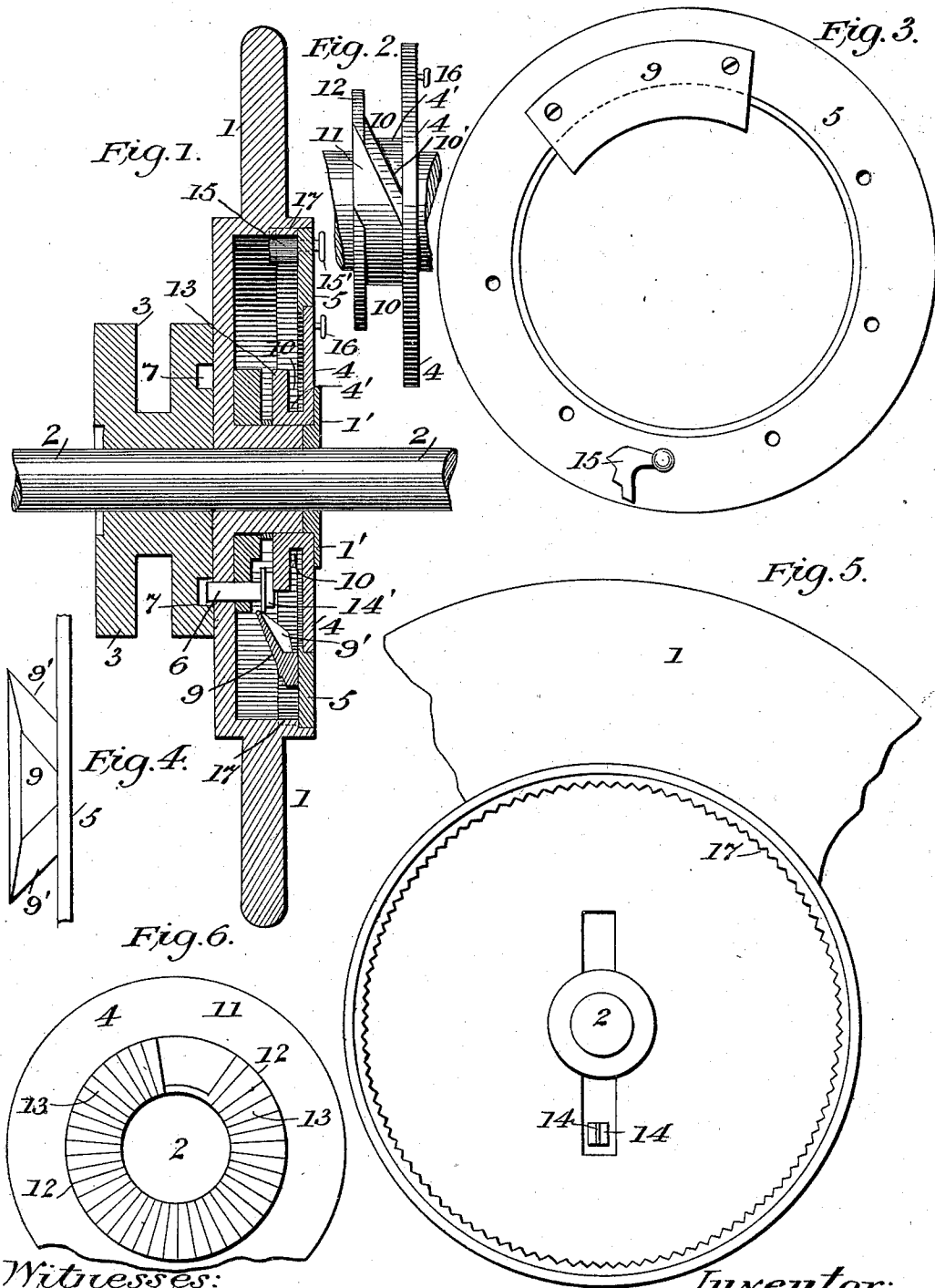


No. 653,230.

Patented July 10, 1900.

F. H. GARDNER.
LOCK FOR BICYCLES.
(Application filed Dec. 16, 1899.)

(No Model.)



Witnesses:
E. Murphy
H. C. Pierce

Inventor:
Frank H. Gardner

UNITED STATES PATENT OFFICE.

FRANK H. GARDNER, OF JACKSON, MICHIGAN.

LOCK FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 653,230, dated July 10, 1900.

Application filed December 16, 1899. Serial No. 740,613. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. GARDNER, a citizen of the United States, residing at the city of Jackson, Jackson county, State of Michigan, have invented a new and useful Combination-Lock for Bicycles, of which the following is a specification, viz:

My invention is a combination-lock for bicycles, its object being to provide means for momentarily locking the bicycle when not desired for use and as easily and quickly unlocking it, thereby doing away with use of a chain and padlock, and to so construct said locking means that no person unacquainted with the combination would be able to unlock the same. This I accomplish by inserting the lock in the sprocket-wheel.

My invention also relates to the particular construction, arrangement, and combination hereinafter shown and described, whereby the device is simple, durable, and useful.

In the drawings, Figure 1 is a vertical section of a sprocket-wheel provided with my invention. Fig. 2 is an elevation of part 4. Fig. 3 is a detail of part 5. Fig. 4 is a top view of part 5 with parts broken away. Fig. 5 is a detail of sprocket-wheel construction with parts broken away. Fig. 6 is a detail of part 4.

1 is a sprocket-wheel on the pedal crank-shaft 2. The hub of the wheel is enlarged and provided with a large circular cavity opening on one side of the wheel, as illustrated in Fig. 5. Covering this cavity and forming the outer surface of this side of the wheel are two flat tumblers 4 and 5, 4 being the tumbler nearer to the shaft 2. These tumblers lap upon each other, and the outer edge of tumbler 5 fits into an offset in inner edge of the wheel, thereby being flush and true and forming an even surface of the wheel over the said cavity.

1' is a collar keyed to the shaft 2 and against the hub of wheel 1 and tumbler 4, thereby holding the tumbler 4 and by it the tumbler 5 in position.

3 may be the frame of the bicycle or a washer or the boxing of the shaft 2 in the frame. It is provided with a number of slots 7 in its side next the sprocket-wheel for the purpose of receiving the end of the locking-

bolt 6, which is preferably square, and which is moved from the inside of the sprocket-wheel outward into engagement with the part 3, as mentioned. This bolt 6 is moved in and out of engagement as desired and when in engagement the wheel is locked and cannot be unlocked until some one acquainted with the combination hereinafter described turns the mechanism.

The tumbler 4 has an internal attachment 4', provided with a circumferential rib 12, forming the space 10 between the tumbler 4 and the rib 12. Through this rib 12 an angular slot 11 is cut, as shown in Fig. 2, and in the space or groove 10 a diagonal rib 10' forms an extension of one of the angular sides of the slot 11. This slot 11 is somewhat larger than the head 14 of the bolt 6, and the groove 10 is wider than the depth of the head 14, and when the bolt 6 is withdrawn from engagement with the part 3 its head 14 passes into the groove 10 through the slot 11 and is held therein until the tumbler is turned so that the rib 10' engages the head 14 and forces it downward through the slot 11 and into one of the holes 7 in the part 3. On the inner surface of the rib 12 are the radial corrugations 13 and on the top of the bar-head 14 is rib 14', which under circumstances hereinafter described will engage one of the corrugations 13 and prevent the bar from being withdrawn and the tumbler 4 from being turned.

On the inside of tumbler 5 is the curved projection 9, extending inwardly and concentric to the tumbler and having the beveled ends 9'. This projection 9 extends to and engages the inner edge of the head 14 and as the tumbler 5 is turned will crowd under it and force the bolt 6 backward, the head sliding upward on one of the stopping edges 9'.

If tumbler 4 is set as shown in Fig. 1, the head 14 will be raised until the rib 14' enters one of the corrugations 13 on the rib 12, and thus prevent the bolt 6 being withdrawn. If, however, the tumbler 4 be set so that the slot 11 is over the head 14 and the tumbler 5 is then turned, the extension 9 will crowd the head 14 backward through the slot into the groove 10, and then turning, the tumbler 4 will place the rib 12 underneath the edges of the head, thereby holding it and the bolt from

again passing into locking position until both the tumblers are turned to the proper point—viz., the tumblers 5 turned so that the extension 9 is withdrawn from the path of the head—when turning the tumbler 4 backward will force the bolt-head 14 out of the slot 11 and into slot 7, and thereby lock the wheel.

By graduating the outer surfaces of the tumblers 4 and 5 similar to the dials of a safe combination-lock, with the width of the graduated spaces equal to the width of the slot 11 and the edges 9, respectively, the number on the dial 4 will indicate the point to which it must be turned to place it over the head of the bolt-head 14, and the point or number over the edge 9' will indicate the front to which the tumbler 5 must be turned for it (9') to engage the head of the bar 6. The graduated surfaces of these tumblers are not shown in the drawings, but will be readily comprehended.

15' is a knob on the outside of tumbler 5, extending to an eccentric-shoe 15 on inside of the tumbler 5 and adapted to engage the corrugations 17 on the inner edge of the cavity of the wheel, whereby the tumbler 5 may be prevented from revolving when the wheel is in motion. Means may also be provided for locking the tumbler 4; but it is not probable that the motion of the wheel would turn both the tumblers so that the locking-bolt 6 would be moved into locking position. 16 is a knob on outer surface of tumbler 4 for turning the same, the knob 15' being used also for turning the tumbler 5 after the eccentric 15 has been turned out of engagement with 17.

In order that the combination may be changed, I secure the attachment-carrying rib 12 and the projection 9 to their tumblers

by means of screws, so that their position on the tumblers may be varied as desired.

It is obvious that other means may be provided for actuating the bolt 6, such as would be suggested by experience or mechanical skill, without departing from the object and principle of my invention.

It is immaterial which wheel be provided with the lock mechanism.

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

1. In a lock for bicycles, a sprocket-wheel, a lock-bolt mounted in said sprocket-wheel and adapted to be moved into engagement with the bicycle-frame, a permutation-tumbler on the sprocket-wheel, and means carried by said permutation-tumbler for operating said locking-bolt as described.

2. In a lock for bicycles, a sprocket-wheel, a lock-bolt mounted in the sprocket-wheel and adapted to be moved into engagement with the bicycle-frame, one or more permutation-tumblers in the sprocket-wheel, and means controlled by said tumblers for operating said locking-bolt, as described.

3. In a lock for bicycles a sprocket-wheel, a lock-bolt mounted in the sprocket-wheel and adapted to be moved into engagement with the frame, and means in the sprocket-wheel for operating said lock-bolt as described.

In testimony whereof I have subscribed my name in presence of two witnesses.

FRANK H. GARDNER. [L. S.]

In presence of—

F. G. FIFIELD,
GEORGE R. STONE.