

(No Model.)

2 Sheets—Sheet 1.

W. CORRY.  
SAFE, VAULT, &c.

No. 363,118.

Patented May 17, 1887.

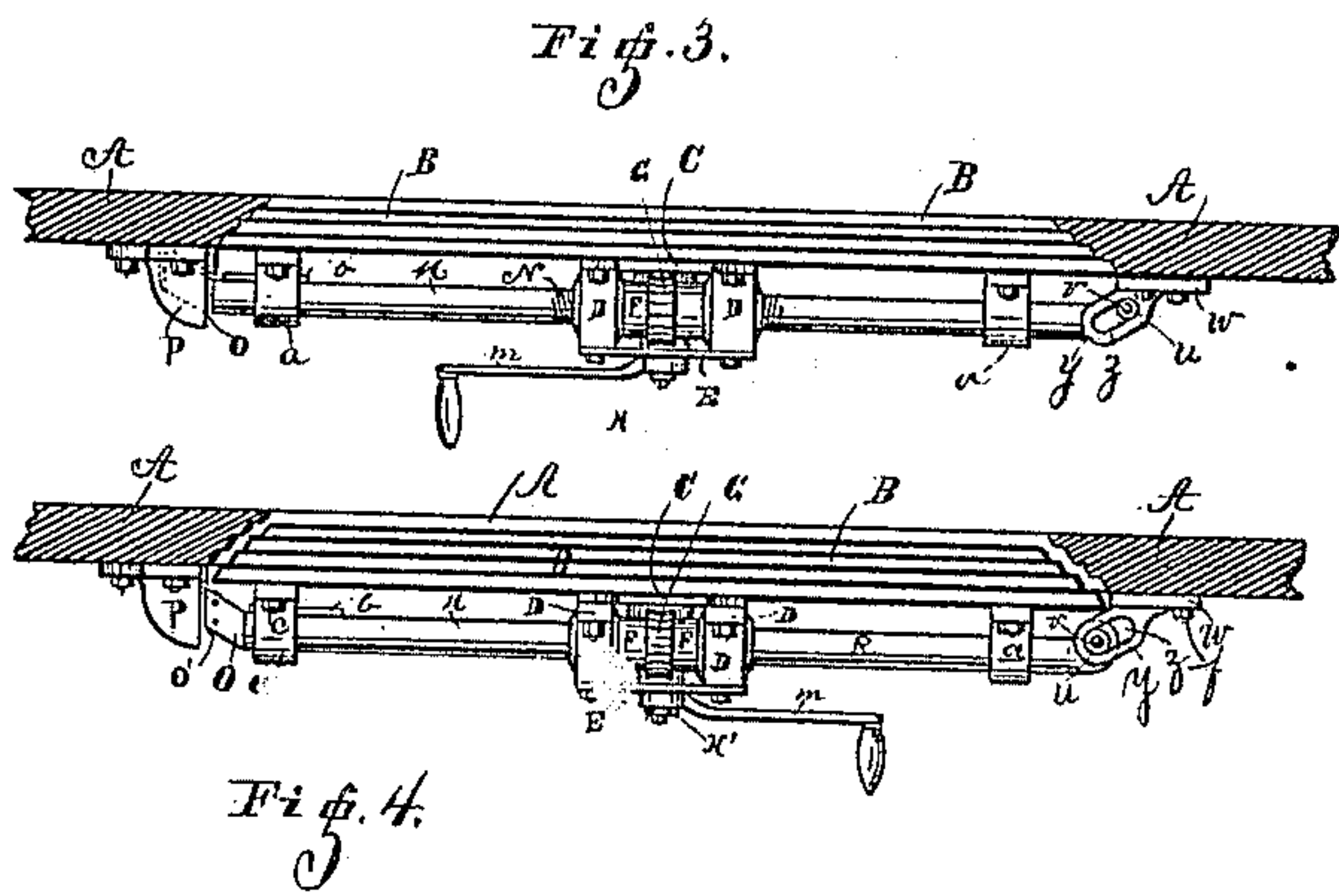
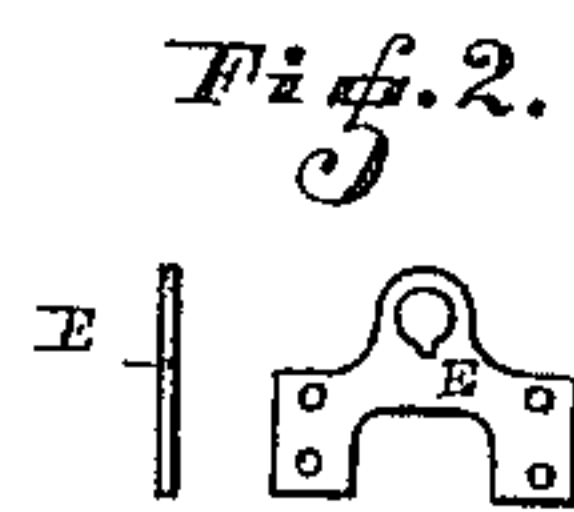
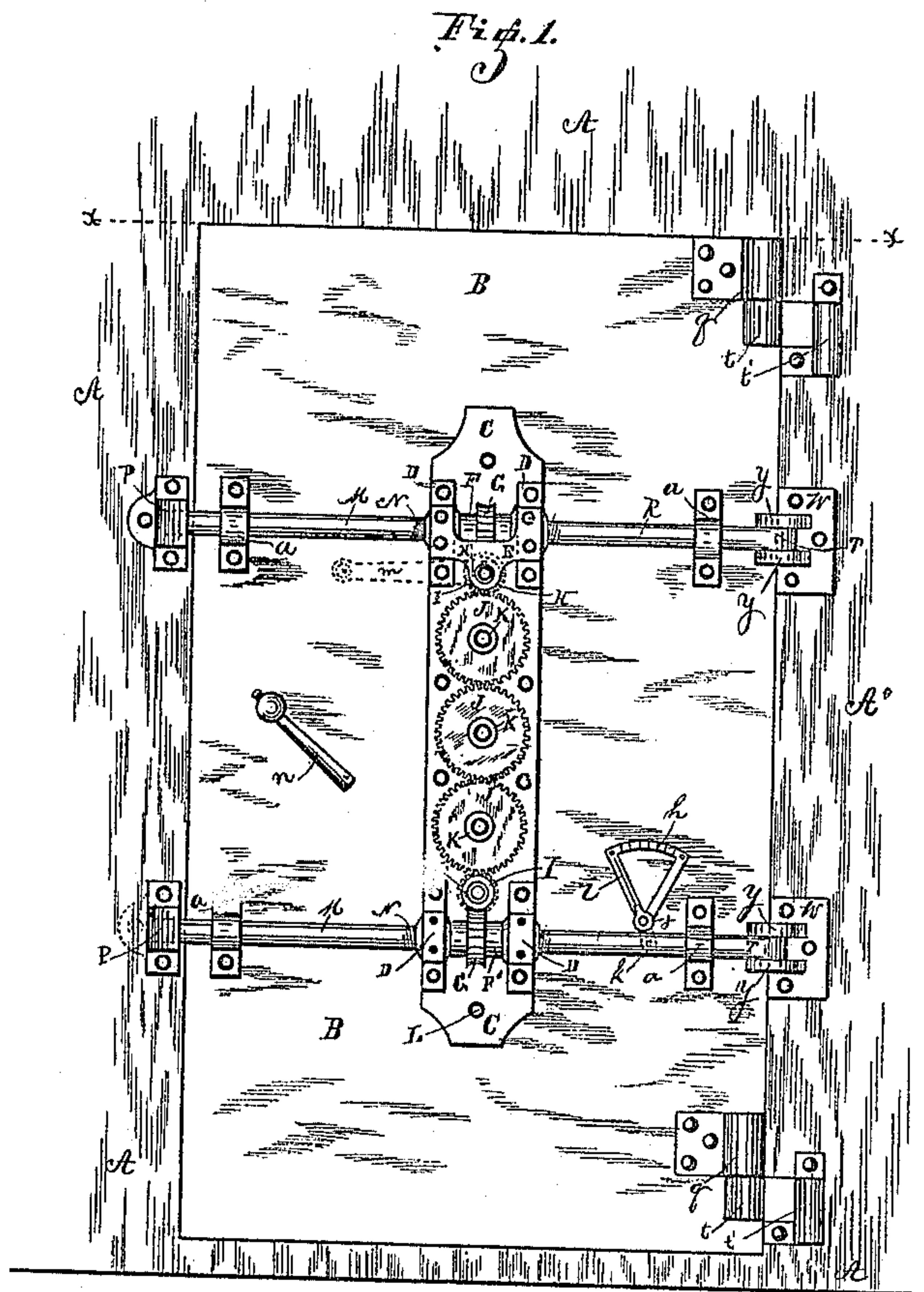


Fig. 4.

WITNESSES:  
R. J. Pullen  
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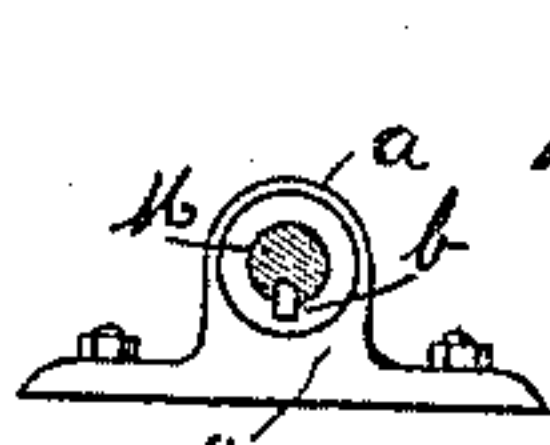


Fig. 5.

William Corry INVENTOR

(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

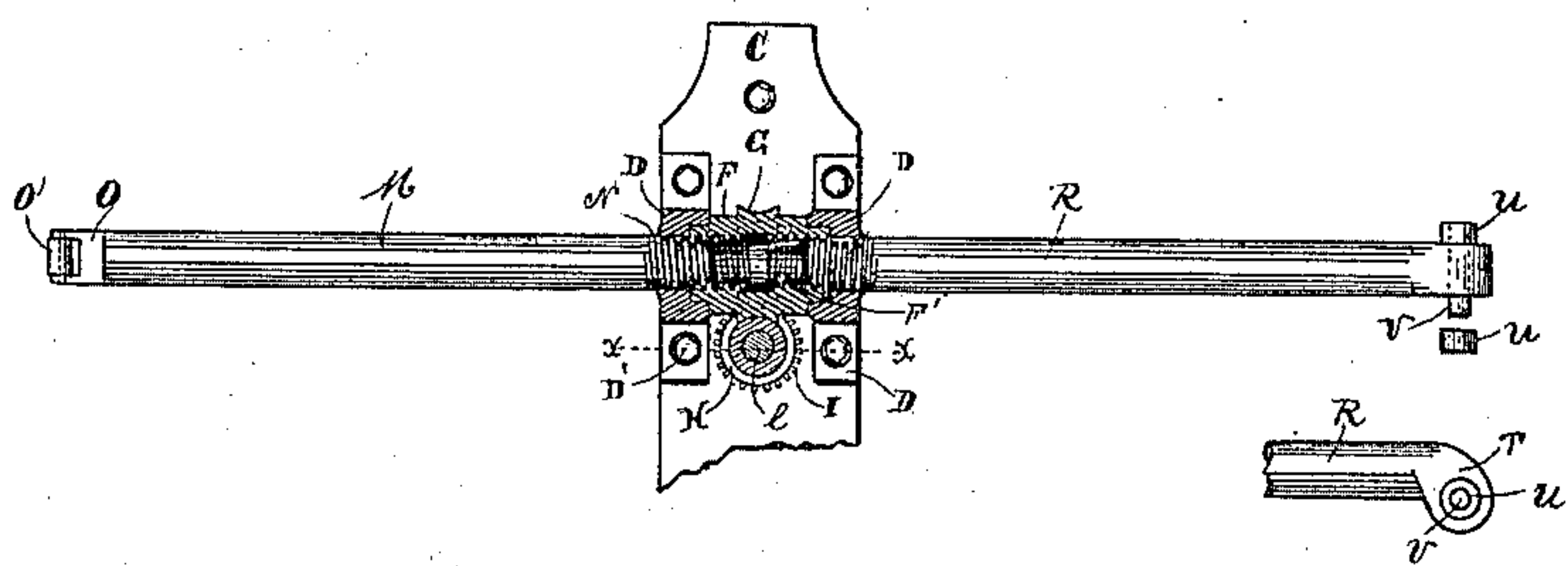
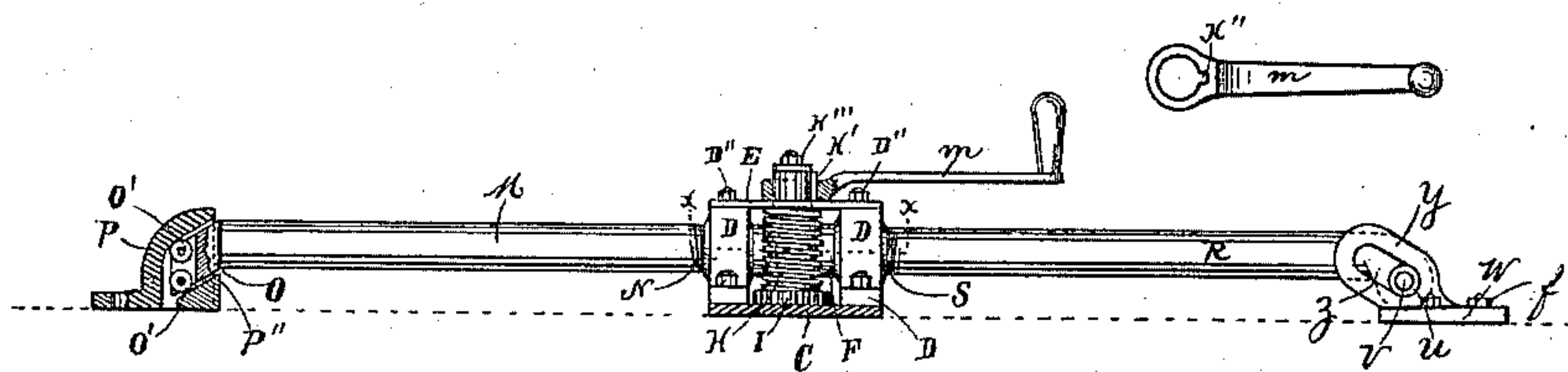
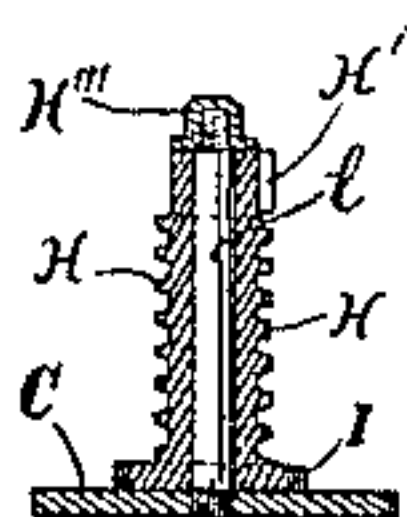


Fig. 7.



*Fini. 8.*



*WITNESSES:*

R. T. Pullen  
E. C. Hall

William Cory INVENTOR



# UNITED STATES PATENT OFFICE.

WILLIAM CORRY, OF CINCINNATI, OHIO, ASSIGNOR TO HALL'S SAFE AND LOCK CO., OF SAME PLACE.

## SAFE, VAULT, &c.

SPECIFICATION forming part of Letters Patent No. 363,118, dated May 17, 1887.

Application filed January 25, 1887. Serial No. 225,451. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CORRY, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful  
5 Improvements in Safes, Vaults, &c., of which the following is a specification.

My invention relates to means for closing the doors of safes, vaults, pneumatic cabinets, and the like; and the invention consists in a series  
10 of bolts arranged to operate on inclines, with gearing for operating the same, whereby the door can be forced to its seat, as hereinafter more fully set forth.

Figure 1 is a front elevation, and Fig. 2 a  
15 front and edge view of a portion detached; Fig. 3, a transverse horizontal section on the line *x x* of Fig. 1, showing the door closed; and Fig. 4 is a similar view showing the door released and ready to be swung open. Figs. 5,  
20 6, 7, and 8 are views, partly in section, of certain details.

This invention is designed to be applied to that class of safe and vault doors which are arranged to move straight into and out of their  
25 seat in the jambs of the safe or vault, and after being thus moved out of their seat be turned on their hinges, which are specially constructed to permit of such movements, and which being well understood need not be herein described,  
30 the object of this invention being to provide means by which the door can be forced to its seat with great power, so as to close it tight, it often being difficult, especially after the hinges have become worn by use, so as to per-  
35 mit the heavy doors of safes and vaults to sag a little, to force them fully to their seats when closed, without which the bolt-work will not readily enter its holes in the jambs. There are  
40 also manufactured at the present day what are known as "pneumatic cabinets," which, like safes, are made of metal, and which require to have their doors close air-tight, to enable pa-  
45 tients to be treated therein by various pneumatic methods or processes; and this invention is designed for use in that connection also, the doors or jambs of these pneumatic cabinets being usually provided with a rubber packing to more readily render their joints air-tight.

Referring to the drawings, A indicates the  
50 front wall or face of a safe, vault, or cabinet;

and B the door of the same hung on the hinges *q*, *t*, and *t'* of the kind above mentioned.

C represents a plate securely fastened to the outside of the door, upon which is secured the  
55 gearing that operates a series of bolts, M and R, and also the bearings for the inner ends of said bolts. These bolts M are arranged in pairs, as shown, their outer ends being supported in brackets *a*, in which they can slide to and fro, and where they are provided with  
60 a feather, *b*, as shown in Figs. 3, 4, and 5, to prevent them from turning. At their inner portions these bolts are supported in brackets D, secured to the plate C, as shown in Figs. 1,  
65 2, 3, 4, 6, and 7, their inner ends protruding through the brackets D, so as to enter a sleeve, F, which is journaled at its ends in said brackets, as shown in section in Fig. 6. This sleeve  
70 F has a right-hand screw-thread cut on its interior at one end, and a left-hand thread in like manner at its opposite end, the bolts M  
75 and R having corresponding screw-threads cut on their adjoining ends, so that by turning the sleeve F in one direction the bolts M and R will be simultaneously screwed into the sleeve, thereby drawing the bolts toward each other  
80 endwise, and by turning the sleeve in the opposite direction the bolts will be simultaneously shoved apart or thrust outward endwise.

For the purpose of giving motion to the  
80 sleeve F it has a central hub or projection, G, as shown in Figs. 1, 3, and 4, on the periphery of which is cut a series of teeth to form a worm-wheel which engages with a worm or screw  
85 shaft, H, located directly under it, as shown more clearly in Fig. 6, the inner end of which is supported in the plate C, while its outer end is supported by a bracket or plate, E, secured to the brackets D, as shown in Figs. 1, 3, and  
90 4, the bracket E being shown detached in Fig. 2, the end H' of said worm H projecting out from or beyond the bracket E far enough to receive a crank, *m*, as shown in Figs. 3 and 4  
95 and by dotted lines in Fig. 1, by which the worm can be turned when desired. The worm H is provided at its inner end with a pinion or spur wheel, I, as shown in Figs. 6, 7, and 8, and which, as shown in Fig. 1, engages with the first of a series of spur-wheels, J, mounted  
100 on studs K, secured to plate C, the last of the



series of these wheels J engaging with the pinion I' of a second worm, H', which operates another sleeve, F', located at the junction of the lower set of bolts, M and R, as shown in Fig. 1, the lower set of bolts, sleeve, worm-wheel, and worm being a duplicate of those above. It will thus be seen that by turning the crank *m* motion will be transmitted from the worm H to both sleeves F and F' simultaneously through the medium of the pinions I and I' and the intermediate gear-wheels J, so that both sets of bolts will be simultaneously thrust outward or drawn inward, according as the crank is turned in one or the other direction.

In order to crowd or force the door to its seat, the ends of the bolts M are bent so as to form an inclined portion, O, as shown in Figs. 4 and 7, and which, as the bolts are forced outward, enter correspondingly-inclined sockets or cavities in brackets P, securely fastened to the jamb or wall of the safe A on that side, these inclined ends O of the bolts M being preferably provided with anti-friction rollers O', as shown more clearly in Fig. 7, so set as to bear against the inclined inner faces of the sockets in the brackets P to reduce the friction of the parts. On the opposite jamb or wall I secure brackets T, which have two projecting arms, *y*, in each of which is an inclined slot, *z*, shown in Figs. 3 and 4, the outer end of the bolts R on that side of the door working between these slotted arms *y*, as shown in Fig. 1, and carrying a pin, *v*, upon each end of which is a roller, *u*, as shown in Figs. 6 and 7; which pin and rollers work in the slots *z* of the arms *y* of the brackets T, the inclination of the slots *z* being the same as that of the sockets in the brackets P at the opposite side.

It will readily be seen that when the door B is swung on its hinges to the position shown in Fig. 4, parallel with the face of the safe or vault, then, by turning the crank so as to move the bolts outward, they will operate on the inclines at both sides simultaneously and uniformly, and thereby force the door into its seat, or to the position shown in Fig. 3, and so as to crowd it shut tight.

By reversing the motion of the crank, and thereby withdrawing the bolts, they will operate on the inclines in a reverse manner, and thereby force the door out of its seat to the position shown in Fig. 4, this being of special use in the case of the heavier doors of vaults and safes when the wear on the hinges permits the door to settle or sag so as to bear with considerable weight on the bottom or on the side.

It is obvious that, if desired, more than two pairs of bolts, M and R, may be thus arranged on a door, it only being necessary to duplicate the gearing and worms for operating the additional bolts. It is also obvious that where two

or more pairs of bolts are used and connected by intermediate gear the crank may be applied to either of the worms, or to any of the intermediate wheels, and impart motion to all simultaneously.

Having thus described my invention, what I claim is—

1. In combination with a safe, vault, or similar box or inclosure, a door, B, having applied thereto a series of bolts with inclines at their outer ends arranged to act in connection with corresponding inclines on the safe, vault, or box, substantially as shown and described, whereby said bolts can be made to force the door to its seat when closed and also force the door from its seat by reversing the movement of the bolts.

2. In combination with a pair of bolts applied to the door of a safe, vault, or box, and provided with inclines at their ends arranged to operate in connection with corresponding inclines on the safe, vault, or box, substantially as described, the screw-sleeve F, provided at its opposite ends with screw-threads of opposite pitch arranged to engage with corresponding threads on the bolts, and mechanism, substantially such as described, for rotating said sleeve, and thereby imparting an endwise movement to said bolts, substantially as and for the purpose set forth.

3. In combination with the door of a safe, vault, or similar receptacle, a pair of sliding bolts, R M, having their inner ends connected by a sleeve and having a right and left hand thread and a worm-wheel, G, and a screw or worm, H, engaging with the worm-wheel and adapted to receive a crank or lever for the purpose of imparting to said bolts the force necessary to crowd the door to or from its seat, as set forth.

4. The combination, with a safe or vault door, of two or more pairs of bolts, R M, each pair of bolts being connected at their inner ends by a sleeve, F, provided internally with a right and a left hand screw-thread and externally with a worm-wheel, G, a worm or screw, H, provided with a pinion, I, and a series of intermediate wheels, J, connecting the worms of the separate pairs of bolts, with means for imparting motion to the same, substantially as and for the purpose set forth.

5. In combination with the bolts of a door, B, arranged to operate as described, the index or pointer *i*, pivoted to the door and connected at one end to one of the bolts, whereby its opposite end is caused by the movement of the bolt to indicate the distance the bolts have moved, substantially as shown and described.

WILLIAM CORRY.

Witnesses:

R. T. CULLEN,  
A. ACTON HALL.