Dec. 27, 1927. 1,653,868

H. J. MURRAY

BURGLAR ALARM

Filed Jan. 17, 1920 3 Sheets-Sheet 1

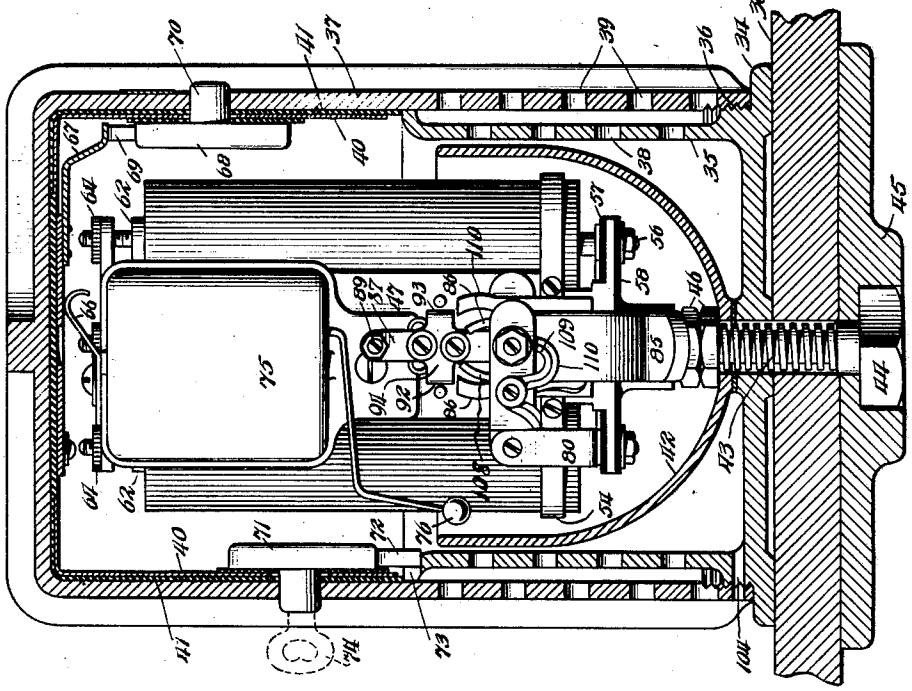


Fig. 2.

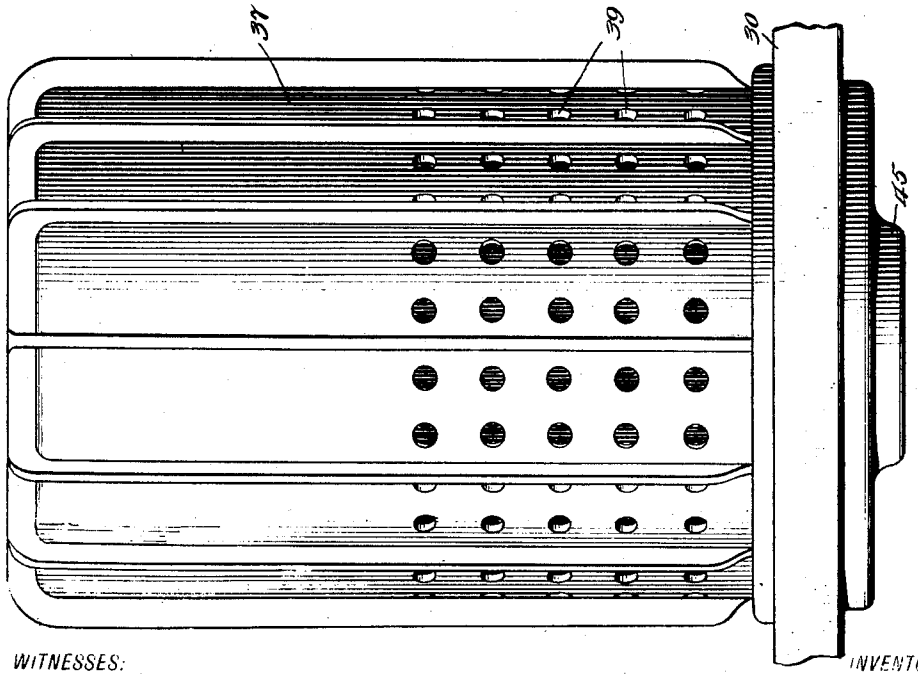


Fig. 1.

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Filed Jan. 17, 1920 3 Sheets-Sheet 2

Fig. 4.

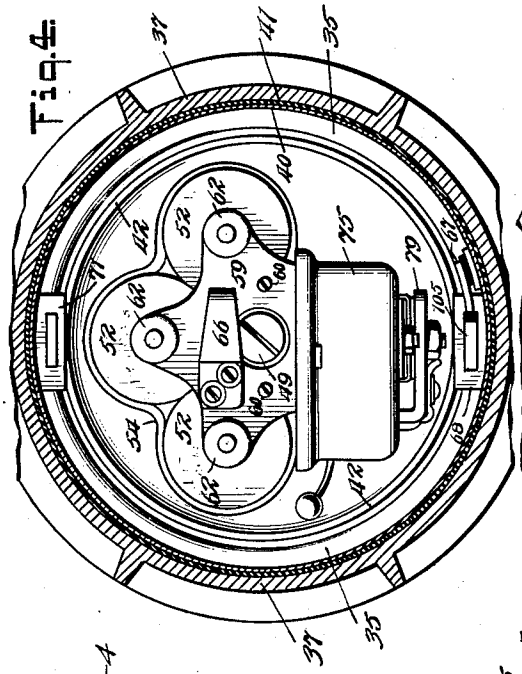
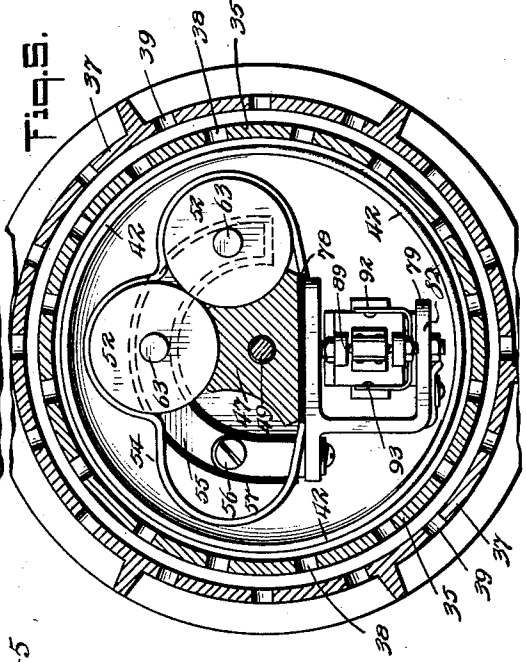


Fig. 5.



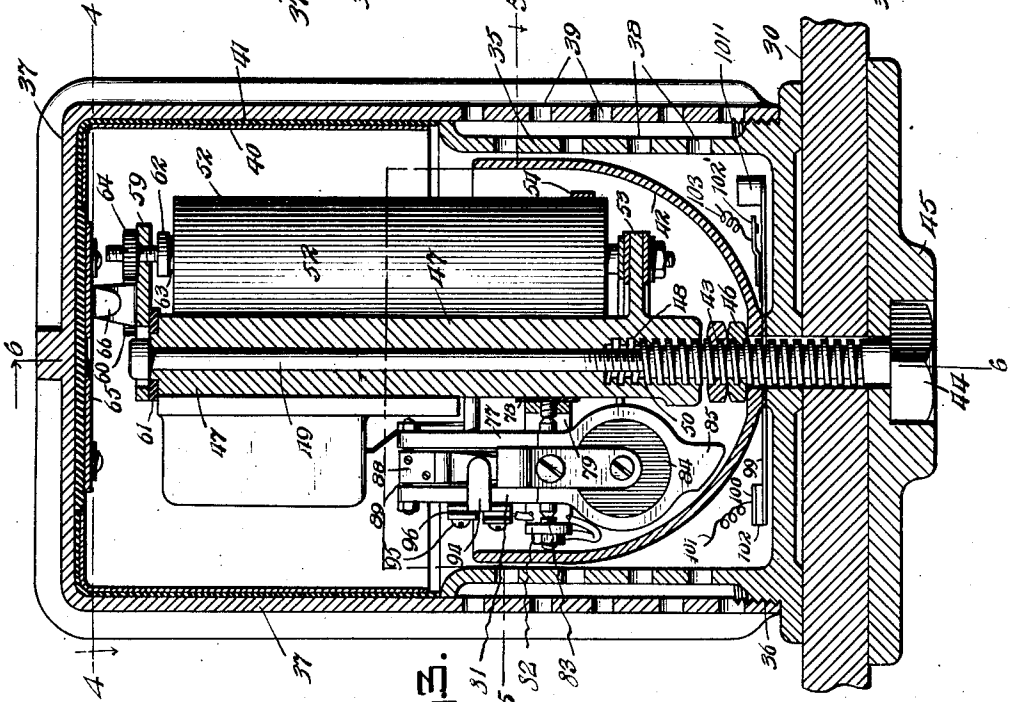


Fig. 2.

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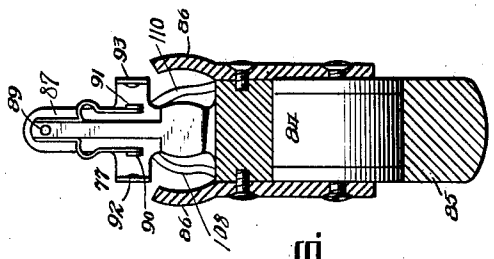


Fig. 6.

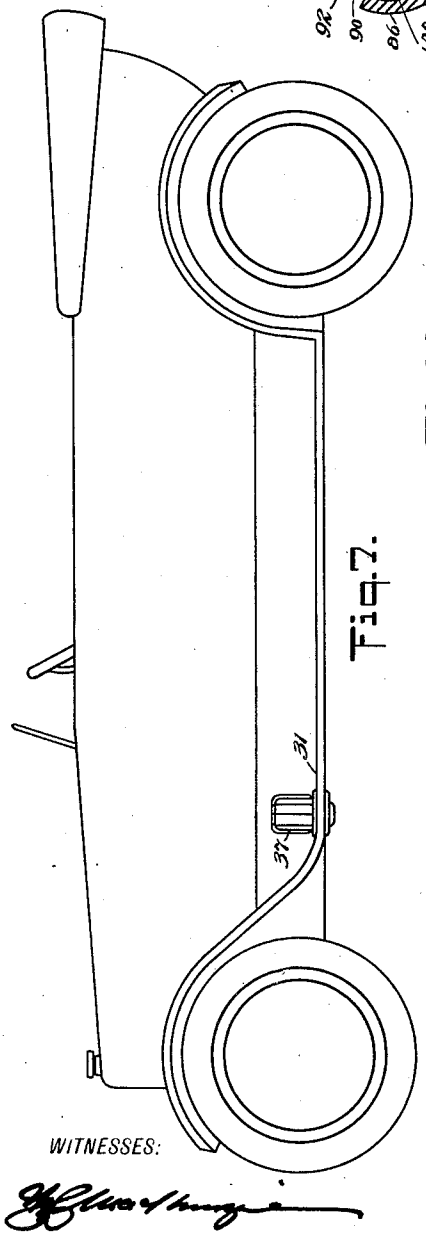


Fig. 7.

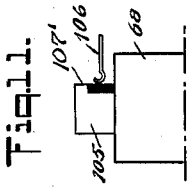


Fig. 11.

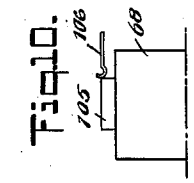


Fig. 10.

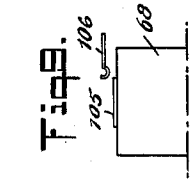


Fig. 9.

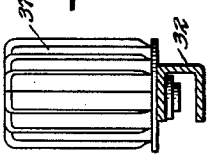


Fig. 12.

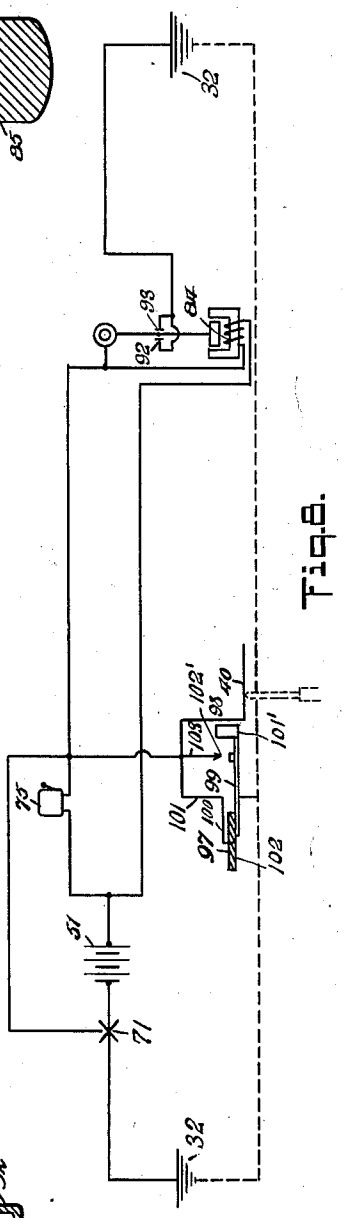


Fig. 8.

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1,653,868

UNITED STATES PATENT OFFICE.

HOWARD J. MURRAY, OF BROOKLYN, NEW YORK, ASSIGNOR TO R. M. COMPANY INC., OF EAST PITTSBURGH, PENNSYLVANIA, A CORPORATION OF DELAWARE.

BURGLAR ALARM.

Application filed January 17, 1920. Serial No. 352,214.

The invention relates in general to an automatic protective device for movable bodies, such as vehicles, constitutes a development of the subject-matter disclosed in my Patents No. 1,288,128, for electric-circuit control, patented December 17, 1918, and for electric circuit controls, No. 1,400,229 granted Dec. 13, 1921, and specifically the invention relates to an audible alarm, a visual signal or other notice compelling device which will function automatically when subjected to a change of inertia.

In the above identified application it is suggested that an electric circuit be formed which will include an electrically actuated signalling device and a circuit closer therefor which will become operative by a change in velocity or direction of the body on which the device is mounted. The present application discloses one commercially perfected form of such a circuit forming organization of parts and also discloses another form of automatically actuated and inertially controlled circuit closer differing from the one shown in the said application.

The primary object of the invention is to provide a simple form of burglar-proof signalling or alarm device which will function automatically when moved or jarred and which will function when any attempt is made to cause the device to become inoperative.

Referring to the preferred embodiment of the invention herein illustrated another object is to provide a self-contained unit which will be free of any external connection, except the fastening connection, and in which even the fastening connection is arranged so that it will not be accessible for demounting the device from its support by any usual method. Incidental to this general desideratum the invention contemplates the mounting of an alarm device, a source of power for actuating the same, and a governing control all housed within a containing casing which is made of a burglar-proof material and designed in accordance with approved practice of small portable safe constructions.

The invention further features a simple unit which includes an electrically actuated alarm device and source of electric energy thereof together with an automatically actuated circuit closer, all contained within the casing of the type described. In connection with this feature, a further object of the invention is to provide simply formed means for completing the circuit through the alarm device when any of the usual attempts to burglarize the casing is attempted.

Incidental to the general desideratum to provide a device which will defeat any attempt to render the same inoperative surreptitiously a further object of the invention is to provide for energizing the alarm circuit when an attempt is made to drill through the casing, to eat or otherwise destroy the connection by means of an acid or similar destroying agency introduced into the casing, or when an attempt is made to drown the alarm sound by the introduction of a liquid into the casing.

Another object of the invention is to provide for a control operable from a position exteriorly of the casing for placing the device in a functionally inoperative condition and for testing the electric circuit whenever desired or when the device is set in its operative condition.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:—

Figure 1 is an enlarged view in side elevation of a preferred embodiment of the invention, shown mounted upon a movable support which support in Figures 4 and 7 is shown to be a part of a vehicle;

Figure 2 is a vertical sectional view taken axially through the device shown in Figure 1, and showing the contained mechanism unit in what may be regarded as a side elevation similar to the showing in Figure 7 and facing at right angles to the direction of movement of the supporting vehicle;

Figure 3 is a view similar to Figure 2 showing part of the assembly holder in section and showing the alarm and automatic circuit closer in end elevation, looking at

the same from the right hand side of the showing in Figure 2 and facing in the direction of travel of the support;

Figures 4 and 5 are each horizontal transverse sectional views taken respectively on the lines 4—4 and 5—5 of Figure 3;

Figure 6 is a vertical sectional view of part of the automatically actuated, inertially controlled circuit closer;

Figure 7 is a diagrammatic view showing the outline of an automobile with a device such as is shown in Figure 1 mounted on the running board at the left hand side of the machine;

Figure 8 is a diagrammatic view showing the electrical connections of the several parts of the device shown in the preceding figures;

Figures 9, 10 and 11 are detailed views showing the succeeding positions of the combined lock and test circuit device; and

Figure 12 is an enlarged view showing the mounting of the device on one of the chassis frame members of an automobile.

In the following description and in the claims, parts will be identified by specific names for convenience of expression but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the accompanying drawings, and especially to the showing in Figures 2 and 3 there is shown a support 30 which is liable to be moved. When the form of device shown in Figure 1 is mounted on an automobile it is preferably mounted on the left hand running board 31 so that it will pass a traffic officer's station on the near side. When the device is designed as a structural part of an automobile body it will be built up and contained within the outlines of the same, but in all cases the parts of the control mechanism is inaccessible to parties attemping surreptitiously to remove or damage the same. In Figure 12 the device is shown to be in the preferred unitary form and mounted upon one of the enclosed chassis frame parts 32 of a vehicle. The mechanism is contained within a two-part casing 33. One part of the casing includes a wide spreading base plate 34 positioned on the support 30 and provided with an upstanding and inset circular wall 35. The lower portion of the wall is provided with external screw threads 36 and the screw threaded rim thus formed is outset slightly from the portion of the wall intermediate the top and bottom thereof. The wall is telescoped by means of the other part 37 which constitutes an enclosing cover. This cover is cylindrical with a closed top and an open lower end in threaded engagement with the threaded rim outlining the base of the upstanding wall. These two parts of the casing are formed of highly tempered steel so as to resist drilling and in the form shown in Figures 2 and 3 coact to contain all of the mechanism necessary to constitute the alarm. The casing is thus free of external connections except for the fastening device hereinafter described and thus acts to defeat any attempt to destroy the device by cutting external connections. The wall 35 is provided with small sound conducting perforations 38 and the lower portion of the cover 37 is similarly provided with perforations 39 with each of the perforations 38 offset from the perforations 39, so that it is not possible to introduce a tool into the interior of the casing through any aligned openings. The cover is provided with outwardly extending ribs 37′ which are disposed adjacent the perforations and designed in case a cover is placed over the casing in an attempt to muffle the sound from the interior of the casing to form an air space exteriorly of the casing and open to one or more of the perforations.

The portion of the cover 37 above the upper edge of the wall 35 is lined except for a portion of the top with a thin sheet metal shell 40 designed to constitute an electric conductor for the purpose hereinafter described. The shell is insulated from the cover by means of an inner shell of insulating material 41. A notice-compelling, signalling or alarm device, herein shown to be an inverted hollow bell 42 is positioned within the outline of the wall 35 and is shown to be of the largest possible size that can occupy the space within the outlines of the wall 35. It is necessary in a device of this character that some definite type of alarm be adopted universally and it is to be assumed that the bell disclosed is of such a type and sound therefrom is of some distinct tone which will not be mistaken for the usual automobile warning bell. The bell is held in position with the bottom constituting the apex of the dome and held to the support 30 by means of a bolt 43 which has its head 44 fitted in a recess formed in a bolt plate 45 positioned on the underside of the support 30 and below the base plate 34. Lock nuts 46 engage the threaded portion of the bolt which extends through the plate 45, through the base 34 and through the bottom of the bell to secure the parts rigidly together. A casting 47 constitutes an assembly holder for demountably supporting the mechanism and is provided with a threaded socket 48 in its lower end disposed in screw threaded engagement with the end of the bolt which terminates within the interior of the casing. A relatively long adjustment and locking rod 49 extends through the holder 47 with its head engaging the top thereof and with its opposite end threaded into a socket 50 formed in the upper end of the bolt. By this construction it is understood that by loosening the rod 49 (see Fig-

ure 4), the assembly holder can be adjusted to assume any angular position about its vertical axis and by screwing the rod tightly into position the assembly holder can be locked in any desired position, such as in a position to cause the automatic circuit closer hereinafter described, to function when the support 30 is moved in any definite direction of travel, such as in the forward movement of the vehicle shown in Figures 7 and 13.

The assembly holder is provided with means for demountably positioning thereon a source of electric energy 51 herein shown to be three dry battery cells 52 which are supported from a ledge 53 projecting rearwardly from the body portion of the assembly holder and which cells are held in position by means of a strap 54. The lower end of the cells are maintained in electric-contact by means of a conducting strip 55 fastened thereto by rivets 56 and insulated from the ledge by means of top and bottom insulating strips 57 and 58. The cells are electrically connected at their upper ends by means of the conducting plate 59 fastened to the top of the body portion by means of screws 60 and insulated therefrom by means of an insulating strip 61. The plate 59 is provided with upper, button contacts 62, herein shown to be large headed screws, designed to be screwed into contact with the poles 63 of the cells and to be locked in position by the lock units 64. This plate is designed to be connected electrically with a plate 65 carried by the cover on the underside thereof, by means of a spring contact 66. In this construction it will be understood that as the case covering is disposed in position an electric contact will be made at one end of the battery of cells. The plate is provided at one edge with an extension 67 constituting a lock spring contact and the circuit is completed therefrom to the metal lining conductor by means of a circuit controlling lock 68. This lock is carried on the inner side of the casing and is provided with a bolt 69 designed to engage with the lock spring contact and thus complete the circuit when the bolt is thrown. This circuit lock is controlled by a suitable key which can be inserted into the barrel 70 of the circuit lock from the outside of the casing.

The casing cover is locked against rotary movement by means of a case lock 71, the bolt 72 of which engages in a slot 73 in the top of the wall 35 and, as a matter of convenience, one key 74, indicated in dotted lines in Figure 2 may be utilized to control both of the locks.

An electro-magnetically actuated bell-clapper 75 of conventional form is mounted on the front face of the assembly holder and has its clapper 76 operatively disposed to sound the bell 42 when the circuit is completed through the bell clapper.

An inertia controlled and automatically actuated circuit closer 77 is positioned on the front face of the assembling holder, is insulated therefrom by means of a sheet of insulation 78. The circuit closer includes a U-bracket 79 designed to extend horizontally across the line of direction of the movable support and is connected electrically to the bottom battery cell connecting plate 55 by means of an L-plate 80. An upstanding rocking frame 81 is pivotally supported between the arms 82 of the bracket on journalling screws 83 arranged so that the frame has freedom of movement about a horizontal axis disposed slightly above the center of gravity of the frame. The lower part of the frame below the axis of swing is weighted by an electro-magnet 84 and terminates in a relatively heavy weight 85 defining the lower swinging end of the rocking frame. The electro-magnet is provided at opposite ends with a pair of upstanding cores 86 which project above the axis of swing and are disposed on opposite sides of a pivoting frame 87 constituting an upstanding portion of the rocking frame. A swinging pendulum 88 constituting an armature is pivoted at its upper end on a pivot pin 89 and is designed to swing in both directions into contact with either of the cores 86 so as to be held thereby when the electro-magnet 84 is energized. The armature is provided on opposite sides of its pivotal mounting with a pair of relatively movable spring contacts 90 and 91, each of which contacts are designed in their outward swing away from their normal open circuit position to contact respectively with one of a pair of relatively fixed contacts 92 and 93 formed at opposite ends of a yoke member 94 fastened to the upper portion of the rocking frame by means of set screws 95 and insulated therefrom by insulating washers 96.

It will be understood that mechanically the device is complete, as thus far described, when provided with certain electrical connections, as outlined in Figure 8, but in order to defeat attempts to destroy the operativeness of the device additional features are incorporated and illustrated in the preferred embodiment. Two of such features are hereinafter identified as an acid alarm 97 and a liquid alarm 98 both mounted within the outline of the upstanding wall and positioned adjacent the bottom of the base. These devices are each intended to close the normal actuating circuit and to cause the device to sound when an attempt is made to destroy the connection by the introduction of acids or to drown the operation of the device by introducing water or other conducting or non-conducting liquid.

Referring particularly to the acid alarm, as shown in Figure 3, it is to be understood that a grounding plate 99 is fastened between

the base 34 and the bell 42 and extends into the space between the bell and the bottom of the base. A coacting terminal 100 of a conductor 101 is held insulated from and in spaced relation to the strip 99 by means of some absorbent material 102 such as blotting paper.

It will be understood that when acid is introduced in the casing it will saturate the insulating blotting paper and thus either eat the paper so that contact will be made between the terminal 100 and the grounding plate 99 or the acid itself will provide the necessary conducting substance to complete the short circuiting.

Referring particularly to the liquid alarm, it will be noted that the strip 99 extends from the center of the casing in the opposite direction and in this case is flexible so as to be moved freely in an upward direction. It is provided at its outer free end with a float device 101', such as a cork which in its upward floating movement will engage a spring contact 102' constituting the terminal of a conductor 103. By this means should liquid be introduced into the casing the rising cork float will complete the shunt circuit and sound the device as will be understood when reference is made to the electric diagram shown in Figure 8. The casing is provided with a drain outlet 104 for preventing the accumulation therein of other substances which might effect the operation of the device. It is found desirable, especially where storage batteries are used, to test out the main circuit and for this purpose another normally open circuit is provided and which, as shown in Figure 8, includes the alarm 75, the source of power 51 and a wiping contact between the bolt 105 of the lock 71 and a spring finger 106 grounded on the casing.

Referring to the showing in Figures 9 to 11, inclusive, it will be noted that an insulating strip 107 is inset in the side of the bolt and in such a manner that as the bolt is shot into locking position contact will be made momentarily as the advance side 107 of the bolt passes the spring contact 67, thus causing the momentary closing of this circuit. The spring passing onto the insulating strip will again break the circuit. During the instant of time that the spring is in contact with the metal part of the bolt the alarm device will sound thus indicating to the user that the device is in operative condition.

By means of a device of this character it is possible to provide a form of signalling device which will function automatically when moved and which will continue to function irrespective of any surreptitious attempt to render the device inoperative. The automatic circuit closing feature of the device can be designed so sensitive that when positioned on an automobile the mere stepping of a person upon the running board or the jarring of the machine by the collision therewith of another machine will be sufficient to start the alarm. At the same time the alarm will not be sounded during the maintenance of the car in its normal running condition as when moving on an incline. The device when utilized as an attachment to a moving body is otherwise independent of the body or any of its movable parts so that it cannot be affected by the inoperativeness of parts external to itself. The device is at all times under the authorized control of the operator but will resist any attempt to burglarize the same by any of the known methods.

While I have shown and described, and have pointed out in the annexed claims, certain novel features of my invention, it will be understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described my invention, I claim:

1. In a device of the class described, the combination of a base member including an upstanding wall wide open at the top and provided with sound conducting perforations, a cover of greater height than the wall telescoping said wall and provided with perforations confined to its lower part, each offset from the perforations in the wall thereby to prevent direct access to the interior of the wall and sound creating means within the outlines of said wall and extending upwardly into the unperforated part of the cover.

2. In a device of the class described, the combination of a mechanism containing casing provided with perforations to permit sound waves to issue therefrom, sound producing means contained within the casing, means contained within the casing for inaugurating the action of said sound producing means, said casing provided with outwardly extending projections disposed adjacent the perforations and designed in case a cover is placed over the casing in an attempt to muffle the sound from the interior of the casing to form an air space exteriorly of the casing and open to one or more of the perforations.

3. In a device of the class described, the combination of a mechanism containing casing, a post disposed centrally in the casing, means within the casing for forming an electric circuit, said means including an electrically actuated sound producing member, and a circuit closer including movable means carried by the post in spaced relation to the casing and operatively controlled by

a movement in space of the casing thereby to actuate the sound producing member and means within the casing for forming a shunt circuit, said means including said sound producing member and a circuit closer for said shunt circuit, said last named circuit closer provided with means for placing the same in operative condition by means of a key inserted into the casing.

4. In a device of the class described, the combination of a mechanism containing casing provided with a base support therefore, a bolt for fastening said casing to the support, a mechanism carrying unit threaded to the portion of the bolt extending into the interior of said casing, a locking rod passing through said unit and threaded into said bolt, said rod being contained entirely within said casing and its support thereby preventing the demounting of the unit while the casing is closed.

5. In a device of the class described, the combination of a support, a mechanism containing casing carried by said support, a bolt plate on the underside of said support provided with a bolt-head-receiving-recess, a bolt having its head located within the outlines of said recess, said bolt passed through said support and into said casing, a lock nut for securing the casing to the bolt, an assembly holder rotatably mounted on said bolt, and an adjustment-and-locking rod passing through said holder and engaging said bolt to secure the holder in rotatably adjusted position on the bolt.

6. A device of the class described including a burglar proof mechanism containing casing comprising a pair of telescoped cylindrical walls, means for locking the walls together, a hollow bell housed within the walls and substantially filling the available space at one end of the casing, an alarm circuit including mechanism for actuating the same, both partially contained within the outlines of the bell and completely contained within the casing.

7. A device of the class described, the combination of a mechanism containing casing, a bolt plate provided with a recess on its underside, a bolt having its head fitted in said recess and extending through the bolt plate into said casing, means within the casing for locking the bolt in place, a holder positioned in said casing, secured to said bolt and adjustable thereon about a vertical axis, and alarm mechanism mounted on said holder, completely enclosed in said casing and shifted with the holder about said vertical axis.

8. In a device of the class described, the combination of a two-part burglar proof casing, one part including a base with an upstanding circular wall, the other part constituting an enclosing cover telescoping the circular wall and spaced therefrom, means for locking the cover in place, said cover provided on its inner side with a metal shell constituting an electric conductor insulated from the cover, and an electric circuit and control mechanism therefor completely housed within and protected by said casing and inaccessible from the outside of the locked casing, said electric circuit including said electric conductor and a connector in electric engagement therewith and carried by the housed mechanism and said conductor and connector operatively disposed, whereby the removal of the cover will render the electric circuit inoperative.

9. In a device of the class described, the combination of a two-part burglar proof casing, one part including a base with an upstanding circular wall, the other part constituting an enclosing cover telescoping the circular wall and spaced therefrom, means for locking the cover in place against rotary movement, said cover provided on its inner side with a metal shell constituting an electric conductor insulated from the cover and said shell provided with a bolt engaging part, an electric circuit and control mechanism therefor completely housed within and protected by said casing and inaccessible from the outside of the locked casing, said electric circuit including said electric conductor whereby the removal of the cover will render the electric circuit inoperative and a circuit controlling lock having a bolt adapted to engage said bolt engaging part on the conducting shell to control the circuit and including key controlled mechanisms for actuating the bolt from the exterior of the casing.

10. A device of the class described comprising a mechanism containing casing, a central post, a holder mounted on said post for movement about a vertical axis, an electric alarm device completely housed within said casing and including a control mechanism operable when the device is moved in one direction, said control being mounted on said holder and adjustable therewith about said vertical axis.

11. A device of the class described comprising a mechanism containing casing, a holder mounted centrally in said casing, means including control mechanism constituting part of an alarm circuit carried by said holder, and said holder provided with means for demountably positioning thereon a source of electric energy for said circuit, said casing enclosing all parts of said circuit and said control mechanism and including means providing authorized access to the interior thereof for replenishing said source.

Signed at New York city, in the county of New York and State of New York, this 5th day of January, A. D. 1920.

HOWARD J. MURRAY.