July 3, 1934. R. D. CLARK 1,965,030

BURGLAR TRAP

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FIG. 1.

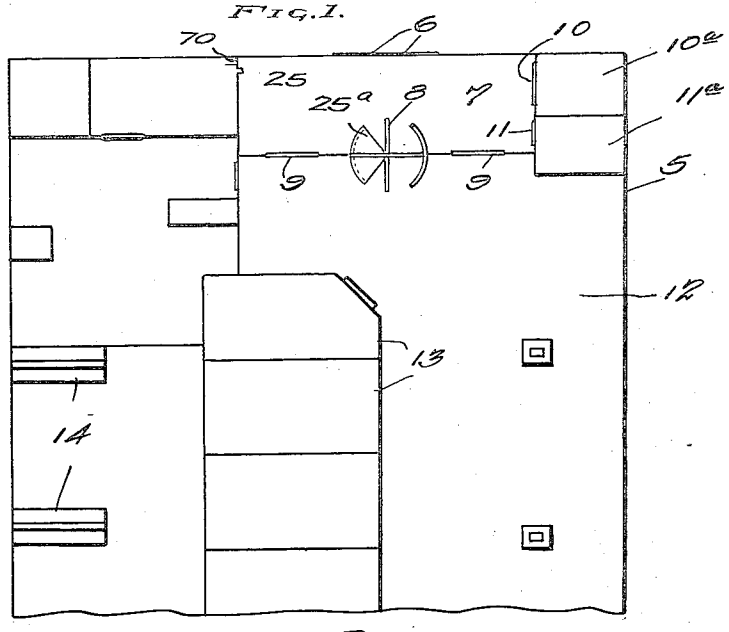
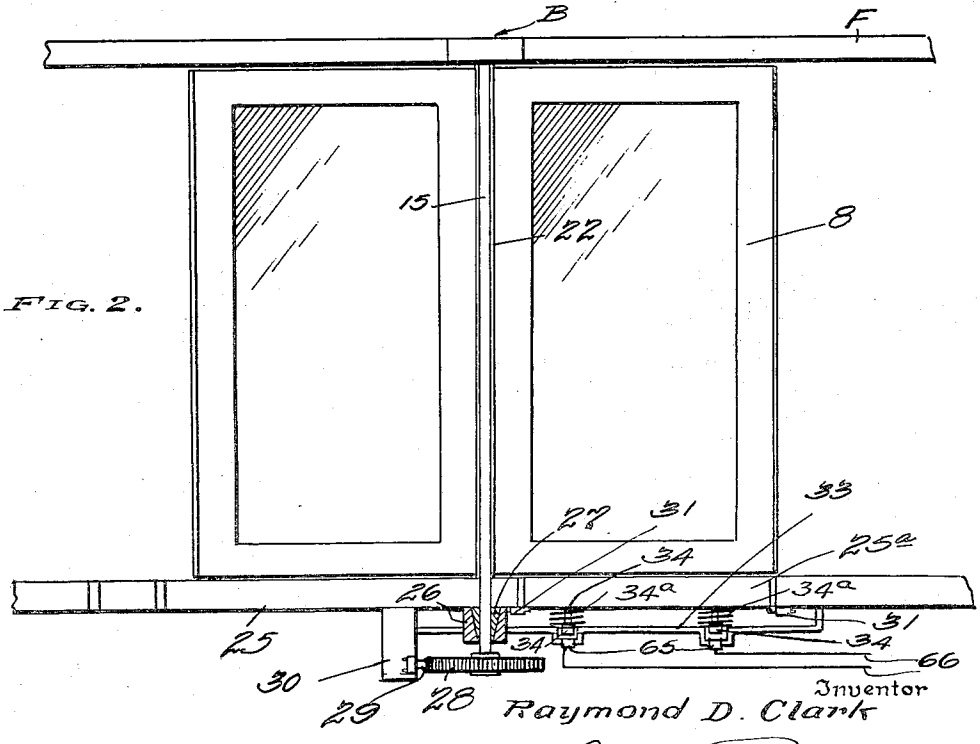


FIG. 2.



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BURGLAR TRAP

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FIG. 3.

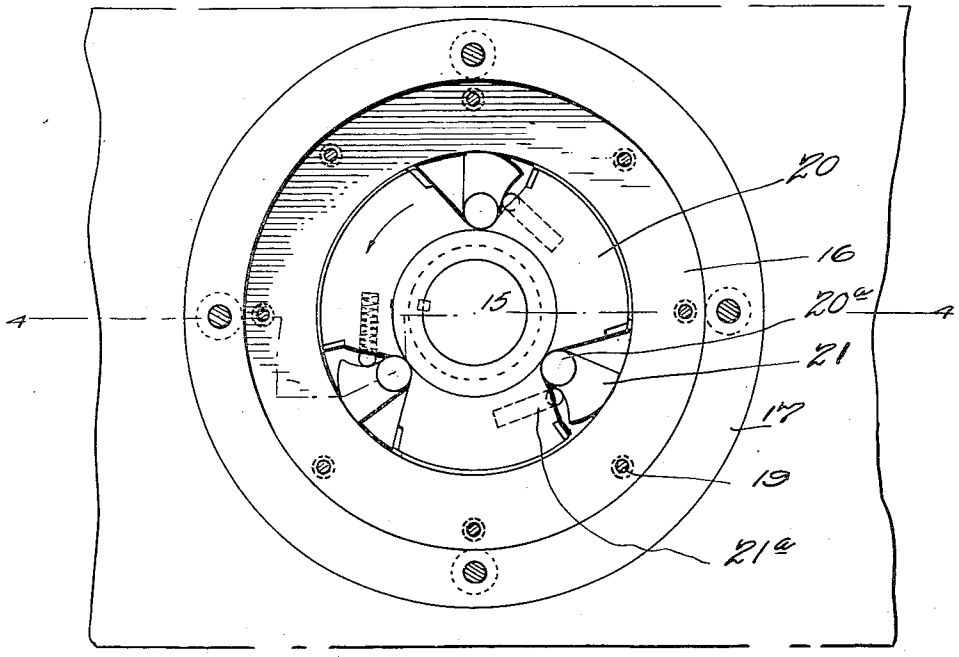
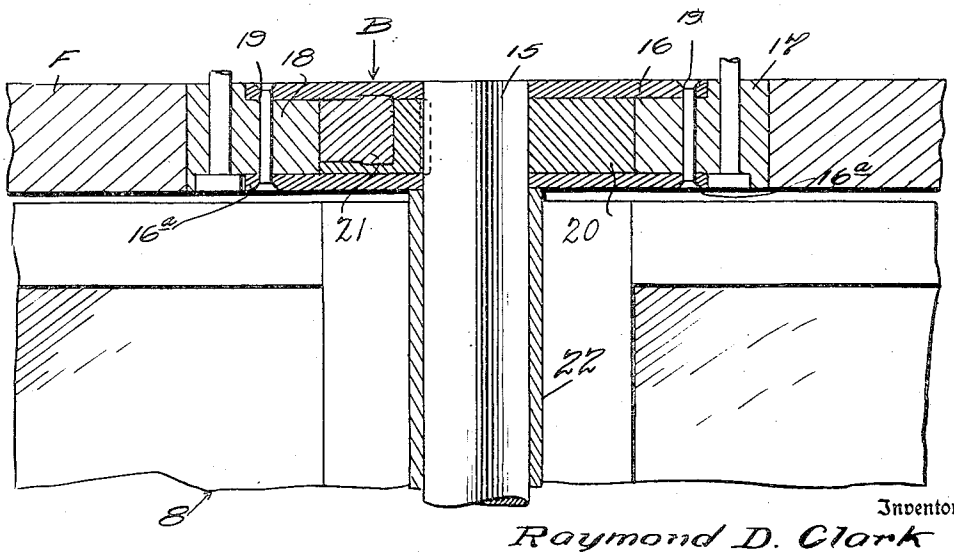


FIG. 4.



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BURGLAR TRAP

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FIG. 5.

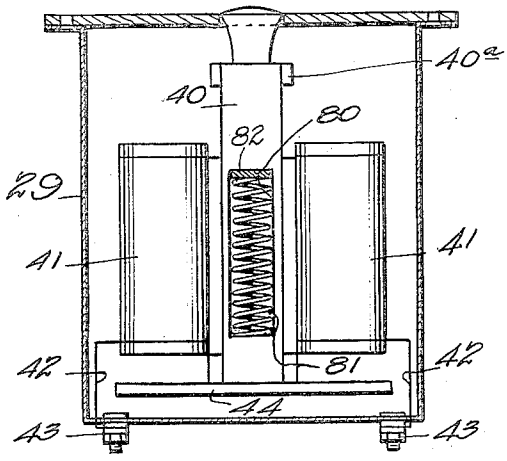


FIG. 6.

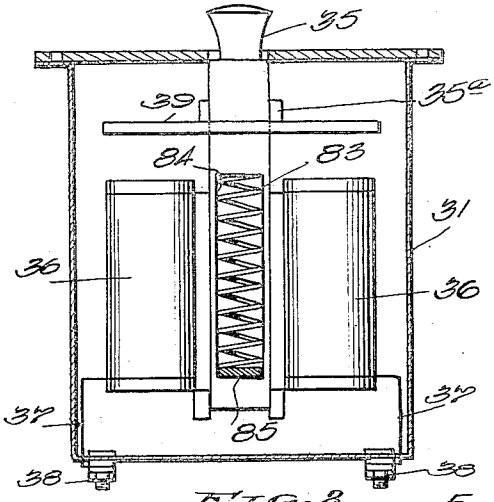


FIG. 8.

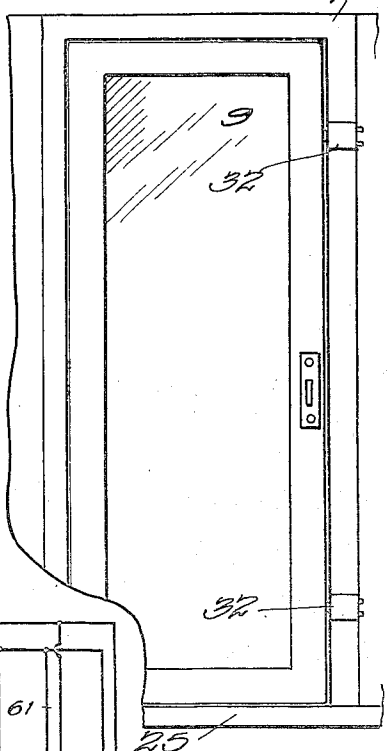
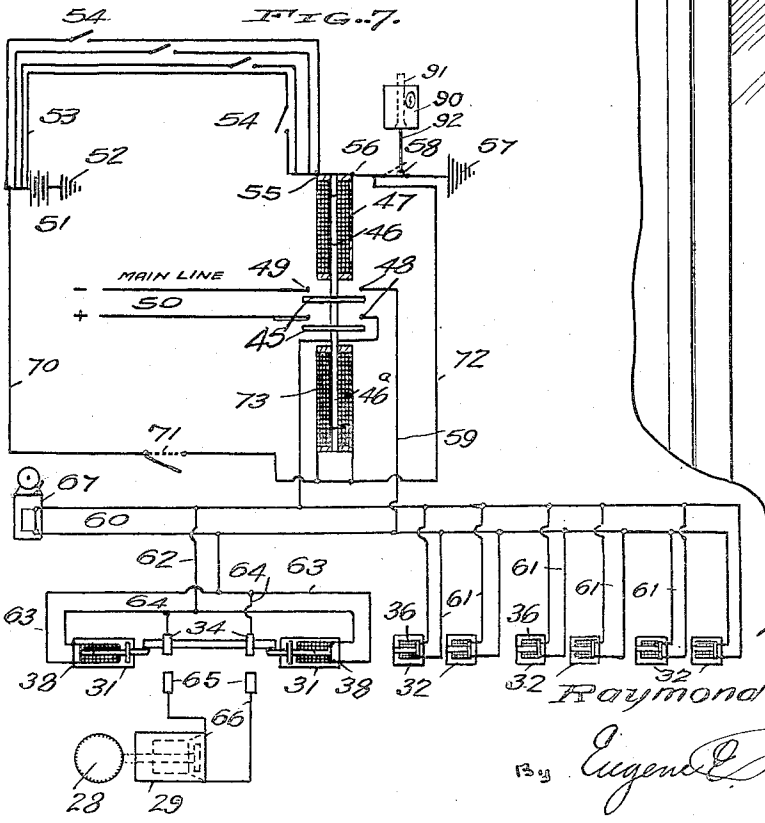


FIG. 7.



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Patented July 3, 1934

1,965,030

UNITED STATES PATENT OFFICE

1,965,030

BURGLAR TRAP

Raymond D. Clark, Milwaukee, Wis.

Application January 5, 1931, Serial No. 506,817

6 Claims. (Cl. 20—1.01)

My invention relates to burglar protection apparatus and has particular reference to such as is peculiarly adapted for banks, jewelry stores and similar establishments.

Briefly stated,—the invention has for one of its primary objects to provide means which will not only protect a bank or jewelry store against loss by robbery, but which will effectually trap the burglar and hold him pending the arrival of police,—the nature of the apparatus being such that the occupants of the store or bank will be protected from the intruder while he is trapped, as aforesaid.

Another object of the invention is to provide a novel apparatus of the class referred to which can be installed in a bank or store at a comparatively moderate expense and without changing the ordinary appearance of the establishment, to the end that the suspicion of the thief or the curiosity of meddlesome persons will not be aroused.

A still further object of the invention is to provide a burglar protection and trapping apparatus which may be operated from a number of remote points and which incorporates means for locking the doors of an entrance vestibule once the thief has entered same on his way out of the bank with his loot, there being means operable by the thief for locking the revolving or other door communicating between the vestibule and the bank in the event that the thief endeavors to enter the banking room when he finds his escape from the front vestibule door to be barred.

The invention also resides in a novel thief-actuated locking means for the revolving door which communicates with the vestibule, and in certain other novel features of construction, combination and arrangement of the various parts, and in certain modes of operation, all of which will be readily apparent to those skilled in the art upon reference to the accompanying drawings in connection with the detailed description appearing hereinafter,—from which it will be observed that the setting of the apparatus in operation gives no warning to the thief which would deter him from choosing the vestibule as an avenue for escape,—it being further observed that tear gas discharge apparatus may be placed in the vestibule, and that there may also be a signal operated by the apparatus and located in the nearest police station.

In accordance with the patent statutes I have chosen for purposes of illustration what now appears to be a preferred form of the invention,—although it will be understood that the same is capable of any other mechanical expressions within the spirit and scope of the subject matter claimed hereinafter,—the claims to be interpreted broadly except as to points wherein the prior art imposes a more limited interpretation.

In the drawings, wherein the same reference characters have been used to designate the same parts in all views,

Figure 1 is a fragmentary plan view showing the floor plan of a bank and the application of my apparatus thereto;

Figure 2 is an elevational view, partly in section and showing the novel revolving door features of the invention, and particularly the means for locking the door through a treadle to prevent the burglar from reentering the bank once he has escaped into the vestibule;

Figure 3 is a top plan view partly broken and showing the clutch means and bearing at the upper portion of the revolving door and which prevents same from being turned except in one direction,—namely a counter-clockwise direction;

Figure 4 is a sectional view taken on the line 4—4 of Figure 3;

Figure 5 is a longitudinal sectional view of a lock such as is used for the doors of Figure 8 and for locking the revolving door shown in Figure 2;

Figure 6 is a longitudinal sectional view of a lock such as is used for supporting the depressible treadle 25*a* in Figure 2;

Figure 7 is a wiring diagram of the circuits involved in the apparatus, and,

Figure 8 is an elevational view partly broken and showing one of the doors communicating with the vestibule.

Referring specifically to the drawings, and particularly to Figures 1 and 2,—numeral 5 denotes generally a walled building, banking or jewelry establishment having the front entrance 6 communicating with the vestibule 7 having the revolving door 8 and adjacent swinging doors 9 communicating with the banking room 12, it being noted that the vestibule 7 has a pair of doors 10, 11 leading to the elevator shaft 10*a* and stairway 11*a*.

The banking room 12 will have the tellers' cages 13, the bookkeepers' desks 14 and the usual arrangement of the modern banking establishment with the vaults (not shown) in the rear of the room.

It is proper to mention, at this point that I am not concerned with the specific arrangement of the banking room or with the interior of the jewelry store or the like to which my invention may be applied. The essential feature,—broadly speaking,—is the vestibule 7 in which, as will be

understood as the description is developed, the burglar or intruder is adapted to be trapped when he seeks to escape.

The revolving door 8 is supported upon a shaft 15, with the upper end of which is associated the clutch member B which provides a bearing and which incorporates the means for preventing the turning of the revolving door 8 about its axis 15, except in a counter-clockwise direction, as viewed in Figure 3,—or from right to left as viewed in Figure 2.

It is understood that the clutch and bearing member B may take a number of different forms. However, I prefer, as illustrated in Figures 3 and 4, to anchor a stationary annular frame 17 to the partitioning or building frame F, said annular frame 17 having annular cut-outs at each surface to seat the keeper plates 16, 16ª, which are secured to said frame as at 19 to overlie the portion 18 of said stationary frame 17,—which keeper plates serve as bearing faces for the disk-like member 20 which is keyed to the upper end of the shaft 15.

The disk 20 carries a plurality of cam-like members 21 seated in recesses at the periphery of said disk and pivoted in said recesses as indicated at 20*a*,—the disk 20 having a plurality of actuator lugs 21*a* bearing against one edge of said cams 21. From the construction shown in Figure 3 it will be evident that the cams 21 will permit the disk 20, the shaft and door to revolve in a counter-clockwise direction as viewed in Figure 3. However, if it is attempted to swing the door in a clockwise direction it is evident that the cams will jam against the inner peripherial portion 18 of the stationary annular frame member 17 and thus prevent movement of the door.

As indicated, the shaft 15 extends through a tubular bearing portion 22 which is shown in Figures 2 and 4.

The lower end of the shaft 15 carries a substantially frustro-conical bearing member 27 which is supported in a correspondingly recessed block 26 secured to the floor framing 25, as shown in Figure 2.

The extreme end of the shaft 15 has keyed thereon the toothed wheel or gear 28,—opposite which is disposed the block or support 30 which is secured to the floor framing 25 and carries the electrically actuated lock 29 of the type shown in Figure 5, its bolt being adapted to be thrown into engagement with the teeth of the wheel or gear 28 to lock the revolving door 8 against rotation.

In carrying out the invention, I provide a depressible flooring section 25*a* at the entrance to the revolving door 8 from the vestibule 7. This depressible flooring section 25*a*, as shown in Figure 2, is normally supported by the bolts of electrically operated lock members 31 which are secured to the bottom of the floor of framing 25. This type of lock is shown in Figure 6.

Referring to Figures 2 and 7 it will be noted that the depressible flooring section 25*a* carries a pair of contacts 34 working through holes in a supporting bracket 33 which is secured to the flooring 25 at one end and to the block 30 at the other end. Coil springs 34*a* interposed between floor section 25*a* and the supporting bracket 33 serve to yieldingly support the floor section 25*a*, but which will permit the flooring section 25 to be depressed under the weight of a person so that the contacts 34 of the section 25 will engage the contacts 65 which are carried by the bracket member 33, so as to close the circuit of the magnets 36 of said locks to draw the bolts 35 inwardly,—each bolt having a cross bar 39 or armature arranged in spaced parallelism to the magnets 36.

The specific circuits will be referred to more in detail later on,—the main point to be understood at this time being that when the apparatus has been "set" the locks 31 are operated to release the flooring portion 25*a* so that same may be depressed. Referring to Figure 6 the lock 31 is seen to comprise a casing and a lock bolt 35 having an armature 39 within the casing and arranged in opposition to the ends of a pair of magnets 36, there being lead wires 37 from the magnets 36 to the binding posts 38. Manifestly, when the magnets 36 are energized the armature 39 will be drawn inwardly to retract the lock bolt 35 and this will permit the floor section 25*a* to be depressed against the action of the springs 34*a*.

As to the lock shown in Figure 5, the same comprises the casing 29, the bolt 40 and the magnets 41. However, here, the rear end of the bolt 40 is provided with the armature 44 so that when the magnets 41 are energized the armature will be drawn against the ends of the magnets to force the bolt 40 outwardly so as to lock the doors 6, 9, 10, 11, (each of which is fitted with a lock 29), or to cause the bolt to engage the teeth of the gear or wheel 28, it being understood that the lock 29 is of the same type used for locking said gear.

Lock 29 has a spring 81 in the bolt recess 80, one end of which spring is engaged by a casing carried lug 82 to normally tend to retract bolt 40,—while in Figure 6 the spring 83 in bolt recess 84 has one end engaged by a casing carried lug 85 which serves to normally protract the bolt 35 of lock 31. Casing carried guides 35*a*, 40*a* are shown for the respective bolts 35, 40.

Leads 42 connect the magnets 41 of Figure 5 with the binding posts 43.

Turning to Figure 7, it will be noted that a double pole switch 45 is carried by the plunger 46 of the solenoid 47,—such switch being adapted to connect the contacts 49 of the main current supply line with the contacts 48 of the circuit which controls the locks 29, 31, etc.

The solenoid plunger 46 is operated from the battery 51,—one side of which is grounded, as at 52, and from the other side of which leads a plurality of wires 53 each having a switch control member 54, said wires being connected to the binding post 55 of the solenoid 47,—the other binding post 56 of said solenoid being grounded as at 57 and including a master cut-out switch 58.

It is to be understood, that the switches 54 will be located at different points in the bank and so positioned that they can be actuated by the employees without attracting the attention of an intruder. Immediately any one of the switches 54 is operated the solenoid plunger 46 will be drawn inwardly to cause the switch 45 to close the circuit of the locks through the lead wires 59 having electrical connections 61, 60,—these latter connecting up the locks 32 of the doors 6, 9, 10, 11, Figure 1, so that their bolts will be thrown outwardly immediately the switch 45 is operated to close the circuit.

Wires 62 lead from the line 60 and have branches 63 connected with the floor supporting locks 31, as shown at 38. Thus, immediately the switch 45 is operated the bolts 35 of the locks 31 will be drawn inwardly leaving the floor section 25*a* supported only by the springs 34*a* about the contact plungers 34, as shown in Figure 2.

The robber after having obtained the money from the bank rushes out through the revolving door 8 which is at this time free to move in a counter-clockwise direction. However, while the robbery is in progress one of the employees of the bank has operated one of the switches 54 energizing the circuit of the locks 32, 31. Thus, the robber finds the outer door or doors 6 of the bank locked,—it being understood that such doors will have locks similar to 32.

Finding his avenue of escape closed the thief seeks to return to the banking room through the revolving door. Stepping upon the treadle 25*a* the contacts 34 thereof come into engagement with the contacts 65 immediately below, thus, closing the circuit of the magnets 41 of the lock 29 and causing the bolt 40 to be projected into the teeth of the gear or wheel 28 which is rigid on the shaft 15 of the revolving door. Thus, it is impossible for the thief to turn the door.

Wires 66 connect the contacts 65 with the binding posts 43 of the lock 29.

Thus, the thief will be confined in the vestibule until such a time as the police have arrived on the scene,—it being observed that the lines 59, 60 connect with a suitable signal device such as 67 which will be located in the nearest police station.

As will be appreciated there is nothing in the appearance of the bank to give any clue as to the presence of the protection apparatus hereinabove described, and furthermore the operation of the apparatus is entirely silent and the first knowledge the intruder has that he has been trapped by the apparatus is when in seeking to escape he finds the front doors and other doors communicating with the vestibule to be locked. It is very important, of course, that the revolving door 8 not be actuated or locked until after the thief has gained the vestibule.

Of course, all glass in all doors will be of the bullet proof variety and the structures generally of sufficient strength to resist any depredations of the enraged culprit.

I also prefer to provide the vestibule 7 with a tear gas or other means for subduing the intruder after he has been confined. This may take the form of a receptacle encased in the wall and having a discharge outlet 70 controlled by a suitable valve, not shown.

Referring to the wiring diagram, Figure 7, I have shown the solenoid 73 whose plunger 46*a* is connected to the plunger 46 of the solenoid 47 which carries the double-pole switch 45.

A line 70 leads from the battery 51 to one side of the solenoid 73 and contains the switch 71, as shown. A line 72 leads from the other side of the solenoid 73 to the ground wire 56 of the solenoid 47,—the switch 58 being between the point of attachment of wire 72 with 56 and the ground point 57 so that when the switch 58 is opened the circuit of the solenoid 73 will be rendered inoperative along with the circuit of the solenoid 47.

The switches 54 in the lines 53 are preferably of the flex or momentary contact type so that the battery strength will be conserved in that the battery current will be called into play only momentarily for the purpose of actuating the solenoid plunger inwardly to connect the points 48, 49 by means of the double-pole switch 45.

The solenoid 73 is for the purpose of moving the switch 45 to open position. Obviously, this will be accomplished when switch 71 is closed and the solenoid 73 energized to draw a plunger 46*a* inwardly. As already stated the opening of the switch 58 in the ground line 56 of solenoid 47 will render both solenoid circuits inoperative.

It is preferable in order to obviate any likelihood of the night watchman in the bank or other establishment inadvertently operating the device to provide the main lock 90 of the front doors 6 (which lock is in addition to the locks 32 associated with said doors) with means for opening the switch 58 when the door is locked for the night.

In carrying out the invention, I provide, as shown in Figure 7, the link connection 92 between the switch 58 and the rear end of the bolt 91 of said lock 90. When the bolt is thrown out the switch 58 will be opened and when the bolt is retracted the switch 58 will be closed. Thus, the device is made absolutely fool-proof.

The switches 54 may have the outward appearance of wall panels, or may otherwise be camouflaged so as not to be noticed by outsiders.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Protection apparatus for banks and the like having an entrance vestibule and doors communicating therefrom, the apparatus comprising in combination remote control means for locking certain of said vestibule doors including the door leading from the vestibule to the exterior of the building and leaving open a door whereby the intruder may gain the vestibule from the banking room, and intruder-actuated means associated with said remote control means at the vestibule side of said last mentioned door for locking the same when the intruder enters the vestibule and tries to re-enter the banking room.

2. In an apparatus of the class described, a plurality of doors, one of which constitutes a revolving door, a partition in which said revolving door is located and separating the banking room from an entrance-way, treadle operated means in said entrance-way and providing a floor section adjacent said revolving door, means for locking said revolving door against movement and controlled by said treadle operated means, means for locking the other doors, means normally supporting said treadle operated means against operation, and remote control means for releasing said treadle support upon actuation of said means for locking the other doors.

3. In an apparatus of the class described, a plurality of doors, one of which constitutes a revolving door, a partition in which said revolving door is located and separating the banking room from an entrance-way, treadle operated means in said entrance-way and providing a floor section adjacent said revolving door, means for locking said revolving door against movement and controlled by said treadle operated means, means for locking the other doors, slidable means normally supporting said floor section providing treadle operated means against operation, remote control means for releasing said treadle support upon actuation of said means for locking the other doors.

4. In a protecting apparatus for a banking establishment or the like having a revolving door, a treadle operated locking means for said revolving door, means normally supporting said treadle in inoperative position, remote control means for releasing said treadle supporting means and actuating said locking means, said remote control means actuating said locking means at a period coincident with the operation of said treadle operated locking means, said remote control

means including a solenoid switch, an actuating circuit therefor, a plurality of control stations for said solenoid circuit, and a main circuit closed by said solenoid switch.

5. In a banking establishment or the like having remote control means for locking the outer door there being a vestibule between the outer door and the banking room with a revolving door communicating from the vestibule to the banking room; the combination of treadle means adjacent said revolving door and within the vestibule and having means for locking said revolving door, means normally supporting said treadle means to prevent operation of the revolving door locking means, and said remote control means having an operative connection with said treadle supporting means for releasing the same at the time the first mentioned door is locked.

6. In a banking establishment or the like having remote control means for locking the outer door, there being a vestibule between the outer door and the banking room with a revolving door leading from the vestibule to the banking room; the combination of treadle operated locking means for said revolving door, lock means having bolts normally supporting said treadle in inoperative position, retracting means for said bolts for releasing said treadle, and an operative connection between said remote control door locking means and said bolt retracting means.

RAYMOND D. CLARK.