T. S. SPIVEY.

VAULT AND STRONG ROOM DOOR.

APPLICATION FILED APR. 22, 1909.

954,547. Patented Apr. 12, 1910.

Fig. 1.

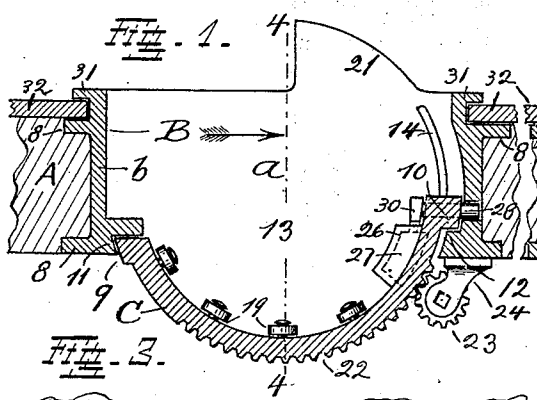


Fig. 2.

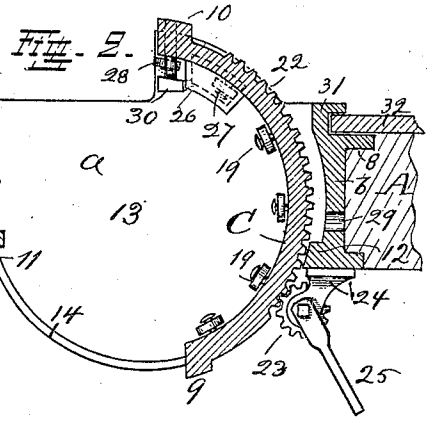


Fig. 3.

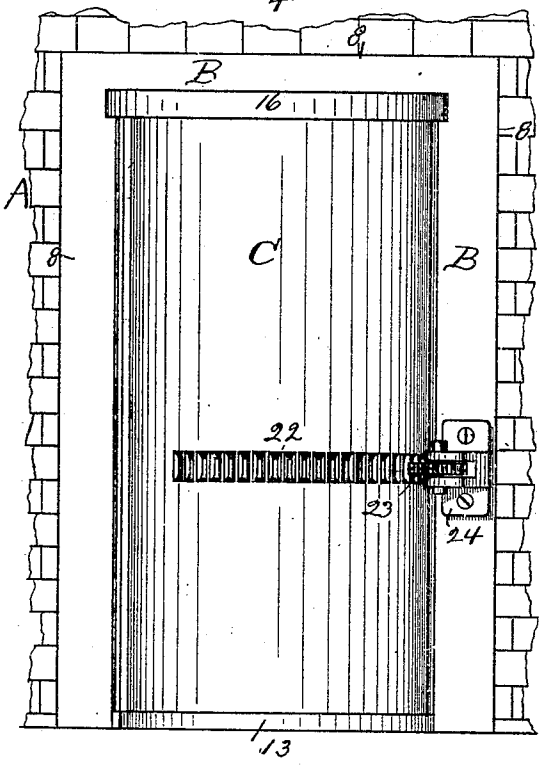


Fig. 4.

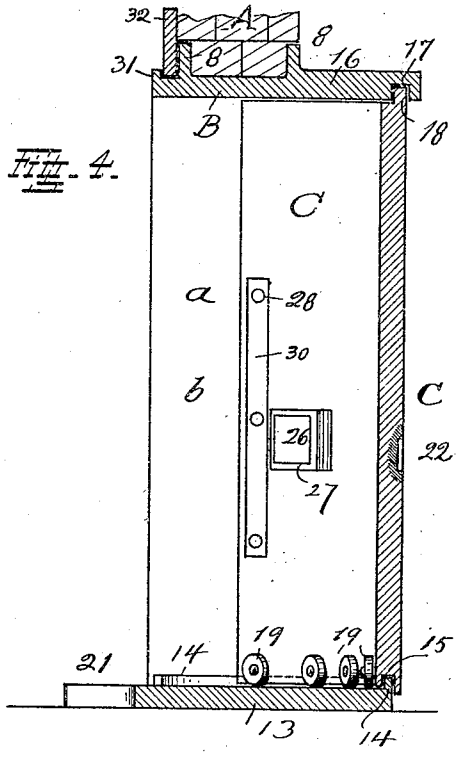
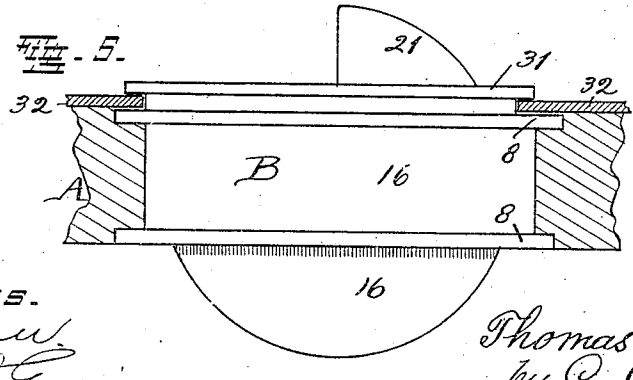


Fig. 5.



Witnesses.
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UNITED STATES PATENT OFFICE.

THOMAS S. SPIVEY, OF CINCINNATI, OHIO, ASSIGNOR TO THE VICTOR SAFE & LOCK COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

VAULT AND STRONG-ROOM DOOR.

954,547. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed April 22, 1909. Serial No. 491,551.

To all whom it may concern:

Be it known that I, THOMAS S. SPIVEY, a citizen of the United States, and residing at Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Improved Vault and Strong-Room Door; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawing, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to an improved door for vaults and strong rooms and is constructed in a manner to combine possibility of easy manipulation with great strength and security against attempts of unauthorized access.

In the following specification and particularly pointed out in the claims at the end thereof, will be found a full description of my invention, together with its manner of manipulation, parts and construction, which latter is also illustrated in the accompanying drawing, in which:—

Figure 1, is a horizontal section through the door and the frame in which it is supported, the door being shown closed. Fig. 2, in a similar view shows the door open. Fig. 3, is a front-view of the door, as shown in Fig. 1. Fig. 4, is a vertical section through the door and its frame, taken on line 4—4 of Fig. 1, and looking in the direction of the arrow. Fig. 5, is a top-view of the door-frame.

A, is part of the front-wall of a vault or strong-room, provided with a door-opening *a*. B, is a four-sided door-frame substantially rectangular set into this opening, and C is the door fitted to this frame. Unless closed by this door direct passage through the opening surrounded by this frame is possible in either direction. The upright parts *b*, *b*, of the frame which form the jambs have on each of their inner and outer edges laterally extending rims 8 which between them receive the masonry of wall A, and serve to hold the frame securely seated in the wall-opening.

The door consists of a solid rectangular structure in form of a cylindrical segment having parallel upright and horizontal edges and is provided on one of its upright edges with a lip 9 and on the other with a shoulder 10, both projecting outwardly from the periphery of the outer side of the door. In the closed position of the door lip 9 butts against a shoulder 11 on the front-face of one of the upright parts of the door-frame, and shoulder 10 butts against a shoulder 12, projecting inwardly from the other jamb, all as shown in Fig. 1.

The door is supported to have a sliding movement for opening or closing, it moving horizontally in its own vertical plane as best shown in Fig. 2, and in guide-ways provided for the purpose and engaged with its upper and lower ends, see also Fig. 4. These guide-ways are formed at the edges of the forwardly extended horizontal bottom and top-parts of the door-frame. A preferable way is to form them so that the engaging parts overlap each other with overhanging joints to avoid upwardly open interstices which would favor introduction of liquid explosives. Fig. 4, shows this construction plainly, the guide-way in the lower forwardly extended part, or sill 13 consisting of an upwardly projecting tongue 14, fitted to a groove 15 in the lower edge of the door. At the upper forwardly extended part or lintel 16, the guide-way consists of a groove 17 provided in the underside of this part, into which a tongue 18 at the upper edge of the door is fitted. As will be noted upwardly open joints are avoided by this arrangement. Devices to reduce the friction and facilitate the movement of the door may be provided at its lower edge in form of ball-bearings within groove 15, or rollers may be provided, connected as shown at 19. The horizontal parts of the door-frame, or at least its sill part may also be extended rearwardly as shown at 21 to sustain the door when it moves into its open position as shown in Fig. 2, and to provide means upon which it rests while open.

Doors of limited weight may be manipulated directly by hand suitable handles or knobs being provided for the purpose upon the outer side. Suitable mechanical devices may also be provided and consist as shown of a rack 22 provided on the front-side of the door into which a pinion 23 meshes, supported in a bracket 24, attached to the adjacent door-frame. A handle 25, which may be detachable is used for the manipulation of this pinion.

Customary locking means, to hold the door in its closed position may be provided,

as for instance a time-lock 26, which may be seated in a recess 27 provided on the inner side of the door. One or more bolts 28, actuated by this time-lock, are provided which for locking engage sockets 29 in the door-jamb into which their outer ends pass. When more bolts are used, a bar 30 is provided for them by which they are all simultaneously moved as said bar is actuated by the time-lock.

The construction of the door and of its frame is so deviced as to permit the making of either, or of each in form of a casting which may be of non-machinable metal. Inserts of machinable-metal are provided in the customary manner in case door and frame are made of non-machinable metal, to permit machine and tool-work where such is necessary. This refers to the attachment of bracket 24, to the forming of sockets and fitting of bolts for them, to bearings for rollers 19 etc. Otherwise grinding is resorted to to finish the door and its frame and to fit them to each other. Rack 22 may be cut into a soft metal insert, or the teeth may be ground out of the solid metal of the door.

When the door is being closed, shoulder 10 on its rear-edge moves against shoulder 12 on the adjacent upright part of the door-frame, and lip 9 at its front-edge moves against shoulder 11 on the other upright part of the door-frame, thereby producing a tight closure which prevents introduction of explosives at the upright edges of the door. The overhanging parts at the lower and upper edges perform the same function in the places mentioned.

The inner edges of the door-frame are extended laterally all around to form a flange 31, which receives the edge of the vault-lining 32 and serves as an attaching means for the same whereby lining and frame may be securely connected to each other.

Both door guide-ways are open rearwardly to permit the door to be passed in when the structure is assembled.

Having described my invention, I claim as new:

1. In door-construction for vaults, the combination of a door-frame having connected upright and horizontal members which latter are extended forwardly and provided on their inner sides with guide-ways presenting segments of a circle and a door in shape of a cylindrical segment fitted with its lower and upper edges to these guide-ways.

2. In door construction for vaults, the combination of a door being curved outwardly between its upright edges in form of a cylindrical segment which is provided with a tongue at its curved upper end and with a groove in its curved lower end and a door-frame having connected upright and horizontal members into which the door is movably fitted, of the horizontal members the upper one being provided with a groove to receive the tongue at the upper edge of the door, and the lower one being provided with a tongue to be received by the groove in the lower end of the door whereby overhanging joints are provided which prevent upwardly open joints.

3. In door construction for vaults, the combination of a door being curved outwardly between its upright edges in form of a cylindrical segment, a frame consisting of upright and horizontal members into which this door is movably fitted and the horizontal members of which are provided with curved guide-ways which engage the door at upper and lower edges respectively, and between which guide-ways the door moves, the lower member being extended rearwardly to sustain the door when in open position.

4. In door-construction for vaults, the combination of a door being curved outwardly between its upright edges in form of a cylindrical segment, a frame to which this door is movably fitted and which is provided with curved guide-ways in which the door at its upper and lower edges moves, a curved rack on the convex side of this door, a pinion fitted to this rack, a bearing attached to the frame in which this pinion is supported and means to manipulate the pinion.

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

THOMAS S. SPIVEY.

Witnesses:

C. SPENGEL,

T. LE BEAU.