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S. R. JONES

2,492,383

SURGICAL HEAD LOCK

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Fig. 1

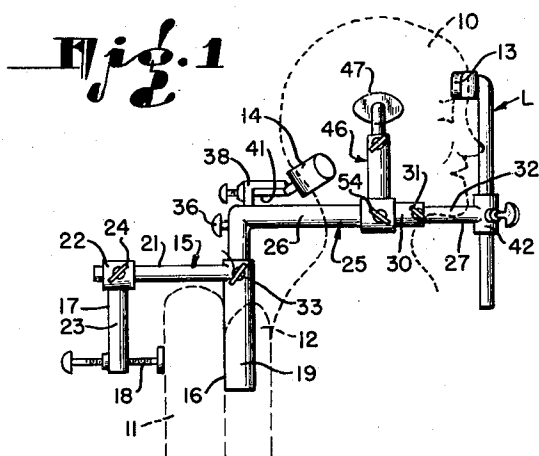


Fig. 2

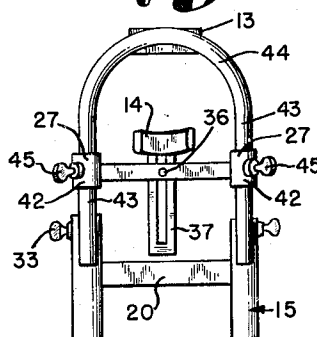


Fig. 3

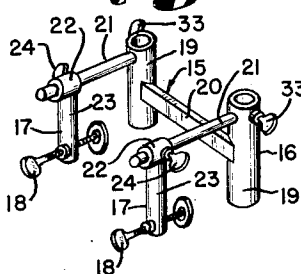


Fig. 4

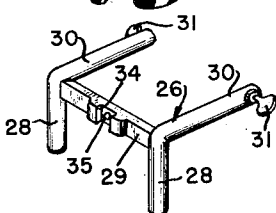


Fig. 5

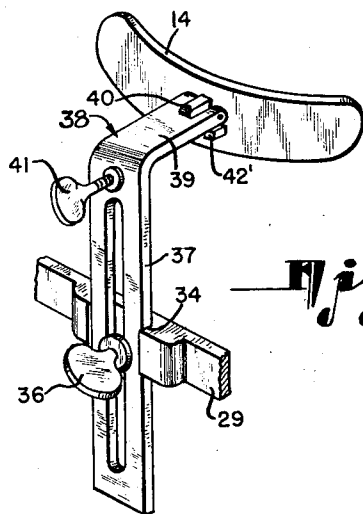
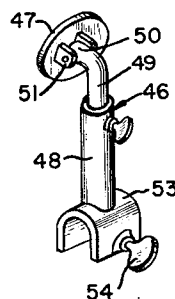


Fig. 6

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SURGICAL HEADLOCK

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14 Claims. (Cl. 155—177)

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My invention relates to a device for holding the head of a patient during surgical operations and is especially suited to the holding of the head during brain or neuro-surgery such as that pertaining to ventricle study, the ganglion, etc.

It is an object of the invention to provide a head holding means for use during surgery which will securely hold or lock the head in a desired position and which is readily adjustable to different sizes and shapes of heads, but which is of such construction that there is no possibility of movement of the head engaging parts during use of the device.

It is an object of the invention to provide a device having rigidly supported adjustable parts for cushioned, but positive engagement with the frontal and occipital areas and also having an adjustable member for engagement with a side of the head.

A further object of the invention is to provide a head holding device of the character described especially adapted for use with the patient seated in upright or nearly upright position, and having rigid adjustable locking means by which the device may be detachably but firmly secured to the back rest of an operating table or chair.

It is also an object of the invention to provide a surgical head lock having a support with means for detachably securing it to a back rest, a frame slidably secured in the support, this frame being longitudinally adjustable, and carrying thereon adjustable parts for engagement with the head.

Further objects and advantages may be brought out in the following part of the specification.

Referring to the drawing which is for illustrative purposes only:

Fig. 1 is a side view showing the manner of use of my invention.

Fig. 2 is a front view thereof with the temporal rest removed.

Fig. 3 is a perspective view of the bracket which forms a part of the support of the device.

Fig. 4 is a perspective view of the vertically slidable frame.

Fig. 5 is an enlarged perspective view of the temporal rest.

Fig. 6 is a greatly enlarged view of the occipital clamp with padding removed therefrom.

In Fig. 1, I show the patient's head 10 in upright position and my head lock in what may be termed substantially vertical position. It will be understood that when the back rest of the operating table or equivalent device to hold the patient's body is tilted backward, the head lock

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will be likewise tilted. The patient's back rests against suitable padding or cushion 12, and his head is held between padded, curved head engagement members 13 and 14, respectively referred to as frontal clamp 13 and the occipital clamp 14.

The head lock includes a support 15 comprising a bracket 16 and a pair of adjustable arms 17 provided with clamping screws 18 to engage the rear face of the back rest 11. As shown in Fig. 3, the bracket 16 comprises a pair of vertical tubes 19, which form vertical guides, connected in spaced relation by a cross-bar 20, and bars 21 extending rearwardly from the upper ends of the tubes 19 in substantially parallel relation. The adjustable arms 17, as shown also in Fig. 1, have upper tubular ends 22 to slide on the bars 21, and downwardly projecting tubes 23, the lower ends of which carry the clamping screws 18. The arms 17 are provided with clamping screws 24 to engage the bars 21, whereby the arms 17 may be adjusted along the bars 21 as required.

The occipital clamp 14 is carried by a vertically adjustable frame 25 which includes a bracket 26 and forwardly adjustable extensions 27. The bracket 26 of the frame 25 is made as shown in Fig. 4. It includes a pair of vertical tubes 28 held in spaced relation as by a cross-bar 29, and forwardly extending tubes or guides 30 which have clamping screws 31 at the forward ends thereof to engage the shanks 32 of the extensions 27. The tubes 28 are made so that they will slide within the tubes 19 of the support 15, and clamping screws 33 are provided at the upper ends of the tubes 19 for engagement with the vertical members 28 thereby making it possible to vertically adjust the frame 25 relatively to the support 15. The cross-bar 29 has intermediate its ends a vertical guide slot 34 and a threaded opening 35 to receive the threaded shank of a clamping screw 36, Fig. 6, which clamps, against vertical movement, the vertical bar 37 which forms a part of the support 38 for the occipital clamp 14. At the upper end of the bar 37 there is a forwardly extending portion 39 having at its forward end a hinge 40 by which the occipital clamp 14 is supported so that it may swing on a horizontal axis, to enable it to be tilted, as shown in Fig. 1, into a position corresponding to the slope of the occiput which it engages. An adjusting screw 41 is positioned so that it will engage the portion 42 of the occipital clamp below the hinge 40, to tilt the member 14 in counterclockwise direction.

At the forward ends of the shanks 32 of the ex-

tensions 27 there are short vertical tubes 42 forming vertical guides for the side bars 43 of a U-shaped support 44 which carries the frontal clamp 13 at its upper end so that the frontal clamp 13 may be adjusted along the cervical axis of the head, which is the axis of the head that extends also through the neck of the patient. The supporting member 44 is bent to the form shown from a length of metal tubing. The guides 42 carry clamping screws 45 for engaging the vertical bars 43 to hold the supporting member 44 so that the frontal clamp 13 will be firmly held in the position required for proper engagement with the frontal of the patient.

The head lock also includes a side rest 46 which is adjustable so that its pad 47 may be brought into engagement with a selected lateral area of the head. This side rest 46, as shown in Fig. 5, includes a vertical guide 48 comprising a tube and being adapted to receive a vertically adjustable bar 49 having its upper end 50 bent toward the head of the patient so as to carry hinge means 51 by which it is connected to the pad 47.

At the lower end of the tubular guide 48 there is a yoke or saddle 53 which fits upon either the right or the left guide 30 in different positions therealong, and has a screw 54 positioned below the diametral plane of the member 30, for clamping it in a selected position for engagement to the side of the head opposite from that on which the operation is to be performed.

I claim as my invention:

1. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest, the combination of: a support having means for attaching it to a back rest; an occipital clamp curved to fit the occipital region of the head; means for adjustably securing said clamp to said support so that it may be moved along the longitudinal axis of the head and neck of a patient; a curved frontal clamp for engagement with the frontal area of the head; and means for adjustably supporting said frontal clamp so that it may be moved toward and away from said axis and up and down along said axis, said last named means comprising an extensible member extending from said support across the body of the patient from rear to front, said extensible member having means for locking a section thereof in different positions of extension and having at its forward end a supporting element, and a member adjustably secured to said supporting element and being connected to said frontal clamp whereby said frontal clamp may be moved up and down.

2. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest, the combination of: a support having means for attaching it to a back rest; an occipital clamp curved to fit the occipital region of the head; means for adjustably securing said clamp to said support so that it may be moved along the longitudinal axis of the head and neck of a patient; a curved frontal clamp for engagement with the frontal area of the head; and means for adjustably supporting said frontal clamp so that it may be moved toward and away from said axis and up and down along said axis, said last named means comprising a pair of extensible members extending from said support across and above the shoulders of the patient, said extensible members having means for locking sections thereof

in different positions of extension, and a member to support said frontal clamp comprising a transverse portion connected to said frontal clamp and side bars extending down from said transverse portion for engagement with the front ends of said extensible members, and means for adjustably connecting said side bars to said front ends of said extensible members.

3. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest, the combination of: a support having means for attaching it to a back rest; an occipital clamp curved to fit the occipital region of the head; means for adjustably securing said clamp to said support so that it may be moved along the longitudinal axis of the head and neck of a patient; a curved frontal clamp for engagement with the frontal area of the head; and means for adjustably supporting said frontal clamp so that it may be moved toward and away from said axis and up and down along said axis, said last named means comprising an extensible member extending from said support across the body of the patient from rear to front, said extensible member having means for locking a section thereof in different positions of extension, and means connecting said frontal clamp to the forward end of said extensible member, having a supporting part extending from the forward end of said extensible member across the face of the patient and having adjustment means so as to provide movement of said frontal clamp substantially parallel to the coronal plane of the patient's body.

4. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest, the combination of: a support having means for attaching it to a back rest; an occipital clamp connected to said support, said clamp being curved to fit the occipital region of the head; a curved frontal clamp for engagement with the frontal area of the head; and means for adjustably supporting said frontal clamp so that it may be moved toward and away from the longitudinal axis of the neck and head and up and down along said axis, said last named means comprising an extensible member extending across the body of the patient from rear to front, said extensible member having means for locking a section thereof in different positions of extension, and means connecting said frontal clamp to the forward end of said extensible member, having a supporting part extending from the forward end of said extensible member across the face of the patient and adjustment means to provide movement of said frontal clamp substantially parallel to the coronal plane of the patient's body.

5. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest, the combination of: a support having means for attaching it to a back rest; an occipital clamp connected to said support, said clamp being curved to fit the occipital region of the head; a curved frontal clamp for engagement with the frontal area of the head; means for adjustably supporting said frontal clamp so that it may be moved toward and away from longitudinal axis of the head and neck and up and down along said axis, said last named means comprising an extensible member extending across the body of the patient from rear to front, said extensible member having means for locking a section there-

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of in different positions of extension, and means connecting said frontal clamp to the forward end of said extensible member, having a supporting part extending from the forward end of said extensible member across the face of the patient and being adjustable so as to provide movement of said frontal clamp substantially parallel to the coronal plane of the patient's body; and adjustable means for engaging the side of the patient's head.

6. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest, the combination of: a support having means for attaching it to a back rest; an occipital clamp curved to fit the occipital region of the head; means for adjustably securing said clamp to said support so that it may be moved along the longitudinal axis of the head and neck of a patient; a curved frontal clamp for engagement with the frontal area of the head; means for adjustably supporting said frontal clamp so that it may be moved toward and away from said axis and up and down along said axis, said last named means comprising an extensible member extending across the body of the patient from rear to front, said extensible member having means for locking a section thereof in different positions of extension and having at its forward end a supporting element, and a member adjustably secured to said supporting element and being connected to said frontal clamp whereby said frontal clamp may be moved up and down; and a support adjustably connected to said extensible member having a pad for engaging the side of the patient's head.

7. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest of the character described, the combination of: a support adapted to be connected to a back rest, said support having guides extending substantially parallel to the plane of said back rest; a frame; means connecting said frame to said guides so that said frame may be moved through different positions in a plane substantially parallel to the coronal plane of the head, said frame having supporting members extending along lines which pass over and across the shoulders of the patient; extensible means carried by said supporting members of said frame and means to lock said extensible means in different positions of extension relatively to said frame; an inverted U-shaped frame having legs disposed substantially parallel to the coronal plane of the patient and adjustably connected to the front ends of said extensible means; a frontal clamp connected to the upper part of said U-shaped frame; an occipital clamp; and releasable means connecting said occipital clamp to said frame so that said occipital clamp may be moved through different positions of adjustment with respect to said frame.

8. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest of the character described, the combination of: a support adapted to be connected to a back rest, said support having guides extending substantially parallel to the plane of said back rest; a frame; means connecting said frame to said guides so that said frame may be moved through different positions in a plane substantially parallel to the coronal plane of the head, said frame having supporting members extending along lines

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which pass over and across the shoulders of the patient; extensible means carried by said supporting members of said frame and means to lock said extensible means in different positions of extension relatively to said frame; an inverted U-shaped frame having legs disposed substantially parallel to the coronal plane of the patient and adjustably connected to the front ends of said extensible means; a frontal clamp connected to the upper part of said U-shaped frame; an occipital clamp; means for connecting said occipital clamp to said frame so that said occipital clamp may be moved through different positions of adjustment with respect to said frame; and an adjusting means operative between said connecting means and said occipital clamp for rotating said occipital clamp on a substantially horizontal axis.

9. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest of the character described, the combination of: a support adapted to be connected to a back rest, said support having a pair of tubes extending substantially parallel to the plane of said back rest; a frame adjustably connected to said tubes so as to be moved through different positions in a plane substantially parallel to the coronal plane of the head, said frame having a pair of bars extending into said tubes and having a pair of tubes forming slides extending along lines which pass over and across the shoulders of the patient; extension bar means carried by said slides of said frame and means to lock said bar members in different positions of extension relatively to said frame, said bar means having transverse tubes at the front ends thereof; an inverted U-shaped frame having legs disposed in said transverse tubes and substantially parallel to the coronal plane of the patient and adjustably connected to the front ends of said bar members; a frontal clamp connected to the upper part of said U-shaped frame; and an occipital clamp connected to said frame for engaging the occipital region of the head.

10. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest of the character described, the combination of: a support adapted to be connected to a back rest, said support having a pair of tubes extending substantially parallel to the plane of said back rest; a frame adjustably connected to said tubes so as to be moved through different positions in a plane substantially parallel to the coronal plane of the head, said frame having a pair of bars extending into said tubes and having a pair of tubes forming slides extending along lines which pass over and across the shoulders of the patient; extensible means carried by said slides of said frame and means to lock said extensible means in different positions of extension relatively to said frame, said extensible means having transverse tubes at the front ends thereof; an inverted U-shaped frame having legs disposed in said transverse tubes and substantially parallel to the coronal plane of the patient and adjustably connected to the front ends of said extensible means; a frontal clamp connected to the upper part of said U-shaped frame for engagement with the frontal region; an occipital clamp connected to said frame for engagement with the occipital region; and a temporal rest adapted to be attached to one of said horizontal tubes of said frame, said rest having an extensible

post and a head-engaging pad connected to the upper portion thereof.

11. In a head lock for supporting the human head during surgery thereon while the patient is supported on a chair or table having a back rest, the combination of: a support having means for attaching it to a back rest; an occipital clamp to engage the cervical region of the head; means for adjustably securing said clamp to said support so that it may be moved along the longitudinal axis of the head and neck of a patient; a frontal clamp for engagement with the frontal area of the head; and means for adjustably supporting said frontal clamp so that it may be moved toward and away from said axis and up and down along said axis, said last named means comprising an extension member extending from said support across the body of the patient from rear to front, said extension member having a section thereof adjustable forwardly and rearwardly with respect to said occipital clamp, and a supporting member extending transversely to said extension member from said section to said frontal clamp and connecting said frontal clamp to said section.

12. In a surgical head lock, the combination of: a support; an occipital clamp connected to said support, to engage the occipital region of the head; a frontal clamp to engage the central frontal region of the head above the eyes; and means for connecting said frontal clamp to said support, said means comprising adjustably related parts whereby said parts may be relatively moved and whereby said frontal clamp may be moved in several planes with relation to said occipital clamp and to thereby be brought into selected engagement with the frontal area of a head which engages said occipital clamp.

13. In a surgical head lock, the combination of: a support; an occipital clamp connected to said support, to engage the occipital region of the head; a frontal clamp to engage the central frontal region of the head; means for adjustably

connecting said frontal clamp to said support, whereby said frontal clamp may be moved in several planes with relation to said occipital clamp and to thereby be brought into selected engagement with the frontal area of a head which engages said occipital clamp; a side clamp for engaging the side of the head; and means for connecting said side clamp to said support in a number of different positions of engagement with the surface of the side of the head independently of the position of said frontal clamp.

14. A side rest for connection to the side extension bar of a head lock of the character described, comprising: a yoke member having a pair of downwardly extending walls to fit over the side bar of the head lock in different positions therealong; screw means carried by said yoke for locking the yoke to said side bar; an extensible arm extending from said yoke so as to lie along the side of a head; means for locking said extensible arm in different positions of extension; and a pad connected to the outer end of said extensible arm for engagement with the side of the head.

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