A. LAWSON.

LOCK.

APPLICATION FILED JUNE 21, 1909.

958,880.

Patented May 24, 1910.

2 SHEETS—SHEET 1.

Fig. 2.

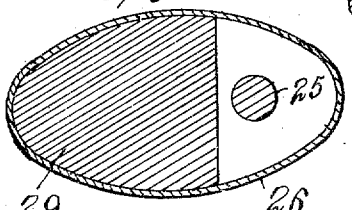


Fig. 3.

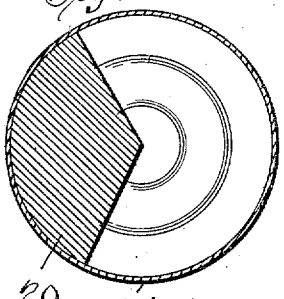
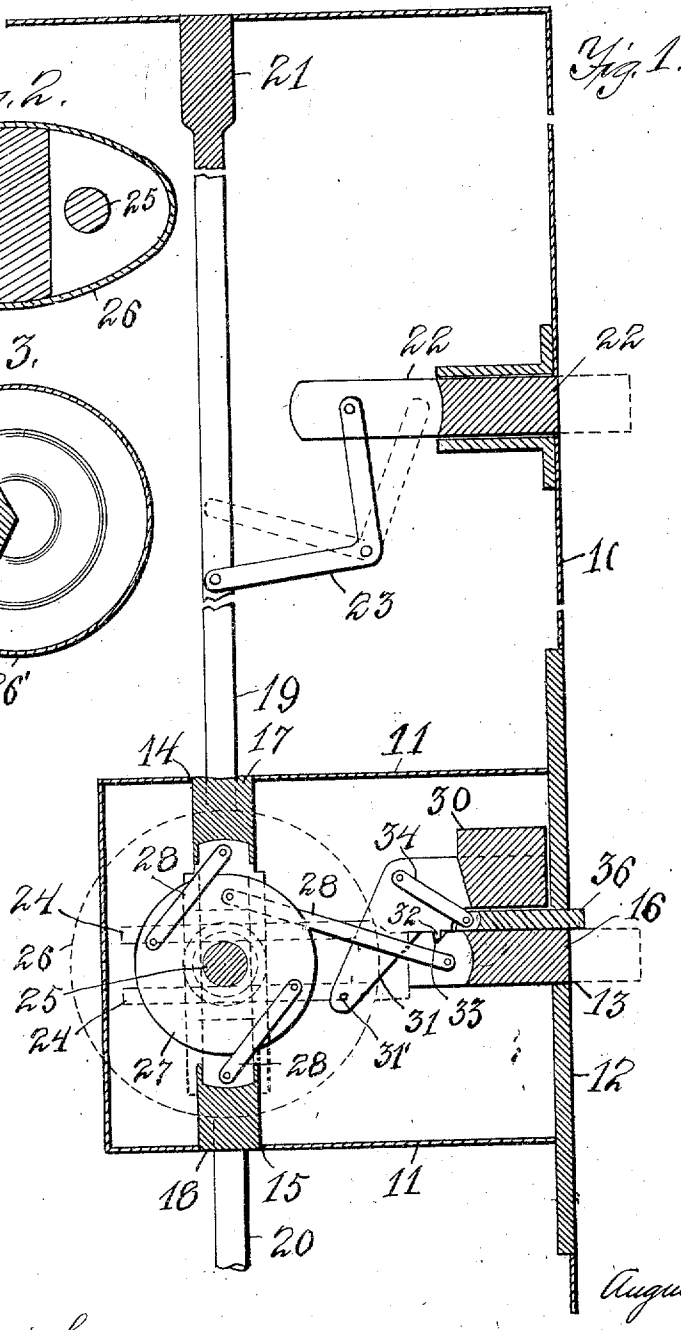


Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

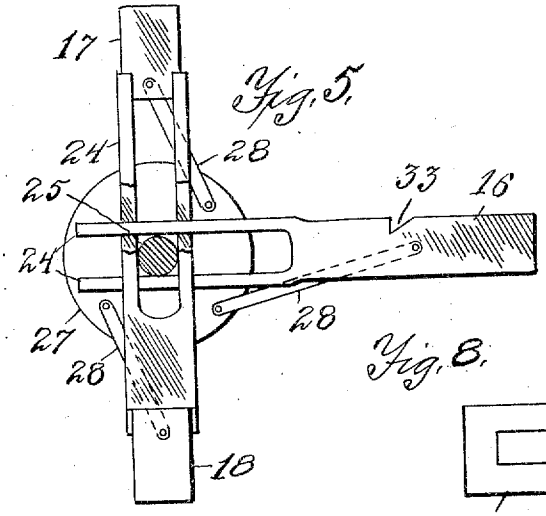


Fig. 4.

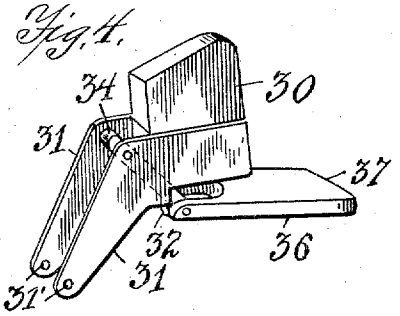


Fig. 8.

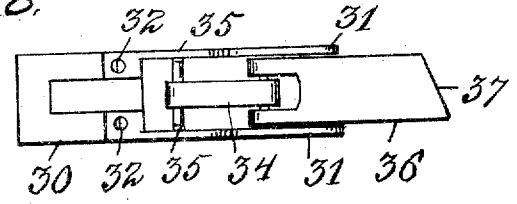


Fig. 6.

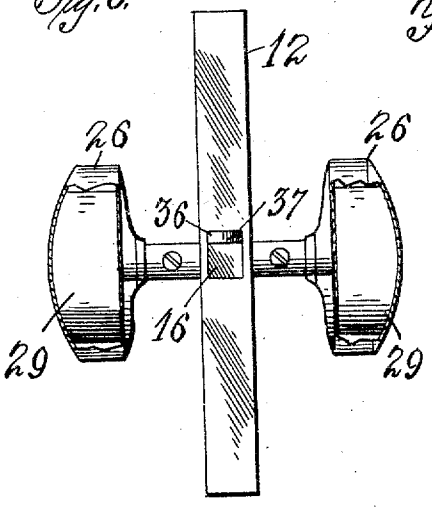
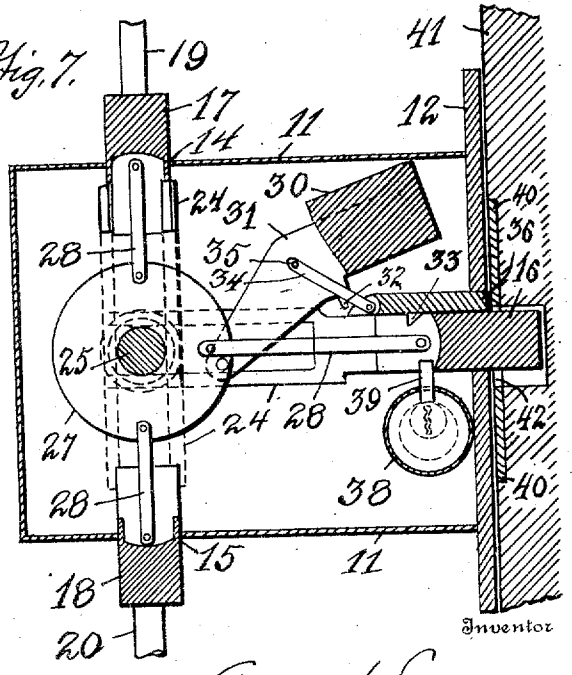


Fig. 7.



Witnesses

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LOCK.

958,880. Specification of Letters Patent. Patented May 24, 1910.

Application filed June 21, 1909. Serial No. 503,433.

To all whom it may concern:

Be it known that I, AUGUST LAWSON, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Locks, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The invention relates to gravity door locks, and the improvement consists in the peculiar construction and arrangement of the parts as described in this specification and the accompanying drawings and pointed out in the claims.

In the drawings, Figure 1 is a sectional view of a portion of a door and a multiple bolt lock, showing the arrangement of the same, with the bolts in the unlocked position. Fig. 2 is a sectional view of an oval knob, showing the off center arrangement of the weight in said knob; and Fig. 3 is a similar view of a modification showing a round knob with weight at one side. Fig. 4 is a detail perspective view of the gravity catch for the central horizontal bolt. Fig. 5 is a detail elevation of the bolts showing the guide arms attached to each bolt to keep it in line. Fig. 6 is a front elevation of the central lock as attached to the door showing the knob at each side broken away to show the weight in each knob. Fig. 7 is a sectional view of the lock and a portion of the door jamb with the bolts in the locked or extended position. Fig. 8 is a plan view of the under side of the weight portion of the gravity catch and the upper side of its tripping plate or bolt, the parts being placed in the extended position to show their form instead of being folded on one another as in the lock.

Similar numerals refer to corresponding parts in the several views.

The numeral 10 indicates the door, which is preferably a hollow sheet metal fire proof door or shutter in which to use such a gravity actuated lock as herein shown; the hollow sheet metal construction providing plenty of room for the rod and bolt work as well as for the central lock case, though it is apparent that this lock may be used upon solid doors of wood or other material.

The numeral 11 indicates the casing of the central portion of the lock, which has the front plate 12 and the openings 13 14 and 15 therein for a three-way lock, as shown in Figs. 1 and 7. The bolt 16 is slidably mounted in opening 13 in front plate 12 and the bolts 17 and 18 are slidably mounted in openings 14 and 15, suitable extension rods 19 and 20 being attached to bolts 17 and 18 to actuate a plurality of bolts in other portions of the door, as for example the bolts 21 and 22 in the upper part. Bolt 22 is actuated by the vertical rod 19 by means of a bell crank 23, suitable openings being provided in the edge of the door for said extension bolts. It is apparent that bolts may be arranged in the lower part of the door by attaching to rod 20 in a manner similar to those shown in the upper portion, when so desired.

The three bolts, 16 17 and 18 are held in line as to their inner ends by means of guide arms 24. A pair of arms 24 are attached to the inner ends of each bolt and extend each side of the cross bolt 25, which cross bolt bears the knobs 26 on its outer ends. It is apparent that the guides 24 passing each side of the cross shaft 25 hold the bolts 16 17 and 18 in line as they slide back and forth. The bolts are actuated by means of a central crank wheel 27, which is attached to shaft 25, and links 28 which are each pivotally attached to crank wheel 27 and bolts 16 17 and 18 so that each link stands straight in line with its respective bolt when the bolt is in the extended or locking position, as shown in Fig. 7. It is then apparent that the turning of the knobs 26 and shaft 25 will withdraw the bolts 16 17 and 18 from the extended position or if they be in the unlocked or non-extended position, as shown in Fig. 1, the turning of the knobs will cause the bolts to pass outward into the locked position. The length of the links 28 are proportioned so as to give the bolts an equal extension beyond the edge of the door. In order to cause the bolts to automatically fly outward when the door closes it is necessary to provide, in a gravity actuated lock, a weight which shall accomplish this extension of the bolts. Accordingly a weight 29 is provided in one side of each of the knobs 26 which automatically causes the extension or outward sliding of the bolts, whenever the bolts are released so that they may pass outward. It is apparent that the bolts will slide easily and the double weights 29 provided in the two knobs furnish sufficient

force to easily turn shaft 25 and actuate the bolts whenever they are released. The oval form of knob 26 shown in Fig. 2 is usually preferred since the weight 29 being placed farther to one side from across the bolt 25 obtains greater leverage in turning said bolt, though the modified form of a round knob 26' shown in Fig. 3 would attain applicant's purpose for a single latch or bolt 16. It is apparent that the oval knob 26 can be extended to any desired extent to obtain greater leverage for a mutiple bolt lock.

In order to hold the bolts in the unlocked position, shown in Fig. 1, a gravity catch is provided which consists of the weight 30 which has the rearwardly extending arms 31, which are each pivotally attached at 31' to the opposite inner sides of the casing 11, so that weight 30 may be raised until it touches the upper inner side of the said casing, as shown in Fig. 7. A pair of pins or teeth 32 are provided on the under side of weight 30 which engage a crosswise notch 33 in the upper side of bolt 16 when said bolt is in the unlocked position, as shown in Fig. 1. It is obvious that a single pin 32 would attain the purpose. The pair of pins is preferably provided in order to have a catch each side of a central link 34, which is pivotally attached at 35 to the arms 31. A tripping bar or bolt 36 is pivotally attached to the other end of link 34. The front end of tripping bar 36 is cut at a bevel, as shown at 37. The tripping bolt 36 extends out beyond front plate 12 when the bolt 16 is in the unlocked position, as shown in Fig. 1. It is now apparent that when the door or shutter with the bolts in the unlocked position, as shown in Fig. 1 is closed, the bevel end 37 of tripping bolt 36 will strike the plate 40 on the door jamb 41, thereby pushing inward on tripping bolt 36 and by means of link 34 raising the weight 30 and pins 32 out of notch 33, thereby releasing the bolt 16 and allowing the weights 29 in knobs 26 to swing down to the under side, thereby turning cross shaft 25 and crank wheel 27, actuating bolts 16 17 and 18 into the extended position. It is apparent that this actuation can not take place as the door closes until the door is in place upon the door jamb so that the bolts will find the openings in the locking plates on the jamb or casing, since tripping bolt 36 will not be actuated until it strikes the jamb or locking plate 40 and said plate will hold the bolt until the door comes opposite the locking opening 42.

This is all the lock that is usually needed for fire proof doors, shutters and the like, but in some instances it is desired to lock the bolts in place. For this purpose a separate lock 38 is provided having a suitable bolt 39 actuated by a key so as to be moved into locking conjunction with bolt 16, as shown in Fig. 7, holding bolt 16 in the locked position until the locking bolt 39 is withdrawn.

I claim as new:

1. In a door lock, a lock casing having suitable openings therein, a bolt slidably mounted in said opening and means for actuating said bolt, a weighted catch pivotally attached to the inner side of said casing, said catch having a pin on its under side to engage a notch in said bolt, a tripping bolt slidably mounted on said bolt and having link connection in said weighted catch, said tripping bolt extending through the front of said casing to raise said catch by striking a door plate.

2. In a door lock, a lock casing having suitable openings therein for the bolt, a bolt slidably mounted through one of said openings in the front plate of said casing, said bolt having a notch in its upper side, a tripping bolt slidably mounted on said bolt, a weight pivotally mounted on the inner side of said casing, a projection on the under side of said weight to engage said notch in said bolt, said weight having link connection with said tripping bolt and extending over said bolts to hold the same.

3. In a door lock, a casing having a suitable front plate with an opening therein, a bolt slidably mounted in said opening, a cross shaft through said casing, knobs on said shaft, a crank wheel attached to said shaft within said casing, link connection between said bolt and shaft to slidably actuate said bolt by the turning of said shaft, guide arms on the inner end of said bolt passing each side of said shaft to keep said bolt in line, a weight to turn said shaft and actuate said bolt, a gravity catch to hold said bolt, and means for raising said catch actuated by closing the door.

4. In a lock, a casing for said lock having openings in the edges thereof, a cross shaft revolubly mounted in said casing, knobs on said cross shaft, a crank wheel on said shaft, bolts slidably mounted in said openings in said casing, guide arms on the inner ends of said bolt intersecting one another on opposite sides of said shaft to hold said bolts in line, links pivotally attached to said bolts and said crank wheel so as to be in line with said bolts when in the extended position, a gravity catch for one of said bolts, and means for operating said catch.

5. In a door lock, a lock casing having suitable openings therein, bolts slidably mounted in said openings, a cross shaft revolubly mounted in said lock casing, knobs on said cross shaft, weights in one side of said knobs to turn said shaft, a crank wheel on said shaft within said casing, link connection between said bolts and said crank wheel, guide arms on the inner ends of said bolts extending on opposite sides of said shafts to keep said bolts in line, a gravity

catch pivotally attached within said casing, said catch having a tooth and notch engagement with one of said bolts to hold all of said bolts, and a tripping bolt for said gravity catch having connection therewith to automatically release said bolts when the door is closed, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AUGUST LAWSON.

Witnesses:
A. W. KEITTLE,
ERASTUS CROSBY.