(No Model.)

W. CORRY.

MECHANISM FOR CLOSING AND OPENING SAFE DOORS.

No. 463,698. Patented Nov. 24, 1891.

Fig. 1.

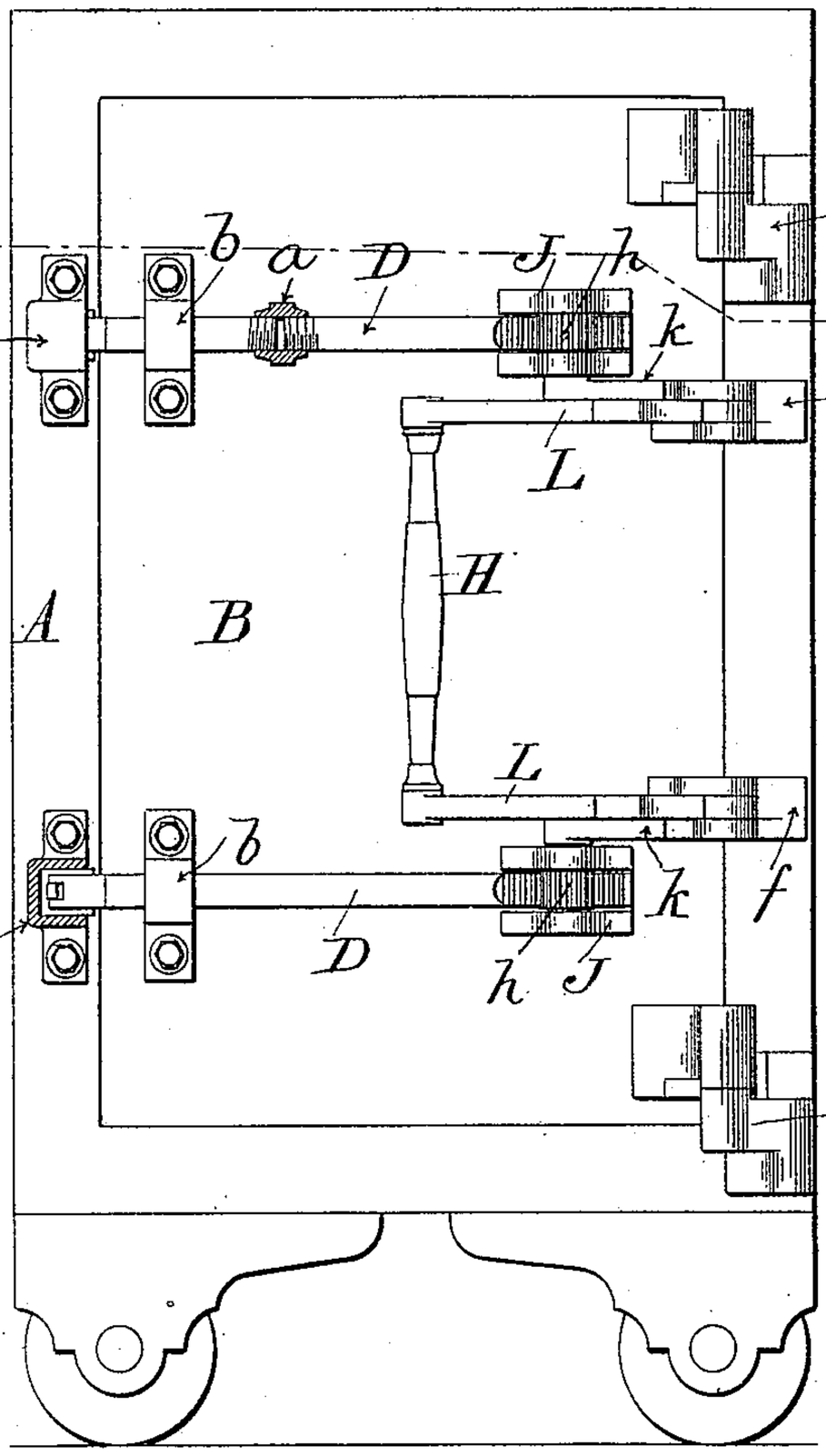
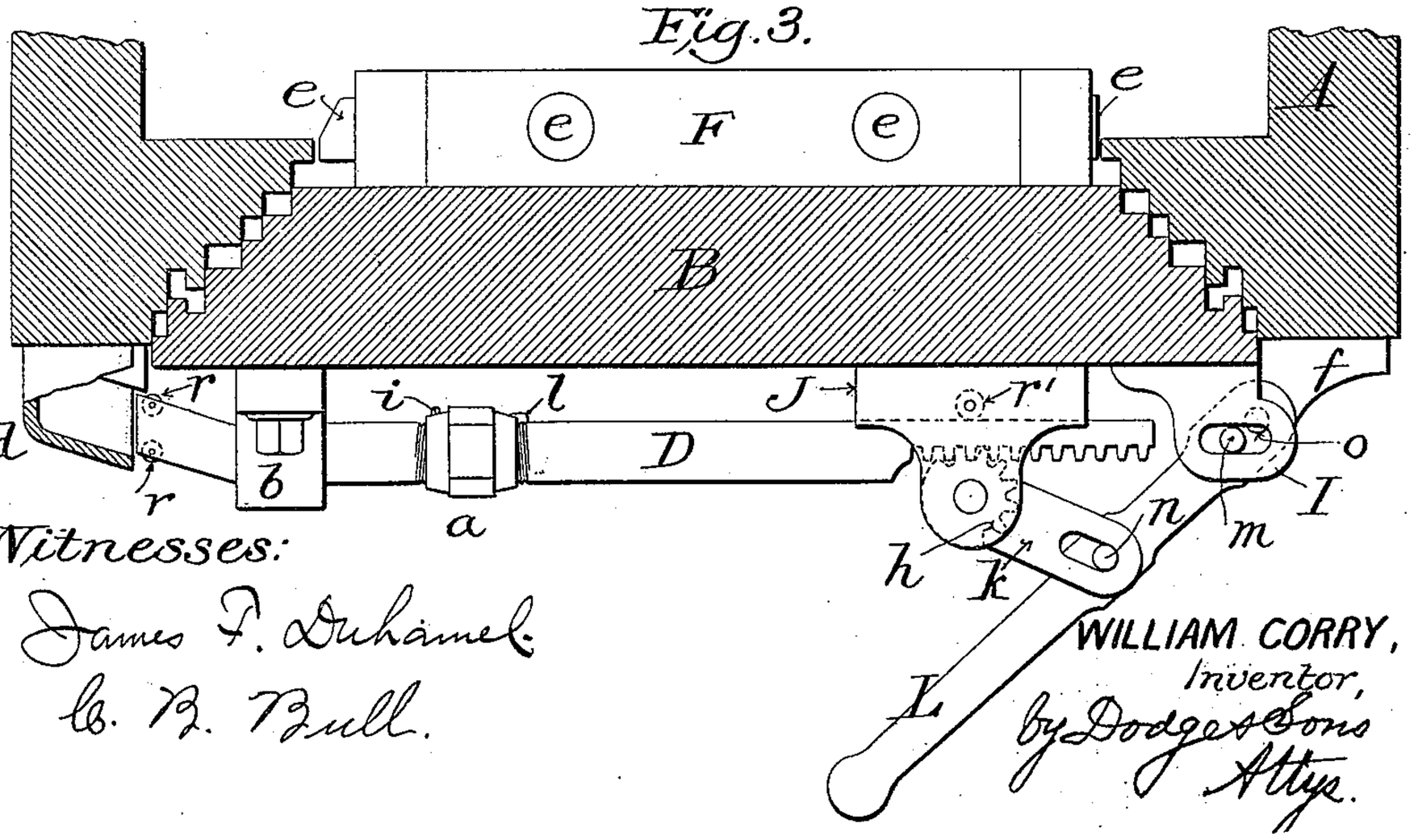


Fig. 2.

Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM CORRY, OF CINCINNATI, OHIO, ASSIGNOR TO HALLS SAFE AND LOCK CO., OF SAME PLACE.

MECHANISM FOR CLOSING AND OPENING SAFE-DOORS.

SPECIFICATION forming part of Letters Patent No. 463,698, dated November 24, 1891.

Application filed August 10, 1891. Serial No. 402,260. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CORRY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Mechanism for Closing and Opening Safe and Vault Doors, of which the following is a specification.

This invention relates to safes, vaults, and similar receptacles; and the invention consists in means for opening and closing the door, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a front elevation of a safe having my improvements applied thereto. Fig. 2 is a similar elevation taken at right angles to Fig. 1; and Fig. 3 is a transverse horizontal section on the line *x x* of Fig. 1, showing the door swung into position and ready to be forced into place.

This invention is designed to be used in connection with that class of doors on safes and vaults which are provided with interlocking projections engaging in corresponding grooves in the jambs of the body, or vice versa, or both, and which necessitates moving the door bodily straight in and out in closing and opening the same in a manner well understood, the door being for that purpose hung on double hinges, as usual in such cases.

In Patent No. 363,118, granted to me May 17, 1887, I described pressure-bars applied to the doors of safes, &c., with inclines operating to force the door in and out, and my present invention is designed to provide means for operating the pressure-bars and at the same time secure a positive and uniform movement of the door and by which the attendant can exert great force thereon.

In the drawings, A represents the body of a safe; B, the door; C, the hinges, and D the pressure-bars, which are secured upon the outer face of the door and have one end inclined to engage in an inclined socket in a clip *d*, firmly secured to the wall or body near the edge of the door in the same manner as described in my former patent above mentioned, it being provided with friction-rollers *r*, as therein described and as shown in Fig. 3. In the former patent these pressure-bars were provided with an inclined slot at their rear ends to force the door in and out at that side; but in the present case I dispense with this, the rear end of the pressure-bars D stopping short of the edge of the door, as shown in Figs. 1 and 2, their face for some distance being provided with teeth, as shown more clearly in Fig. 3, which engage with pinions *h*, journaled in brackets J, secured to the front of the door, the bar D sliding in a recess in the brackets in rear of the pinions, there preferably being a friction-roller *r'* seated in the bracket in rear of the bar, as shown in dotted lines in Fig. 3. To each of these pinions *h* is rigidly secured an arm *k*, which has a slot in it, as shown in Fig. 3, there being one of these pinions and slotted arms for each pressure-bar, of which two are usually applied to the door, as shown in the drawings, though more may be used, if desired. To the face of the door at its rear edge I secure two or more brackets I, which are also provided with a slot, as shown clearly in Fig. 3. To operate these various parts I provide two levers L, which are hinged or pivoted at *o* to brackets *f*, firmly secured to the wall or body A, these being so located that their pivot or journal *o*, on which the levers are hung, shall be in line with the edge of the door, as shown in Fig. 3. These levers are connected at their opposite or free ends by a handle-bar H, by which they are moved when desired. Each lever, as shown in Fig. 3, is provided with two pins *n* and *m*, the former being arranged to engage in the slot in the pinion-arm *k* and the latter in the slot in the bracket I on the door. With these devices thus arranged it will be seen that when it is desired to close the door it is first swung on its hinges to the position shown in Fig. 3, when by pressing on the handle-bar H the levers L are forced inward toward the door. The pins *m*, moving in their slots, operate to press or force the door inward at its rear edge, the pins *n* at the same time pressing inward the ends of arms *k*, and thereby turning the pinions *h*, the teeth of which, engaging with those of the pressure-bars, shove the latter endwise, their inclined ends engaging in the sockets of the clips *d* and forcing the door inward at that edge also, the parts all moving simultaneously and working together to force the door into its seat

with great force. To open the door or draw it out of its closed position, it is of course only necessary to reverse the movement by pulling the handle-bar H outward. It is obvious that this method of operating the pressure-bars by means of the pinions and the levers L may be applied with equal facility to the pressure-bars (described and shown in my former patent) with inclines at both ends; but in that case the slotted brackets I on the door and the pins *m* on the levers L might be dispensed with, as their functions would be performed by the inclines at the rear ends of the pressure-bars.

With doors of the ordinary size I make the pressure-bars of a single piece, as shown in the lower part of Fig. 1; but for the larger or odd-sized doors I may make them in two parts and unite them by a nut or thimble *a*, provided with a right and left handed thread, by which means they can be adjusted to work with perfect accuracy. When once adjusted the nut *a* will be fastened by a set-screw *i* or by a wedge *l*, as shown in Fig. 3, or by lock-nuts.

The bolt-work is mounted in a frame F, secured to the inner face of the door in such a position that when the door is fully closed the ends of the bolts *e* will engage against the inner face of the walls around the sides and ends of the door, this frame, with its bolts *e*, being shown in Fig. 3. Any suitable style of bolt-work may be used and any style of time or other lock may be applied to lock the bolt-work.

This invention is of special advantage in large safes and vaults, in which large and heavy doors are used. It is obvious that more than two pressure-bars may be used, in which case, of course, the number of pinions and levers will be correspondingly increased, and that in small safes a single pressure-bar may be applied and operated in the same manner. The great power exerted by the means described enables the door to be closed very tightly, so as to leave no space or crack for the insertion of explosives, and especially so when rubber or other elastic packing is used in the grooves or joints.

Having thus fully described my invention, what I claim is—

1. In combination with one or more pressure-bars applied to the door of a safe, vault, or similar receptacle, a pinion arranged to engage with and move said pressure-bar, said pinion being provided with an arm for operating the same, and one or more pivoted levers connected to the pinion-arm, substantially as described, whereby the movement of the lever is made to impart an endwise movement to the pressure bar or bars, as and for the purpose set forth.

2. In combination with a safe or vault and its door, one or more pressure-bars adapted to press the door in and out at one edge, one or more brackets applied to the door at or near its opposite edge, one or more pinions arranged to engage with the pressure-bars, and one or more pivoted levers arranged to engage with the brackets and with the arms of the pinions, the combination and arrangement being substantially as shown and described.

In witness whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM CORRY.

Witnesses:
LOUIS DENGHAUSEN,
LEWIS BUSE.