

(No Model.)

M. GESSLER.
BICYCLE LOCK.

No. 577,248.

Patented Feb. 16, 1897.

Fig. 1.

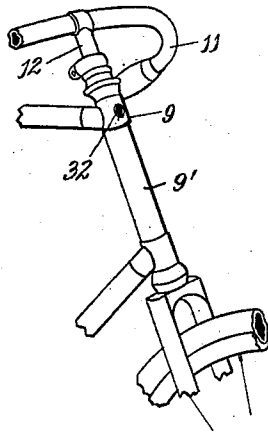


Fig. 2.

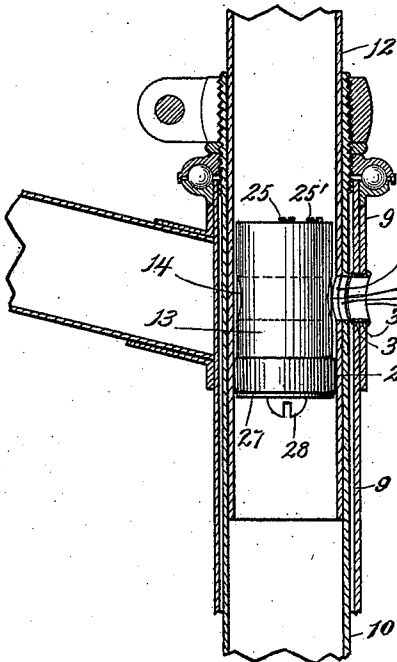


Fig. 6.

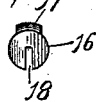


Fig. 7.

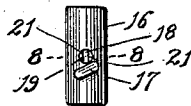


Fig. 3.

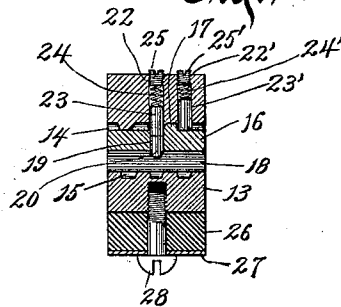


Fig. 4.

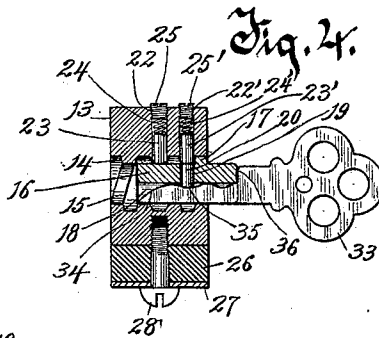


Fig. 5.

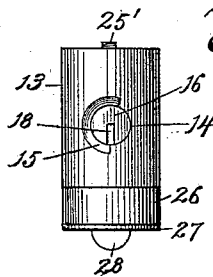
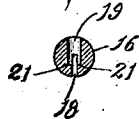


Fig. 8.



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UNITED STATES PATENT OFFICE.

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BICYCLE-LOCK.

SPECIFICATION forming part of Letters Patent No. 577,248, dated February 16, 1897.

Application filed May 25, 1896. Serial No. 593,024. (No model.)

To all whom it may concern:

Be it known that I, MAXIMILIAN GESSLER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Bicycle-Locks, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in bicycle-locks.

The object is to provide an improved construction of lock adapted to be arranged within the front tubing of the bicycle-frame and to be thereby entirely hidden from view, the invention comprehending an improved form of lock wherein the key is inserted directly into the bolt, and as the key is turned the bolt is forced either outwardly or inwardly in order to effect the locking or unlocking. The device is also of such construction as to employ the fewest possible number of parts, thereby securing not only lightness, but also simplicity in construction and inexpensiveness in production.

With the above primary object in view the invention consists of the devices and parts, or their equivalents, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a perspective view of the forward portion of a bicycle equipped with my device. Fig. 2 is a vertical sectional view, on an enlarged scale, through a portion of Fig. 1. Fig. 3 is a sectional view through the locking mechanism. Fig. 4 is a similar view showing the key in place and the bolt drawn outwardly to a locking position. Fig. 5 is a detail elevation of the locking mechanism. Fig. 6 is an end view of the bolt. Fig. 7 is a plan view thereof, and Fig. 8 is a cross-section on the line 8 8 of Fig. 7.

Referring to the drawings, the numeral 9 indicates the upper brace-sleeve of a bicycle-frame; 9', the outer stationary sleeve or tube which the brace-sleeve surrounds; 10, the steering-tube; 11, the handle-bar, and 12 the handle-bar tube, telescoping into the steering-tube.

In the application of my invention the locking mechanism is shown as disposed in the handle-bar tube. This locking mechanism consists of a cylinder 13, which is provided

with an interior transverse opening 14, said opening formed with a spiral screw-thread 15. A bolt 16 is adapted to fit in the opening 14, and this bolt is provided with an inclined rib 17, which engages the screw-threads 15. The bolt is also provided at its under side with a longitudinal slot 18 and with a vertical opening 19, arranged just in advance of the rib 17 and extending downwardly to the slot 18. Adapted to fit in this opening 19 is a tumbler-pin 20. The pin is prevented from falling through the longitudinal slot 18 by means of shoulders 21 21, formed in said slot, (see Fig. 8,) and upon which shoulders the lower end of the pin is adapted to be normally seated.

Extending downwardly from the top surface of the cylinder to the opening 14 thereof are vertical pin-openings 22 22', in each of which fit locking-pins 23 23'. Above these pins are advisably arranged coiled springs 24 24', and these springs are pressed down against the pins by means of small screws 25 25', engaging threads in the openings 22 22'. These screws also serve to regulate the tension of the springs.

Adapted to fit against the lower end of the cylinder is a disk 26, composed of rubber or similar material. Against this disk 26 in turn fits a metallic plate 27. The disk and plate are held to the lower end of the cylinder by means of a screw 28, passing through said plate and disk and entering the cylinder. These parts 26, 27, and 28 are used for the purpose of holding the cylinder firmly in place within the tube. The locking mechanism is advisably arranged within the handle-bar tube, and in its application thereto said tube is removed from the frame and the cylinder inserted in place. A screw-driver is then passed upwardly in the lower end of the tube to engage the screw 28. This screw is then turned so as to compress the disk and spread the edge thereof outwardly firmly against the inner side of the tube. It is obvious that in this manner the cylinder is firmly held in place against slipping without the necessity of passing screws, bolts, or other devices through the tubing, and thus marring the appearance.

The handle-bar tube 12 is provided with a bolt-opening 29, registering with the transverse opening 14 of the cylinder, and the steering-tube 10, outer sleeve 9', and brace-sleeve

9 are likewise provided with openings 30, 30', and 31, respectively. The openings 29 and 30 are adapted to be brought into register with the openings 30' and 31 when the steering-tube 5 is turned so as to bring the wheel at an angle. In the opening 31 is advisably fitted a sleeve 32.

The locking-key employed by me is designated by the numeral 33. The upper edge 10 of the end of this key is provided with a bevel 34, and at the terminus of this bevel with a depression 35.

Fig. 3 shows the position of the parts when the bolt is in a normal position. It will be 15 seen that the pin 20 is below the plane of the upper end of the opening 19 and that the pin 23 extends down into said opening 19 and bears against the upper end of the tumbler-pin 20. The bolt therefore is locked by the 20 pin 23 against being turned, and consequently forced outwardly. If now it is desired to lock the machine, the front wheel is turned at an angle, so as to bring the several bolt-openings in register. The locking-key is now inserted 25 in the longitudinal key-slot 18 of the bolt. As soon as the beveled end 34 of the key contacts with the lower end of the pin 20 said pin is raised, and when the key has reached the limit of its in movement by the contact of its 30 shoulder 36 with the end of the bolt the depression 35 will be directly under the pin 20, and said pin will then drop so that its upper end is flush with the upper surface of the bolt, the depression being just deep enough to bring 35 about this result. The pin 23 is therefore prevented from passing into the vertical opening 19 of the bolt and locking said bolt against turning. The key is now turned, and with it the bolt, and in view of the fact that the inclined rib 17 of said bolt engages with the 40 screw-thread 15 said bolt will be forced outwardly into the registering openings 29, 30, 30', and 31 of the handle-bar tube, steering-tube, outer sleeve, and brace-sleeve, respectively. 45 In this outward movement of the bolt its vertical opening 19 is finally brought in line with the opening 22' of the cylinder. One complete turn of the key has the effect of moving the bolt exactly the distance to cause 50 this registration. Now the moment the key is withdrawn the pin 20 of course necessarily drops, and also the pin 23', which latter passes partly into the opening 19 of the bolt and thereby locks said bolt in this locking position. 55 When it is desired to unlock, the key is inserted, as shown in Fig. 4, and said key is then given one complete turn in the reverse direction. This will cause the bolt 16 to travel inwardly, so that its opening 19 and pin 20 60 are brought into register with the opening 22 and pin 23 of the cylinder. When the key is now withdrawn, the pin 23 is forced down into the opening 19 of the bolt for the purpose of locking said bolt.

65 While I have shown the coiled springs 24 and 24' for forcing the pins 23 23', yet it will be obvious that these springs are not abso-

lutely necessary to successful results, inas- 70 much as the pins would readily fall into the opening 19 by gravity. The springs, however, effect a more positive and certain movement of the pins.

As stated, the cylinder is advisably arranged within the handle-bar tube, in view 75 of the fact that said tube can be readily removed, so as to allow access to the screw 28, in order to effect either the locking of the cylinder in place in the tube or its removal therefrom. However, the invention is not 80 necessarily restricted to this disposition of the parts, as it could be arranged within the steering-tube. In such case it might be placed within said steering-tube in the reverse position to that shown in Fig. 2—that is to 85 say, with the disk end of the cylinder uppermost. In that event access to the screw 28 could be readily obtained by simply removing the handle-bar tube and passing a screw- 90 driver downwardly to engage the screw 28; or, in cases where the lower end of the steering-tube is open, as in some constructions of bicycles, the locking mechanism could be ar- 95 ranged within the steering-tube in exactly the same position it is placed in the handle-bar tube, as shown in Fig. 2.

From the above description it will be seen 95 that I provide a simple and effective lock in which but few parts are required and in which the bolt is operated by inserting the key directly into said bolt. This avoids the neces- 100 sity of employing a complicated tumbler adapted to be engaged by the key and in turn to engage the bolt. The entire device is completely hidden from view and the mechanism can be applied to a bicycle-frame without 105 the necessity of changing any of the parts of said frame, the only requirement being that the several tubes have registering openings formed therein for the bolt.

From the foregoing description it will be 110 seen that the invention comprehends the employment of a bicycle-lock in which the lock-casing is fitted within the inner rotatable tubing at the front of the bicycle-frame, said tubing having a bolt-opening therein, which 115 normally is out of register with the opening of the outer stationary tubing, but which may be brought into register with said opening of the outer stationary tubing when the inner tubing is rotated a desired distance. This 120 lock-casing is provided therein with a bolt, and a key is adapted to be passed through the openings when they are in registering position, to engage directly the bolt, said key 125 when turned in one direction causing the bolt to be drawn from within outwardly through the opening of the inner rotatable tubing and into final engagement with the outer stationary tubing, whereby the inner tubing is locked to the outer tubing and is pre- 130 vented from being turned, and consequently the front wheel, which is connected to the inner tubing through the medium of the usual fork, is prevented from being turned back to

such position as to enable the machine to be ridden. After the bolt is thus drawn out to a locking position it can subsequently be forced back to its normal position to unlock the machine by turning the key in the opposite direction. By this construction, when the machine is unlocked, no portion of the lock mechanism is visible, as the inner tubing is then turned so as to bring its opening out of register with the opening of the outer tubing; and, furthermore, by reason of the fact that the bolt is drawn outwardly through the openings, when said openings are in registering position, only one set of said openings is necessary, thereby greatly subserving strength in the framework of the machine.

The invention differs from other constructions of bicycle-locks in the respect that the bolt is drawn from within outwardly by means of a key engaging the bolt directly, said bolt being drawn through the opening of the inner rotatable tubing and the opening of the outer stationary tubing, the opening of the inner tubing being brought into register with the opening of the outer tubing by turning said inner tubing a desired distance, and with it the front wheel of the machine, whereby the bolt is enabled to be drawn outwardly into the opening of the outer stationary tubing to thereby hold the inner tubing against rotation. It will thus be seen that only one set of openings is necessary—viz., an opening in one side of the inner tubing and an opening in one side of the outer tubing. Furthermore, from the fact that the inner tubing fits closely revolubly in the outer tubing there is no opportunity for lateral play, and hence no means are required for overcoming lateral movement.

What I claim as my invention is—
In a bicycle-lock, the combination, of the

front outer stationary tubing of a bicycle-frame provided at one side with a bolt-opening, inner tubing fitting closely, revolubly in the outer stationary tubing, said inner tubing provided at one side with a bolt-opening, and having a connection with the fork of the front wheel, the inner tubing adapted, when rotated a desired distance, to bring its bolt-opening into register with the opening of the outer tubing, and to also turn the front wheel of the bicycle at an angle, a lock-casing fitting within the inner tubing, and provided with a screw-threaded bolt-opening registering with the opening of the inner tubing, lock mechanism within the casing, a bolt within the bolt-opening of the lock-casing, said bolt provided with a feather engaging the screw-threads of the bolt-opening, and a key adapted, when the inner tubing is turned so as to bring the bolt-openings into register, to be passed through said openings and to engage the bolt directly, said key when turned in one direction, adapted to draw the bolt from within outwardly through the registering openings, and to finally engage the opening of the stationary outer tubing, whereby the inner tubing, and the fork which carries the front wheel, are held against rotation; and when the key is turned in the opposite direction, the bolt is forced from without inwardly through the registering openings to its normal position within the casing, whereby the inner tubing and the front fork carried thereby are free to be turned.

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

MAXIMILIAN GESSLER.

Witnesses:

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