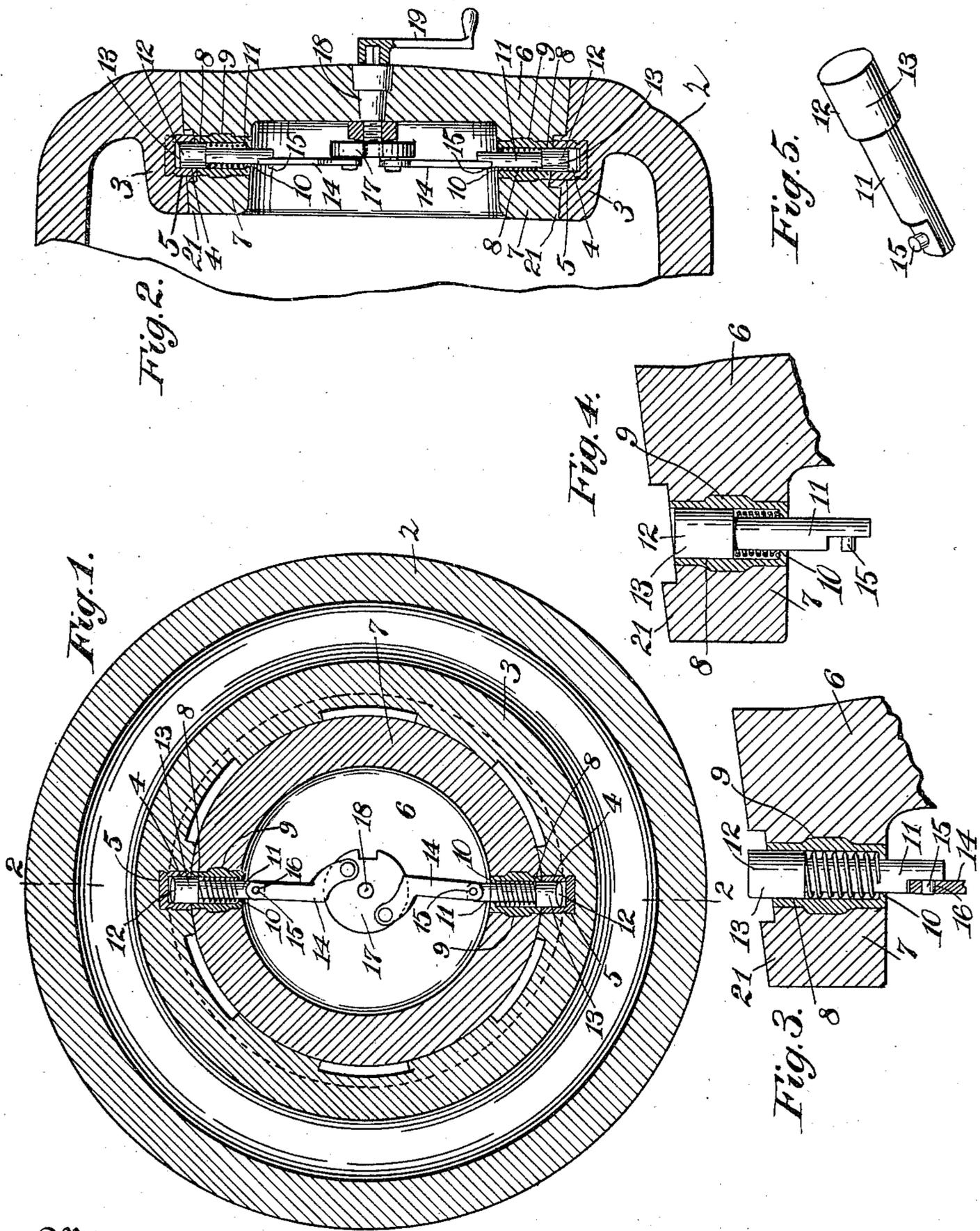


S. W. FISH.  
SAFE OR VAULT DOOR HOLDING MEANS.  
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997,790.

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# UNITED STATES PATENT OFFICE.

SAMUEL W. FISH, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO TAYLOR IRON & STEEL COMPANY, OF HIGH BRIDGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SAFE OR VAULT DOOR HOLDING MEANS.

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*To all whom it may concern:*

Be it known that I, SAMUEL W. FISH, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Safe or Vault Door Holding Means, of which the following is a specification.

The present improvement relates to locking means for the doors of safes or vaults, and more particularly to a locking means adapted for use with rotary doors usually held in the jamb of the body by threads or lugs, the object of the invention being to provide improved means for securing a rotary safe door against rotation and of such construction that the locking bolts will be securely held in their locked position should the entire bolt operating mechanism be detached from the door by an explosive charge or otherwise.

In the construction in another application of mine, the springs are utilized to protract as well as hold the bolts in their protracted position should the operating mechanism for the bolts be separated therefrom. In the present improvement, however, the springs are used, not as bolt protracting means, but as the means for holding the bolts in their protracted positions, other means being used for protracting as well as retracting the bolts.

In practice various forms of means can be used for protracting or retracting the bolts, according to the construction of the safe; that is to say, they can be spindle operated, or automatically operative without the use of a spindle, and it is therefore deemed necessary only to show some simple form of mechanism adapted for this purpose. The means that is used will usually be controlled by suitable time and combination lock mechanism, which, however, it is not deemed necessary to show herein.

In the drawings accompanying and forming part of this specification, Figure 1 is a cross-sectional view of one form of safe or vault body and its door, looking toward the front; Fig. 2 is a cross-sectional view taken in line 2-2, Fig. 1; Fig. 3 is a detail view of a portion of the door, illustrating the bolt held in its protracted position by its spring; Fig. 4 is a similar view, illustrating the bolt in its retracted position, with the

spring under compression; and Fig. 5 is a perspective detail view of one of the bolts.

Similar characters of reference indicate corresponding parts throughout the different figures of the drawings.

The safe or vault body 2 may be of any suitable or desired construction. In the present instance, however, it is shown provided with a door opening the jamb of which is partly formed by means of a rearwardly extending flange 3 having suitable bolt openings 4 therein, formed in suitable metal inserts 5.

The door 6, which is shown as of an integral construction and likewise having its joint surface partly made up by the provision of an integral rearwardly extending flange 7, is of circular form, having a tapered joint surface adapted to fit a similarly formed jamb surface or opening in the body. The flange of the door is provided with suitable bolt openings 8 formed in suitable metal inserts or sleeves 9, each of which is shown interlocked with the wall of its bolt opening and at its inner end is provided with an inwardly extending flange or shoulder 10 encircling the shanks 11 of the bolts 12, the heads 13 of which are somewhat larger than the shanks and form a shoulder between which and the inturned flanges 10 of the inserts 9 suitable means such as a coil spring is located. This spring, in the form shown, encircles the shank of the bolt and is retained within the bolt opening by reason of the shoulder on the bolt and the inturned flange on the metal insert through which the bolt shank extends. This spring, in the present instance, is effective to hold the bolt in its protracted position, suitable means being provided for protracting as well as retracting the bolt. As herebefore stated, any suitable means may be used for this purpose, it being necessary, however, that it be somewhat more powerful than the springs in order to retract the bolts against the tension of the springs.

In the form shown, the bolt-operating means comprises a pair of levers 14 detachably connected to the shanks of the bolts, for which purpose each of the bolts is provided with a stud 15 for projecting into an opening 16 at the outer end of the bolt lever. The inner ends of the bolts are pivotally connected to a disk 17, which may be

fixedly secured to the inner end of a spindle 18 projecting through the door and which spindle may be rotated by a crank 19.

In practice, as hereinbefore stated, suitable time and combination locks will be used for controlling the manipulation of the bolts so as to prevent the retraction thereof prematurely by means of the crank. In some forms of safes, instead of a spindle, suitable automatic means could be used for protracting as well as retracting the bolts at the proper time, this automatic means being controlled by suitable combination lock mechanism. In the present instance, however, when the door is shut and rotated into its proper position to have the lugs 21 thereof engage similarly formed lugs on the body to prevent the withdrawal of the door from its seat, the bolts will be brought into alignment with the bolt openings in the jamb, whereupon, on turning the crank, the spindle will be rotated to throw out the bolts and so lock the door against rotation. When the bolts are thrown out the springs will expand and so hold the bolts in their protracted position, so that should the bolt operating means be separated from the bolts by explosive charges or otherwise the bolts will still be held in their protracted position by the springs and thus prevented from being jarred loose or retracted in an improper manner.

When it is desired to open the safe in the usual manner, the spindle is rotated and the bolts retracted, compressing the springs, whereupon the safe door can be opened. Of course, it will be understood that some suitable means will be used for holding the springs in their retracted position. It will thus be observed that the bolts are retracted and protracted by means independent of the spring, and that when once protracted they are held in such position by means concealed entirely within the bolt opening, and which is shown located around the bolt, so that the tampering with the same in any manner is positively prevented. It will also be observed that the spring which holds the bolt in its protracted position, although it is not effective to protract the bolt, is in turn compressed or operated through the medium of the bolt itself when the same is retracted by its operating means. It will also be

observed that the shoulder formed by the enlarged head of the locking bolt prevents it from passing through the bolt hole into the chamber formed within the door.

I claim as my invention:

1. A safe or vault door having one or more bolt openings located within the metal of the door, a bolt located in each of said openings, a spring concealed within each of the openings of the door for maintaining the bolt in its protracted position should the bolt operating mechanism be detached therefrom, a metal insert between the spring and the metal of the door and having means for engaging one part of the spring to hold the same concealed within the bolt opening, and means for actuating the bolt or bolts.

2. A safe or vault door having one or more bolt openings located within the metal of the door, a bolt located in each of said openings, a spring concealed within each of the openings of the door for maintaining the bolt in its protracted position should the bolt operating mechanism be detached therefrom, a metal insert between the spring and the metal of the door and interlocked with the wall of the bolt opening and having means for engaging one part of the spring to hold the same concealed within the bolt opening, and means for protracting the bolt independently of its spring and retracting it against the action of its spring.

3. A safe or vault door having one or more bolt openings therein, a sleeve within each of said openings and having an in-turned flange or shoulder at its inner end, a bolt located in each of said sleeves and having one part of greater diameter than another part thereof, a spring concealed within said sleeve and therefore surrounded by the metal of the door and located around the bolt and between said shoulder of the sleeve and that part of the bolt having the larger diameter for maintaining the bolt protracted should the operating mechanism for the bolt be detached therefrom, and means for retracting the bolt against the action of its spring and for protracting the bolt independently of its spring.

SAMUEL W. FISH.

Witnesses:

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