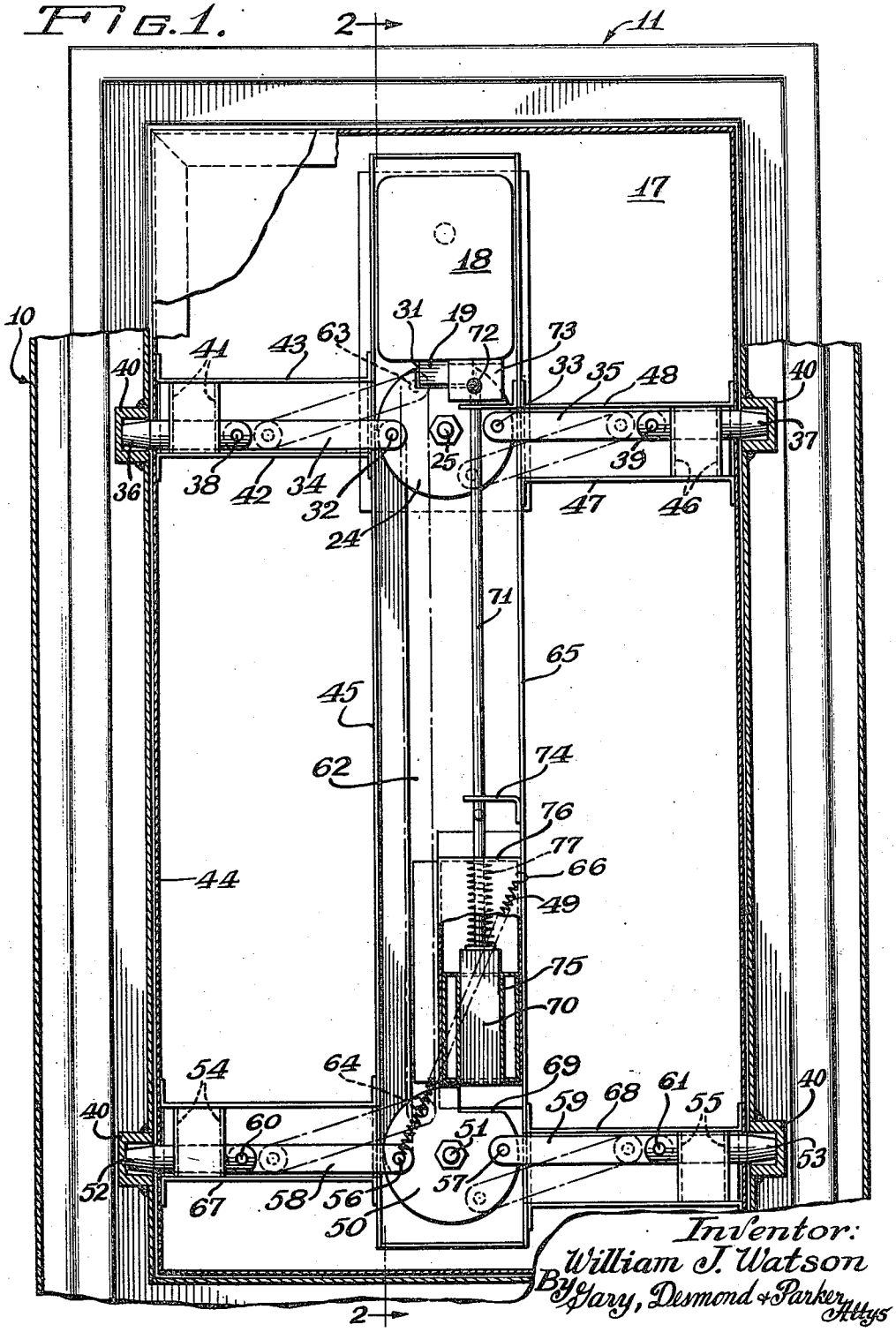
Feb. 18, 1958 W. J. WATSON 2,823,536

SAFE DOOR LOCKING MECHANISM

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FIG. 1.



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FIG. 2.

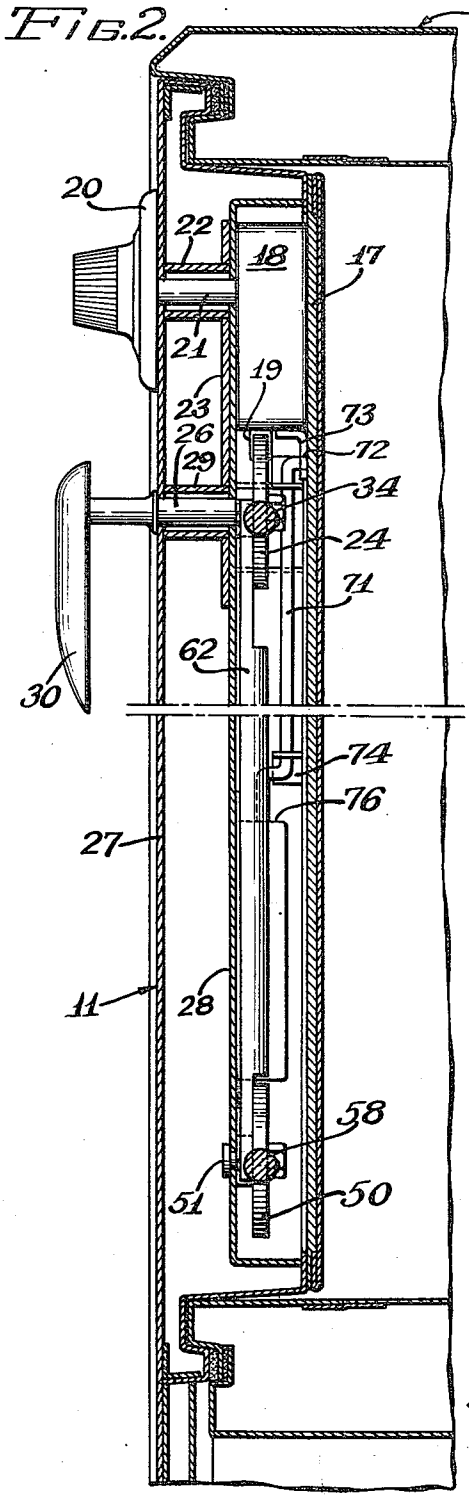
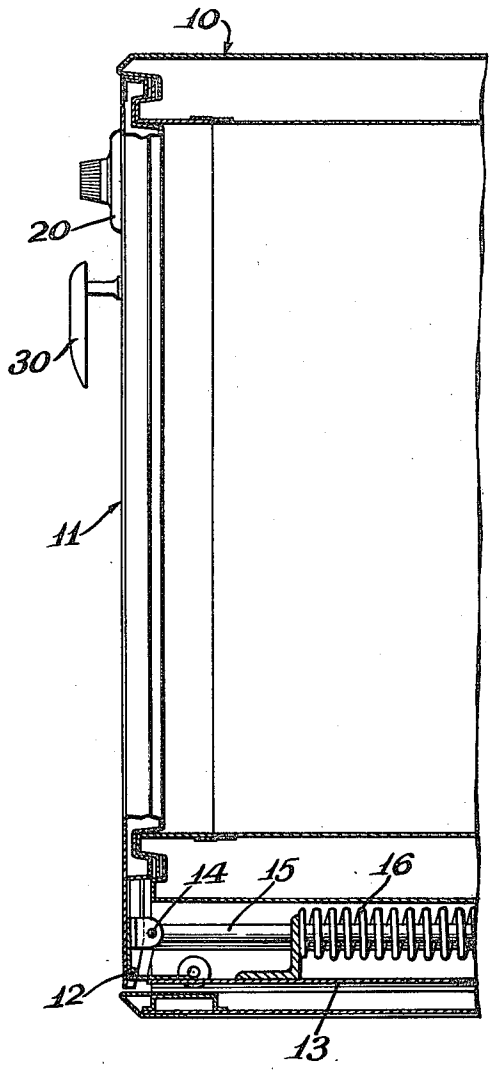


FIG. 3.



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SAFE DOOR LOCKING MECHANISM

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Application December 28, 1954, Serial No. 477,988

5 Claims. (Cl. 70—1.5)

This invention relates to novel and improved safe door locking mechanism of enhanced burglarproof character.

It is an object of the present invention to provide a safe door comprising a plurality of bolts, interconnected through operating cams and attached in a manner so that if one attempts to jimmy the bolts they will jam on the back stroke instead of tending to open the mechanism.

Another object is to provide a relocking device linked to the door lock in a manner so that in the event one attempts to drift or otherwise remove the lock the linkage slips free and permanently locks the door to the extent that the safe door must be destroyed in order to release the mechanism and open the safe.

Other objects relate to the details of construction and arrangement of parts, as will be apparent from a consideration of the following specification and accompanying drawings which for the purpose of illustration show a cabinet safe wherein the door is hinged at its lower edge and adapted for the storage and handling of records.

Fig. 1 is a fragmentary vertical section through the safe and its door illustrating my novel mechanism.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary side elevational view of a cabinet safe with parts in section.

Referring to the drawings, the reference numeral 10 generally indicates a cabinet safe having a door 11 hinged at its lower edge 12 to the retractable carriage mechanism 13, and pivotally engaged at 14 to the spring actuated bolt 15. The illustrated cabinet safe is adapted for storage of visible index record trays in horizontally-disposed vertically-stacked arrangement and which for use are adapted to be drawn out and pivoted downwardly. The safe door is adapted to be swung downwardly to horizontal position against the action of spring 16 and partially telescoped by means of its engaged carriage 13 within the base of the safe, providing a supporting ledge for the downwardly inclined record trays. It will be understood, however, that my novel door locking mechanism is not restricted to doors and cabinet safes of the kind illustrated, but is applicable to safe doors in general which may be otherwise hinged to the safe.

The inner face 17 of the door supports a combination lock 18 having a reciprocable tongue 19, the lock being operable by means of the dial 20 on the outer face of the door, through the spindle 21 embraced by the protective collar 22. The front face of the lock is further protected by the steel plate 23. Immediately below the lock, and on the longitudinal axis of the door 11 shown, is disposed the cam or swivel disc 24 secured to the stud or cam anchor point 25 on the inner end of spindle 26,

the latter being journalled in the outer door shell 27 and lock mechanism casing plate 28, and further protected by the steel collar 29 and provided with the actuating outer handle 30.

As shown in Fig. 1, disc 24 is provided with a peripheral slot 31 which opens upwardly when the door is locked to receive lock tongue 19. Pivotally secured to disc 24, at the diametrically spaced points 32 and 33, are the links 34 and 35 carrying the locking bolts 36 and 37 pivotally engaged to the links at 38 and 39, respectively. The bolts 36 and 37 are received, in extended position within steel plugs 40 welded to the outer shell or jamb portion of safe 10 which forms a seat for door 11.

Bolt 36 is slidably retained in apertured keeper plates 41 extending between the transversely disposed plates 42 and and 43, the latter plates being secured between the door side wall 44 and the side wall extension 45 of casing plate 28. As will be seen from the full lines in Fig. 1, when the bolt 36 is fully extended within its plug 40 in locking position, with the horizontal axes of bolt 36 and link 34 aligned, link 34 abuts against plate 42. In this position it will be noted that an extension of said aligned axes passes below the anchor point 25 of disc 24. From this it will be apparent that any pressure on the end of bolt 36 will not unlock the safe but rather will tend to jam link 34 against plate 42 and lock the mechanism tighter.

The same applies to the opposed bolt 37 which in a similar manner is slidably retained between the keeper plates 46 secured between transverse plates 47 and 48 extending between the opposed sides of the door shell 27 and casing plate 28. In this instance when the link 35 is brought into alignment with its bolt 37 the link comes into abutment with plate 48.

It will thus be seen that the bolts 36 and 37 are retained in spaced parallel relationship to each other, and the swivel disc is pivotally retained at a point intermediate the inner ends and projected longitudinal axes of the bolts. When the lock 18 is opened and the tongue 19 withdrawn from slot 31, spring means 49, as will be later explained, causes the disc 24 to rotate in a clockwise direction, to incline the links 34 and 35 to the illustrated dotted position, and withdraw the respectively engaged bolts 36 and 37 from locking engagement with the safe. For relocking the disc 24 is rotated, by means of handle 30, in a counterclockwise direction to the limits of abutment of the links 34 and 35 against their respective plates 42 and 48, which brings their respective pivot points 32 and 33 past center on opposed sides of the disc pivot point. With the tongue 19 in slot 31, and with the pivot points 32 and 33 in this over-center relation to the disc anchor point 25, if one attempts to jimmy the bolts 36 and 37 they will merely jam on the back stroke instead of tending to open the mechanism.

The locking mechanism further comprises a second rotatable cam or disc 50 mounted on the casing 28 by means of the stud or cam anchor point 51 and disposed medially in both transverse and longitudinal directions between the inner ends of spaced parallel locking bolts 52 and 53. Bolt 52 is retained for sliding movement in the apertured keeper plates 54 and bolt 53 is similarly retained in the keeper plates 55. Pivotally secured to disc 50, at diametrically spaced points 56 and 57, are the links 58 and 59, the opposed ends of said links being pivotally engaged at 60 and 61 to the bolts 52 and 53, respectively.

The disc **50** is engaged to disc **24** for joint swiveling or oscillation therewith by means of the rod **62** pivotally engaged at its opposed ends **63** and **64**, respectively, to the discs **24** and **50**, so that the two pairs of bolts may act jointly. When locking tongue **19** is withdrawn from the slot in disc **24**, both discs **24** and **50** are urged clockwise by means of the tension spring **49** secured at one end to swivel disc **50** at pivot point **56** and extending obliquely therefrom to the opposed side wall **65** of casing **28**, as indicated at **66**. When the discs are jointly rotated in a counterclockwise direction for locking, the links **58** and **59** are brought into alignment with their respective bolts **52** and **53**, into abutment with the plates **67** and **68**, respectively, and with their pivot points **56** and **57** in overcenter relation to the disc anchor point **51**, to the same locking effect as hereinbefore described with respect to bolts **36** and **37** and their connected parts.

The disc **50** is formed with a peripheral notch **69** adapted to receive the spring-loaded locking bolt **70** carried by the rod **71** under special conditions. The upper end of the rod **71** is bent at a right angle and the end normally received loosely in the aperture **72** of the depending leg of the angle plate **73** secured to the casing of lock **18**. The rod **71** is further supported in the apertured angle **74** secured to side **65** of casing **28**, and its associated bolt **70** is received in the guide or slideway **75**. Between the head of bolt **70** and the casing top **76** is confined the compression spring **77** which normally tends to urge bolt **70** downwardly, to provide a relocking device. Thus, in the event one attempts to drift or otherwise remove the lock, as by knocking off the combination in an attempt to enter, the upper end of rod **71** slips free of the angle plate **73**, permitting spring **77** to seat the bolt **70** in notch **69** of disc **50**. This prevents rotation of the disc **50** and linked disc **24** from rotation in a clockwise direction and thereby automatically locks the mechanism. Since this relocking arrangement is contained wholly within the door and is not actuatable from the outer face thereof, in the event the relocking device is ever set off, then the safe door must be destroyed in order to release the mechanism and open the safe.

Although I have described the preferred embodiment of my invention, it will be apparent to those skilled in the art that various changes in the details may be made without departing from the spirit thereof.

I claim:

1. The combination with a safe door of locking mechanism carried by said door comprising a pair of opposed locking bolts mounted for reciprocation in spaced parallel relationship to each other, a rotatable disc having its axis disposed intermediate the inner ends and projected longitudinal axes of said bolts, links pivotally connected to the inner ends of said bolts and to diametrically opposed points on said disc respectively, means for rotating said disc to reciprocate said bolts and adapted to project them outwardly for locking reception within seats carried by an associated safe and to align the links with their respective bolts in said projected position, and abutment means disposed adjacent said links for limiting successive angular movement of said links from inclination to their respective bolts when the latter are retracted to said aligned relationship in projected locking position.

2. The combination with a safe door of locking mechanism carried by said door comprising two spaced pairs of opposed locking bolts mounted for reciprocation in spaced parallel relationship to each other, a rotatable disc disposed intermediate the inner ends and projected longitudinal axes of each bolt pair, links pivotally connected to the inner ends of said bolts and to diametrically opposed points on said discs respectively, means for jointly rotating said discs to reciprocate said bolts and adapted to project them outwardly for locking reception within seats carried by an associated safe and to align the links with their respective bolts in said projected position, and abutment means disposed adjacent said

links for limiting successive angular movement of said links from inclination to their respective bolts when the latter are retracted to said aligned relationship in projected locking position.

3. The combination with a safe door of locking mechanism comprising two spaced pairs of opposed locking bolts mounted for reciprocation in spaced parallel relation to each other, a first rotatable disc disposed intermediate the inner ends and projected longitudinal axes of one bolt pair and a second rotatable disc disposed intermediate the inner ends and projected longitudinal axes of the other bolt pair, links connected to the inner ends of said bolts and to diametrically opposed points on said discs respectively, means extending exteriorly of said door for oscillating said first disc and connecting rod means extending between and in pivotal engagement with said discs for joint oscillation of the second with the first disc for jointly reciprocating their associated bolts and adapted to project said bolts outwardly for locking reception within seats carried by an associated safe and to align the links with their respective bolts in said projected position, abutment means disposed adjacent said links for limiting successive angular movement of said links from inclination to their respective bolts when the latter are retracted to said aligned relationship in projected locking position, combination lock mechanism including a locking tongue receivable in a peripheral slot formed in said first disc for normally locking the mechanism in a releasable manner, a separate spring-pressed bolt receivable in a peripheral notch formed in the second disc when the locking bolts are in projected position, inaccessible for manipulation exteriorly of said door, for preventing oscillation of said discs when the locking bolts are in said projected position, and a connecting rod extending from said spring-pressed bolt with its opposed end normally in displaceable engagement with holder means secured to the combination lock mechanism normally holding said spring-pressed bolt out of engagement with said second disc.

4. The combination with a safe door having a combination lock mounted thereon, locking mechanism carried by said door comprising a pair of opposed locking bolts mounted for reciprocation in spaced parallel relationship to each other, a rotatable disc, said disc having its axis disposed intermediate the inner ends and projected longitudinal axes of said bolts, links pivotally connected to the inner ends of said bolts and to diametrically opposed points on said disc respectively, means for rotating said disc to reciprocate said bolts and adapted to project them outwardly for locking reception within seats carried by an associated safe and to align the links with their respective bolts in said projected position, abutment means disposed adjacent said links for limiting successive angular movement of said links from inclination to their respective bolts when the latter are retracted to said aligned relationship in projected locking position, attack defeating mechanism associated with said combination lock, said attack defeating mechanism comprising a spring pressure bolt means releasably anchored to said combination lock means and adapted to be received in a peripheral notch formed on said rotatable disc to prevent rotation of said rotatable disc when said combination lock is tampered with.

5. The combination with a safe door having a combination lock mounted thereon, locking mechanism carried by said door comprising a pair of opposed locking bolts mounted for reciprocation in spaced parallel relationship to each other, a rotatable disc operatively associated with said combination lock and having its axis disposed intermediate the inner ends and projected longitudinal axes of said bolts, links pivotally connected to the inner ends of said bolts and to diametrically opposed points on said disc respectively, means for rotating said disc to reciprocate said bolts and adapted to project them outwardly for locking reception within seats carried by

an associated safe and to align the links with their respective bolts in said projected position, abutment means disposed adjacent said links for limiting successive angular movement of said links from inclination to their respective bolts when the latter are retracted to said aligned relationship in projected locking position, said combination lock operatively associated with said rotatable disc for arresting retracting movement of said bolts, attack defeating mechanism associated with said combination lock for preventing retraction of said bolts, said attack defeating mechanism comprising a spring pressed bolt means detachably connected with said combination lock and adapted to enter a notch formed on said disc for preventing rotation of said disc when said combination lock is removed from said safe door, said spring pressed bolt being inaccessible for manipulation exteriorly of the door.

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