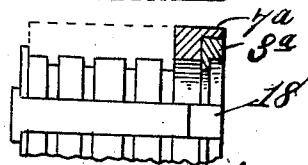
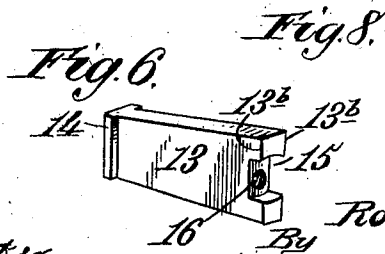
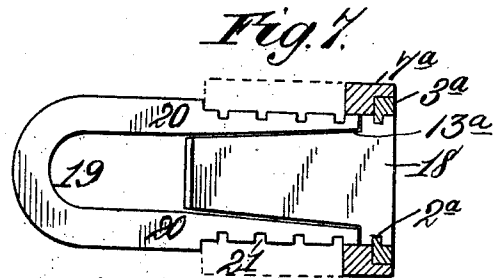
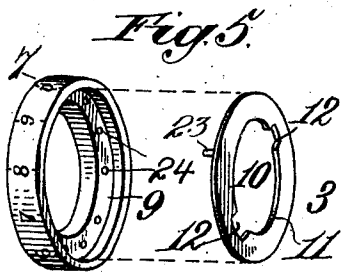
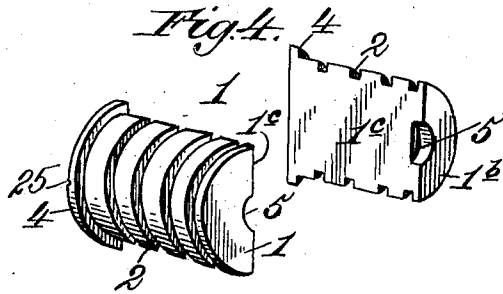
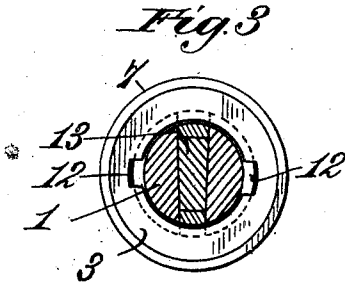
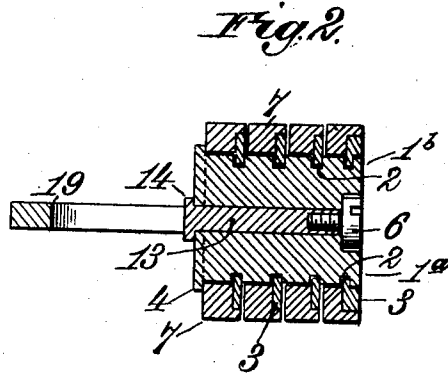
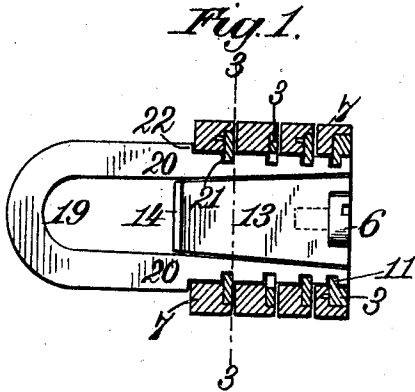


No. 830,500.

PATENTED SEPT. 11, 1906.

R. GIBSON.
PERMUTATION PADLOCK.
APPLICATION FILED OCT. 31, 1905.



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UNITED STATES PATENT OFFICE.

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PERMUTATION-PADLOCK.

No. 830,500.

Specification of Letters Patent.

Patented Sept. 11, 1906.

Application filed October 31, 1905. Serial No. 235,286.

To all whom it may concern:

Be it known that I, ROWAN GIBSON, a citizen of the United States, residing at Gaffney, in the county of Cherokee and State of South Carolina, have invented certain new and useful Improvements in Combination or Permutation Padlocks, of which the following is a specification.

This invention relates to improvements in combination or permutation padlocks, and has for its object to provide such a lock of simple and economical construction composed of parts which may be readily assembled and conveniently and easily separated for the purpose of changing the combination.

The invention resides in a combination or permutation padlock constructed as and having the features hereinafter described.

That which is regarded as new will be set forth in the clauses of claim appended to the description.

In the accompanying drawings, illustrating what I regard as the best known embodiment of my invention, Figure 1 is a longitudinal sectional view; Fig. 2, a longitudinal section taken at right angles to that shown in Fig. 1; Fig. 3, a cross-section on the line 3 3 of Fig. 1; Fig. 4, a perspective of members of the plural-member core. Fig. 5 is a perspective of one of the tumblers. Fig. 6 is a perspective of one form of key. Fig. 7 is a detail of a different form of key, showing the relation of the shackle thereto; and Fig. 8 is a fragmentary section showing the end of the key and adjacent cooperative parts.

In the said drawings the reference-numeral 1 designates generally a plural-member core, shown in the drawings as consisting of two like semi-elliptical parts 1^a 1^b, the plane opposing faces 1^c of which are preferably oblique to provide opposing cam-surfaces for the purpose hereinafter set forth. The circumferential faces of said members 1^a and 1^b are provided with a plurality of channels or grooves 2, in which work the hereinafter-described tumbler-disks 3, and at one end each member of the core is provided with a tumbler-supporting shoulder 4. According to one of the illustrated embodiments of the invention said core members are constructed at one end with countersunk seats 5

to receive the head of a key-confining screw 6, as hereinafter set forth and illustrated in Fig. 1 of the drawings. This detail is, however, purely preferential, as the key may be secured in place by means illustrated in Figs. 7 and 8 or in any other suitable manner.

The numerals 7 designate a plurality (to the particular number of which my invention is not restricted) of rings designed to be rotatably assembled upon the plural-member core, and adjustably associated therewith are the disks 3, the elements 3 and 7 when combined together constituting compound tumblers, which are the type of tumblers I recommend, but to which, as will appear by several of the appended claims, my invention is not restricted.

In the illustrated example of my invention the disks 3 are disposed flush in seats 9, provided therefor in rings 7. The passages 10 in the disks, in which the plural-member core is arranged when the parts are assembled, are of less diameter than those of the rings, whereby the shackle-engaging rims 11 thereof extend inwardly beyond the inner walls of the rings, and at diametrically opposite points the rims of the disks are mutilated or cut away to provide ways 12 to permit the insertion and withdrawal of the shackle, as hereinafter set forth.

The parts hereinbefore referred to constitute what may be termed the "barrel" of the padlock. Said parts are assembled by arranging the rings and the disks associated therewith upon the plural-member core, which may be readily effected by first stringing the rings and disks upon one member of the core, then introducing the other member of the core within said rings and disks, after which the key 13 may be introduced between the members of the core. The parts thus assembled are securely held in operative relation by a key 13, having a head 14, which engages one end of the members of the core and is fashioned at its other end to accommodate fastening means. The key is centrally disposed and provides at opposite sides thereof shackle-guides 13^a between the parts of the core. As shown in Fig. 6, said key is provided with a screw-head recess 15, in the base of which is formed the female member 16 of a

screw connection. The recess 15 when the key is in position is in coincidence with the screw-head seats 5, provided in the members of the core. According to this embodiment of my invention when the screw 6 is adjusted the barrel members of the lock are held together thereby. The screw prevents displacement or removal of the key, and so long as the latter is in place the core and tumblers are held by the engagement of the disks 3 with the channels of the core.

In Figs. 7 and 8 one end of the key is provided with a long narrow head 18 of sufficient length to fit within and yet with facility be removed from a ring 7^a, with which is combined a disk 3^a, having ways similar to the ways 12 of the disks 3. The key-head 18 is provided with a channel 2^a. When the ring 7^a is rotated to bring the ways of the associated disk 3^a into register with the head 18, the key may be withdrawn, and when said ring is shifted to bring the disk 3^a into the channel 2^a of the key the latter is locked in position and the ring 7 and disk 3 are confined in proper relative position upon the core. In this arrangement and as shown the members of the core may be extended flush with the ring 7^a to fill out the same and the extension be provided with a channel similar to the channel 2^a to afford an extended bearing and guideway for the disk 3^a.

The key 13 is preferably tapering longitudinally, the edges thereof diverging from the shackle-entering end to facilitate the entrance of the shackle into the barrel. Said key 13, furthermore, is preferably provided with wedge-shaped sides 13^b to accord with the cam-faces of the members of the core, the purpose of which cam-faces and wedge shape of the key is twofold. First, by reason of the fact that the key is of less width than the diameter of the core members the chamber between said core members when the barrel is assembled is sufficiently commodious at one side to permit the introduction of the key with facility, after which the key may be moved to occupy the central position with relation to the core members illustrated in the drawings, and by the cooperation of its wedge-faces against the cam-faces of the core members it serves to separate the plural-member core until the disks have properly entered the channels 2 thereof. When the key is in position, it is obvious that said disks cannot leave said channels, but are retained, together with the rings with which they are associated, in proper operative relation.

The shackle 19 comprises legs 20 of shape and proportions to enter and fit the guideways 13^a. In the outer edges of the two shackle-legs are provided notches 21, that cooperate with the disks to secure the shackle in the barrel when the rings are rotated to establish engagement of said notches and

disks and with stops 22 to limit the degree of insertion of the shackle within the barrel to insure that when it is fully inserted therein the notches will be accurately in line with the disks, so that when the rings are rotated the disks may pass without hitch into said notches. When it is desired to release the lock, the rings are rotated to bring the ways 12 of the disks into alinement or register, whereby the shackle may be withdrawn longitudinally in a straight path.

When, as illustrated, the barrel elements are assembled, the semi-elliptic members of the plural-part core are spaced apart by the key to present an interrupted cylindrical core upon which the tumblers accurately fit to rotate.

When my invention is embodied in connection with compound tumblers, as shown, to change the combination, the members of the barrel are removed, as described, and the position of the disks 3 with relation to the rings 7 altered, as may be desired. Means are provided to maintain any given adjustment of the disk. Such means, of which one example is shown, may consist of a dowel-pin 23 upon the disks adapted to engage in any one of a series of sockets 24 in the rings. The position of any given disk or disks may be shifted, resulting in a change of combination, and to guide in establishing the combination each pin-and-socket connection is given an appropriate designation, which is indicated on the face of the rings, as by numbers, as shown, so arranged with relation to the plural-member core that when the combination signs are in coincidence with an indicator 25, associated with the core, the ways 12 of the disks 3 will register with the shackle-legs and the shackle may be inserted or withdrawn.

It will be apparent that it is only when the ways of the disks are in alinement or register that the shackle can be inserted or withdrawn and that when the shackle has been inserted rotation of one or more of the rings serves to establish engagement of a disk or disks with the notches of the shackle and securely lock and confine the latter in the barrel. Great variety of combination or permutation may be secured by shifting the position of the disks in or with relation to the rings, and the diversity of change may be increased by increasing the number of ring and disk elements. My invention is not confined to the number of tumblers employed nor to the details heretofore set forth otherwise than as may be stated in some one or more of the clauses of claim appended hereto and then only for the purpose of those particular clauses.

By my invention I provide a combination or permutation lock having a novel arrangement and combination of elements, producing a lock of simplified construction and economical manufacture and the parts of

which may be readily assembled for operation and separated for the purpose of alteration of combination or permutation.

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

1. In a combination or permutation padlock, the combination of a plural-member core, a tumbler rotatably arranged thereon and provided with shackle-ways adapted to receive a shackle, and a key interposed between the members of the core.

2. In a combination or permutation padlock, the combination of a plural-member core provided with tumbler-channels, tumblers having shackle-ways adapted to receive a shackle, rotatably arranged on said core and adapted to engage said channels, and a key interposed between the members of the core.

3. In a combination or permutation padlock, the combination of a plural-member core provided with tumbler-channels, compound tumblers rotatably arranged on said core, adapted to engage said channels, and having shackle-ways adapted to receive a shackle, and a key interposed between the members of the core.

4. In a combination or permutation padlock, the combination of a plural-member core, compound tumblers rotatably arranged thereon, and having shackle-ways adapted to receive a shackle, and a wedge-shaped key interposed between the members of the core.

5. In a combination or permutation padlock, the combination of a plural-member core, tumblers rotatably arranged thereon, and having shackle-ways adapted to receive a shackle, and a longitudinally-tapering key interposed between the members of the core.

6. In a combination or permutation padlock, the combination of a plural-member core, tumblers rotatably arranged thereon, and having shackle-ways adapted to receive a shackle, and a longitudinally-tapering and transversely-wedge-shaped key interposed between the members of the core.

7. In a combination or permutation padlock, the combination of a plural-member core, the members of which are provided with laterally-extending tumbler-supporting flanges, tumblers rotatably arranged on said core, and having shackle-ways adapted to receive a shackle, a key interposed between the members of the core, and means for confining said key in position.

8. In a combination or permutation padlock, the combination of a plural-member core, the members of which are provided with tumbler-supporting flanges, compound tumblers rotatably arranged on said core, and having shackle-ways adapted to receive

a shackle, a key interposed between the members of said core and provided with a channeled head, and a tumbler associated for coöperation with the key-head to confine the key in position.

9. In a combination or permutation padlock, the combination of a plural-member core provided with tumbler-channels, and with tumbler-supporting flanges, compound tumblers rotatably arranged on said core, and having shackle-ways adapted to receive a shackle, a key interposed between the members of said core and provided with a channeled head, and a tumbler associated therewith for coöperation with the key-head to confine the key in position.

10. In a combination or permutation padlock, the combination of a plural-member core, tumblers having shackle-ways rotatably arranged thereon, a key interposed between the members of the core, means for confining said key in position, and a shackle provided with means to engage the tumblers.

11. In a combination or permutation padlock, the combination of a plural-member core, tumblers having shackle-ways rotatably arranged thereon, a key interposed between the members of the core, means for confining said key in position, and a shackle provided with channels to engage the tumblers.

12. In a combination or permutation padlock, the combination of a plural-member core, provided with channels, tumblers having shackle-ways rotatably arranged thereon and engaging said channels, a key interposed between the members of the core, means for confining said key in position, and a shackle provided with means to engage the tumblers.

13. In a combination or permutation padlock, the combination of a plural-member core, provided with opposed cam-faces, tumblers rotatably arranged thereon, and having shackle-ways adapted to receive a shackle, and a wedge-shaped key interposed between the members of the core.

14. In a combination or permutation padlock, the combination with a plural-member core, tumblers rotatably arranged thereon, and having shackle-ways adapted to receive a shackle, and a key interposed centrally between the members of the core to provide shackle-ways.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROWAN GIBSON.

Witnesses:

C. E. HAMRICK,
J. P. CROW.