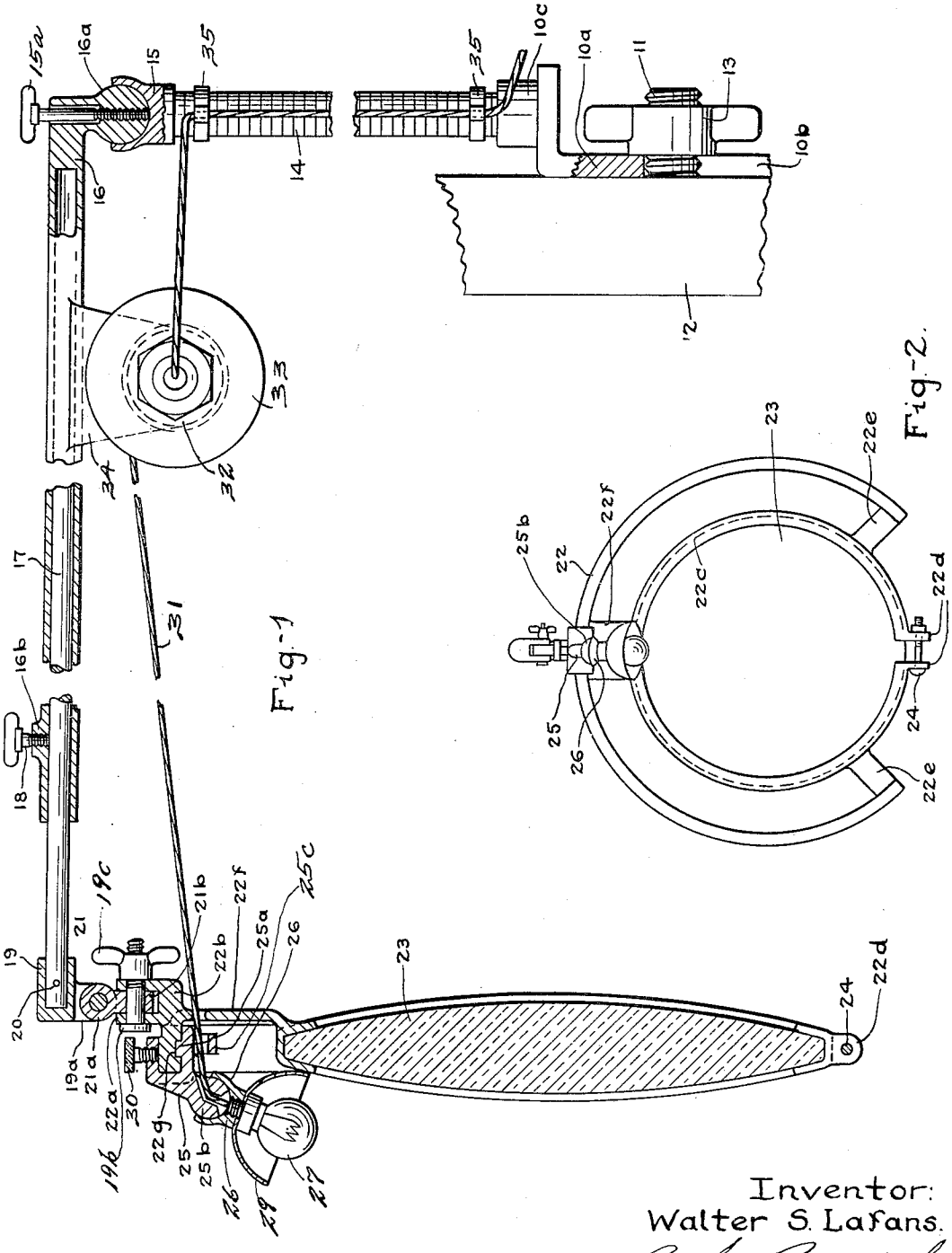
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OPTICAL ILLUMINATOR

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OPTICAL ILLUMINATOR

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10 Claims. (Cl. 174—177)

This invention relates to a surgical appliance, and while the invention is capable of use for practically all examinations or operations on the human body, it is of particular use to dentists, eye, ear and throat physicians, and for surgeons generally. It has been the common practice to examine parts of the human body such as the teeth, throat, etc., with the naked eye, and to operate or work on such parts while the same are viewed with the naked eye. This has also been true with surgical operations. It is obvious that much finer and more delicate work can be done if the parts are viewed under magnification.

It is an object of this invention, therefore, to provide a surgical appliance by which various parts of the human body can be viewed under magnification, and at the same time be illuminated so that examinations can be made thereon or operations performed thereon.

It is a further object of the invention to provide a magnifying device such as a lens, together with an illuminating means mounted adjacent the lens and preferably at the edge thereof and which can be moved to various positions about said lens so that the desired portions being examined or worked upon can be effectively illuminated.

It is also an object of the invention to provide a magnifying device such as a lens carried on an extensible and contractible bracket which in turn is carried on a suitable standard, said bracket being preferably mounted about a universal joint and said standard preferably also being adjustable.

It is still another object of the invention to provide a device adapted to be attached to a chair such as a dentist's chair comprising a standard and a forwardly extending arm, said parts being adjustable and said arm carrying at its forward end a member swingable thereon in which a lens is mounted, said lens having a semi-annular member extending thereabout and a lamp carrying means mounted on and slidable circumferentially on said semi-annular member.

It is more specifically an object of the invention to provide a lens having a rim thereabout, a semi-annular member extending about said rim, a member slidably mounted on said semi-annular member and circumferentially movable thereon, means for holding said member in various positions, and a member swingable on said last mentioned member and arranged to carry a lamp and reflector therefor.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawing, in which like reference characters refer to similar parts throughout the several views and in which:—

Fig. 1 is a view partly in side elevation and partly in vertical section of the device; and

Fig. 2 is a partial view in front elevation shown on a reduced scale.

Referring to the drawing, a device is shown comprising a bracket 10. This bracket has a vertically extending plate-like portion 10*a* having a vertical slot 10*b* therein adapted to fit over a screw or threaded stud 11 which may extend from the rear side of a back 12 forming part of a chair in which the patient sits. Screw 11 has a hand operated nut 13 thereon which can be tightened against bracket 10 to hold the same rigidly in position. Bracket 10 also has an upstanding boss 10*c* in which is mounted a standard 14. While the standard may be of any desired construction or material, in practice it has been found convenient to have the same made of flexible tubing which can be bent in various directions but which will retain the position to which it is bent. The top of standard 14 carries a socket member 15 in which is disposed a ball 16*a* forming part of an arm 16. Ball 16 extends at right angles to the main portion of arm 16 so that the latter as shown extends substantially horizontally. Arm 16 can be moved to different positions and held by a set screw 15*a*. Arm 16 is formed as a tube in which is slidable the rod 17. Tube 16 has a small boss 16*b* adjacent its end through which extends a set screw 18 having a small wheel at its end by which it may be tightened or loosened. Rod 17 has secured to its outer end a bracket 19, the same being shown as pinned to said rod by the pin 20. Bracket 19 has a depending bifurcated portion 19*a* between the arms of which is disposed a lug 21*a* of bracket 21, the same having another depending lug 21*b* which is embraced by the bifurcated portion 22*a* of projection 22*b* extending rearwardly from a semi-annular or ring-like member 22. A stud 19*b* extends through portions 21*b* and 22*a* and has thereon a wing nut 19*c* which can be loosened to relatively swing said portions or tightened to hold them in fixed relation. Member 22 extends about a rim 22*c* forming the holding rim for a lens 23. The rim 22*c* is split at its bottom portion and has the projecting lugs 22*d* through which passes the headed and nutted bolt 24 by means of which the rim 22*c* is clamped upon and held upon the lens 23. The member 22 is connected to the rim 22*c* by arms 22*e* and also by a web 22*f* at the top of portions 22 and 22*c*. Mem-

ber 22 has a groove 22*g* formed at its inner side, shown as rectangular in radial cross section. A bracket 25 has arms fitting above and below member 22 and the lower of said arms is provided with a projection 25*a* adapted to seat in the groove 22*g*. A ball 25*b* is disposed at the end of the short arm projecting downwardly and outwardly from member 25, which ball is embraced by a socket member 26. Socket member 26 has secured thereto a lamp socket 27 in which is secured a lamp 28. A reflector 29 is also mounted on the socket 27. A screw 30 extends through the bracket 25 and engages the member 22 having a head thereon by which it can be tightened to hold bracket 25 in the desired position. A cord 31 having conductors therein extends to the socket 27 and as shown, this passes into the socket member 26 and through a small depending lug 25*c* on member 25 and through the ball 25*b*. Said cord extends to a drum or reel 32 mounted in a casing 33 supported on a bracket 34 which is made as a portion of or secured to the arm 16. The drum 32 preferably will be turned by a spring (not shown) so that the cord 31 will be wound up thereon and kept under suitable tension. Cord 31 extends through the center of drum 32 and through lugs 35 on standard 14 to a suitable source of current. As the lamp is moved, the cord will be drawn off of the reel.

In operation, the device will be supported by standard 14, which standard may be either supported on the floor or secured in a chair as shown. The standard will be adjusted to bring the arm 16 into the desired position and rod 17 will be adjusted so that the lens 23 can be brought in front of the desired location. If the throat is to be examined or if work is to be done on the teeth, the lens will be positioned in front of the mouth of the patient. The dentist or physician in charge can then look through the lens and will see the portion to be examined or worked upon, magnified. The lamp 28 will be lighted and the portion to be worked upon or examined will thus be illuminated. The bracket 25 can be moved to any point on the member 22 and secured in place by the screw 30. In the usual operation of the device, the operator will be disposed on the side of the lens opposite the lamp 27. The lamp 27 thus illuminates the portion being viewed through the lens 23. The light will be directed upon the desired place by a reflector 29. It will be seen that the lamp and reflector do not come within the field of the lens so that there will be no interference with the lens and the lamp or reflector will not get in front of the portion to be examined or worked upon. While the lens 23 may be of various sizes, in practice it has been found that a lens about four and one-half inches in diameter is very effective. When the physician or dentist is using the device to examine or work upon some portion of the patient's mouth or throat or the teeth, the lens can be placed in front of the mouth and also acts to shield the physician from the breath of the patient or from any moisture or globules which may be emitted from the patient's mouth.

From the above description it is seen that applicant has provided a very simple and efficient appliance which has a high degree of utility. It is obvious that in dental work much more accurate work can be done when the parts being worked upon are magnified. The device is also of great utility and advantage in performing any operation in which a knife is used. It will readily be seen that an incision can be much more accurately located when the surgeon sees the parts under magnification. This is quite important, as often times a very slight variation in the location of a cut means important results. As stated, the lamp is disposed adjacent the edge of the lens and can be readily moved about the lens and brought to the most advantageous position to illuminate the portion being examined or worked upon. The lamp and reflector are small and are disposed so they do not in any way interfere with the work or the use of the lens. The device has been amply demonstrated in actual practice and found to be very successful and efficient.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. A surgical apparatus having a combination, a magnifying device, a support for the edge of said device, and an illuminating element mounted adjacent to and slidable about said device to be located at different positions about the periphery of the same.

2. A surgical apparatus having in combination, a lens, a member in which said lens is mounted, a second member carried by and spaced from said member and extending around said lens, means movable on said second member to different positions around said lens, and a lamp carried by said means.

3. A surgical appliance having in combination, a lens, a member extending about the edge of said lens, means mounted on said member and movable to different positions about said lens, and a lamp carried by said means.

4. A surgical appliance having a combination, a lens, a supporting means for said lens, means for holding said means in various positions, a lamp supported adjacent the edge of said lens and slidable to different positions about the edge of said lens.

5. A surgical appliance having in combination, a lens, a member slidable circumferentially about and adjacent the edge of said lens and being movable toward and from said lens, and a lamp carried by said member.

6. A surgical appliance having in combination, a support, an arm extending from said support, a universal joint connecting said arm and support, a member carried at the other end of said arm and movable relatively thereto, a lens mounted in said member, a member mounted on said last mentioned member and movable thereon about said lens, and a lamp carried by said last mentioned member.

7. A surgical appliance having in combination, a standard adapted to be moved to and held in different positions, an extensible and contractible arm swivelly secured to said standard, a lens holding means carried by said arm and movable about axes at right angles to each other, and a lamp carrying member mounted to be slidable circumferentially about said lens.

8. A surgical appliance having in combination, a stationary support, a lens, a lens holding means mounted on said support and movable to different positions relatively thereto, a lamp disposed adjacent one edge of said lens, and means for supporting said lamp movable circumferen-

tially about said lens in a plane substantially parallel to said lens.

9. An apparatus of the class described, having in combination, a lens, a member carrying said lens, universally movable means for supporting said member, a lamp support mounted adjacent said lens and movable to different positions thereabout, and a lamp carried by said lamp support for illuminating an object viewed through said lens.

10. An apparatus of the class described having in combination, a lens, means carrying said lens and extending thereabout, a lamp support mounted on said means movable to different positions about said lens, a lamp carried in said support for illuminating an object viewed through said lens, said lamp support being movable toward and from the plane of said lens.

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