May 13, 1924. 1,493,690

H. A. MARTIN

SAFETY DOOR

Filed Jan. 20. 1922

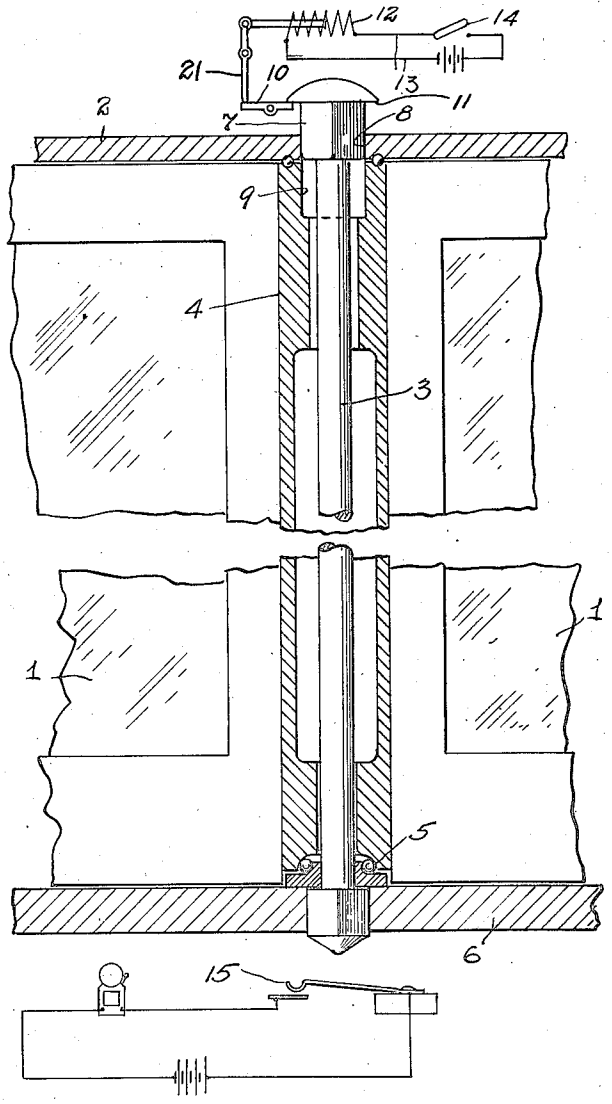


Fig. 1.

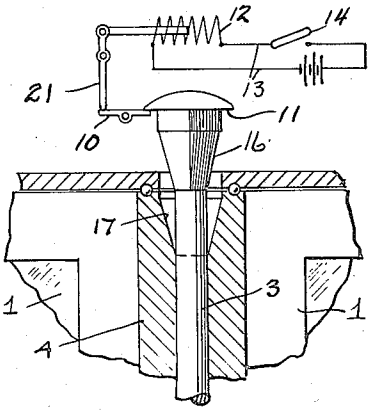


Fig. 2.

INVENTOR.

Henry A. Martin

BY

Day, Oberlin & Day

ATTORNEYS

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UNITED STATES PATENT OFFICE.

HENRY A. MARTIN, OF WASHINGTON, DISTRICT OF COLUMBIA.

SAFETY DOOR.

Application filed January 20, 1922. Serial No. 530,735.

To all whom it may concern:

Be it known that I, HENRY A. MARTIN, a citizen of the United States, and a resident of Washington, District of Columbia, have invented a new and useful Improvement in Safety Doors, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvement, relating as indicated to safety doors, have more particular regard to the provision of locking means for use with revolving doors for banking rooms, or in like situations where in the event of attempted robbery, or for other reasons, it may be desired to control the entrance or exit to such rooms from a remote point. A further object is to provide means for automatically giving an alarm in case occasion arises thus to lock a door so that the police or guardian of a building may be notified of danger.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing: —

Fig. 1 is a broken central section of a revolving door of the type to which my present improvements are more particularly applicable, certain of the control connections as well as the alarm system being shown diagrammatically; and Fig. 2 is a sectional view of a detail illustrating a modification in construction.

The detailed construction of the revolving door proper forms of course no part of the present invention and it is not intended to imply that the latter is limited in its use to a door of this type only, since it may be employed in connection with any door designed to swing about a vertical axis. In the illustrative door shown there will be a plurality (usually four) of radially projecting sections 1 supported to rotate about a central axis within a suitable door frame 2. The side portions of such frame are usually of circular conformation in cross-section and of sufficient depth so that there is at no time provided a free opening through the doorway. Accordingly, locking means that will prevent the door from rotating will insure against ingress or egress.

In the preferred construction shown in the drawing the aforesaid locking means comprise a central shaft 3 about which the door is adapted to rotate, as hereinbefore explained, the sections 1 of the door being to this end attached to a tubular central member 4 journaled upon said shaft. Roller bearings 5, or like anti-friction means, will usually be interposed between the floor 6 and the lower end of said tubular member in order to render the door more easily rotatable, the shaft 3 serving merely to hold the axis of the door in proper vertical position. Said shaft is non-rotatably held but longitudinally movable within tubular member 4 by being provided preferably at its upper end, with an enlargement 7 of polygonal, e. g., square form in cross-section, the opening 8 in the upper portion of the door frame in which such enlarged portion is held being of corresponding form. There is also provided in the upper end of tubular member 4 a recess 9 of the same form as such enlargement 7 on the shaft, so that if the latter is dropped below the door frame 2, it will engage with such recess 9 and thus effectively lock the door against rotation, as will be readily understood.

For normally retaining shaft 3 in raised position a pivotal latch 10 is provided, such latch engaging a flange 11 on the upper end of the shaft above the enlarged portion 7. An electro-magnetically actuated catch 21 is adapted in turn to engage such latch to prevent same turning about its pivot so that with the parts in the position shown in Fig. 1, the shaft 3 is held in its raised position. Energization of the solenoid 12, however, serves to withdraw said catch and thus leave the latch 10 free to drop out of the path of the flange 11 so that the shaft 3 will in turn drop under its own weight into locking engagement with tubular member 4. The electric circuit 13, whereby solenoid 12 may be thus energized, is controlled by one or more suitable

switches 14 which, in the case of a banking room, would be located at various stations about such room, thus permitting the door to be locked instantly by any of the tellers or other employees in the bank. To reset the locking mechanism and permit the door again to be rotated, it is merely necessary to lift the shaft 3, but access thereto can be safe-guarded so that this will only be possible by an authorized person.

For the purpose of giving an extraneous alarm, a switch 15 is located at a point beneath the lower end of shaft 3 or in connection with the flange 11 on the upper end thereof so that downward movement of such shaft will close such switch and thus ring a bell or actuate any other suitable electro-magnetic device for giving such alarm.

In order to insure the ready engagement of the enlarged portion of the shaft 3 with the recess in the tubular member 2, such enlarged portion 16 may be made of the truncated pyramidal form shown in Fig. 2, instead of the straight polygonal cross-section shown in Fig. 1, and the recess 17 in said member of correspondingly tapered form. Accordingly the shaft will be free to drop as soon as latch 10 is released irrespective of whether the recess is strictly in register with such enlarged portion or not and the latter will automatically find itself upon partial rotation of the door. Such partial rotation, however, will not be sufficient to permit a person to pass through the doorway.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. The combination with a door or like closure designed to swing about a vertical axis, of a shaft about which said door thus swings, said shaft being non-rotatably held but longitudinally movable into locking engagement with said door, means normally retaining said shaft out of such engaging position, and signal means adapted to be actuated upon movement of said shaft into such engaging position.

2. The combination with a revolving door having a central tubular member supported upon independent bearings, of a central shaft about which said tubular member revolves, said shaft being nonrotatably held but longitudinally movable, a recess of polygonal cross section in said central tubular member, and an enlargement of corresponding cross section in said shaft adapted to engage such recess upon downward movement of said shaft, and a catch normally retaining said shaft against such movement.

3. The combination with a revolving door, of a central shaft about which said door thus revolves, said shaft being nonrotatably held but longitudinally movable, a recess of polygonal cross section in said door, and an enlargement of corresponding cross section in said shaft adapted to engage such recess upon downward movement of said shaft, a catch normally retaining said shaft against such movement, means controlled from a point remote from said door adapted to release said catch, a signal circuit, and a switch controlling said circuit and adapted to be actuated upon movement of said shaft.

Signed by me this 16 day of January 1922.

HENRY A. MARTIN.