F. LESLIE.

SAFETY ALARM DEVICE FOR MOTOR VEHICLES.

APPLICATION FILED JAN. 8, 1917.

1,257,259.

Patented Feb. 19, 1918.

2 SHEETS—SHEET 1.

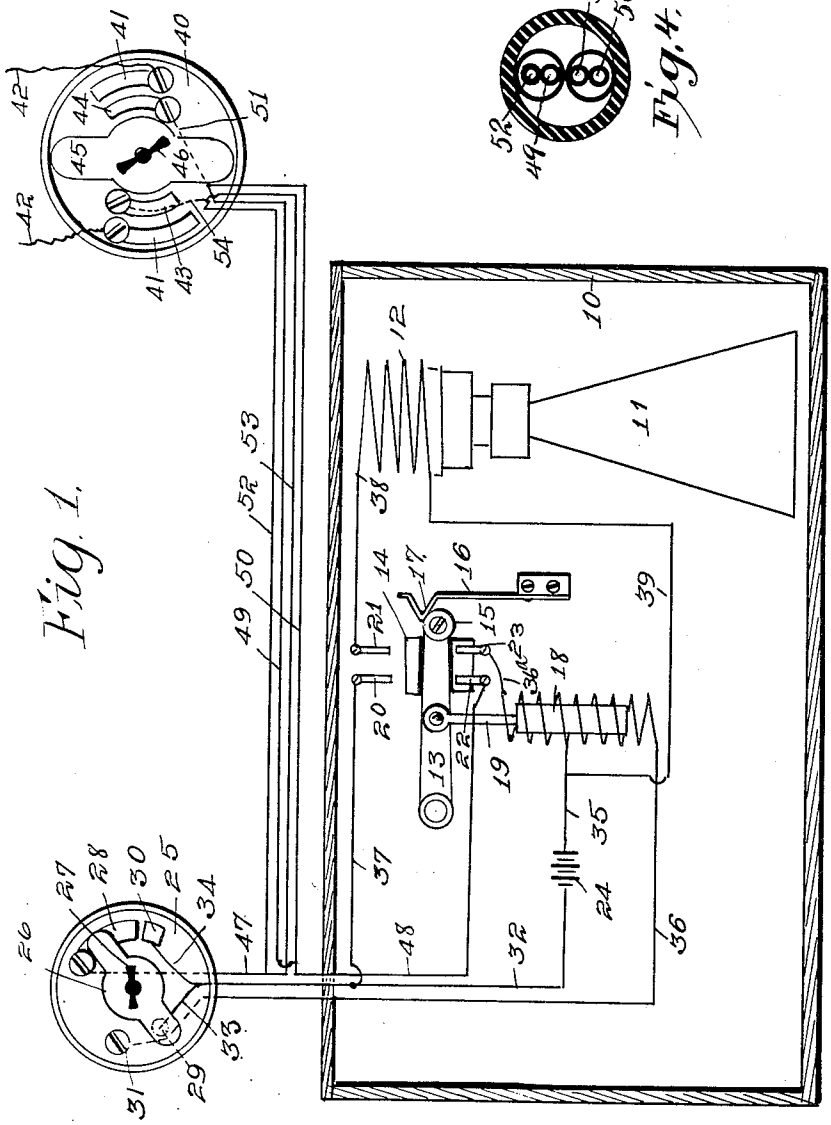

Fig. 1.

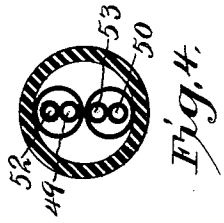

Fig. 4.

Witness

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Inventor

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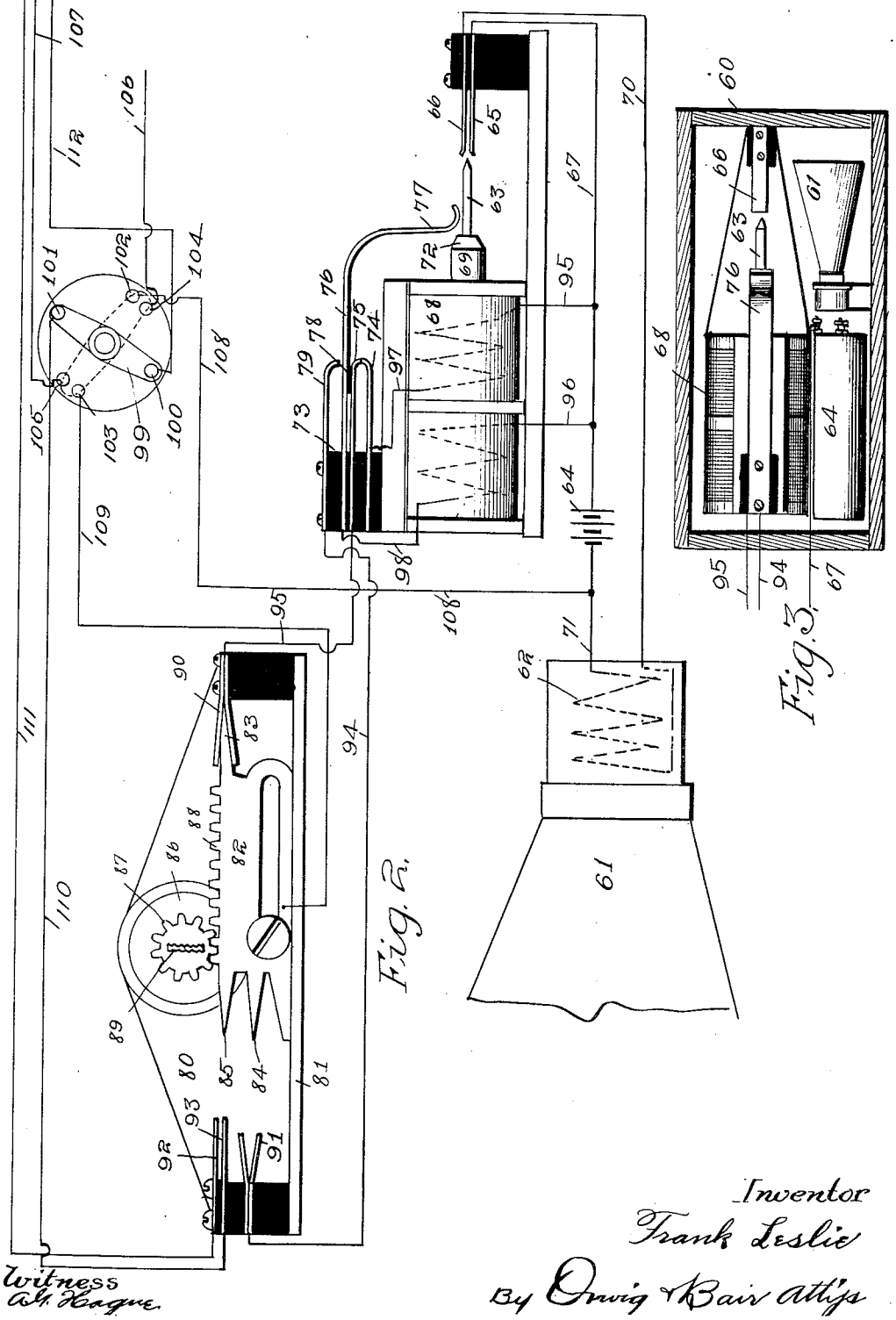

Fig. 2.

Fig. 3.

Witness
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UNITED STATES PATENT OFFICE.

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SAFETY ALARM DEVICE FOR MOTOR-VEHICLES.

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To all whom it may concern:

Be it known that I, FRANK LESLIE, a citizen of the United States, and resident of Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Safety Alarm Device for Motor-Vehicles, of which the following is a specification.

The object of my invention is to provide a safety alarm device for motor vehicles, of simple, durable and inexpensive construction.

A further object is to provide an alarm device mounted in an inaccessible position and included in an electric circuit, whereby when the device has been set for use and the ordinary switch used on motor vehicles is tampered with, the alarm will be thrown in circuit and will sound continuously until properly stopped.

Still a further object is to provide such a device having its circuits so arranged that by proper movement of the controlling switch the alarm device may be shut off and returned to its "set" position.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows a diagrammatic view of a device embodying my invention.

Fig. 2 shows a similar diagrammatic view of a slightly different form.

Fig. 3 shows a horizontal, sectional view through the receptacle of the form shown in Fig. 2, and

Fig. 4 shows a sectional view through the special cable.

In the accompanying drawings I have used the reference numeral 10 to indicate generally a closed receptacle which is designed to be built in such a way that access to the interior is very difficult. Mounted within the receptacle 10 is an alarm device such as a horn 11. The alarm 11 has the ordinary coil 12.

Pivotally mounted within the receptacle 10 is a movable switch member 13 carrying a plate 14 which projects laterally from both sides of the switch member 13 and is insulated from said switch member. On the free end of the switch member 13 is a roller 15 arranged adjacent to a spring 16, having a V-shaped point 17 in engagement with the roller. Suitably supported is a double solenoid 18, on the core of which is a stem 19 pivotally connected with the switch member 13, as shown.

Adjacent to the switch member 13 on one side thereof, are two spaced contact points 20 and 21, and adjacent to said switch member on the opposite side are spaced contact points 22 and 23.

Within the receptacle 10 is a battery 24 or other suitable source of electrical energy. Suitably supported is a switch 25 which I may call the alarm setting switch. The switch 25 has the movable switch member 26 provided with a key hole 27 for permitting the operation by a key, and has the spaced opposite contact points 28 and 29, the latter being shown by dotted lines, and the spaced contact points 30 and 31 arranged opposite each other. A wire 32 and branch wires 33 and 34 connect the points 29 and 30, which are so arranged that they are never in contact with the switch member 26 at the same time.

One half of the solenoid 18 is connected by a wire 35 with the battery and by a wire 36 with the contact point 31. The other half of the solenoid is connected by the wire 35 with the battery, and by a wire 36ª with the contact point 23. A wire 37 connects the wire 32 with the contact point 20, and a wire 38 connects the contact point 21 with the coil 12. The coil 12 is also connected by the wire 39 with the wire 35.

On the car is the ordinary switch including the base or supporting member 40 and the contact points 41 arranged opposite each other and connected by wires 42 with the ignition system of the car. Opposite contact points 43 and 44 are mounted on the switch supporting plate 40. The respective members of the opposite pairs of contact points are designed to be connected by a movable switch member 45 having a key hole 46 for key operation.

A wire 47 is connected with the contact point 28, and a wire 54 is connected with the contact point 43. The wires 47 and 54 are connected by insulated wires 52 and 53. Connected with the contact point 44 is a wire 51. Connected with the contact point 22 is a wire 48. The wires 48 and 51 are connected by insulated wires 49 and 50. The wires 52 and 49 are contained in a

single cable, and the wires 53 and 50 are contained in another single cable. Both of these cables are contained in a large single cable, as illustrated in Fig. 4. The object of this arrangement will be hereinafter more fully explained in the description of the practical operation of my improved device.

In the operation of the device the alarm is inoperative when the switch member 45 is off, and when the switch member 26 connects the points 30 and 31. When the user of the car is about to stop the car and leave it, he inserts his key into the key hole 27 and throws the switch member 26 to its position shown in Fig. 1, where it connects the contact points 28 and 29.

If anyone improperly tampers with the switch member 45 and moves it to position for connecting the contact points 41 for utilizing the ignition system of the car, it will be obvious that the contact points 43 and 44 are also connected by the switch member 45, whereby there is closed a circuit as follows: The circuit includes the battery 24, the wire 32, the wire 33, the contact point 29, the switch member 26, the contact point 28, the wire 47, the wires 52 and 53, the contact point 43, the switch member 45, the contact point 44, the wire 51, the wires 49 and 50, the wire 48, the contact point 22, the plate 14, the contact point 23, the wire 36^a, the upper half of the solenoid, and the wire 35 back of the battery. The upper portion of the solenoid is thereby energized, moving the core which normally stands in the lower part of the solenoid, upwardly and swinging the switch member 13 with the plate 14 upwardly until the plate 14 connects the points 20 and 21. When the points 20 and 21 are connected, a shunt circuit is established through the wire 37, the point 20, the plate 14, the point 21, the wire 38, the coil 12, and the wire 39, thereby actuating the alarm 11.

When the plate 14 is moved upwardly, disconnecting the points 22 and 23, the circuit through the switch member 45 is broken. This, however, is immaterial after the switch member 13 has been moved upwardly, inasmuch as the switch member 13 passes the V-shaped portion 17 of the spring 16 on its upward movement and the spring 16 will then hold the switch member 13 in its upper position where the plate 14 connects the points 20 and 21 and the horn or other alarm 11 will continue to be actuated until the switch member 26 is operated by the holder of the key therefor.

Before explaining how the alarm is stopped, attention is called to the fact that if the cable containing the wires 49 and 50, and 52 and 53 should be cut by a shears or knife or the like, such knife or shears would very likely connect the wires 52 and 49, or the wires 53 and 50 to make a contact closing the circuit in exactly the same way as is done by the switch member 45. If a skilled electrician should attempt to cut the wires without operating the switch member 45, he would naturally separate the cable having the wires 49 and 52 from the cable having the wires 53 and 50, for separately severing the wire contained by these cables. He would not ordinarily suppose that the wires 52 and 49 contained in one cable would connect with the wires 47 and 48 respectively, and in cutting the wires 52 and 49, or in cutting the wires 53 and 50, a circuit would be closed by the cutting instrument and the alarm device actuated for moving the switch member 13. This would be done by an instantaneous closing of the circuit through the wires 49 and 52 or the wires 50 and 53, and after the switch 39 has been actuated the alarm will continue to sound even though the wires 49 and 50, and 52 and 53 should be severed. This I consider an important part of my device.

When it is desired to stop the sounding of the alarm and to reset the signal device for further use, the switch member 26 is moved to position for engaging the contact points 30 and 31. A circuit is then closed through the battery, the wire 32, the wire 34, the point 30, the switch 26, the point 31, the wire 36, the lower part of the solenoid, and the wire 35. This actuates the lower half of the solenoid and draws the core downwardly carrying with it the switch member 13 until the roller 15 again passes the V-shaped point 17. The plate 14 is drawn away from the points 20 and 21, thereby breaking the circuit through the coil 12 of the horn and causing the plate 14 to connect the points 22 and 23. The switch member 45 may then be used in the operation of the car in the ordinary way, and on account of the break at the switch 26 the alarm device will not be actuated until the car is again stopped, the switch 45 turned off, and the switch 26 moved to its position shown in the drawings.

It will thus be seen that the interior of the receptacle 10 may be securely locked away from any interference except when it is desired to open said receptacle.

The great advantages of my device arise from the fact that when the alarm has once been actuated it will continue to sound until the switch member 26 is actuated to disconnect the alarm device 11. It is obvious that if a stranger should tamper with the car and the horn or other alarm device should begin to sound and should sound continuously, suspicion would be aroused and in all probability the tamperer would be frightened away without attempting to take the car.

The arrangement of the wires 49 and 50, and 52 and 53 is such that even if a person

somewhat skilled in the arrangement of wires should attempt to separately sever the wires in the different cables contained in the large cable, he would in all probability close the circuit through the upper half of the solenoid, thereby operating the switch 13 and actuating the alarm.

In the form of my device shown in Figs. 2 and 3, a closed receptacle 60 is used. Within the receptacle is an alarm device 61 having the coil 62. Within the receptacle 60 is a battery or other source of electrical energy 64, and a double solenoid 68 having the core 69 from which projects a point 63. Suitably mounted adjacent to the end of the point 63 are spaced contact points 65 and 66 insulated from each other and adapted when the core 69 is at the limit of its outward movement to be connected by the point 63. The contact point 65 is connected by a wire 67 with the battery 64, and the contact point 66 is connected by the wire 70 with the coil 62. The battery 64 is connected with the other end of the coil 62 by means of a wire 71. The outer end of the core 69 is beveled at 72, as shown.

Mounted preferably adjacent to the solenoid 68 is a block of insulation 73, supported by which are outwardly projecting contact points 74 and 75, preferably of spring metal, with their extreme ends normally in engagement with each other. Mounted in the block of insulation is one end of a spring lever device 76 which extends away from the block parallel with the contact point or arm 75, and at its free end is bent toward the point 63 at 77. The free end of the arm 76 is arranged in the path of the core 69. On the arm 76 is a block of insulation 78 which engages the contact point 75, whereby the arm 76 assists in holding the contact points 75 and 74 together. Above the arm 76 is a contact point 79.

Suitably located and mounted is an alarm setting device comprising a supporting plate 80 having a flange 81. Resting on the flange 81 and slidably supported on the plate 80 is a rack bar 82 having at one end a projecting contact point 83 and at its other end spaced projecting contact points 84 and 85. A lock device 86 carries a pinion 87 in mesh with the teeth 88 of the rack 82, and is provided with a key hole 89 whereby the lock device may be actuated.

Mounted on suitable insulation on the alarm setting device is a contact point 90 adapted to engage the point 83 in one position of the sliding movement of the rack 82. Suitably mounted on the plate 80 and insulated therefrom is a contact device 91 adapted to contact with the point 84 when the rack 82 is in the other position of its sliding movement. Suitably mounted are spaced contact points 92 and 93 arranged to contact with and be connected by the contact point 85 when the rack 82 is in its last mentioned position. The contact device 91 is connected by a wire 94 with the contact arm 79. The contact point 90 is connected by a wire 95 with the contact arm or point 75.

One half of the solenoid 68 is connected by a wire 95 with the wire 67, and the other half of the solenoid is connected by a wire 96 with the wire 67. The first mentioned half of the solenoid is connected by a wire 97 with the contact point or arm 74, and the other half of the solenoid is connected by a wire 98 with the spring arm 76.

Suitably mounted on the motor vehicle is a movable switch member 99. Arranged adjacent to the switch member, adapted to contact with the opposite ends thereof when the switch 99 is in one of its positions, are contact points 100 and 101, designed to connect with the magneto of the car as hereinafter mentioned. The switch on the car also has the opposite contact points 102 and 103. Adjacent to the contact point 102 is a contact point 104, and adjacent to the contact point 103 is a contact point 105. The last four described contact points are so arranged that the switch member 99 may engage all four of the contact points at once. The contact points 104 and 105 are designed to be connected with the battery of the car by wires 106 and 107. The contact point 102 is connected with the wire 71 by a wire 108. The contact point 103 is connected by a wire 109 with the rack 82. The contact point 93 is connected by the wire 110 with the contact point 101, and the contact point 92 is designed to be connected by a wire 111 with the magneto of the machine. The contact point 100 is designed to be connected by a wire 112 with the magneto.

In the practical operation of the form of the device shown in Figs. 2 and 3, the rack bar 82 is moved to position shown in Fig. 2, with the contact point 83 in engagement with the contact point 90. It is understood that the parts are set in this position when it is not desired to run the car and when the switch member 99 is in neutral position. Anyone attempting to tamper with the car would ordinarily turn the switch 99 to position shown in dotted lines in Fig. 2, for connecting the battery of the car with the ignition system thereof.

When the switch member 99 is moved to position shown by dotted lines in Fig. 2, a circuit is completed from the battery through a portion of the wire 71, the wire 108, the contact point 102, the switch member 99, the contact point 103, the wire 109, the rack 82, the switch member 83, the contact point 90, the wire 95, the contact point 75, the contact point 74, the wire 97, one half of the solenoid 68, the wire 95, and a portion of the wire 67. One half of the

solenoid is thereby energized, whereby the core 69 is moved outwardly until the point 63 engages both of the points 65 and 66, whereby a shunt circuit is closed through another portion of the wire 67, the point 65, the point 63, the point 66, the wire 70, the coil 62, and a portion of the wire 71, and the alarm device is actuated.

On the outward movement of the core 69 its beveled portion 72 engages the spring arm 77, moving said spring arm outwardly and upwardly, thereby permitting the points 75 and 74 to separate, which they will do on account of their resiliency, and breaking the contact through the switch member 99. At the same time the arm 76 is made to contact with the contact point or arm 79.

The alarm device which is in an inaccessible receptacle, will continue to sound until the person having the key to fit the hole 89 inserts the key into said opening and operates the pinion 87 for moving the rack from its position shown in Fig. 2 to position where the point 84 engages the contact device 91 and the point 85 engages and connects the contact points 92 and 93.

When the point 75 moves away from the point 74 the circuit through what may be called the forward half of the solenoid is broken.

It may be noted that when the rack 82 is in the position shown in Fig. 2, the car cannot be operated on the magneto on account of the break between the points 92 and 93. When, however, the rack is moved to its other position, the point 85 connects the points 92 and 93, and when the switch member 99 is moved to position shown in Fig. 2 the magneto wires 112 and 111 are connected by means of the point 92, the point 85, the point 93, the wire 110, the point 101, the switch 99, and the point 100. The car can thus be worked on the magneto as long as desired, and may be operated on the battery without affecting the alarm device.

The connecting of the points 91 and 84 makes it possible to energize what may be called the rear half of the solenoid 68 whenever the switch 99 is thrown to its battery position, the circuit being as follows: From the battery 64 through a portion of the wire 71, the wire 108, the contact point 102, the switch member 99, the contact point 103, the wire 109, the rack 82, the points 84 and 91, the wire 94, the contact arm 79, the spring contact arm 76, the wire 98, the solenoid 68, the wire 96, and part of the wire 67. The energizing of the rearward half of the solenoid draws the core 69 back into the solenoid and leaves the alarm device in its "set" position. When the driver of the car desires to leave the car, the rack 82 is moved back to its position shown in Fig. 2.

Some changes may be made in the construction and arrangement of the various parts of my improved safety alarm device, without departing from the essential features and purposes thereof, as illustrated and claimed herein, and it is my intention to cover by my present application any modifications of structure or use of mechanical equivalents which may be reasonably included within the scope of my claims.

I claim as my invention:

1. In a device of the class described, a receptacle, an alarm device, a source of electrical energy, a switch device received within said receptacle, a switch device designed to be connected with the ignition system of a car, a controlling switch, and means for electrically connecting said parts, whereby when said controlling switch is in one position of its movement and the car switch is moved to one position of its movement, said first switch will be moved to position for closing a circuit through said alarm device, said electrical connecting means including two double cables contained in a larger cable, each of the double cables containing wires connected with opposite contact points of the car switch.

2. In a device of the class described, a switch designed to be connected with the ignition system of a car, a lock controlled double switch, a receptacle, an alarm device therein, a double solenoid arranged within said receptacle having a core, switch devices operatively placed with relation to said core, a source of electrical energy within said receptacle, wiring means for connecting the aforesaid parts whereby when said second switch is in one position of its movement, and said first switch is moved to operative position no connection is made within the alarm device, and whereby when said second switch is in another position of its movement and the first switch is moved to operative position, said solenoid is energized for moving said core for operating the switches connected therewith for closing a circuit within the receptacle through said alarm device.

3. In a device of the class described, a switch designed to be connected with the ignition system of a car, a lock controlled double switch, a receptacle, an alarm device therein, a double solenoid arranged within said receptacle having a core, switch devices operatively placed with relation to said core, a source of electrical energy within said receptacle, wiring means for connecting the aforesaid parts whereby when said second switch is in one position of its movement, and said first switch is moved to operative position no connection is made within the alarm device, and whereby when said second switch is in another position of its movement and the first switch is moved to operative position, said solenoid is energized for

moving said core for operating the switches connected therewith for closing a circuit within the receptacle through said alarm device, said parts being so arranged that when said second switch is moved from its last named position to its first described position, another part of said solenoid is energized for moving the core away from operative connection with the switch members designed to coact therewith, whereby the alarm is thrown out of circuit and said first switch may be operated without affecting the alarm.

Des Moines, Iowa, August 28, 1916.

FRANK LESLIE.