

July 22, 1952

D. C. SHAPIRO
CENTRIC SWITCH MEANS

2,604,559

Filed March 31, 1950

2 SHEETS—SHEET 1

Fig. 1.

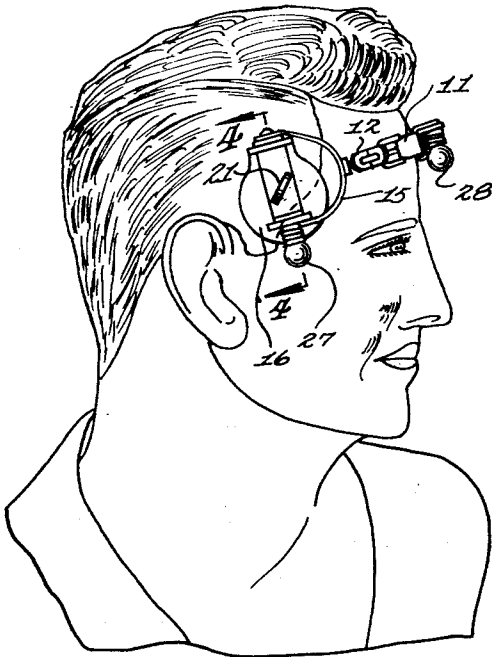


Fig. 5.

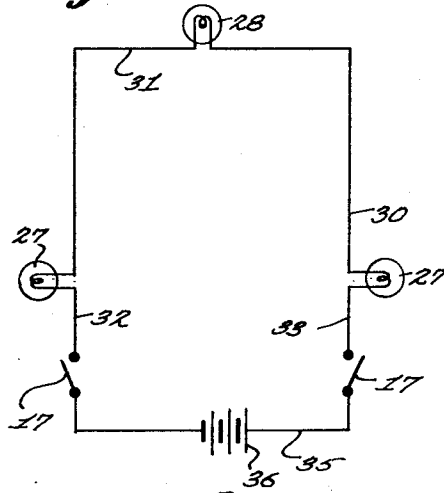


Fig. 3.

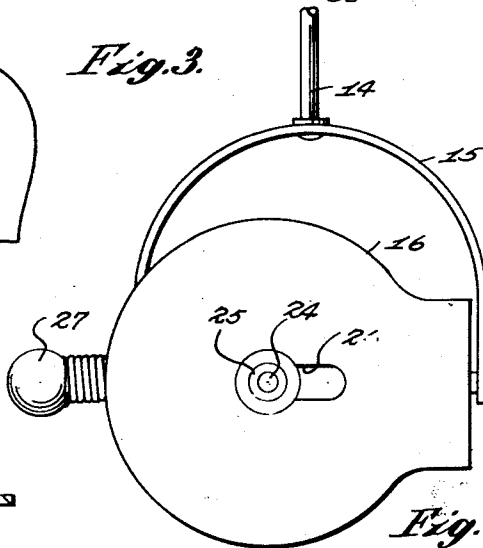


Fig. 4.

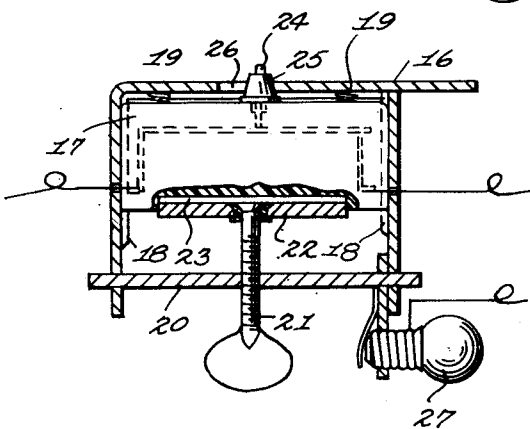
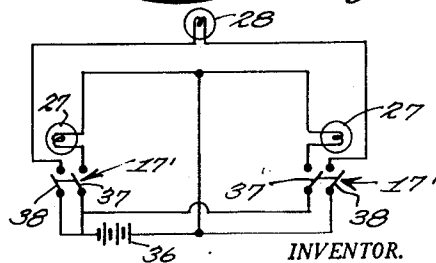


Fig. 6.



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2 SHEETS—SHEET 2

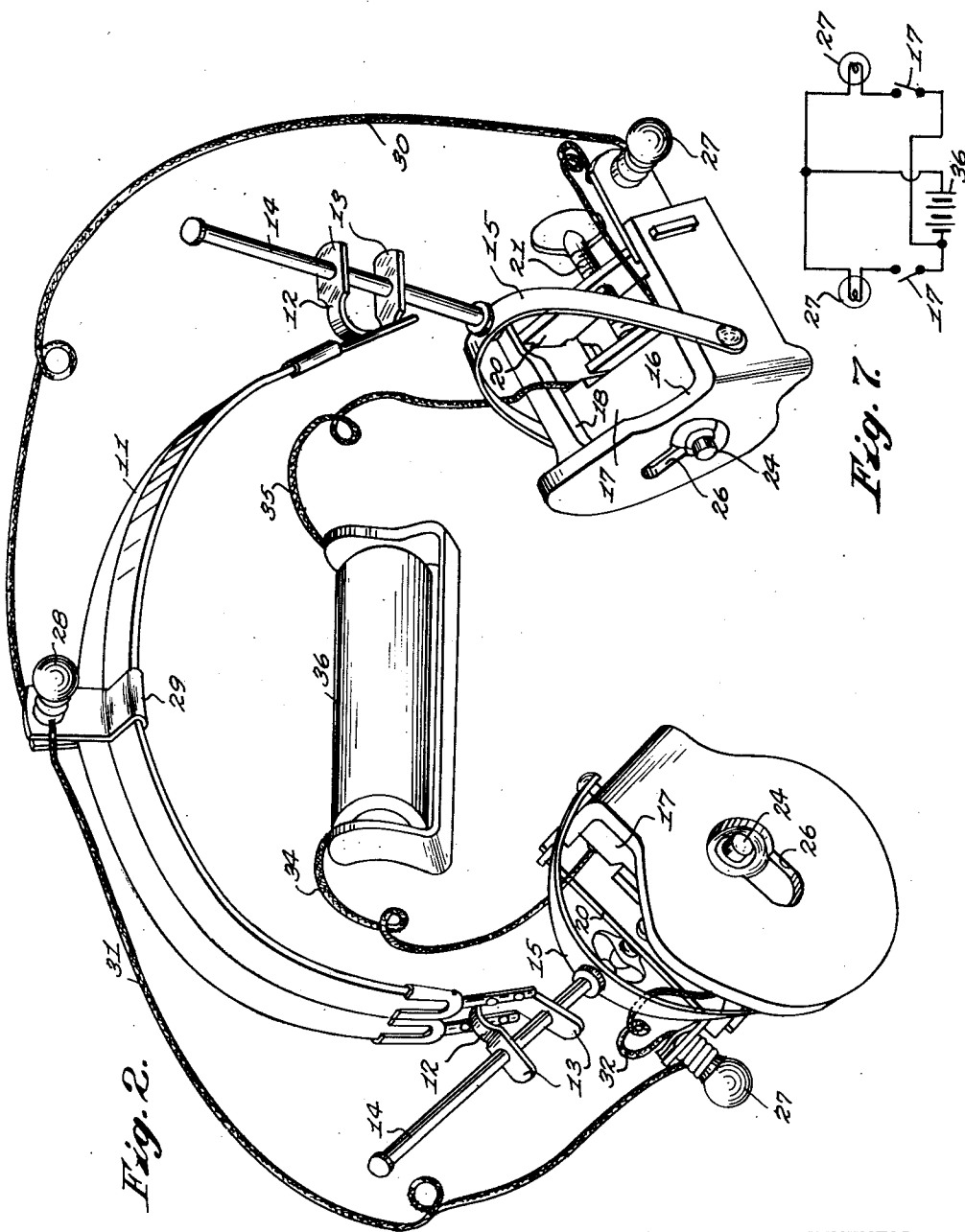


Fig. 2.

Fig. 7.

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CENTRIC SWITCH MEANS

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3 Claims. (Cl. 200—52)

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This invention relates to improvements in dental instruments, and more particularly to an apparatus for indicating a correct bite of a dental patient in making an impression on bite-taking material in fitting the patient with artificial teeth.

My prior Patent 2,543,512 issued February 27, 1951, shows a device adapted to be used for the same purpose.

A main object of the invention is to provide a novel and improved device for establishing correct "centric," namely, to establish the correct relation of the jaws to function with artificial teeth, said device being simple in construction, providing an accurate indication when the patient's bite is properly centered, and providing a positive means of determining when correct centric has been attained by a patient making an impression on bite-blocks or other bite-taking material.

A further object of the invention is to provide an improved centric indicator for determining the attainment of a properly centered bite by a patient making an impression on bite-taking material, said device involving only a few parts, operating in response to the flexing of the temple muscles of the patient, whereby a properly centered bite gives a positive indication, being provided with means for indicating both to the dentist and the patient when a properly centered bite has been attained, and serving to eliminate guesswork and reduce the amount of time required, as well as the cost involved, in obtaining a correct impression of the patient's bite.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a side elevational view, showing an apparatus according to the invention worn by a patient in position for indicating the attainment of correct centric in making a bite impression;

Figure 2 is an enlarged perspective view of the apparatus worn by the patient in Figure 1, said apparatus being in accordance with the present invention;

Figure 3 is an enlarged elevational detail view of one of the temple-engaging elements of the apparatus of Figures 1 and 2;

Figure 4 is an enlarged cross-sectional detail view taken on line 4—4 of Figure 1;

Figure 5 is a schematic circuit wiring diagram of the electrical circuit of the apparatus disclosed in Figures 1 to 4;

Figure 6 is a schematic circuit wiring diagram

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of a modified form of apparatus according to the present invention;

Figure 7 is a schematic circuit wiring diagram of another modified form of apparatus according to this invention.

Referring to the drawings, and more particularly to Figures 1 and 2, 11 designates a headband of suitable flexible spring material, said headband being provided at its ends with brackets 12, 12 secured thereto, and rotatably and slidably extending through the arms 13, 13 of said brackets are the rod elements 14. Secured to the ends of the rod elements are the resilient yoke members 15, and pivoted to the ends of the resilient yoke members are the generally U-shaped, temple-engaging members 16, 16. Designated at 17, 17 are respective micro-switches which are slidably mounted between the arms of the U-shaped members 16, said arms being provided with guide ribs 18 above and below the side corner portions of the micro-switches 17 to guide the micro-switches for inward and outward adjustments in the U-shaped members 16. Designated at 19 are coil springs positioned between the inside surfaces of the micro-switches 17 and the adjacent inner wall surfaces of the members 16, as shown in Figure 4. The springs 19, 19 exert a biasing force on the micro-switches, biasing said micro-switches outwardly. Secured transversely to the outer end portions of the arms of the members 16 are the bar elements 20, and threaded through said bar elements are the screw members 21 rotatably secured at their inner ends to pressure plates 22 which are received in correspondingly-shaped recesses 23 in the micro-switches 17. The springs 19, 19 bias the micro-switches outwardly against the pressure plates 22, and the position of the micro-switches may be adjusted by rotating the screw members 21. Each micro-switch 17 is provided with a plunger 24 for operating same, said plunger being surrounded by a sleeve element 25 carried by the micro-switch, and the sleeve element projecting through an opening 26 formed in the wall of the associated U-shaped member 16. The micro-switches 17 are normally open and are closed responsive to the inward movement of their plungers 24.

Mounted on each temple-engaging member 16 is an electrical lamp 27, said lamp projecting downwardly when the apparatus is worn in the manner of Figure 1, and mounted on the intermediate portion of the headband 11 is an additional lamp 28 carried on a bracket 29 clamped to the headband. The respective lamps 27, 27 and

28 are connected in series, as by the flexible insulated wires 30, 31, 32, 33, 34 and 35, with the micro-switches 17, 17 and a suitable battery 36, as shown in Figure 5.

The battery 36 may either be mounted on the device so as to be carried thereby, or may be located in any convenient adjacent position.

In operation, the device is mounted on the patient's head in the manner shown in Figure 1, with the members 16, 16 engaging the patient's temples, and the headband portion 11 overlying the patient's forehead. In this position, the lamp 28 is in view of the patient, and the side lamps 27, 27 are in view of the dentist from either side of the patient. The device operates from the flexing of the templar muscles. When a patient's jaw is in proper centric position, the templar muscles, one on each side of the forehead, are expanded. The temple-engaging members 16, 16 which house the micro-switches 17, 17 are in contact with said muscles, and the plunger elements 24 of the switches are both urged inwardly simultaneously to close the micro-switches 17, 17 when a proper bite has been attained. Before the patient attempts to attain a proper bite, the positions of the micro-switches 17, 17 are adjusted by means of the screw members 21 until the lamps 27, 27 and 28 are just illuminated. Then, the screw members 21 are reversed until the lamps just become extinguished. The device is now ready for operation. When the patient establishes a proper centric or "bite," the flexing of the patient's templar muscles will close the micro-switches 17, 17 and cause the lamps 27, 27 and 28 to become energized.

The purpose of the center lamp 28 is to provide an indication to the patient when he has attained a proper bite. The patient is told to bite until this center lamp 28 becomes illuminated. The dentist can do other work while the patient is taking his or her "bite."

By the use of the above device, guesswork is eliminated entirely in the operation of obtaining a proper dental impression, and insures the dentist against rechecking and refitting of teeth, reducing his costs, and saving time for the dentist, the patient and the dental laboratory.

The device may be operated either with alternating current, direct current, or by the battery illustrated in the drawings.

Figure 6 illustrates a modified form of the invention, wherein the lamps 27 may be energized independently of each other and of the lamp 28. In Figure 6, the micro-switches 17', 17' carried by the temple-engaging members are double-pole, single-throw switches, each having the respective poles 37 and 38. Each of the side lamps 27 is connected to the battery 36 in series with a pole 37 of the associated micro-switch 17'. The center lamp 28 is connected to the battery 36 in series with the poles 38 of both micro-switches 17', as shown. Therefore, either of the lamps 27 may become energized by the closure of the micro-switch 17' on the side of the apparatus at which the lamp is located. When a properly centered bite is achieved, both lamps 27 and the center lamp 28 become energized simultaneously.

In the embodiment of the invention illustrated in Figure 7, the center lamp is omitted, and each lamp 27 is connected independently in series with the battery 36 through its associated micro-switch 17. Therefore, each lamp 27 may become energized independently of the other lamp. When a properly centered bite is achieved, both lamps 27 become energized simultaneously.

In the embodiments illustrated in Figures 6 and 7, the battery 36 may be replaced by any suitable current source, as by the secondary of a step-down transformer whose primary is connected to the alternating current power lines, or by an external power source.

While certain specific embodiments of dental apparatus for establishing the correct bite of a dental patient in making an impression on bite-taking material have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In an apparatus for establishing correct bite of a dental patient in making an impression on bite-taking material, a head band adapted to fit over the patient's head, respective temple-engaging members secured to the respective ends of the head band, respective micro-switches slidably mounted in the temple-engaging members for inward and outward movement in said temple-engaging members, each micro-switch having an actuating plunger extending inwardly through its associated temple-engaging member and being arranged to actuate the micro-switch responsive to the flexing of the patient's templar muscles, spring means biasing the micro-switches outwardly, and respective abutment members threadedly engaged on the temple-engaging members and bearing directly against the micro-switches to restrain said micro-switches against outward movement whereby the positions of the micro-switches in the temple-engaging members may be adjusted by adjusting the abutment members.

2. In an apparatus for establishing correct bite of a dental patient in making an impression on bite-taking material, a head band adapted to fit over the patient's head, respective temple-engaging members secured to the respective ends of the head band, respective micro-switches slidably mounted in the temple-engaging members for inward and outward movement in said temple-engaging members, each micro-switch having an actuating plunger extending inwardly through its associated temple-engaging member and being arranged to actuate the micro-switch responsive to the flexing of the patient's templar muscles, spring means biasing the micro-switches outwardly, and respective abutment members adjustably secured in the temple-engaging members and bearing directly against the outwardly facing portions of the micro-switches to restrain said micro-switches against outward movement whereby the positions of the micro-switches in the temple-engaging members may be adjusted by adjusting the abutment members.

3. In an apparatus for establishing correct bite of a dental patient in making an impression on bite-taking material, a head band adapted to fit over the patient's head, respective, generally U-shaped temple-engaging members secured to the respective ends of the head band, respective micro-switches slidably mounted in the temple-engaging members for inward and outward movement in said temple-engaging members, each micro-switch having an actuating plunger extending inwardly through the bight portion of its associated temple-engaging member and being arranged to actuate the micro-switch responsive to inward movement thereof produced

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by the flexing of the patient's temple muscles, spring means positioned between the micro-switches and the bight portions of the temple-engaging members and biasing the micro-switches outwardly, respective bar members secured to the arms of the respective temple-engaging members outwardly of the micro-switches, and respective adjusting screws threaded through said bar members and directly engaging the micro-switches to restrain the micro-switches 10 against outward movement, whereby the positions of the micro-switches in the temple-engag-

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ing members may be adjusted by adjusting the screws.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,205,775	Hencz -----	June 25, 1940
2,411,194	De Rome -----	Nov. 19, 1946