

S. W. COLLINS.
COMBINATION BICYCLE LOCK.

Patented Feb. 9, 1897.



Inventory

Samuel W. Collins
by Heber S. Parmanor,
ATTORNEY.

UNITED STATES PATENT OFFICE.

SAMUEL W. COLLINS, OF KOKOMO, INDIANA, ASSIGNOR OF SEVEN-TWELFTHS
TO RUFUS LAYMON, OF SAME PLACE, AND WILLIAM J. WINGATE AND
JOEL T. BARKER, OF DANVILLE, INDIANA.

COMBINATION BICYCLE-LOCK.

SPECIFICATION forming part of Letters Patent No. 576,835, dated February 9, 1897.

Application filed May 9, 1896. Serial No. 590,932. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. COLLINS, a citizen of the United States, residing at Kokomo, in the county of Howard and State of Indiana, have invented certain new and useful Improvements in a Combination Bicycle-Lock; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in combination bicycle-locks of that class that are permanently attached to the bicycle-frame and adapted to securely lock the steering-post against turning within the frame-head, and has for its objects, first, to provide a lock of that class that is always in position; second, that can be locked and unlocked without the use of a key; third, that is susceptible of a great number of changes of the combination; fourth, that may be changed readily from one combination to another; fifth, that will add but little weight to the bicycle; sixth, that will not be in the way of the rider, and, seventh, that may be built upon the bicycle or attached thereto after the machine is finished.

With these objects in view my invention consists in the construction and combination of parts shown in the accompanying drawings, and described in the following specification.

In the drawings, Figure 1 is a view of a portion of a bicycle, showing the lock thereon. Fig. 2 is a cross-sectional view taken on the line 2 2 of Figs. 1 and 3. Fig. 3 is a vertical sectional view of the lock and that portion of the bicycle-frame to which it attaches. Fig. 4 is a top plan view showing the outer rings or tumblers in section. Fig. 5 is a cross-section of one of the outer rings or tumblers. Fig. 6 is an enlarged fragmental view of a section of one of the inner notched tumblers and the outer ring. Fig. 7 is a perspective view, partly in section, of the lock-opening

ring or tumbler, and Fig. 8 is a sectional view showing a modified form of construction.

A is the handle-bar.

B is the frame-head.

C is the steering-post.

D is the horizontal top tube of the frame. 55

E is the central core sustaining the locking-bolt.

F is the retaining-ring, which holds the tumblers and friction-rings up against each other. 60

G is the lock-operating ring or tumbler.

H H are the separating-rings between the tumblers.

I I are the notched inner tumblers.

J J are the outer rings or tumblers having the combination-numbers. 65

K is the locking-bolt.

L is the spring which presses the bolt K forward when it is released by the tumbler G.

The outer rings J are provided with a series of numbers and graduations on the outside, and each of them have the V-shaped projection *a* located upon the inner face at the desired point. This projection *a* enters the V-shaped notches *b*, extending across the outer faces of the tumblers I. The tumblers I are each provided with a slot *c* in the inner face, and the outer face above the slot *c* is plain, as at *d*. 75

The operating-ring G has on its inner face an open collar *e*, one end of which is narrower at the opening than the other and gradually widens toward the center. It is also provided with a shield *f*, which is adapted to project over a portion of the outer rings J, and has a semicircular notch *g* in its outer edge, whereby the screw *h*, securing the retaining-ring F, may be removed. It is also provided with a mark *i*, which is directly over the opening in the open collar *e*, secured to the inside. The notched tumblers I are not as wide as the outer rings J, and the difference in width is filled by the separating-rings H. These rings are immovable on the tube D and have an opening corresponding with the width of the bolt K, thereby allowing the projections *j* thereon to pass said rings H. These rings serve to separate the 80 85 90 95

tumblers I and prevent the adjacent tumbler from turning by friction when the next one to it is being turned.

The bolt K is adapted to slide in a slot *k* in the core E, and in the slot *k'* in the horizontal tube D, and has the projections J upon its upper edge, which are adapted to pass the slots *c* in the notched tumblers I, the openings in the separating-rings H, and the opening in the open collar *e*. The lower part of the rear end of the bolt K is cut away and is provided with a stud *l*, around which one end of the spring L is coiled. The core E has an opening of sufficient size to receive the coil-spring L. The front end of the bolt K passes through an opening in the wall of the frame-head B and enters a slot *m* in the steering-post C, when said steering-post is turned so as to bring the slot *m* opposite the bolt K. The spring L presses the bolt forward into said slot *m*, provided the ring G is turned so as to bring the opening in the open collar *e* in line with the projections *j* upon the bolt K. When in this position, the shield *f* will be opposite the side of the tube D and the mark *i* will be directly on top of said tube. When moved in this position, the semicircular notch *g* passes the screw *h*, and thereby prevents its removal. The tumblers I and the outer rings J, which move together by reason of the notches *b* and the projections *a* engaging each other, are then turned, which carries the slots *c* in the tumblers I out of line with the projections *j* upon the bolt K, thereby preventing the bolt K slipping back, and holding the forward end in the slot *m* in the steering-post. In this position the operating-ring G cannot be rotated by reason of the rear projection *j* on the bolt K being held against a rear movement by reason of the forward projections *j* not being able to pass the notched tumblers I. The slot *m* being in the side of the steering-post, it will be seen that the front wheel will be turned sidewise when locked, thus rendering it impossible to propel the bicycle except in a small circle.

To unlock the wheel, the rings J are turned until the numbers on the ring to which the combination is set come opposite the mark *i* upon the ring G. This brings the openings *c* in the tumblers I in line with the projection *j* on the bolt K. The ring G is then turned, the rear projection *j* on the bolt K being engaged by the narrow end of the open collar, and thereby draws the bolt K back. This brings the other projections into the slots *c* on the inside of the tumblers I, which prevents them from being turned. The shield *f* is then on top of the tube, as shown in Fig. 1, and covers the numbers to which the combination is set and prevents any one from observing the numbers of the combination when the wheel is unlocked. The wheel is quickly locked by turning the ring G until the mark *i* is opposite the numbers of the combination, then turning the steering-post until the open-

ing *m* comes opposite the bolt K. A slight turn of the rings J prevents the withdrawal of the bolt and throws the combination out. To change the combination, the screw *h* is removed and the securing-ring F slid back on the tube D. The ring G and separating-ring H are slid back against F and the outer ring J slipped off of the notched tumbler I. The ring J is then turned until the desired number comes on top, directly opposite the plain portion *d* of the tumbler I, and is then slipped back, when the V-shaped projection *a* will enter a corresponding V-shaped notch in the tumbler J. Either one or both of the sets of numbers may be changed in the same manner, when all the rings and tumblers are pushed back into place and the screw *h* again inserted, holding the lock securely in place.

It will be seen that the combination is susceptible of a large number of changes and that it will be impossible to open the lock without working the combination or destroying the frame.

In Fig. 8 is shown a modified form of the lock adapted to be attached to a bicycle already built, as it is obvious the constructions above described can only be advantageously attached when the frame is being put together. The arrangement and construction of the rings J and the tumblers I are the same, and the bolt K operates in the same manner; but the lock-operating ring G is located next the steering-post, and the core E has a flange *n* on the outer end, which is equal in diameter to the diameter of the rings J, and serves to hold them in place on the core E. The bolt K is slightly different in shape, but the principle and manner of locking is the same as in the lock above described.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A bicycle-lock adapted to secure the steering-post against turning within the frame-head, consisting of the bolt K, having projections *j*, and a stud *l*; the coil-spring L, the notched tumblers I, having the slots *c*, and the plain portions *d*; the outer rings J, having the inner projection *a*, and the outer numbers and graduations; the separating-rings H, the ring G, having the mark *i*, the projecting shield *f*, and the semicircular notch *g*; and the retaining-ring F, securing said rings and tumblers against slipping back upon the tube D, substantially as shown and described.

2. In a bicycle-lock, adapted to lock the steering-post against turning in the frame-head, the combination with the bolt K, adapted to pass through the frame-head and enter the opening in the steering-post, and having projections *j*, and a spring-stud *l*; the bolt withdrawing and releasing ring G, having the open collar *e*, to engage the end projection *j*, of the bolt K, the shield *f*, and the semicircular notch *g*; the tumblers I, having the slots *c*, and the V-shaped notch *b*; the rings J, hav-

ing the V-shaped projections *a*, adapted to engage the notches *b*, on the tumblers I, and having numbers and graduations upon their outer faces, whereby the combinations may be read, substantially as set forth.

3. The combination with a bicycle-frame and steering-post, of the locking devices consisting of the bolt K, the coil-spring L, the notched tumblers I, rings J, having the projections *a*, the ring G, having the shield *f*, and the open collar *e*, inside thereof; the securing-ring F, and the separating-rings H, all substantially as shown and described.

4. The combination in a bicycle-lock, of the outer rings J, having the projections *a*, and the numbers and graduations on their outer faces, the ring G, having the shield *f*, and the open ring *e*, the notched tumblers I, and the separating-rings H, with the bolts K, adapted to enter the opening *m*, in the steering-

post C, and having the projections *j*, and the stud *l*; and the coil-spring L, all substantially as set forth.

5. In a bicycle-lock, the combination of the steering-post having a slot *m*, the rings J, having the numbers and graduations on their outer faces and the V-shaped projections *a*, on the inner side, the notched tumblers I, having the slots *c*, the separating-rings H, the operating-ring G, having the shield *f*, and the open collar *e*, and the bolt K, adapted to enter the slot *m*, in the steering-post C, and the coil-spring L, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL W. COLLINS.

Witnesses:

WM. M. DUNLAP,
M. H. TUTTLE.