Oct. 20, 1925. 1,557,691

W. C. HILL

ROBBERY PREVENTIVE DEVICE

Filed Jan. 15. 1923

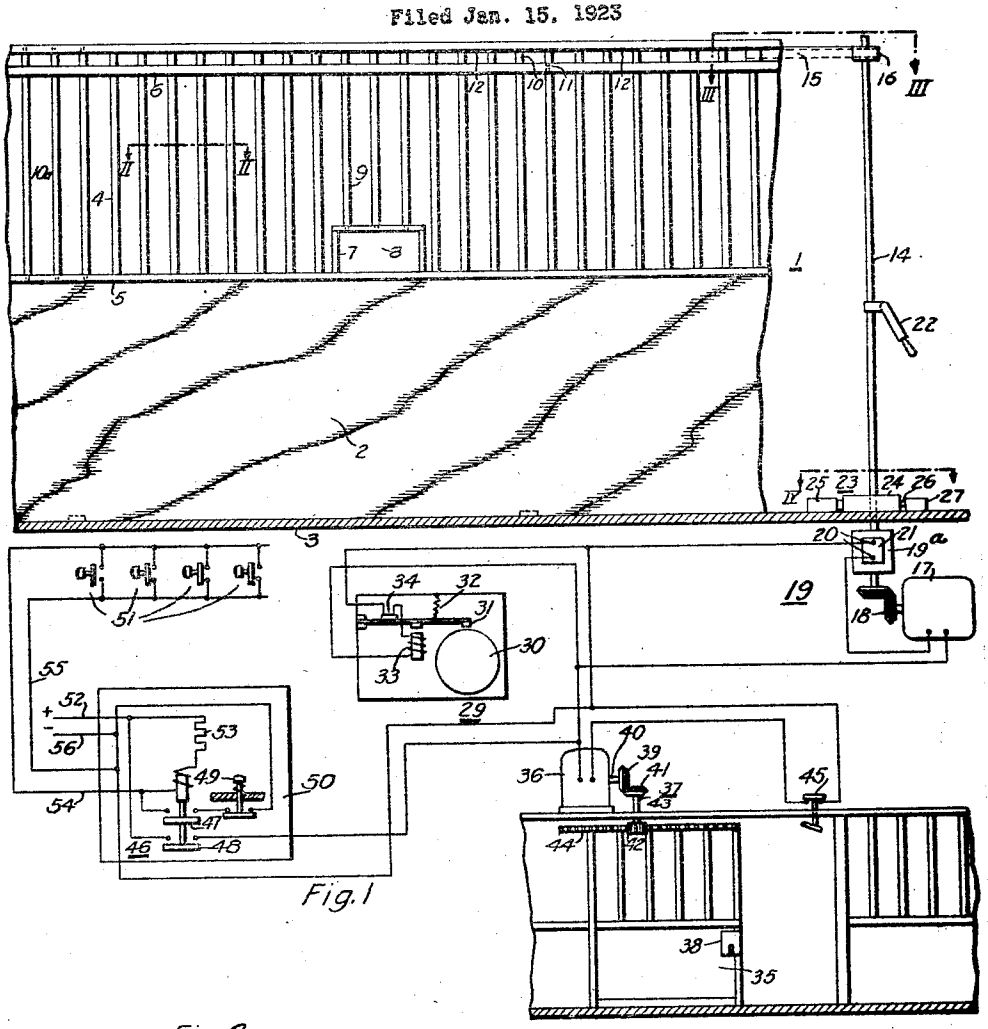


Fig. 1

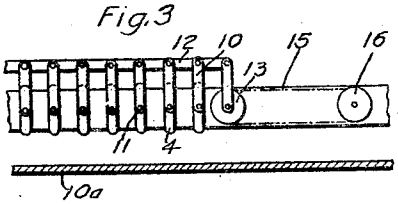


Fig. 3

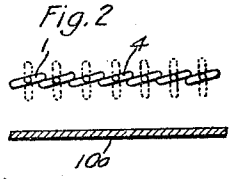


Fig. 2

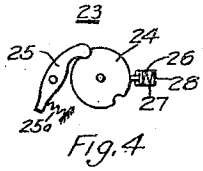


Fig. 4

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UNITED STATES PATENT OFFICE.

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ROBBERY-PREVENTIVE DEVICE.

Application filed January 15, 1923. Serial No. 612,849.

To all whom it may concern:

Be it known that I, WILLIAM CHANCELLOR HILL, a citizen of the United States, and a resident of Bellefonte, in the county of Center and State of Pennsylvania, have invented a new and useful Improvement in Robbery-Preventive Devices, of which the following is a specification.

My invention relates to robbery preventive devices employed to protect banks, safe deposit vaults, and ticket offices from being plundered by gunmen or hold-up-men.

One object of my invention is to provide means for preventing sudden robbery of men who are working with money, securities or other valuables behind barriers or in cages. Such robberies are usually effected by the gunmen pointing fire arms at the men, who are working behind the barrier and compelling them to deliver over unto them the valuables with which they are working.

Another object of my invention is to provide automatic means for preventing the robbers from escaping once they have attempted to commit a robbery, where such automatic means is employed.

Still another object of my invention is to provide an improved control system for simultaneously effecting a plurality of mechanical operations required to operate plurality of devices constructed in accordance with my invention.

Briefly speaking my invention comprises employing a plurality of pivotally mounted shutters in a barrier, or in the side of a cage in front of a compartment and upon an employee pressing a button, means is provided for actuating the shutters to their closed position. Means is also provided for ringing a bell and closing one or more doors, simultaneously with the closure of the shutters.

For a better understanding of my invention, reference may be made to the accompanying drawings. Figure 1 of which is a view, partly in side elevation and partly in section, of a barrier having a plurality of movable shutters, and a door and a bell, all of which are operated in accordance with my invention and Figs. 2, 3 and 4, inclusive, are cross sectional views taken along the lines II—II, III—III and IV—IV, respectively of Fig. 1.

Referring to Fig. 1 of the drawing, a barrier, or cage 1, comprises a heavy marble slab 2 securely mounted upon a floor 3, and a plurality of steel shutters 4, which are pivotally mounted in two horizontal steel plates 5 and 6 above the marble slab 2.

A U-shaped plate 7 provides a suitable opening 8 for a cashier or clerk to conduct business with people who are standing outside the cage. A plurality of shutters 9, which are shorter than the shutters 4, are pivotally mounted between the plates 6 and 7. The shutters 4 which are positioned on each side and adjacent to the plate 7, are suitably notched to permit them to properly close against the plate 7.

A glass plate 10^a extends in front of the shutters 4 and 9 to prevent people on the outside of the cage placing anything between the shutters 4 and 9.

An arm 10 is secured to each of the shutters 4 and 9, as is best illustrated in Fig. 3. The arms 10 are mechanically connected together by means of a rod or bar 12. A toothed member or sprocket wheel 13 is securely mounted upon the end pin 11, which is adjacent to a vertical shaft 14 and is mechanically connected by means of a chain 15 to a sprocket wheel 16, which is securely mounted on one end of the shaft 14.

The shaft 14 may be actuated by a motor 17 to which it is mechanically connected by means of a plurality of gear members 18. A controller or switching device 19 comprises an annular drum 19^a, which is securely attached to the shaft 14 and is actuated thereby, and a plurality of stationary control fingers 20, which are engaged by a movable contact segment 21, which is securely mounted upon the insulatable drum 19. The switching device 19 is so constructed that the contact segment 21 engages the control fingers 20 when the shutters 4 and 9 are in their open position, as is illustrated in Fig. 1. When the shaft 14 is turned to actuate the shutters 4 and 9 to their closed position—as is best illustrated by Fig. 2 of the drawing—the contact segment 21 disengages the stationary control fingers 20.

A handle 22, which is behind the cage or barrier 1, is provided to so actuate the shaft 14 that the shutters 4 and 9 are returned to their open position by one of the employees of the institution in which the barrier is situated, after the shutters 4 and 9 have been closed. The reverse movement of the shaft 14 causes the contact sequent 21, which is se-

curely mounted upon the drum 19ª to reengage the stationary control fingers 20, thereby permitting a second operation of the device. A cam device 23 comprises a disc 24 which is securely mounted upon a shaft 14. A dog 25 and a pin 26 are employed respectively for locking the shaft 14 in the position corresponding to the open position of the shutters 4 and 9 and resiliently positions it in the position corresponding to the open position of the shutters 4 and 9. The dog 25 is resiliently maintained in position by the spring 25ª.

The pin 26 is resiliently positioned in a casing 27 by means of a spring 28.

A bell 29, which is mounted on the outside of the building containing the barrier 1, is provided in my robbery preventive device to notify pedestrians on the street when the bank is being robbed. The bell 29 comprises a metallic disc 30 and a striker 31. The striker 31 is biased to the position illustrated in the drawing by means of a resilient member or spring 32. A solenoid is employed for actuating the striker 31 against the metallic disc 30 and a switching device 34 is provided for automatically making and breaking the circuit comprising the solenoid 33.

A door 35 is slidably mounted at the front entrance of the institution containing the barrier or cage 1. A motor 36 and a gear mechanism 37 are employed to actuate the door 35 to its closed position, where it is held by means of a locking device 38, which can be unlocked only by some person having a key for it.

The gear mechanism 37 comprises a gear member 39 that is secured to the shaft 40 of the motor 36, a plurality of gear members 41 and 42 which are secured to a shaft 43 and a ratchet member 44, which is attached to the door 38. A switching device 45, which is adapted to be actuated to its open position upon the closure of the door 35, is employed to interrupt a circuit comprising the motor 36.

A relay device 46, which is employed to govern the energization of the motors 17 and 36 and the bell 29, comprises a plurality of contact members 47 and 48. A circuit interrupting device or pushbutton switch 49 is employed to break a holding circuit for the relay device 46, that includes the contact member 47. The relay 46 and pushbutton switch 49 are locked in a box 50 at a remote point. A plurality of push button switches 51 in the building in which the barrier is placed are located at accessible and convenient places in the building in which the barrier 1 is placed.

The operation of the robbery preventive device is effected by any person who is working within the building in which the cage or barrier 1 is placed pressing one of the push button switches 51, thereby energizing the actuating coil of the relay 46 by a circuit from an electrical supply conductor 52, through a resistor 53, actuating coil of the relay device 46, conductor 54, a push button switch 51, and conductor 55 to an electrical supply conductor 56. The energization of the actuating coil of the relay device 46 causes it to assume its closed position, thereby establishing a holding circuit for the relay device 46 from the supply conductor 52 through resistor 53, actuating coil and contact member 47 of the relay device 46 and push button switch 49 to the supply conductor 56.

The closure of the relay device 46 establishes a circuit from the supply conductor 52, through the contact member 48 of the relay device 46, the electric motor 17 and stationary control fingers 20 and movable contact segment 21 of the switching device 19 to supply conductor 56. The energization of the motor 17 causes it to actuate the gear members or sprocket wheels 13 and 16, which are mechanically connected by the chain 15, and rod 12 to which the shutters 4 and 9 are connected by the arms 10.

When the shutters 4 and 9 have assumed their closed position, the circuit comprising the motor 17 is interrupted by movable contact segment 21 disengaging the stationary control fingers 20 of the switching device 19.

The motor 17 is actually deenergized a fraction of a second prior to the complete closure of the shutters 4, one upon another. The motor 17 is stopped by the shaft 14 coming to rest when the shutters 4 and 9 are closed. The motor 17, shaft 14 and gear members 18 are designed to be sufficiently rugged to permit of this quick stoppage.

The rotation of the shaft 14, causes the contact segment 21 to disengage the stationary control fingers 20 of the switching device 19. When the shutters 4 are reopened by actuating manually the handle 22, the drum 19ª is rotated in a reverse direction until the contact segment 21 reengages the control fingers 20.

When the relay device 46 assumes its closed position, another circuit is established from the supply conductor 52, through the contact member 48 of the relay device 46, solenoid 33, and switching device 34 of the alarm bell 29 to the supply conductor 56. The bell 29 will ring until the relay device 46 is opened by pressing the push button switch 49.

Still another circuit is established upon the closure of the relay device 46 from the supply conductor 52 through the contact member 48 of the relay device 46, electric motor 36 and switching device or relay 45, to the supply conductor 56. When the door 35 has been actuated to its closed position by the motor 36 driving the gear mechanism

37, the switching device 45 is actuated to its open position thereby deenergizing the motor 36.

It is necessary before returning the shutters 4 and 9 and the door 35 to their original positions to press the push button 49 thereby causing the relay device 46 to return to its open position.

The shutters 4 and 9 are returned to their normal or open position by manually actuating the handle 22, after releasing the dog 25 from the cam member 24.

While I have illustrated and described my invention in its preferred form it is apparent that minor changes may be made in the apparatus and control system without departing from the spirit of my invention. I desire therefore to be limited only by the scope of the appended claims.

What I claim as my invention is:—

1. In a robbery preventive device, the combination with a barrier, of a shield movably mounted in said barrier, means comprising a motor for actuating said shield, a door, means comprising a motor for actuating said door, means comprising a push button for simultaneously energizing said motors, and means for maintaining said motors energized independently of said push button.

2. In a robbery preventive device, the combination with a barrier, of a shield movably mounted in said barrier, means comprising a motor for actuating said shield, a door, means comprising a motor for actuating said door, means comprising a push button for simultaneously energizing said motors and automatic means for separately deenergizing said motors.

3. In a robbery preventive device, the combination with a barrier, of a plurality of shutters movably mounted in said barrier, means comprising a motor for actuating said shutters, a door, means comprising a motor for actuating said door, means for simultaneously energizing said motors, and automatic means for independently deenergizing said motors.

4. In a robbery preventive device, the combination with a barrier, of a plurality of mechanically connected shutters movably mounted in said barrier, means comprising a motor and a rotatable shaft for actuating said shutters, and means comprising a switching device mechanically connected to said shaft for governing the energization of said motor.

In testimony whereof, I have hereunto subscribed my name this 8th day of January, 1923.

WILLIAM CHANCELLOR HILL.