

F. C. JOUTRAS.
SPECULUM.
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Patented Apr. 28, 1914.

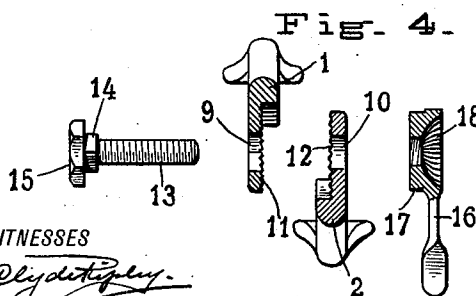
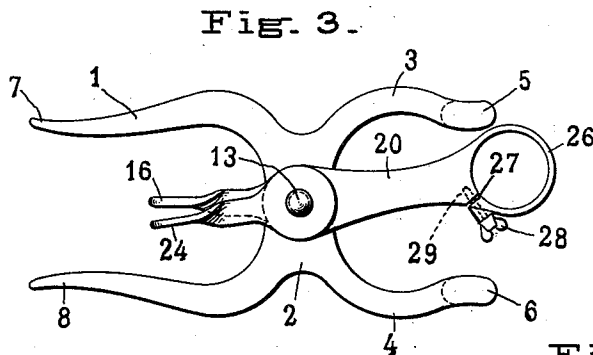
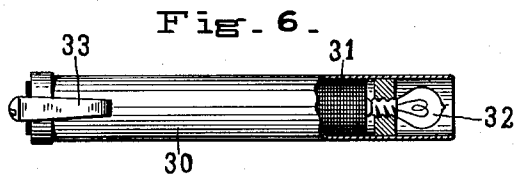
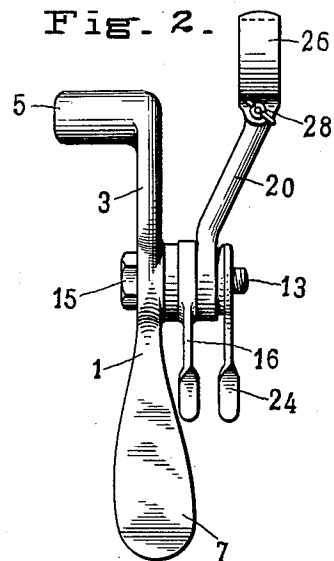
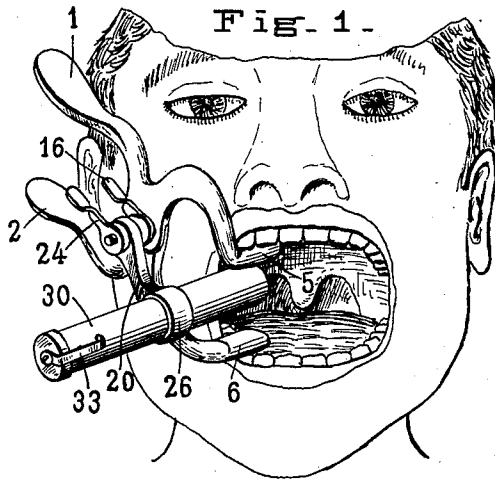
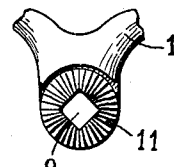


Fig. 5.



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SPECULUM.

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To all whom it may concern:

Be it known that I, FRANKLIN COOPER JOUTRAS, a citizen of the United States, and a resident of Union Hill, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Specula, of which the following is a full, clear, and exact description, whereby any one skilled in the art may make and use the same.

The invention relates to specula and primarily to the class of surgical instruments known to the profession as "mouth gags." Such devices are commonly employed in one form or another and are absolutely essential in certain operations relating to the mouth, throat and nose. They are used whether the patient is under the influence of an anesthetic or not.

The invention herein described relates more particularly to an adjustable mouth gag for holding the jaws of the patient in certain fixed open position and involves features of adjustability with quick releasing actions and devices appurtenant thereto for illuminating the parts to be explored or operated upon.

The object of the invention is to provide a speculum, and especially a mouth gag of simple construction and few parts which may be readily sterilized and which may be quickly adjusted in the mouth in a positive manner and proof against accidental slipping or closing under extreme closing pressures of the jaws.

A further object is to provide an adjustable mouth gag which, while positively locked against collapse, through pressure of the jaws, may be instantly collapsed and released by the operator.

A further object is to provide in conjunction with a positive locking and quick releasing mechanism for the adjustable jaws of the mouth gag simple and convenient adjustable illuminating devices which will give the required light directly upon the parts to be explored or operated upon without the use of reflectors, head-mirrors or other devices commonly employed.

A still further object is to provide a speculum having an arrangement of parts for opening the jaws or other parts of the person that may be engaged thereby and holding them extended, combined with locking means for positively locking the levers in open position and with a limited univer-

sal adjustment for the illuminating devices, all combined in a single unit structure.

It has been common practice for surgeons and dentists to use mouth gags of various forms, the simplest type being a plug which is inserted between the teeth after the jaws have been opened, said plug being attached to suitable retaining devices to prevent their accidental dropping into the throat. Other forms include devices with screw arrangements for forcing a pair of jaws open between the teeth of the patient and require considerable time and attention for proper adjustment. Even with such devices, the surgeons have been compelled to employ a head-mirror or some form of reflecting or illuminating device aside from the mouth gag to direct the necessary light upon the field of the operation to be performed. In the use of such devices more or less of the attention of the surgeon or operator must be directed to proper lighting of the throat or other organs which is more or less of a source of annoyance in delicate operations, particularly where speed of movements is an essential.

Mouth gags are usually employed and are an essential in treating diseases of the throat, such as the removal of tonsils, operations upon the larynx and removal of adenoids and in these operations where anesthetics are used, there is great danger of strangulation due to the blood or particles being removed dropping back into the throat. Where the ordinary types of mouth gag are employed, considerable time is required to release them from the mouth of the patient, which must be done to overcome strangulation.

It is one of the principle objects of the present invention to provide an arrangement by which the mouth gag when once locked in place may be instantly collapsed and released by a simple movement of a lever and which, when in place, will direct a brilliant light directly upon the parts to be treated.

The mouth gag herein described has no extraneous attachments to be watched such as electrical connections, tubes or other wiring and is entirely out of the field of movement of the operator, forming no impediment to the use of his instruments and needing no attention after once adjusted.

Referring to the drawings Figure 1 illustrates a mouth gag and illuminating mecha-

nism in place. Fig. 2 is a top plan view of the device illustrated in Fig. 1. Fig. 3 is a side elevation of the device. Fig. 4 is a sectional view of the several parts unassembled, illustrating their relative position, etc. Fig. 5 is a face view of the lever appurtenant to the pivot illustrating the bearing between the levers. Fig. 6 is a side view of the illuminator element with parts broken in section.

The device herein shown and illustrated is formed entirely of metal parts of such a character as to form and finish that they may be readily sterilized. In fact, the whole device may be unassembled at a moment's notice and each of its parts completely and thoroughly sterilized. It is illustrated herein as applied to the right side of the jaw though, obviously, it is capable of use either for the right side or the left side, thus making it universal in its application.

The device, in the main, as illustrated herein, comprises a pair of pivoted levers having their adjacent faces serrated radially about a common pivot and with a locking device for holding the serrations in engagement combined with a connection appurtenant to the locking device having a limited universal movement and forming with the main pivot a support for an illuminating device which may be adjustably arranged in the support and with a locking lever for the support.

Referring to the drawings one of the levers is denoted with the numeral 1 and the cooperating lever is designated at 2. These levers are what might be termed of right and left construction with forward ends 3 and 4 arched from a common pivot point and provided with laterally extended members 5, 6, integral with the levers and angularly disposed with reference thereto and properly formed to fit against the teeth of the patient. As illustrated herein, the lateral extensions are slightly curved to insure a hold upon the teeth when they are opened between the jaws. The opposite ends of the respective levers terminate in handles 7, 8, these handles each being bowed away from the central pivot portion of the levers. At their adjacent bearing points they are perforated, the inner lever 1 having an angularly formed perforation 9 and the outer lever 2 having a round perforation 10. About the perforations 9 and 10 are serrated faces 11, 12 formed upon reduced portions of the levers and arranged in radial lines about the perforations as more clearly shown in Fig. 5. These serrations on the opposing faces of the levers are arranged to interengage and when held in close engagement form a positive lock for preventing opening or closing movements of the lever.

A pivot stud 13 having an angularly formed shoulder 14 and head 15 is passed

through the levers with its angularly formed shoulder 14 fitting into the perforation 9 of the inside lever. A clamping lever 16 is arranged with a screw-threaded perforation and coöperates with a screw-thread upon the pivot 13 to securely bind the serrated faces of the opposing levers in locked position. The clamping lever 16 has an enlarged central portion 17 with a socket 18 of substantially semi-spheroidal form which is likewise serrated and within which fits a similarly formed and serrated boss 19 upon a supporting lever 20. The boss of this lever 20 has a central opening 21 considerably larger in diameter than the diameter of the threaded pivot 13 and in its outer face has a smooth semi-spheroidal depression 22 within which fits the semi-spheroidal boss 23 of a locking lever 24. The locking lever 24 has a screw-threaded perforation 25 adapted to engage with the outer end of the pivot or spindle 13.

The boss 19 of the lever 20 resting within the semi-spheroidal seat 18 of the lever 16 and having a semi-spheroidal seat 22 for the locking member 23 of the lever 24 may be adjusted and locked in various positions by a slight rotary movement of the lever 24 without disturbing the adjustment of the levers 1 and 2. The outer end of the lever 20 is provided with an adjustable clamp of ring form 26 herein shown as split as at 27 and provided with a wing nut and screw 28, 29 by which it may be contracted about the casing 30 of the illuminating device. The illuminating device as herein shown consists of a casing 30 containing a source of electrical supply 31 and with a small lamp 32, said casing and its contained source of electrical supply and lamp being of comparatively small diameter and of very light weight. It is practically of pencil form.

The casing may be held and secured in any desired position of adjustment through the clamping ring of the lever 20 and the light from its lamp may be directed to any desired point by adjusting the lever upon its substantially universal connection with the supporting spindle and appurtenant parts. The casing 30 is provided exteriorly with a suitable contact making and breaking switch 33.

In using the device, the outer ends 3 and 4 of the levers are brought together and the lateral extensions 5, 6 are placed between the jaws of the patient, the handles 7, 8, of the levers are then compressed and simultaneously force open the jaws of the patient to any desired degree. A slight upward movement of the lever 16 forces the serrated faces 11, 12 of the jaws 1 and 2 together and securely locks them against movement. The illuminating support 20 may now be adjusted to any desired position with its self-

contained lamp casing 30 and when adjusted a slight upward movement of the lever 24 securely locks the support of the illuminator in the proper position to direct its rays of light into the throat or mouth. This adjustment of the illuminating device may be effected without interfering with the adjustment of the levers 1 and 2 and the adjustment may be changed from time to time without interfering with the adjustment of the levers 1 and 2. To release the mouth gag and appurtenant parts, a very slight depression of the lever 16 immediately releases the levers and the device will collapse. This is a particularly desirable feature inasmuch as where cases of strangulation occur, quick action is often necessary.

From the above, it is apparent that a very slight rotary movement of the levers 16 and 24 is sufficient to either positively lock the appurtenant members in fixed position or to release them and at the same time a substantially universal adjustment for the illuminating support is secured.

It is apparent from the above description and showing of the drawings that the entire device may be readily taken apart and assembled and are so constructed that complete sterilization is possible. The illuminating casing may be removed from the binding loop 26 and all of the parts may be unassembled by unscrewing the levers 24 and 16 from the spindle or pivot 13. Obviously, the speculum is subject to modifications as to form and material and may be made in varying sizes and shapes depending upon the use to which it is to be subjected.

As illustrated herein for the human mouth, it is of comparatively light though strong construction and is what might be termed universal in its adjustment. Combined with its light construction are the features of complete and positive action, to say nothing of the further necessary feature of quick action, positive locking and ready release, the parts being so arranged that they may be quickly and easily unassembled and sterilized, even by those uninitiated in the handling of mechanical devices. The parts are so arranged that no error can be made in re-assembling. By forming the levers 1 and 2 as described with the integral angularly disposed and laterally extending jaw-engaging parts 5 and 6, the mouth gag lies close to the side of the face, leaving the mouth practically unobstructed in front or at either side.

What I claim as my invention and desire to secure by Letters Patent is:

1. A mouth gag comprising a pair of pivoted inter-engaging levers each having a lateral extension at one end for insertion between the jaws and with handles at their opposite ends adapted to separate the ends bearing the lateral extension, a pivot com-

mon to said levers, interengaging locking faces upon the levers adjacent to the pivot, a threaded lever engaging said pivot for forcing said interlocking faces into engagement and locking the levers in various positions of adjustment and an illuminator support adjustably arranged upon said pivot and means for locking said illuminator support against the locking lever of the jaws.

2. A mouth gag comprising a pair of pivoted interengaging levers, a pivot common to said levers, interlocking faces upon the levers, means for forcing said interlocking faces into engagement and locking the levers in various positions of adjustment, an illuminator support operatively arranged with reference to said levers, and having a limited universal adjustment with reference thereto and a lever mounted upon the pivot and adapted for locking and releasing actions with reference to the illuminator support.

3. In a device of the character described, a pair of pivoted levers interengaging serrations intermediate said levers, a pivot common to said levers, a rotatable locking device appurtenant to the levers and mounted upon the pivot, an illuminator support mounted upon the pivot and provided with a ball and socket connection with the locking device of the levers and means for locking said illuminator support in adjusted position upon the pivot.

4. In a device of the character described, a pair of pivoted levers adapted for insertion between the jaws, interengaging locking means intermediate said levers, a locking lever for holding said locking means in engagement, said lever provided with a concaved seat, an illuminator supporting member having a convex boss seated within said concaved seat and provided with a concaved seat and a locking lever having a convex face engaging said seat.

5. In a device of the character described, a pair of pivoted levers adapted for insertion between the jaws, interengaging locking means intermediate said levers, a locking lever for holding said locking means in engagement, said lever provided with a concaved serrated seat, an illuminator supporting member having a convex serrated boss seated within said concaved serrated seat and provided with a concaved seat and a locking lever having a convex face engaging said seat.

6. In a device of the character described, a pair of pivoted levers, interengaging members intermediate said levers, a pivot common to said levers, a locking lever rotatable upon said pivot and adapted to hold said members in interengaged position and an illuminator support having a limited universal adjustment upon the pivot and provided with an adjustable holder and an

illuminating device and a lever mounted upon the pivot and adapted to lock said illuminator support in any position of adjustment.

- 5 7. In a device of the character described, a pair of pivoted levers, interlocking faces upon said levers adjacent a pivot fixed with reference to one of said levers and upon which the other of said levers may rotate, a
10 locking lever having a screw-threaded engagement with said pivot, an adjustable illuminator support mounted upon said pivot and a locking lever for said illuminator support in screw-threaded engagement

with said pivot and permitting adjustment 15 and locking of the illuminator support with the pivoted levers in locked position.

8. A speculum comprising a pair of levers pivotally united and having part-engaging portions, in combination with a support for 20 an illuminator having a limited universal adjustment and arranged between the part-engaging portions of the said levers and supported on the pivot that unites them.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."