removed by removing their prongs 41 from the holes 39 and fixed trunnions or prongs 61 inserted, such as illustrated in Fig. 6. These prongs 61 form rigid extensions from a bracket 63 of a curved member 65, to which is attached a dome-shaped extension 67. Nested between the members 65 and 67 is a resilient member 69, curvilinearly grooved as shown at 71 and having a palate-engaging dome 73. Attach-

ments between parts **69** and **65** are shown at **66**. Thus member **69** may be nested over the patient's front upper teeth. The prongs **61** may or may not be split as are prongs **41**. Such splitting aids their insertion or removal but is not necessary for rotary positioning of them in their holes, for they are nonrotary. The operation of the invention with the attachment of Fig. 6 is like that above described, except that there is no rotation of the assembly **65**, **67**, **69**, **71** and **73** with respect to the block **37**. Nevertheless, under some circumstances such an alternative nonrotary arrangement is desired. The curvature for the parts **65**, **67**, **69**, **71** and **73** is that for a child, but the curvature of similar parts for an adult may be employed.

The adjustability of the instrument is an aid to avoiding aspiration of the anesthetic projected from the ether tube **28**, since the anesthetic may be projected sidewise along the blade **27** when the blade is angled, as shown in Figs. 5 or 5A.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a mouth gag having a two-legged loop member on one leg of which is a guided slide for a manually adjustable tongue blade; the improvement comprising a pair of bite members having independent upright swivel mounts on the other leg of said loop member, said members being movable on their respective mounts into various horizontal angular relations in the same general horizontal plane.

2. The improvement in a mouth gag having a two-legged loop member on one leg of which is a guided slide for a manually adjustable tongue blade; comprising a pair of separate bite members, individual prongs on the bite members respectively, and a member on the other leg of said loop member having spaced holes therein with upright axes in which said prongs are journaled.

3. The improvement in a mouth gag having a generally U-shaped loop member with its legs arranged one above the other and the lower leg of which is a guided slide for a manually adjustable tongue blade; comprising a pair of separate bite members, an individual pivot prong rigid with each bite member, and a member on the other leg of said loop member having spaced holes therein, each receiving one of said prongs, whereby said bite members are independently rotatable in and independently removable from said holes.

4. The improvement in a mouth gag having a generally U-shaped loop member with legs disposed generally horizontally one above the other, a ratchet-controlled guided slide on the lower leg for a manually and vertically adjustable tongue plate adapted to carry an anesthetic tube, a part of the other leg being provided with a pair of holes with upright axes, a pair of separate bite members, each having a split prong slidable vertically into and out of one of said holes and independently rotatable therein.

5. The improvement in a mouth gag having a generally U-shaped loop member with its legs disposed generally horizontal and one above the other and on the lower leg of which is a ratchet-controlled guided slide for a manually adjustable tongue plate adapted to carry an anesthetic tube, comprising a rigid block on the other leg of the U-shaped member provided with a pair of upright holes, said holes being spaced apart horizontally, and tooth-engageable means having upwardly facing groove elements and having downwardly projecting mounting pins received in said holes.

6. The improvement in a mouth gag according to claim 2, wherein each bite member is rigid and of V-shaped vertical cross section and an individual strip of cushion material is seated within each V-shaped member.

7. The improvement in a mouth gag according to claim 6, wherein each V-shaped rigid member is formed with opposite openings and each strip is formed with opposite resilient buttons inserted in respective opposite openings and anchoring the strip therein.

8. The improvement in a mouth gag according to claim 6, wherein the side of each V-shaped member remote from the prong is formed with a smoothly rounded upwardly facing edge portion.

9. The improvement in a mouth gag having a two-legged loop member on one leg of which is a guided slide provided with a manually adjustable tongue blade, comprising a pair of separate bite members having V-shaped grooved portions arranged end to end but spaced from each other endwise, individual trunnions on said bite members depending therefrom and offset lengthwise of the bite members from said grooved portions and pivoted on the other leg of said loop member to swing thereon horizontally.

10. The improvement in a mouth gag according to claim 2 in which the two bite members are spaced apart lengthwise and the depending trunnions are offset toward each other with their axes closer together than the adjacent ends of the grooved portions.

11. The improvement in a mouth gag according to claim 6 wherein each individual cushion strip extends beyond the ends of the rigid V-shaped member.

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