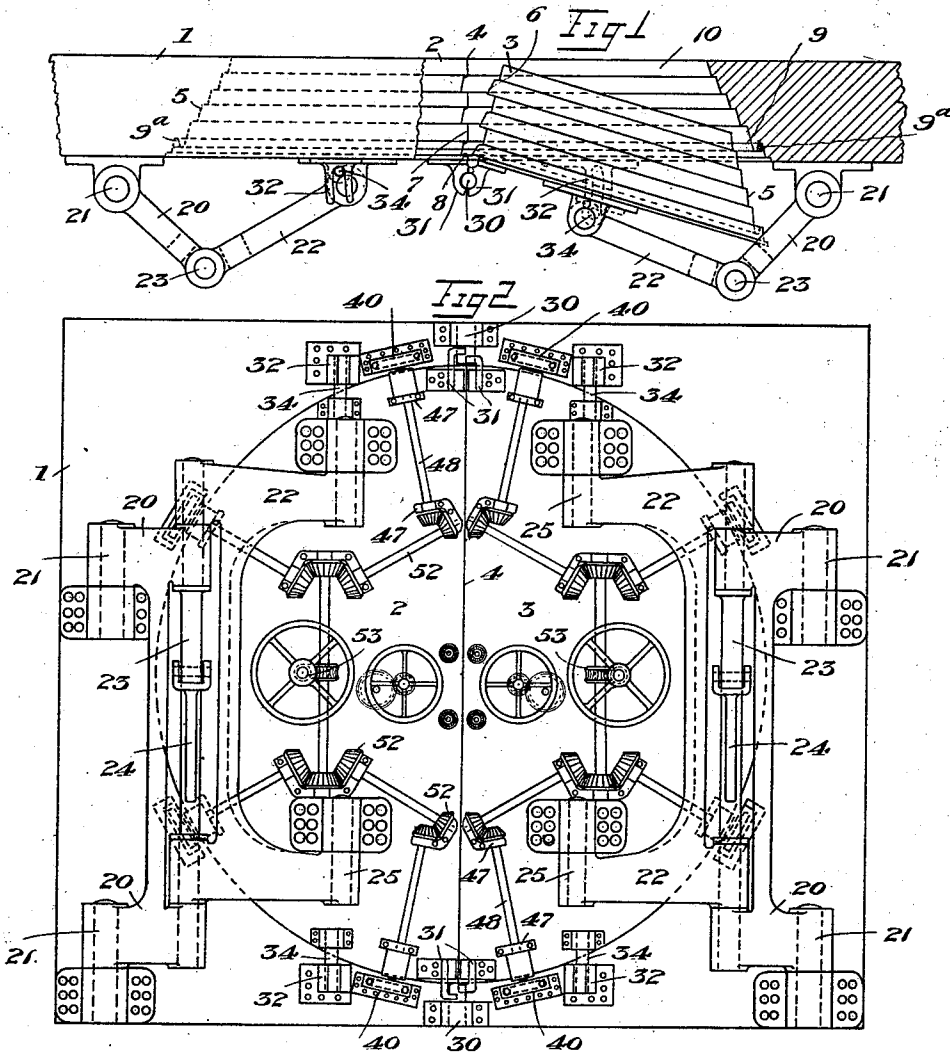


E. S. PILLARD.
DOORS FOR SAFES AND VAULTS.
APPLICATION FILED AUG. 30, 1907.

1,001,221.

Patented Aug. 22, 1911.

2 SHEETS-SHEET 1.



Edward S. Pillard ^{Inventor}

Geo. W. Hamlin
his Attorney

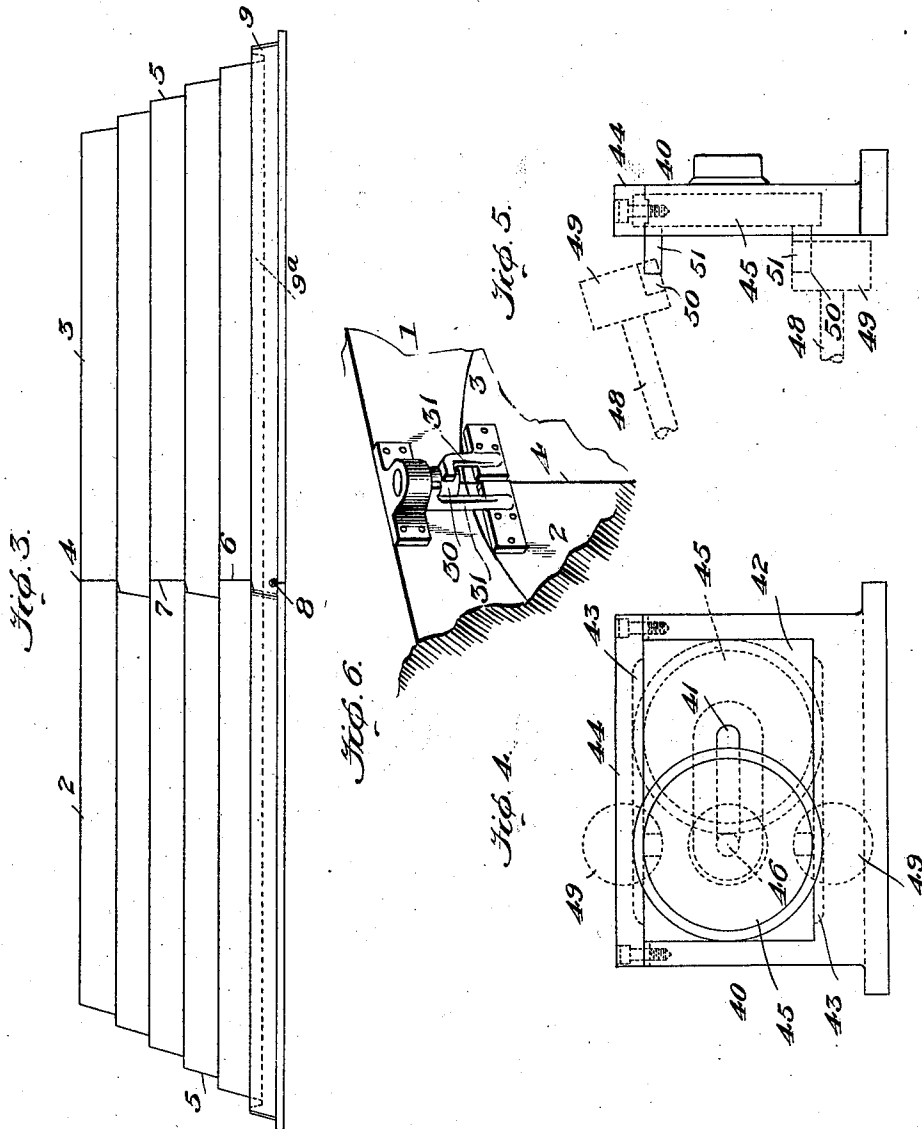
Witnesses
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Inventor

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Witnesses

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By

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UNITED STATES PATENT OFFICE.

EDWARD S. PILLARD, OF PHILADELPHIA, PENNSYLVANIA.

DOORS FOR SAFES AND VAULTS.

1,001,221.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed August 30, 1907. Serial No. 390,733.

To all whom it may concern:

Be it known that I, EDWARD S. PILLARD, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Doors for Safes and Vaults, of which the following is a specification.

My invention relates to doors for safes and vaults.

Prior to this invention, vault and safe doors have been provided either with a single outside door, or double door locked to a central mullion whether the doors have been semi-circular or quadrilateral. It is obvious that any vault or safe door is only as strong as its weakest part and the back bolts on any safe or vault door are placed at that point so that the hinges of the door cannot be removed and the door opened at that point. As the back bolts are only put on such doors for the foregoing purpose, a double door locked to a mullion at the center, is only as strong as its strength at points of locking to the mullion which are the opening points, and consequently, doors of this character are considerably weaker than a single door.

Having the foregoing weaknesses of double, mullion-locked doors in view, my invention has for its objects, first, to provide a double door for vaults and safes, the respective doors of which are controlled by their separate systems of locks and bolt-work, said doors being so hinged that either may be opened independently of the other and at the outer edge instead of the inner edge; second, to provide double doors which will engage each other where they meet, thereby entirely dispensing with the mullion heretofore employed, and making the doors practically as strong as a single door; and, third, to so guide and hinge the doors that they may be readily started on their opening movement when unlocked.

Among the advantages of my invention are, first, doing away with the necessity of having either a double entrance or any emergency door in the vault; reducing the space required in which to swing the door in opening or closing it so that but substantially only one half the space heretofore required in which to swing a vault or safe door is required.

I wish it understood that the interlocking projections of the double doors at their

meeting points is not absolutely necessary, but by such construction I obtain a strength at this point many times that which would be obtained by the use of bolts, and the invention may be used on a single door as well as on double doors; the doors may be of different desired shapes; and other changes may be resorted to.

The invention is fully set forth herein-after and the novel features are recited in the appended claims.

In the accompanying drawings:—Figure 1 is a plan view of the front of a vault, with a part of the front wall in section and another part broken away, showing the doors and the construction of door jambs; Fig. 2, a front elevation of the doors as applied to the front of a safe or vault; Fig. 3, a plan view of the doors when closed; Figs. 4 and 5 are details of the device for seating the doors in the door jamb and Fig. 6 a detail of the separable hinge.

The front wall of a burglar-proof vault is shown at 1 and the double doors 2 and 3 are shown as each constituting a semicircle, their exterior meeting line being shown at 4. The doors are of the usual stepped construction, as shown at 5, to prevent the introduction of a liquid explosive, interlocking projections 6, 7, being used on the meeting faces of the doors (the outer marginal line being shown at 4) which extends from top to bottom of the doors. This will be more clearly understood by reference to Fig. 3, and its object is to dispense with the use of bolts at the meeting faces of the doors and to provide means which will have many times the resisting power of numerous bolts at this point, for when the doors are closed and the parts 6, 7, interlocked, the two doors 2 and 3 are, in effect, one door so far as their power of resistance to unauthorized opening is concerned.

The vertical meeting edge 4 of the door 2 is provided with an ordinary strip of packing 8, and the outer step 9 of the jamb 10 is provided with a circularly arranged packing 9^a which the packing 8 meets, in consequence of which, when the doors are closed, a liquid explosive can be introduced no farther than the vertical packing 8 or circular packing 9^a. The joint where the doors meet is also wedge-proof, as a wedge can be introduced only a slight distance before it will meet the joint.

Unlike ordinary safe or vault doors which

are hinged at their outer edges, my doors are hinged at their inner edges, or at least, they open from their outer edges, which will be clearly understood by reference to Fig. 1.

To permit this opening of the respective doors, either simultaneously or independently, it is necessary to employ a peculiar form of hinge which comprises a yoke 20 hinged to the wall 1 at 21, and a yoke 22, which is hinged to the yoke 20 on the pintle 23; a suitable hinged operating handle 24 is provided on pintle 23 so that the doors may be swung open or closed by the utilization of the leverage thus provided. The arms of the yoke 22 are hinged by pintles 25 to the door.

On the front 1 are stationary vertically extending pintles 30, and on the respective doors are notched pintles 31 (Figs. 1 and 2) which bear against the pintles 30 to afford a detachable hinge for each door, it being understood that this hinge is provided so that the door may first swing as shown in Fig. 1 to cause disengagement of the interlocking projections 6, 7, and then the door may be manipulated to cause the pintles 31 to free themselves from the pintles 30, whereupon the door may be swung outwardly bodily and then backwardly, the toggle joint manner of hinging the door permitting such action.

To guide the door in its closing movements, I provide forks 32 (Figs. 1 and 2) on the front 1, which loosely receive pins 34 carried by the respective doors at the top and bottom thereof, but these are not absolutely necessary.

The weight of a door or doors of a burglar-proof vault is such that means are necessary to tightly force them closed. The novel means employed for causing tight seating of the doors embraces the following parts, viz: On the front 1 at as many points as may be desired (Fig. 2), there are provided open rectangular guides 40, which have a longitudinal slot 41 (Fig. 4) in their rear walls 42, and grooves or ways 43 are provided, the outer side or cap 44 of the guide being detachable to thereby permit the insertion of a wheel 45 whose periphery is received in the ways 43, said wheel being adapted to play back and forth in the guide, said wheel having a stub shaft 46 which is adapted to play in the slot 41 and thereby take up the strain on the wheel 45 and assist in guiding it in its reciprocations. Journalled in bearings 47 on the doors are shafts 48 which are provided on their outer ends with wheels 49 which have cavities, notches, or recesses 50, which receive a pin 51 projecting from the wheel 45. Suitable bevel gears and shafting 52 connect the various shafts 48 with hand-wheel-operating mechanism 53, whereby all of the shafts 48 on each door may be simultaneously rotated, but the pro-

portioning of the gears is such that the proper amount of rotation will be given each wheel 49 to cause it to perform its function in cooperation with the wheels 45 to cause the doors to be drawn closed with an equal pressure or strain at the various points where the closing devices are used.

After the doors have been closed, to obtain tight seating thereof, the mechanism 53 is turned, whereupon the shafts 48 are rotated, and by the cooperation of the wheels 49 with the pins 51, the doors are drawn tightly closed, and in moving from nearly closed position to absolutely tightly closed position, the respective wheels 49 move relatively across the faces of the wheels 45, as shown by the dotted positions in Figs. 4 and 5, the rotation of the shafts 48 through the devices 49, 50, causing the wheels 45 to move to and fro in their guides 43. This mechanism constitutes a universal joint, as it were, between the doors and the front of the vault or safe and enables the doors to be closed absolutely tight without any great effort on the part of the person closing the same.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. Twin doors for safes or vaults which are adapted to be closed in juxtaposed relation, and means hinging the juxtaposed or inner parts of said doors, constructed and arranged to permit said doors to be opened outwardly from their outer ends.

2. Twin doors for safes or vaults which are adapted to be closed in juxtaposed relation, means for hinging the juxtaposed or inner parts of said doors, constructed and arranged to permit said doors to be opened outwardly from their outer ends, and interlocking means on the respective inner juxtaposed faces of said doors.

3. Twin doors for safes or vaults which are adapted to be closed in juxtaposed relation, means for hinging the juxtaposed or inner parts of said doors, whereby they are adapted to be opened from their outer ends, interlocking projections on the respective inner juxtaposed faces of said doors, and supporting hinges for the doors.

4. Twin doors for safes or vaults which are adapted to be closed in juxtaposed relation, means detachably hinging the juxtaposed or inner parts of said doors, whereby they are adapted to be opened from their outer ends and may be bodily detached where hinged, interlocking means on the respective inner juxtaposed faces of said doors, and supporting hinges for the doors, whereby the doors may be first swung open on the detachable hinges to disengage the doors and thereafter the doors may be bodily moved with the articulated hinges.

5. A door for safes or vaults, in combina-

tion with a multi-part hinge for said door, and an additional separable hinge for the door, said hinges being so constructed and arranged as to permit the door to be first swung on said separable hinge and thereafter swung bodily on the multi-part hinge.

6. A door for safes or vaults which has projections for purposes of locking it when closed, in combination with a multipart hinge for said door, and an additional separable hinge for the door, said hinges being so constructed and arranged as to permit the door to be first swung on said separable hinge to disengage the projections aforesaid, and thereafter swung bodily on the multipart hinge.

7. A safe or vault door composed of independently swinging companion doors for the same entrance, hinging means for said doors, and interlocking projections on the

meeting edges of said doors which are adapted for engagement to lock the abutting edges of said doors against opening when the latter are closed.

8. A safe or vault door composed of independently swinging companion doors for the same entrance; hinging means for said doors, interlocking projections on the meeting edges of said doors which are adapted for engagement to lock the abutting edges of said doors against opening when the latter are closed, and means for guiding the respective doors in their opening and closing movements.

In testimony whereof, I hereunto affix my signature in presence of two witnesses.

EDWARD S. PILLARD.

Witnesses:

MARY F. LYONS,

ROBERT ROSENBERG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."