April 25, 1944. J. L. GOTHERS 2,347,554

VIBRATOR APPARATUS

Filed July 8, 1940

Fig. 1.

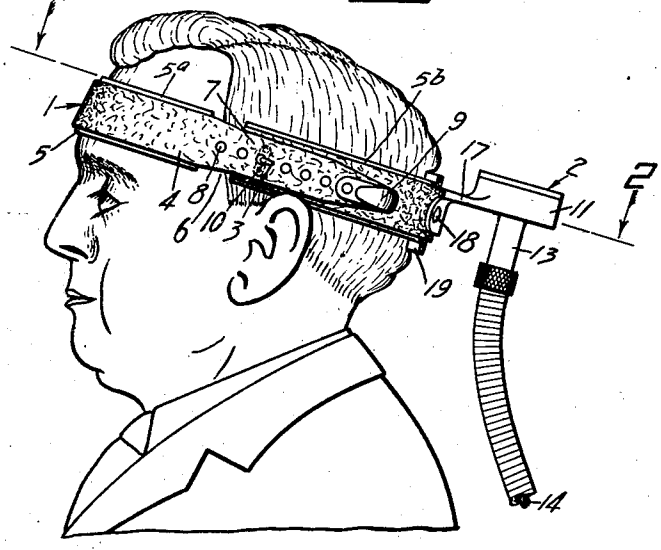


Fig. 5.

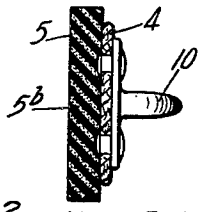


Fig. 2.

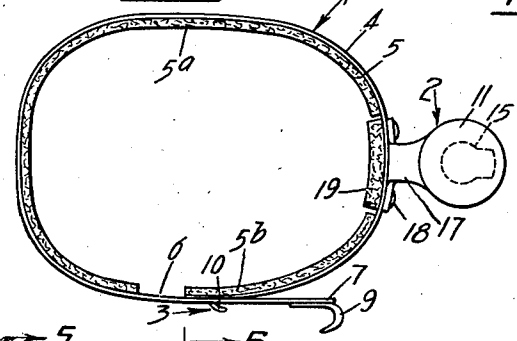


Fig. 6.

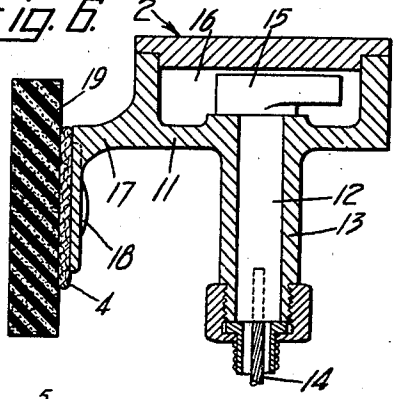
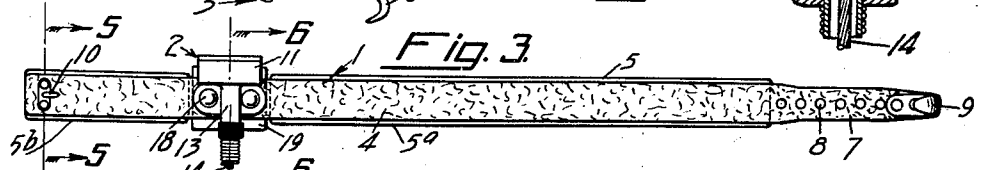


Fig. 3.



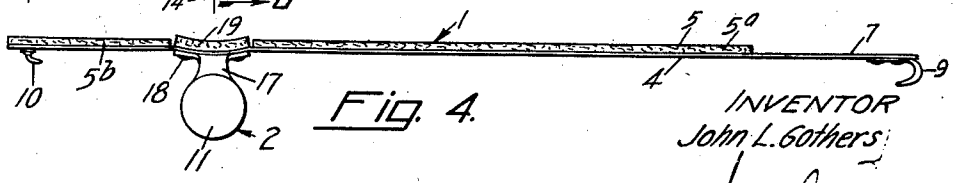


Fig. 4.

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UNITED STATES PATENT OFFICE

2,347,554

VIBRATOR APPARATUS

John L. Gothers, Hartford, Conn.

Application July 8, 1940, Serial No. 344,397

3 Claims. (Cl. 128—36)

My invention relates to vibrator apparatus.

It has for its object to provide an improved apparatus for vibrating the occipital area of the skull, and, more particularly, such an apparatus especially adapted to use during dental work. A further object of my invention is to provide an improved and simplified apparatus adapted to be attached to the patient's head in such manner as to cause the vibrations to be localized and properly applied with certainty on the occipital area under varying conditions. A still further object of my invention is to provide an improved vibrator carrying band type structure adapted to be readily and quickly applied to the patient's head, and one which is comfortable in use while enabling the pressure upon the occipital area to be varied as desired and the vibrator to continue to function effectively irrespective of movements of the patient's head. These and other advantages of my improvements will, however, hereinafter more fully appear.

In the accompanying drawing, I have shown for purposes of illustration one embodiment which my invention may assume in practice.

In this drawing:

Figure 1 is a side elevation of my improved construction in position on a patient's head;

Fig. 2 is a plan view of the apparatus per se as it appears when connected for use;

Fig. 3 is a plan view showing the same in extended position;

Fig. 4 is a top edge view of the construction shown in Figure 3;

Fig. 5 is an enlarged detail section on line 5—5 of Figure 3, and

Fig. 6 is an enlarged detail section on line 6—6 of Figure 3.

In this illustrative construction, I have shown my improvement as including a vibrator carrying band, generally indicated at 1, and adapted to be secured on a patient's head, as illustrated in Figure 1, and carrying vibrator mechanism, generally indicated at 2, adapted to act on the occipital area of the head, while also carrying improved connections, generally indicated at 3, for removably connecting the band 1 securely on the head with the vibrator mechanism in the desired engagement with the occipital area, all as hereinafter more fully described.

As shown, the band 1 includes a flexible outer band member 4 which may be of any suitable material, such, for example, as fibrous material, fabric or the like; this band being of sufficient length to extend around the patient's head as illustrated. As shown, a suitable inner or head engaging band 5 is also provided and suitably attached to the inner surface of the band 4 as, for example, by adhesive, this band 5 preferably being formed of sponge rubber. In the form illustrated, this band 5 comprises a plurality of pieces 5a and 5b of different length, terminating adjacent opposite sides of the vibrator 2 and preferably also having a space 6 therebetween to permit the band to be adjusted to different sizes. As shown, the outer bend 4 has on one end a reduced end portion 7 extending beyond the longer piece 5a of the inner band and across this space 6. Herein, this portion 7 is provided with a series of apertures 8 disposed in spaced relation longitudinally of this end portion 7 and also with a grasping hook member 9 suitably attached to the extremity of the latter, any selected aperture 8 being adapted to receive a suitable hook 10 suitably fixed to the other end of the outer band 4 at a point adjacent the space 6.

Referring more particularly to the vibrator mechanism 2, it will be noted that the same herein includes a casing 11 having a shaft 12 rotatable in a long, lower bearing 13 thereon and driven from any suitable source of power, as, for example, a motor (not shown), by means of a flexible shaft 14. Herein, a laterally offset lug or projection 15 is provided on the upper end of the shaft 12 and rotatable in a chamber 16 in the casing 11, in such manner as thereby to vibrate the entire casing 11 in a well known manner. Herein, this casing 11 is preferably formed of a light metal as, for example, aluminum, and mounted as shown in Figure 6 on a bracket having a depending and preferably arcuate arm 17 which is, in turn, suitably connected as by rivets 18 to the outside of the band 4 opposite the space between the adjacent ends of the inner band portions 5a and 5b. Herein, also, a sponge rubber vibrating pad 19, preferably slightly wider and thicker than the latter portions, is suitably attached to the inner face of the band 4 opposite the vibrator arm 17 and between and slightly spaced from the adjacent extremities of the inner band portions 5a and 5b in such manner as to expose spaced areas of the band 4 and thereby, in effect, cause the pad 19 and the vibrator 2 to be mounted on a diaphragm extending between the extremities of the band pieces 5a and 5b adjacent thereto. Thus, this pad 19, which tends to conform to the arcuate arm 17, is located opposite and adapted to engage with the occipital area of the patient's head and to transmit the high frequency vibrations of the vibrator mechanism 2 to this area in an effective manner. Fur-

ther, it will be evident that through the adjustable band structure heretofore described, it is possible for this pad 19 to be pressed against this occipital area and for the band to be adjusted as necessary to produce the desired pressure against this area, despite wide variations in the size of the patient's head.

In the use of my improved construction, the band 1 is first so adjusted as to fit the patient's head, with the slightly projecting pad 19 in the desired position and snugly engaging the scalp over the occipital bone structure. The vibrator 2 is then started, and the same is operated at a selected suitable frequency as, for example, between 3000 to 4500 revolutions per minute, in such manner as to impart the desired high frequency vibrations to the occipital area. When, through the use of suitable control mechanism such, for example, as a rheostat (not shown), the frequency of vibration is such as almost to produce chattering of the teeth when together, it is found that the average patient is entirely free from evidences of pain incident to the use of a drill or other instruments on the teeth. Further, any patients who are antagonistic to the use of a drill to such an extent as to make it almost impossible for a dentist to do proper work for them, have no objection to such work while my improved vibrator mechanism is in operation, the usual rasping sensation and nervous tension being eliminated and the vibrations also acting as a sedative and blocking off to a large extent transmission to the brain of the sensation of pain.

As a result of my improved construction, it is made possible to continue to obtain the desired vibratory effect with great certainty, due to the location of the vibrator mechanism in such manner that it acts directly upon the occipital area of the head. Further, it is made possible by means of the adjustable band structure to obtain the desired pressure of the pad 19 upon this area without depending upon the weight of the patient's head or his inadvertent lack of cooperation in holding his head upon the vibrator or in any predetermined position with respect to the latter. Further, it is found that the band structure is entirely comfortable in use, the vibration being localized on the pad 19 by the structure thereof and adjacent thereto and the cushioning means 5*a*, 5*b*. The band is also readily adjustable in size to adapt it to use on different patients. This structure also is such as to be inexpensively produced, and also to be used with any standard make of headrest, the vibrator mechanism being such as to be readily disposable between the head supporting members thereof. These and other advantages of my improvements will, however, be apparent to those skilled in the art.

While I have in this application specifically described one embodiment which my invention may assume in practice, it will be understood that the same has been chosen for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a vibrator device, a percussive mechanism, a flexible band carrying said percussive mechanism intermediate its ends and on the outer face thereof, an intermediate vibrator member on said band on the inner face thereof and opposite said percussive mechanism and vibrated by the latter, means for connecting the ends of said band to vary the pressure exerted by said intermediate vibrator member, and cushioning means carried on the inner face of said band for preventing transmission to the patient's body of percussion through the remainder of said band and terminated adjacent to but spaced from said intermediate vibrator member for producing areas of increased flexibility relative to the remainder of said band adjacent said vibrator member and for forming, in effect, an independently vibrated diaphragm carrying said vibrator member and mechanism and vibrated by the latter.

2. In a vibrator device, a percussive mechanism having a rigid frame portion, a flexible band having said frame portion attached to the outer face thereof intermediate the ends of said band, a vibrator pad carried on the inner face of said band opposite said frame portion, padding carried by said band for preventing the transmission of percussion through the remainder of said band, said padding terminating adjacent to but spaced from said pad to produce unpadded areas of said band for producing a diaphragm portion of increased flexibility relative to the remainder of said band and carrying said pad and mechanism and vibrated relative to the rest of the band by said mechanism, and means on said band for connecting the ends thereof to vary the size thereof and the pressure exerted by said pad.

3. In a vibrator device, an elongated flexible band having a percussive mechanism connected to the outer face thereof between the ends of said band and cooperating connecting means on the opposite ends of said band, a vibrating pad on the opposite face of said band from said percussive mechanism and opposite the latter, and cushioning strips for preventing the transmission of percussion through the remainder of said band and extending oppositely from said pad longitudinally of said band toward said connecting means, said pad being thicker than the portions of the cushioning strips adjacent the same, whereby said pad may be pressed firmly against a portion of a body enclosed within said band, and said cushioning strips terminating adjacent the pad but spaced therefrom.

JOHN L. GOTHERS.