

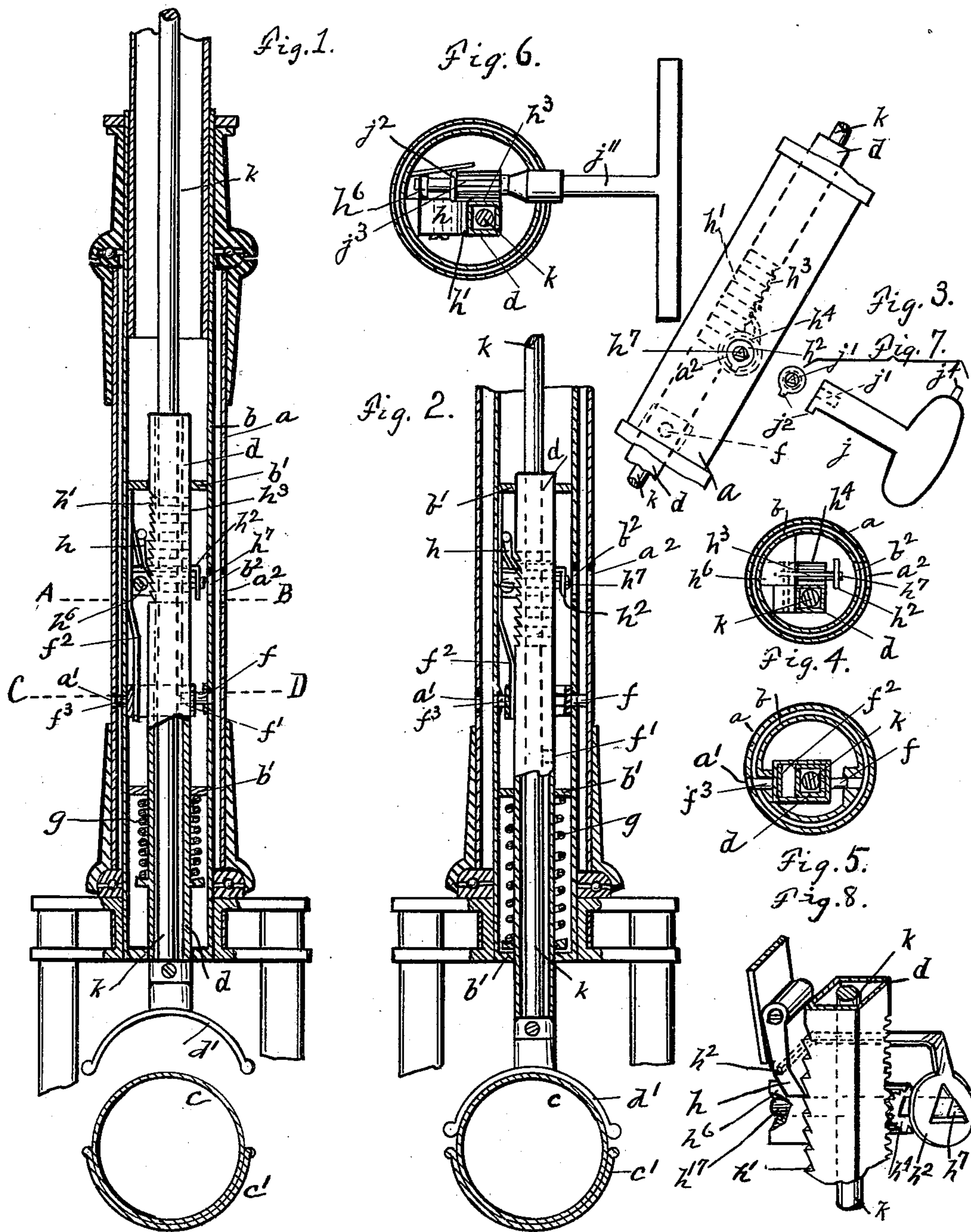
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F. VILLIERS-STEAD.
LOCKING DEVICE FOR CYCLES.

(Application filed Aug. 27, 1897.)

(No Model.)



WITNESSES

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LOCKING DEVICE FOR CYCLES.

SPECIFICATION forming part of Letters Patent No. 637,433, dated November 21, 1899.

Application filed August 27, 1897. Serial No. 649,714. (No model.)

To all whom it may concern:

Be it known that I, FRANK VILLIERS-STEAD, a subject of the Queen of Great Britain and Ireland, residing at London, England, have invented certain new and useful Improvements in Locking Devices for Cycles and the Like, of which the following is a specification.

This invention relates to an improved cycle-lock and is characterized by the application to the steering-fork tube of a cycle or the like of means of the nature hereinafter described and claimed, whereby the steering-wheel can at the will of the cyclist be locked, so as to be prevented from rotating, so that the vehicle cannot be ridden away or even wheeled away with the steering-wheel on the road, and the wheel can only be released by the holder of the key of the locking mechanism.

On the accompanying drawings, Figure 1 represents a sectional elevation of a cycle head-tube and steering-fork tube fitted with the improved lock, showing the same out of action. Fig. 2 represents a like view showing the lock in action. Fig. 3 represents a partial elevation at right angles to Fig. 1. Figs. 4 and 5 are sections respectively on lines A B and C D, Fig. 1. Fig. 6 is a like view, on an enlarged scale, to Fig. 4 of a modification. Fig. 7 shows the unlocking-key, and Fig. 8 is an enlarged view of a detail.

a represents the cycle head-tube, *b* the steering-fork tube, and *c c'* the steering-wheel tire and rim.

To the end aforesaid the invention is characterized by the application, in combination, to the steering-fork tube of a cycle or the like, of a tube *d*, adapted to apply the block or shoe *d'* to the tire *c*, a spring-detent *f* serving until released by the cyclist to hold the lock-tube out of action, but in position for actuation, a spring *g* serving, when the lock-tube is released from the detent, to depress the tube and to apply the tire-lock or brake-block to the wheel-tire and a spring-pawl *h* and ratchet apparatus serving until itself released by the cyclist by the proper key serving to unlock the device to keep the lock-tube depressed and the tire-lock or brake-block applied to the wheel-tire.

The tube *d* is square and is guided by and

has facility of endwise movement in upper and lower guides *b'*, crossing the tube *b*, secured thereto, and partakes of the movements of such tube about its axis. The tire-lock *d'* is fitted to the lower end of the rod *k* within tube *d*, which at any convenient part of its length is fitted with the spring *g*; which is so applied as to constantly tend to depress the lock or brake into engagement with the tire. The detent *f* may be adapted to engage with the tube at any convenient part of its length, and at such part the tube is formed with a recess *f'*, with which the detent *f* is caused automatically to engage when the tube is raised to its inoperative position (*vide* Fig. 1) by a spring *f²*, which normally tends to keep the detent in position for engagement with the recess.

The detent is formed with a projecting pusher *f³*, by which the detent can at the will of the cyclist be conveniently released from engaging with the tube when the pusher is opposite an aperture *a'*, made in the cycle head-tube.

The spring-pawl *h* is adapted to engage with ratchet-teeth *h'*, formed in the lock-tube, and serves to prevent the tire-lock from being raised out of engagement with the tire unless and until the pawl is removed from engagement with the teeth *h'* by its being operated by the appropriate key *j*, as hereinafter further referred to. The lock-tube is also formed with teeth *h³*, by means of which after the pawl has been released from the ratchet it can be raised either by a toothed wheel *h⁴*, Figs. 3 and 4, operated by a key *j*, Fig. 7, or by a wheel-key *j''*, Fig. 6. The spindle of the wheel *h⁴* is supported by a bearing *h⁶* and is formed with a triangular or other suitable peculiarly-shaped arbor *h⁷*, (*vide* Fig. 3,) adapted to engage only with a key *j*, having a correspondingly-shaped socket end *j'*. The pawl *h* is fitted with a guard-piece *h²*, which surrounds the wheel-arbor *h⁷*, and is so shaped as to permit of the key-socket being inserted onto the arbor *h⁷*, while it prevents the wheel from being turned by the key until the pawl *h* has been disengaged from the ratchet. To this end the key is provided with a projection *j²*, which is adapted to bear against the guard, and thereby to press the pawl *h* from engage-

ment with the ratchet-teeth h' . This, however, can only be done when an aperture b^2 , made in the tube b opposite the arbor h^7 , is opposite an aperture a^2 , made in the cycle-head tube and which is shaped to the size and formation of the key-stem. (*Vide* Fig. 3.) The part h^7 , angular at its fore end, is cylindrical at the end supported in bearing h^6 , as shown at h^{17} , Fig. 8.

10 In the modification represented in Fig. 6 the key is made as a wheel-key having teeth j^3 , adapted to engage with the teeth h^3 of the tube d and with a part j^2 , serving to disengage the pawl h from the ratchet-teeth h' before 15 the tube can be raised by the turning of the key.

Assuming the parts to be in the position represented in Fig. 1 and it is desired by the cyclist to lock the steering-wheel in order to 20 leave his machine unattended without fear of its being ridden or wheeled away, all that he need do is to press on the pusher f^3 by a projection j^4 on the key j , so as to force the detent f out of engagement with the tube d , 25 whereupon the spring g instantly depresses the lock-tube, pressing the tire-lock d' into engagement with the tire. The cyclist may augment the pressure of the tire-lock on the tire by depressing the lock-tube still further 30 by means of the key, and into whatever position the tube be depressed the pawl and ratchet-teeth will hold it therein until the pawl be released and the tube be lifted by the appropriate key j . Should it be attempted 35 to steal the cycle by piercing and deflating the tire, the spring g , owing to the absence of resistance offered by the inflated tire, will then cause the tube to follow down the deflated tire until the lock d' bears against the 40 wheel-rim, and so will prevent the cycle from being ridden or wheeled away.

k is a brake-rod which may be manipulated from the handle-bar in the ordinary way, thereby applying the brake d' without movement of tube d , said tube being held in the 45 retracted position shown in Fig. 1. The block d' is thus utilized both as a brake-shoe and as a lock-shoe. Rod k forms a yielding support for the shoe d' .

50 In lieu of being applied directly to the tube b the parts of the device may be applied to a carrier-tube removably applied to the tube b . Though the invention is hereinbefore described with particular reference to its use 5 as a cycle-lock, it will be understood that it is equally applicable as a lock to the wheels of motor and other vehicles.

I claim as my invention—

1. In a cycle-lock, the combination with the frame and one of the wheels of the cycle, of 60 a shoe adapted to engage with said wheel, a locking device for said shoe, a detent for normally holding said locking device out of action, a spring for actuating said locking device after the detent has been withdrawn, 65 and a rod adapted to actuate said shoe before the withdrawal of said detent, substantially as set forth.

2. In a cycle-lock, the combination with the cycle-head, the steering-fork tube and the 70 steering-wheel, of a locking-tube, portion of which is located within the steering-fork tube, a shoe adapted to engage with said wheel and to be operated by said locking-tube, a detent for normally holding said tube 75 out of action, a spring for automatically actuating said tube after the detent has been withdrawn, and a rod adapted to actuate said shoe before the withdrawal of said detent and passing through the steering-fork tube, sub- 80 stantially as set forth.

3. In a cycle-lock the combination with the cycle-head, steering-fork tube and the steering-wheel, of a locking-tube, a portion of 85 which is located within the steering-fork tube, a shoe adapted to engage with said wheel and to be operated by said locking-tube, a detent for normally holding said tube retracted, a spring 90 for automatically actuating said tube after the detent has been withdrawn, means for locking said tube with the shoe against the wheel when thus actuated, and a brake-rod 95 for operating the shoe to apply it to the wheel before the detent is released.

4. The combination of tubes a, b , with reg- 95 istering key-openings, an arbor h^7 , shoe d' , a yielding support for said shoe, teeth d having teeth h' , ratchet h , and guard-piece h^2 moved by insertion of a key, retracting the ratchet before the tube can be raised. 100

5. The combination of tubes a, b with reg- 105 istering key-openings, an arbor h^7 , shoe d' , tube d having teeth h' , ratchet h , guard-piece h^2 moved by insertion of a key, retracting the ratchet before the tube can be raised, and rod k for operating the shoe without release of the detent-ratchet.

Signed at London, England, this 14th day of August, 1897.

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Witnesses:

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