March 4, 1952 J. POHANKA 2,588,288

DENTAL LIGHT

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Fig. 1

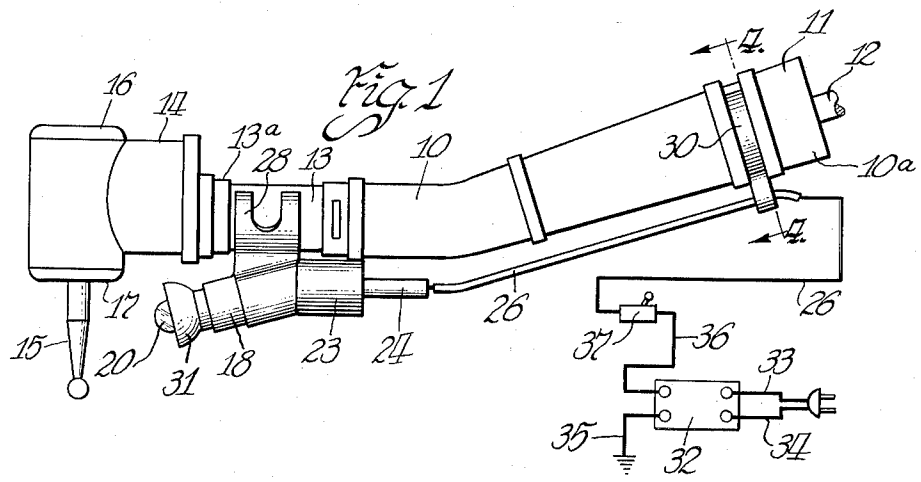


Fig. 2

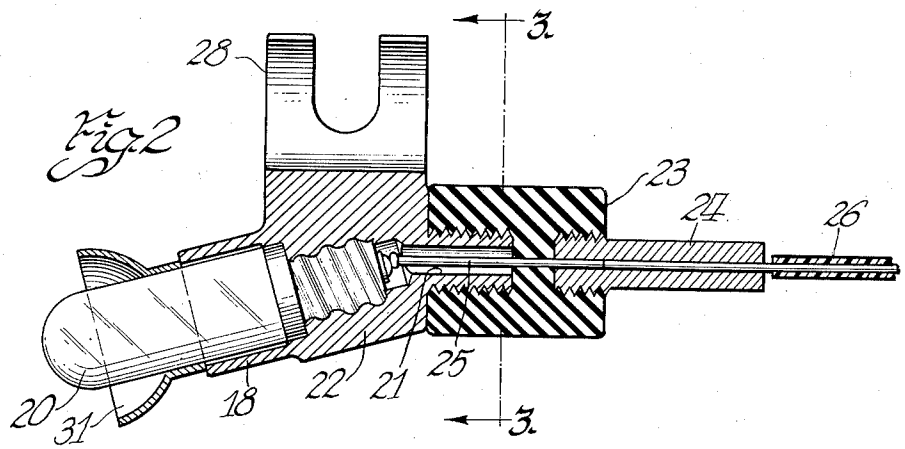


Fig. 3

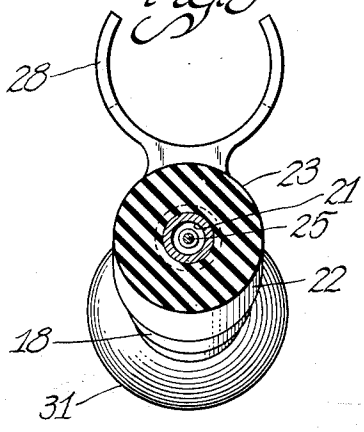


Fig. 4

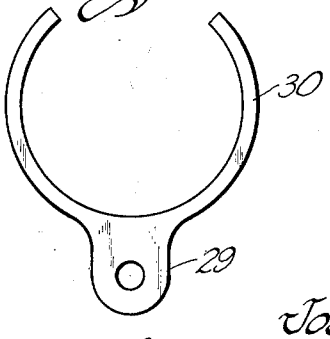
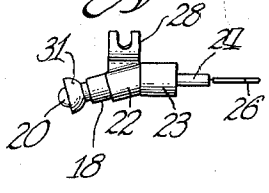


Fig. 5



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DENTAL LIGHT

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4 Claims. (Cl. 173—358)

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My invention is directed to a very small illuminating device or light adapted to be mounted adjacent the head piece of a dental contra-angle drilling device and to the novel structural features thereof and to the combination of structural features for mounting said light upon and along the head of the drilling device so as to illuminate the working area of the drill and at the same time present no interference or obstruction to normal drilling and viewing by the dentist of the area being worked upon.

It is an important object of my invention to provide an illumination light of a size so small and so compact that it may be easily mounted on the normally lower side of the grippable hand piece of a dentist's contra-angle to thereby avoid interference with proper gripping and holding of the drill unit and to thereby avoid obstructing the dentist's view of the cavity or other part being drilled, and so that the area worked upon can be maintained satisfactorily illuminated thereby permitting the dentist to continuously and clearly watch the progress of drilling as well as to watch the location, angle and position of the drill, all without the need for intermittent withdrawal of the drill and head piece from the patient's mouth.

In the practice of dentistry, the steps of drilling cavities in teeth preliminary to filling them are exceedingly unpleasant both from the standpoint of the dentist and the patient. A dentist's skill and his ability to secure good-will depends in many instances on his ability to perform drilling and grinding operations with the least possible pain to the patient and with accuracy and skill so that fillings will have long endurance as well as be properly mounted in the shape and size of cavities best suited for the particular case.

A great deal of guess on the part of the dentist is the general rule in numerous instances as to whether or not he has drilled or ground correctly and skillfully and this has been due to his inability to see and watch the area worked upon during the drilling operations. The inability to see either a direct or mirror reflected image is due primarily to the poor light which is present, especially when operating on the posterior teeth and in other areas where the use of a contra-angle is indicated. Attempts to periodically look at the reflection of the cavity upon which work is being performed, to "check" what is being done is not satisfactory in most instances and is difficult because saliva runs into the cavity immediately upon withdrawal of the burr and such saliva obstructs and makes unclear the work performed.

Another unsatisfactory factor is that due to the pain encountered by the patient, the patient often delays the replacement of the drill which has been withdrawn to enable the dentist to check

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his progress, depth of cavity, etc. Another objectionable factor is that due to the dentist's inability to see, the drill slips out of place, with great pain to the patient, as the dentist is often unable to hold a reflecting mirror in his other hand during drilling and frequently cannot as he has to hold the patient's cheek or head.

These and other objectionable features are eliminated by my invention, which permits the dentist to see the area worked upon during drilling operation and to more accurately gauge his progress and to avoid errors and provides for performance of more skillful work. The comparison may be similar to a surgeon performing a part of an operation without light as compared with constant illumination and view during such operation.

Other and further important objects of my invention will be apparent from the following description and appended claims, reference being made to the accompanying drawing and numerals of reference thereon.

On the drawings:

Fig. 1 is a side elevation of my attachable dental light and means for holding same on a dental head piece.

Fig. 2 is a detail sectional view of the socket and attached parts taken on a longitudinal plane thereof.

Fig. 3 is a detailed sectional view taken on a plane indicated by line three of Fig. 2.

Fig. 4 is an elevational view of the clamp or clip and taken on line four of Fig. 1, the handle and shaft parts being omitted.

Fig. 5 is an elevation showing the actual size of the device.

Referring to the drawings, numeral 10 designates a centrally passaged grippable handle made of metal having an end portion 11 to which the end of flexible cable 26 is attachable. A driven flexible shaft 12, only a fragment of which is shown in Fig. 1, is rotatable in the passage of handle 10.

The forward end of the handle 10 at point 10a is removably mounted on a nipple (not shown) on the rear end of hand piece 13. Hand piece 13 extends to annular flange 13a, at which point its end portion is threadingly connected to an opening (not shown) of the casing 14, which houses a rotatable chuck means for holding burrs in position and cooperating gear means (not shown) which transmits the power from the flexible shaft 12 to the chuck and burrs mounted therein. A burr 15, is illustrated as mounted in the casing which has upper and lower threaded caps or plugs 16 and 17.

Referring to Figures 1 and 2, numeral 18 designates a rounded metal shell or casing made of metal whose forward end extends outwardly to provide a supplementary holding means for

the bulb 20 and to protect the bulb against damage or breakage by normal impacts. The main portion of casing 18 is internally threaded and provides a centrally passaged socket base or member 22 which is of conductive material and is internally threaded as shown in Fig. 2 to receive a threaded bulb.

The normally rear portion of socket member 22 has an integral externally threaded nipple 21 thereon.

Numeral 23 is a passaged screw plug or nipple of non-conductive material which has one end portion threaded so as to thread on nipple 21. The opposite end of the passage of plug 23 is internally threaded and has removably mounted therein, for example by threading a passaged plug or end portion of a tube-like passaged metal terminal member or connector 24.

A section of conductive terminal wire 25 is mounted in the passage of plug 23 with its flattened or headed end disposed in the socket cavity as shown in Fig. 2 and with its opposite end preferably extending into the connector or terminal 24, or if desired extending as far outward as desired (in the latter case to continue as part of the circuit wire 26 leading to the power source). I prefer to terminate and secure the wire segment 25 within connector 24 and then secure the bare end of a circuit wire 26 in said connector, for example by pinching the terminal end against the inserted bare end portion of the wire.

Numeral 30 designates a yieldable metal clamp or clip of substantially C shape which preferably has an integral apertured ear 29 as shown in Fig. 4. Circuit wire 26 which is enclosed within a non-conductive covering, is threaded through ear 29 of the clip 30 which is releasably clamped on the handle 10 at the desired point. More than one of such retaining clips may be so mounted in spaced apart position.

As shown in Figs. 1, 2 and 3, a yieldable rounded metal clamp 28 is secured to casing 18, for example by welding or soldering, said clamp is of greater length at one side thereof then at the other, as indicated in Fig. 1 so that the casing 18 and the bulb mounted therein will normally be disposed at a slight angle diverging outwardly so as to direct the maximum light-rays toward the outer-end portion of the burr. Said clamp 28 is flexible and may be manually pulled away from the hand piece when desired, for example when replacing the bulb or cleaning the hand piece and connected parts.

As indicated in Fig. 1, a rounded outwardly flaring reflector 31 is preferably mounted about the projecting end portion of the bulb 20 so as to reflect rays in the direction of the burr. The position of said reflector 31 may be adjusted and the same may be mounted at or upon the forward end portion of the casing 18. Such securance may be a snug frictional seat or equivalent securance.

As before recited, one of the problems previously unsolved is the production of a safe, practical light so small and yet sufficient in illuminating power so that the same will not be in the way when drilling in the mouth and which will not obstruct the dentist's view; which will not produce a glare lessening his vision, and which will not interfere in any way with normal use in the difficult positions in which dental drilling has to be performed. My invention attains all of these accomplishments in addition to those hereinafter recited, and one factor of said accomplishments is the smallness of size of the entire lighting unit which is reproduced in actual size in Fig. 5 of my accompanying drawing.

One power means which I have found satisfactory is illustrated at the right of Fig. 1. This is represented by a transformer 32, two of whose terminals are connected by circuit wires 33 and plug 34 to the usual plug of normal building current. One of the opposite terminals of said transformer 32 is connected by a circuit wire 35 to a ground connection, and the fourth terminal of said transformer is connected by circuit wire 36 to a manually operable hand switch 37 of conventional type. One terminal of hand switch 37 has connected thereto the circuit wire 26 in the usual manner. The position of hand switch 37 may be varied in the circuit wire 26 as desired.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention, within the scope of the claims constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In combination, in a minute lighting fixture for illuminating the work area adjacent the burr in a contra-angle casing having a bent passaged conductive socket; said casing at one end thereof providing a passaged, reduced and externally threaded nipple; a passaged non-conductive member, mounted at one end thereof, about said nipple and having the other end thereof internally threaded; a conducting element rigidly mounted in the passage of said member and having one end thereof disposed so as to engage a bulb; the other end of said conducting element terminating within the said member; a passaged plug threadingly and removably mounted in the last mentioned end of said member, the passage of said plug being aligned with said conducting element and into which passage the said conducting element extends; a circuit wire terminating near an end of said plug and rigidly mounted in the passage of said plug removable contact with one end of said conducting element, and a clamp adapted to connect said device to a dental contra-angle.

2. In lighting device adapted to illuminate the area adjacent the burr of a dentist's contra-angle; an angularly bent socket adapted to receive a light bulb; a passaged non-conductive member connected about the rear of said socket; a passaged plug rigidly and removably mounted in said member for securing a circuit wire in position; the passage in said plug being of substantially the same diameter as the circuit wire; a circuit wire terminating in the passage of said member and removably extending into the passage of said plug and having a terminal disposed in said socket, said terminal being adapted to be contacted by a part of a light bulb; a second circuit wire rigidly mounted in said plug and abutting one end of said first mentioned circuit wire; a clamp on said socket adapted to be engaged on a contra-angle and a second attachable clamp adapted to hold a portion of the second circuit wire.

3. In a lighting device sufficiently small to be mounted adjacent a contra-angle and illuminate the work area from within the human oral cavity, a casing providing a bent light socket; said socket having a reduced threaded nipple; a passaged non-conductive member threaded on said nip-

ple; a passaged plug in one end of said member; a wire rigidly mounted in said casing and said member and disposed in the passage of said plug and having a terminal in said socket; a circuit wire connected to said plug and extending rearwardly; releasable clip means on said casing adapted to mount said casing adjacent a hand piece of a dental drill device; and a clamp for holding the rear exposed and insulated portion of said circuit wire adjacent the hand piece.

4. In a lighting device adapted to illuminate the area adjacent the burr of a dentist's drill, a bent socket of conductive material; said socket having a reduced externally threaded nipple; a passaged non-conductive member threaded on said nipple; a metal terminal plug releasably mounted in one end of said member; a wire extending into said socket and terminating in said member and extending into said plug; a circuit wire having one end thereof rigidly connected to said plug and terminating within said plug and extending rearwardly and being releasably

connected to said first wire; and a releasable clip means on said socket adapted to mount said socket adjacent the hand piece of said drill.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,272,700	Newcomb	July 16, 1918
1,993,881	Grigg	Mar. 12, 1935
2,038,911	Stutz et al.	Apr. 28, 1936
2,252,267	Lofgren	Aug. 12, 1941
2,287,874	Gibbons	June 30, 1942
2,303,121	Hartness	Nov. 24, 1942

FOREIGN PATENTS

Number	Country	Date
322,382	England	Dec. 5, 1929