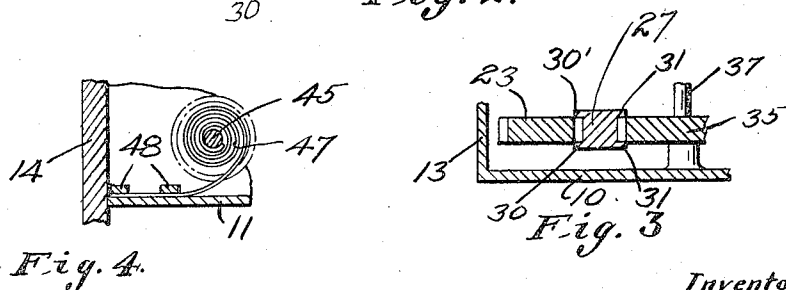
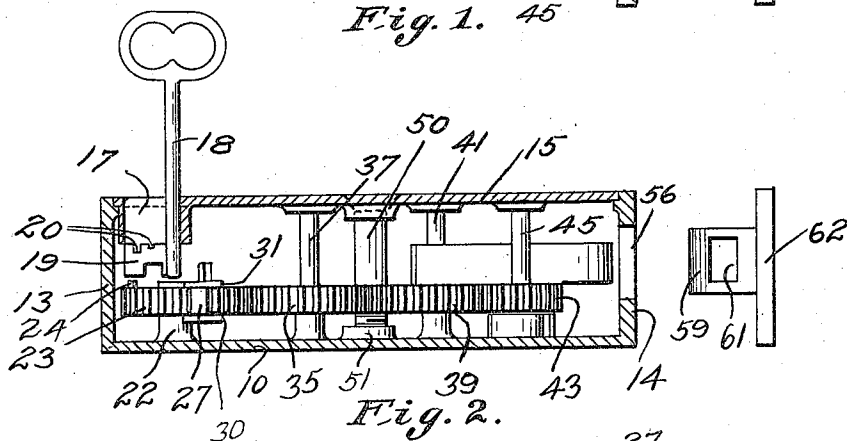
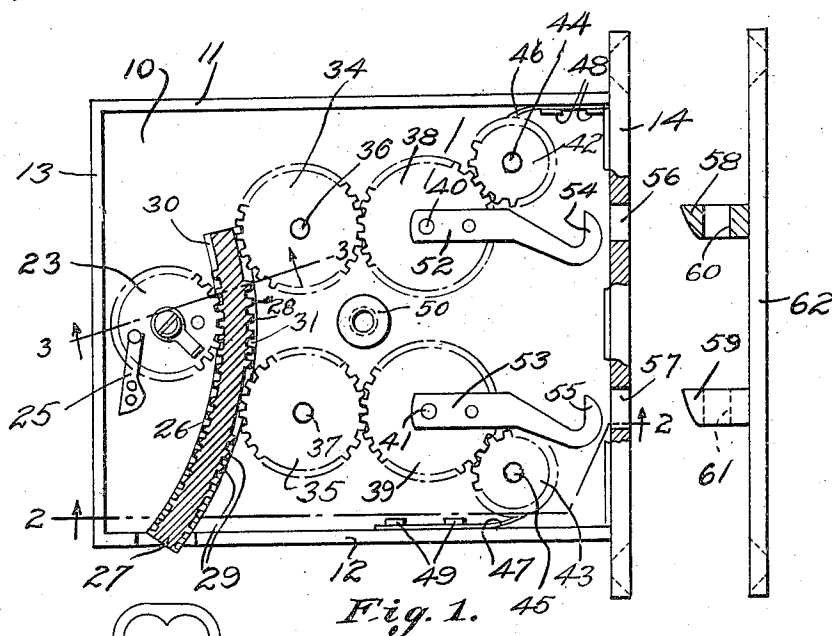


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By Frank Lederman
their Attorney

UNITED STATES PATENT OFFICE.

KAZIMIER BUCZYNSKI AND BRONISLAW SZOKA, OF GRAND RAPIDS, MICHIGAN.

COMBINATION-LOCK.

1,320,444.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, KAZIMIER BUCZYNSKI, a citizen of Russia, residing at Grand Rapids, county of Kent, and State of Michigan, and I, BRONISLAW SZOKA, a citizen of Russia, residing at Grand Rapids, county of Kent, and State of Michigan, have invented certain new and useful Improvements in Combination-Locks, of which the following is a specification.

This invention relates to improvements in locks, particularly to types adapted to be used in connection with folding doors and like sliding parts.

The principal object of the invention is to provide a novel form of key operated lock in which the engaging elements are always receptive of the keeper, and operate simultaneously.

A further object is to provide a lock which can be operated by a key having a definite form of ward, the lock being of the usual appearance and relatively inexpensive to construct.

These and other like objects are attained by the novel construction and combination of parts hereinafter described, and shown in the accompanying drawings, forming a material part of this disclosure, and in which—

Figure 1 is a side elevational view showing a lock made in accordance with the invention, the cover plate being removed.

Fig. 2 is a transverse sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary sectional view taken on line 3—3 of Fig. 1, and

Fig. 4 is a partial view showing an interior corner of the lock construction.

The lock consists of the usual rectangular casing having a bottom plate 10, side walls 11 and 12, rear end walls 13, and front wall or face plate 14, the end wall 13 and face plate 14 having inwardly extending ledges upon which rest the cover plate 15.

Formed through the cover plate is the key entrance 17, adapted to receive the key 18, having a ward 19, its upper portion having slots 20 adapted to engage with corresponding projections formed on the lower surface of the key entrance 17, so as to prevent the operation of a false key in the lock.

Fixed on the bottom plate 10, centrally with the axis of the key 18, is a support 22, on which is rotatably engaged a spur

gear 23, having rigidly attached upon its side an upturned rigid projection 24, adapted to engage with the ward 19 as the key is turned, thereby transmitting rotary motion to the gear 23.

In order to prevent excessive motion, a stop 25 is secured to the bottom plate 10, its arm extending over the gear so as to contact with the projections 24 preventing complete rotation of the gear.

The teeth of the gear 23 mesh with rack teeth 26 formed on the concave side of a curved bar 27, other teeth 28 and 29, being formed upon the outer side of the bar, all of the teeth extending between flanges 30 and 30', and 31 and 31', extending marginally outward so that the bar 27 is supported movably and guided by the upper and lower flanges. One end of the outer rack 28, engages with another gear 34 and the other outer rack 29 engages with a gear 25, these gears being rotatable upon spindles 36 and 37, extending upward from the bottom plate 10 to the cover 15, the flanges 31 and 31' acting as guards for the teeth and assisting in supporting the rack bar 27.

The gear 34 meshes with another gear 38 while the gear 35 meshes with a similar gear 39, these last named gears being mounted upon posts or spindles 40 and 41, secured like the spindles 36 and 37, between the bottom plate and cover of the lock casing.

Meshing with the gears 38 and 39 are spur pinions 42 and 43 mounted upon pinions 44 and 45, having secured at their lower sides coiled flat springs 46 and 47, the springs 46 being held against the rear side plate 11, by a pair of clips 48, similar clips 49, securing the rearwardly extending ends of the spring 47, to the side wall 12, these springs being adapted to exert torsional movement to the spindles 44 and 45, transmitted through the gear trains to the rack bar 27 and then to the first gear 23.

A central hollow tubular post 50 is screw threaded into a lug 51, formed with a bottom plate 10 so as to hold the parts of the lock casing in a rigid position.

Fixed upon the upper sides of the gears 38 and 39 are bars 52 and 53, from which extend hook elements 54 and 55, contiguous to the openings 56 and 57, formed in the front plate 14 of the lock, into which the keepers 58 and 59 may pass, the keepers being provided with openings 60 and 61, receptive of the hooks 54 and 55, the keepers

being rigidly engaged with the keeper plate 62 in a manner which will be clearly apparent.

Thus, when the door containing the lock casing is closed by sliding it toward the keeper plate 62, the keeper elements 58 and 59 pass into the openings 56 and 57 and become engaged with the hooks 54 and 55, the springs being retracted, due to the curvature of the respective hocks and keepers, while the springs act to force the hooks into the openings of the keepers, holding the door in a locked position until a key has been inserted and the train of gears actuated by the rack bar 27, thus releasing the keepers and permitting the door to be opened in the ordinary manner.

Having thus described our invention what we claim as new, and desire to secure by Letters Patent, is—

1. In a lock for sliding doors, the combination with a keeper plate, a pair of keepers extending therefrom, said keepers having openings, a lock casing, a plurality of gear pairs rotatable therein, lock hooks carried by one pair of said gears engageable with the

openings in said keepers, a curved rack bar engaging with the outer pair of gears, said rack bar having teeth upon its convex and concave sides, the teeth upon said convex side engaging with said outer pair of gears, an actuating gear having its teeth engaged with the teeth upon the convex side of said rack bar, and means for operating said actuating gear.

2. In a lock for sliding doors, the combination with a lock casing, of two pairs of gears pivotally mounted therein, a master gear adapted to be actuated by a key, a curved rack having teeth upon its concave side engageable with said master gear, teeth formed upon the outer side of said rack engageable with first gears in each of said pairs, hooks carried by the last named pair of gears, said hooks being engageable within keepers through openings in the front of said lock, and means for normally maintaining said hooks in a locking position.

In testimony whereof we have affixed our signatures.

KAZIMIER BUCZYNSKI.
BRONISLAW SZOKA.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."