

Feb. 9, 1932.

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1,844,338

THEFT ALARM FOR AUTOMOBILES

Filed May 23, 1929

2 Sheets-Sheet 1

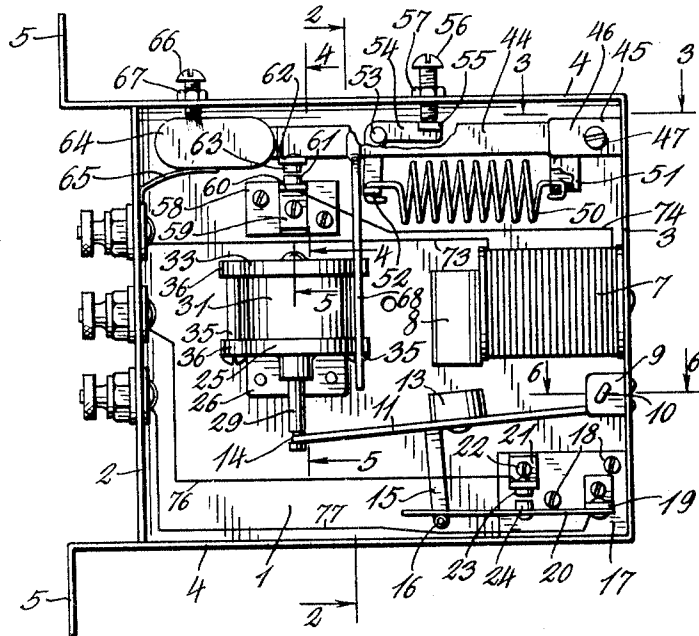


Fig. 1.

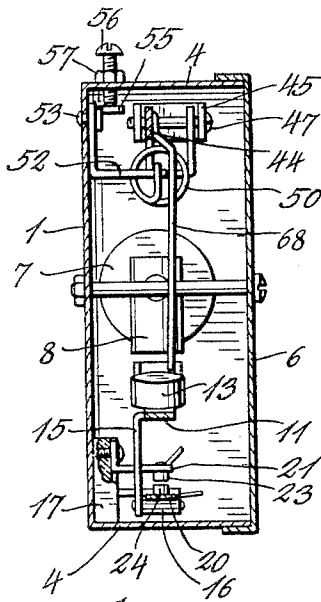


Fig. 2.

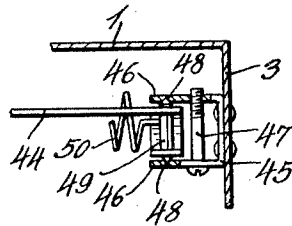


Fig. 3.

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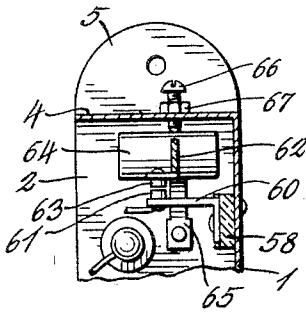


Fig. 4.

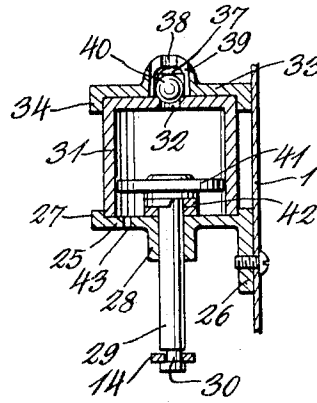


Fig. 5.

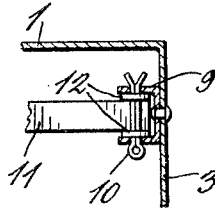


Fig. 6.

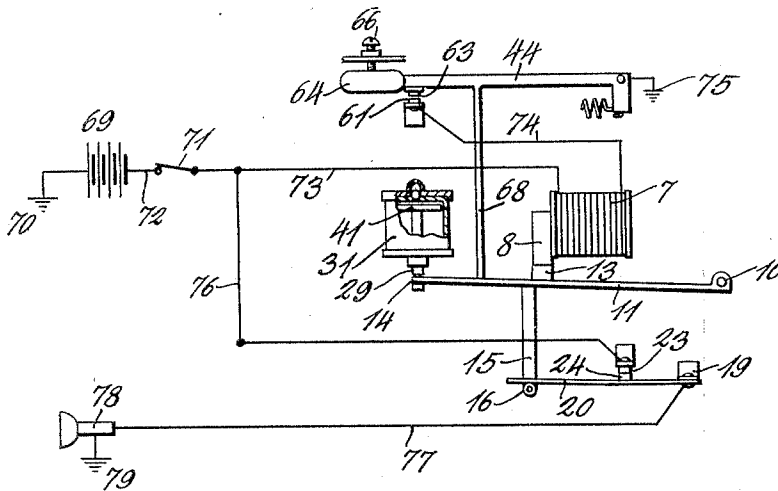


Fig. 7.

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UNITED STATES PATENT OFFICE

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THEFT ALARM FOR AUTOMOBILES

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This invention relates to improvements in theft protective devices and has reference more particularly to a device that can be applied to an automobile or to a building or to any other article and which will cause a signal to be sounded when the automobile or the building is disturbed.

The theft of automobiles is getting to be a matter of common occurrence, and it is therefore highly desirable to equip automobiles with a device that will sound an alarm if the automobile is disturbed by an unauthorized person, but which can be rendered inoperative by the owner by the simple means of opening a hidden switch.

This invention, briefly described, consists of a casing in which is located an electromagnet having a movable armature. The movable end of the armature is connected with one part of a dashpot which is so arranged that the armature can move quickly in response to the magnetic attraction when the magnet is energized, but which will return slowly to its normal or inoperative position. A signal control switch is associated with the armature in such a manner that it will be closed as soon as the armature starts moving in response to the energization of the magnet and which will remain closed until the armature has almost reached its normal position. Connected in series with the electromagnet is a theft protective switch, comprising an arm pivoted at one end and having the other end provided with a weight which has considerable inertia. This arm carries a contact which is adapted to move into engagement with another contact for the purpose of closing an electric circuit through the electromagnet. This arm is normally held in inoperative position by means of springs and will return to inoperative or open switch position of its own accord. Means is provided for adjusting the sensitiveness of the theft protective switch.

Having thus briefly described the invention, the same will now be described in detail and for this purpose reference will be had to the accompanying drawings, in which the preferred embodiment of the invention has been illustrated, and in which:

Fig. 1 is a plan view looking into the casing and showing the parts in normal or inoperative position, portions being broken away to better disclose the construction;

Fig. 2 is a section taken on line 2—2, Fig. 1;

Fig. 3 is a section taken on line 3—3, Fig. 1;

Fig. 4 is a section taken on line 4—4, Fig. 1;

Fig. 5 is a section through the dashpot, taken on line 5—5, Fig. 1;

Fig. 6 is a section taken on line 6—6, Fig. 1, and

Fig. 7 is a diagrammatic representation showing the different elements of the apparatus and the electrical connections to the different parts.

In the drawings reference numeral 1 represents the bottom of the casing within which the apparatus is located. This casing has end members 2 and 3 and sides 4. The two sides extend down below the end member 2 and terminate in outwardly extending portions 5, which are perforated and which serve as means for attaching the casing to a support. The casing is provided with a cover 6 which can be removed when access is desired to the interior of the casing. Located within the casing is an electromagnet having a coil 7 and a pole 8. This magnet is preferably secured to the end 3 of the casing which, therefore forms part of the magnetic circuit. Secured to the inside of end 3 is a U-shaped bracket 9 whose parallel sides are perforated for the reception of a pintle 10 which in this case is formed from an ordinary cotter pin. The armature 11 has one end provided with parallel lugs or ears 12 which are perforated for the reception of the pintle and which is secured to the bracket 9 in the manner shown in Fig. 6. The armature has a pole piece 13 secured to its upper side as shown in Fig. 1 and extends beyond the pole piece and terminates in a notched end portion 14. Secured to the lower side of the armature 11 is an arm or bracket 15 whose lower end terminates in a laterally extending projection having a roller 16 attached thereto. A signal control switch comprising a block of insulating material 17 is secured to the bottom 1 by means of screws 18. A bracket 19 of L-shape is se-

cured to the insulating block and has a spring contact member 20 secured to one arm thereof. Another bracket 21 of L-shape is secured to the insulating base by means of a screw 22 and a projecting arm of this bracket carries a contact 23. A cooperating contact 24 is carried by the spring 20 which in turn is controlled by the armature 11. Secured to the bottom 1 of the casing is a dashpot. This dashpot consists of a base 25 having a downwardly extending lug 26 on one side. This base has a circular upwardly extending flange 27 and a downwardly extending tubular hub 28. A piston rod 29 extends through the hub and has its lower end provided with an annular groove 30, which is adapted to occupy the space between the two parts of the end 14 in the manner shown in Fig. 5. A cylindrical cup-shaped member 31 has its open end supported on the upper surface of the base 25 in the manner shown in Fig. 5. The bottom of this cup has a central opening 32 and is held in place by means of an end cap 33. This cap has a downwardly extending cylindrical flange 34. Bolts 35 pass through perforated diametrically located lugs on the base 25 and have threaded connections with openings in correspondingly located lugs 36 which are part of the end closure 33. This end closure is provided on its lower side with a recess 37 having an opening 38 at its bottom. Grooves 39 are formed in the sides of the recess and when the parts are assembled, the ball 40 is located in this recess and serves to function as a check valve which permits air to pass outwardly from the cup, but which prevents air from passing into the cup. A piston 41 is secured to the upper end of the piston rod. This piston has a sliding fit with the interior of the cup so that it can be moved with comparatively little or no frictional resistance. A plurality of washers 42 is carried by the piston rod directly below the piston. These washers may be made from leather, fiber or any other suitable material. The base 25 is provided with one or more openings 43 through which the air may freely pass when the piston moves in either direction. When the magnet is energized, the armature 11 will be attracted until its pole piece 13 comes into contact with the lower end of the pole piece 8 of the electromagnet. During this movement of the armature, the piston 41 will be moved upwardly, thereby expelling the air from the piston chamber above the piston. As the armature moves upwardly the signal control switch comprising members 23 and 24 will be closed. The circuit through the electromagnet is closed by means of theft protective switch which consists of an arm or lever 44, which is pivoted between the two sides of a bracket 45, Fig. 3. This bracket is U-shaped and has two parallel arms 46 that are connected by means of a screw 47. The inner surfaces of these

arms are provided with conical depressions 48, in which the conical ends of the pintle 49 are located. The arm 44 has its end bent into U-shape and the pintle 49 extends through the two parallel sides of this U-shaped end portion. A spring 50 has one end connected to the U-shaped portion 51 of the arm and has its other end connected with the upwardly extending end portion 52 of the bell crank lever which is pivoted at 53. This lever has an arm 54 which extends substantially parallel with the side 4 and is provided with a laterally extending portion 55 that is engaged by the inner end of the adjusting screw 56. This screw is provided with a lock nut 57 that holds it in adjusted position. By means of this screw the tension in spring 50 can be adjusted so as to vary the sensitiveness of the theft protective switch. Secured to the base directly above the electromagnet is a block 58 of insulating material. This block carries an L-shaped bracket 59. The laterally extending portion 60 of this bracket is provided with a contact 61. The arm 44 is provided with a laterally extending projection 62 which carries a contact member 63 that is adapted to move into engagement with the contact 61 on the bracket 59. Secured to the free end of arm 44 is a weight 64. This weight may be made of lead and should be quite heavy. A spring 65 is secured to the end wall 2 and engages the lower side of the weight so as to exert a force tending to move the arm towards the side 4. This spring is made of a thin strip of metal and cooperates with the spring 50 to hold the theft protective switch in open position. A screw 66 extends through a threaded opening in the side 4 and projects towards the side of the weight 64 so as to form a stop for the latter. By adjusting the position of screw 66 the extent to which the contacts 62 and 63 can separate, can be determined. A rigid rod or wire 68 is secured to the arm 44 and terminates directly above the armature 11, so that it will be engaged by this armature just before the latter reaches its upward limit of travel and it therefore connects the armature with the arm 44 so that the theft protective switch will be forcefully moved to open position when the armature has reached the end of its travel, thereby assuring that the magnet 7 will become demagnetized. After the magnet has been demagnetized, the force exerted by the spring 20 as well as the action of gravity on the mass of the pole piece 13 and the armature, will gradually return the armature to the position shown in Fig. 1.

In Fig. 7 I have shown in a diagrammatic way the different elements comprising this apparatus. The electric energy for operating the device may be obtained from any suitable source but in the drawing a battery 69 has been shown. One pole of this battery is

grounded at 70 and the other pole is connected to a switch 71 by means of a conductor 72. One terminal of this switch is connected to the electromagnet by means of a conductor 73. The other end of the coil on the electromagnet is connected to the contact 61 by means of a conductor 74. The arm 44 is connected with the ground as indicated at 75. When the contacts 61 and 63 are moved together, a circuit will be closed through the electromagnet, and the latter will therefore become energized and move the armature from the position shown in Fig. 1 to the position shown in Fig. 7, in which position contacts 23 and 24 are moved together. A wire 76 extends from the wire 73 to the bracket 21 and another conductor 77 extends from the bracket 19 to the horn or electric alarm 78. One terminal of this alarm is grounded at 79 and therefore when the signal control switch is closed, the signal will become energized and will continue to operate until the signal control switch has opened. If the disturbance to which the automobile, or the body to which the device is attached, still continues the theft protective switch will again close and the signal will therefore again become operative. If the disturbance is a continuous one, the theft protective switch will be closed before the signal control switch is open and the signal will then be in continuous operation, until switch 71 has been opened. If the disturbance was merely temporary and the parts are quiescent when the signal control switch opens, the parts will remain in inoperative condition until again disturbed.

From the above description it will be seen that I have produced a very simple device which is especially well adapted for use in connection with burglar alarms and which can be applied to any article which is to be protected. Although the device is especially well adapted for use in automobiles, it can also be applied to buildings as above indicated and when attached to the under side of floors, it will be set into operation by any one walking over the floor of the building and if contacts 61 and 63 are connected by a plurality of switches controlled by the windows, the signal will also be set in operation if the windows are opened and this device can therefore be used as a burglar alarm for the protection of almost any article to which or with which it can be connected.

Having described the invention what is claimed as new is:

1. A theft alarm device comprising, in combination, a signal circuit including a normally open switch for control of the signal, an electromagnet having a movable armature, a resilient connection between the armature and the circuit control switch whereby the armature may continue to move after the circuit control switch has closed, a retarding device connected with the armature, said de-

vice offering very little resistance when the armature moves in response to the attractive force of the electromagnet but retards the movement of the armature away from the electromagnet, an inertia controlled theft protective switch in series with the electromagnet and interconnecting means between the armature and the theft protective switch for holding the latter open when the armature is in attracted position.

2. A theft alarm device comprising, in combination, a support, an electromagnet on the support, an armature located below the electromagnet and mounted for pivotal movement, a dashpot cylinder secured to the support above the free end of the armature, a piston located in the cylinder, a rod secured to the piston, said rod being connected with the free end of the armature whereby the piston will be reciprocated in the cylinder when the armature is moved, a closure for the upper end of the cylinder, said closure having an opening provided with a check valve that permits air to freely move out of the cylinder and prevents air from flowing into the cylinder, a signal control switch which is normally open, means for operatively connecting the armature with the signal control switch, said means being yielding whereby the armature can continue to move towards the magnet after the signal control switch has closed, an inertia controlled theft protective switch in series with the electromagnet, and means interposed between the armature and the theft protective switch for holding the latter in open position when the armature is in fully attracted position.

In testimony whereof I affix my signature.

RICHARD RUPERT.