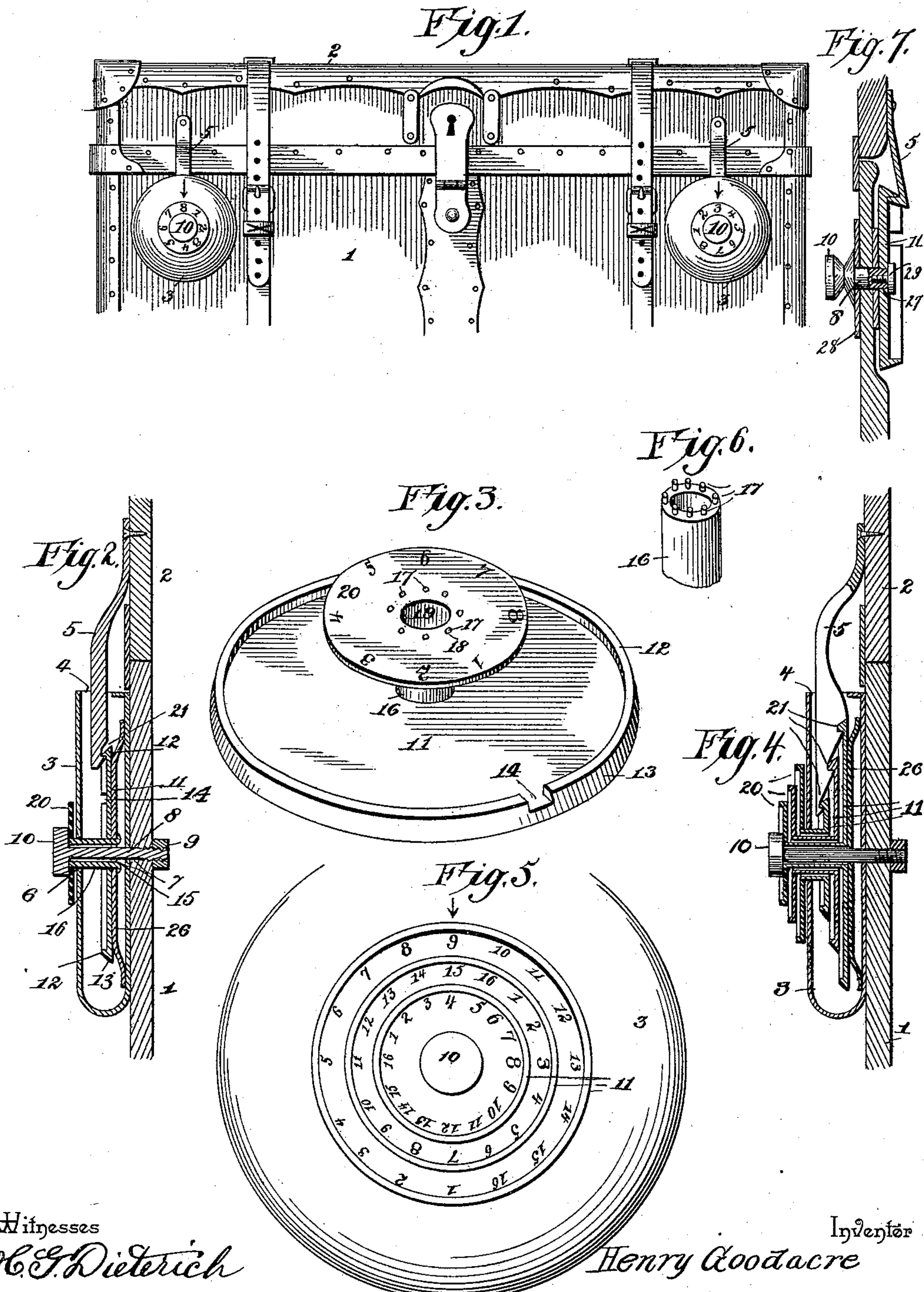


(No Model.)

H. GOODACRE.
PERMUTATION LOCK.

No. 451,153.

Patented Apr. 28, 1891.



Witnesses

H. G. Dieterich

M. Duval

Inventor

Henry Goodacre

By his Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

HENRY GOODACRE, OF LEXINGTON, KENTUCKY.

PERMUTATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 451,153, dated April 28, 1891.

Application filed December 2, 1890. Serial No. 373,285. (No model.)

To all whom it may concern:

Be it known that I, HENRY GOODACRE, a subject of the Queen of Great Britain, residing at Lexington, in the county of Fayette and State of Kentucky, have invented a new and useful Lock, of which the following is a specification.

This invention relates to locks; and the objects in view are to provide a cheap and simple lock, especially adapted to be applied to trunks, hand-satchels, &c., and designed as a preventive of unauthorized persons tampering with the contents, as is often the case in hotels, boarding-houses, baggage-rooms, and other places; also to give strength and rigidity to the trunk.

Various other objects of the invention will hereinafter appear, and the novel features will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a front elevation of the upper portion of a trunk, the lid of which is locked in position by means of locks constructed in accordance with my invention. Fig. 2 is a detail in vertical longitudinal section of the lock in its simplest form. Fig. 3 is a detail in perspective of the locking disk or tumbler, the indicating-disk being mounted thereupon. Fig. 4 is a view similar to Fig. 2, the number of tumblers being increased to lend complication. Fig. 5 is a front elevation of a lock constructed as in Fig. 4. Fig. 6 is a detail of the upper end of the stud. Fig. 7 is a modified construction.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the body, and 2 the top or lid, of an ordinary trunk provided with the usual bindings, protectors, and straps, and herein employed for the purpose of rendering the operation of my invention clear. In this instance, near the opposite ends and to the front wall of the trunk, I locate a housing or lock-case 3, which is provided at its upper end with an opening 4, sufficiently large to permit of the introduction of the bolt or hasp 5, which latter is secured at its upper end to the front wall of the lid or cover 2. Through an opening 6, formed in the center of the housing or case, and through a corresponding opening 7, formed in the front wall of the trunk, is passed a connecting-bolt 8, nutted,

as at 9, at its inner end, and provided at its outer end with a flat head 10.

11 designates a locking disk or tumbler, of circular shape in plan and provided with an annular peripheral shoulder 12, the outer face of which is inclined or beveled, as at 13, said flange being cut away or notched, as at 14, at any point. From the center of the disk or tumbler, at which point said disk or tumbler is perforated, as at 15, there is a hollow stud 16, the outer end of which projects a slight distance beyond the edge of and through the opening 6 in the case or housing, and at said end is provided with any number of outwardly-projecting pins 17, which engage removably an annular series of perforations 18, surrounding a central opening 19, formed in the center of an indicating-disk 20, located outside of the casing or housing and retained in position upon the stud by means of the head 10 of the bolt 18. There may be any number of numerals or characters upon the face of the indicating-plate, and by loosening the nut 9 and slightly withdrawing the bolt 8 the indicating-disk 20 may be drawn outwardly, so that its perforations disengage with the pins of the stud, and said disk may then be turned so that any one of its numerals or degrees is diametrically opposite the notch 14, formed in the annular shoulder 12 of the tumbler or disk 11.

In operation it is simply necessary, regardless of the position of the notch 14, in order to lock the lid to lower the same, so that the ward 21, formed in the under side near the lower end of the hasp 5, will be sprung over the annular shoulder 12, such being permissible by reason of the presence of a flat spring 26, interposed between the rear face of the tumbler or disk and the rear wall of the housing or by reason of the elasticity of the hasp 5. To unlock the lid it is simply necessary to revolve the indicating-disk until that number thereof at present diametrically in line with the notch 14 is brought to a point opposite the hasp 5, which is indicated upon the housing by an arrow or other suitable character, when the lid may be raised, the hasp readily withdrawing through the notch 14, formed in the annular shoulder of the tumbler. It will be observed that various numbers may be employed upon the indicating-

disk, and the lock thus rendered more or less perplexing. I prefer to employ two or more locks as thus constructed, one near each end of the trunk, as shown in Fig. 1, or at other parts, so that even if successful in actually guessing the correct position of the notch in the tumbler and actually bringing the tumbler to a position to disengage with the hasp, yet the fact that the trunk still remains locked at the opposite end fails to disclose that the first-mentioned lock has been actually unlocked, and hence complexity arises.

As shown in Fig. 4, the wards 21 of the hasp may be increased in number, and so also may the number of tumblers or disks 11, and consequently the studs and indicating-disks. In such an event the sizes of the tumblers and disks are relatively proportioned and decreased toward the outer tumbler and disk of the series, so as to expose for engagement the annular shoulders of the tumblers and to the view the numerals upon the disks. It will be observed that in this construction each disk may be set at a different numeral, so that while one disk requires to be turned so as to bring one numeral to the starting-point the other disk may require the same numeral or some other numeral, and in this manner the lock rendered much more mystifying than would be the case in the construction illustrated in Fig. 2. It will be obvious that two pins on the end of the stud may serve to connect a disk having several openings; also that the pins may be formed upon the under side of the disk and the studs provided with the holes.

Referring to Fig. 7, I have illustrated a still further modification of my invention. In this instance the lock-case is omitted and the locking devices located on the inside of the trunk. The hasp 5 is preferably spring-like, while the tumbler 11 is provided with a polygonal opening 27, through which and the front wall of the trunk is passed the bolt 8, provided at its inner end with polygonal faces, so as to fit the opening in the tumbler, and at its outer end with a head 10, forming an indicating-disk adapted to move over a metal guard-plate 28, secured to the outer surface of the wall of the trunk. At its inner end the bolt 8 is provided with a threaded perforation in which is mounted a milled-headed thumb-screw 29, serving to prevent withdrawal of the bolt from its position. By loosening the screw and withdrawing the bolt the bolt may be reinserted, so that any desired numeral or character upon its indicating-disk is brought radially opposite the notch in the tumbler. This modified construction may be inserted in a case and located upon the outside of the trunk.

Having described my invention, what I claim is—

1. In a lock of the class described, the combination, with a casing, a bolt passed there-

through and provided with a head, a circular disk or tumbler having a peripheral locking-flange provided with a notch and mounted on the bolt, a hollow stud for receiving the bolt and extending from the tumbler to the front of the casing, and an indicating-disk centrally perforated to receive the bolt and removably connected with the stud and maintained in position by the head of the bolt, of a bolt having a ward for engaging the flange of the disk, substantially as described.

2. The combination, with the case provided with an opening at one end and with an opening in its face, of a bolt passed through the opening in the face, a circular disk or tumbler having a peripheral flange provided with a notch mounted for rotation upon the bolt, a spring for pressing the same toward the front of the casing, and a rigid bolt having a ward adapted to be passed through the opening in the end of the casing and engage the locking-flange of the tumbler, substantially as specified.

3. In a lock, the combination, with the case, the bolt passed therethrough, the circular disk or tumbler having a peripheral flange provided with a notch and mounted for rotation upon the bolt, a hollow stud inclosing the bolt and extending from the disk beyond an opening in the casing, and an indicating-plate removably mounted upon the stud, of a bolt having a ward adapted to pass through the casing and engage the flange of the tumbler, substantially as specified.

4. In a lock, the combination, with the casing, a bolt passed therethrough, a series of graduated disks, each having a peripheral flange provided with a notch, a hollow stud projecting from the centers of each of the tumblers and graduated as to size, so as to inclose each other, and the bolt and a series of indicating-disks, graduated, secured to the studs, and located outside of the casing, of a bolt having a series of wards adapted to engage the flanges, substantially as specified.

5. The combination, with a lock-case, a bolt passed therethrough, a series of rotatable graduated tumblers mounted for rotation upon the bolt, each having a hollow central stud, a series of graduated indicating-disks removably mounted upon the studs, and a spring interposed between the rear wall of the casing and the rear tumbler, of a bolt having a series of wards adapted to be inserted through an opening in the end of the case and engage the tumblers, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HENRY GOODACRE.

Witnesses:

VIRGIL MCCLURE,
JOHN ALLEN.