

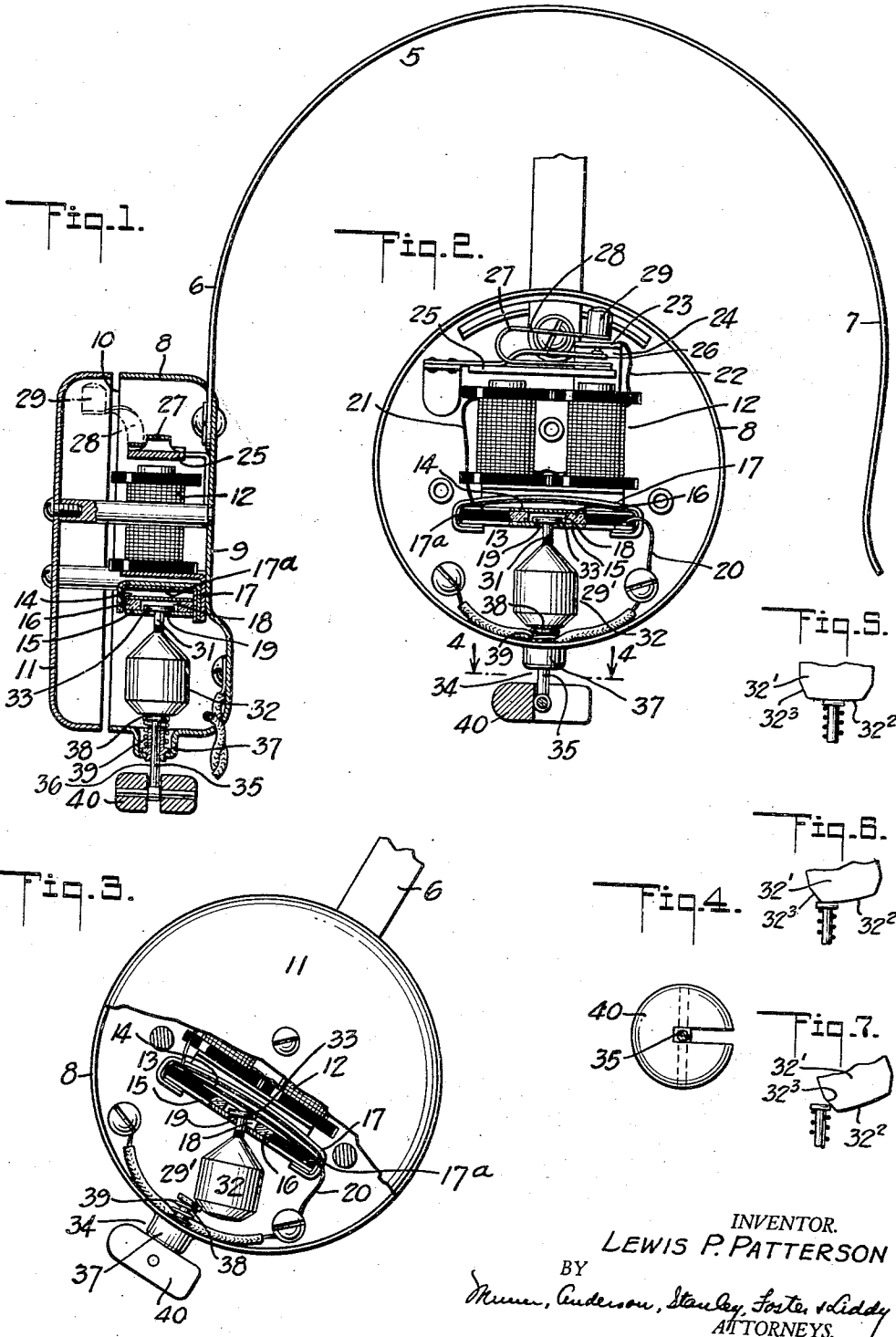
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SLEEP INHIBITOR

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SLEEP INHIBITOR

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1 Claim. (Cl. 177—311)

My invention relates to sleep inhibitors, and has for its primary object the provision of a novel and positively functioning device adapted to be worn on the head of a person and, according to certain conditions, to automatically create sound of sufficient amplitude to excite the organ of hearing and thereby disturb and prevent one from sleeping involuntarily. The device is particularly designed for use by a person engaged in certain work requiring that he remain constantly alert and vigilant in order that the work in which he is engaged, such as the driving of an automobile or other vehicle, may go forward as intended with the full use of one's normal faculties, thereby preventing accidents and possible damage to life and property that could otherwise result because of sleepiness and inalertness of the driver and a lack of such due care as would be expected of an ordinarily prudent and careful person. However, the invention is in no manner restricted to use thereof by drivers of automobiles upon whom the law of torts largely imposes differing degrees of care for the fixing of responsibility for the commission of wrongs resulting in damage to life and property. To the contrary, the invention has been found highly desirable and efficient for use by persons entrusted with the commission or duty of guarding or watching over the property of another, or even for use by students or other persons who may be compelled to read for a period of time during which one may have a natural desire to doze.

An important object of the invention is to provide a device of the character set forth having sound-producing means which will remain inactive so long as the head of the user is in one position or held erect, such as when one is perfectly conscious and fully awake, and which will automatically operate to arouse the user the instant the position of the head changes and he suddenly nods because of partial consciousness of the user and a tendency to sleep.

Another object of the invention is to provide a device of the character described which will be of light weight and so constructed and designed as to comfortably fit the head of the wearer.

A further object of the invention is to provide a device of the character set forth which can be quickly applied to or removed from the head as desired.

Another object of the invention is to provide a sleep inhibitor embodying a novel form of circuit closer for making and breaking a circuit freely and quickly in operative response to changes in the position of the head from a normal open cir-

cuit position, whereby to control the operation of an electrically actuated audible alarm.

With the above and other objects in view which will appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangements of parts which will be hereinafter fully described and particularly pointed out in the hereto appended claims.

In the accompanying drawing has been illustrated a single and preferred form of the invention, it being, however, understood that no limitations are necessarily made to the precise structural details therein illustrated, but that changes, alterations and modifications within the scope of the claims may be made when desired.

In said drawing,

Figure 1 is a vertical section through the device with parts thereof shown in full lines;

Figure 2 is a view in elevation of the device showing a part thereof removed for the purpose of clarity;

Figure 3 is a view in elevation of the device with parts broken away and illustrating a closed position of the circuit controlling switch;

Figure 4 is a section taken on the line 4—4 of Figure 2;

Figures 5 to 7, inclusive, are schematic illustrations of a slightly modified form of pendulum.

In carrying the invention into practice, use is made of a substantially inverted U-shaped member 5 of resilient material of a size to fit the head of the user so that the two relatively movable branches 6 and 7 will come against the opposite sides of the head in a manner similar to any well-known form of telephone head set.

The branch 6 carries a housing 8 having a closed flat side 9 adapted to extend against the ear of the user or to be close thereto, and an open side 10, at which last named side, and supported by the housing, is a bell 11.

Supported within the housing is an electromagnet 12 of any suitable well-known construction, the same adapted to be acted upon in response to actuations set up in a switch mechanism 13. This mechanism comprises a pair of spaced apart contact plates 14 and 15 between which is interposed a strip of insulating material 16 of suitable thickness for the purpose intended. These plates and the said insulating material are contained within a sheath 17 fixed to the wall 9 of the aforementioned housing 8. The central portion of the material 16 is formed with a vertical opening 18 and in alignment therewith and formed in the plate 15 is a somewhat similar

but slightly smaller opening 19. The line wire 20 shown in Figure 2 connects with the contact plate 15 and from the co-acting plate 14 is extended a wire 21 which connects with the electro-magnet 12. A wire 22 from the magnet 12 connects with a fixed contact element 23 of a make and break device 24, the latter including an armature 25 adapted to co-act with said electro-magnet, and a spring contact element 26, the latter carried by the armature and adapted to co-act with the element 23. On reference to Figure 1 of the drawing, it will be observed that the armature carries a U-shaped resilient hammer 27, the arm 28 of which has its free end situated with respect to the annular wall of the bell 11 so that the weight 29 will be operatively co-ordinated with said wall, whereby to rapidly strike thereagainst as the arm 28 is vibrated when the armature is set in motion.

Hung from the lower contact plate 15 is a pendulum mechanism 29' adapted to vibrate in any lateral direction with respect to a line drawn perpendicularly through the aligned openings 18 and 19, as will be readily appreciated upon reference to Figure 3. This pendulum mechanism includes a stem 31 on which a weight 32 is mounted, and the upper end of the stem passes through the opening 19 and same has a flat circular head 33 which rests upon the upper surface of the plate 15 so as to come within the opening 19. The said opening 19 is somewhat larger than the diameter of the head 33 so that the latter is free to tilt to a circuit-closing position and to bridge the contact plates 14 and 15 when the pendulum is tilted as shown in Figure 3. The electro-magnet 12 is adapted to be connected in the usual manner with a source of current supply. It may receive current from a storage battery of the type commonly used as part of the ignition system of an automobile, or it may be supplied with current from a dry battery or it may be connected in a source of house current, in which latter instance the current may be taken through a transformer of any suitable well-known construction.

In order that the pendulum, after it has assumed a circuit closing position (Figure 3), may be automatically retained in such position until manually reset, I provide a latching device 34, the same including a stem 35 which is slidable axially with respect to the pendulum through an aperture 36 in the closed wall of a cup 37. This cup constitutes a part of the housing 8 and said stem passes into the housing and is provided with a head 38 which is normally held in the position shown in Figure 1 by the action of a light coil spring 39. The lower end of the pendulum has free wiping engagement with the upper flat face of the head 38, and same is adapted to readily pass thereover as the pendulum moves away from a normal vertical position. When the pendulum has moved to the position substantially as indicated in Figure 3, the head 38 under the normal action of the spring 39 is urged to a position where it functions as a stop or abutment in order that the circuit may remain closed until the stem 35 shall have been manually depressed

and the device 34 readjusted to yieldingly bear against the lower end of the pendulum, as shown in Figures 1 and 2. If for any reason it should not be desired to latch the pendulum in a circuit closing position after it has operated to sound the bell 11, a tiltable button 40 at the lower end of the stem 35 may be turned to a vertical position where it will co-act with the cup 37 so as to hold the head 38 in a retracted position where it will not lie in the path of movement of the pendulum.

From the above description, it is believed that the operation of the device will be readily understood by those skilled in the art. I wish to state, however, that in order that the plate 14 may readily adapt itself to the movements of the head 33, same is capable of being freely flexed as the head 33 is brought into engagement therewith. It is, therefore, desired that said plate be rather thin and somewhat springy and that the sheath 17 be arched where it spans the said plate, so as to compensate for the flexure of the plate as the pendulum oscillates.

The aforementioned sheath 17, if constructed of sheet metal, as is preferred, is faced with an insulating material 17a, and same functions in conjunction with the insulation 16 to completely insulate the plates 14 and 15 from each other. The stem 31 of the pendulum 29 is formed with a section 31a of insulating material so as to prevent a short circuit occurring through the metallic housing 8 by engagement of the pendulum with the head 38.

In the pendulum mechanism shown in Figures 5 to 7, inclusive, the weight 32' is formed with a relatively broad horizontal surface 32² and a flared or conical portion 32³. The stem 35' of the latching device is provided with a flat head 38' of small diameter as compared with the diameter of the weight at the surface 32² thereof. The spring 39' lightly holds the head against the surface 32² normally as shown in Figure 5. Because of the proportion of the surface 32² with respect to the size of the head 38', it follows that the pendulum can move for a substantial lateral distance (Figure 6) before the head 38' will be advanced to a latching position (Figure 7) by the action of the spring 39'.

What is claimed is:

A sleep inhibitor comprising a housing having a resonant element at one side thereof; the opposite side of the housing formed to close against the ear of a human head; a head-engaging member for supporting the housing on the head to dispose said opposite side thereof in close relation to the ear as aforesaid; a clapper for the resonant element; an electric circuit; an electro-magnet connected in said circuit and contained in the housing, the clapper including an armature disposed relative to the pole of the magnet to be pulsed upon energization of the magnet to thus actuate the resonant element for audible detection of sound by the ear; and means for closing said circuit when the head is tilted from an erect position.

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