

F. E. BENNETT.

LOCK.

APPLICATION FILED JULY 25, 1910.

1,000,889.

Patented Aug. 15, 1911.

Fig. 1.

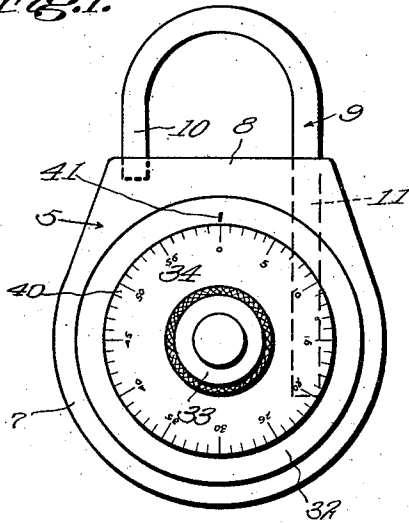


Fig. 2.

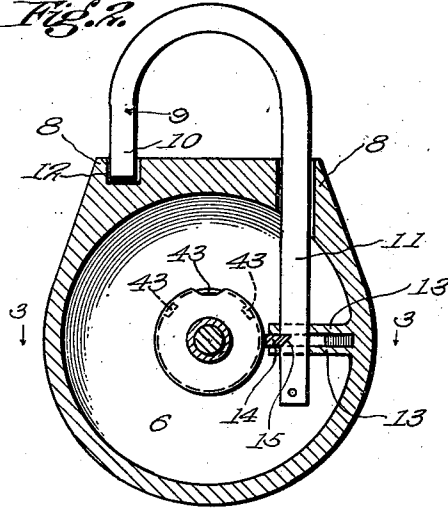


Fig. 3.

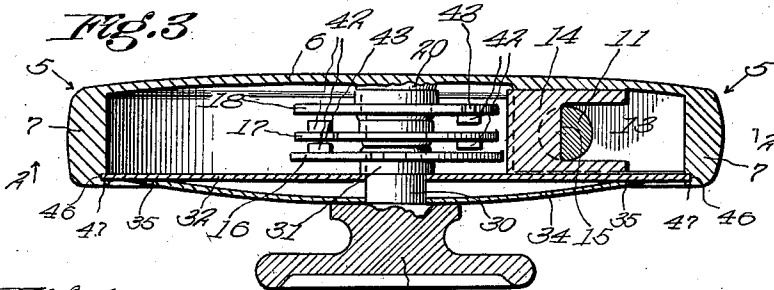


Fig. 4.

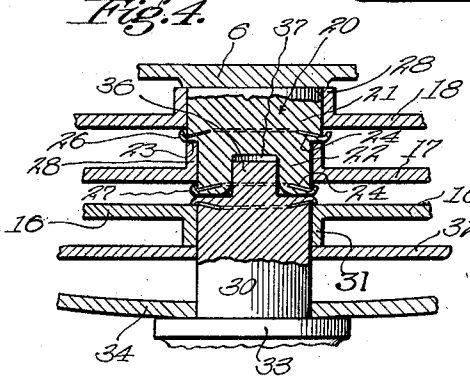
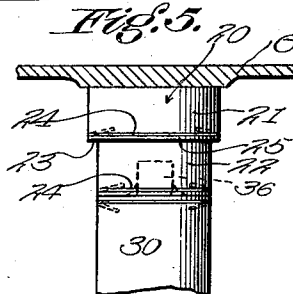


Fig. 5.



Witnesses
Edward H. Carpenter
Hal M. Slemmon

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Fred E. Bennett.
by James T. Carpenter
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UNITED STATES PATENT OFFICE.

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LOCK.

1,000,889.

Specification of Letters Patent.

Patented Aug. 15, 1911.

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To all whom it may concern:

Be it known that I, FRED E. BENNETT, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Locks, of which the following is a specification.

This invention relates to improvements in locks of the permutation type for the purpose of rendering them more certain and reliable in their action; and it relates particularly to a lock in which rotating disks are utilized to hold or release the locking bolt, such as described in my application S. N. 539,036 filed January 20, 1910. In locks of this character it has heretofore been difficult to obtain a construction which would allow the individual disks to be entirely independent of one another at all times except when it is desired to drive one disk through the medium of another, at the same time obtaining a construction which is simple in character so as to permit of inexpensive manufacture and assembly of parts.

The present invention consists mainly in the construction of the stud shaft and the arrangement of the disks thereon. The stud shaft is made in two portions, one carried by the back and one by the front of the lock. Provision is made for slipping the disks on the parts of the stud shaft and for securing them thereon in such a manner that they are entirely out of contact with each other excepting through the medium of the driving lugs. After the front and back of the lock have been assembled as separate elements, the elements may then be assembled by a simple operation, as will be explained.

In the accompanying drawings: Figure 1 is an elevation of my improved lock. Fig. 2 is a section taken on line 2—2 of Fig. 3. Fig. 3 is an enlarged section taken on line 3—3 of Fig. 2. Fig. 4 is a further enlarged section, showing in detail the construction and arrangement of the stud shaft and the disks mounted thereon. Fig. 5 is a detail showing the stud shaft previous to the placement of the disks thereon.

In the drawings 5 designates a case of suitable construction, being in the form illustrated, with a back 6 and lateral walls 7. The face is made with a flat faced projection 8 on top through which shackle 9 extends. Shackle 9 is provided with a short

shank 10 and a long shank 11, short shank 10 extending into a shallow aperture 12 in portion 8 and long shank 11 extending through portion 8 and lateral wall 7 into the interior of the case. The lower end of shank 11 passes through two guide members 13 formed integrally with the case and between which a bolt 14 is adapted to reciprocate. Bolt 14 is provided with a beveled face 15 on its end which engages with shank 11, the bevel being so arranged that an upward pull on the shank will force the bolt toward the left in Fig. 2. The bolt normally abuts, or approaches, the peripheries of a series of disks 16, 17 and 18, disk 16 being slightly larger in diameter than the other two disks. This general construction and combination of shackle and locking devices is disclosed in my former application above mentioned and forms no part of the present invention.

Formed integrally with back 6 is a stud 20 having two cylindrical portions of different diameters. On each of these cylindrical portions is mounted one of disks 17 and 18. The stud is originally formed as shown in Fig. 5, portions 21 and 22 being turned to different diameters so as to leave a shoulder 23 between the two portions. Immediately behind the end of the stud and behind shoulder 23 a circumferential slot 24 is cut, as shown in Figs. 4 and 5. When disk 18 is placed upon portion 21, a hollow upset tool is used to force the ring of material at 25 around over the edge of the remainder of portion 21 in the form of a bead 26. Disk 17 is then similarly placed on portion 22 and a bead 27 is formed to hold that disk in place. Each of the disks is provided with a hub 28 which serves to space it from the adjacent disks and also to give it a sufficient bearing upon the stud shaft. The space allowed for the hubs is such that, when beads 26 and 27 are turned over as shown, sufficient room is allowed for the free movement of the disks. The provision of cuts 24 allows the turning of beads 26 and 27 without upsetting the portions of the stud shaft on which the disks rotate, thus leaving them free. Disk 16 is similarly mounted on a stud 30 with the exception that it is tightly fitted onto the stud so that it cannot be moved thereon under ordinary circumstances. It is possible to move the disk on the stud by applying sufficient force, this provision be-

ing made in order that the combination of the lock may be changed if desired. Hub 31 of disk 16 bears against front plate 32 of the lock. This plate is secured to the case by placement in a groove 46 and the formation of a bead 47 over the front of its edge. Stud 30 is securely attached to or forms a part of thumb nut 33 on the outside of the lock. Immediately under thumb nut 33 is rigidly attached a spring plate 34, the plate being forced onto stud 30 so that it will turn therewith. The parts just described are assembled before front plate 32 is placed in the case. Plate 34 is resilient owing to its dished configuration. When the parts are assembled, plate 34 is compressed between thumb nut 33 and plate 32, edge 35 of plate 34 being thereby forced into close frictional engagement with the front plate 32. When the front plate is placed in position a pin 36 on the end of stud 30 enters a bore 37 in the end of stud 20, holding the two studs in alinement to form the stud shaft on which the disks are mounted. The edge of bore 37 is rounded off so as to prevent any inward forcing of the edge and consequent seizing of pin 36 when the bead 27 is formed or when the lock is subjected to any crushing pressure, tending to force the two studs together.

Plate 34 is provided with numbered division marks 40 on its edge which are registered with a mark 41 on plate 32. Driving lugs 42 are formed on the disk for the purpose of rotating one from the other. When the correct combination is turned up all three notches 43 will be arranged directly opposite bolt 14. An upward pull on the shackle will then force the bolt into the notches and out of engagement with the

shackle, allowing the shackle to be withdrawn.

It will be understood that my invention consists particularly in the construction of the studs and the mounting of the disks thereon, that the remaining features of the mechanism described may be varied at will, the claimed features being capable of combination with widely varying bolt and shackle mechanisms.

Having described my invention, I claim:

1. In a lock of the character described, a disk carrying stud, having a peripheral groove near its end, and a disk mounted on the stud behind the groove, the metal in the edge portions of the end of the stud outside the groove being flattened and expanded in diameter to form a collar preventing the removal of the disk from the stud.

2. In a device of the character described, a disk carrying stud having a plurality of portions of unequal diameters and a shoulder at the end of each portion, there being an annular groove in each portion near the shoulder, and a disk mounted on each of the portions behind the groove and abutting the shoulder of the adjacent portion, the metal between the shoulder and groove of each portion being flattened out and enlarged in diameter and turned over the stud body portion to form a bead preventing the removal of the disk from the stud.

In witness that I claim the foregoing I have hereunto subscribed my name this 20th day of July 1910.

FRED E. BENNETT.

Witnesses:

JAMES T. BARKELEW,
ELWOOD H. BARKELEW.