Aug. 31, 1954 J. A. T. ELLISON 2,687,721

MICTURITION CURATIVE DEVICE

Filed June 8, 1951

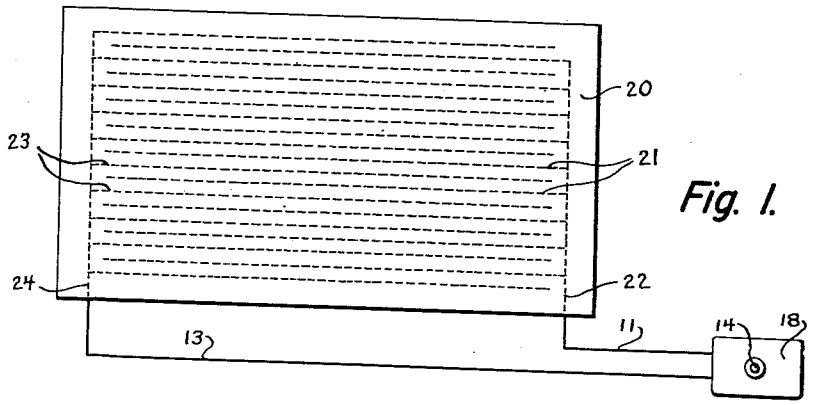


Fig. 1.

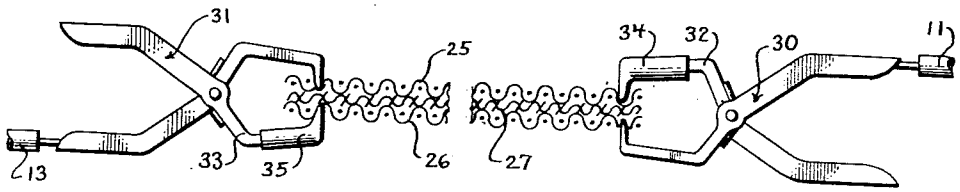


Fig. 2.

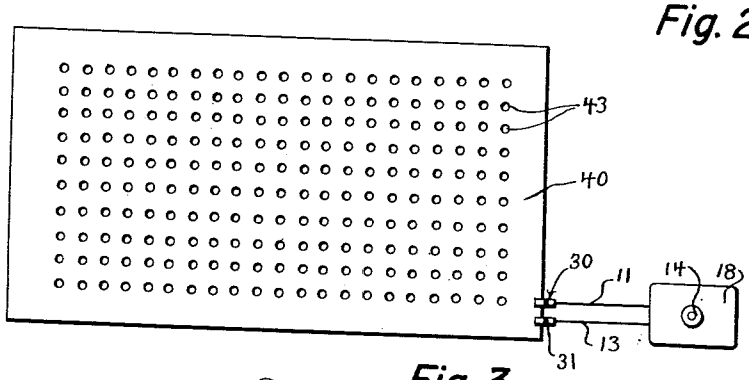


Fig. 3.

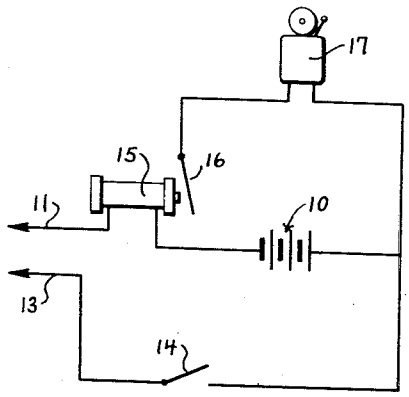


Fig. 5.

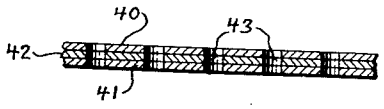


Fig. 4.

INVENTOR.
John A.T. Ellison
BY
Edward E. Powell
atty.

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MICTURITION CURATIVE DEVICE

John A. T. Ellison, Seattle, Wash., assignor of one-half to Joe Weidum and one-half to J. Vernon Clemans, both of Seattle, Wash.

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4 Claims. (Cl. 128—138)

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The present invention relates to a micturition curative device, and more particularly to a device which will awaken a child when micturition commences.

Nocturnal enuresis is a common perplexing childhood problem and it has been discovered that it can be cured by repeatedly awakening the child, as by the ringing of a bell, whenever the bed wetting starts. The most apparent manner of making the ringing of a bell dependent upon an instance of micturition has appeared to be an arrangement whereby an electric control circuit for the bell is completed through the urine discharged by the child. Accordingly, the arrangement must include a bed pad adapted to be placed under the child so as to be exposed to the urine and having spaced electrical conductors adapted to be bridged by the urine. A further requirement, perforce, is that the bed pad be detachable and washable.

Therefore, it is a principal object of the present invention to provide a washable pad-like device of simple and economical construction having spaced electrical conductors arranged and adapted to be electrically bridged by contact of urine therewith.

With the foregoing and other still more particular objects and advantages in view, the invention consists in the novel construction and in the adaptation and combination of parts hereinafter described and claimed.

In the accompanying drawings:

Figure 1 is a plan view of one species of bed pad of the present invention connected to the bell control circuit.

Fig. 2 is an enlarged fragmentary vertical section of a second species of bed pad, and also illustrating the use of specially adapted plier-like spring clips for making an electrical connection with the bell control circuit.

Fig. 3 is a plan view of a third species of bed pad connected to the bell control circuit.

Fig. 4 is an enlarged fragmentary vertical section through a row of holes of the species of Fig. 3.

Fig. 5 is a schematic view of the electrical bell control circuit.

Referring to the drawings, and particularly to Fig. 5 thereof, the bell control circuit for the bed pad will first be detailed. The current for the circuit is supplied from batteries 10, the total voltage of the latter preferably being no greater than 12 volts so that there is no danger of shocking the child. It will be noted that the control circuit comprises a primary and a secondary circuit, the former including leads 11 and 13 to the

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pad-like device, a normally closed push-button switch 14, and a relay unit 15 controlling a normally open switch 16 in the secondary circuit, the latter also including the bell, denoted by 17. Keeping in mind, as will be later detailed, that when micturition occurs the leads 11 and 13 will be in effect joined, it is readily seen that upon each such occurrence the primary circuit through the relay unit 15 will be completed. This will result in a closing of relay switch 16 and hence in a closing of the secondary circuit so as to activate the bell. The switch 14 is provided so that the child, after being awakened, can open the control circuit to stop the ringing of the bell and terminate the flow of current through the bed pad. A housing 18 is provided for the control circuit as shown in Figs. 1 and 3, with the push-button 14 being mounted thereon for ready access.

Continuing now to a description of the bed pad it will be noted that three different species thereof are shown in the drawings. The first species, shown in Fig. 1, utilizes a sheet 20 of cloth or other absorptive material which has electrical insulating properties when dry and on this pad are sewn spaced rows of stitches from an electrically conductive wire thread. These stitches are represented by the dashes in Fig. 1 and it will be noted that the alternate rows of stitches, denoted by 21, stem from a column 22 of stitches at one end of the sheet and that the other rows of stitches, denoted by 23, stem from a column 24 of stitches, at the opposite end of the sheet. These two columns 22 and 24 of stitches are joined with the control circuit leads 11 and 13. When this device is in operative position beneath the child, any urine discharged will be absorbed by the pad 20 and will electrically connect at least on adjacent pair of stitched rows 21 and 23 and hence complete the control circuit to ring the bell.

Continuing to the second species illustrated in Fig. 2, it is readily seen that such comprises two wire screens 25 and 26 separated by an intermediate layer 27 of cloth sheeting or other absorptive material which is non-conductive when dry. The screens and cloth sheet are preferably not secured together so that the sheet can be removed for laundering, leaving the screens free to be reused with a fresh sheet. When in operative position on a child's bed, the screens are connected with the control circuit leads 11 and 13 and this can be accomplished by the use of plier-like spring clips 30 and 31, respectively, each having its prongs clamped over both screens and with the upper prong 32 of the clip 30 and the

lower prong 33 of the clip 31 being insulated from the screens 25 and 26, respectively, by insulating sheathes 34 and 35. The clips are connected to the leads 11 and 13 of the bell control circuit. With this arrangement, when micurition commences, the urine, upon contacting the absorptive sheet 27, electrically bridges the conductive wire screens and hence completes a circuit from lead 11 to lead 13 through clip 32, the lower and upper screens 26 and 25 via the urine, and clip 31, thus resulting in the ringing of the bell 17.

A third species of bed pad is illustrated in Figs. 3 and 4 and comprises two thin outer layers 40 and 41 of electrically conductive foil, aluminum foil being preferred, separated by a thin layer of paper 42 or another electrically insulating material. The layers are perforated to present a plurality of holes 43 each passing through all three layers, the size of these holes being unimportant as long as they are large enough to permit urine to readily pass therethrough. It is preferred to cement the layers together to keep the holes in alignment. The outer conductive layers may be connected to a respective one of the leads 11 and 13 by the use of the clips 30 and 31 as before. With such an arrangement the urine, when discharged by the child, passes through one or more of the holes 43 and hence completes a circuit between the foil layers 40 and 41, thus effecting electrical juncture of the leads 11 and 13 to ring the bell. It will be apparent that a particular advantage of this species of the invention is the fact that when the bed pad becomes soiled, it can be washed off and readily reused.

It is thought that the invention, and its advantages, will have been clearly understood from the foregoing detailed description of the preferred illustrated embodiments. It is self-evident that changes from the illustrated and described embodiments may be resorted to without departing from the spirit of the invention and it is accordingly my intention that no limitations be implied and that the hereto annexed claims be given a scope fully commensurate with the broadest interpretation to which the employed language admits.

What I claim is:

1. In a micturition curative device, a thin pad having outside facings of metallic foil separated by and secured to a thin intermediate layer of an electrically insulating material, said pad presenting a plurality of openings each passing completely therethrough for the ready passage of liquid from one facing to the other.

2. In an alarm device including a thin pad whose outside facings are electrically conductive and are electrically bridged only when liquid contacts the pad, means for electrically connecting each of a pair of electric alarm circuit leads to a respective one of said facings, said means comprising a pair of electrically conductive clips each connected to a respective one of the leads and adapted to grip the pad with one clip being insulated from one of said facings and the other clip being insulated from the other facing.

3. A micturition curative device comprising a thin pad having outside facings of metallic foil separated by and secured to a thin intermediate layer of an electrically insulating material, said pad presenting a plurality of openings each passing completely therethrough for the ready passage of liquid from one facing to the other, an electric alarm circuit including a pair of leads to opposite of said outside faces, and means comprising a pair of electrically conductive clips each connected to a respective one of the leads and adapted to grip the pad with one clip being insulated from one of said facings and the other clip being insulated from the other facing.

4. In a micturition curative device, a thin laminated pad having outside layers of metallic foil separated by and completely cemented to an intermediate layer of paper, said pad having a plurality of openings each passing completely therethrough for the ready passage of liquid from one outside layer to the other.

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