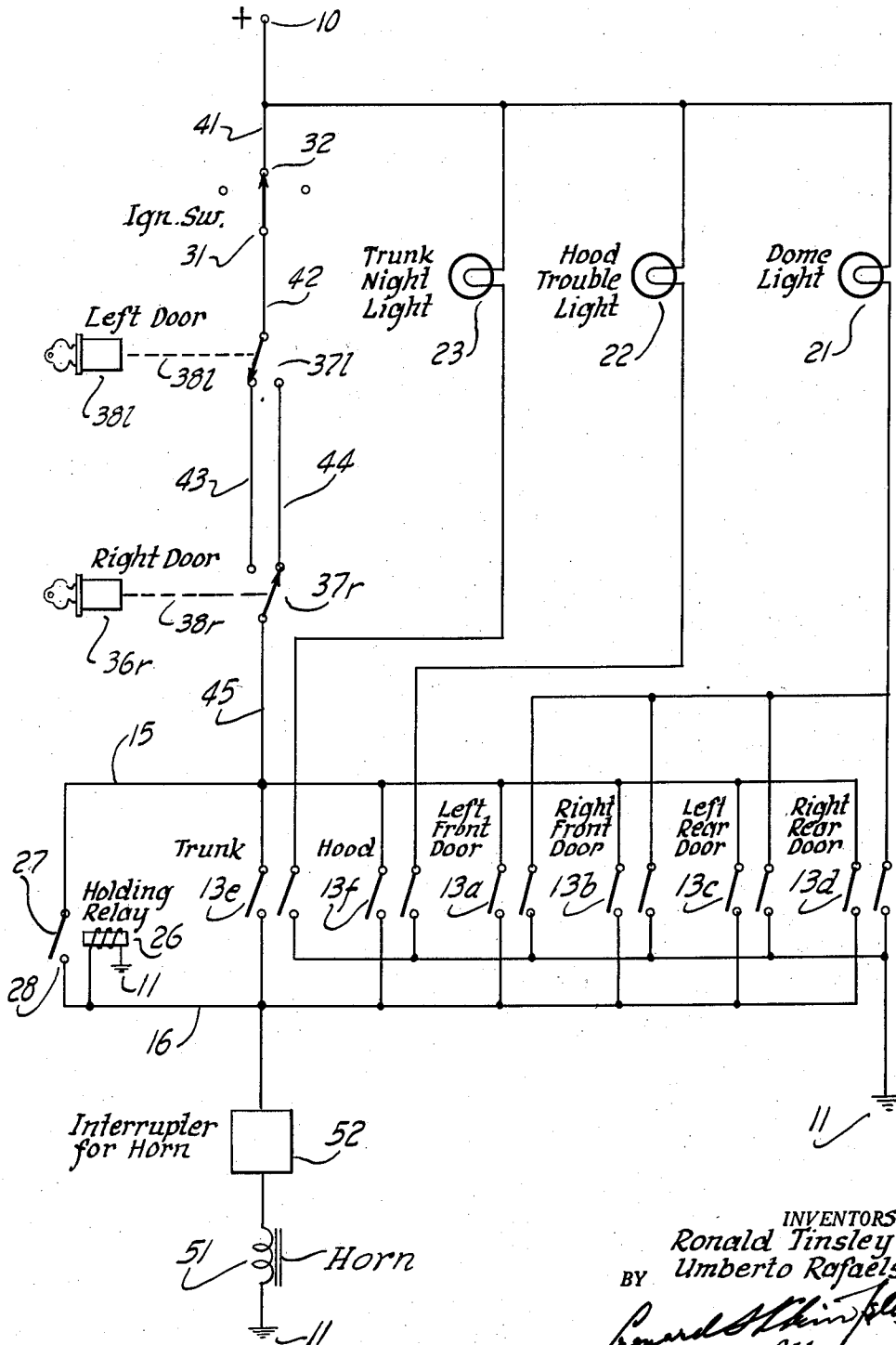


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R. TINSLEY ET AL
ANTI-THEFT ALARM SYSTEM

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INVENTORS
Ronald Tinsley
BY Umberto Rafaele
Ronald Tinsley
Attorney

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ANTI-THEFT ALARM SYSTEM

Ronald Tinsley, Oak Park, and Umberto Rafaels,
Chicago, Ill.

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1 Claim. (Cl. 340—63)

This invention relates to an alarm system for motor vehicles to provide an audible signal that the vehicle is being tampered with in a manner indicative of attempted theft or pilferage.

The present invention has for its principal object the provision of an alarm system for motor vehicles which includes means for automatic setting of the alarm simply by the usual act of locking one of the doors.

An additional object is to provide an alarm system as stated which may be triggered by the unauthorized disturbance of any one of a number of parts of the vehicle.

Another object is to provide a system as aforesaid so arranged that protection for any portion of the automobile additional to those included in the original installation may be added subsequently with no disturbance of the original system.

A further object is to provide an alarm system of the foregoing character including means whereby a momentary tripping of the alarm cannot be negated by reverse action of the trespasser.

Another object is to provide, in an alarm system for motor vehicles means for causing intermittent sounding of the horn and thereby an easily identifiable signal.

Other objects will appear from the following description which, taken with the single figure constituting the accompanying drawing, discloses a preferred form the invention may assume in practice.

Broadly regarded the invention system comprehends the provision of a set of contacts associated with each part of a motor vehicle likely to be the object of trespass, e. g. the doors, hood, trunk, spare tire, etc. connected into a circuit in parallel so that unauthorized disturbance of any of the parts so equipped completes a circuit to the horn. By utilizing a parallel arrangement additional sets of contacts may be readily added at any time. In another aspect the invention includes a holding relay associated with the parallel-connected contacts for establishing the audible alarm portion of the circuit incident upon even momentary closing of one pair of the contacts. Thus the alarm is sounded continuously notwithstanding the trespasser's immediate restoration of the contacts to active position. In still another phase the invention includes three-way switches coactive with at least the two front doors of the vehicle and so arranged that locking of one or the other door by the customary key is effective to condition the system for its purpose. The invention also includes an interrupter in the horn circuit to provide an intermittent sounding of the audible device. If desired the interrupter may be arranged to provide a distinctive coded series of sounds enabling recognition thereof above the cacaphony of noises which might otherwise render the alarm undistinguishable.

Turning now to the drawing which shows, in schematic form, an arrangement in accordance with the invention the source of operating voltage, e. g. the battery of the vehicle is indicated at 10 for the plus side and by the usual ground symbol for the negative side, as at 11.

The system includes a plurality of single-pole, single-

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throw trip switches 13a to 13f associated with each part of the vehicle likely to be trespassed upon. For example we have shown, in addition to the four door switches 13a to 13d, a trunk switch 13e and a hood switch 13f. Since all of those switches are connected in parallel across bus conductors 15 and 16 it will be obvious that any of the switches noted may be eliminated or others added without affecting the others, thereby materially enhancing the flexibility of the invention system. It will be understood that the switches 13a to 13f are of the type which are normally open, as by spring bias, and are closed when a door is opened, a hood lifted, etc. thereby to close a circuit across the bus conductors 15 and 16.

For convenience and economy of installation and maintenance the switches 13a to 13f may be combined in a common housing with the switches for the customary dome and/or courtesy light 21, with the hood trouble light 22 and the trunk night light 23 by simply adding another pair of contacts thereto. However, this step is mentioned and shown only to emphasize the adaptability of the system to existing wiring and components and is not to be regarded as limitative.

A holding relay 26 provided with a single armature 27 and front contact 28 is connected across the conductors 15 and 16 as shown. Accordingly upon closure of any switch 13a and 13f pursuant to a trespass a circuit is completed from plus battery (through means to be described) through the relay winding to ground and the armature 27 is pulled against the contact 28 to maintain current flow through the winding notwithstanding restoration to open condition of the previously closed one of the switches 13a to 13f. In this manner a trespasser who has attempted to enter the protected enclosure and initiated the alarm and who has immediately tried to restore the status quo is confronted with the same alarm as a full entry would have induced.

The alarm circuitry is conditioned for operating by turning off the ignition switch and locking either door from the outside of the vehicle. Customarily both of the front doors of a motor vehicle are arranged to be locked by the conscious employment of a key, and the invention is exemplified herein as applied to a vehicle so equipped. It will become apparent, however, that the system disclosed is equally applicable to vehicle doors adapted to be locked by digital or manual pressure on an exterior button or handle since a unidirectional latching movement is effected in those cases also.

Accordingly, we have shown a conventional type of ignition switch 31 which has an "off" position 32 (sometimes referred to as "Lock" position, which is the condition prevailing when the vehicle is left unattended). No attempt has been made to illustrate the wiring of the switch for its usual functions, but we have shown the plus battery to the contact 32 in order that turning the ignition key to "Lock" will connect plus battery to the alarm system. Final conditioning of the circuit is effected by locking one of the front doors. One of the cardinal advantages of the invention system lies in the arrangement now to be described whereby locking of either the left or right doors will energize the system for operation.

Each door lock 36r and 36l is equipped with a single pole-double throw switch 37r and 37l actuated from one position to the other by means of a member 38r and 38l connecting the plug of the customary cylinder lock to the respective switch arms. For convenience of description and claiming the switches 37l and 37r, when connected as shown, are referred to as three-way switches. With conductors connected between the switches as shown it will be noted that locking of either door is instrumental in closing a circuit as follows: from plus battery at 10, over lead 41, switch 31 in the position shown, conductor

42, switch 37l, one of the two leads 43 or 44 depending upon the position of the switch 37l, one of the contacts of the switch 37r depending upon the actuation or lack thereof as concerns this switch, over lead 45 to energize bus 15 with plus battery.

In the drawing both door locks are shown in unlocked condition so that, as pointed out above, locking of either of the doors completes a circuit through either lead 43 (if the right door is locked) or lead 44 (if the left door is locked). The situation would be the same if the doors were arranged to be locked by holding an exterior button operatively associated with the lock and meanwhile slamming the door shut since such operation, typical of a number of present-day models of automotive vehicles, is equivalent to turning a key. In such case the switch 37l or 37r would be actuated by the locking movement initiated through the button. Normally the driver will lock all of the doors, except the one lock through which he will exit, by means of a handle or button on the interior of the vehicle and then after exiting will lock the door through which he exits by means of a key or the handle button as just explained. Should the driver neglect to latch one of the doors but does remember to lock the exit door the invention system will still be operative since opening of any door equipped with the switches 13a to 13d will activate the alarm.

In respect to the switches 37l and 37r it will be noted that locking of either one of the doors will energize the circuit. For example, assuming the driver locks the left hand door by use of the interior button or handle then conscious external locking of the right hand door will prepare the alarm circuit and vice versa.

The audible device utilized for the system may be the horn with which the vehicle is already equipped or may be an additional device, such as a siren, if a different sound is desired. For purposes of illustration the device is indicated at 51 as a solenoid which may be the active element of the horn, motor driven siren or other equivalent producer of sound or a relay for energizing the same. To provide a distinguishable alarm an interrupter 52 is desirably connected in series with the bus 16 and device 51 and may be of a type which interrupts the circuit in a

coded pattern rendering the signal more easily distinguished above the noises of traffic or simply for contrast. If desired the device 51 may be a visible signal, e. g. the head or tail lamps of the vehicle. Moreover both an audible and visible signal may be used together.

While we have shown a particular embodiment of our invention, it will be understood, of course, that we do not wish to be limited thereto since many modifications may be made and we therefore contemplate by the appended claim to cover any such modifications as fall within the true spirit and scope of our invention.

We claim:

An alarm system for a motor vehicle having a pair of doors and a current supply comprising: a normally-open first switch operatively associated with a part of the vehicle subject to tampering, said switch being adapted to close its contacts when the part is tampered with, a lock for each door, a pair of single-pole, double-throw switches each having its blade operatively connected with a respective one of the locks for movement of the blade from the first pole to the second pole upon actuation of the lock between locked and unlocked positions respectively, a lead connecting the first pole of one switch to the second pole of the other switch, a lead connecting the second pole of said one switch to the first pole of said other switch, circuit means connecting one side of the supply to one of said blades, a lead connecting said other blade to one side of said first switch, a signalling device, and circuit means connecting the other side of said first switch and said device in series with the other side of the supply to activate the device upon closing of said first switch.

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