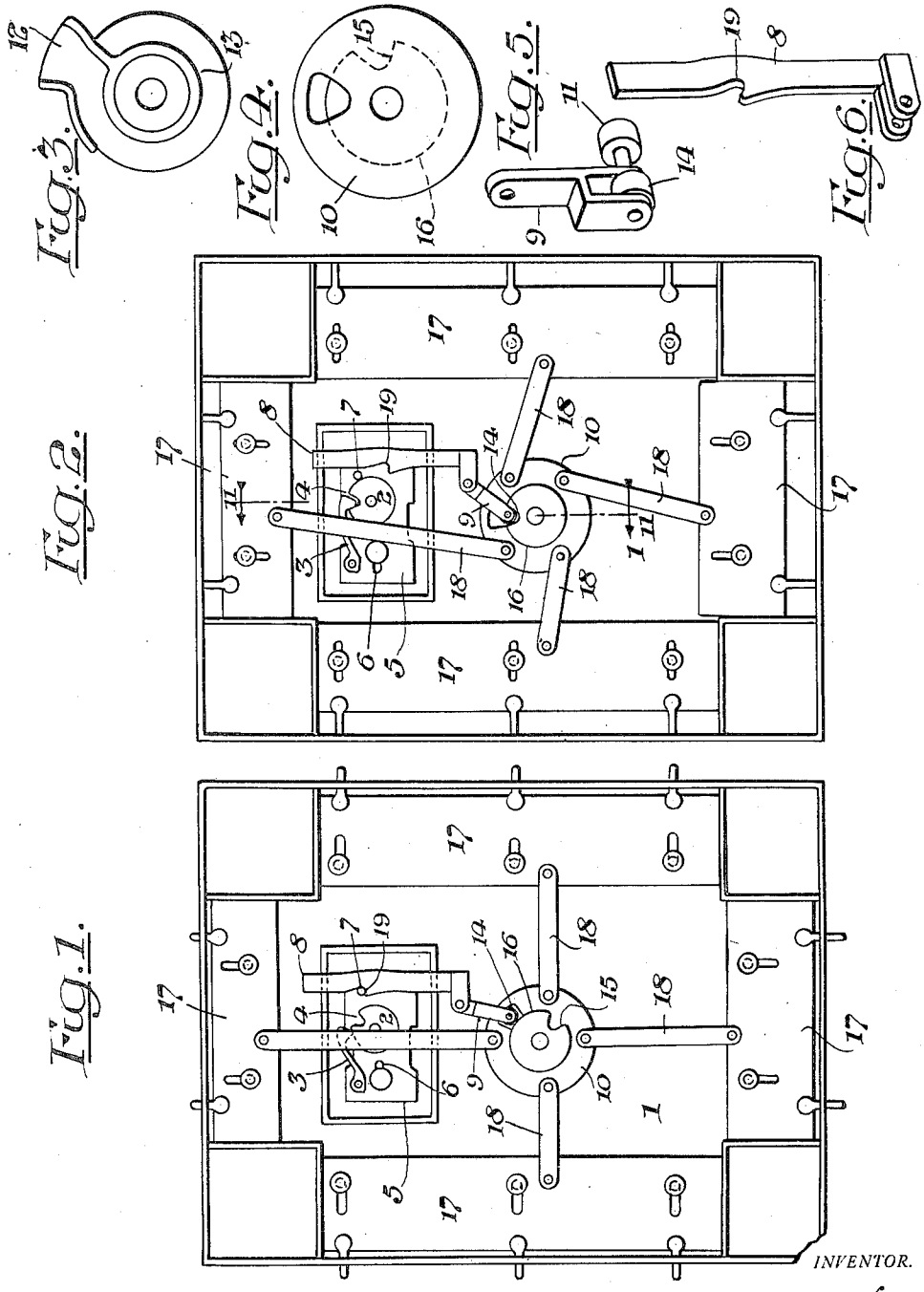
July 20, 1948. M. BRETOS Y CLAVERIA 2,445,511

SAFE AND VAULT LOCKING AND UNLOCKING MECHANISM

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INVENTOR.

Manuel Bretos Y. Claveria

BY Francis E. Boyce

ATTORNEY

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SAFE AND VAULT LOCKING AND UNLOCKING MECHANISM

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Fig. 9.

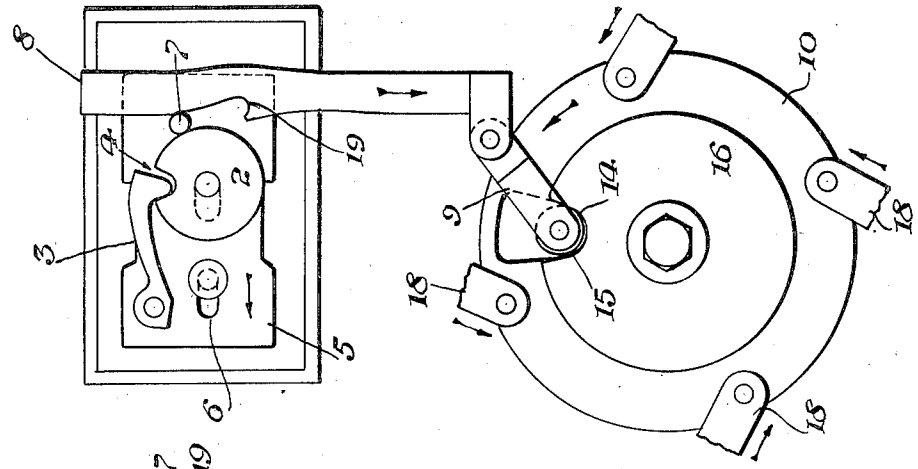


Fig. 8.

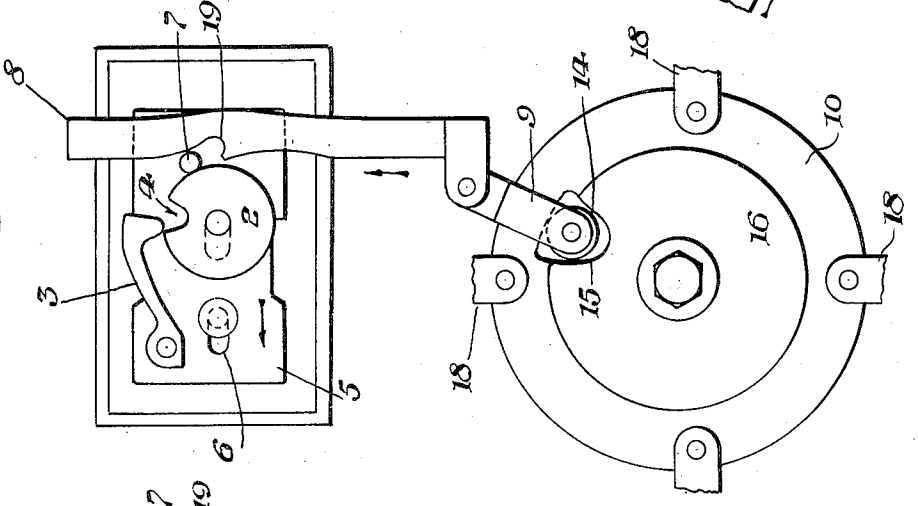
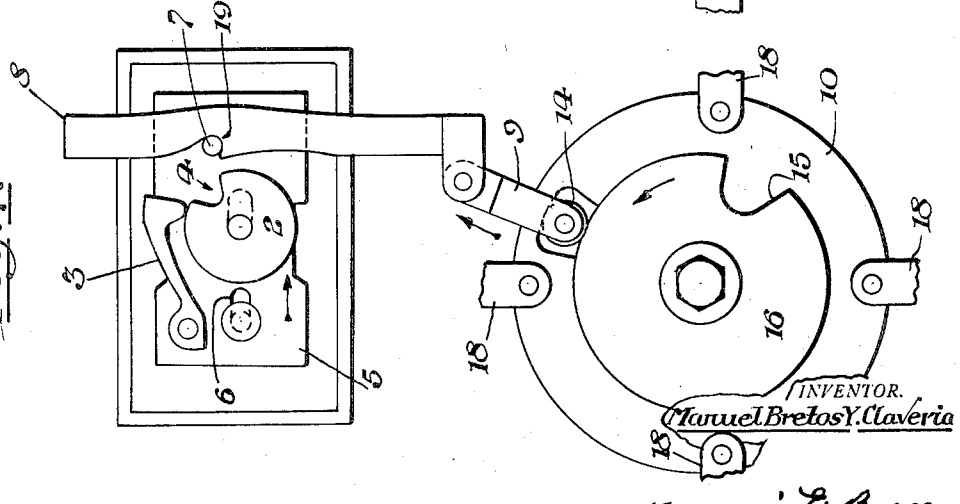


Fig. 7.



INVENTOR.
Manuel Bretos Y. Claveria

BY Francis C. Boyce

ATTORNEY

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Fig. 11.

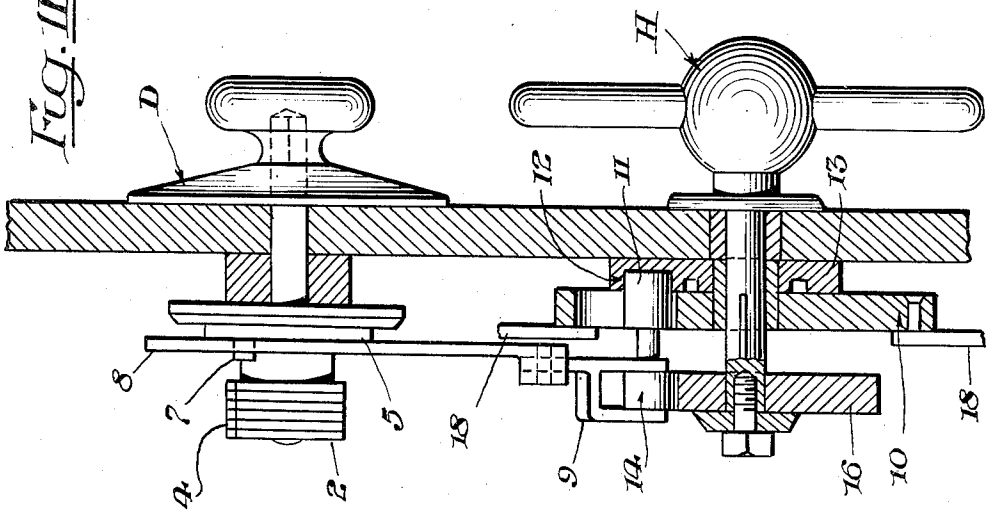
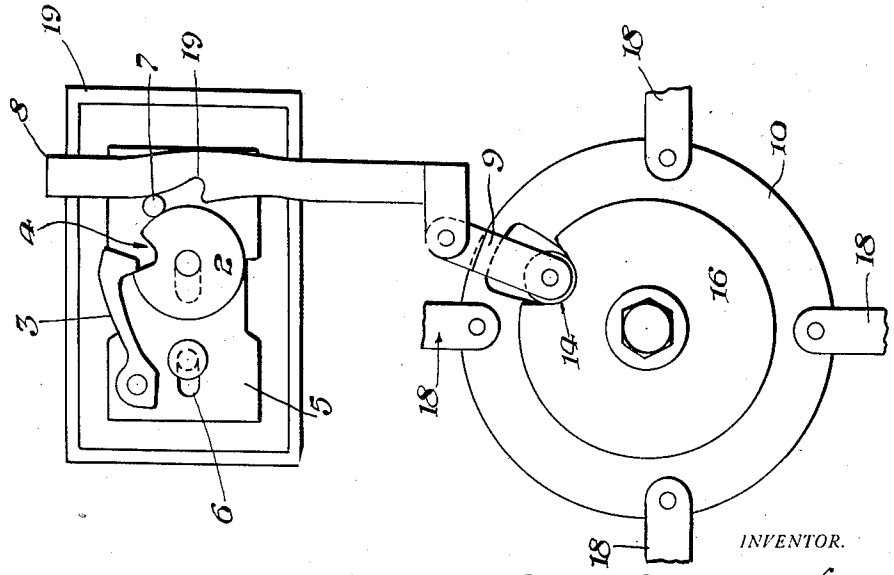


Fig. 10.



INVENTOR.

Manuel Bretos Y. Claveria

BY Francis E. Boyce

ATTORNEY

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UNITED STATES PATENT OFFICE

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SAFE AND VAULT LOCKING AND UNLOCKING MECHANISM

Manuel Bretos y Claveria, Mexico City, Mexico

Application August 19, 1944, Serial No. 550,191
In Mexico January 4, 1944

3 Claims. (Cl. 70—119)

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My invention relates particularly to an improved locking and unlocking mechanism for safes and vaults and similar doors which are intended to be secured against the efforts of burglars and other persons attempting to tamper with the safe.

The main object of my improvement is to provide a secondary or auxiliary locking and unlocking mechanism. The secondary mechanism includes means which consists in the arrangement of diverse operative members as hereinafter set forth.

In the accompanying drawings,

Fig. 1 is a view of the inner face of a safe door to which my improvement has been applied and shows the mechanisms in locking position.

Fig. 2 is a view similar to Fig. 1, but showing the mechanism in unlocking position;

Fig. 3 is a side view of one of the operating disks and its actuating roller secured on the inner surface of the safe door;

Fig. 4 is a side view of another disk constituting a feature of the invention;

Fig. 5 is a perspective view of a link member forming another element of the invention;

Fig. 6 is a perspective view of a bar adapted for operation in association with the link shown in Fig. 5;

Figs. 7, 8, 9 and 10 are broken away side views illustrating the position of the locking mechanism at different stages of its operation; and

Fig. 11 is a transverse sectional view taken approximately on the line 11—11 of Fig. 2.

Referring to the drawing, 1 designates the inner face of a safe door, on which is mounted for operation by the usual numbered dial D (Fig. 11) on the outer side of the door a disk combination 2, the indivdual disks of which are each provided with a peripheral depression 4 for engagement with a detent 3 pivotally mounted on an auxiliary locking device 5 mounted on the door, said locking device having a guide slot 6 through which passes a headed pin secured in the door whereby the locking device 5 is slidable longitudinally thereof. In its forward edge the locking device 5 carries a short pin 7 disposed in position to engage an indentation 19 in the edge of a vertically slidable bar 8 thereby to maintain said bar in its uppermost position when the safe is locked, as indicated in Fig. 1. The said bar 8 at its lower end has a bifurcated portion at right angles thereto and in said portion is pivoted a link 9 carrying a pair of rotatable rollers 11 and 14 for cooperation with a disk 10 mounted for rotation below the locking device 5, as hereinafter described.

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To the said disk 10 are pivoted the ends of four radially extending bars 18 the opposite ends of which are pivotally connected respectively with the four locking plates 17 of the safe, said disk being mounted for free rotation on the spindle of the usual door handle H disposed on the outside of the door.

On the pivotal axis of the disk 10, that is to say, on the spindle of the door handle, is secured a disk 16 having a peripheral indentation 15 for engagement by the roller 14 when the locking device 5 is operated by manipulation of the usual numbered dial and the consequent rotation of the guide 12 carried by the disk 13 to move said locking device away from the bar 8 so that the latter will descend by gravity until the roller 14 engages the said indentation 15, whereby on turning the operating handle of the safe the disk 16 is rotated and with it the disk 10 because of the engagement of the roller 11 with the uppermost radial bar 18 as hereinafter described, thereby moving the radial bars 18 to the position shown in Fig. 2 thus withdrawing all of the locking plates 17 and permitting the safe to be opened. On the other hand, when the safe is to be locked by rotating the usual door handle counter-clockwise the disk 16, and with it the disk 10, is rotated to move the link 9 on the bar 8 to vertical position thus raising said bar until its indentation 19 is in position to be engaged by the pin 7 carried by the locking slide 5, so that the radial bars 18 are retained in the locking position shown in Fig. 1. In other words, in order to open the safe, the usual graduated dial on the outside of the safe door is operated until the last numeral thereon is opposite the index mark of the combination. Then on rotation of the knob the disk 2 is also rotated until its indentation 4 is engaged by the detent 3, whereby the locking device 5 is moved so that its pin 7 is carried out of engagement with the indentation 19 in bar 8, whereupon the said bar 8 descends by gravity and roller 14 comes into contact with the edge of disk 16. Then by rotating the usual handle or pilot wheel for opening the door of the safe the disk 16 is also rotated and the roller 14 falls into the indentation 15 in said disk thereby limiting its rotation. By the same movement the second roller 11 carried by the link 9 has engaged the uppermost radial bar 18 at its pivotal connection with the disk 10 and caused said disk to rotate with the disk 16 thereby moving all of the radial bars 18 into the safe-opening position shown in Fig. 2.

To lock the safe, the handle or pilot wheel is rotated in the reverse or counter-clockwise direc-

tion whereby disk 16 pushes rollers 14 and 11 towards the right in Fig. 2, bar 8 remaining in its upright position. As soon as the disk 16 has been rotated sufficiently to move the link 9 to vertical position the combined weight of the bar and link acting on the disk 16 by means of the roller 14 further rotates said disk, and with it the disk 10 until the latter has moved the radial arms to the closing position shown in Fig. 1. In the meantime, by manipulating the graduated dial in the reverse direction the bar 8 is moved upward and the locking slide 5 moved forward until its pin 7 enters the indentation 19, thus retaining the bar 8 in its uppermost position. After this operation the handle or pilot wheel is free to rotate in either direction, as is also the graduated hand wheel for operating the combination lock.

A special advantage of the invention lies in the fact that the combination-locking mechanism is secured to the inner wall of the safe casing, so that a would-be burglar cannot destroy it.

Having thus described my invention what I claim is:

1. The combination with a safe door having a main locking mechanism, of an auxiliary locking device comprising a vertically movable bar having means cooperating with the main locking mechanism for normally retaining said bar in its uppermost position, a rotatable disk disposed below said bar and having means for actuating the closing members of the safe, said bar having at its lower end a roller disposed in position to engage said actuating means, and means associated with said roller for rotating the disk and operating said actuating means thereby to move the closing members into safe-opening position.

2. The combination with a safe door having a main locking mechanism, of an auxiliary locking device comprising a vertically movable bar having means cooperating with the main locking mechanism for normally retaining said bar in its uppermost position, a rotatable disk disposed below said bar, radial arms pivotally connected with said disk and with the closing members of the safe for actuating the same, said bar having at its lower end a roller disposed in position to engage one of said radial arms, and means associated with said roller for rotating the disk and thereby operating said radial arms to move the closing members into safe-opening position.

3. The combination with a safe door provided with a main locking mechanism having locking bolts and means for operating said locking mechanism actuating said bolts, of an auxiliary locking device associated with said main locking mechanism for operation by manipulation of said locking mechanism, the organization being such that when the safe is locked said operating means are free to rotate in either direction.

MANUEL BRETOS Y CLAVERIA.

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