

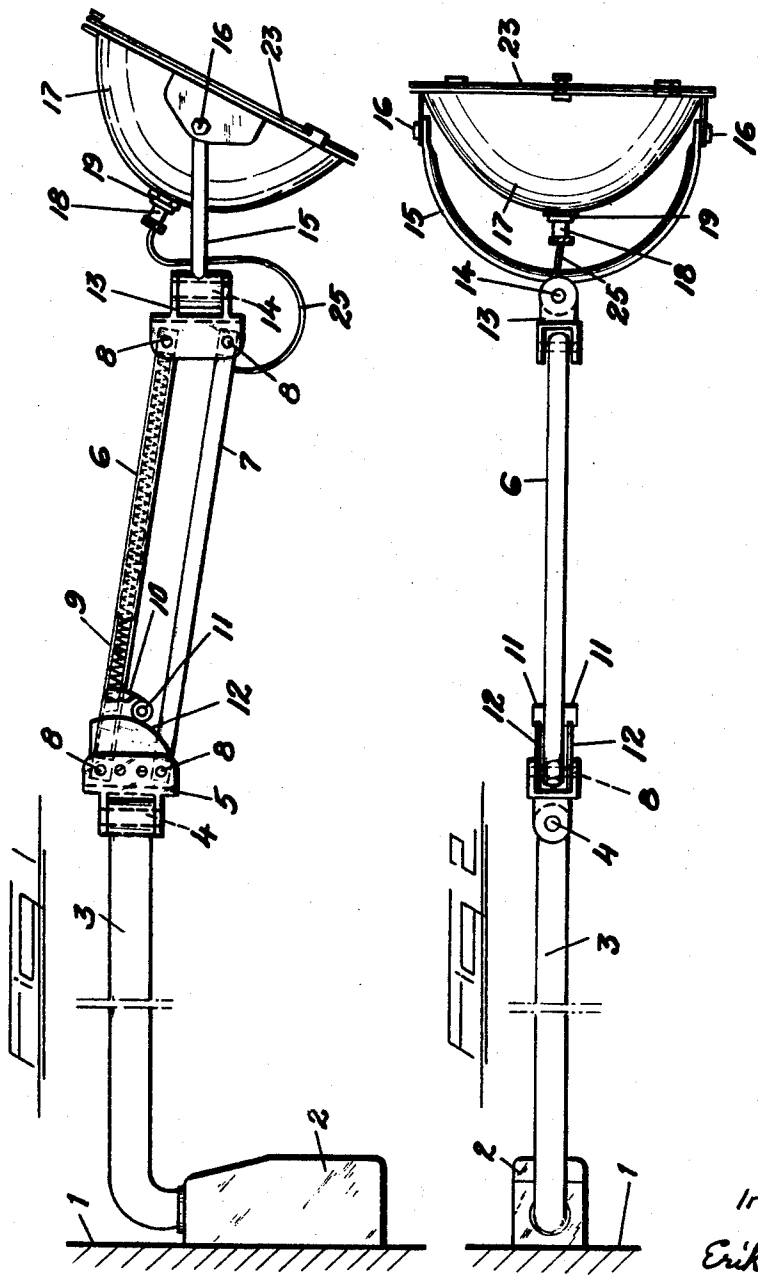
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E. STROM
DENTAL SPOTLIGHT

2,911,525

Filed April 10, 1956

2 Sheets-Sheet 1



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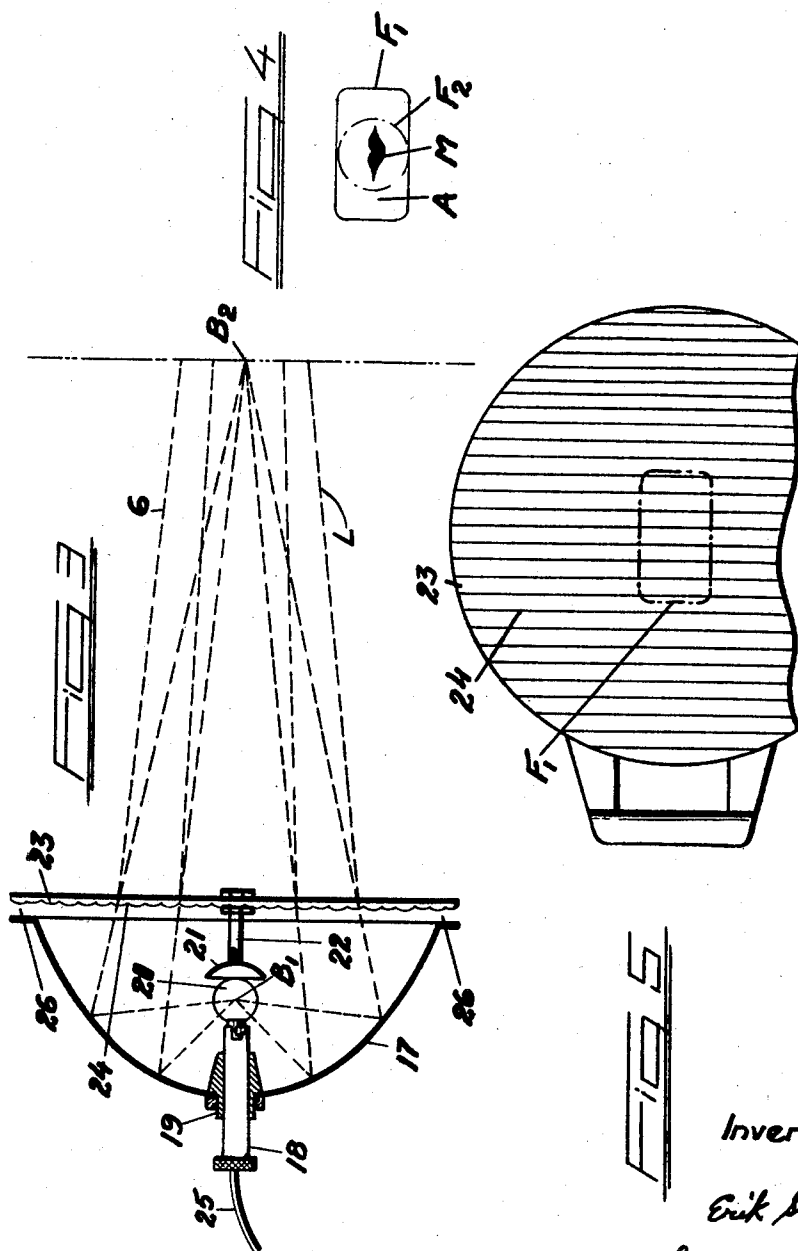
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1

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DENTAL SPOTLIGHT

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1 Claim. (Cl. 240—41.15)

The present invention generally relates to lighting devices, and more particularly to lighting sets for work and surgical operation purposes.

The invention has for its principal object to provide a lighting set for work and surgical operation purposes and particularly adapted to be used by dentists, and which has the advantage over and above prior constructions for this purpose that it will deliver a well-defined oval or rectangular field of illumination without any appreciable formation of shadows.

A further object of the invention is the provision of a lighting set of the kind referred to which is conveniently adjustable into any desired position.

For the objects stated, a work and surgical operation lighting set according to the present invention is mainly characterised in that the set comprises an ellipsoidal cup-shaped reflector shade on the major axis of which the source of light, such as a frosted filament lamp, is disposed at one focal point while the locality of operation, such as a patient's mouth, is intended to be disposed at the other focal point. The reflector opening is covered by a glass having vertical flutes in spaced parallel interrelation adapted to refract the rays of light in a manner to cause the light spot at the locality of operation to appear as a well-defined substantially oval or rectangular field of light intensively illuminating the region of the patient's mouth.

Further according to the invention, the reflector shade may be attached to one end of a parallelogram linkage arm mounted at its opposite end so as to be angularly adjustable about a vertical axis. Preferably displaceably mounted on one link of said parallelogram linkage arm is a resiliently loaded abutment member which carries, preferably through the intermediary of anti-friction bearing means, a roller adapted to be urged into engagement with a camming track which is fixedly located relative to said parallelogram linkage arm. This enables the lighting set always to be readily adjusted into the most suitable position.

Further characteristics and structural features of the invention will be set forth or become apparent from the following description in conjunction with the accompanying drawings which illustrate an embodiment thereof by way of example, and in which:

Fig. 1 is a side elevation of the lighting set;

Fig. 2 is a plan view thereof;

Fig. 3 is a cross-section through the reflector on an enlarged scale;

Fig. 4 illustrates the light spot obtained by the use of the device according to the invention, as compared with a light spot as normally obtained; and

Fig. 5 is a front view of the reflector covering glass.

Referring now to the drawings more specifically, numeral 1 designates a wall to which the lighting set is mounted so as to be angularly adjustable about a vertical axis in a housing or mounting 2 which latter could also be combined with an electric transformer. The in-

2

ner end portion of the lighting set consists of a rigid arm 3 the inner end of which is bent down at right angles and is journaled in the housing or mounting 2, whereas the arm 3 is provided at its extreme end with a vertically extending pivot pin 4 receiving thereon a forked bracket 5 which is angularly adjustable about the pivot pin 4 in a horizontal plane. Attached to the forked bracket 5 are the near ends of two spaced parallel tubular links 6 and 7 which are articulated to the bracket 5 by means of pivot pins 8. Received within the upper link 6 is a coiled compression spring 9 engaging at its rear end an abutment bracket 10 slidably mounted on the link 6 and being provided with a cam following roller 11 which is urged by the spring pressure firmly against camming tracks 12 formed on the forked bracket 5.

The extreme ends of the two parallel links 6, 7 engage a front-end forked bracket or holder 13 and are articulated thereto by means of pivot pins 8. The forked holder 13 is provided with a vertical pintle 14 on which an arcuate yoke 15 is mounted so as to be angularly adjustable in a horizontal plane. Mounted in said yoke 15 by means of horizontally aligned trunnions 16 is an ellipsoidal reflector shade 17 (see Fig. 3). Axially displaceably mounted within a bushing 19 in the bottom center of the reflector is a lamp socket 18 having fitted into its front end a frosted filament lamp 20, an electric connecting cable 25 being introduced through the lamp socket 18. The front opening of the reflector shade 17 is covered by a glass 23 being spaced from the edge of the reflector shade 17 by a ventilation clearance 26. Mounted on a rod 22 secured centrally on the internal face of the glass 23 is a small cup-shaped anti-dazzle shade 21 disposed opposite the filament lamp 20. The glass 23 is formed in its internal face with flutes 24 (see Fig. 5). The glass 23 may be made of heat-absorbing shatterless Plexiglas which, in conjunction with the ventilation feature of the reflector shade 17, will ensure an extremely low development of heat.

When using the lighting set, the filament lamp 20 should be so adjusted as to be situated at one focal point B₁ of the ellipsoid of which the reflector shade 17 forms part whereas the locality of operation A in the region of the patient's mouth M (Fig. 4) is localized to the other focal point B₂. The rays of light L emitted by the filament lamp 20 and being indicated by broken lines, after they have been reflected by the reflector 17, will be refracted when passing through the fluted glass 23 in a manner to cause the locality of operation A (Fig. 4) to be illuminated intensively by a substantially rectangular and relatively large field of light F₁, rather than by a circular light spot F₂ of small area as is the case when using lighting sets of the previously existing types.

By this means there will be obtained in the region of the patient's mouth an essentially improved and intensified illumination of a larger and well-defined zone, and without any harmful formation of shadows. It is to be understood, of course, that the size and shape of the illuminated area may be varied at will by suitable adjustment of the relative position of the structural elements of the lighting set.

What I claim is:

A lighting set especially designed for dental use consisting of, an ellipsoidal reflector, a small bulb light source in the reflector disposed on the major optical axis thereof at one focal point of the reflector and positionable to localize the other focal point of the reflector at a patient's mouth, a glass covering the light opening of the reflector and spaced parallel vertically extending wide flutes formed in said glass with their convexities on the light source side of said glass, said flutes being formed by narrow spaces between vertically extending ridges arranged adjacent each other on the glass and the surface

of each ridge being a partial cylindrical surface and forming acute angles with the cylindrical surfaces of the adjacent ridges so that rays of light from the light source directed toward the glass from the reflector are refracted by the vertically extending ridges of the glass to form a rectangular area of light of intense illumination at a patient's mouth.

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