Dec. 27, 1932. C. KEMP 1,892,512

LOCK

Filed Sept. 20, 1930

FIG. 1

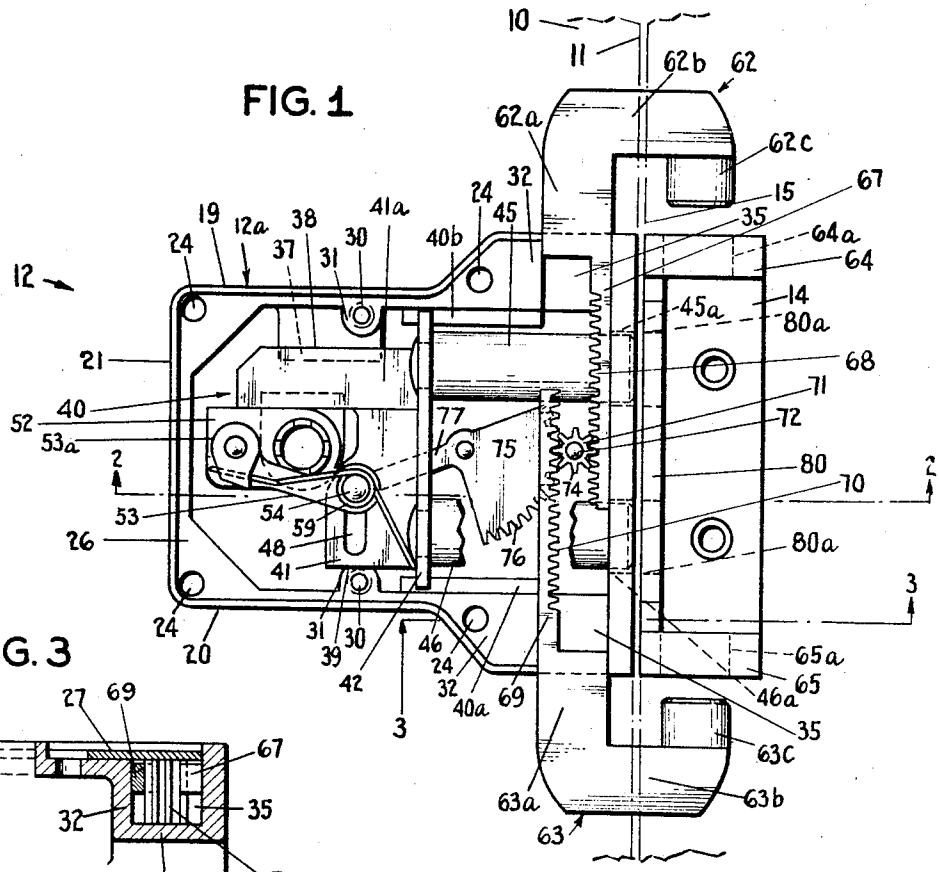


FIG. 3

FIG. 4

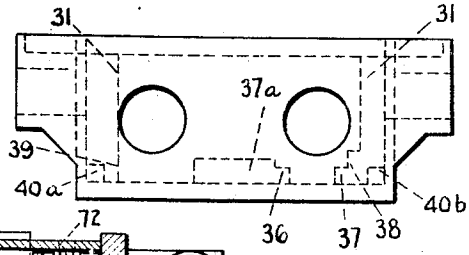
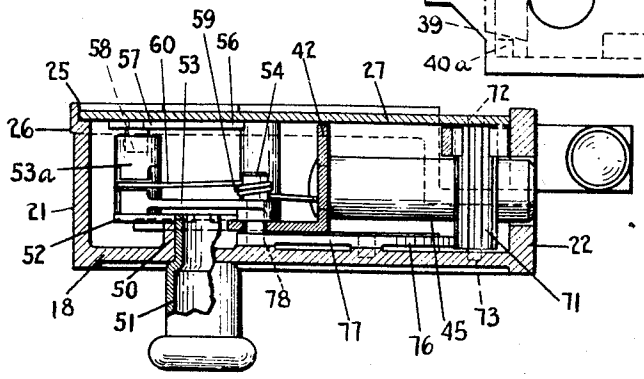


FIG. 2



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UNITED STATES PATENT OFFICE

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LOCK

Application filed September 20, 1930. Serial No. 483,174.

This invention relates to locks.

Among the objects of the invention is to provide a neat, compact and rugged lock of the character described, and which shall comprise few and simple parts, be comparatively inexpensive to manufacture, smooth and positive in operation, and which shall yet be easy to assemble, disassemble and manipulate, practical and efficient to a high degree.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts, which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention,

Fig. 1 is a rear, elevational view of the lock embodying the invention with the rear cover of the lock casing removed and parts broken away to show the interior construction;

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1; and

Fig. 4 is an end view of the lock casing.

Referring now in detail to the drawing, 10 designates a portion of the door on which is mounted, adjacent the outer vertical edge 11 thereof, a lock 12 here shown as carrying a plurality of bolts, adapted to cooperate, in the manner hereinafter described, with a strike or keeper 14 attached to the door jamb 15.

The lock 12 comprises a casing 12*a* having a front wall 18, top and bottom walls 19 and 20, an end wall 21 and a second end wall 22 disposed adjacent the edge 11 of the door. The casing may be secured to the door in any suitable manner, as for instance by means of screws and the like fastening members, extending thru openings 24 formed in extending portions of the casing adjacent the rear edge 25 thereof. The top and bottom walls 19 and 20 and the end wall 21 are formed with an internal shoulder 26 adjacent said rear edge 25 for seating a rear cover plate 27. Said cover plate may be secured to said casing in any suitable manner, as for instance, by means of screws extending thru threaded openings 30 in bosses 31 integrally formed with the bottom and top walls of the casing.

The casing 12*a* furthermore, may be formed with symmetrical aligned wall portions 32 extending outwardly from said bottom and top walls 19 and 20 and disposed parallel to the end wall 22. Extending outwardly from said top and bottom walls 19 and 20 are walls 33 parallel to the front wall 18 and joining the walls 32 and 22. It will be noted that the walls 32, 33 and 22 form with the cover plate 27, a pair of tubular openings 35 at the top and bottom of the casing, adjacent said front wall 22, communicating with the interior of the casing.

For the purpose hereinafter appearing, the front wall 18 is formed with an integral shoulder, ledge or step 37 having a smooth surface 38 parallel to the top wall 19. The boss 31 extending from the bottom wall 20 is likewise provided with a flat surface 39 parallel to said surface 38 of step 27. Said front wall 18 is provided with another integral portion 37*a* forming a step 36 parallel to and aligned with said step 37. Slidably mounted within the casing 12*a* and guided by and between the parallel surfaces 38, 39 is a member 40 having a plate portion 41 parallel to said front wall 18. Said member 40 is provided with an extension 41*a* resting on and guided between said steps 37 and 36*a*. Extending from said plate portion 41 at right angles thereto is an integral plate portion 42 disposed parallel to the end wall 22. Secured to said plate 42 in any suitable manner, are a pair of parallel horizontal bolts 45 and 46, the front ends of which are slidably received in openings 45*a* and 46*a* of said end wall 22. The casing 12*a* is further formed with integral ledges 40*a* and 40*b* contacting the ends of said wall 42 and providing a supporting guide therefor.

The plate member 41 is formed for the purpose hereinafter appearing, with a slot 48 disposed substantially parallel to the front

wall 22. Means is provided for projecting said bolts 45, 46 from the casing and retracting the same into the casing. To this end, the front wall 18 of the casing is formed with an integral boss 50 having a bore rotatably receiving a finger knob 51 projecting into the casing. Fixed to the inner end of the knob is an arm 52 to the outer end of which there is pivoted a link 53, said link being attached to a pin 54 disposed perpendicular to the front wall 18 and extending thru slot 48 in said plate portion 41.

It will now be seen that upon rotating the knob 51, the arm 52 is rotated therewith for moving the link 53 and causing sliding movement of the member 40 by reason of the pin and slot connection 54, 48. Any suitable key controlled mechanism 56 may be mounted on the cover plate 27, the same being provided with an arm 57 substantially contacting the inner side of said cover plate and provided with a forwardly projecting lug 58 pivoted to a rearwardly extending portion 53*a* of the link 53. Thus, upon turning of the key within mechanism 56, the arm 57 is rotated and the lug 58 actuates the link 53 for translating said member 40. A coil spring 59 may be mounted on pin 54 and provided with end extensions 60 engaging portion 53*a* of the link 53, and the plate portion 42, for normally urging member 40 toward the end of its stroke in either direction.

The lock 12 is provided with a pair of vertical U-shaped bolts 62, 63 adapted to be projected from the casing 12*a* simultaneously with the retraction of said horizontal bolts 45, 46. Said bolts 62 and 63 are symmetrically disposed and are provided with portions 62*a* and 63*a*, respectively, received within the tubular openings 35 of the casing. Said bolts 62, 63 are further provided with parallel portions 62*b* and 63*b* respectively, adapted to overlap the door jamb, and with portions 62*c* and 63*c*, respectively, extending toward each other and preferably of circular cross-section. The keeper 14 is provided with a wall 80 having openings 80*a* for receiving the horizontal bolts 45, 46 and with parallel walls 64, 65 having openings 64*a*, 65*a* for receiving the bolt portions 62*c*, 63*c*, respectively.

Means is provided for moving the bolts 62, 63 inwardly toward each other simultaneously with the projection of the bolts 45, 46, and outwardly away from each other simultaneously with the retraction of said horizontal bolts. To this end, the bolt 62 is provided with a rack extension 67 slidably contacting the inner surface of the end wall 22 and provided with teeth 68 on the inner face thereof. It will be noted that the rack portion 67 is disposed between the bolts 45, 46 and the cover plate 27. Extending from the bolt portion 63*a* of the bolt 63 is a rack portion 69 likewise disposed between the bolts 45, 46 and the cover plate and also provided with teeth 70, on the inner face thereof. Extending between the racks 67, 69 is a pinion 71 having end shafts 72 and 73 journaled in suitably aligned bearing openings formed in the front wall 18 and in said rear plate 27. The teeth 74 of the pinion 71 mesh with the teeth 68 and 70 of the racks 67 and 69, whereby rotation of said pinion will cause movement of the bolts 62 and 63 in opposite directions.

Pivoted to the front wall 18 of the casing and disposed between the member 40 and said front wall, is a plate member 75 having a segmental gear portion 76 meshing with the teeth 74 of said pinion 71. Said member 75 is provided with an extending arm 77 pivotally connected as at 78 to said pin 54, whereby said member is provided with a cammed or pin and slot connection with said member 40.

It will now be seen that upon actuation of the knob 51 or the key mechanism 56 from the position shown in Figs. 1 and 2, the arm 52 will be rotated counterclockwise and the link 53 will be moved to the right, to cause the projection of bolts 45, 46 and simultaneous rotation of the plate 75 for rotating the pinion 71 and moving the bolts 62, 63 toward each other into engagement with the keeper 14. Obviously, actuation of the knob or key mechanism in the opposite direction will cause retraction of the bolts 45, 46 and movement of the bolts 62, 63 away from each other to disengage the same from the keeper.

The link 53 may be pivoted to the member 40 independently of the slot 48, it merely being necessary that the member 75 have a pin and slot or cammed connection with said member.

One feature of this invention is the construction of the device which permits easy assembly and disassembly of the various parts. In disassembling the lock, for example, removal of the cover plate permits the bolts 62, 63 to be lifted out of the casing, thus permitting the pinion 71 to be removed. The coil spring 59 may then be taken out of the casing to permit removal of the link 53. The member 40 may then be moved to the left, (looking at Fig. 2), to release the ends of the horizontal bolts 45, 46 from the end wall 22. The member 40 may then be removed to permit removal of the member 75. Obviously, the lock may be assembled by replacing the parts in reverse manner. The cover plate 27 thus serves as a bearing for one shaft end 72 of the pinion 71 and also serves to retain the bolts 62, 63 within tubular openings 35, and the remainder of the mechanism in proper operating position within the casing.

It will thus be seen that there is provided a device in which the several objects of this

invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiment set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a lock, a pair of bolts and means for projecting said bolts simultaneously in transverse directions, said means comprising a rack portion on one of said bolts, a pinion meshing with said rack portion and a geared member meshing with said pinion, and having a pin and slot connection with said other bolt.

2. In a lock, in combination, a casing, a horizontal bolt slidably mounted thereon, a pair of oppositely extending vertical bolts mounted on said casing, said vertical bolts having rack portions, a pinion meshing with and disposed between said rack portions, and a member pivoted to said casing having a geared portion meshing with said pinion and a pin and slot connection with said horizontal bolt.

3. In a lock, in combination, a casing, a horizontal bolt slidably mounted thereon, a pair of oppositely extending vertical bolts mounted on said casing, said vertical bolts having rack portions, a pinion meshing with and disposed between said rack portions, a member pivoted to said casing having a geared portion meshing with said pinion and a pin and slot connection with said horizontal bolt, and means for reciprocating said horizontal bolt.

4. In a lock, a casing, a member slidably mounted in said casing and having a slot, a finger knob rotatably mounted in said casing and having an arm within said casing, a link pivoted to said arm and having a pin projecting into said slot, and a member pivoted to said casing and having a portion pivoted to said pin.

5. In a lock, a casing, a member slidably mounted in said casing and having a slot, a finger knob rotatably mounted in said casing and having an arm within said casing, a link pivoted to said arm and having a pin projecting into said slot, and a member pivoted to said casing and having a portion pivoted to said pin, a bolt fixed to said slidably mounted member, a second bolt mounted on said casing and having a rack portion, a pinion rotatably mounted in said casing meshing with the rack portion, said pivoted member having a portion provided with gear teeth meshing with said pinion.

6. In a lock, in combination, a casing having a front wall and an end wall, a rear cover plate for said casing, a bolt mounted within said casing and adapted to be projected thru said end wall, a pinion rotatably mounted on and between said front wall and cover plate, a second bolt having a rack portion meshing with said pinion and disposed between said cover plate and said first bolt and a member disposed between said first bolt and front wall, pivoted to said front wall and having gear teeth meshing with said pinion, said member being operatively connected to said first bolt for rotating said pinion and moving said second bolt upon movement of said first bolt.

7. In a lock, in combination, a casing having a front wall and an end wall, a bolt mounted within said casing and adapted to be projected thru said end wall, a pinion rotatably mounted on said front wall, a second bolt having a rack portion meshing with said pinion and disposed on one side of said first bolt and a member disposed on the other side of said first bolt, pivoted to said front wall, and having gear teeth meshing with said pinion, said member having a pin and slot connection with said first bolt.

8. In a lock, in combination, a casing having a front wall and an end wall, a rear cover plate for said casing, a member slidably mounted within said casing, a pair of bolts fixed to said member and adapted to project thru said end wall, a pinion disposed between said bolts rotatably mounted in said front wall and cover plate, a second pair of symmetrically disposed bolts mounted in said casing for movement parallel to said end wall, said second pair of bolts having rack portions extending between said first pair of bolts and said cover plate and disposed on opposite sides of and meshing with said pinion.

9. In a lock, in combination, a casing having a front wall and an end wall, a rear cover plate for said casing, a member slidably mounted within said casing, a pair of bolts fixed to said member and adapted to project thru said end wall, a pinion disposed between said bolts rotatably mounted in said front wall and cover plate, a second pair of symmetrically disposed bolts mounted in said casing for movement parallel to said end wall, said second pair of bolts having rack portions extending between said first pair of bolts and said cover plate and disposed on opposite sides of and meshing with said pinion, and means for simultaneously projecting all of said bolts.

10. In a lock, in combination, a casing having a front wall and an end wall, a cover plate for said casing, a member slidably mounted within said casing, a pair of bolts fixed to said member and adapted to project thru said end wall, a pinion disposed between said bolts rotatably mounted in said front wall and cover plate, a recond pair of symmetrically disposed bolts mounted in said casing for movement parallel to said end wall, said sec-

ond pair of bolts having rack portions extending between said first pair of bolts and said cover plate and disposed on opposite sides of and meshing with said pinion, and means for simultaneously projecting all of said bolts, said means comprising a member pivoted to said front wall and disposed between said wall and said first pair of bolts, said last named member having a geared portion meshing with said pinion, and a cammed connection with said slidably mounted member.

11. In a lock, a casing, a plurality of bolts having parallel rack portions, and means for projecting said bolts from said casing, said means comprising a pinion disposed between and meshing with said rack portions, a geared member meshing with said pinion, and a member rotatably mounted on said casing about an axis spaced from and parallel to the axis of said geared member, and adapted to be turned from the exterior of said casing, and having an operative connection with said geared member, whereby said bolts may be projected upon turning said rotatably mounted member.

In testimony whereof I affix my signature.

CHARLES KEMP.