W. E. ARNOLD.

VAULT AND STRONG ROOM DOOR.

APPLICATION FILED DEC. 4, 1909.

955,933. Patented Apr. 26, 1910.

Fig. 1.

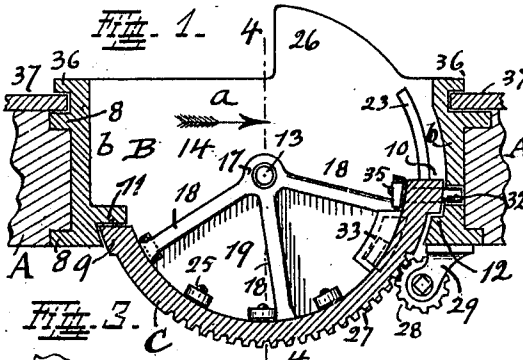


Fig. 2.

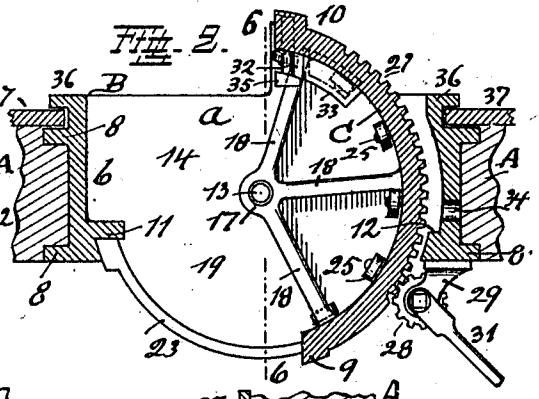


Fig. 3.

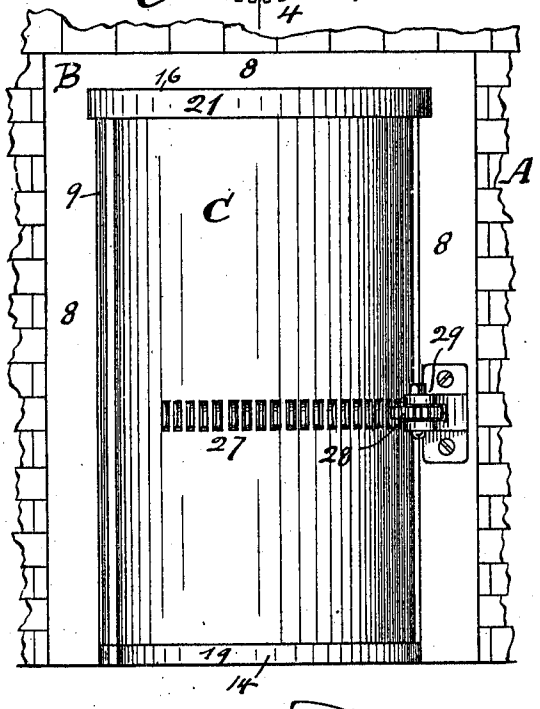


Fig. 4.

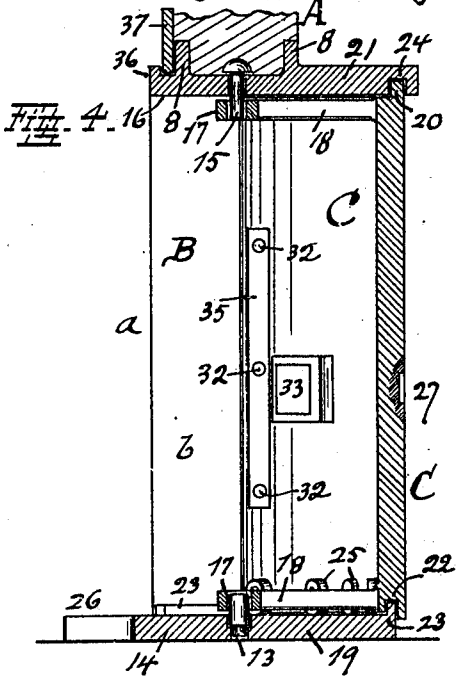


Fig. 5.

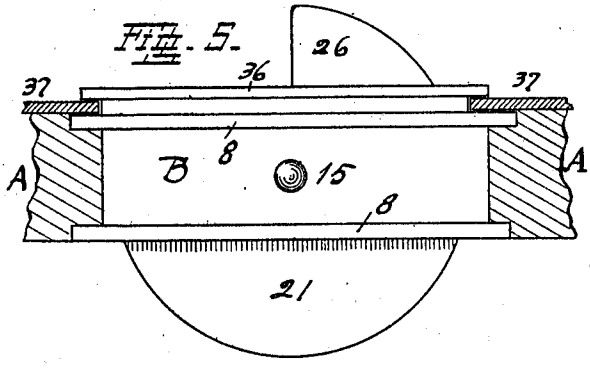
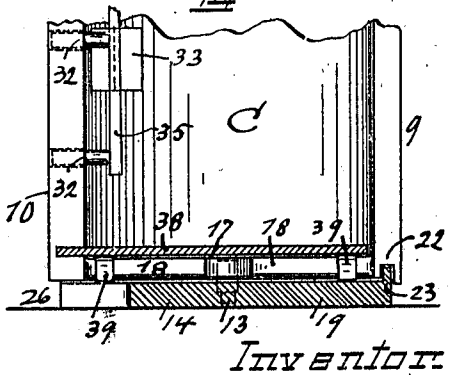


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILBER E. ARNOLD, OF MADISONVILLE, OHIO, ASSIGNOR TO THE VICTOR SAFE & LOCK COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

VAULT AND STRONG-ROOM DOOR.

955,933. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed December 4, 1909. Serial No. 531,460.

To all whom it may concern:

Be it known that I, WILBER E. ARNOLD, a citizen of the United States, and residing at Madisonville, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Vault and Strong-Room Doors; 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 forms also a part of this specification.

This invention relates to certain improvements in the construction of doors for vaults and strong-rooms, the particular feature concerning the manner of supporting such a door, so that it may be conveniently manipulated.

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

Figure 1, is a horizontal section through such a door and the frame to which it is fitted, the door being shown in closed position. Fig. 2, is a similar view and shows the door open. Fig. 3, is a front-view of the door in its closed position and as it appears in Fig. 1. Fig. 4, is a vertical section through the door and its frame, taken on a line 4—4 of Fig. 1, and looking in the direction of the arrow shown there. Fig. 5, shows a top-view of the door-frame. Fig. 6, is a section taken on a line 6—6 of Fig. 2, the lower part only of the door being shown.

A shows part of the front wall of a vault or strong-room, a door-opening *a* being provided to permit access.

B is a door-frame preferably rectangular and set into this opening in the wall, its opposite upright sides *b*—*b* of the frame forming the jambs of the door.

C is the door fitted to this frame and movably supported so that it may prevent passage through the opening surrounded by the frame when closed and permit it in either direction when open.

The construction of the door and of its frame is so devised that either or each of them may be made in form of a casting, which may be of non-machineable metal like manganese steel for instance.

Flanges 8—8 extending outwardly from the frame are provided which receive between them the masonry of wall A and thereby serve to hold the door-frame securely seated in the wall-opening.

The door is in form of a rectangular slab of solid metal, convex between its longer, upright edges, so as to form in substance a segment of a cylinder. It is provided on one of its upright edges with a lip 9 and on its other edge with a shoulder 10.

In the closed position of the door as shown in Fig. 1, its lip 9 strikes against a shoulder 11, and shoulder 10 on the door which projects outside of the periphery thereof abuts against a shoulder 12, both shoulders projecting inwardly from the door-jambs. A tight closure is thus obtained which prevents the introduction of explosives at the upright edges of the door. The door has a swinging movement for opening or closing, it moving horizontally in its own plane as best shown in Fig. 2. It is supported for such purpose on pivots, one 13, seated in the sill 14 and the other 15 being seated in the lintel 16 of the door-frame. Engagement of the door with these pivots is by hubs 17 carried at the ends of arms 18, which project from the inside of the door at lower and upper edges of it and preferably radially arranged. The horizontal edges of this door meet the edges of forwardly extended parts 19 and 21 of sill and lintel respectively, said extended parts completing the closure when the door is in the closed position shown in Fig. 1. These opposite edges meet in a manner which prevents the introduction of liquid explosives, for which purpose tongues and complementary grooves are provided thereat. The grooves are arranged to be inverted so as to be incapable of retaining liquid explosives and to prevent also the accumulation of dust and dirt. For such purpose a groove 22 is provided in the lower edge of the door, to receive a tongue 23 which projects upwardly from the front edge of the extended sill. Above, a groove 24 is provided in the underside of the forwardly extended part of the lintel to which is fitted a tongue 20 at the upper edge of the door. It will now

be noted, by observing Fig. 4, that upwardly open joints are avoided by this arrangement which would favor the introduction of explosives in liquid form.

Means, which by reducing friction and by carrying part of the weight of the door facilitate its manipulation, may be provided at its lower edge. They may be in form of ball- or roller-bearings provided within groove 22, or such rollers may be provided in a manner as shown at 25, they traveling upon the sill and its forwardly extended part. The sill by preference is also extended rearwardly as shown at 26, to provide a surface for these rollers to travel upon.

Smaller doors of limited weight may be manipulated directly by hand, suitable handles or knobs being provided for the purpose.

For heavier doors suitable mechanical devices are provided as for instance a rack 27 on the outer side of the door, into which a pinion 28 is fitted which is supported on a bracket 29, connected to adjacent parts of the door-frame. A handle 31 is provided, preferably detachable, whereby the pinion may be rotated.

Suitable locking means, usually one or more bolts 32, to be actuated by a time-lock 33, may be provided. These bolts are seated in the door near one of its edges and adapted to move into sockets 34 provided in adjacent parts of the door-frame, said sockets being so located as to be opposite the ends of the bolts when the door is in closed position.

Where a number of bolts are used, they are all attached to a bar 35, whereby they are simultaneously moved, said bar being operatively connected to the time-lock, to be actuated thereby.

When the door and its frame are made of non-machineable metal as before alluded to, I provide for inserts of machineable metal which are placed during the casting of these parts, to permit machine and hand tool-work where such is necessary, as for instance to provide for the guide-ways and sockets of the locking-bolts, the attachment of the time-lock, for the formation of rack 27 and for the connection of bracket 29 and for bearings for rollers 25.

For all other work, finishing of the door and the frame and fitting of the edges of the former into this latter, grinding is resorted to.

The edges of the door-frame on the inside of the vault are extended outwardly all around to form an attaching flange 36 which permits connection with the vault-lining 37.

A section of removable flooring 38 may be provided which during business hours may be placed into the door-way, to cover the lower arms 18 as shown in Fig. 6, so as to provide for a level and even passage-way through the door-opening. It may rest on these arms and also on feet 39.

I am familiar with the construction of a related device, described and claimed in an application, Serial No. 491,551. Said application being prior to mine, the scope of my claim should be construed accordingly and so as not to include any of the matter claimed in said prior application.

Having described my invention, I claim as new:

In door construction for vaults, the combination of a door in shape of a cylindrical segment having converging arms projecting from its inner concave side near its horizontal edges and hubs supported by these arms in a position so as to be concentric to this concave surface, a rectangular door-frame having sockets located opposite each other in the horizontal members, and pivots seated in these sockets and engaging the hubs mentioned in a manner to permit the door to swing in its cylindrical plane.

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

WILBER E. ARNOLD.

Witnesses:
C. SPENGEL,
F. LE BEAU.