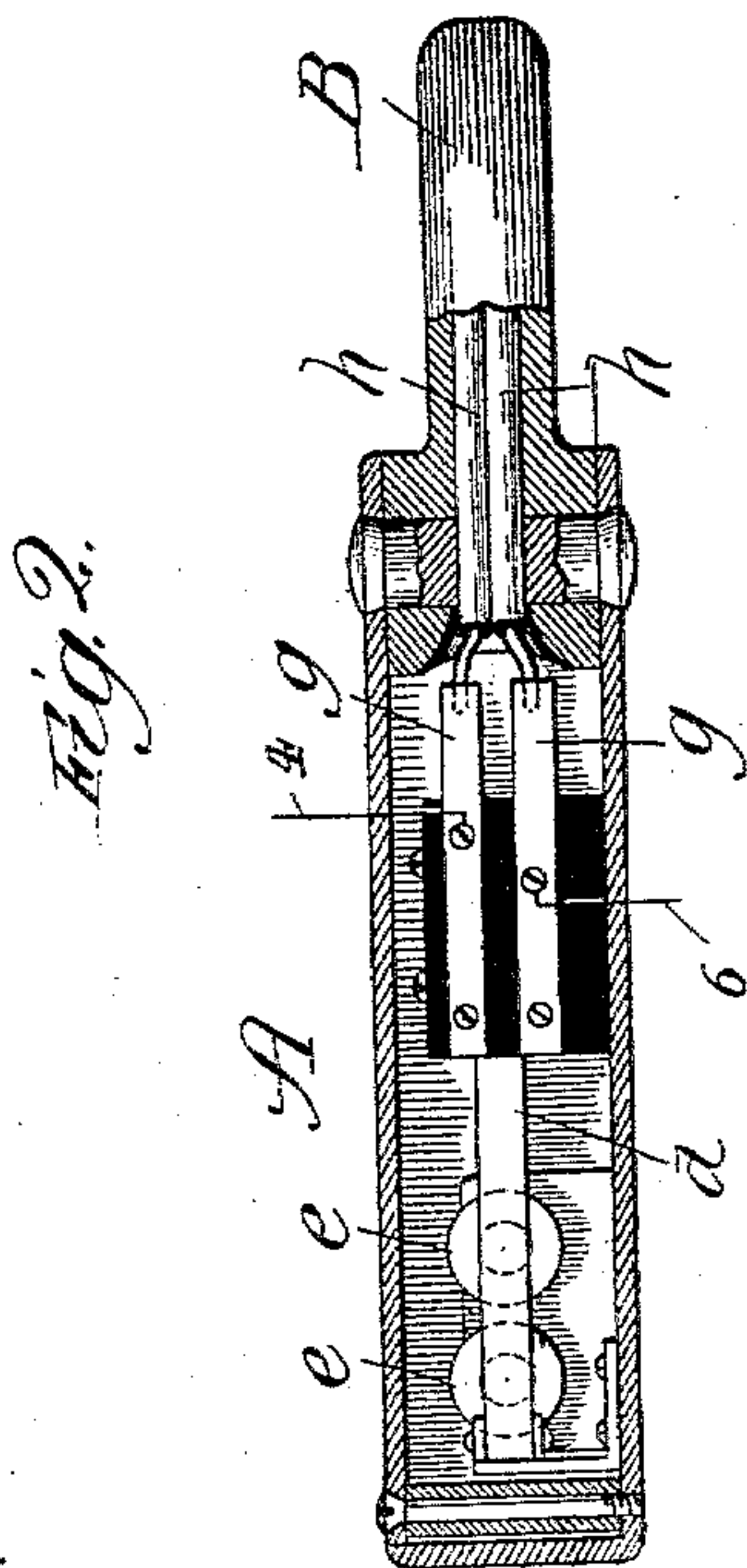
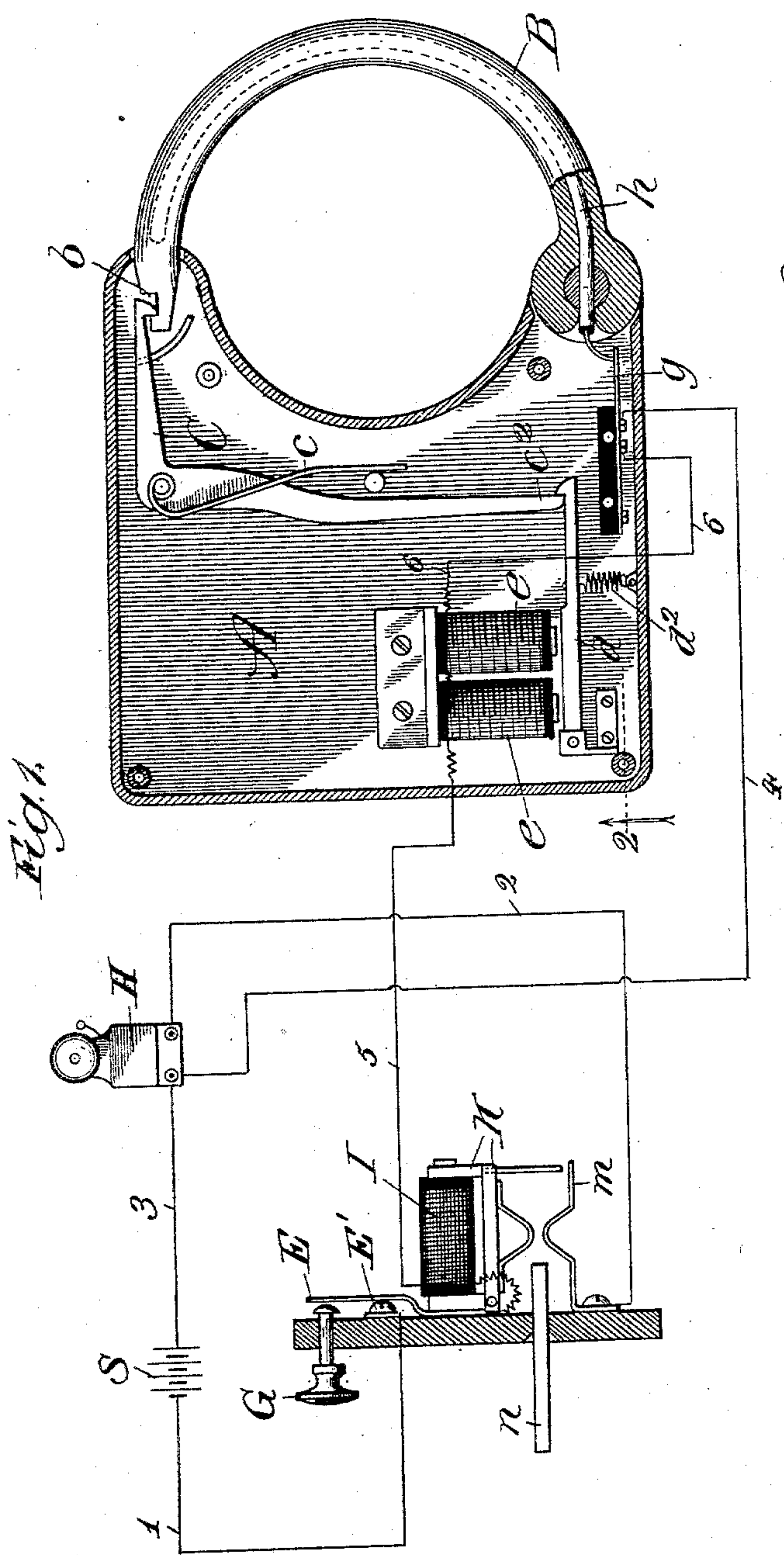


(No Model.)

F. V. WALSTROM & J. ERICKSON.
ELECTRICALLY ACTUATED LOCK FOR BICYCLE RACKS.

No. 597,891.

Patented Jan. 25, 1898.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK V. WALSTROM AND JOHN ERICKSON, OF CHICAGO, ILLINOIS.

ELECTRICALLY-ACTUATED LOCK FOR BICYCLE-RACKS.

SPECIFICATION forming part of Letters Patent No. 597,891, dated January 25, 1898.

Application filed November 9, 1896. Serial No. 611,484. (No model.)

To all whom it may concern:

Be it known that we, FRANK V. WALSTROM and JOHN ERICKSON, citizens of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Electrically-Actuated Locks for Bicycle-Racks, of which the following is a specification.

The object of our invention is to provide a simple, economical, and efficient lock arranged to be unlocked by electrically-actuated mechanism and sound an alarm; and the invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a diagrammatic view of the mechanism, and Fig. 2 a side elevation of the lock with a portion of the case broken away.

In the art to which this invention relates it is well known that a bicycle may be taken out of a rack when a duplicate key is used or the lock broken, so that the person checking the wheel is responsible therefor, unless the original key or check was returned and used for such purpose. To avoid this objection and provide a simple, economical, and efficient electrically-actuated lock—one that will give warning when it has been opened, broken, or a wheel removed therefrom—is the principal object of our invention.

In constructing a lock in accordance with our improvements we make a case A of the desired size and shape to hold and contain the operative parts. To the front portion of this case we pivot a locking-strap B of the desired shape and size adapted to pass around the wheel-rim and tire or any other portion of the wheel for locking the same in place. The free end of the locking-strap is provided with a notch *b*, arranged to be engaged by a pivoted locking-latch C, which is held in normal disengagement by means of a spring *c'*. In order to release this latch when desired, we provide a set of electromagnets *e*, having an armature *d* arranged within the magnetic field, so as to contact the arm *c* of the locking-latch and hold it in engagement with the locking-strap when current is furnished to the magnets. When the flow of current is stopped in the magnets by the breaking of the electric circuit or otherwise, the armature-

lever drops or is swung back by means of the tension-spring *d*², thereby releasing the locking-latch and allowing the locking-strap to be withdrawn.

To make and break the electric circuit and deenergize the electromagnet, we provide a contact-spring E, arranged to contact a point E', both of which are arranged in the electric circuit with the locking-magnet, one of such parts being connected with the magnet and the other with the source of electric energy, hereinafter described. A push-button G is arranged adjacent to the contact-spring, so that the spring may be pushed in and the circuit broken. This push-button may be located at any desired point. For instance, if the rack is in an outbuilding or outside the push-button may be in the house where the person who checks the wheels has his office or station.

It is desirable when the lock is opened or broken that a signal should be given to the party in charge of the checking unless a preliminary precaution has been complied with. In order to accomplish this result, we provide the locking-strap with an insulated wire *h*, bent back on itself, as shown in the drawings, so that its free ends may contact two flexible strips *g*, insulated from each other, one of such strips being connected with an electromagnet or relay I on an auxiliary circuit and the other with the battery. If the locking-strap is swung open, the free ends of the wire *h*, which is inserted in such strap, are swung away from contact-strip *g* and the circuit broken. This main or what might be termed a "normally-closed" electric circuit controls the action of the relay, which in turn controls an alarm, so that the breaking of the normally-closed circuit momentarily deenergizes a magnet I and allows its armature-lever K to drop and contact a metal piece *m*, thus closing the auxiliary circuit, in which is included the bell H, so that current flows from the battery S, through wire *l*, contact-points E E' to armature K, through piece *m* and wire 2 to bell H, and back by wire 3 to battery.

If it be desired to allow the unlocking of the rack and withdrawing of the bicycle without ringing the bell, a check *n* may be used and inserted through a suitable perforation in the wall, so as to pass between the arma-

ture-lever of the auxiliary circuit and the spring-piece *m* and prevent the lever from making circuit or break the circuit if it has been closed.

5 The operation of the parts is as follows: When the wheel is placed in the rack and the locking-strap swung around into locking position, the latch *C* engages with the strap and locks it in position. The main electric
10 circuit is thereby closed by the free ends of the wire *h* contacting the brushes or contact-strips *g*. Current flows from the batteries *S* and energizes the magnets *e*. The lock being now in position, the party obtains the check
15 *N* for the lock that he has used, so that it cannot be broken or opened without sounding an alarm to the checkman. When the party owning the wheel is desirous of obtaining his
20 wheel, he delivers the check to the checkman, who inserts it in proper position and presses the button *G*, which action releases the wheel. As outlined before, if the locking-strap be broken or opened before the check is placed
25 in position the main circuit, which comprises wires 4 and 3, batteries *S*, wire 1, contact-points *E E'*, wire 5, magnet *e*, and wire 6, is broken, when the magnet *I* is deenergized, so that its armature-lever drops to contact the
30 piece *m* and close the auxiliary or bell circuit. In this way current flowing from the batteries through wire 1, contact-points *E E'*, armature-lever *K*, point *M*, and wire 2 rings the bell *H* and passes back by wire 3 to battery. The
35 insertion of the check, however, will stop the ringing of the bell by breaking the bell-circuit.

While we have described our invention with more or less minuteness as regards details and as being embodied in certain pre-
40 cise forms, we do not desire to be limited thereto unduly any more than is pointed out in the claims. On the contrary, we contemplate all proper changes in form, construction, and arrangement, and the omission of
45 immaterial parts and substitution of equivalents, as circumstances may suggest or render expedient.

We claim—

1. In a lock of the class described, a combination of a locking mechanism, an alarm
50 mechanism, a relay arranged to control the alarm mechanism, and a normally-closed electric circuit arranged to control the relay, substantially as described.

55 2. In a lock of the class described, the combination of a lock arranged to be operated by

electrically-actuated mechanism and break the electric circuit when the lock is open, an electromagnet on the main circuit arranged to open and close an auxiliary circuit, an
60 auxiliary circuit arranged to be opened by the deenergizing of an electromagnet when the main circuit is broken and sound a signal, a signal upon such auxiliary circuit, and means for keeping the armature of the electromag-
65 net in contact with the magnet and the auxiliary circuit open when desirable to keep such circuit open, substantially as described.

3. In a lock of the class described, the combination of a lock provided with a locking-
70 strap, latch mechanism for holding the strap in its locked position, electromagneto mechanism for holding the latch and strap in engagement, an electric circuit embracing a source of electricity, the electromagnets and
75 the locking-strap for energizing the magnets, means for opening and closing such circuit to energize or deenergize the magnets and lock or permit the unlocking of the mechanism, an auxiliary electric circuit including a signal
80 and source of electricity, an electromagnet interposed between the main circuit and the auxiliary circuit so arranged that when the main circuit is broken the magnet is deenergized and the auxiliary circuit closed to sound
85 an alarm or signal, substantially as described.

4. In a lock of the class described, the combination of a lock provided with a locking-
90 strap, a latch in the lock adapted to hold the strap in its locked position, electromagneto mechanism arranged to hold the latch mechanism in locking engagement when the magnets are energized and release the same when the magnets are deenergized, and a normally-
95 closed electric circuit including the locking-strap, magnets and source of electricity so arranged that when the lock is open the main circuit is broken, means as a push-button located on such circuit for breaking the circuit
100 deenergizing the magnet and permit the releasing of the latch, and a relay arranged to be controlled by the normally-closed circuit and when such circuit is broken or the locking-strap unlocked to sound a signal, and
105 a signal on such auxiliary circuit, substantially as described.

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