

A. VILLANI.

LOCK.

APPLICATION FILED NOV. 16, 1918.

1,297,754.

Patented Mar. 18, 1919.

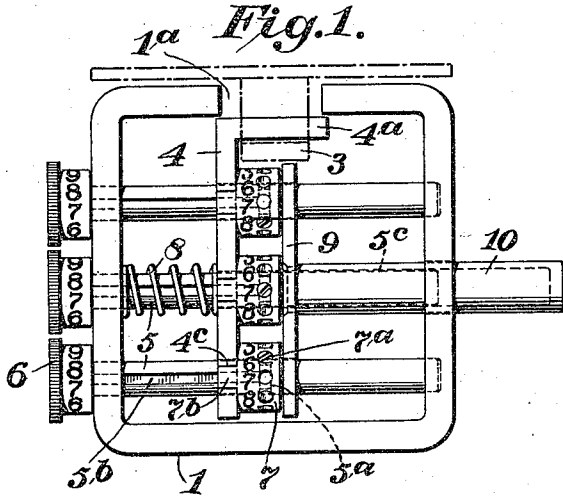
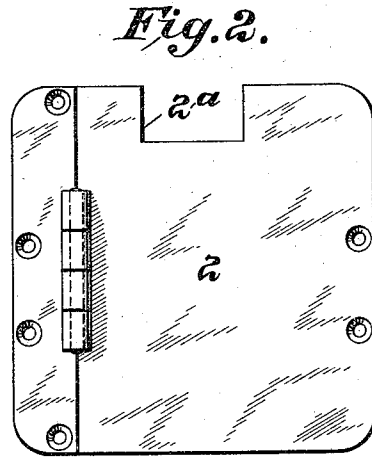
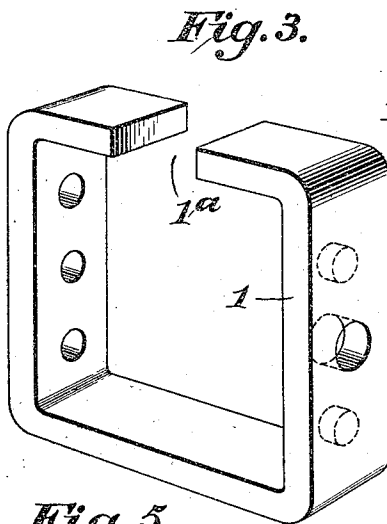
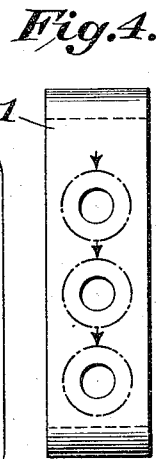
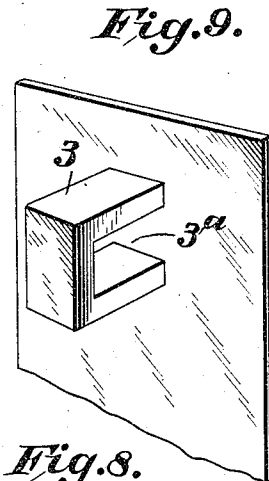


Fig. 5.

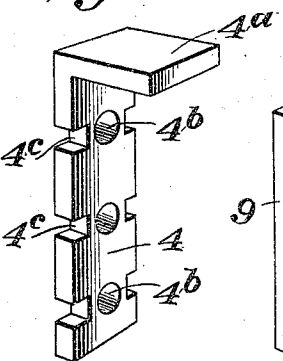


Fig. 6.

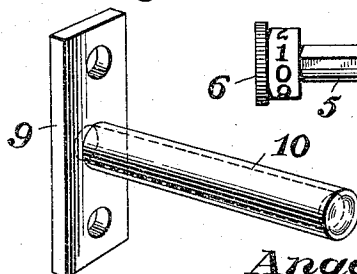


Fig. 8.

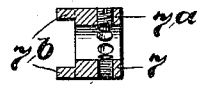
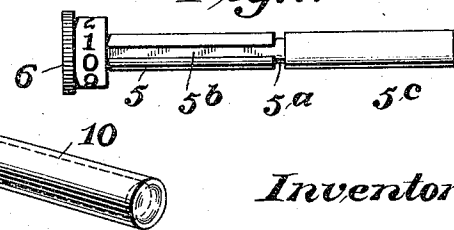


Fig. 7.



Inventor:

Angelo Villani,

by *Middleton Donaldson & Spear*
Attys.

UNITED STATES PATENT OFFICE.

ANGELO VILLANI, OF WILMINGTON, DELAWARE.

LOCK.

1,297,754.

Specification of Letters Patent.

Patented Mar. 18, 1919.

Application filed November 16, 1918. Serial No. 262,830.

To all whom it may concern:

Be it known that I, ANGELO VILLANI, residing at Wilmington, Delaware, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My present invention relates to improvements in permutation locks and aims to provide a simple, economical and durable construction in which the combination may be readily varied.

With these and other objects in view the invention includes the novel features of construction and arrangement and combination of parts hereinafter described and particularly defined by the appended claims.

My preferred embodiment of my invention is illustrated in the accompanying drawing in which:

Figure 1 is a plan view of my improved lock with the cover removed.

Fig. 2 is a plan view showing the cover.

Fig. 3 is a perspective view of the lock frame or case.

Fig. 4 is an edge view of lock frame looking from the left of Fig. 1.

Fig. 5 is a perspective view of the locking bar of member.

Fig. 6 is a perspective view of the push means for operating the locking member.

Fig. 7 is a detailed side elevation of one of the shafts.

Fig. 8 is a sectional detail of one of the locking disks, and,

Fig. 9 is a perspective view of the keeper.

Referring by reference characters to this drawing the numeral 1 designates the main frame or case of the lock which may comprise a bar of metal bent to the shape clearly shown in Fig. 3 with the ends spaced apart to form a keeper receiving opening 1^a. Cover plates 2 are secured to the top and bottom of this frame to complete the lock casing, by any suitable means, such as screws, and I prefer to form at least one of these, of two sections, one being permanently secured to the frame and the other hinged to the former, thereby preventing any danger of loss of parts of the casing when the same is opened to change the combination. If the lock is to be engaged by the keeper by a relative movement transverse to the plane of the lock casing the cover plates are provided with cut away portions 2^a corresponding in size and shape to the keeper 3 which has an eye 3^a designed to be engaged by the

angularly turned end 4^a of the slidable member or locking bar 4. This bar is provided with a plurality of holes 4^b through which pass a corresponding number of shafts 5 which are journaled in the walls of the casing and project therethrough at one end where they are provided with heads 6 bearing permutation characters.

Each shaft 5 has an annular groove 5^a and a longitudinal groove 5^b communicating therewith. On each shaft in line with the annular groove is loosely mounted a disk or ring 7 provided with a plurality of radial screw holes corresponding in number and position to the characters on the corresponding head 6, and a screw 7^a is designed to be inserted through any one of these holes and have its inner end engage the annular groove. It will readily be seen that these screws prevent the disks or rings from being moved to the left (Fig. 1) until the shafts have been turned to cause the longitudinal grooves to align with the ends of the screws. The disks or rings are prevented from turning with the shafts by projections 7^b thereon which engage corresponding recesses 4^c in the locking bar.

A spring 8, encircling one of the shafts, normally keeps the locking bar pressed into locking position.

In order to move the locking bar to the left, (Fig. 1) to unlock or release the keeper when the shafts have all been turned to proper position I provide a push plate 9 having holes by which it is slidably mounted on the shafts, and this plate is provided with a push rod 10 extending outside the casing, this push rod being conveniently made tubular and slidably mounted on the outer portion 5^c of the intermediate shaft 5.

It will be understood that the case or frame is provided with suitable indicating marks as shown by the arrow heads, Fig. 4, to indicate where the permutation characters are to be positioned to set the lock in unlocking position, and that the disks or rings 7 are provided with permutation characters corresponding to the characters of the heads 6 to aid in initially setting or changing the combination.

Having thus described my invention, what I claim is:—

1. In combination, a casing having an opening in one wall, a keeper having an eye adapted to enter said opening, a spring pressed bar mounted to move transversely

of said opening and having a portion adapted to engage the eye of the keeper, a plurality of parallel shafts journaled in the casing and having heads on the outside of the casing bearing permutation characters, said shafts passing through openings in said slidable member, disks loosely mounted on said shafts, means for holding the disks against rotation, means for holding said disks against longitudinal movement on the shafts except when the latter are in a predetermined position and means for moving the disks bodily when in such position.

2. In combination, a casing having an opening in one wall, a keeper having an eye adapted to enter said opening, a spring pressed bar mounted to move transversely of said opening and having a portion adapted to engage the eye of the keeper, a plurality of parallel shafts journaled in the casing and having heads on the outside of the casing bearing permutation characters, said shafts passing through openings in said slidable member and having each an annular groove and a longitudinal groove terminating in the annular groove, disks loosely mounted on said shafts, each having a projection to coact with said grooves, means for holding said disks against rotation, and a push member for acting on said disks.

3. In combination, a casing having an opening in one wall, a keeper having an eye adapted to enter said opening, a spring pressed bar mounted to move transversely of said opening and having a portion adapted to engage the eye of the keeper, a plu-

rality of parallel shafts journaled in the casing having heads on the outside of the casing, said shafts passing through openings in said slidable member and having each an annular groove and a longitudinal groove communicating therewith, disks on said shafts having annularly arranged screw holes, a screw in one of the holes of each disk having an end engaging the shaft grooves, projections on the disks engaging recesses in the slidable member, and a push member acting on said disks.

4. In combination, a casing having an opening, a plurality of shafts journaled in the casing transversely of said openings, each of said shafts having an annular groove and a longitudinal groove communicating therewith, a locking bar having openings to receive said shafts and having an angular turned end overlying said opening, permutation heads on said shafts outside the casing, disks on said shafts on the opposite side of said bar, annularly adjustable projections carried by said disks and engaging said grooves, means for locking said disks against rotation on the shafts, a push bar overlying the disks and having holes through which the shafts pass, a tubular push rod encircling one of the shafts and engaging the push bar and having a part projecting outside the casing, and a spring exerting tension on the locking bar.

In testimony whereof, I affix my signature.

ANGELO VILLANI.

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