Oct. 29, 1935. J. A. N. THIBERT 2,019,060

MOUTH PROP

Filed Sept. 18, 1934

Fig. 1.

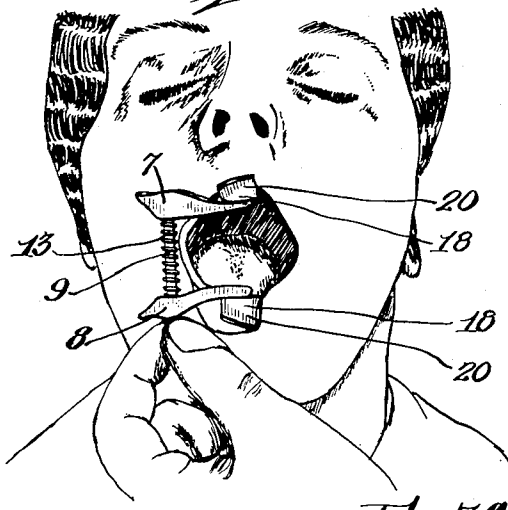


Fig. 2.

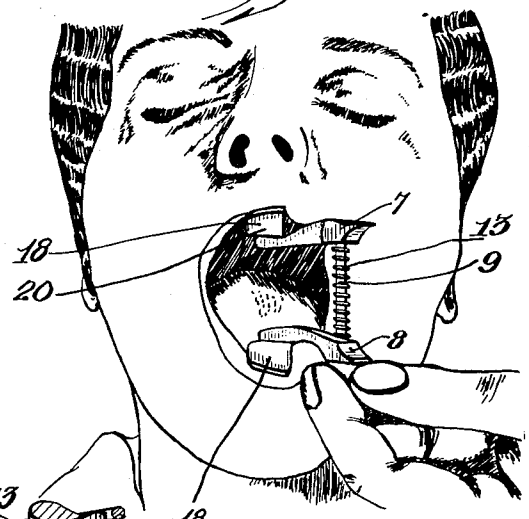


Fig. 3a.

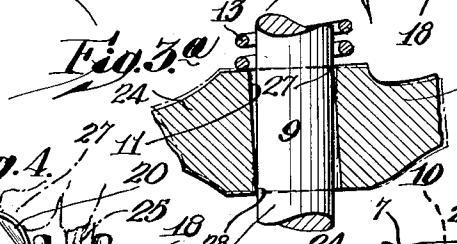


Fig. 4.

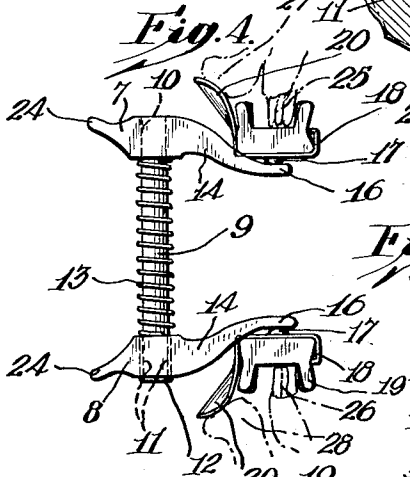


Fig. 5.

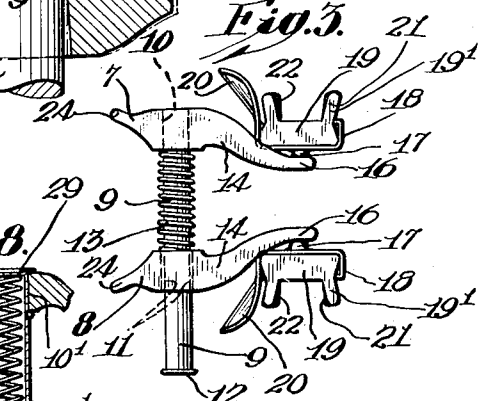


Fig. 8.

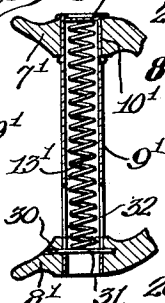


Fig. 6.

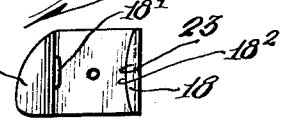


Fig. 5.

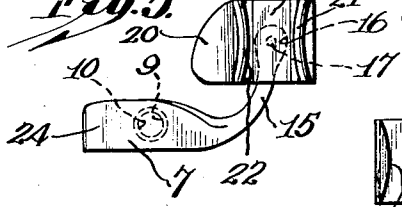
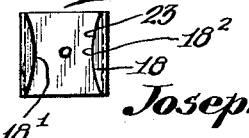


Fig. 7.



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2,019,060

MOUTH PROP

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Application September 18, 1934, Serial No. 744,471

6 Claims. (Cl. 128—6)

The present invention relates to a device for propping and holding jaws apart while a dentist or throat surgeon works on the patient's teeth or performs an operation on teeth, tonsils or adenoids, the device being intended however for any use to which it may be adapted.

A purpose of the invention is to provide a novel device of the character indicated which will be easy and inexpensive to manufacture and well suited to the needs of service.

A further purpose is to combine a lip-holding device with a jaw prop.

A further purpose is to provide a jaw prop which locks in any set position against closing under pressure of the jaws, but automatically opens as the mouth opens.

A further purpose is to permit the operator to close a locked jaw prop instantly, no matter what the position of the prop, desirably merely pressing upon bar extensions of the jaw prop.

A further purpose is to provide a novel jaw propping device which will be particularly suited for use in those operations during which the patient is to be under the relaxing influence of general anesthesia, as from nitrous oxide or ether, or other general anesthetic.

A further purpose is to follow up the spontaneous muscular relaxing of a patient receiving a general anesthetic, such as nitrous oxide, or any other anesthetic. I use this spontaneous relaxing of the muscles at the attainment of anesthesia to permit a spring to additionally open the mouth of the patient at the moment of complete anesthesia, thereby securing a wider opening of the mouth and more complete access to the affected parts. When the patient has relaxed in the third stage of anesthesia, the muscular relaxation, which is one of the symptoms of anesthesia, permits the spring to urge the mouth open wider, or permits the operator to open the mouth wider, to be held open by the spring, and by the locking of the jaw prop.

A further purpose is to interpose a compressed spring between relatively movable end members of a jaw prop thereby urging the jaws apart resiliently.

A further purpose is to use a spacing spring of sufficient strength to open the jaws more widely after general anesthesia than before.

Further purposes will appear in the specification and in the claims.

I have elected to illustrate two only of the different forms in which my invention resides but have selected forms and a modification thereof which are practicable and effective and which at the same time well illustrate the principles involved.

Figures 1 and 2 are front elevations illustrating a desirable embodiment of the device on a patient in different positions of use.

Figures 3 and 4 are elevations to larger scale than in Figures 1 and 2, which illustrate the device in relatively contracted and expanded positions, the positions respectively before and after relaxation of the mouth muscles from anesthesia.

Figure 3*a* is an enlarged section of a fragment of Figure 3, the section being parallel to the paper in Figure 3.

Figure 5 is a top plan view of Figure 4.

Figure 6 is a fragmentary plan view corresponding to a portion of Figure 5 but with a jaw cushion shown in Figure 5 removed in Figure 6, to illustrate a desirable detail feature of the structure.

Figure 7 is similar to Figure 6, but illustrates a modification without the lip retractors or lip guards, to be used on the posterior teeth.

Figure 8 is a fragmentary section of an alternative form of jaw prop embodying my invention.

Like numerals refer to like parts in all figures.

Describing in illustration and not in limitation and referring to the drawing.

The device as shown in Figures 1 to 6, inclusive, comprises spaced bars 7 and 8 loosely connected together by a rod 9. The rod 9 is fastened at 10 to the bar 7 at one end and slides with respect to the bar 8 through opening 11. It carries a head 12 beyond the bar 8 to limit the relative spread of the bars. A spring 13 surrounding the rod 9 and compressed between bars 7 and 8, presses the bars apart. The bars are thus free to turn relatively on the axis of the rod 9 and by contraction and expansion of the spring, to relatively move along this axis. The rod 9 and bar 7 may desirably move as a unit.

The bars 7 and 8 are preferably relatively heavy near the rod 9 and offset toward one another at 14 and then laterally at 15 to provide head portions 16 that carry outwardly extending pivot pins 17 for the support of members 18. The members 18 serve the double function of holders for jaw cushions 19 and of supports for lip guards 20, which may, with some disadvantages, be omitted, as shown in Figure 7. The guards 20 are shown as integral with the holders 18. The pivot pins 17 are rigidly fastened in the head portions 16 of the bars 7 and 8. In practice pins are cast with the bars.

The holders 18 are suitably of sheet metal and at the perforations for the pivots 17 are de-

pressed or balled toward the head portions 16 of the respective bars, to provide freedom of universal angular rocking at 17, permitting the holders and therefore the cushions to accommodate their position to any normal variations in the teeth or jaws of different patients. The side walls of the holders are closer together at the middle at 18', 18² than at the ends to hold the cushions to advantage.

The cushions 19 are shown as rubber channels, the sides of which flare from the middle outwardly at 21 and/or at 22 by reason of the holding engagement or/and engagements with the interiors of the holders. The upstanding projections 19' prevent the cushions from slipping laterally out of position.

In order to give good holding engagement I prefer to convexly bend the holding edge of the holder at 23, this convexed portion pressing into the material of the cushion and preventing inadvertent displacement.

The bars 7 and 8 are shown as of cast metal and are preferably opposite counterparts with the single exception that one is bored at 11 to permit sliding engagement with the rod 9 while the other at 10 makes rigid connection with the rod 9. The bars are extended at 24 to form lug portions for engagement by a finger and thumb of the surgeon or other individual inserting the device to place.

The prop is positioned preparatory to administering an anesthetic, inserting the cushion members between the jaws of a patient while pressing the bars together at the lugs 24, the cushions 19 receiving the teeth or gums of the patient and the lip guards 20 engaging the lips and preventing them from moving to positions interfering with full access to the mouth.

When a patient has relaxed into the third stage of anesthesia, a muscular relaxation takes place, which is one of the symptoms of anesthesia, and the mouth automatically opens wide and permits better access to the affected parts. Sometimes the surgeon or his assistant must manually urge the mouth open wider. In this case, my mouth prop immediately increases its opening, and holds the mouth in the set position.

The position of the prop after insertion and during the period before the patient attains complete anesthesia may be as indicated in Figure 3. The strength of the spring 13 need not be so great as to materially discomfort the mouth muscles of the patient with the device in the position of Figure 3.

At the moment the patient attains complete anesthesia and the mouth muscles relax, there is an immediate expansion of the spring 13, more widely opening the mouth. The additional opening of the mouth shows the surgeon the moment when he may proceed with the operation since anesthesia is usually then complete and the additional opening of the mouth of the patient also providing the greatest access to the affected parts that can be properly attained.

An important feature of my invention is the locking of the mouth prop in any set position. The opening 11 in the bar 8 is desirably slightly larger than the rod 9, so that normally the bar 8 can slide freely in or out along the rod 9 against or under the action of the spring 13. At all times, the bars 7 and 8 will be forced apart until resistance is encountered by the spring 13, as for example by contact of the jaw cushions with the mouth of the patient or engagement of the bar extensions 24 by the fingers of the operator.

When pressure is applied to the jaw cushions, as for example incident to the effort of the patient to close his mouth, the jaw prop does not close, but locks in the set position, as shown in Figure 3a. The bar 8 rocks slightly from the position shown in dot-and-dash in Figure 3a when pressure is applied to the jaw cushions, and the inner end of the opening 11 at 27 on the side toward the jaw cushions and the outer end of the opening 11 at 28 on the side toward the bar extensions 24 jam against the rod 9 and lock the mouth prop by friction. It is then impossible for the patient to force the mouth prop closed, notwithstanding that the patient may become rigid. Should the patient relax, however, the mouth prop opens further, and locks in the new position.

To release the mouth prop, it is merely necessary for the operator to press against the bar extensions 24, thus rocking the bar 8 to the dot-and-dash position of Figure 3a, in which the operator can slide the bar 8 along the rod 9 without locking. The leverage of the bar extensions 24 is slight compared to the leverage of the bars through which the mouth prop is locked, so that pressure on the bar extensions 24 closes the prop, being almost in line with the axis of the rod 9, while pressure on the ends of the bars locks the prop.

It will be seen that the engagement members, that is the cushions 19 and lip guards 20, may be and usually are inserted at the middle of the mouth, more usually as in Figure 1, with the bow portions 15 of the bars 7 and 8 extending along the lips to the side of the mouth, the outwardly extending body portions of the bars offset so far to one side as to afford greatest access through the mouth to the affected part.

When desired, the prop may be swung from one side of the mouth to the other without removing the cushion and lip members 19 and 20. For example, in extracting all the teeth, the operator may operate successively on one side and then on the other side, shifting the mouth prop from one to the other of the positions of Figures 1 and 2 when changing sides, without rearranging throat packs or removing and reversing the mouth prop. In using nitrous oxide, speed is a vital factor. In some cases shifting from one to the other of the positions of Figures 1 and 2 is not necessary, particularly because, if advantage be desired from the bend of the bars seen in Figure 5, in allowing the bars to lie close to the mouth while giving minimum metal within the mouth, the prop can be turned upside down. Either character of bar direction or position can thus be secured, with the bar at right or left as desired or as required.

Without turning the prop upside down both of the positions shown in Figures 1 and 2 can be secured. Notwithstanding that the prop position in one of Figures 1 and 2 may be regarded by some operators as an awkward prop position, much less desirable than can be secured by turning the prop upside down, it may nevertheless be more desirable to swing the prop from one of these positions to the other, where freedom of access is desired during the same operation at the other side of the mouth than at the side at which access was first desirable, than to replace the prop during the operation.

The bends of the prop seen at 14 in Figure 4, and at 15 in Figure 5, materially assist in giving as much free opening as possible for access to the point at which the operation is performed.

The rod 9 may, if desired, take the form of a sleeve 9' as shown in Figure 8. In this form the sleeve 9' has a closed end 29, and at this end makes a swivel fit at 10' with the bar 7', this permitting

the bar 7' to swing with respect to the sleeve 9' and the bar 8'. The bar 8' is drilled at 30 to receive a pin 31, which passes through a slot 32 in the sleeve 9'.

Movement of the sleeve 9' longitudinally with respect to the bar 8' is permitted by the slot 32. The spring 13' engages the closed end 29 of the sleeve at one end, and engages the pin 31 at the other end. The jaw contacting ends of the bars 7' and 8' may be the same as those in any of the other figures. The same locking action in any set position is obtained with the form of Figure 8 as with the other forms.

It will be evident that a desirable feature of my mouth prop is the resilient spring action upon the jaws. When the mouth prop is initially inserted, the muscles of the mouth and jaw are likely not to yield readily, and the extent of mouth opening possible without great discomfort to the patient is likely to be small. When, however, the relaxing effect of anesthesia is experienced by the patient, the muscles of the mouth and jaw yield and permit increased opening of the mouth under the action of the spring 13, which resiliently urges the jaw cushions apart. This gives the operator a larger opening through which to work than would be obtainable if the jaw prop were rigidly set at the time it is first inserted and before the relaxation due to the anesthesia.

It will be evident that the fit of the resilient cushions within the guttered holders, shown in Figures 3–7, permits easy withdrawal and insertion of the cushions. As these cushions are ordinarily made of rubber it is desirable to have them thus readily removable and insertable in order that they can be taken out for sterilization of the prop or can be retained during the sterilization and removed afterward to facilitate rapidity in drying.

In view of my invention and disclosure variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art to obtain all or part of the benefits of my invention without copying the structure shown, and I, therefore, claim all such in so far as they fall within the reasonable spirit and scope of my invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A mouth prop comprising separated arms, means for forcing the arms apart, a guide for controlling movement of one of the arms with respect to the other and terminals for the arms pivoted thereon and including sections of rubber channel and holders for the sections of channel, the holders engaging the outside of the channel walls intermediate the lengths of the sections and permitting these walls to curve inwardly.

2. A mouth prop comprising separated arms, means for forcing the arms apart, a guide for controlling movement of one of the arms with respect to the other and terminals for the arms pivoted thereon and including outwardly directed sections of rubber channel and holders for the sections of channel, the holders engaging the outside of the outer channel walls intermediate the lengths of the sections and permitting these walls to curve inwardly.

3. For a mouth prop, a terminal for engaging teeth of a patient, the said terminal comprising a channel rubber section and a holder for the rubber section, the said holder having side members engaging the channel sections laterally and a lip guard forming an extension of one side member for retracting the lips of the patient.

4. A resilient mouth prop comprising bars adapted to lie partly inside and partly outside the mouth, resilient means for pressing the bars apart and grooved terminals pivoted to the inner ends of the bars adapted to engage the teeth of the patient and one of them having an extension providing a lip guard.

5. A resilient mouth prop comprising bars adapted to lie partly inside and partly outside the mouth, resilient means for pressing the bars apart and grooved terminals pivoted to the inner ends of the bars adapted to engage the teeth of the patient and one of them having an extension providing a lip guard, the lip guard being diagonal laterally with respect to the groove of the terminals.

6. In a mouth prop, a retaining member for a jaw cushion, a soft rubber jaw cushion held in position by the retaining member, having general channel formation with sides extending away from the retaining member to prevent lateral displacement of the mouth prop and a lip retracting member extending from one side of the retaining member beyond the corresponding side of the jaw cushion.

JOSEPH A. N. THIBERT.