(No Model.)

A. KIRKS.

OPERATING MECHANISM FOR DOORS OF SAFES AND VAULTS.

No. 384,262. Patented June 12, 1888.

Fig. 5.

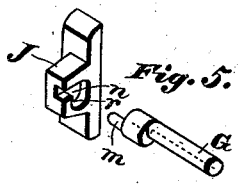
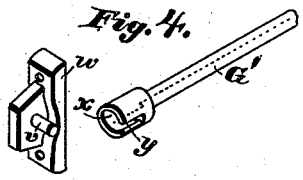


Fig. 4.



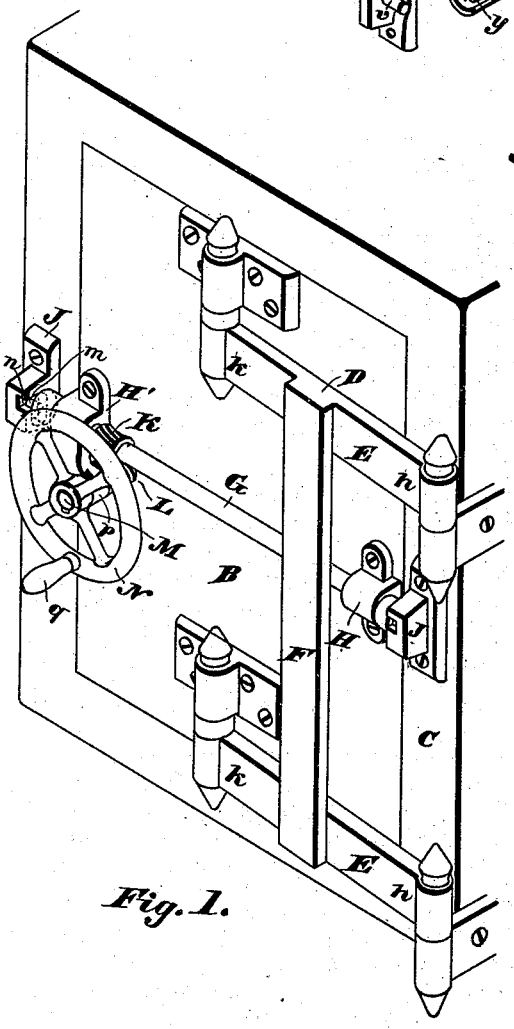


Fig. 1.

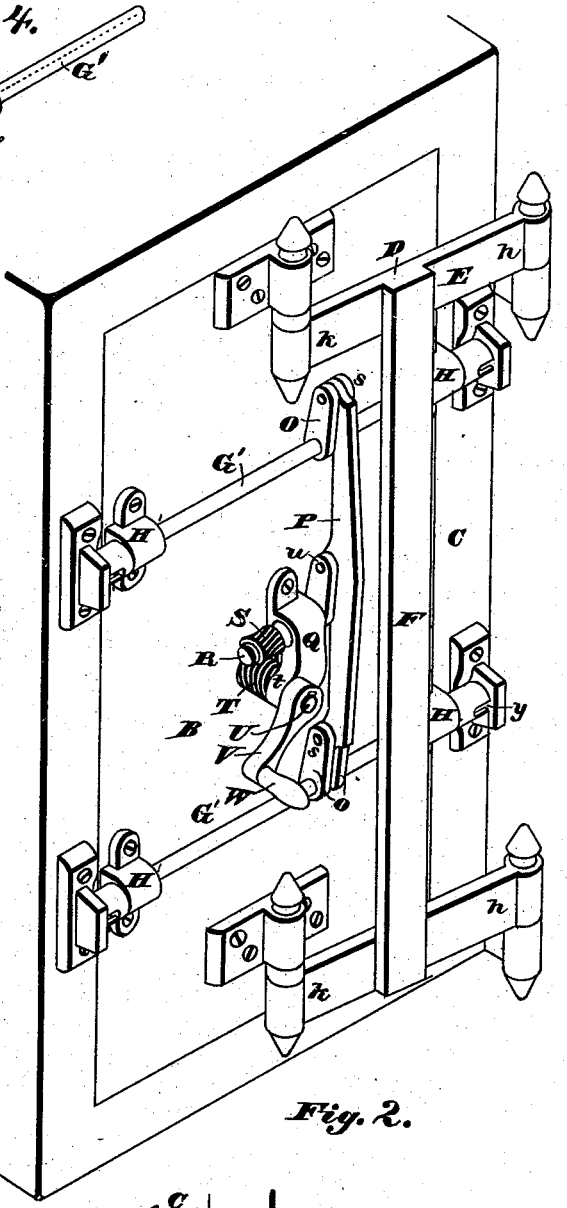


Fig. 2.

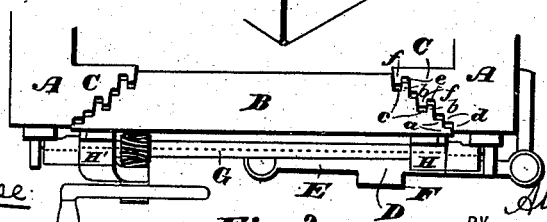


Fig. 3.

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OPERATING MECHANISM FOR DOORS OF SAFES AND VAULTS.

SPECIFICATION forming part of Letters Patent No. 384,262, dated June 12, 1888.

Application filed October 14, 1887. Serial No. 252,334. (No model.)

To all whom it may concern:

Be it known that I, ALBERT KIRKS, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Operating Mechanism for Doors of Safes and Vaults, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in operating mechanism for the doors of safes and vaults; and it consists in certain features of construction and combination of parts, as will be hereinafter set forth in the claims.

Figure 1 is an isometrical view of the safe front and door, illustrating one form of my invention as applied thereto. Fig. 2 is same view of safe front and door, illustrating another form of application of my improvement. Fig. 3 is a transverse sectional view of Fig. 1. Fig. 4 is a view in perspective comprising parts shown in Fig. 2 detached. Fig. 5 is a view in perspective comprising parts shown in Fig. 1 detached.

Similar letters of reference indicate corresponding parts in all the figures of the accompanying drawings.

As my invention is applicable to many of the well-known forms of safe and vault doors, as well as different plans of hanging such doors, I will, for the purpose of this application, proceed to describe my invention, referring to the safe and other parts only as conjunctional thereto.

Letter A represents a safe-frame, and B a safe-door, the outer edge of which is provided with offsets *a*, tongues *b*, and grooves *c*. The door-jamb C has similar offsets, *d*, grooves *e*, and tongues *f*. In the grooves *c* and *e* there is placed a suitable packing, against which the tongues *b* and *f* are pressed when the said tongue enters the grooves *c* and *e*.

To carry the door vertically into the jamb, the tongues *b* and *f*, parallel with and entering the grooves *c* and *e*, there is provided a swinging frame or crane, D, formed in this case of the hinged parallel bars E and a vertical strut, F. The ends *h* of the bars E have a pivotal connection with the body or frame of the safe, and to the free ends *k* of said bars the door B is pivotally secured.

To force the door into locking position, one or more presser-shafts, G, Fig. 1, G′, Fig. 2, are provided, supported in journal-boxes H and H′. On the ends of said shafts there is provided an outwardly-projected pin, *m*, (see Fig. 5,) which is eccentric to a line drawn through said shaft.

To the front of the safe frame there are secured outwardly-projected abutments J, having on their inner side face a right-angle groove or camway, *n*, adapted to receive the eccentric-pin *m* when the door is closed. On the shaft G, Fig. 1, there is mounted a worm-wheel, K, that engages a worm, L, mounted on a cross-shaft, M, said shaft supported by and rotated in a journal-box, *p*, integral with the journal-box H′, and a suitable end support in the door. On the outer end of said shaft M is mounted a crank-wheel, N, or other form of handle-crank, as *q*, by which the said shaft may be rotated.

The operation is as follows: When the door is swung into the jambs, the pins *m*, resting above the center line of the shaft G, pass into the opening *n*, and by turning the crank N, rotating the shaft M, and the worm L, engaging worm-wheel K, the shaft G will be rotated, turning the pins *m* down into the groove *n* and against the abutting side *r* of groove, whereby the door will be forced into its proper position, the tongues *c* and *f* resting against the packing in the grooves *c* and *b*, forming an air and gas tight joint, and at the same time bring the locking-bolts into register with the perforations provided therefor in the door-jambs. By a reverse movement of the crank the door may be drawn out and swung open. By this arrangement a compact and powerful means for closing and opening the door against the atmospheric pressure, both within and without the safe, is secured.

In Fig. 2 is shown one method of applying my invention to large safe or vault doors, and consists in providing two presser-shafts, G′, supported in journal-boxes, as H, provided with outwardly-projected arms O, secured

thereto, said arms having at their outer ends a pivotal connection, as *s*, with a link, P, by which the two shafts G′ are connected through the arms O. To operate said link for the purpose of rotating the presser-shafts G′, a journal-box and hanger, Q, is provided, as shown, in which a crank-shaft, R, is supported, the crank having a pivotal connection, as *u*, with the link P, that in movement will coincide with the pivotal connection of the said link to the arms O. On the free end of the crank-shaft R there is mounted a worm-wheel, S, which engages with a companion wheel, T, mounted on the shaft U, which is supported in the hanger *t* and a suitable end support resting on the door. On the outer end of the shaft U there is mounted an operating crank, V, having a handle, W, by which the shaft and worm-wheels T and S may be rotated, whereby the link P may be vibrated and the shaft G rotated, as and for the purpose hereinbefore stated in describing the parts comprised in Figs. 1 and 5; or, if preferred, other forms of cams, abutments, and eccentrics may be used, such as shown in Figs. 2 and 4, in which a stationary pin, *v*, is supported by hanger *w*, and on the end of the shaft G′ an eccentric end aperture or cam, *x*, open on one side, as *y*, through which the abutting-pin may be passed into engagement with the eccentric portion of the aperture, by which the door may be forced into locking position.

Having thus fully described the nature and object of my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the door-frame and the door hinged thereto and capable of a tilting movement on its own pivotal connection independent of its swinging movement on its hinge-connection with the door-frame, of a rotary presser-shaft, a worm-wheel and worm for rotating said shaft, and eccentric mechanism connected with the shaft and frame, whereby the rotary movement of the shaft will cause the door to move bodily toward and away from its seat in the frame, substantially as set forth.

2. The combination, with the door-frame and the door hinged thereto, of presser-shafts having lugs or arms projected laterally therefrom, a link connecting the projecting arms, a worm-wheel having a crank-connection with the link, and a worm in engagement with the worm-wheel and provided with an operating-crank whereby the presser-shafts are simultaneously rotated, substantially as set forth.

3. The combination, with the door-frame and the door hinged thereto, of a presser-shaft having an eccentric aperture or groove in the end thereof, open at one side, a stationary pin adapted to engage the said eccentric groove, and means for rotating the presser-shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand this 10th day of October, A. D. 1887.

ALBERT KIRKS.

Witnesses:
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