No. 704,180. Patented July 8, 1902.

A. R. FERGUSSON.

LOCK.

(Application filed Apr. 22, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

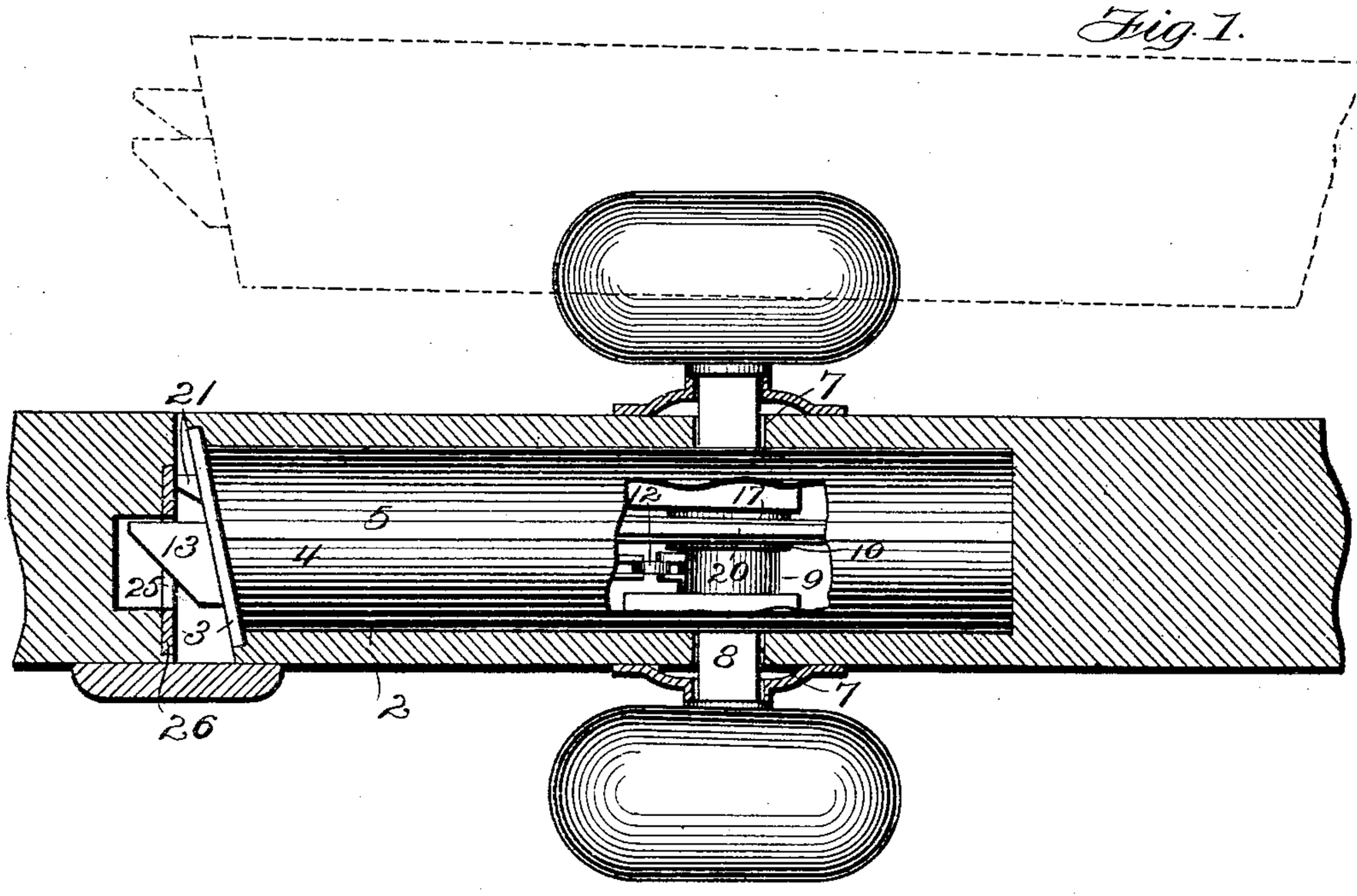
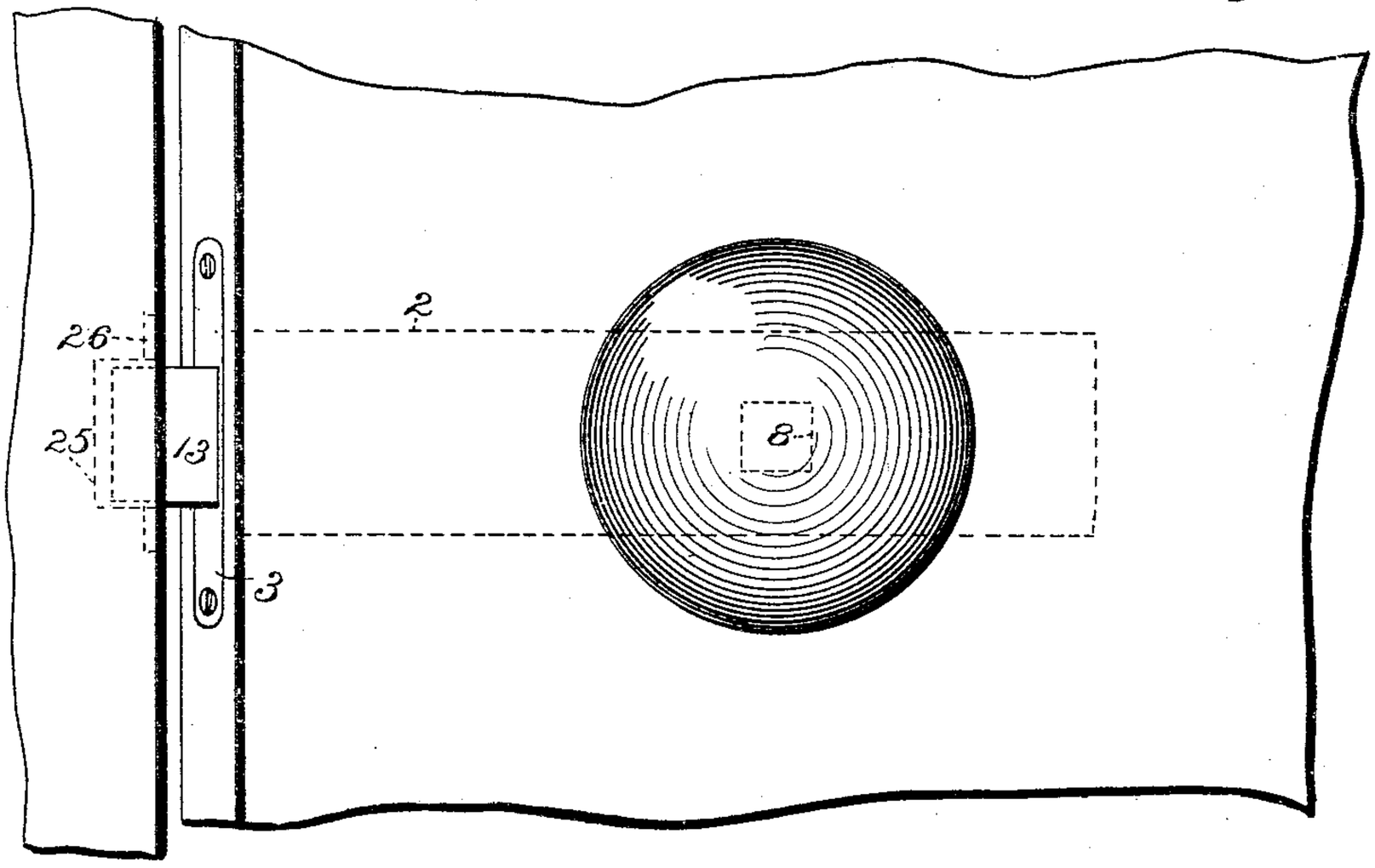


Fig. 2.



Witnesses.
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No. 704,180. Patented July 8, 1902.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

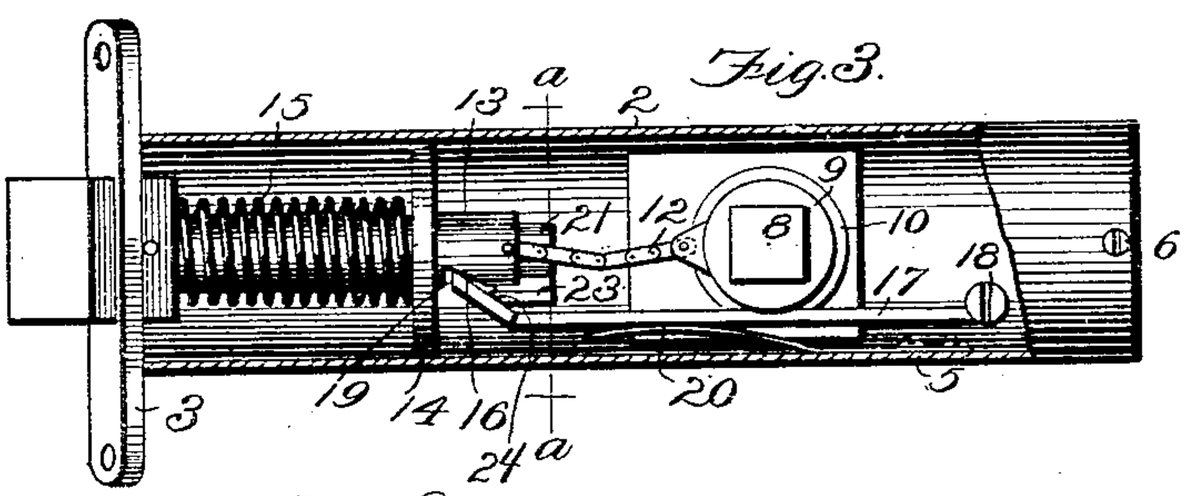


Fig. 4. Fig. 5.

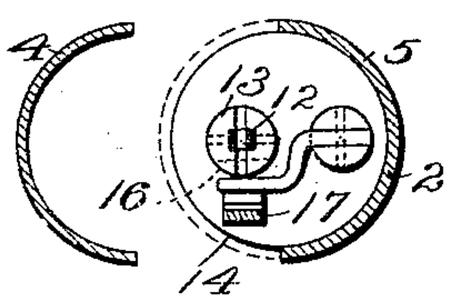


Fig. 6.

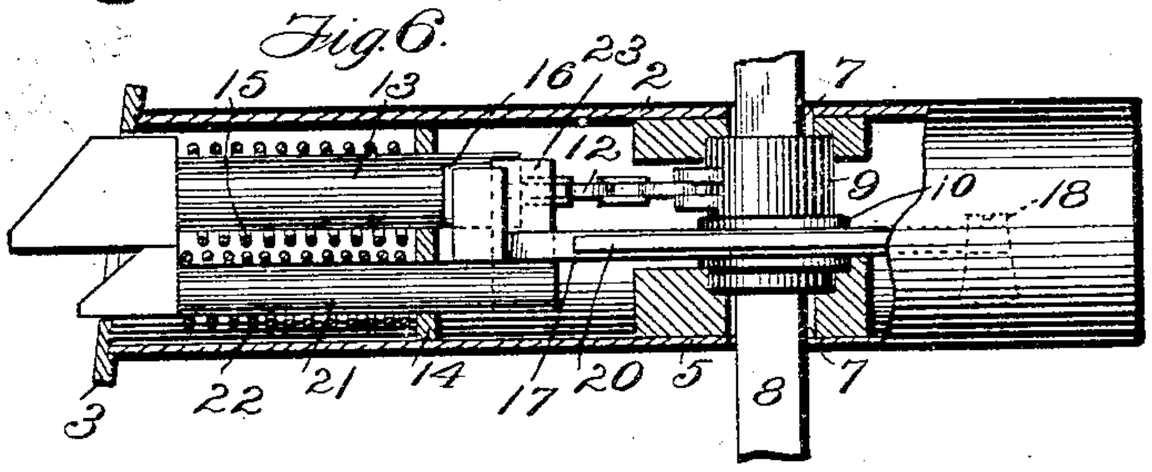


Fig. 7.

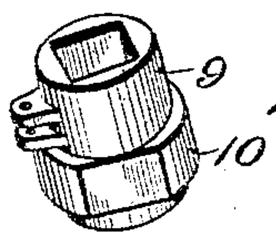


Fig. 8

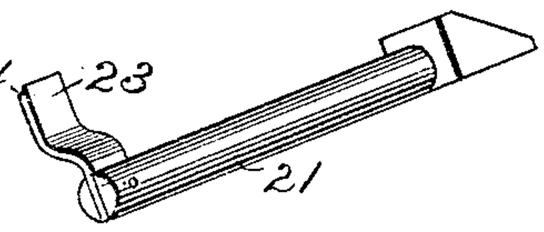


Fig. 9.

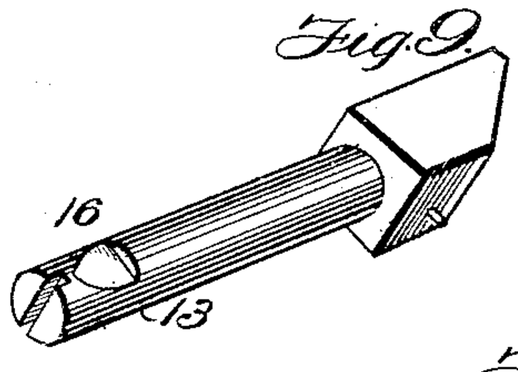


Fig. 11.

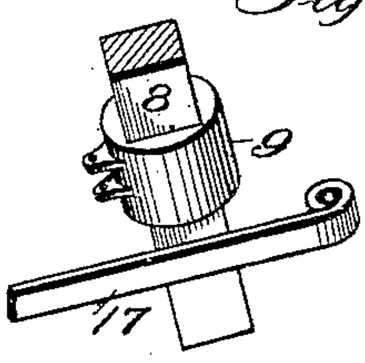


Fig. 10

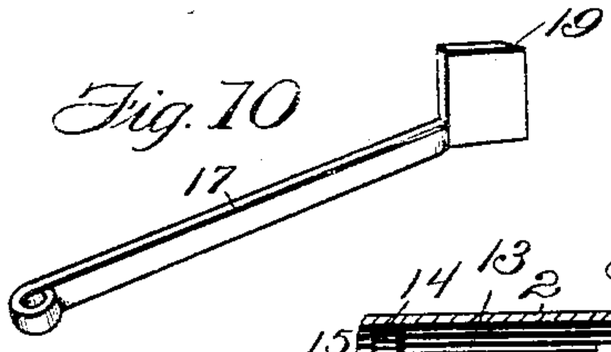
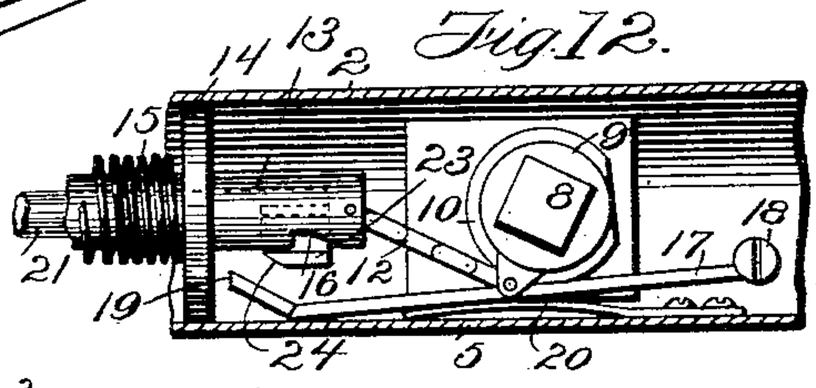


Fig. 12.



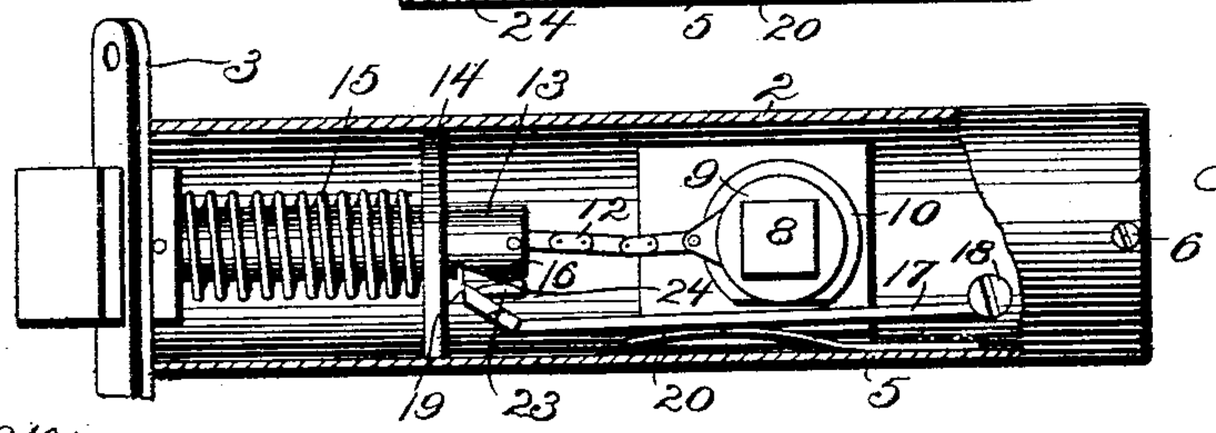


Fig. 13.

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UNITED STATES PATENT OFFICE.

ALAN ROBB FERGUSSON, OF NEW YORK, N. Y.

LOCK.

SPECIFICATION forming part of Letters Patent No. 704,180, dated July 8, 1902.

Application filed April 22, 1901. Serial No. 56,887. (No model.)

To all whom it may concern:

Be it known that I, ALAN ROBB FERGUSSON, a citizen of the United States, residing in the borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification.

This invention relates to locks, the object of the invention being to provide an improved lock having automatically-operative means effective to lock the bolt or latch in its protracted or normal latching or locking position.

A further object of the invention is to provide a lock mechanism extremely simple in construction and operation, free of complicated parts or mechanisms, inexpensive to manufacture, and which can be made of comparatively small size, involving as one part thereof improved means for automatically locking the latch or bolt in its working position.

In the drawings accompanying and forming part of this specification, Figure 1 is a transverse sectional view of a portion of a door and jamb with this improved lock mechanism in position and connected with the knobs of such door, the dotted lines representing the door partially open. Fig. 2 is a side view of the organization shown in Fig. 1. Fig. 3 is a sectional view of this improved lock mechanism and its casing. Figs. 4 and 5 are cross-sectional views of the mechanism, taken in line *a a*, Fig. 3, Fig. 4 showing a part of the lock-casing detached from that part thereof shown in Fig. 5. Fig. 6 is a cross-sectional view of the lock mechanism partly in elevation, taken at right angles to Fig. 3. Figs. 7, 8, 9, 10, and 11 are detail views of various parts of this improved lock mechanism, all the parts of such lock mechanism being shown except the springs for the bolts and the connecting device between the main bolt and the hub of the knob. Fig. 12 is a cross-sectional view of a part of this lock mechanism, illustrating the bolt retracted by the knob; and Fig. 13 is a similar view showing the locking device released from the main bolt.

Similar characters of reference designate corresponding parts in the different figures in the drawings.

Since it is possible in the ordinary construction of locks or latches to insert a knife or other thin instrument intermediate the jamb and the door and push back the latch or bolt, and so permit the door to be opened, it is desirable to provide means for preventing such manipulation, which means will be automatically operative on the shutting of the door and preferably by means of a device retracted and held in its retracted position by the jamb.

I am aware that it is not new to provide an automatically-operative means to prevent the retraction of the bolt or latch by the insertion of an implement between the jamb and the door; but all the mechanisms of which I am aware adapted to accomplish this purpose are complicated, involving a large number of parts, and expensive to manufacture, it not having been found possible heretofore, so far as I am aware, to provide a simple lock mechanism comprising only a few parts in which the latch or bolt will be automatically locked on the closing of the door, and therefore the primary object of the present invention is to provide a lock mechanism of this description.

This improved lock mechanism comprises, in a general way, a shiftable bolt or latch connected with the knob for movement thereby in one direction, a locking device operative to engage said bolt and prevent the retraction thereof, and a shiftable device adapted to engage and be operated by the jamb or other part on the doorway and when retracted to permit the locking of said bolt, the unlocking of such bolt being effected when the door is in its closed position by means of the knob, these few simple parts comprising the major part of the device and being so organized that they can be readily assembled in a lock-casing of comparatively small size.

In one form thereof herein shown and described the lock-casing is shown comprising a tubular or cylindrical casing 2, preferably closed at its inner end and provided at its outer end with a face-plate 3 for attachment to the door. The casing may comprise a pair of semicylindrical members or plates 4 and 5, suitably secured together—as, for instance, by a screw or screws 6. The casing is provided with a transverse opening 7 for the passage of the knob-spindle 8, which projects through a hub 9, mounted to turn in such casing. This hub is provided with

a working part, such as a cam-face 10, for the purpose hereinafter specified, and is connected by a suitable connector, shown herein as a chain 12, with the main bolt or latch 13 projecting through the face-plate, and which usually has a beveled end, such bolt being supported in the present instance by a face-plate and by an apertured member or partition 14 within the casing. A suitable coiled spring 15 is located on the bolt-shank intermediate such partition and the head of the bolt for maintaining such bolt in its protracted position. The shank of this bolt is shown provided with a notch or recess 16, forming an offset, coöperating with which is a locking device, designated in the present instance as a "tumbler" 17, pivotally secured to a projection or pin 18, secured in the casing, which tumbler is shown provided with a beveled end 19, complementary to the shape of the notch 16. This member is so located that the working or cam face 10 of the hub is in position to raise it on the turning of the knob, it being maintained in engagement with such working face and in its locking position by a suitable spring, shown herein as a flat spring 20. For controlling the engagement of the tumbler with the main bolt or latch a controller shown comprising a shiftable member is provided, which in the form shown comprises an auxiliary bolt 21, having a beveled face the head of which projects through the face-plate so as to engage the lock-keeper or jamb of a doorway, the shank being mounted in the partition 14. This bolt is located in such position that one bolt is in front of the other, the auxiliary bolt being shown located in the rear of the beveled side of the main bolt or latch. This auxiliary bolt is maintained in its protracted position by means of a suitable coiled spring 22, located intermediate said partition and the head of the bolt. This bolt controls a device adapted to interfere with the locking of the main bolt, which device is shown comprising a laterally-extending member or arm 23, carried by the bolt and preferably having a beveled edge 24, adapted to work intermediate the locking device and the main bolt, thereby to throw or shift the locking device out of engagement with said main bolt.

In operation when the door is pushed to, the main bolt is pushed in in the usual manner until it is opposite the opening 25 in the keeper or strike plate 26, when its coiled spring forces it into its protracted or locking position. During this operation the auxiliary bolt has likewise been pushed in by the keeper or jamb of the doorway, so that its arm 23 is shifted into position to permit the spring 20 to force the tumbler into engagement with the notch in the main bolt, and so prevent the retraction of the main bolt as long as the auxiliary bolt is held in its retracted position by the keeper or jamb of the doorway in a manner which will be readily understood. When it is desired to open the door, the turning of the knob will throw the locking device out of engagement with the main bolt, and so permit such bolt to be retracted. The turning of the knob will of course in practice be prevented in some suitable manner—as, for instance, by providing a locking mechanism within the knob and operated by a key through such knob. Some suitable means may also be provided for locking the main bolt in its protracted position from the inside of the door, so that the same cannot be retracted even when the knob is turned.

From the foregoing it will be seen that the present improved lock mechanism comprises, in connection with a main bolt or latch present in all lock mechanisms of this character and connected with the knob in some suitable manner, a spring-controlled locking device in the form of a tumbler and a controller therefor, shown comprising a spring-controlled auxiliary bolt, which parts in the form shown comprise four members—the auxiliary bolt having a laterally-extending arm, a spring therefor, a locking device, and a spring therefor—being so assembled that without the addition of other parts and by simply forming a notch in the main bolt and a cam-face on the knob-spindle hub the main bolt can be automatically locked on the closing of the door, so that it cannot be opened by the insertion of a knife-blade or other thin instrument between the jamb and the door and unlocked by the turning of the knob.

Not only is the present mechanism simple in its organization and operation, but the location of the bolts one in front of the other prevents tampering with the rear or auxiliary bolt to effect the unlocking of the door. Were this auxiliary bolt located above or below the main latch it would be in such position that it could be tampered with. In the present case the main bolt or latch protects the auxiliary bolt, it being in front of the latter, so that the insertion of a knife-blade or cutting-tool between the door and the jamb for the purpose of forcing a hole in the jamb, so that the auxiliary bolt could be projected outward by its spring, is not possible, since this cutting-tool would have to first cut through or entirely remove the main latch, which is not a practicable operation. It will therefore be seen that as the main latch is locked by mechanism located within the lock, which mechanism is in turn controlled by the auxiliary bolt, and which is located behind and protected by the main latch, it is not possible to manipulate the main latch surreptitiously in any practicable manner. Consequently not only does the auxiliary bolt prevent the improper working of the main latch, but the main latch in turn protects the auxiliary bolt in such manner that the lock mechanism cannot be manipulated except by the proper means and in the proper manner.

I claim as my invention—

1. In a lock, the combination of a pair of bolts or latches, one behind the other, one a

main latch and the other an auxiliary member or bolt; a shiftable tumbler for engaging the bolt; and means carried by the auxiliary bolt and movable between the tumbler and main latch for positively moving and holding the tumbler out of engagement with the main latch when said auxiliary bolt is in its protracted position.

2. In a lock mechanism, the combination with a latch or bolt, of a locking-tumbler for locking said latch and comprising a pivoted lever having a flanged end; and an auxiliary bolt having a laterally-extending part movable between the flanged end of said tumbler and the latch and effective when in its protracted position to interfere with the locking of said latch by said tumbler, and when shifted into a retracted position to permit the locking of said latch.

3. In a lock, the combination with a casing, of a knob-spindle carried thereby having a tumbler-engaging surface; a pair of spring-controlled latches or bolts, one behind the other, one a main latch connected with said spindle for movement thereby and the other an auxiliary bolt; a spring-controlled tumbler having a part adapted to engage said main latch and lock the latch in a protracted position, said auxiliary bolt having a part movable between the tumbler and main latch for positively moving and holding the tumbler out of engagement with the main latch when said auxiliary bolt is in its protracted position, the organization being such that on the rotation of the knob-spindle or the protraction of the auxiliary bolt the tumbler will be disengaged from the main latch.

4. In a lock mechanism, the combination with a tubular casing, of a knob-spindle projecting transversely thereof and carrying a cam; a main bolt or latch carrying a spiral spring and connected with said spindle by a chain and having a stop-face; a tumbler pivotally connected to said casing at one side of the spindle and having a flanged end at the other side of said spindle effective to engage the stop-face of said latch; a spring for throwing said tumbler into locking position, the cam on the operation of the knob being effective to lift said tumbler from the latch; an auxiliary bolt mounted in said casing and carrying a spiral spring, said bolt having a laterally-projecting part provided with a beveled end working intermediate the flanged end of said tumbler and the latch and effective in one position to permit the locking of said latch by the tumbler, and in another position to lift said tumbler free of the latch.

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