April 28, 1925. 1,535,393

A. C. BALLBACH

DOORLOCK

Filed June 30, 1923 2 Sheets-Sheet 1

Fig. 1.

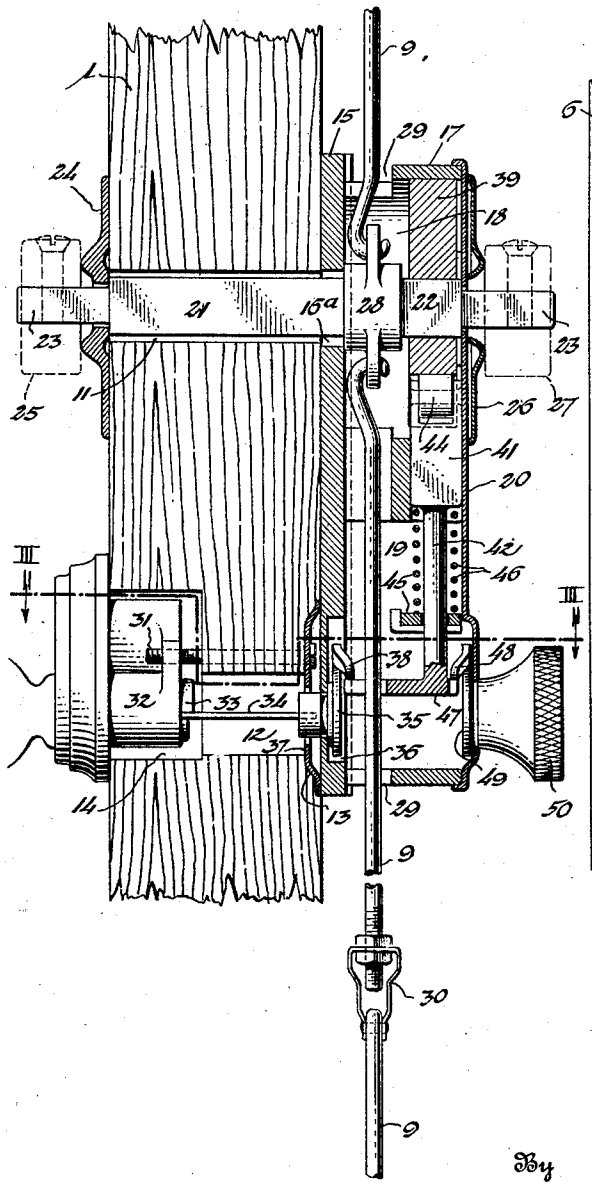
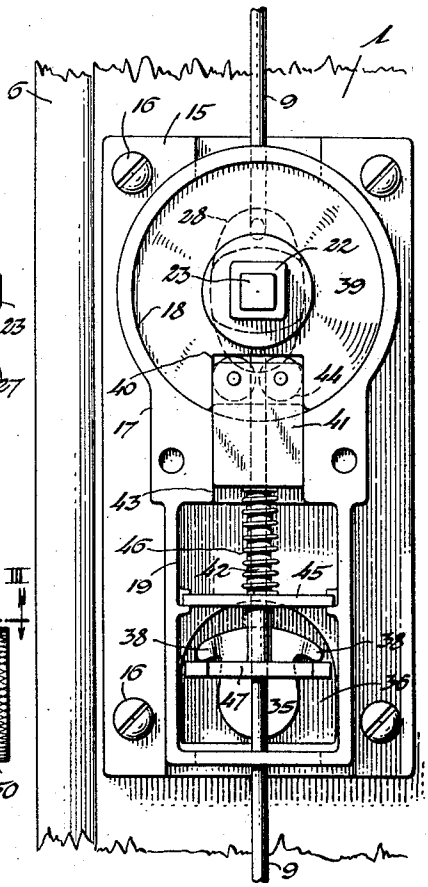


Fig. 2.



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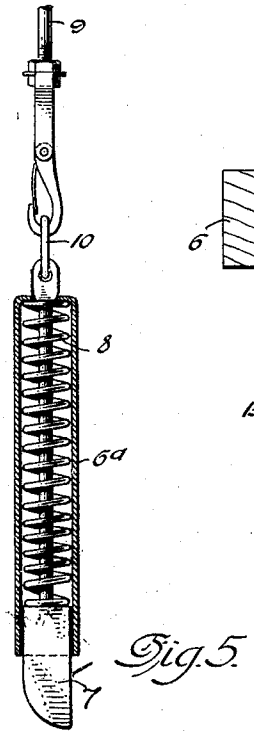


Fig. 5.

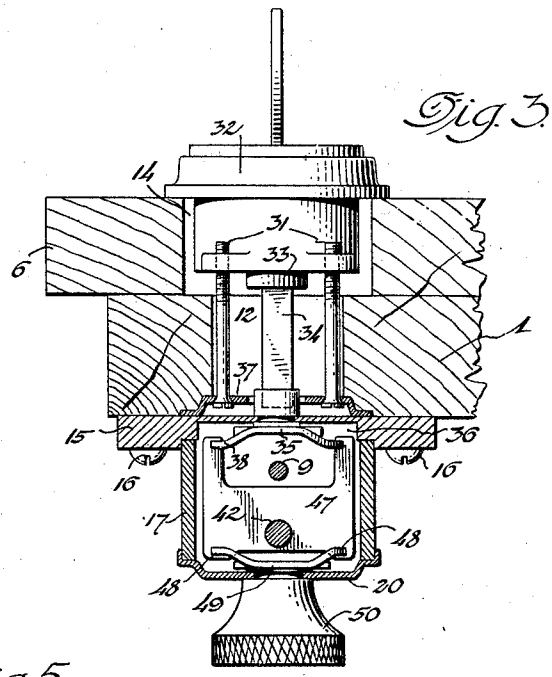


Fig. 3.

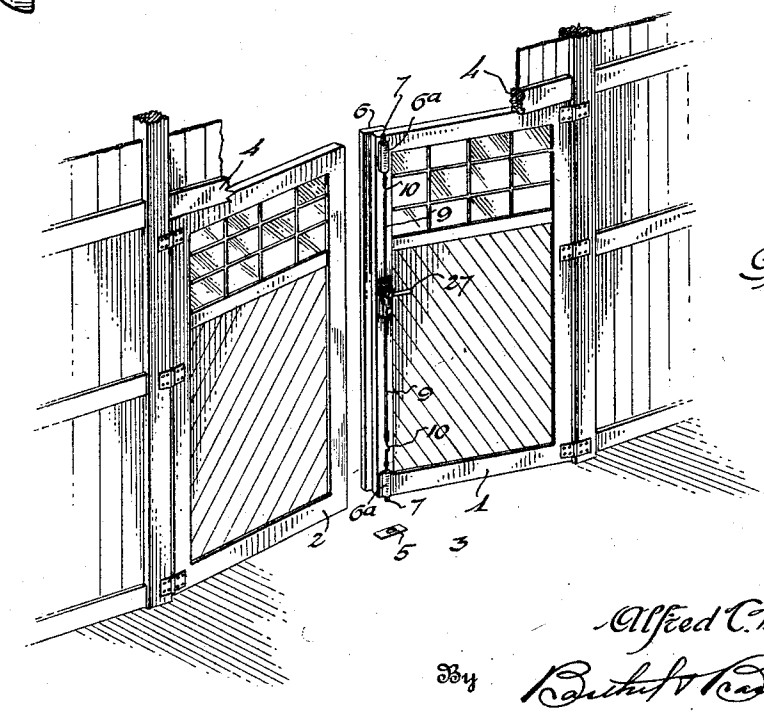


Fig. 4.

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UNITED STATES PATENT OFFICE.

ALFRED C. BALLBACH, OF DETROIT, MICHIGAN.

DOORLOCK.

Application filed June 30, 1923. Serial No. 648,739.

To all whom it may concern:

Be it known that I, ALFRED C. BALLBACH, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Doorlocks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to door locks and has special reference to a key controlled, knob actuating, double bolt lock that may be advantageously used in connection with garage doors to lock edges of a door relative to a door frame or jamb. The lock mechanism is intended for hinged vertical doors to lock the upper and lower ends of the doors, but the locking mechanism is applicable to a sliding door and may be used horizontally of the door to lock side edges thereof.

My invention aims to provide a locking mechanism of the above type wherein reciprocable bolts may be automatically actuated when a door is closed to lock the door, said bolts being articulated with knob actuating means by which the bolts may be retracted. The knob actuating means is controlled by a key operated mechanism and all of the mechanism is compactly arranged for mounting on a door so that the mechanism may be operated from either side of the door.

My door lock will be hereinafter described and then claimed and reference will now be had to the drawing wherein

Figure 1 is a vertical sectional view of a portion of the door and lock showing the greater part of the mechanism;

Fig. 2 is a front elevation of the same with a cover plate removed;

Fig. 3 is a horizontal sectional view of the lock taken on the line III—III of Fig. 1;

Fig. 4 is a perspective view of garage doors provided with a lock in accordance with my invention, and

Fig. 5 is a longitudinal sectional view of one of the spring pressed bolts of the door lock.

Considering an installation of the door lock reference will first be had to Fig. 4 showing vertically disposed hinged garage doors 1 and 2 swingable relative to each other and adapted to be locked in a closed position relative to a floor or pavement 3 and a door frame 4, both provided with sockets or keepers 5, one of which is shown in connection with the floor 3. The door 1 has a meeting rail 6 adapted to overlap the door 2, at the outer side thereof, and on the inner side of the door 1, at the upper and lower ends thereof, are vertically alining casings 6^a containing slidable beveled bolts 7 which are held normally extended by the expansive force of springs 8, so that said bolts may be retracted by engagement with the keepers 5 to automatically snap into said keepers when the door 1 is swung to a closed position. The inner ends of the slidable bolts 7 are loosely connected to vertically alining rods 9 with the loose connections 10 permitting of the slide bolts being retracted by engagement with the keepers 5, without shifting the rods 9.

The edge of the door 1, intermediate the casings 6, is provided with two openings 11 and 12, the latter communicating with end recesses 13 and 14. Mounted over the recess 13 and the inner end of the opening 11 is a lock plate 15 held in place by screws 16. At the upper end of the lock plate 15 is an opening 16^a registering with the opening 11 and on said plate is a casing 17 having a cylindrical chamber 18 and a rectangular chamber 19, both of which are adapted to be closed by a cover plate 20 suitably mounted on the casing 17.

The cylindrical chamber 18 communicates with the openings 11 and 16^a and free to rotate in the openings 11 and 16^a is a knob shaft 21 having shanks 22 and 23. One of the shanks 23 extends through an escutcheon plate 24, suitably secured to the outer side of the meeting rail 6, and this particular shank has an outside knob or crank 25.

The other shank 23 extends through the cover plate 20, and escutcheon plate 26 carried thereby, and is provided with a knob or crank 27.

On the knob shaft 21, within the chamber 18, is a double crank 28 to which the ends of the rods 9 are connected, said rods extending through openings 29 provided therefor in

the casing 17 with one or both of said rods provided with a turn-buckle or take-up device 30.

Fixed in the recess 14 by screws 31 is a conventional form of key operated lock mechanism 32 having its bolt 33 provided with an extension 34 extending through the opening 12 into a rotatable members 35 carried by the lock plate 15 and partly housed in a recess 36 of said lock plate. The rotatable member 35 extends through an anchor plate 37 mounted in the recess 13 as anchoring means for the screws 31, and said rotatable member has outstruck cam portions 38, the purpose of which will hereinafter appear.

Mounted on the shank 22 of the knob bolt 21 and rotatable in the chamber 18 is a circular head 39 provided with a notch 40 to receive the head 41 of a plunger 42, said plunger head being slidable in a groove or way 43 connecting the chambers 18 and 19 of the casing 17 The plunger head 41 is provided with anti-frictional rollers 44 so as to reduce friction on periphery of circular head and easily slide in the notch 40 and the groove 43. With the plunger head 41 extending into the notch 40 of the head 39 the knob shaft 21 is locked against rotation and consequently the rods 9 cannot be shifted to retract the spring pressed bolts 7.

The plunger 42 extends through a detachable horizontally disposed partition 45 in the chamber 19 and incircling said plunger, between the partition 45 and the plunger head 41 is a coiled expansion spring 46 holding the plunger normally elevated, either in the notch 40 or against the head 39 of the knob shaft 21.

On the lower end of the plunger 42 is a notched head 47 providing clearance for the lowermost rod 9 and said notched head is normally engaged by the cam portions 38 of the rotatable member 35. The notched head is also normally engaged by cam portions 48 of another rotatable member 49, carried by the cover plate 20, said rotatable member having a conventional form of knob or crank 50.

Without unlocking the lock mechanism 32 the knob 50 may be turned, in either direction, to lower the plunger head 41 and release the head 39 so that the knob 27 may be used to rotate the shaft 21 and manually retract the bolts 7.

The lock mechanism 32 may be actuated by its key to turn the rotatable member 35 to retract the plunger head 41 or set the plunger head in a lowered position, so that the knob bolt 21 may be rotated by either of the knobs 25 or 27 to retract the spring pressed bolts 7.

From the outer side of the door 1 it is necessary to operate the lock mechanism 32 before the knob 25 can be used, but at the inner side of the door the knob 50 can be used at any time independent of the lock mechanism 32 to release the knob shaft 21 so that the knob 27 can be used to rotate the knob shaft.

It is thought that the operation and utility of the door lock will be apparent without further description, and while in the drawing there is illustrated a preferred embodiment of my invention, it is to be understood that the structural elements are susceptible to such changes as are permissible by the appended claims.

What I claim is:—

1. A lock comprising spring pressed bolts, a knob shaft, rods connecting said spring pressed bolts to said knob shaft so that said shaft may retract said bolts, a head on said knob shaft provided with a notch, a plunger provided with anti-frictional devices adapted to engage in the notch of said head and prevent rotation of said knob shaft, and a key controlled lock mechanism adapted to retract said plunger to release said knob shaft.

2. A lock as claimed in claim 1, and a head on the lower end of said plunger a knob actuated rotatable member coaxially of said key controlled lock mechanism, cam members operatable by said key controlled lock mechanism and said knob actuated rotatable member adapted to depress the lower head of said plunger, said knob actuated rotatable member being adapted for retracting said plunger independent of said key controlling lock mechanism.

3. A lock comprising bolts, a lock casing, a shaft, rods extending into said lock casing and connecting said bolts and shaft so that said shaft may actuate said bolts, a head on said shaft, a plunger adapted to engage said head and prevent actuation of said shaft, a head on the lower end of said plunger cut away to provide clearance for one of said rods, and cam members engageable with opposite sides of said plunger head and operatable independent of each other for depressing said plunger to release said shaft head.

4. A lock as claimed in claim 3, wherein one of said cam members, is key controlled.

5. In a lock, a bolt actuating shaft, a plunger adapted to lock said shaft, a head on said plunger, rotatable members at opposite sides of said plunger having outstruck cam members normally engaging said head and adapted to depress said head to retract said plunger, and means holding said plunger normally extended to lock said shaft.

6. In a lock, a bolt actuating shaft, a plunger adapted to lock said shaft, a head on said plunger, co-axial rotatable members at op-

posite sides of said plunger, said members having outstruck cam portions normally engaging said head and adapted to depress said head to retract said plunger, means holding said plunger normally extended to lock said shaft, a key operated lock mechanism for controlling one of said rotatable members, and a knob for controlling the other of said rotatable members, said rotatable members being operatable independent of each other.

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

ALFRED C. BALLBACH.

Witnesses:
KARL H. BUTLER,
ANNA M. DORR.