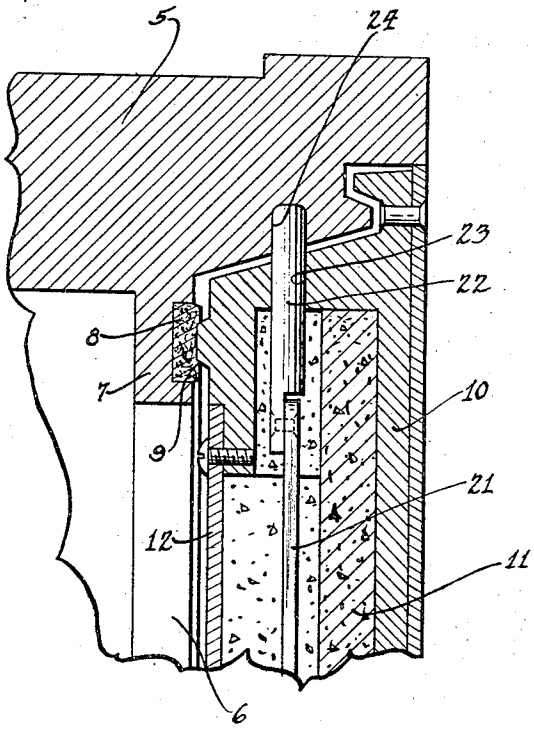
Aug. 9, 1932. P. E. PYLE 1,870,746

AUTOMATIC SAFE DOORLOCK

Filed May 26, 1930 2 Sheets-Sheet 1

Fig. 2.



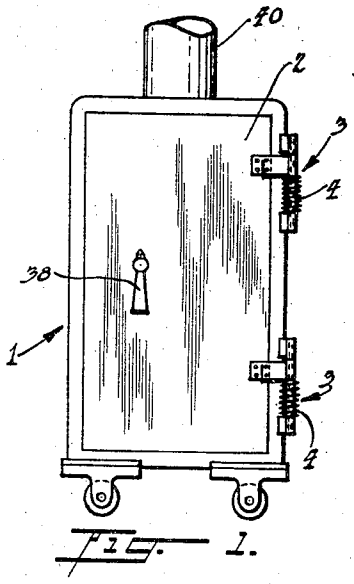


Fig. 1.

Fig. 4.

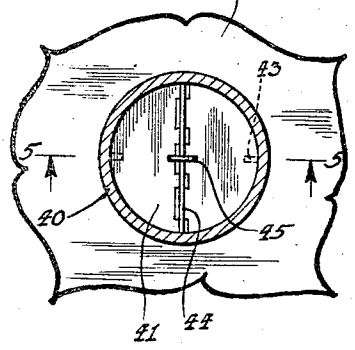
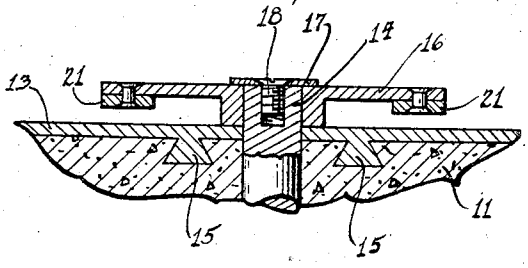


Fig. 3.



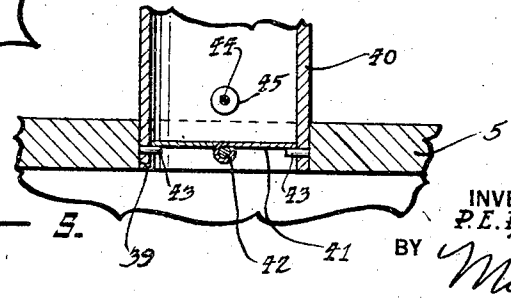


Fig. 5.

INVENTOR
P. E. Pyle
BY Munn & Co.
ATTORNEYS

Aug. 9, 1932. P. E. PYLE 1,870,746

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Filed May 26, 1930 2 Sheets-Sheet 2

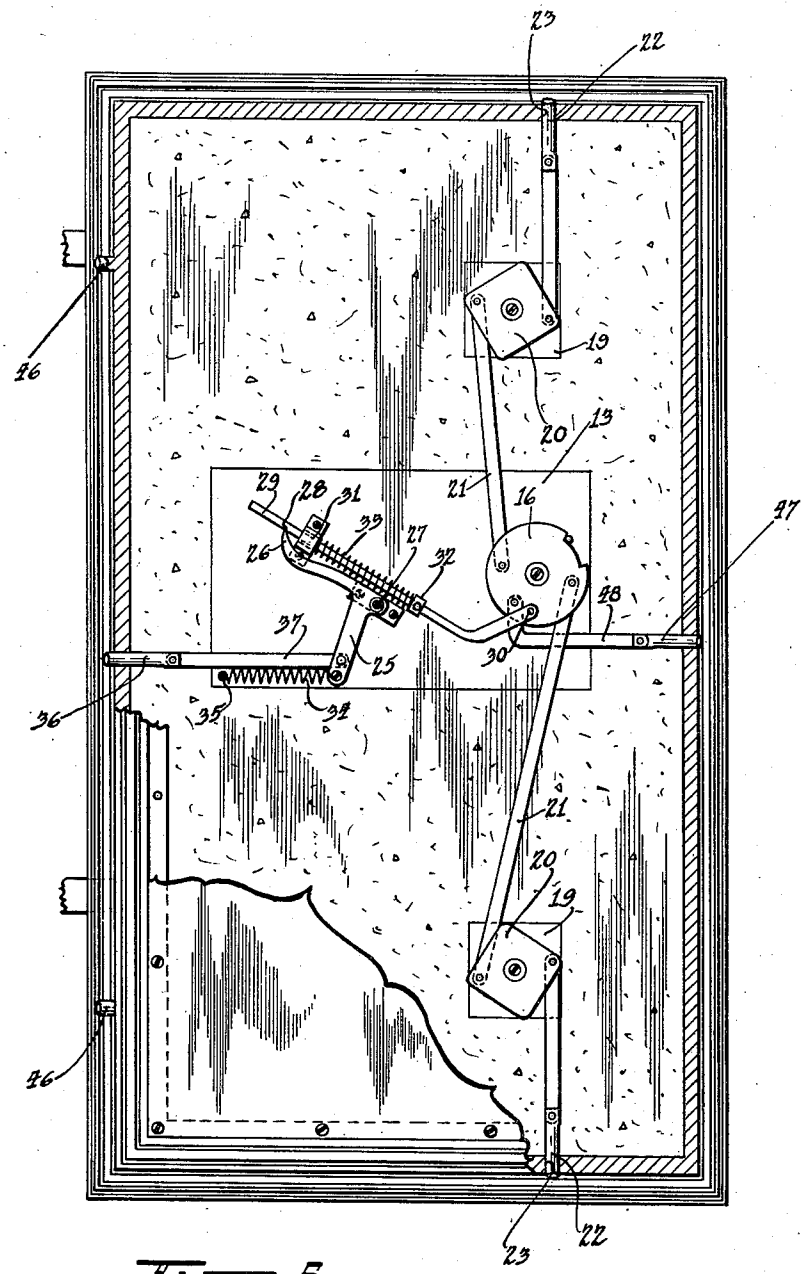


Fig. 6.

INVENTOR
P. E. Pyle
BY Munn & Co.
ATTORNEYS

Patented Aug. 9, 1932

1,870,746

UNITED STATES PATENT OFFICE

PAUL EDWARDS PYLE, OF LA FAYETTE, INDIANA, ASSIGNOR TO THE SCHWAB SAFE COMPANY, OF LA FAYETTE, INDIANA

AUTOMATIC SAFE DOORLOCK

Application filed May 26, 1930. Serial No. 455,672.

My invention relates to improvements in film safes, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a film safe in which means is provided whereby proper ventilation is attained, thereby entirely negativing the danger incidental to films in storage.

A further object is to provide a safe in which a novel door construction is employed in that the door is automatically self-closing and self-locking, and in which the door is additionally novel in that effective sealing means, as against gas, is provided whereby a maximum insurance against the danger of handling and storing films is attained.

A further object is to provide a film safe in which novel means is provided whereby the door in moving to a closed position automatically actuates a door-locking mechanism.

A further object is to provide a film safe in which means is provided whereby the danger incidental to an explosion of the film gas in the safe is entirely eliminated.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is a front elevation of a safe embodying my invention,

Figure 2 is an enlarged sectional detail view of a portion of the door construction,

Figure 3 is a detail view showing the manner in which a certain portion of the door-locking mechanism may be mounted upon the door,

Figure 4 is a top plan view of my damper construction,

Figure 5 is a sectional view taken along the line 5—5 of Figure 4, and

Figure 6 is an enlarged plan view of the inner side of the door showing a portion broken away for the purpose of exposing the door-locking mechanism.

In carrying out my invention, I make use of a safe 1 having a door 2 hingedly secured thereto by means of hinges 3. The hinges are provided with spring means 4 which tend to move the door to a closed position whenever freed. The safe proper comprises a wall construction 5 having an opening 6 therein, see Figure 2. The opening comprises in part a flange 7 having an insulating material 8 surrounding the opening. The door is provided with a bead 9 which is aligned with the insulating material, whereby a gas-tight connection is attained. The door may comprise a shell structure 10 within which a filler 11 is placed. The filler may comprise diatomaceous earth in connection with a suitable cement. Such fillers are of course well known in the art and therefore require no detailed description.

The inner side of the door is provided with a plate 12 which lies adjacent the filler 11. In Figure 6, I have broken away the greater portion of the plate for the purpose of showing the door-locking mechanism. The door-locking mechanism comprises in part a mounting plate 13 having a shaft 14 projecting therethrough and extending inwardly. The plate may be provided with retaining lugs 15 which may be embedded in the filler. A disc 16 is mounted upon the shaft 14 and may be held thereon by means of a washer 17. The end of the shaft 14 may be squared, whereby the disc 16 will of course be rotated whenever the shaft is moved. A screw or bolt 18 passes through the washer and into the threaded opening in the shaft 14 for holding the disc in assembly with the shaft. The shaft 14 is operatively connected with a handle disposed upon the exterior of the door, as will be explained later.

Companion plates 19 are embedded in the filler. The companion plates are provided with movable plate elements 20 which are operatively connected with the disc 16 through the medium of links 21. The plate elements are connected with bolt elements 22, which, in the present instance, project through openings 23 in the top and bottom of the door. This construction is clearly shown in Figure 2. The bolt elements, when moved outwardly, project into openings 24 in the safe casing. The bolts may be pro-

jected outwardly or drawn inwardly by moving the plate elements 20. These elements are moved through the rotation of the disc 16.

A bell crank lever 25 is mounted upon the plate 13. One end of the bell crank lever is formed to provide a pawl 26. The bell crank lever is pivotally mounted at 27. The pawl is arranged to be moved into a recess 28 in a rod 29 which is connected at 30 with the disc 16. The rod passes through a lug 31 and is provided with a collar 32. A spring 33 may be placed between the lug 31 and the collar 32 which tends to move the rod in the direction of the disc 16. The lug 31 is of course secured to the plate 13.

One end of the bell crank lever is connected with a spring 34, which, in turn, is secured at 35 to the plate 13. This end of the bell crank lever is associated with a bolt element 36 through the medium of a link 37. The spring 35 tends to move the bell crank lever about its axis 27 in a clockwise direction.

The disc 16 may be manually actuated through the medium of a handle 38, which is disposed upon the exterior side of the door 2. The top of the safe wall is provided with an opening 39 for receiving a flue 40. The flue may be welded within the opening or otherwise secured therein. The flue preferably extends to the exterior of the room or the building within which the film safe is located. The flue is provided with a damper 41, which, in the present instance, is constructed in two sections which tend to assume closing positions as shown in Figure 5. The sections are mounted upon a shaft 42. The sections may be moved about the shaft as an axis when pressure is applied underneath the plates. Suitable abutting elements 43 may be provided for supporting the sections in their horizontal relation, as shown in Figure 5. A rod 44 may be disposed within the flue and provided with a disc 45. This construction holds the sections apart at a predetermined distance, whereby the sections will tend to return to the positions shown in Figure 5 by gravity.

The hinged side of the door 2 is preferably provided with a pair of integral lugs 46 which project into openings in the safe wall when the door is closed. This construction tends to make the door additionally secured when it is closed.

Referring to Figure 6, it will be noted that I have provided a bolt element 47 in connection with the opposite side of the door. This element is also connected with the disc 16 through the medium of a link 48. The bolt elements 22, 36, and 47 project into openings in the safe wall whenever the bolt elements are moved outwardly. The bolt elements may be withdrawn for permitting the door to be opened by moving the handle 38.

Movement of the handle 38 rotates the disc 16 for withdrawing the bolt elements as shown in Figure 6. As soon as the handle 38 is released, the spring 33 moves the disc 16 back to its normal position. The spring 34 tends to move the bolt element 36 outwardly. When the disc 16 has been rotated sufficiently far through the medium of the handle 38, the pawl 26 is moved within the recess 28. At this time the bolt elements 22 and 47 are held in their retracted positions. The bolt element 36 projects to the exterior of the edge of the door whenever the latter is opened. Whenever the door 2 is released after it has been opened, the springs 4 will of course tend to move the door to its closed position. As soon as the bolt element 36 engages with the edge of the safe wall, the bell crank lever 25 will of course be moved, at which time the pawl 26 will be moved out of engagement with the recess 28. This occurs at a time when the door has been moved to a closed position through the medium of the springs 4. Immediately upon the pawl's being moved out of the recess 28, the spring 33 will rotate the disc 16 for projecting the bolts 22 and 47. The projection of the bolts of course locks the door in its closed position. The lugs 46 lock the hinged side of the door.

An important feature in connection with my invention is the fact that the door is automatically locked whenever it is freed. In other words, dropping the door whenever it has been opened frees the door so that the springs may move it to a closed position. As soon as it has reached its final position, the bolt elements 22 and 47 are automatically moved to their recesses or bores 24. This construction eliminates the necessity for inspecting the door to determine whether or not it has been properly locked. Further than this, it negatives the danger incidental to the careless supervision of safes used for films.

A further important feature is the fact that an explosion of the gases formed within the safe by reason of the nature of the films stored therein will not endanger people who are closely situated in the vicinity of the safe. Gases from films which are made from such material as nitrocellulose are extremely poisonous. Films of this type tend to decompose by reason of heat and this decomposition forms a gas within the safe. Occasionally, explosions have been known to occur when the temperature has reached approximately 180°. Should an explosion occur, the poisonous gases will of course pass from the safe through the flue 40.

There is very little if any danger of any serious explosions when the films are not confined. Various city ordinances require that films of this type shall be stored upon the tops of buildings and the like. In my construction, the interior of the safe is properly ventilated, which tends to negative the formation of the gas within the safe under high

pressure. It is desirable to keep the pressure within the safe at less than ten pounds per square inch. The flue may of course be proportioned on the basis of this consideration. The door is effectively sealed, which of course provides a gas-tight construction. This is also an important feature.

I claim:

1. In a safe construction, a hinged door, a spring-actuated rotatable plate carried by the door, locking bolts actuated by a movement of the plate, means for rotating the plate to withdraw the locking bolts, a pawl for holding the plate stationary when the locking bolts have been withdrawn, and an auxiliary locking bolt carried by the door and arranged to move the pawl out of holding position when the auxiliary locking bolt has entered its socket.

2. In a safe construction, a hinged door, a rotatable plate carried by the door, locking bolts actuated by a movement of the plate, means for rotating the plate to withdraw the locking bolts, a spring-pressed rod pivotally secured to the plate for rotating the latter and being provided with a notch, a pawl having a portion arranged to enter the notch for holding the rod against the tension of the spring, and means actuated by the closing of the door for moving the pawl to free the spring-pressed rod.

3. In a safe construction, a hinged door, a rotatable plate carried by the door, a plurality of locking bolts actuated by a movement of the plate, a spring-pressed rod pivotally connected to the plate and having a notch, a bell crank lever having a pawl portion arranged to enter the notch for holding the rod against the tension of the spring, an auxiliary bolt pivotally connected to said bell crank lever, and a second spring for normally swinging the pawl portion of the bell crank lever toward the spring-pressed rod and for extending the auxiliary bolt, the engagement of the auxiliary bolt in its socket moving the pawl against its spring to release the spring-pressed rod, whereby the bolt-actuating plate is moved to lock the door.

4. In a safe construction, a hinged door, a rotatable member mounted on the door, locking bolts operatively connected with the rotatable member and movable when said member is rotated, said locking bolts being normally disposed in extended positions, means for rotating said member for positioning the bolts in retracted positions, an actuating arm movably mounted on the door and operatively connected with the rotatable member, a lever arm movably mounted on the door and adapted for engaging the actuating arm for holding the bolts in their retracted positions, and means for moving the lever arm out of engagement with the actuating arm when the door is disposed in its closed position whereby the locking bolts may be moved to their extended positions.

5. In a safe construction, a hinged door, a rotatable member mounted on the door, locking bolts operatively connected with the rotatable member and movable when said member is rotated, said locking bolts being normally disposed in extended positions, means for rotating said member for positioning the bolts in retracted positions, an actuating arm movably mounted on the door and operatively connected with the rotatable member, a lever arm movably mounted on the door and adapted for engaging the actuating arm for holding the bolts in their retracted positions, and means for moving the lever arm out of engagement with the actuating arm when the door is disposed in its closed position whereby the locking bolts may be moved to their extended positions, said last named means comprising an actuating bolt connected with the lever arm and adapted for engaging the safe.

6. In a safe construction, a hinged door, a rotatable member mounted on the door, locking bolts operatively connected with the rotatable member and movable when said member is rotated, said locking bolts being normally disposed in extended positions, means for rotating said member for positioning the bolts in retracted positions, an actuating arm movably mounted on the door and operatively connected with the rotatable member, a lever arm movably mounted on the door and adapted for engaging the actuating arm for holding the bolts in their retracted positions, means for moving the lever arm out of engagement with the actuating arm when the door is disposed in its closed position whereby the locking bolts may be moved to their extended positions, said last named means comprising an actuating bolt connected with the lever arm and adapted for engaging the safe, and spring means connected with the lever arm and the door for moving said actuating bolt and lever arm.

7. In a safe construction, a hinged door, a rotatable member mounted on the door, locking bolts operatively connected with the rotatable member and movable when said member is rotated, said locking bolts being normally disposed in extended positions, means for rotating said member for positioning the bolts in retracted positions, an actuating arm movably mounted on the door and operatively connected with the rotatable member, a lever arm movably mounted on the door and adapted for engaging the actuating arm for holding the bolts in their retracted positions, means for moving the lever arm out of engagement with the actuating arm when the door is disposed in its closed position whereby the locking bolts may be moved to their extended positions, and spring means connected with the actuating

arm for rotating the rotatable member for moving said locking bolts to their extended positions.

8. In a safe construction, a hinged door, a rotatable member mounted on the door, locking bolts operatively connected with the rotatable member and movable when said member is rotated, said locking bolts being normally disposed in extended positions, means for rotating said member for positioning the bolts in retracted positions, an actuating arm movably mounted on the door and operatively connected with the rotatable member, a lever arm movably mounted on the door and adapted for engaging the actuating arm for holding the bolts in their retracted positions, means for moving the lever arm out of engagement with the actuating arm when the door is disposed in its closed position whereby the locking bolts may be moved to their extended positions, said last named means comprising an actuating bolt connected with the lever arm and adapted for engaging the safe, spring means connected with the lever arm and the door for moving said actuating bolt and lever arm, and spring means connected with the actuating arm for rotating the rotatable member for moving said locking bolts to their extended positions.

Signed at La Fayette, in the county of Tippecanoe and State of Indiana, this 23rd day of May, 1930.

PAUL EDWARDS PYLE.