Sept. 26, 1967 R. JAEGER 3,344,267

ADJUSTABLE SURGICAL HEAD LAMP

Filed Feb. 9, 1966

FIG. 1

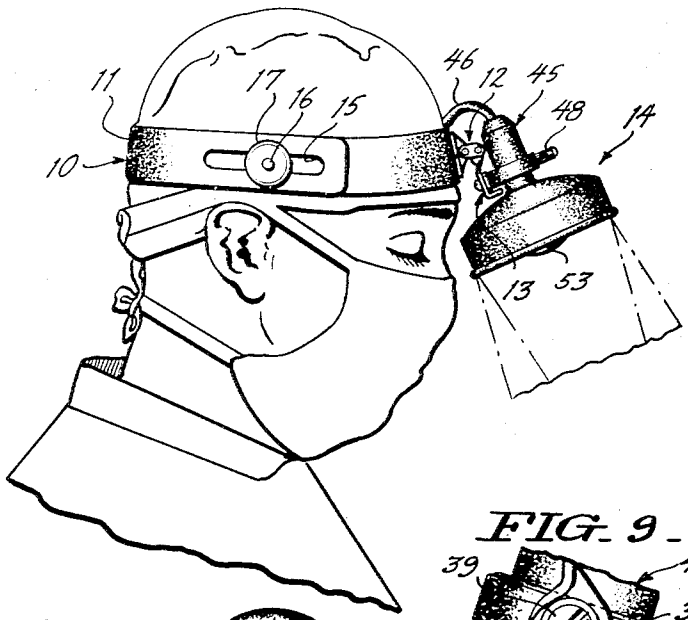


FIG. 4

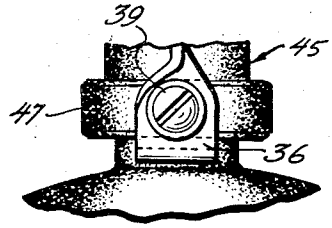


FIG. 5

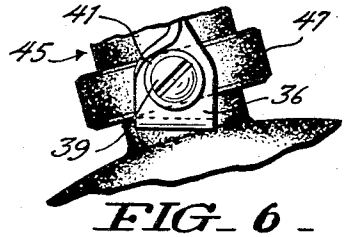


FIG. 9

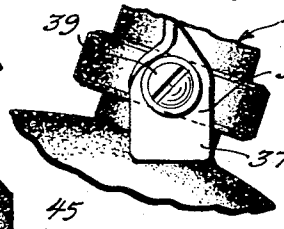


FIG. 6

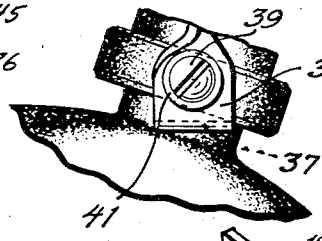


FIG. 2

FIG. 7

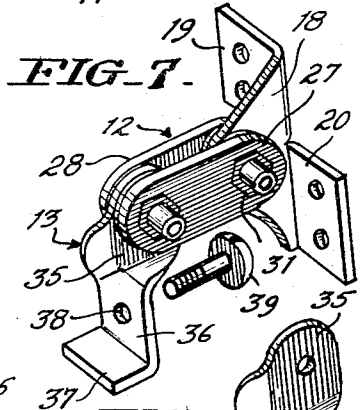


FIG. 3

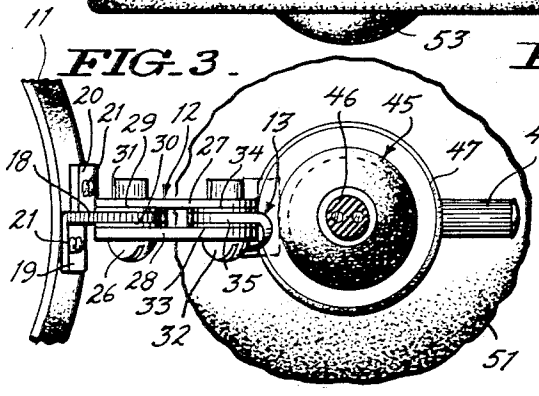


FIG. 10

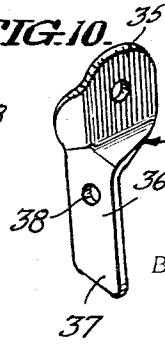
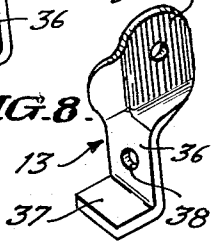


FIG. 8



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ADJUSTABLE SURGICAL HEAD LAMP

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ABSTRACT OF THE DISCLOSURE

A physician's head lamp is described which includes a moldable head band and a universal articulating assembly which connects the lamp to the head band. One piece of the articulating assembly is mounted on the head band and pivots in a vertical plane. The other piece of the articulating assembly is pivotally linked to the first piece and is also adapted to pivot in the vertical plane. This last piece, however, is constructed with a flat surface thereof bent normally to the vertical, thereby providing space for mounting pivot means which supports the head lamp. The head lamp itself is so configured that the reflector thereof is limited in its movement by the extent of the flat surface of its pivot means.

This invention relates to head lamps for use by physicians in the examination of and operation on their patients. More particularly it relates to a novel head lamp assembly which facilitates the adjustment of the lamp for optimum lighting conditions during the examination or operation.

The apparatus embodying my invention is shown in the following description and drawings, wherein:

FIG. 1 represents the head lamp of my invention in place during its intended use;

FIG. 2 represents an enlarged portion of the head lamp shown in FIG. 1, emphasizing the novel features thereof;

FIG. 3 is a top plan view of a portion of the head lamp shown in FIG. 2;

FIG. 4 is a sectional view taken along the lines and in the direction of the arrows IV—IV of FIG. 2;

FIGS. 5 and 6 are views similar to that of FIG. 4 showing the head lamp in various degrees of adjustment;

FIG. 7 is a perspective view of a portion of the head lamp assembly of my invention enlarged to show certain details thereof;

FIG. 8 is an element of the assembly shown in FIG. 7;

FIG. 9 is a view similar to FIG. 6 of a modified embodiment of my invention; and

FIG. 10 is a view similar to FIG. 8 of a portion of the modified embodiment of my invention shown in FIG. 9.

Referring now to FIG. 1, a physican is shown wearing the combination adjustable head lamp apparatus of my invention **10**, which comprises generally, in combination, a moldable head band **11** and articulating link assembly **12**, a combination pivot plate and limit stop **13**, and a focusing type lamp housing **14**. The head band **11** is preferably formed with a malleable metal, such as aluminum, and is made generally adjustable by the provision therein of a slotted opening **15** at one end thereof. The opposite end thereof is provided with a threaded pin **16** which extends normally from the head band through the slotted opening **15**, and upon which is disposed a milled adjusting nut **17**, the adjustability provided thereby being obvious from FIG. 1.

From FIGS. 1, 2 and 3, it is seen that a generally triangular web **18** is mounted normal to the head band **11** in the general central area of the physician's forehead, the web projecting normally from the head band, and being securely fixed thereto by oppositely directed feet **19**, **20** and a plurality of rivets **21**. The distal portion of web

18 is provided with an opening (not shown) which supports a threaded screw **26**. Screw **26** in turn supports a pair of similar links **27**, **28**, the web **18** and links **27**, **28** being maintained in parallel adjustable alignment by means of plastic washers **29**, **30** and a nut **31**. The ends of links **27** and **28** opposite to those supported upon the web **18** are likewise provided with openings therein (not shown), and are supported by a threaded screw **32** and plastic washers, **33**, **34** in mutually parallel alignment with a web flange portion **35** of the combination pivot plate and limit stop **13**. The central portion of the combination pivot plate and limit stop **13** is the pivot plate **36**, which from FIGS. 2, 7 and 8 is seen to be oriented at a right angle to the web flange portion **35**. The distal portion of the combination pivot plate and limit stop **13** is the limit stop **37** which is likewise oriented at a right angle with the pivot plate **36**. The pivot plate **36** is provided with pivot ring **47**. Screw **39** is threaded into pivot ring **47** at one point on the perimeter thereof, and generally diametrically opposed thereto is a groved adjustment peg **48**, which has a threaded portion not shown disposed within a complementary threaded opening (not shown) in the pivot ring **47**, which opening extends through the base **45** to the generally cylindrical hollow interior thereof. A reflector **49** is adjustably disposed in the lamp housing **14** by means of a rearwardly extending sleeve **50** which has a diameter slightly less than that of the hollow interior of the base **45**, accurate positioning of the reflector **49** being accomplished by adjustment of the adjustment peg **48**. Sleeve **50** extends from a generally concave portion **51**, and the reflector terminates in a rimmed shield portion **52**. A high intensity bulb **53** of known construction is disposed in the conventional socket (not shown) of base **45** and supply wire **46** is led by suitable devices to a safe connector of an electrical source. Standard medical procedures must be observed in the construction and use of the electrical fittings not shown herein in detail.

The use of the apparatus of my invention shown in FIGS. 1, 2, 3, 4, 5, 6, 7 and 8 is readily perceived. Before scrubbing, a physician should personally adjust the moldable head band **11** and reflector **49** to the approximate position in which they are to be used during the examination or operation. The electrical source should be turned on to make certain that it is in working order and that the illuminated focus of the lamp will be properly disposed with respect to the subject under examination. The partially adjusted head band and reflector is then disconnected and removed from the physician's head and maintained in readiness. When the physician is ready for the examination or operation, he replaces the head band as shown in FIG. 1 or under sterile conditions the head band is replaced by another person. The electrical circuit is checked out and the bulb **53** energized. By an adjustment of the peg **48**, the reflector **49** is moved axially with respect to the base **45**. The lamp housing **14** is adjusted by hand so as to swing the housing **14** about the articulating link assembly **12** so as to generally direct the focused light from the bulb **53** at the spot of examination. At the time of examination, a fine adjustment of the light produced from the lamp housing **14** is made by pivoting the housing **14** about the axis of threaded screw **39** by directly grasping the reflector **49**, or by gripping the adjustment peg **48** with an instrument such as a hemostat. It will be appreciated that during an operation any adjustment of the apparatus of this invention must be carried out under sterile conditions. It is apparent from FIGS. 4, 5 and 6 that the adjustment of the lamp housing **14** about the axis of the threaded screw **39** is limited by the limit stop **37** which is positioned between the reflector **49** and the pivot ring **47**. In accordance with the modified embodiment of the apparatus of my invention, as shown

in FIGS. 9 and 10, the limit stop **37** consists merely of an extension of the pivot plate **36**. It is seen therefore that the limit stop **37** in accordance with any of the embodiments of my invention comprises structural means extending beyond the pivot plate **36** and adapted to abut the concave portion **51** of the reflector **49** as shown in FIGS. 5, 6 and 9.

Having thus described the apparatus of my invention, I claim:

1. An adjustable head lamp comprising, in combination,

(1) head band means adapted to be removably positioned upon a person's head,

(2) articulating means affixed to said head band at a position generally medial of the forehead area of said head band means, said articulating means providing articulation in a generally vertical plane,

(3) combination pivot plate and limit stop means affixed to said articulating means outwardly therefrom with respect to said head band means and comprising a single member consisting of:

(a) a web flange portion, which portion is pivotally connected to said articulating means,

(b) a pivot plate portion next adjacent to said web flange portion, which portion in combination with said pivot means provides pivotal support for said lamp means, and

(c) a limit stop portion next adjacent to said pivot plate portion, which portion limits the extent of pivotal movement of said lamp means about the pivot axis normal to said pivot plate,

(4) lamps means adapted to be pivotally supported by said combination pivot plate and limit stop means, whereby the extent of pivotal movement of said lamp means is limited by the configuration of said combination pivot plate and limit stop means, and

(5) pivot means affixed to said combination pivot plate and limit stop means and to said lamp housing means whereby a pivot axis substantially normal to said pivot plate is provided.

2. An adjustable head lamp in accordance with claim **1** wherein said lamp means includes a socket type base portion, a pivot ring portion formed annularly of said base portion, a reflector portion adjustably mounted within said base portion and having structural portions thereof spaced apart from said pivot ring, and a bulb contained in the socket of said base and positioned in focusing relationship with said reflector.

3. An adjustable head lamp in accordance with claim **2** wherein said limit stop portion extends medially of said pivot ring portion and said spaced apart structural portions of said reflector.

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R. SHEER, *Assistant Examiner.*