ABSTRACT: A mouth gag for use with a tongue depressor for oral examination and surgery, the gag being so constructed as to permit relative pivotal motion about a horizontal axis between the gag and the tongue depressor, and pivoting of the gag on the upper teeth of the patient, with locking of both gag and tongue depressor in positions of relative adjustment.
MOUTH GAG

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention or discovery relates to that field of the art embodying surgical instruments for oral examination and surgery. The invention relates more specifically to a mouth gag for use in combination with a tongue depressor. The gag is provided with the usual channel shank to receive the shank of a tongue depressor, and a half loop provided with means for engaging the upper teeth of the patient, the half loop being pivotal with respect to the shank of the gag and also pivotal relatively to the upper teeth of the patient. There is no inside engagement with the lower jaw of the patient, and the tongue depressor having its Shank disposed within the channel shank of the gag may be pivoted relatively to the half loop to any desired angle. The structure is so arranged that a gag and tongue depressor may be positioned in a patient's mouth, even over an endotracheal tube already positioned for purposes of anesthesia, with a substantially continuous movement of one hand of the surgeon. Also, the gag and depressor may be easily removed from the mouth with the use of one hand only and exceedingly rapidly. This arrangement permits the use of a single size tongue blade, rather than requiring an assortment of tongue blades in different sizes.

2. Description of the Prior Art

Heretofore, attempts have been made to provide a mouth gag and tongue depressor combination wherein the tongue depressor could be pivotally related to the mouth gag, but in all such instances of which I am aware, the gag not only engaged the upper teeth of the patient but also the lower teeth. Such arrangement prevented any pivotal movement of the gag relatively to the upper teeth and the tongue depressor could not be moved forwardly and rearwardly to a desired position. Consequently a collection of blades of various sizes had to be available to the surgeon. In addition, the construction of such gags as heretofore made materially impeded both vision and access to the operating field to a material extent. In other instances, gags were provided for engagement with the upper jaw of the patient and not with the lower jaw but it was impossible to pivot the tongue blade relatively to the gag or to move the tongue blade forwardly and rearwardly within the patient's mouth, again requiring a collection of blades of different sizes as well as eliminating the adjustments now believed essential.

In another form of mouth gag commonly used heretofore an attempt was made to acquire some adjustability of a gag-tongue depressor combination. In this instance the gag embodied a complete loop having a portion thereof for engagement with the palate behind the upper teeth with upper tooth engagement of a portion of the loop to each side of the palate engaging portion. However, with certain patients having small mouths, buck teeth, or high-arched palates, the rod could not properly be placed with upper front tooth contact but must be moved so far back on the upper palate that the blade is consequently inserted intraorally too far; and lower lips have been pinched between the blade and the lower teeth from pressure of the blade forced by the posterior placement of the shank element of the gag. Also, posterior placement is limited by the buccal skin which prevents positioning the blade sufficiently to adequately depress the base of the tongue in many patients.

In addition, all mouth gag-tongue depressor combinations made heretofore, of which I am aware, required the use of two hands and in many cases more than two hands to properly position the combination. None of these could be positioned or removed with a single hand operation.

SUMMARY OF THE INVENTION

The instant invention or discovery relates to a mouth gag and mouth gag-tongue depressor combination that may be positioned within the mouth of a patient and rapidly removed therefrom with the use of only one hand by the operating surgeon. Adjustment may be made with the gag-depressor combination in position in the patient's mouth, and the combination may be placed in the patient's mouth over an endotracheal tube previously positioned for purposes of anesthesia. The gag customarily has a channeled shank for reception of the shank of a tongue depressor and a bow or locking member laterally of the shank as a loop that has a return portion adapted to engage the upper teeth of the patient. The channeled shank extends downwardly of the body of the patient along the mid-sagittal line thereof during use, and the bow is pivotally attached to such channeled shank along a transverse pivot axis that is disposed at right angles to the longitudinal axis thereof, whereby the tongue blade may be selectively positioned at a desired angle forwardly, upwardly, and outwardly as desired by virtue of the double pivot arrangement, provided by the transverse pivot axis and the engagement of the upper teeth by the bow. The gag has nothing to contact the lower teeth or jaw of the patient, which would interfere with the double pivoting operation. The gag-depressor combination is so constructed as to afford free visible and physical access to the field of operation to an extent not heretofore acquirable. By virtue of the tongue blade being forwardly and rearwardly movable, the necessity of having a supply of tongue blades of various sizes is eliminated, a single-sized tongue blade is all that would be necessary for most adults, and a single tongue blade for most children.

The instant invention is usable with equal ease with various sized mouths, buck teeth, high-arched palates, and most other variations in mouth formations. Means are provided for freely permitting inward pivotal movement of the tongue blade relatively to the gag, but which lock against outward pivotal movement, which lock is easily releasable. The usual form of locking arrangement to maintain height adjustment between the tongue blade and the gag is mounted on the shank of the gag, and the arrangement is such as to prevent pivoting may be released alone or both locking means may be released together by a flick of the thumb, thus making it easy to install or remove the gag-depressor combination with one hand.

It is apparent, therefore, that applicant has solved the problems previously existing in the prior art as mentioned above, and solved them in a simple and economical manner, as will become more apparent from the disclosures hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary front view showing a gag-depressor combination embodying principles of the instant invention in operative position within a patient's mouth;

FIG. 2 is an enlarged front elevational view of the invention without the patient's mouth; and

FIG. 3 is a fragmentary side elevational view, taken from the left-handed side of FIG. 2, of the invention and indicating in dotted lines the nature of the pivotal movement of a part of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The mouth gag of the instant invention includes a channeled shank 1 with the usual finger piece 2 at the lower end thereof and the usual pawl 3 immediately pivoted as at 4 and having an inturned lower end 5 for engagement with the rack on a tongue blade shank through an aperture 6 in the shank 1, this pawl being constantly spring urged into the position of engagement seen in FIG. 3. At the top thereof, the shank 1 provided with a transversely extending bearing sleeve 8 welded or equivalently secured to the shank. A loop or bow 9 preferably of open configuration with a 180° closed end, is journaled within the bearing sleeve 8 and is thereby pivotally related to the shank 1. Any suitable means, not shown, may be utilized to retain the end of the bow within the bearing sleeve 8, such as a projection on either the end of the bow or the bearing sleeve riding in a groove extending partially around the other. The upper or free end of the
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3 bow carries thereon a pair of arches 10-10, or the equivalent, for engaging the upper teeth of the patient. A substantially sector shaped ratchet 11 is welded or equivalently secured to the bow 9 adjacent the broad side of the bearing sleeve 8. A pawl 12, having a preferably serrated thumb press 13 on one end thereof is pivoted as at 14 to a mouth 15 secured to the base 1, and this pawl is spring biased in any suitable manner into engagement with the teeth on the ratchet 11. It will be noted that the teeth are so disposed that free pivotal movement may occur between the shank and the bow 9 in one direction but is prevented against pivotal movement to the opposite direction unless the element 13 is pressed to release the pawl. A stop pin 16 may be provided on the ratchet, if desired, to abut the shank 1 and prevent the ratchet from passing out of engagement with the pawl when the shank 1 is moved in the direction of free movement. The pawl 12 may alone be moved into disengaged position by pressure on the thumb member 13. However, means are provided in the form of an arm 17 secured at one end to the pawl and extending freely across the path of movement of the upper end of the pawl 3, whereby when the pawl 3 is moved to released position, it automatically contacts the arm 17 and moves the pawl 12 to released position.

The gag above described is designed for use with a tongue depressor comprising a shank 18 and a tongue blade 19 disposed at an angle thereto, the blade 19 having a hollow ridge 20 extending longitudinally thereof to define a groove on the underside of the blade for the reception of an endotraechal tube 21, seen in FIG. 1. The shank of the tongue blade is provided with a series of transverse notches to provide a rack 22 for engagement by the lower end of the pawl 3 to hold the tongue blade in fixed position relatively to the channelized shank 1 of the gag, these parts being associated telescopically. The usual finger hook 23 may be provided on the bottom of the depressor shank 18 to facilitate height adjustment of the tongue blade relatively to the shank 1 of the gag.


In FIG. 1 the gag-depressor assembly is shown in operative position within the mouth of a patient. The arches 10 on the bow 9 are in engagement with the upper teeth 24 of the patient, and the blade 19 of the depressor is holding down and retracting the tongue 25 of the patient. At the same time the blade 19 is maintaining the endotraechal tube 21, which may have previously been placed in position for anesthesia, firmly in position and out of the way of the operating surgeon and it will be noted that vision of and access to the operating field is unimpeded to an extent heretofore not obtained.

In operation, the instant invention is extremely simple, and yet highly effective in operation. Before application to a patient's mouth, the attending surgeon may adjust the height of the tongue blade 19 by depressing the upper end of the pawl 3 and telescopically moving the shank 18 of the depressor relatively to the channel shank 1 of the gag. Then, with the use of only one hand and with the parts disposed substantially as shown in the dotted line position of FIG. 3 with the teeth engaging arches opposite the pivot sleeve 8 and in the same general plane with the pivot sleeve and the shanks of the depressor and gag, the surgeon may then engage the upper teeth of the patient with the arches 10 and by almost a continuous motion press the tongue blade inwardly and downwardly to the desired extent, with the arches pivoting on the tongue blade. The shank of the gag pivoting on the sleeve 8 relatively to the bow 9, carrying the tongue blade shank therewith. This engagement may reach the position shown in full lines in FIG. 3, although actually the preferable position is with the arches 10 in alignment with the pivot sleeve 8 directly across the mouth of the patient, the shanks of the blade and gag being disposed so as to contact the teeth of the patient may be necessary. The device is held in position by the engagement of the arches 10 with the upper teeth of the patient and pressure upon the tongue of the blade 19, there being no working contact whatever with the lower jaw or teeth of the patient. If pivoting on the upper teeth of the patient is prevented, as is the case with any device which also engages the lower teeth, then the pivot at the sleeve 8 will enable repositioning of the tongue depressor so as to further depress the base of the tongue, but forward and rearward movement of the depressor blade is prevented. On the other hand, in the instant device without any engagement with the lower teeth or jaw, the shank 1 of the gag may be pivoted so that the depressor blade may extend farther into the mouth or as may be desired, thereby eliminating the need of a plurality of tongue depressors having blades of different sizes. It will be noted that the ratchet 11 and pawl 12 are so related that inward movement of the depressor blade is freely permitted but outward movement of the depressor blade is locked by the pawl unless the same is released from the ratchet. It is a simple expedient to make any minor adjustments of the tongue blade outwardly after the assembly has been positioned by releasing the pawl 12 to permit outward movement of the blade.

It should also be noted that the entire gag-depressor assembly may be removed from the patient's mouth with the surgeon utilizing only one hand, grasping the shank 1 of the gag and exerting thumb pressure on the upper end of the pawl 3 and that thumb pressure automatically disengages both the pawl 3 and the pawl 12 as above explained permitting outward movement of the tongue blade and telescopic movement between the shank of the depressor and the shank of the gag.

This is quite advantageous, especially if it is necessary, due to some emergency, to almost instantaneously remove the assembly from the mouth of the patient.

It will further be noted that the assembly may readily be positioned in the patient's mouth with the endotraechal tube already positioned, since the ridge 20 of the tongue blade may be laid over the tube in the same substantially single motion it requires to position the assembly in the mouth of the patient with the tongue depressed ready for operation or diagnosis.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim:
1. A mouth gag for use with a tongue depressor in oral diagnosis and surgery, which mouth gag includes a channelized shank adapted to receive the shank of a tongue depressor and a bow attached to said shank and extending laterally as a loop having a return portion adapted to engage the upper teeth of a patient while the said channelized shank extends downwardly substantially along the mid-sagittal line of the body of the patient, the improvement comprising: a pivotal connection attaching said bow to said channelized shank and providing a pivot axis that extends transversely of said shank at substantially right angles to the longitudinal axis thereof and permits relative pivotal movement between said bow and shank around said transverse axis, said bow being adapted to pivot on the upper teeth of the patient at the location of engagement therewith while the gag is free of any working engagement with the lower teeth or jaw of the patient and while the tongue depressor extends into the mouth posteriorly, thereof and on top of the tongue; and manually releasable locking means operably associated with said channelized shank and bow for maintaining them in selected pegged interengaged adjustment.
2. A mouth gag combination in accordance with claim 1, wherein the locking means comprises pawl and ratchet mechanism.
3. A mouth gag combination in accordance with claim 2, wherein the ratchet of the mechanism is secured to the bow and the pawl is secured to the channelized shank.
4. A mouth gag combination in accordance with claim 3, wherein a second pawl is secured to the channelized shank for coaction with a ratchet of a tongue depressor that is adapted to be received by the channel of said channelized shank; and
means are provided between said second pawl and the first pawl for operating the two in common.

5. A mouth gag combination in accordance with claim 4, wherein the second pawl includes a thumb-press for manual actuation; and wherein the means for operating the two pawls in common includes a stub shaft extending from the first pawl into the line of action of the second pawl.

6. A mouth gag combination in accordance with claim 4, including a tongue depressor having a mounting shank and a blade member, the mounting shank being provided with ratchet formations for coaction with the second pawl and being slidably received by the channel of the channeled shank, with the blade member projecting in tongue-engaging direction.

7. A mouth gag combination in accordance with claim 1, including a tongue depressor having a mounting shank and a blade member, the mounting shank being slidably received by the channel of the channeled shank and the blade member projecting in tongue engaging direction; and means for locking the mounting shank of the tongue depressor in adjusted positional relationship with the channeled shank.