

(No Model.)

J. RANK.
BICYCLE LOCK.

No. 583,861.

Patented June 1, 1897.

Fig. 1.

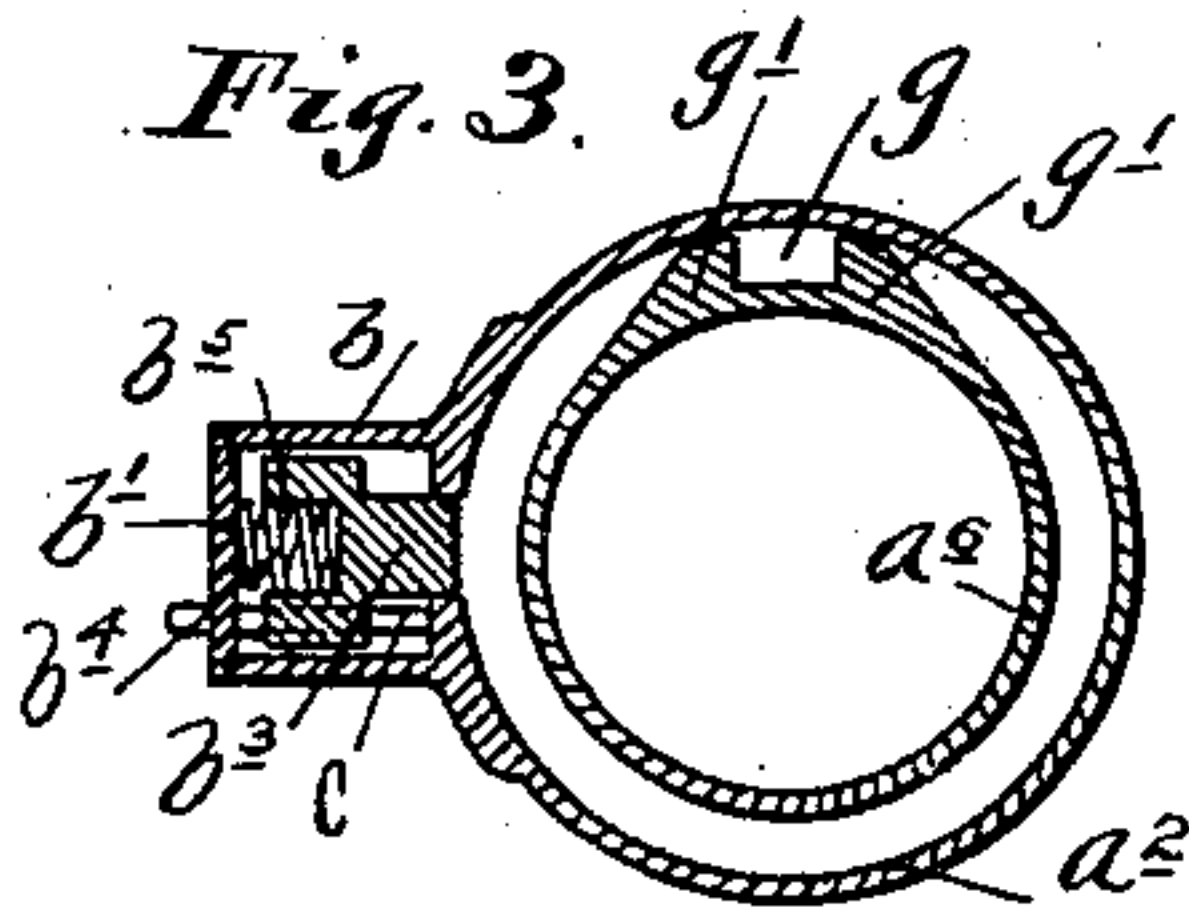
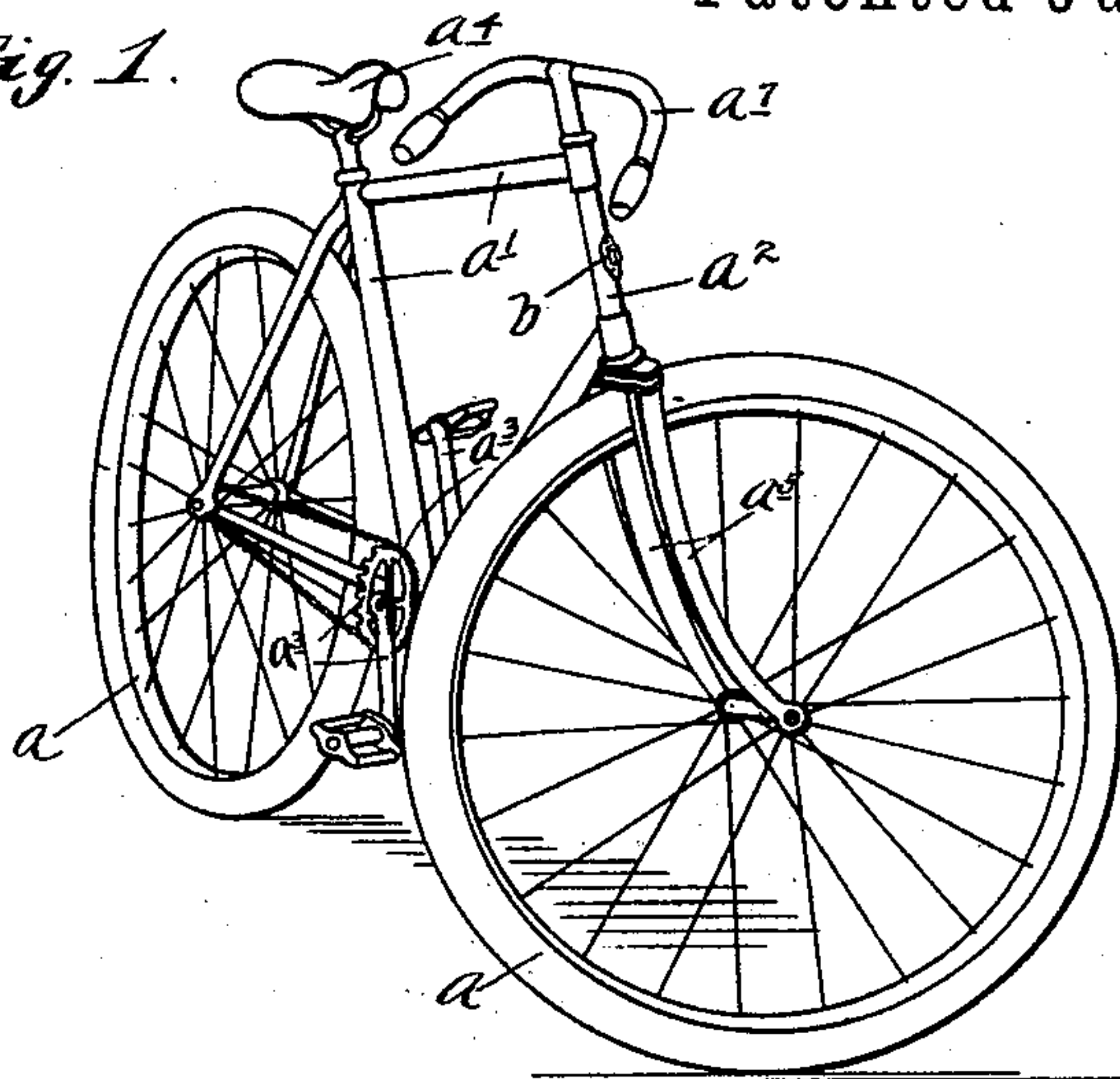


Fig. 2.

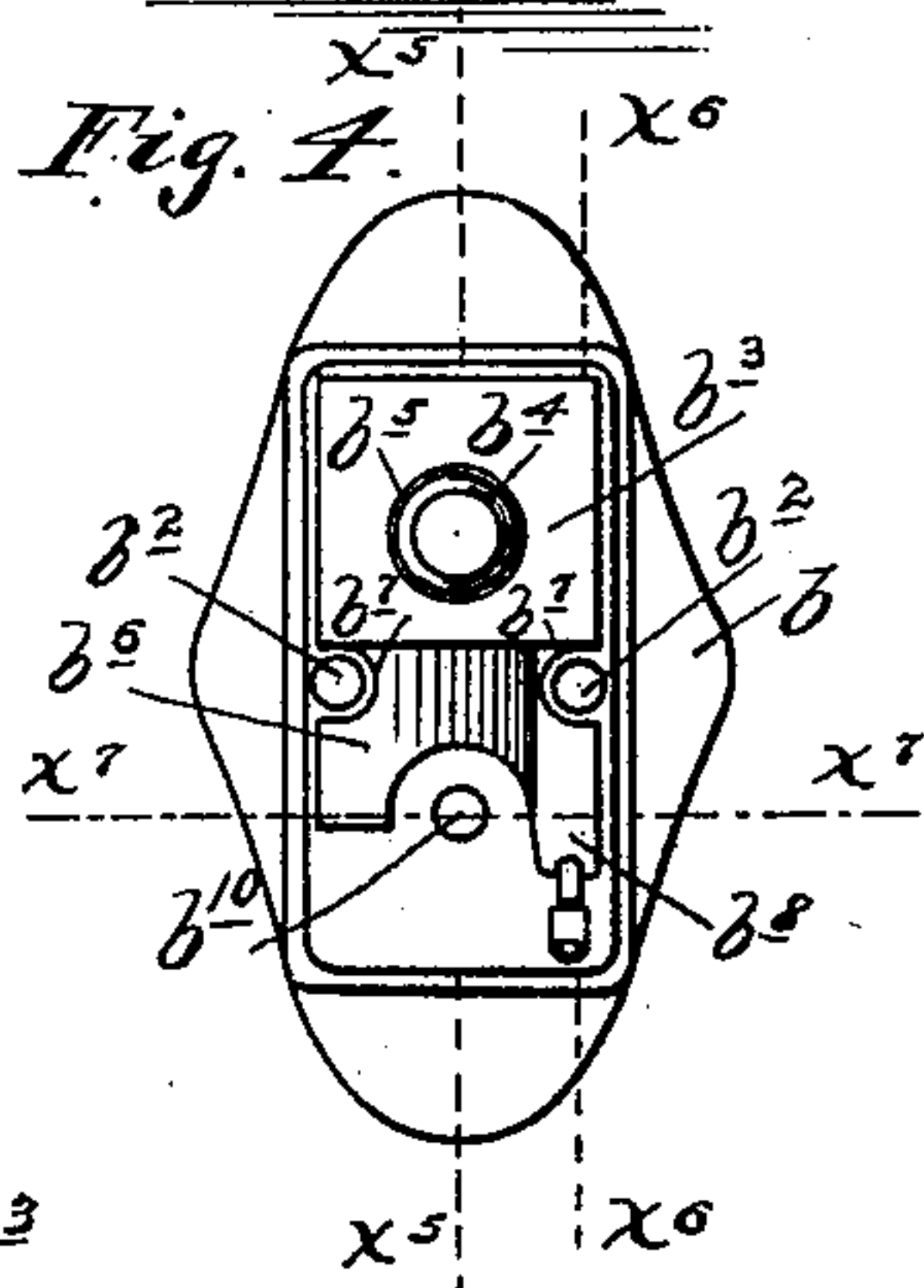
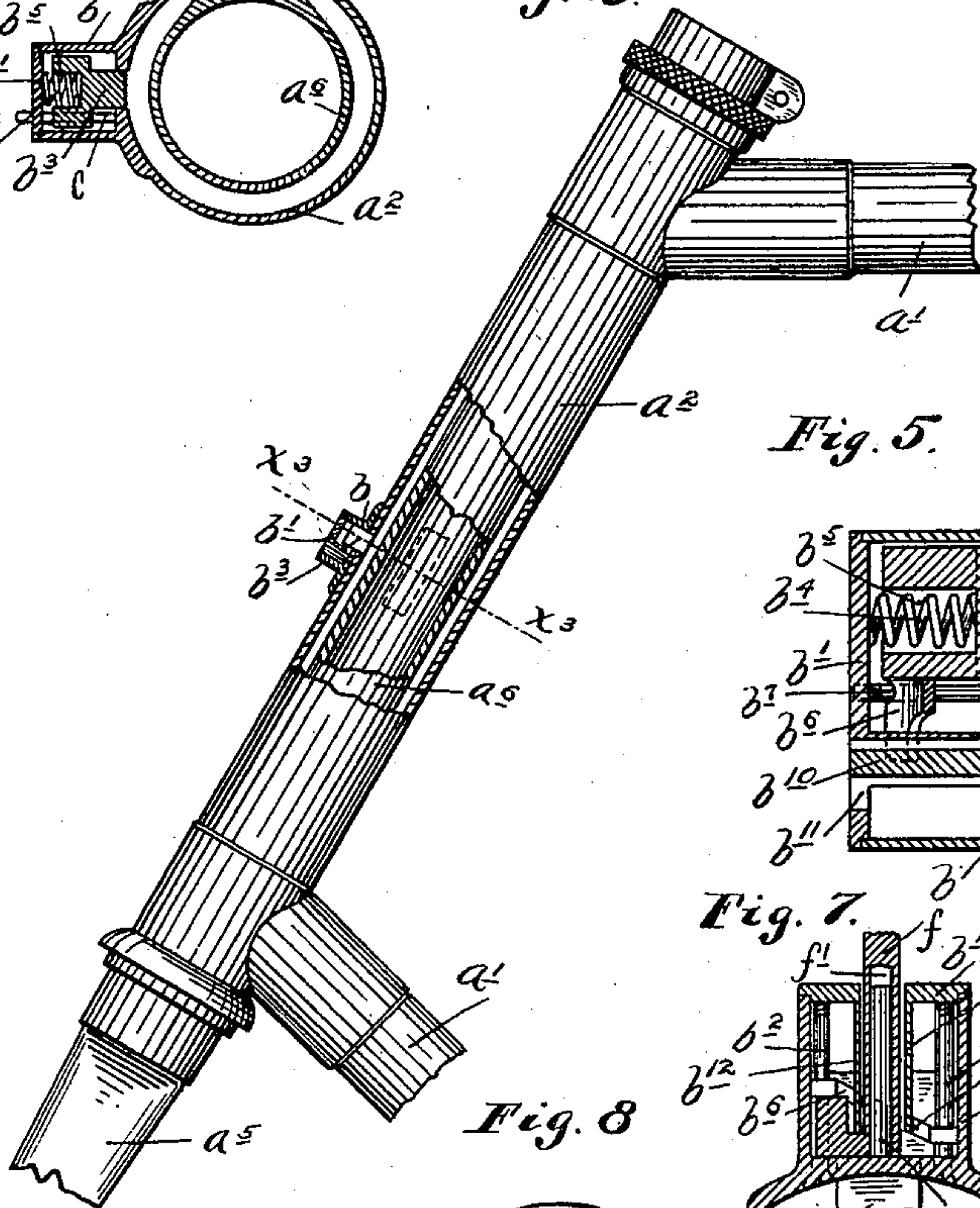


Fig. 5.

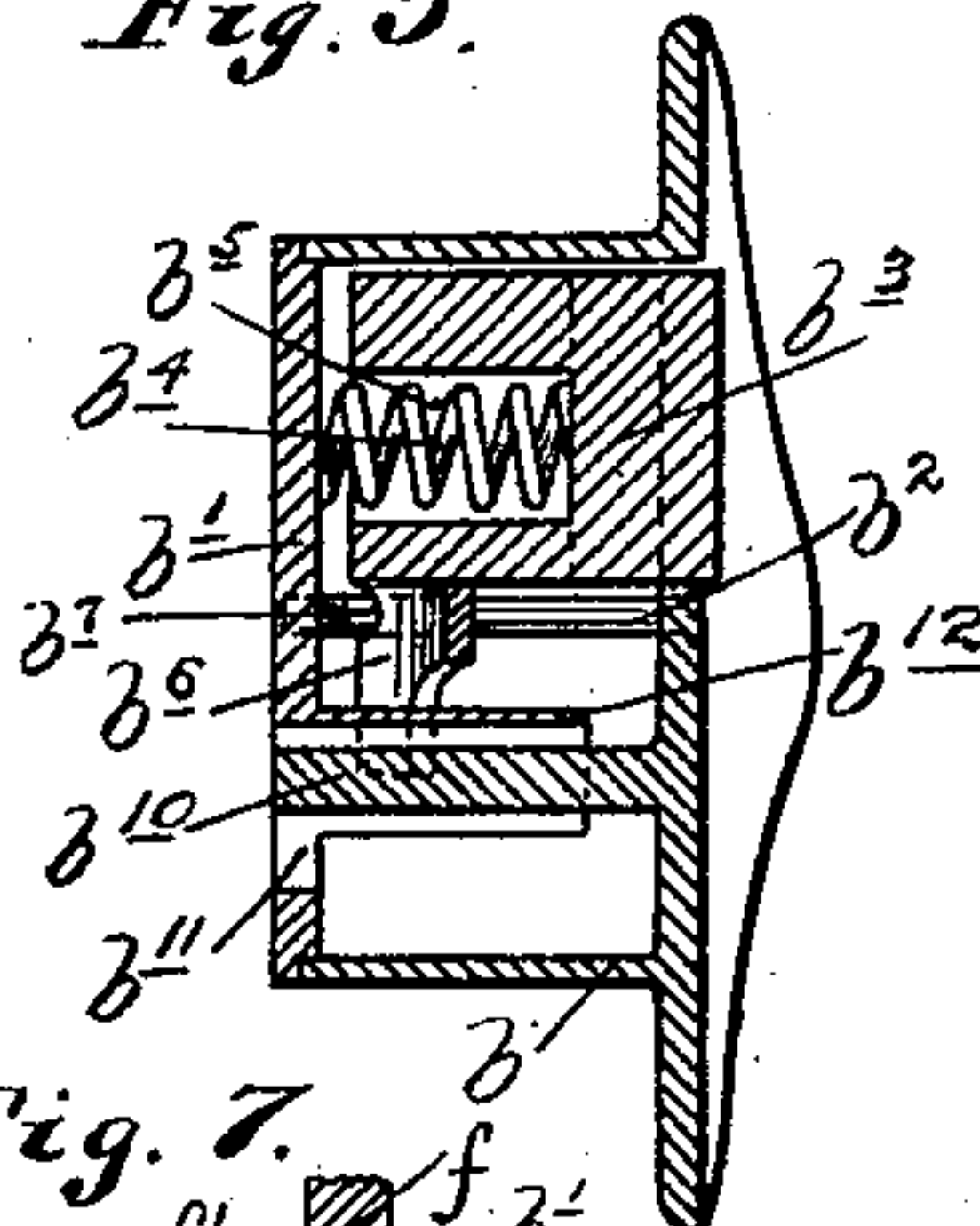


Fig. 7.

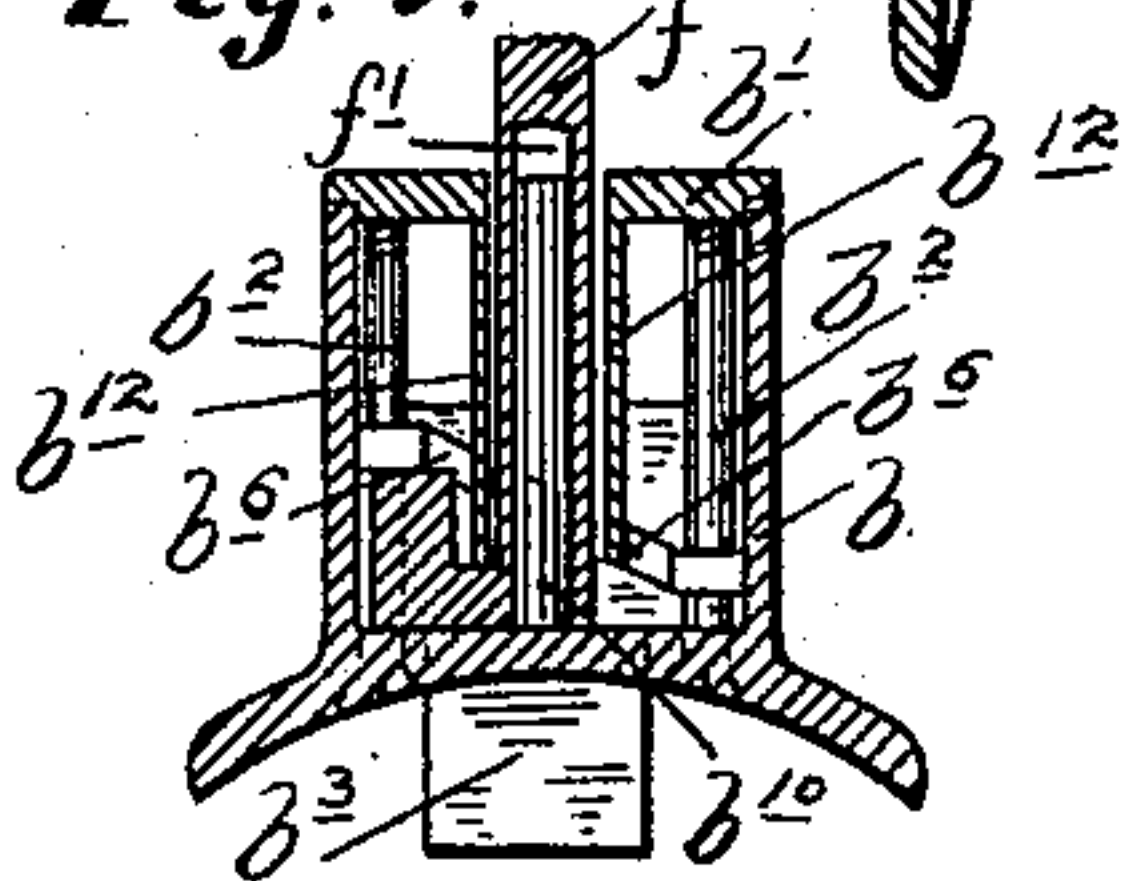
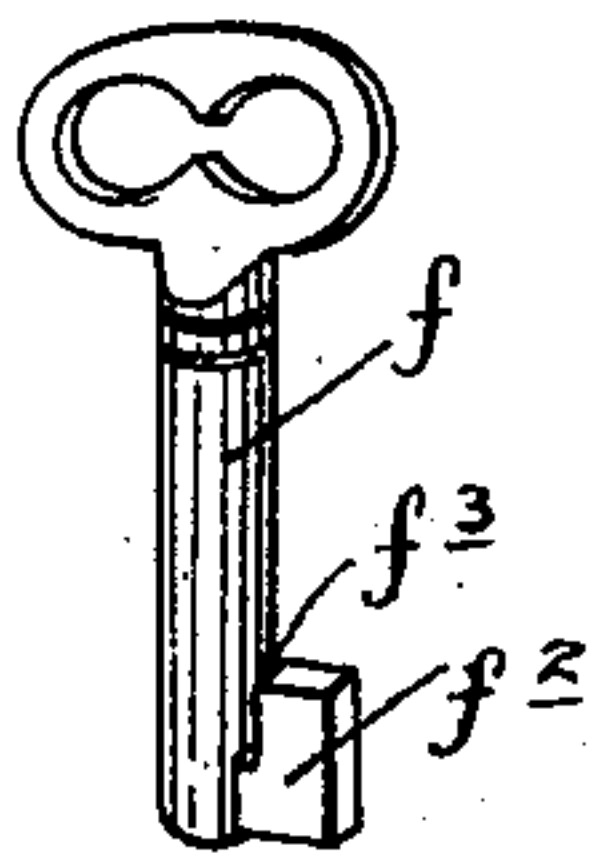


Fig. 8.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN RANK, OF MINNEAPOLIS, MINNESOTA.

BICYCLE-LOCK.

SPECIFICATION forming part of Letters Patent No. 583,861, dated June 1, 1897.

Application filed May 1, 1896. Serial No. 589,817. (No model.)

To all whom it may concern:

Be it known that I, JOHN RANK, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Bicycle-Locks; and I do hereby 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.

My invention has for its object to provide an improved lock for bicycles.

To this end my invention comprises the novel devices and combinations of devices, hereinafter described, and defined in the claims.

The preferred form of my invention is illustrated in the accompanying drawings, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a view in perspective showing a bicycle equipped with my improved lock. Fig. 2 is a view in side elevation with some parts broken away, showing the steering-head portion of the bicycle-frame with my improved lock applied thereto; and Fig. 3 is a horizontal section taken substantially on the line $x^3 x^3$ of Fig. 2. Fig. 4 is a view in front elevation, showing my improved lock removed from the steering-head of the bicycle-frame with some parts of the same removed. Fig. 5 is a vertical longitudinal section taken on the line $x^5 x^5$ of Fig. 4. Fig. 6 is a vertical longitudinal section taken on the line $x^6 x^6$ of Fig. 4. Fig. 7 is a horizontal section taken substantially on the line $x^7 x^7$ of Fig. 4, a portion of the key which coöperates with the lock being also shown in working position and the lock-plunger being shown in its locking position; and Fig. 8 is a view in perspective, showing the key removed from the lock.

a indicates the wheels, a' a^2 the framework, of which a^2 is the steering-head, a^3 the pedal-cranks and chain-drive, a^4 the seat, a^5 the swiveled front fork, a^6 the fork-stem, and a^7 the handle-bars, of an ordinary safety-bicycle.

In the application of my improved lock I prefer to rigidly secure the lock-case to the steering-head and provide the fork-stem with a detent with which the lock plunger or bolt of the lock may be engaged so as to secure or

lock the steering-head and fork-stem against rotary motion. The detent in the fork-stem should be so located with respect to the lock-plunger that said plunger and detent can be engaged only when the front wheel and fork-stem are turned substantially as shown in Fig. 1 or with the front wheel turned at an angle to the rear wheel and frame, so that the machine cannot be run on a straight line.

As shown, this lock comprises a lock-case $b b'$, of which parts the body portion b is brazed or otherwise secured to the steering-head a^2 , and the cap portion b' is rigidly secured to the body portion b by means of a pair of bolts b^2 .

b^3 is a lock plunger or bolt which is mounted for horizontal reciprocating motion within the case-body b and works through suitable passages both in the inner wall of the case-body b and in the adjacent wall of the steering-head a^2 . The plunger b^3 is held under strain to move inward into its locking position by means of a spring b^4 , which works in a recess b^5 of the plunger b^3 and is compressed between the same and the inner face of the cap b' . The plunger b^3 is provided with a depending cam-plate b^6 , which is provided with side notches b^7 and with a projecting finger portion b^8 . The notches b^7 work on the rods b^2 and assist in holding the lock-plunger b^3 to a true line movement.

c indicates a spring-catch the inner end of which is fulcrumed within the case and the outer end of which works through a slot b^9 in the case-cap b' . This latch c is provided with a tooth c' , which is adapted when the lock-plunger b^3 , together with its cam-plate b^6 , are moved inward into the unlocking position of said plunger to engage and hold the finger portion b^8 against the action of the spring b^4 . The catch c is subject to the action of a leaf-spring c^2 , which normally holds the same in its operative position.

The body b of the lock-case is provided with an interior key-post b^{10} , and the cap portion b' is provided with a keyway b^{11} and an inwardly-projecting semicylindrical flange b^{12} , which runs concentric to the key-post b^{10} .

f indicates the operating-key, provided with its stem with a seat f' , which fits the post b^{10} , and also with a laterally-projecting blade or lug f^2 . The blade f^2 is cut out or notched adjacent to the body of the key, as shown at f^3 .

The fork-stem a^6 is provided with a notch or detent g , which is formed by side lugs g' , which stand out from said fork-stem and gradually taper off and blend into the same in directions from said detent g . This notch or detent g , it will be noted by reference particularly to Fig. 3, stands at an angle, normally, of about ninety degrees from the lock plunger or bolt b^3 of the lock.

The operation of the lock will be substantially as follows: Normally the projecting finger portion b^8 of the cam-plate b^6 will be engaged and held by the tooth c' of the spring-fingers c , and the lock-plunger b^3 will be held in its unlocking position against the action of its spring b^4 . When it is desired to lock the wheel, the lock-plunger b^3 may be released by pressing with the finger on the free end of the spring-catch c , thereby disengaging the tooth c' from the finger portion b^8 and permitting the spring b^4 to become active to throw said plunger b^3 into its locking position. If the detent g^3 should happen to be turned into line with the plunger b^3 when it is thus released, the machine will be immediately locked. If, however, the detent or notch g happens to be in any other position, the plunger b^3 will when released be thrown inward into the opening formed between the steering-head a^2 and the fork-stem a^6 , and by subsequently turning said fork-stem until the detent g is turned into line with the locking-plunger b^3 said lock-plunger will be cammed outward by the inclined portions g' (but not far enough to permit the finger portion b^8 to be caught by the spring-catch $c c'$) and then will snap into said detent g and lock the steering-head and fork-stem against rotary motion with respect to each other. When thus locked, as shown in Fig. 1, it is obvious that the machine cannot be run or removed without picking the same up and carrying it bodily.

The locking-bolt b^3 is retracted or thrown back into its unlocking position by means of the key f , which is inserted into the lock-case, as shown in Fig. 7. When this key is then turned, the blade or lug portion f^2 of the same will engage under the diverging end of the cam-plate b^6 , and by a continued movement through about a semicircle will retract said

plunger b^3 against its spring b^4 , at the limit of which movement the finger portion b^8 will be engaged with the tooth c' of the spring-catch c and the lock-plunger will be again held in its normal or unlocking position. It will be seen that under the operative portion of the rotation of the key f the semicylindrical flange b^{12} engages with the notch f^3 of the blade or lug f^2 . Hence a key not having a notch f^3 , which is adapted to pass the flange b^{12} , could not be used to unlock the lock. This flange b^{12} also serves to prevent an instrument from being inserted into the lock to pick the same.

It will be noted that only a very small portion of the steering-head a^2 is cut away, and that the weakness thereby occasioned is much more than made up for by the lock-case b , which is brazed to the steering-head.

It will also be seen that my improved lock is very simple and cheap in construction and is very quickly operated.

It will be understood of course that various alterations might be made without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with the lock-case, of the sliding lock-plunger, provided with a transverse diagonal cam-surface, a keyhole in said lock-case, and a key insertible through said keyhole in line with said bolt, and engageable with said cam-surface to retract said lock-plunger, substantially as described.

2. The combination with a lock-case, of the sliding lock-plunger, provided with the transverse diagonal cam-plate, a keyhole in said case, a key insertible through said keyhole, in line with said lock-plunger, and engageable with said cam-surface, and a finger-operated spring-catch engageable with a portion of said cam-plate, to hold said lock-plunger in its retracted or unlocked position, substantially as described.

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

JOHN RANK.

Witnesses:

JAS. F. WILLIAMSON,
E. F. ELMORE.