

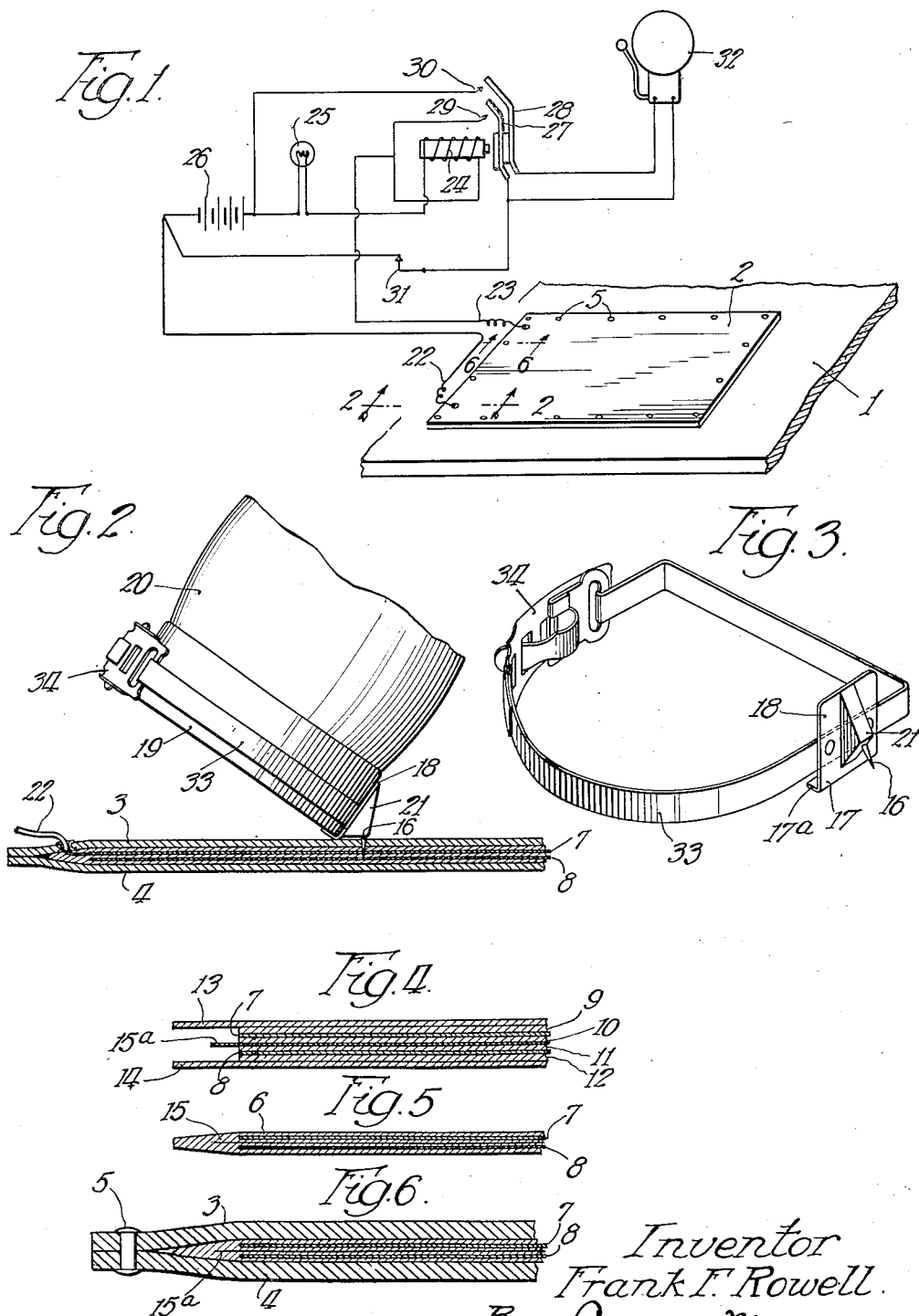
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ALARM SIGNALING MEANS

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ALARM SIGNALING MEANS

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My invention relates to alarm systems more particularly for banks and the like, and aims, among other objects, to provide simple and efficacious means whereby a teller, for instance, can give an alarm of an attempted robbery when he is so threatened, without disclosing to his assailant that an alarm is being given. My invention embodies an electric circuit and desirably includes means for preventing accidental contacts from being made which would cause false alarms.

In one aspect, my invention is inclusive of means whereby the teller or other employee may know whether or not he has made a contact which will actuate the alarm, without such knowledge being also given to the assailant.

My invention will be understood by reference to the illustrative embodiment thereof shown in the accompanying drawing, in which—

Figure 1 illustrates, diagrammatically, a preferred embodiment of the invention;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1 and showing, in rear elevation, a heel equipped with one form of actuating device embodying my invention;

Figure 3 is a perspective view of the actuating device illustrated in operative position in Figure 2;

Figure 4 is a sectional view showing a preliminary step in the production of the insulated terminals shown as embodying the invention;

Figure 5 is a sectional view showing the insulated terminals in final form; and

Figure 6 is a sectional view taken on the line 6—6 of Figure 1, showing the terminals in place between layers of the floor mat here shown for purposes of illustration.

Referring in detail to the views of the drawing, I have shown a portion of a floor 1, which may be an area behind a teller's window, for example, in a bank, or such institution, with my invention applied thereto. In this instance, a mat 2 is shown upon which the teller may stand in performing his duties at the teller's window, the mat covering a substantial area of the floor 1. The mat 2 may conveniently be of linoleum or such appropriate material and is desirably formed in two layers 3 and 4, which may be secured together as by means of suitable rivets 5.

Between the layers 3 and 4 is conveniently disposed my improved terminal plate 6 which embodies insulated terminals 7 and 8, which are complementary to each other. The terminals 7 and 8 are disposed one above the other and parallel each other over practically the entire area of the mat and thus over a substantial area of the floor 1.

A preferred method of producing the terminal plate 6 is described briefly as follows, such description being thought to be sufficient for those skilled in the art.

Sheets of foil such as brass, adapted to form the terminals 7 and 8 are placed between sheets 9 and 10, and 11 and 12, respectively, of suitable material such as paper, for example. These sheets of foil with the adjacent sheets of paper are superposed upon each other, there being desirably two sheets of paper 10 and 11 between the sheets of foil 7 and 8. Over each of the then outer sheets of paper 9 and 12 are laid sheets of paper 13 and 14, for example, which desirably have their edges extending beyond the edges of the sheets of foil 7 and 8 and the sheets of paper 9, 10, 11 and 12, as shown in Figure 4. The structure shown in Figure 4 is then desirably vulcanized as with "Bakelite" resin under the customary heat and pressure to form the substantially homogeneous structure shown in Figure 5, embodying the terminals 7 and 8 which are thus insulated from each other by a film of "Bakelite", and the plate 6 is desirably hermetically sealed as at the margin 15, particularly against the access of water which may be frequently used in washing the floor upon which the mat 2 rests. I provide a waterproof seal around the terminals 7 and 8 as by inserting a layer of rubber 15a in the terminal plate 6 between its upper surface and a terminal 7 or 8, for instance, between the sheets 10 and 11 which rubber may possess the characteristic of closing up a hole made therein by means presently described, thus contributing to the sealing of the terminals. It should be understood that the cross sections here shown are exaggerated and that the structure shown in Figure 4, for example, is itself relatively thin, while the structure shown in Figure 5 is a substantially homogeneous thin sheet, the "Bakelite" resin having impregnated its paper and the sheets of foil imbedded therein.

The teller may have his right shoe, for example, equipped with an actuating device here shown as a metallic needle 16 formed preferably of hard steel and having a relatively short but sharp point. The needle 16 is here shown mounted upon a heel plate 17 represented in this instance by a horizontal portion 17a which is adapted to underlie the heel lift 19 of a shoe, a portion of which is shown at 20. The heel plate also has a vertical portion 18 adapted to be disposed laterally of said lift. The needle 16 is here shown as rigidly mounted, by any suitable means, in an angular portion 21 of the heel plate with its point

above the floor when the heel lift is in its normal position but pointing toward the floor at an angle of substantially forty-five degrees. Thus the needle may be worn by the teller at all times when he is performing his duties at the teller's window and the needle is so positioned that false alarms are not likely to be caused, while at the same time, it is in position for instant use, in cooperation with the mat 2, should the occasion for an alarm arise. Should the teller be threatened by an assailant and told to step back from the window and put up his hands, he may do so and at the same time, while he is moving backwards, for example, tilt his heel as shown in Figure 2, upon which the needle 16 will be pressed downwardly substantially vertically into the mat 2, the point of the needle piercing the upper layer 3 of the mat 2, and the plate 6, thus making an electrical contact between the terminals 7 and 8. The needle 16 desirably projects from the mounting 21 only a sufficient distance to reach the lower terminals 8 and does not pierce this lower terminal.

Thus the teller or other employee can actuate the alarm without his assailant knowing that he is doing so, since the actuating means is not localized in its operation to any one spot.

I will next describe the illustrative electrical circuit which is actuated by the needle 16 when desired. In this instance the relay circuit is normally open at the mat 2, lead-in wires 22 and 23 conventionally connecting respectively with the terminals 7 and 8. When the relay circuit is closed by means of the needle 16, as already described, the relay coil 24 is energized. At the same time that the relay coil is energized, a silent local signal device, preferably a lamp 25, is included in the circuit. The lamp 25 may be so located as to be seen by the teller without being seen by his assailant, thus indicating to the teller whether or not he has closed the relay circuit. The relay circuit may be traced from one pole of the battery or other source of current 26 through the lamp 25, the coil of the relay 24, the terminals 7 and 8, and back to the other pole of the aforesaid battery.

When the relay coil 24 is energized, an armature is attracted which armature is shown as comprising two spring contacts 27 and 28, which are thus caused to engage with the stationary contacts 29 and 30, respectively. The complementary contacts 27 and 29 close a holding circuit which may be traced from one pole of the battery 26 through lamp 25, the relay coil 24, the complementary contacts 27 and 29, the normally closed switch 31, and back to the other pole of the battery. The complementary contacts 28 and 30 (which are engaged when the contacts 27, 29 are engaged) close a circuit which actuates a distant alarm such as the bell 32, which may be located, for instance, at a central station. The distant alarm circuit may be traced from one pole of the battery 26 through the contacts 28 and 30, the bell 32, the switch 31, and back to the other pole of the battery. The

holding and distant alarm circuits, which are in parallel, are maintained closed by the battery 26 until these circuits are broken by pressing the switch 31, which thus acts as a reset switch. When the holding and distant alarm circuits are broken by means of the reset switch 31, the relay coil 24 is de-energized and the armature spring contacts 27 and 28 are, by reason of their inherent resiliency, moved away from their complementary contacts 29 and 30. Thus the lamp 25 and the bell 32 will remain out of circuit until the relay coil 24 is again energized with the switch 31 closed.

Means for clamping the heel plate 17 to the heel lift is here shown as including a strap 33 conveniently formed of flexible metal and adapted to embrace the heel lift 19. A buckle 34, adjustable for different sizes of heel lifts, connects the free ends of the strap 33. The buckle may conveniently be of conventional character and need not be further described.

Obviously, the invention is not limited to the specific details of construction described above for illustration. It is to be understood, further, that it is not indispensable that all the features of the invention be employed conjointly, as they may be advantageously used in various combinations and sub-combinations.

I claim:

1. The combination with a metallic needle for contacting floor terminals of an alarm system; of an angular plate, said plate having a horizontal portion adapted to lie beneath the heel lift of a shoe and a vertical portion adapted to be disposed laterally of said lift, said lateral portion having a portion in which said needle is mounted to extend downwardly and outwardly of said vertical portion but spaced upwardly from said horizontal portion; a metallic strap carrying said plate and shaped to the contour of the lift; and a buckle securing the free ends of the strap together upon the side of the lift opposite said plate.

2. In an alarm signaling means, the combination with a floor mat comprising multiple layers of floor covering material; of a terminal plate disposed between said layers, said terminal plate embodying alternate sheets of paper and metallic foil imbedded in a substantially homogeneous body of insulating material; a heel plate adapted to be secured to the heel lift of a shoe and having angularly related surfaces, one of said surfaces adapted to be disposed parallel to the lower surface of the heel lift and the other surface laterally and angularly thereof, said latter surface mounting a needle adapted to pierce the upper layer of said mat and one of the foil sheets and to contact said other foil sheet, said latter surface limiting downward movement of the needle with respect to said mat upon tilting of the lift to prevent piercing of the last mentioned foil sheet; and means carried by the heel plate for detachably securing the heel plate to the lift.

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