

Filed May 21, 1945

JAW-SUPPORTING APPLIANCE

2 Sheets-Sheet 1

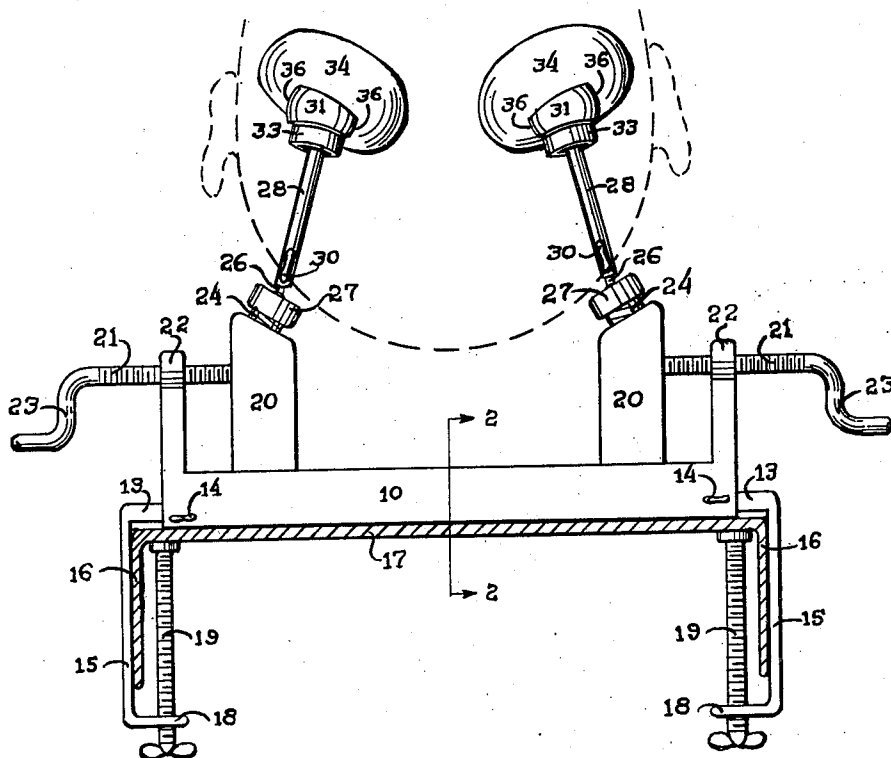


Fig. 1.

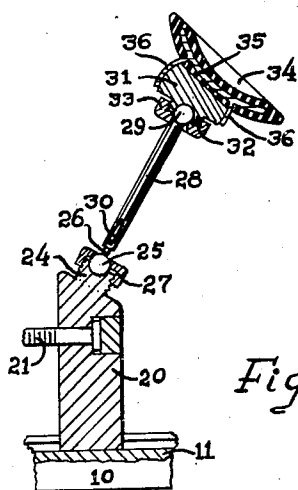


Fig. 3.

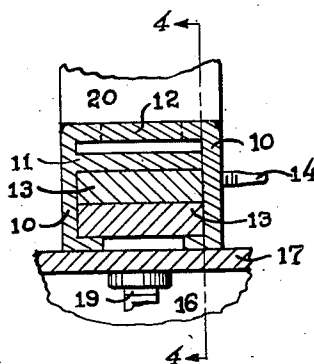


Fig. 2.

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Nov. 2, 1948.

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2 Sheets-Sheet 2

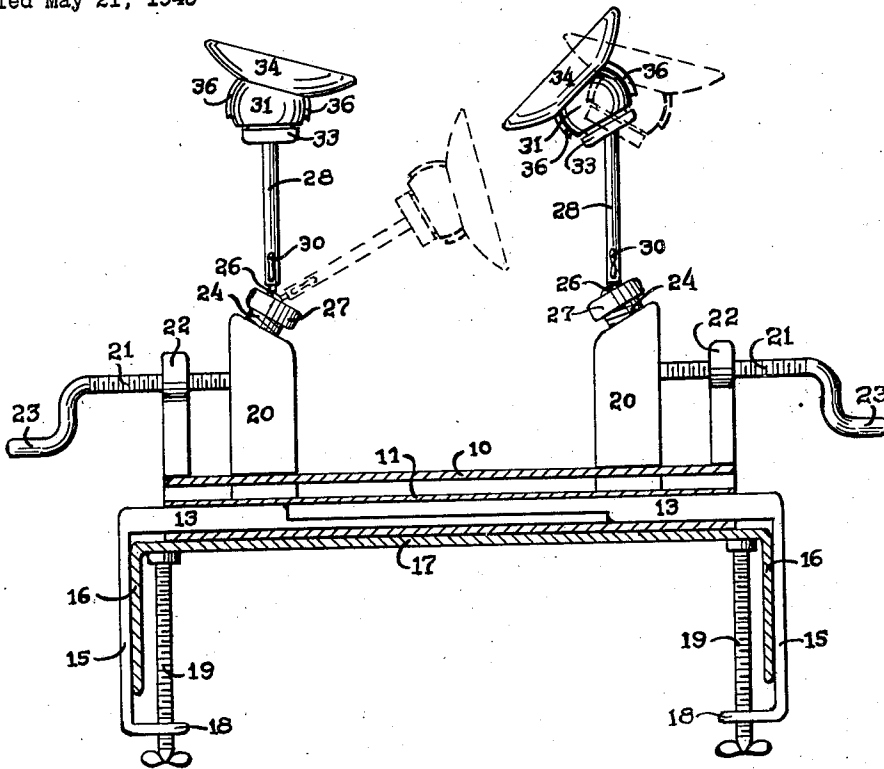


Fig. 4.

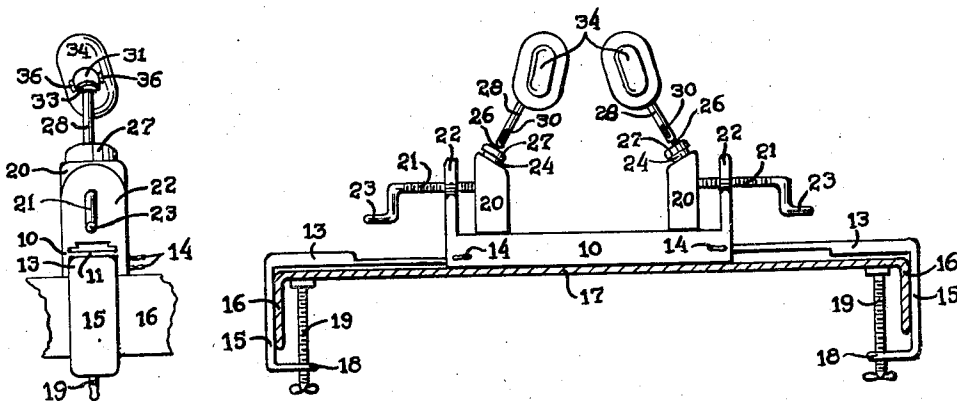


Fig. 6.

Fig. 5.

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JAW-SUPPORTING APPLIANCE

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7 Claims. (Cl. 311-10)

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This invention relates to hospital facilities primarily for use in surgical cases, and more particularly to a surgery appliance or device conveniently employable to enhance and expedite proper administration of anaesthetics, and has as an object to provide an improved such device or appliance effective to inhibit pernicious relapse of the tongue in a patient approaching or experiencing anaesthetization.

A further object of the invention is to provide an improved appliance for cooperative association with a surgical table to engage with the protuberant mandibular salients or inferior maxillary angles of a supine patient and thereby hold the jaws of the patient against separation attendant upon muscular relaxation.

A further object of the invention is to provide an improved jaw-supporting appliance of surgical significance adapted for operative association with and removable and replaceable mounting on standard surgical tables of various sizes and types.

A further object of the invention is to provide an improved jaw-supporting appliance of surgical significance conveniently and promptly adjustable to accommodate the variations of dimension, conformation, and position encountered in the treating of successive patients.

A further object of the invention is to provide an improved jaw-supporting appliance of surgical significance wherein the variously-adjustable elements of the assembly are arranged to be conveniently secured and held in the desired adjusted relation.

A further object of the invention is to provide an improved construction and operative arrangement of elements constituting a jaw-supporting appliance of surgical significance.

A further object of the invention is to provide an improved jaw-supporting appliance of surgical significance that is simple of construction, operative installation, and adjustment, positive and efficient in attainment of the ends for which designed, fully adaptable to meet all of the requirements of its purpose, durable in use, and susceptible of practical development from conventional materials through the application of well-known facilities and techniques in such variety of form, style, and specific detail as may be deemed advantageous.

With the foregoing and other objects in view, my invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims, and

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illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of a typical embodiment of the invention as associated with a surgical table in position for practical use, broken lines in said view representing the head of a patient approximately as related with and to the device in the manner and for the purpose intended. Figure 2 is a fragmentary, detail section on an enlarged scale, taken transversely and on the indicated line 2-2 of Figure 1. Figure 3 is a fragmentary, detail section, on the same scale as Figure 1, taken vertically and axially through one of the adjustable support assemblies comprised within the device as shown. Figure 4 is a vertical section taken longitudinally through the device according to Figure 1 on substantially the indicated line 4-4 of Figure 2, certain of the adjustable elements of the assembly being shown in positions alternative to those of their initial representation, and yet further adjustable relationships being indicated by broken line portions of the view. Figure 5 is an elevational view, on a reduced scale, of the device shown in Figure 1 as adapted to and mounted on a surgical table of greater width than that shown in the preceding figures. Figure 6 is an end elevation of the showing of Figure 5.

A very considerable proportion of surgical operations are performed with the body of the patient horizontally supine on a suitable table, the head in natural alignment with the body, and the face directed upwardly. With the body so disposed, administration to the patient of an anaesthetic productive of insensibility and consequent destruction of conscious muscular control results in such relaxation of the jaw, tongue, and throat muscles as permits the lower jaw to open and sag downwardly away from the upper jaw and the tongue to relapse into obstructing relation with the throat for resultant interference, often vitally dangerous, with the patient's breathing. It is well understood that retention of the lower jaw in closed relation against the upper jaw will serve to hold the tongue in non-obstructing clearance with the throat passage, even when conscious muscular control has been fully relaxed, and it is to the provision of convenient and effective means, comfortable to the patient, operable to maintain the jaws in closed position, that the instant invention is directed.

As represented by the views of the drawings, my improved jaw-supporting device or appliance comprises, in a unitary assembly, a base member adapted to be removably and replaceably secured

transversely of and against the upper surface of a surgical table, a pair of spaced, parallel abutments slidably engaged in upstanding relation with and for independent adjustment longitudinally of said base, and a cushion-terminated, length-adjustable stem upstanding from and for selective orbital adjustment relative to each said abutment; the elements constituting the unitary assembly being designed and arranged for disposition of the base transversely beneath the neck of a patient and engagement of the cushioned stem ends with and in supporting relation against posterior aspects of the patient's mandible angles, so that sagging of the mandible about its condyle axis is resisted by the weight of the head.

In the construction of the improvement as shown, the numeral 10 designates the base member of the assembly, which base member, while susceptible of practical development with functional equivalence in a variety of specific forms, is illustrated as a straight, rectangular, elongate unit, of a length somewhat in excess of the maximum human head width, formed in any convenient or desired manner of any suitable rigid and durable material, such as metal, to define a uniformly hollow interior opening through both of the unit ends and a flat bottom surface engageable with and adapted to rest on a table upper surface. A longitudinally co-extensive web 11 fixedly closes against and bridges between side walls of the member 10 in parallel relation with said member top and bottom planes to divide the member interior into channels of unequal size adapted to function as slideways, the lower of said channels preferably being considerably greater in cross-sectional area than the upper one, and the latter opening upwardly through slots of uniform width longitudinally intersecting the member top web in end-spaced alignment on opposite sides of an uninterrupted top web central portion 12.

The lower interior channel of the member 10 conveniently accommodates and is substantially filled by slidably-adjustable means, in longitudinally extensible and retractible relation with said member, for positioning and securing said member and its associated elements as desired for use relative to surgical tables of customary sizes and types. As illustrated, said slidably-adjustable securing means may take the form of similar, complementary bars 13 having each an outer end portion of a size to telescope within and slidably cooperate with the member 10 lower interior channel and an inner end portion of reduced thickness and maintained width adapted for slidable, complementary cooperation with the like portion of the associated bar within the depth limit of the receiving channel, said bar inner end portions of reduced thickness being adapted for overlapped superposition, as shown in Figure 4, when the bars 13 are retracted interiorly of the member 10, and for freely slidable longitudinal separation in maintained engagement with said member when the said bars are extended relative thereto. Adjacent the ends and threadedly engaging through a side wall of the member 10, thumbscrews 14, or functionally equivalent agencies, are suitably disposed to each engage with and clampably bear against a side of one of the bars 13 and thereby function to hold the said bars in any position of selective adjustment relative to the said member within the range afforded by the bar lengths. Fixed to and in right angular, depending relation with the outer end of each bar 13, an arm 15 is disposed to span across and bear

at times against the side bar or angle 16 of the typical surgical table 17, each of the said arms 15 terminating in an inturned lug 18 in spaced parallelism with the associated bar 13 wherethrough an elongated thumbscrew 19 threadedly engages in spaced parallelism with the adjacent arm 15 to complete a clamp member engageable with and to selectively secure the outer end of its bar 13 to the table 17 and thereby secure and hold the member 10 in the desired relation with and on tables of varying sizes and specific constructions.

The longitudinally-slotted top web of the member 10 engages with and slidably supports a pair of duplicate, oppositely-disposed abutments 20 in upstanding relation on and above said member for independent, selective adjustment of position longitudinally thereof, each of said abutments having a neck portion of reduced width adjacent its lower end depending in freely slidable relation between the slot margins of the member top web and terminating in a laterally-extended abutment foot sized to fit closely but slidably within the upper member interior channel, the engagement of said abutment foot within said channel serving to hold the associated abutment against separation from or tilting relative to the mounting member while preserving a slidable cooperation therebetween. To facilitate adjustable positioning of and to hold the abutments 20 longitudinally of the member 10, a threaded stem 21 rotatably engages at one end with and is held against relative axial displacement in each of said abutments to extend outwardly of the assembly from its associated abutment in upwardly-spaced parallelism with and longitudinal alignment above the member 10 top web and in threaded cooperation with and through a hole formed for its reception in an end web 22 fixedly upstanding from and transversely of the corresponding end of the member 10, so that rotation of either of said stems 21 reacts by virtue of its engagement through the pertinent web 22 to shift the associated abutment 20, in a direction determined by the direction of stem rotation, longitudinally along the member 10, the outer ends of the said stems 21 being preferably formed as cranks 23, or otherwise suitably worked or fashioned, to provide for convenient manual rotation thereof.

Upper ends of the abutments 20 are preferably inclined somewhat for convergence of their projected planes inwardly and downwardly of the member 10, and each of said abutment upper ends fixedly carries an upstanding, cylindrical, externally-threaded boss 24 provided with a semi-spherical recess axially of and opening outwardly from its upper end to receive and conformably seat a spherical ball 25 on the end of a straight, cylindrical stem 26, said boss 24 threadedly cooperating with a centrally-apertured cap 27 where-through outward extension of the stem 26 is accommodated to adjustably clamp the ball 25 in and against its seat in any desired one of many possible angular relations of said stem and boss axes.

The stem 26 telescopically engages in axial coincidence within and thereby slidably mounts a straight tubular extension 28 formed with a spherical ball 29 on and closing its outer end, and a thumbscrew 30 threadedly engages through a wall of the extension 28 adjacent its open end to bear against and adjustably clamp the extension 28 to the stem 26, thereby providing convenient means for selectively varying the effective

length of the strut constituted by the elements 26 and 28. A wedge-shaped, spherical segment 31 is formed or provided with a fixedly-associated, externally-threaded, cylindrical boss 32 projecting radially from one of its plane surfaces, and said boss carries a semi-spherical recess axially of and opening outwardly from its free end to receive and seat the ball 29 of the extension 28, so that a centrally-apertured cap 33 embracing said extension 28 may threadedly engage with said boss and adjustably clamp the segment 31 to and for selective angular disposition on and about the ball 29 throughout a wide range of specific attitudes and relations.

The segment 31 constitutes a mounting block for support of a jaw-angle-engaging pad or cushion 34 removably and replaceably associated therewith. The pads or cushions 34 for use with the improved device or appliance are preferably provided in sets of graduated size adapted to the age range, size, and general characteristics common to prospective patients, and are alike in adaptability to mounting on the segment 31, general oval outline, cushioning yieldability of material forming their areas or surfaces engageable with the patient's jaw, and concaved conformity of outer surface with the jaw angle to be engaged. As typified by the drawings, the pads or cushions 34 are preferably moulded from sponge rubber, or comparable resiliently-yieldable material, in enveloping relation about a stiff, cupped, reinforcing plate 35 from the convex side of which a pair of clip fingers 36 project in spaced, curved opposition for such embracing engagement with spherical surfaces of the segment 31 as will frictionally retain the associated pad or cushion 34 thereon with the pad or cushion area between the fingers 36 seated on the segment plane surface opposite that carrying the boss 32 and the concaved pad or cushion surface directed generally inwardly and upwardly away from its supporting abutment 20. The indicated means and method for detachably relating the pads or cushions 34 with the segments 31 permits convenient interchange of such pads or cushions within the range of the supply available, and also provides for rotational adjustment of each pad or cushion on and relative to its supporting segment.

In the practical use of the appliance assembled and operatively arranged substantially as shown and above described, the member 10 is disposed on the upper surface of a surgical, or like, table 17 to extend transversely of and beneath the neck of a supine patient and project equally on the opposite sides thereof, in which position the device is secured to the table through proper manipulation and adjustment of the bars 13, thumbscrews 14, and clamp thumbscrews 19. With the member 10 suitably positioned and secured, the abutments 29 are adjusted longitudinally of said member through actuation of the threaded stems 21 to the desired location thereof beneath and somewhat outwardly beyond the adjacent jaw angles, and the strut of each abutment is adjusted as to length and angular disposition to dispose its associated pad or cushion 34 in comfortably fitted bearing engagement with and supporting relation beneath the proximate jaw angle so that the weight of the patient's head is carried through said jaw angles to and supported by the device. When so adjusted in relation to and engagement with the patient's jaw, full relaxation of the patient's muscular control can not result in opening of the jaw, since such opening action is resisted by the head weight, acting against the jaw

angles through the fulcrum provided by the cushioned strut assemblies engaged therewith.

Since many changes, variations, and modifications in the specific form, construction, and arrangement of the elements shown and described may be had without departing from the spirit of my invention, I wish to be understood as being limited solely by the scope of the appended claims, rather than by any details of the illustrative showing and foregoing description.

I claim as my invention:

1. A jaw-supporting appliance of the character described comprising, a base member, means associated with said base member to secure the latter to and transversely of a table top, abutments upstanding in adjustable spaced opposition from said base member, means for selectively adjusting said abutments longitudinally of said base member, a straight, length-adjustable, stem end-swivelled to and extending upwardly from each abutment upper end, and a concave-faced, jaw-engaging cushion adjustably associated with the upper end of each said stem.

2. A jaw-supporting appliance of the character described comprising, a base member, bars slidably engaged within and selectively extensible oppositely from said base member, clamp means on outer ends of said bars selectively engageable with and to clamp said base member transversely of and to a table top, abutments upstanding in spaced opposition from and individually slidable longitudinally of said base member, means for selectively adjusting and holding said abutments relative to said base member, a stem adjustably engaged with and extending upwardly from each abutment upper end, and a jaw-engaging cushion adjustably associated with the upper end of each said stem.

3. A jaw-supporting appliance of the character described comprising, a base member, means for securing said base member to and transversely of a table top, abutments upstanding in adjustable spaced opposition from said base member, means for selectively adjusting said abutments longitudinally of said base member, a straight, cylindrical stem clampably swivelled to and extending upwardly from each abutment upper end, a tubular element telescoped over each said stem and slidable axially thereon, means for clamping said tubular element to and in selectively adjusted positions along said stem, and a jaw-engaging cushion adjustably associated with the free end of each said tubular element.

4. A jaw-supporting appliance of the character described comprising, a base member, means for securing said base member to and transversely of a table top, abutments upstanding in adjustable spaced opposition from said base member, means for selectively adjusting said abutments longitudinally of said base member, a straight, cylindrical stem clampably swivelled to and extending upwardly from each abutment upper end, a tubular element telescoped over each said stem and slidable axially thereon, means for clamping said tubular element to and in selectively adjusted positions along said stem, a mounting block clampably swivelled to the free end of each said tubular element, and a jaw-engaging cushion removably and replaceably clipped to and in supported relation against each said block.

5. A jaw-supporting appliance of the character described comprising, an elongate, rigid base member formed with a longitudinal, end-opening channel, overlapping bars telescopically nested within said channel for selective exten-

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sion therefrom longitudinally and exteriorly of said base member, means for clampably holding said bars in selectively adjusted relation with said base member, clamp means on the outer ends of said bars engageable with and to clamp said base member to and transversely of a table top, and end-cushioned, jaw-engaging means upstanding in spaced duplication from and arranged for selective angular, altitudinal, and longitudinal adjustment relative to said base member.

6. A jaw-supporting appliance of the character described comprising, an elongate, rigid base member formed with upper and lower, longitudinal, end-opening channels, clamp-equipped bars telescopically engaged within and extensible from opposite ends of said base member to secure the latter to and transversely of a table top, slots communicating in end-spaced, longitudinal alignment through the base member top web and with the member upper channel, abutments upstanding in spaced opposition from said base member with their lower ends slidably engaged through said slots and within said member upper channel, means for selectively adjusting and holding said abutments longitudinally of said base member, and end-cushioned, jaw-engaging means upstanding from and arranged for selective angular and altitudinal adjustment relative to each said abutment.

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7. A jaw-supporting appliance of the character described comprising, an elongate, rigid base member, means for securing said base member to and transversely of a table top, abutments upstanding in spaced opposition from and in longitudinally slidable engagement with said base member, webs fixedly upstanding from and transversely of said base member ends, a threaded stem supported by and operatively engaging through each of said webs in axial longitudinal alignment and upwardly spaced parallelism with said base member, a relatively-rotatable, axially-fixed connection between the inner end of each said stem and the adjacent abutment, means on the outer stem ends to facilitate manual rotation thereof, and end-cushioned, jaw-engaging means upstanding from and arranged for selective angular and altitudinal adjustment relative to each said abutment.

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REFERENCES CITED

The following references are of record in the file of this patent:

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