

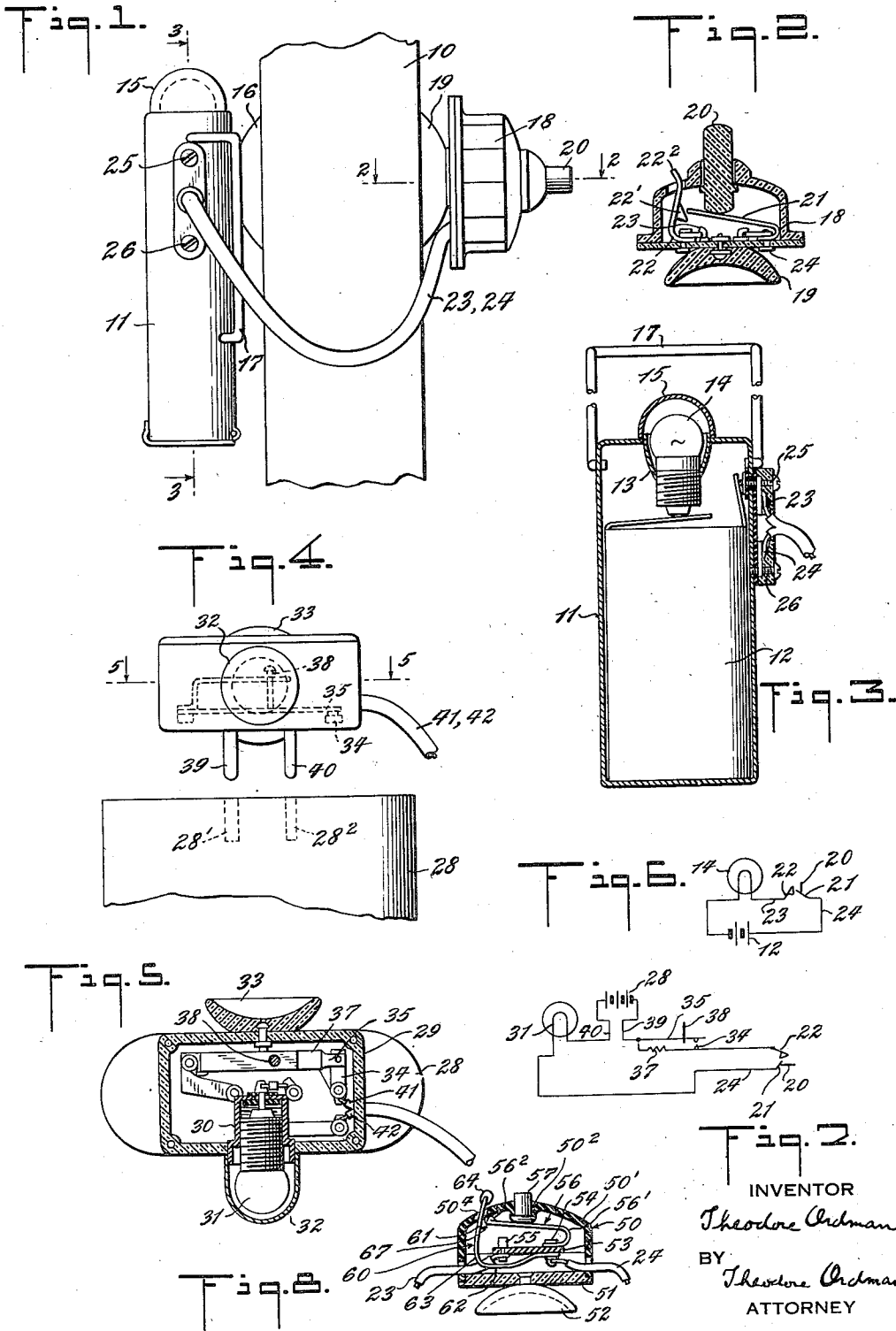
June 6, 1944.

T. ORDMAN

2,350,413

PORTABLE SIGNALING AID FOR THE DEAF AND HARD OF HEARING

Filed March 1, 1940



UNITED STATES PATENT OFFICE

2,350,413

PORTABLE SIGNALING AID FOR THE DEAF
AND HARD OF HEARING

Theodore Ordman, Brooklyn, N. Y.

Application March 1, 1940, Serial No. 321,632

5 Claims. (Cl. 177—329)

The present invention concerns itself primarily with a device to aid the deaf and hard of hearing.

A person of that class is unable to hear audible signals as buzzers or bells of the usual type, or knocks upon his door. Thus, if he is in a room with the door closed, visitors are unable to notify him of their presence outside. As a result, those who are aware of the occupant's disability will enter without signaling. This unannounced invasion of his privacy often produces embarrassing scenes because he may be undressed or in some other informal situation. On the other hand, if the visitor is unfamiliar with the deafness of the occupant, he goes away if he gets no response to his ring or knock. Frequently, as a result, important messages are undelivered.

If the deaf one travels, his problem becomes still more acute, for while he might not object so much to invasions of his privacy by members of his family, such invasions by strangers, or undelivered messages in hotels, cabins or compartments are not only intolerable and exasperating but may entail financial loss.

Of course, by maintaining a constant vigil at the chamber door, such invasions or lost messages can be avoided. However, the continual attendance at the door then necessary distracts the deaf man's attention from whatever work may be at hand and prevents concentration thereon. Time and money may be lost and the nervous strain drains his energy.

At home it proves costly and impractical to wire every room with a visual signal operable from the house door as well as from the entrance to each chamber. In hotels, steamship cabins or railroad compartments, the deaf traveler can not reasonably expect to find such signals because of the unthinkable expense of wiring every place for his possible use.

It becomes necessary, therefore, to provide a portable practical visual signal which may be attached anywhere, without tools of any kind and which will serve to instantly notify the deaf one of the presence of someone outside his door. This is the prime object of the present invention.

Such device should be inexpensive, portable, readily applicable without skill, and easily stored in pocket or handbag when not in use. Other objects, therefore, are to provide an instrument having these features.

Further, the device must be of such a character that a visitor will instinctively operate the

same to announce his presence. This object too is in mind in the present invention.

Additionally, many hard of hearing people already are equipped with electrically operated hearing aids. For them I propose to provide a modified instrument operable from the same power source as their hearing aids to eliminate the burden of carrying extra power units. This is another object of my invention.

With the above and many other objects in view as will be apparent, my invention comprises the novel construction, combination and arrangement of elements as will be hereinafter more fully described and defined in the appended claims.

In the accompanying drawing which forms part of this specification and in which similar reference characters denote corresponding parts:

Fig. 1 is a side elevation of one form of my instrument shown in operative position;

Fig. 2 is a section along line 2—2 of Fig. 1 of a portion of said instrument seen in the direction of the arrows;

Fig. 3 is a section along line 3—3 of Fig. 1 of another portion of the instrument also seen in the direction of the arrows;

Fig. 4 is a front elevation of a modified form of my instrument for use with common hearing aid batteries;

Fig. 5 is a section along line 5—5 of Fig. 4, seen in the direction of the arrows;

Figs. 6 and 7 are illustrative respectively of electric circuits which may be used with either of the two modifications; and

Fig. 8 is a section similar to Fig. 2 of a modified form of the circuit closing device.

Referring to the drawings (Figs. 1—8 inc.), 10 denotes a door, by way of example. It may represent any other suitable support for the elements of the instrument on opposite sides of a chamber entrance.

The instrument itself comprises a visual signal as an electric light, drop annunciator or the like, a power source as a battery, a switching element which will instinctively indicate its function without instructions and enable the visitor to close the electric circuit from outside of the room, and means for removably supporting the elements of the instrument, which supporting means may be applied, without skill or the use of tools.

In the embodiment shown in Figs. 1 to 3, inclusive, 11 denotes a suitable casing to house a small electric battery 12, and a socket 13 in which latter an electric bulb 14 may be mounted as by screwing

or the like. A transparent or translucent cover 15 may be provided to enclose said bulb. In order to suspend the casing from any suitable support without tools or skill, a suction cup 16 of rubber or other suitable material is attached thereto in any desired manner. An alternative suspensor as a hinged bail 17 may be also provided.

To close the electric circuit from the battery, a suitable switch is provided. This switch must be of such type as to close said circuit once operated and keep it closed so that the light will remain lit once the switch has been operated and until it has been reset to open the circuit by the deaf occupant of the chamber. It must also be of such type as to indicate instinctively to the visitor without instructions that it is to be operated by him to attract the attention of said occupant. To this end, I provide a switch whose casing 18 has an outward appearance which resembles a push button commonly employed with bells or buzzers.

Suitably attached thereto for ready mounting to any convenient support outside the deaf person's room is a suction cup 19 similar to cup 16 or other type of suspensor. Suction cups have proved very convenient and effective and no skill or tools are required for mounting them.

A movable push button 20 engages a resilient electric contact element 21 which latter in operative position is adapted to be engaged by a pawl member 22' on a second resilient contact member 22. Thus, if the button 20 is pressed inwardly it will move element 21 into locking engagement with contact 22, whereby the electric light circuit which, as illustrated in Fig. 6 may be of the simple series type, is kept closed until manually released through disengagement of the locking pawl with said element 21. Release may be effected by an extension 22' projecting the outside of casing 18. The switch elements are connected in the electric circuit through short lengths of insulated wires 23 and 24 leading to the properly insulated contacts 25 and 26 in the said casing 11 whereby a simple series circuit through the battery, bulb and switch is established, which is closed on engagement of contact elements 21 and 22 when the pushbutton is pressed.

The said wires with their insulation are of the smallest practical diameter or thickness and are adapted to readily pass through door crevices without interfering with closure of the door. They may be flat strips if desired; they should be hardy and capable of frequent bending; and their insulation should be resistant to wear and have long life.

In operation, as illustrated in Fig. 1, the casing 11 is mounted by its suction cup to the inside of the door or any convenient support in the room, and the pushbutton switch attached on the opposite side of the door by its suction cup or to any other suitable support as the outer frame of said door. The wires connecting the two parts of the instrument pass through the door crevices when the door is closed. A visitor approaching the door, notes the button, thinks it a bell button, pushes it and the light inside glows, remaining lit until the occupant of the room answers and resets the switch. Thus, he is apprised of the visitor's presence and relieved of the necessity of frequently opening his door or leaving it partially open for fear of missing the calling party.

Most portable electric hearing aids are operated from small pocket batteries which the user carries in his pocket and to which he can connect his hearing aid at will by plugging into suitable

electric jacks thereon contact plugs on the ends of lead wires which are connected to his aid. For people who possess such devices, it is unnecessary to provide an additional battery. For their convenience I provide the modification exemplified in Figs. 4, 5 and 7.

Herein, 28 denotes a hearing aid battery of common form provided with some well known form of plug-in jacks 28' and 28".

The unit I have devised to operate from said battery may comprise a small casing 29 of suitable material in which is mounted a socket 30 for an electric light bulb 31. A translucent or transparent shield 32 for said bulb may be provided. Also suitably attached to said casing is a suction cup suspensor 33.

It may be desirable to have an intermittent flashing signal instead of a steady light as such expedient may prove more efficacious in attracting the attention of a deaf person.

To this end, I provide a thermostatically controlled switch element of any suitable design which may be mounted inside of the casing 29. In the embodiment shown it comprises a stationary contact 34, a thermostatic contact strip 35 surrounded by a heating resistance 37 and a suitably supported setting device as set screw 38; to properly space the contact 34, and a corresponding contact point mounted on said strip for operation at the voltage and current ratings of such hearing aid batteries.

Suitable prongs 39 and 40 project from the casing 29 and are adapted to be removably plugged into the jacks on the battery.

The lead wires 41 and 42, like those of the first modification, are brought from the said casing and adapted to connect with a pushbutton switch of the same type as that illustrated in Fig. 2.

The electric circuit may be as shown in Fig. 7, in which the elements are numbered to correspond with the elements in the casing and said pushbutton may be the simple series one there shown.

Operation thereof is identical with that of the first modification with the additional feature of a flashing signal rather than a steady light produced by the thermostatic switch. This flashing feature, too, may readily be incorporated into the first modification if desired, or entirely omitted from the second modification, in which case the electric circuit of the latter will be that of Fig. 6.

An alternative form of switching device is shown in Fig. 8.

In this form the switch casing 50 also has an outward appearance which resembles a pushbutton commonly employed with bells or buzzers.

Suitably attached thereto to a back plate 51 is a suction cup 52 similar to cup 19.

Inside of the switch casing, an insulating plate or strip 53 is suitably supported. This strip has two spaced electrodes 54 and 55 respectively insulated from each other. A spring contact strip 56 is permanently attached to one of the electrodes 54 and reversely bent upon itself at 56' so that its free end 56" overlies the second electrode 55 but is normally spaced therefrom. This strip lies between the upper face of strip 53 and the top 50' of the casing. A movable pushbutton 57 extending through an opening 50" in the casing serves to force the contact strip 56 into and out of engagement with the electrode 55 to make and break an electric circuit.

A spring locking member 60 having a pawl member 61 is also provided. This member 60 is

attached to or electrically connected with electrode 54 from the opposite side of strip 53 as that of strip 56. Member 60 has a portion 62 extending over the bottom of electrode 55 but normally spaced therefrom, and curves around the strip 53 at 63, its upper end extending through an opening 50⁴ in the casing and having a manipulating knob 64 thereon. The pawl 61 normally is so arranged and located with respect to the end 56² of strip 56 that the latter upon depression by pushbutton 57 will engage below the pawl 61. The resiliency of the member 60 serves to maintain the locked engagement of pawl 61 and the end 56² of the strip. The resiliency of strip 53 tends to urge the end 57 upwardly. This resiliency of both parts and engagement will draw the portion 62 of member 60 into engagement with electrode 55 and since member 62 is of conducting material complete an electric circuit by bridging electrodes 54 and 55 across their bottom ends. During engagement of pawl 61 and end 56² the circuit remains closed until the pawl 61 is released. Release is effected by manipulating the knob 64 from the outside of the casing 50. It is to be noted that while such engagement of pawl 61 and end 56² exists continued pressure or intermittent pressure on the pushbutton 57 will not have the effect of releasing the locking engagement because the resiliency of member 60 always urges the bottom edge 67 of pawl 61 into such a position as to tend to overlies the end 57. However, downward pressure on pushbutton 57 will because of the resiliency of strip 60 permit the portion 62 thereof to move away from the electrode 55 and thus break the electric circuit.

As a result, once the pushbutton 57 has been pressed once and initial engagement of pawl 57 and end 56² effected, further pressure by the visitor on the pushbutton will simply result in momentary circuit breaking and consequent flashing of the signal light 14. This is very desirable because a flashing light is more likely to cause attention than a continuously burning light. Release of the pushbutton 57 by the visitor will because of the engagement of pawl 61 and end 56² close the circuit through portion 62 of member 60 and the light will remain lit until the occupant appears at the door and releases pawl 61 by manipulation of knob 64.

The electrodes 54 and 55 of this switch are connected for use in the circuit by attachment respectively to wires 23 and 24 in place of electrodes 22 and 21 shown in Fig. 6.

There are many other possible modifications of the structures described which may be made without departing from the spirit of the invention. For example, there is extant on the open market, a push type electric canopy switch of well known construction which may be substituted for the locking elements 21 and 22 of the pushbutton switch illustrated.

Likewise, the suction cups might be eliminated if the lead wires are replaced by two strips of insulated spring metal which will serve the double function of conduits and clamps whereby the pushbutton switch element and the visual signal may be removably mounted to opposite faces of a door, said strips being of small enough section to readily pass through the door crevices.

The holding feature which keeps the light lit after the pushbutton is pressed also may be accomplished in other ways as, for example, by an electromagnetically operated holding relay of any well known type. If such expedient is fol-

lowed, a simple pushbutton can replace the one described.

However, it has been found through a long series of experiments with the idea of reducing the instrument to the simplest structure consistent with practicability that embodiments such as those illustrated in Figs. 1-8 are least costly and answer the required needs.

It is to be distinctly understood, however, that I do not restrict myself in any way to the modifications described for it is apparent that there are many variations possible without departure from the spirit of my invention.

It should further be remembered that while my device is primarily designed for the deaf and hard of hearing, it is applicable for use by anyone who prefers a visual signal to an audible one.

In each of the foregoing embodiments the wires 23 and 24 may be of any desired length and, if necessary, a self winding spool of any well known type (not shown) in the casing 10 may be provided to reel unused portions of the wires during use of the devices. The reels may be located elsewhere if desired.

What I claim is:

1. A portable signaling device for the deaf and hard of hearing comprising a casing, an electric light carried by said casing, a battery carried with respect to said casing, means carried by said casing and adapted to be removably attached to a support, said electric light being connected in an electric circuit with said battery, and operational control means for said electric circuit comprising housing means whose outward form instinctively indicates the signaling function of said device, a holding switch in said housing means for closing and opening said electric circuit, means carried by said housing means for removably attaching the latter to a support on the opposite side of a closure member from said first-named support and electrical connection between said switch and said circuit in said casing, said connection being admeasured to pass readily through crevices available about said closure member.

2. A portable signaling device for the deaf and hard of hearing comprising a casing, an electric light carried by said casing, means for supporting a battery with respect to said casing, means carried by said casing and adapted to be removably attached to a support, an electric circuit including said light and said battery, operational control means for said electric circuit comprising housing means whose outward form instinctively indicates the signaling function of said device, a holding switch in said housing means for closing and opening said electric circuit, means carried by said housing means for removably attaching the latter to a support on the opposite side of a closure member from said first-named support, and electrical connection between said holding switch and said circuit, said connection being admeasured to pass readily through crevices available about said closure member.

3. A portable signaling device for the deaf and hard of hearing comprising a casing, an electric light carried by said casing, means for supporting a battery with respect to said casing, an intermittently operating switch, means carried by said casing and adapted to be removably attached to a support, an electric circuit including said light, said switch and said battery, operational control means for said electric circuit comprising housing means whose outward form instinctively

indicates the signaling function of said device, a holding switch in said housing means for closing and opening said electric circuit, means carried by said housing means for removably attaching the latter to a support on the opposite side of a closure member from said first-named support, and electrical connection between said holding switch and said circuit, said connection being admeasured to pass readily through crevices available about said closure member.

4. A portable signaling device for the deaf or hard of hearing comprising a casing, an electric light carried by said casing, contact terminal members on said casing adapted to be connected to contact terminals of a battery and to support said battery from said casing, means carried by said casing and adapted to be removably attached to a support, an electric circuit including said light, said terminals and said battery, operational control means for said circuit comprising housing means whose outward form instinctively indicates the signaling function of said device, a holding switch in said housing means for closing and opening said electric circuit, means carried by said housing means for removably attaching the latter to a support on the opposite side of a closure member from said

first-named support, and electrical connection between said holding switch and said circuit, said connection being admeasured to pass readily through crevices available about said closure member.

5. A device of the character described comprising a casing, a socket for an electric light carried by said casing, means for supporting a battery with respect to said casing, means carried by said casing and adapted to be removably attached to a support, an electric circuit including said socket and said battery, operational control means for said electric circuit comprising housing means whose outward form instinctively indicates the signaling function of said device, a holding switch in said housing means for closing and opening said circuit, means for operating said holding switch, means carried by said housing means for removably attaching the latter to a support on the opposite side of a closure member from that of said first-named support, and electrical connection between said switch and said circuit, said connection being admeasured to pass readily through crevices available about said closure member.

THEODORE ORDMAN.