G. ASTON.

LOCK.

APPLICATION FILED MAR. 31, 1914.

1,125,791. Patented Jan. 19, 1915.

Fig. 1.

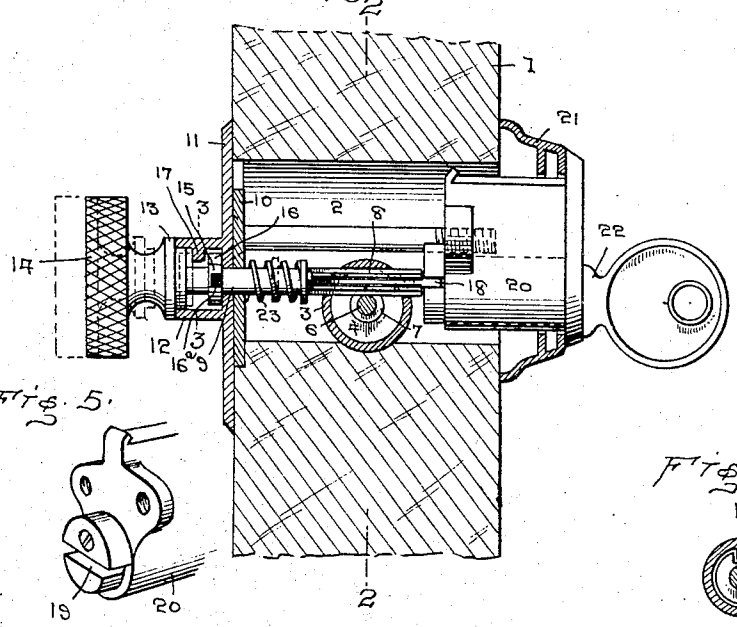


Fig. 5.

Fig. 4.

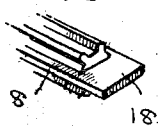


Fig. 3.

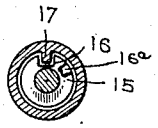
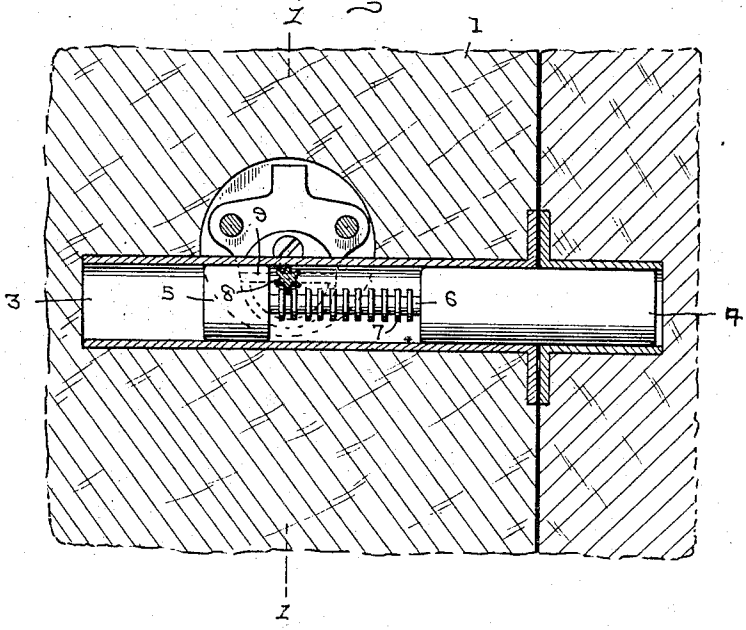


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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LOCK.

1,125,791. Specification of Letters Patent. Patented Jan. 19, 1915.

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To all whom it may concern:

Be it known that I, GEORGE ASTON, a citizen of the United States, residing at New York, Brooklyn borough, in the county of New York and State of New York, have invented certain new and useful Improvements in Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to locks and more particularly to a special form of locking bolt and controlling means therefor and my object among others is to provide a cylindrical form of bolt which may be at all times freely rotated, a very important and valuable desideratum inasmuch as it will be practically impossible to cut the bolt as with a saw or file as it will freely turn when said tools are applied.

A further object of my invention among others is to provide thoroughly reliable and efficient though very simple means whereby the bolt may be readily locked from the inside of the door as against the operation of the regular key of the lock when applied from the outside of the door.

Other objects and advantages will be made clearly apparent in the following specification and pointed out in the claims, reference being had to the accompanying drawings which are made a part of this application and in which,

Figure 1 shows a central sectional view of my invention taken on dotted line 1, 1 of Fig. 2. Fig. 2 shows a sectional view of the barrel of the locking bolt as indicated on dotted lines 2, 2 of Fig. 1. Fig. 3 is a sectional view on dotted lines 3, 3 of Fig. 1. Figs. 4 and 5 are perspective views of certain coöperating parts of my lock control.

In order to conveniently refer to the various details of my invention and coöperating accessories, numerals will be employed, the same numeral being applied to a corresponding part throughout the views.

Referring in detail to the drawings, 1 indicates a portion of the door contiguous to the lock of the usual or any preferred construction and said door is provided in the usual manner with a transverse bore 2 and also with a suitable bore or seat to receive the housing 3, which is cylindrical in form and provided with a suitable bore adapted to snugly receive the cylindrical form of bolt 4 and permit the free reciprocation and rotation thereof as will be hereinafter set forth.

My improved form of cylindrical bolt consists of a body portion or bolt proper 4 having the inner end or terminal 5 of substantially the same diameter as said body portion, the intermediate section being cut-away to provide the shaft 6 having at regular intervals thereon a plurality of annular teeth 7 which serve as the teeth on a rack bar and which are designed to coöperate with the controlling gear 8, which latter is formed upon the shaft 9 extending outward through the plates 10 and 11 secured in any preferred way over the inner end of the bore 2, the plate 11 having the cylindrical extension or hub section 12, the open outer end of which is closed by the flared inner end of the collar 13 carried by the milled head or controlling knob 14. The shaft 9 is also provided exteriorly of the plate 11 with an integral or other form of collar 15, the latter having upon one side a marginal recess 16 to be brought into registration with the lug or tooth 17 located on the inner side of the extension 12. On the inner end of the elongated gear wheel 8 I provide the dowel or flattened extension 18 which is designed to enter the slotted opening 19 provided for the control of the tumblers located within the barrel 20, which latter is provided the usual or preferred form of housing 21 for the exterior end thereof as is common in locks of this character, the said housing is provided with the usual form of escutcheon having a key hole whereby the key 22 may be readily entered into engagement with a plurality of tumblers located within the barrel 20. In order to hold the shaft 9 as disposed normally inward I provide the compression spring 23 which is disposed around said shaft in such a manner that the force thereof will be directed against the plate 10, the result being that said shaft will be held inward as stated whereby the dowel or flattened extension 18 will find and enter the slot 19 when the knot 14 is rotated. In order to lock the shaft 9 and its gear 8 and thereby hold the

bolt from being moved longitudinally, I also provide the recess 16ª on the collar 15 to receive the tooth 17, when shaft 9 is properly turned, thus securely holding the bolt.

It will be obvious from the foregoing that the plurality of teeth 7 upon the shaft or reduced section 6 of the bolt will serve as a rack bar for the pinion or elongated gear 8 thus permitting said gear to be at all times in control of the bolt without regard to whether the shaft 9 is directed inward or outward, the elongation or widening of the gear 8 being designed to permit the longitudinal movement of the shaft 9 incident to the operation of my lock as will be hereinafter pointed out.

The operation of my invention may be stated as follows: It will be understood that when the key is entered in the lock the plurality of tumblers within the barrels 20 will all be properly alined by the action of said key and since the extension 18 is resting normally within the slotted opening 19 it follows that when the key is turned it will cause the rotation of all the tumblers and incidentally the gear 8 causing the latter to travel over and engage the teeth 7 and incidentally extend or withdraw the bolt as desired. The bolt is therefore positively moved by the action of the key inasmuch as no dependence is placed upon the springs or any equivalent means to throw or return said bolt. In like manner the bolt may be readily placed in an unlocked position by a reverse turning of the key and the incident reverse rotation of the slotted member controlling the gear 8.

My improved lock may be so set from the inside of the door that the key belonging to the lock will not operate the same, such result being very desirable at times and this action of my lock I am able to secure by a slight pull upon the knob 14 which will cause the outward movement of the shaft 9 sufficiently to bring the disk or collar 15 into engagement with the lug 17 when by turning the controlling knob 14 to a proper point the said notch or recess 16 will be brought into registration with the tooth or lug 17 when the shaft 9 may be further withdrawn sufficiently to place the said disk or collar 15 upon the outer side of said lug or tooth and by said means withhold the shaft 9 in its outwardly extended position until the shaft 9 is again rotated sufficiently to permit the collar 15 to pass the tooth, through the mediation of the recess 16 and the compression spring 23 as will be obvious. When the shaft 9 has thus been withdrawn it will be clear that the dowell or flattened extension 18 is wholly withdrawn from the recess 19 and it thereby follows that when the key is turned in the lock there will be no connection whatever between the tumblers thus controlled and the bolt and consequently said bolt will remain idle no matter in what direction the key may be turned.

It is furthermore obvious that when the shaft 9 is withdrawn so that the dowel or extension 18 is no longer in engagement with the slot 19 the bolt may be readily thrown outward and withdrawn independently of the tumblers.

It will therefore, be obvious from the foregoing description that I have provided a reliably efficient form of lock having a cylindrical form of bolt which is at all times left free to rotate and will consequently freely turn as against the action of a file or saw and will prevent the cutting of the bolt in such manner as is now common with that form of bolt which is angular in cross section.

The notches 16ª are recessed in the collar 15 for the purpose of locking the gear 8 in rigid position and away from the key controlling device. For this purpose the knob 14 is grasped and drawn outward the collar 15 passing the lug 17 by means of the recess 16 and is slightly turned until the notch 16ª registers with the lug 17 to act as above described.

Believing that the construction, advantages and operation of my invention in improved locks has thus been made clearly apparent, further description is deemed unnecessary.

What I claim as new and desire to secure by Letters Patent is:—

1. In a lock of the character described, the combination of a cylindrical bolt having a reduced section freely rotatable on its axis. a suitable housing therefor, a plurality of teeth preferably formed upon the reduced section of the bolt, a pinion coöperating with said teeth and means to place said pinion in and out of communication with that part of the lock controlled with a key.

2. A lock of the character described, comprising a cylindrical bolt having a reduced section freely rotatable on its axis, a suitable mounting therefor, a plurality of annular teeth formed upon the reduced section of the bolt, a gear device coöperating with said teeth; a shaft in control of said gear, a barrel provided with interchangeable locking members having a controlling key, means to move and hold the shaft and said gear in an outward direction whereby said gear will be placed out of communication with the key controlling device.

3. The herein described lock, comprising a plurality of tumblers having reduced portion a key in control thereof; a cylindrical bolt having with annular teeth preferably formed upon the reduced portion thereof and mounted to freely rotate, a controlled gear for said teeth, a shaft connected to said gear and adapted to move longitudinally, an

extension upon the end of said gear to communicate with the key controlled tumblers whereby the gear will be rotated incident to the rotation of the key controlled tumblers and means to connect and disconnect the gear with the key controlled members as desired.

4. The herein described lock, comprising key controlled devices; a bolt cylindrical in cross section and mounted to freely rotate having a plurality of annular teeth on a portion thereof; a gear coöperating with the said annular teeth, said gear having an extension designed to engage the key controlled device and means whereby said gear may be withdrawn from connection with said key controlled devices from the inner side of the door.

5. A lock comprising, a plurality of key operative tumblers, a gear device independently connected to said key operative devices, said gear having a collar therearound, a recess in said collar and a notch in said collar, said recess to allow said collar to pass a lug in the housing thereto, and said notch to lock said gear in open position, a housing for said gear, a cylindrical locking bolt mounted at right angles to said gear device, said locking bolt having a reduced portion with annular teeth therearound meshing with said gear device, said locking bolt being mounted to freely rotate and a housing to said locking bolt.

6. A lock comprising, a housing having a transverse channel therein, a lug integral to said housing, a cylindrical bolt mounted in said transverse channel to freely rotate therein, and having a reduced portion with annular teeth therearound, a gear device mounted in said housing and meshing with said teeth, said gear device having a shoulder therearound, with a recess and a notch therein, said recess to allow said shoulder to pass said lug, and said notch to allow of the gear device to be locked in disconnected position, a plurality of key controlling devices mounted in said housing and adapted to independently connect with said gear device.

7. A lug comprising, a freely rotatable locking bolt, a housing therefor, a reciprocatory operating gear mounted at right angles to said locking bolt and meshing therewith to operate the same, a collar upon said gear having a recess and a notch therein, a housing for said gear having a lug projecting therethrough, said lug adapted to allow said collar to pass the lug by means of said recess and to lock thereagainst by means of said notch, and a plurality of key controlled devices independently connected to said gear device, said locking bolt being independently operated by either said gear devices or said key controlled devices.

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

GEORGE ASTON.

Witnesses:
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BURNINE MILLS.