B. MORGENTHAU.

LOCK.

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1,424,136.

Patented July 25, 1922.

Fig. 1.

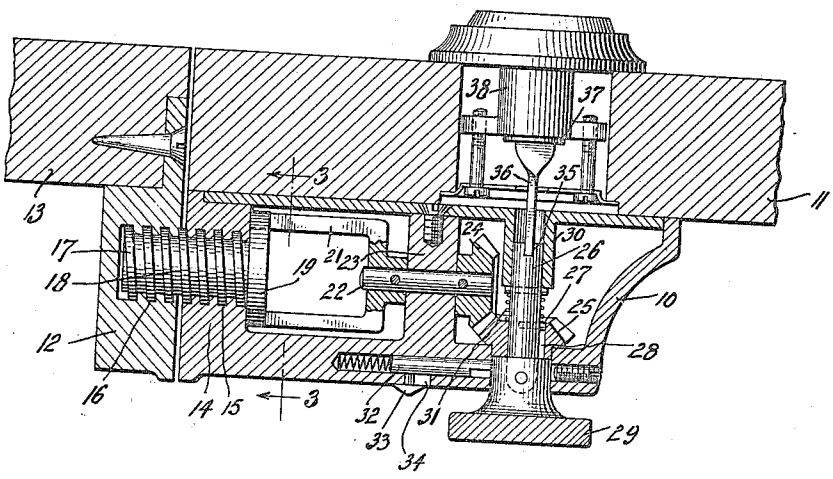


Fig. 2.

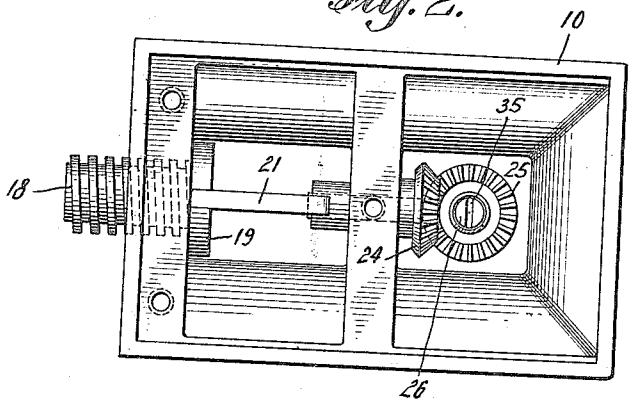
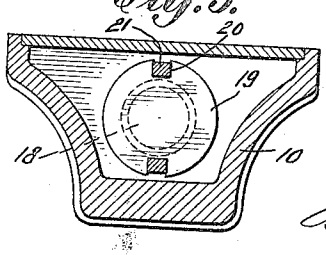


Fig. 3.



INVENTOR

B. Morgenthau

BY

Sigmund Kayser

ATTORNEY

UNITED STATES PATENT OFFICE.

BERNARD MORGENTHAU, OF NEW YORK, N. Y.

LOCK.

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To all whom it may concern:

Be it known that I, BERNARD MORGENTHAU, a citizen of the United States, and resident of the city of New York, 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.

The present invention relates to improvements in locks, and has for its main object to provide one with a sliding and rotary locking bolt, that is actuated by a rotary element, said element being adapted to be operated from the outside by means of a key and from the inside by a knob, the arrangement being such that the said rotary element may be disengaged from the key actuated mechanism, whereby the door cannot be opened from the outside even by the use of the proper key.

Another object of the invention is to provide a lock of the character mentioned which is simple in construction, efficient in operation, and which it is practically impossible to pick by skeleton, or false keys, or other instruments.

A still further object of the invention is to provide a lock of the character mentioned which is adapted for manufacture on a commercial scale, or in other words one which is not so difficult to make as to be beyond the reasonable cost of such a device.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the present invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a central horizontal section taken through a lock constructed in accordance with the present invention; Fig. 2 is a rear elevation of the same with the lock cover removed; and Fig. 3 is a section taken on line 3—3 of Fig. 1.

In the drawings, the numeral 10 indicates a lock-casing, mounted in any suitable manner on the inner face of a door 11, said lock-casing being in alignment with a keeper 12 on the jamb 13. The lock casing is provided in its end plate 14 with a screw-threaded opening 15, the said opening being in registering position with a screw-threaded cylindrical recess 16 in the keeper. With these two sets of threads are adapated to mesh the threads 17 of a cylindrical locking-bolt 18. This bolt is provided upon its inner end with a disk-shaped head 19, having in diametrically opposite portions thereof peripheral notches 20, in which are seated the prongs of a fork-shaped member 21, the latter being fixed to a spindle 22. This spindle extends in the longitudinal axis of the bolt 18, it being rotatably mounted in a bearing 23, on which it is held against longitudinal movement. To the spindle is rigidly fastened a bevel gear 24, in mesh with a similar gear 25, the latter being mounted, in a manner presently to be described, upon a spindle 26, which extends at right angles to the spindle 22. The connection between the spindle 26 and the bevel gear 25 is such that it permits of a movement of the said spindle in the direction of its longitudinal axis, without unmeshing the said two bevel gears. Any suitable connecting means may be employed, in the present case, for instance, a pin 27, fixed to the spindle 26 and extending into a keyway 28 in the bevel gear 25. The spindle 26 carries, outside of the casing, a knob 29, that is rotatably mounted in the face plate of the lock, the free end of the said spindle being journaled in a sleeve 30, which is fixed to or made integral with the back plate of the lock. A pin 26′ extends through the spindle 26, and against this pin and the bevel gear 25 abuts a spring 31, that is coiled around the said spindle for a purpose hereinafter to be described.

As mentioned above, the spindle 26 is shiftable in the direction of its longitudinal axis. When moved outwards, a spring-pressed catch 32 engages the knob 29, to hold the spindle in its outer position against the action of the spring 31. The catch is provided with a finger-piece 33, that extends through a slot 34 in the face plate of the lock-casing. By means of this finger-piece the catch may be disengaged from the knob, whereby the spring 31 causes the spindle 26 to move back to its normal position, shown in Fig. 1 of the drawings.

The inner end of the spindle 26 is provided with a slot 35, in which is seated a projection 36 of a key plug 37, mounted and adapted to turn in a cylinder 38. This plug and cylinder form part of a so-called "cylinder" lock, a detailed description of which is not necessary, as it is well known and does not form part of the present invention. The key is inserted into the key plug from the outside, the plug being fixed, that is to say non-rotatable, in case the key is withdrawn therefrom, as usual in constructions of this type.

The operation of this device is as follows: In the positions of the elements shown in Fig. 1 of the drawings, the locking bolt 18 is shown in its projected position and the catch 32 disengaged from the knob 29. In these positions, the projection 36 of the key plug is seated in the slot 35 in the spindle 26. The door is unlocked from the outside by inserting a key into the plug 37 and turning the latter in the required direction, the rotation of the plug being transmitted by the projection 36 to the spindle 26 and by the intermediary of the pin 27 to the bevel gear 25. This gear, in turn, rotates the gear 24 and the fork 21 fixed thereto, with the result that the locking-bolt 18 is turned and shifted longitudinally upon the said fork toward the bearing 23. The rotating and the shifting movement of the bolt unmeshes the threads of the latter from the threads in the keeper 12, the door being adapted to be opened as soon as such unmeshing has taken place.

In order to unlock the door from the inside with the elements in the positions shown in Fig. 1 of the drawings, the spindle 26 must first be shifted outwards, the catch 32 being automatically interposed between the knob 29 and the bevel gear 25, to hold the spindle disengaged from the projection 36 of the plug 37. If now the knob 29 is rotated in the proper direction, the locking-bolt is disengaged from the keeper 12. It is to be observed that when the catch 32 holds the spindle 26 in its outer position, the door cannot be unlocked from the outside, inasmuch as there is no driving connection between the cylinder plug and the bevel gear 25.

What I claim is:—

1. In a lock, the combination with a casing, of a longitudinally shiftable and rotatable locking-bolt therein, the outer end of said bolt being screw-threaded and adapted to project through said casing for engagement with a screw-threaded keeper, a disk-shaped head upon the inner end of said bolt having in diametrically opposite portions peripheral notches, a rotatable spindle in said casing extending in the longitudinal axis of said bolt, a fork-shaped member fixed to said spindle having its prongs extending parallel to the longitudinal axis of said spindle, said prongs being seated in said notches, a knob rotatably mounted in said casing disposed outside of the same, and a driving connection between said knob and said spindle.

2. In a lock according to claim 1, said driving connection including a bevel gear fixed to said spindle, and a bevel gear in mesh with said first-mentioned bevel gear operatively connected with said knob.

Signed at New York, in the county of New York and State of New York this 27th day of March, A. D. 1921.

BERNARD MORGENTHAU.