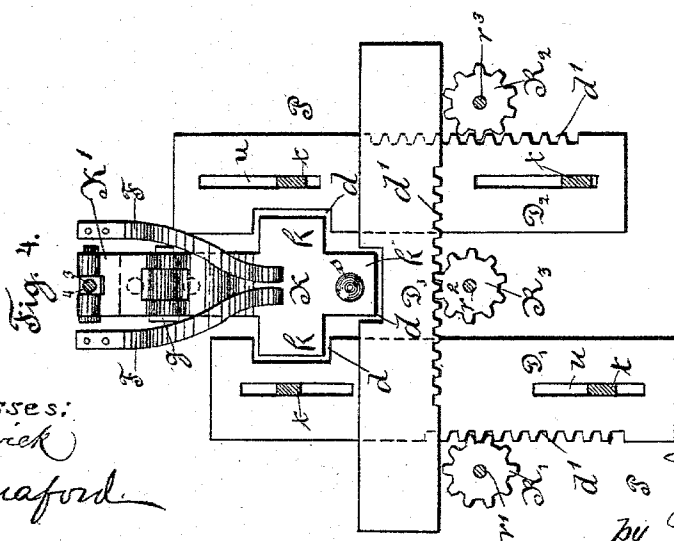
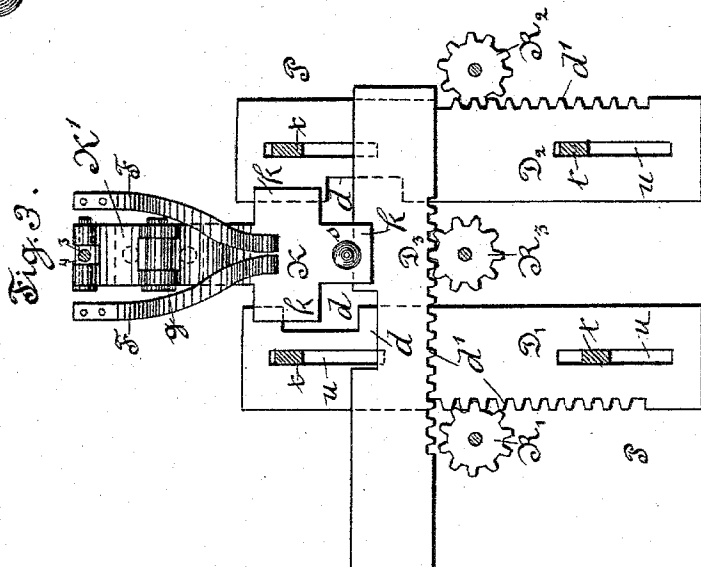
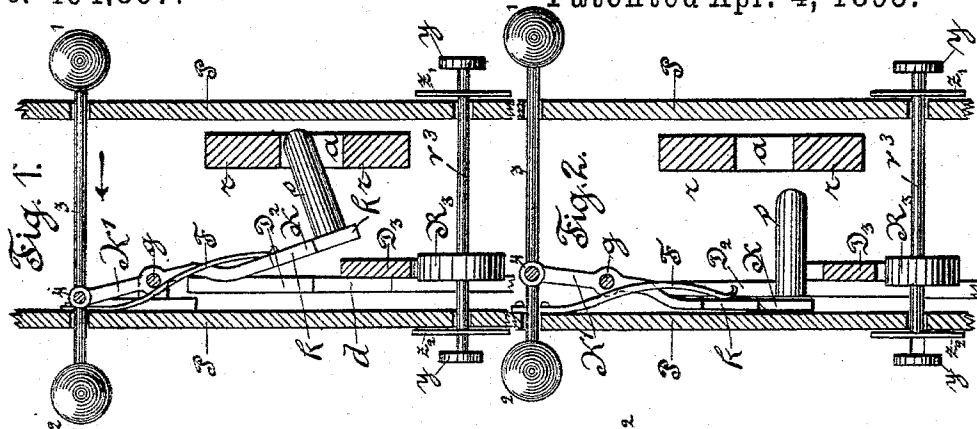


(No Model.)

L. KAPLAN.
PERMUTATION LOCK.

No. 494,867.

Patented Apr. 4, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

LEOPOLD KAPLAN, OF BERLIN, GERMANY.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 494,867, dated April 4, 1893.

Application filed November 3, 1892. Serial No. 450,921. (No model.)

To all whom it may concern:

Be it known that I, LEOPOLD KAPLAN, medical student, of Berlin, in the Kingdom of Prussia and German Empire, have invented a new and useful Improvement in Keyless Permutation-Locks, of which the following is a full, clear, and exact description.

This invention relates to a keyless permutation lock which may be locked by merely pressing upon a knob and moving any one of a series of locking slides, and which is unlocked automatically whenever the locking slides are brought in certain position. The lock is controlled by one or more locking slides and permutation disks, the slides being actuated by racks which are operated by pinions, upon the spindles of which the permutation letter disks are arranged.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse vertical section through the lock, the bolt being secured or locked. Fig. 2 is a similar view, the bolt being unlocked. Fig. 3 is a longitudinal vertical section showing the parts in the positions they occupy when the bolt is locked; and Fig. 4 is a similar view, the bolt being unlocked.

The slide bolt r , of ordinary form and adapted to be shot and withdrawn by a spindle and knob in the ordinary manner, is formed with a slot or opening a , which opening is adapted to receive the latch stud or head s , for locking the bolt, the said stud being formed on the latch K, the latter being in the form of a plate, hinged or pivoted as at g , to move transversely of its case, toward and from the path of the bolt r , and formed with a series of wings k , k , in any desired practical number.

Arranged in connection with the latch K, are the plate springs F, that are secured to the lock casing and press against the said latch, the springs normally tending to withdraw the latch and its stud s from the bolt r . Beyond the pivot g of the latch K, the latter is formed with an arm or extension K', which is connected as at 4 with a spindle 3 that extends transversely through the case, its projecting ends being provided with suitable knobs, 1, 2, the arrangement being such that

by moving the spindle 3, in the direction of the arrow, Fig. 1, the latch plate K will be moved against the tension of the springs F to cause the stud s to engage the ordinary slide bolt r , as in Fig. 1, for locking the latter.

For locking the latch plate K in position to lock the bolt r , a series of slides D', D², D³, is provided, the slides D', D², ranging vertically in the lock case P at the sides of the plate K, and the slide D³, ranging horizontally therein at the bottom of the plate K, as will be readily understood from Figs. 3 and 4. In each locking slide D', D², D³, at the side toward the plate K, a recess d is formed adapted to permit the adjacent wing k of the latch plate to pass therethrough when the slides are brought to a position to bring said recesses opposite said wings, as in Fig. 4. Each locking slide D', D², D³, is formed with rack teeth d' along one longitudinal edge, said rack teeth being engaged by spur pinions R', R², R³, secured on the spindles r' , r^2 , r^3 , which spindles project from both sides of the case, beyond which they are provided with heads y for their ready operation, and with permutation disks z' , z^2 , at opposite ends for receiving any indication marks that will dictate the position to which the permutation disks should be brought to bring the locking slides D', D², D³, into position to permit the latch plate K to withdraw its stud s from the bolt r , which function of the permutation disks is, in general, similar to corresponding parts in other permutation or combination locks. The locking slides D', D², D³, are guided in their movements, by suitable guide projections t , that are affixed to the case in any suitable manner and project into the longitudinal slots u in the slides.

In practice, the parts being in the position shown in Figs. 2 and 4, and it being desired to lock the bolt r , the spindle 3 is moved in the direction of the arrow, Fig. 1, to cause the latch head s to engage the said bolt, after which the slides D', D², D³, are shifted by means of the spindles r' , r^2 , r^3 , to bring the recesses d out of register with the wings k , of the latch plate K, as in Fig. 3, which will lock the said latch against movement.

To shift the permutation disks z' , z^2 , of any spindle r' , r^2 , r^3 , to change the letter, mark or character that will indicate when the slides

D^1, D^2, D^3 , are in the position for unlocking, one of the disks, say D^1 , is arranged to slide on its spindle r^3 , while being compelled to rotate therewith, as by making the spindle square and a corresponding eye in the disk D^1 , whereby the spindle may be moved inward or outward independently of said disk, to disengage the spur wheel R^1, R^2 , or R^3 , or all of them, from the corresponding rack or racks.

The spindle may then be turned with its permutation disk to give the latter a new position so that a different character or mark thereon will indicate the unlocked position of the locking slide, after which the spur wheel and rack are again brought into engagement by restoring the spindle r^1, r^2 or r^3 to its original normal position.

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

1. In a keyless permutation lock, the combination of a bolt, a pivoted spring-acted latch adapted to engage the bolt for locking the latter, locking slides for retaining said latch plate in the position for locking the bolt, and means for actuating said slides, the slides and the latch having respectively, recesses and corresponding wings or projections that are brought into register by the movements of the slides, substantially as described.

2. In a keyless permutation lock, the combination of a bolt, a pivoted latch adapted to engage the bolt for locking the same, a spindle engaging said latch beyond its pivot, a series of locking slides for retaining the latch in the position for locking the bolt, and means for actuating the slides, said slides and the latch having respectively, recesses and corresponding wings or projections that are brought into and out of register by the movement of the bolt, substantially as described.

3. In a keyless permutation lock, the combination of a bolt, a pivoted latch adapted to engage the bolt for locking the same, a retractile spring normally tending to withdraw said latch from the locking position, a sliding spindle connected with the latch beyond its

pivot, a series of locking slides for retaining the latch in locking position, and means for actuating said slides, the slides and the latch having respectively, recesses and corresponding projections that are brought into and out of register by the movements of the slides, substantially as described.

4. In keyless permutation locks, having a sliding bolt, the combination of a pivoted latch movable transversely of the case into the path of the bolt for engaging the latter, a locking slide for said latch, and means for operating said slide, and an operating device extending to the outside of the lock and connected with the latch, for operating the latter, substantially as described.

5. In keyless permutation locks, the combination with a slotted sliding bolt, of a pivoted latch plate having a latch head or stud, and having a series of wings or projections, a sliding spindle connected with said latch for throwing the same, a spring normally acting to withdraw the latch plate from the position for locking the bolt, a series of slides recessed to correspond with the formation of the latch plate and formed with racks, pinions meshing with said racks and mounted on spindles, and permutation disks on said spindles, substantially as described.

6. In keyless permutation locks, the combination of a sliding bolt, a locking latch pivoted to move transversely of the case and engage said bolt, locking slides for the latch, the slides and latch being formed respectively with recesses and projections or wings that are brought into and out of register by the movement of the slides, said slides further being formed with racks, pinions engaging said racks and mounted on spindles, and permutation disks on said spindles, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

LEOPOLD KAPLAN.

Witnesses:

PAUL FISCHER,
PAUL BRINKMANN.