No. 676,117. Patented June 11, 1901.

F. C. BILLINGS.

MEANS FOR LOCKING CONTROLLING LEVERS, &c.

(Application filed July 12, 1900.)

(No Model.)

Fig. 1.

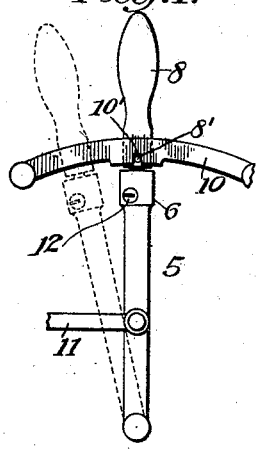

Fig. 15.

Fig. 14.

Fig. 2.

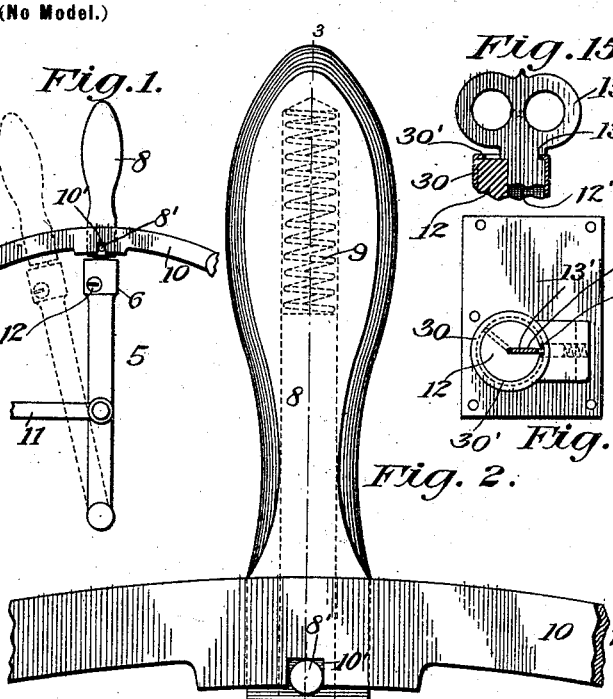

Fig. 3.

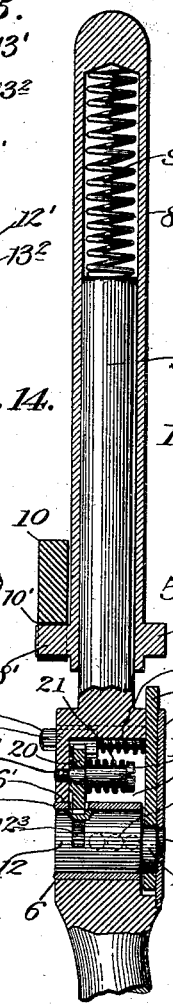

Fig. 12.

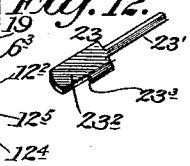

Fig. 6.

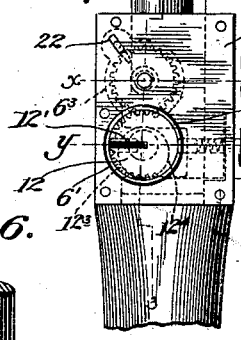

Fig. 7.

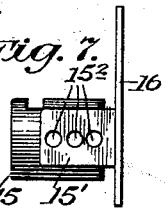

Fig. 13.

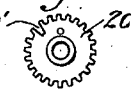

Fig. 9.

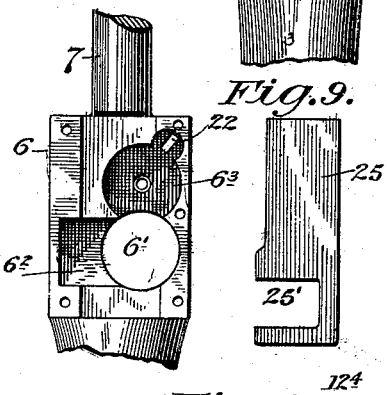

Fig. 8.

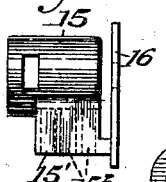

Fig. 4.

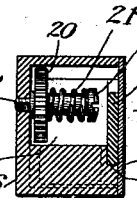

Fig. 5.

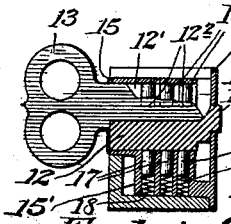

Fig. 10.

Fig. 11.

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By his Attorney

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UNITED STATES PATENT OFFICE.

FREDERIC C. BILLINGS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO AMERICAN BICYCLE COMPANY, OF NEW YORK, N. Y., AND JERSEY CITY, NEW JERSEY.

MEANS FOR LOCKING CONTROLLING-LEVERS, &c.

SPECIFICATION forming part of Letters Patent No. 676,117, dated June 11, 1901.

Application filed July 12, 1900. Serial No. 23,291. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC C. BILLINGS, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Means for Locking Controlling-Levers, &c., of which the following is a specification.

In the practical use of motor-vehicles much trouble has arisen on account of the displacement of controlling-levers either by accident or design, the vehicle sometimes running "wild" and imperiling life and property.

The invention relates to means for securing these levers so that they cannot be released or tampered with by unauthorized persons; and it has for its object the provision of improved means for accomplishing this purpose, as will be hereinafter described.

In the accompanying drawings, in which like numerals designate similar parts throughout the several views, Figure 1 is a side elevation, on a reduced scale, of a controlling or reversing lever with this invention in place thereon, showing a connection leading to the usual link-motion. Fig. 2 is an enlarged view similar to Fig. 1, a part of the reversing-lever being broken away. Fig. 3 is a longitudinal vertical section on line 3 3, Fig. 2, of my combined reversing-lever and lock. Fig. 4 is a horizontal section on line x x, Fig. 2, looking in the direction of the arrow. Fig. 5 is a horizontal section of the lock, taken on line y y, Fig. 2, showing the key and spring-actuated pins in elevation. Fig. 6 is a front elevation of a part of the body of the reversing-lever, the cover and its attached parts being removed. Figs. 7 and 8 are respectively side and plan views of the casing for the barrel of the lock and its connected extension and cover. Fig. 9 is a plan view of the bolt. Figs. 10 and 11 are respectively side and end views of the barrel or plug of the lock. Fig. 12 is a perspective view of a headed pin, the purpose of which will be hereinafter explained. Fig. 13 is a side view of a notched gear employed in my improved lock. Fig. 14 is a side view of a modification; and Fig. 15 is a partial section of said modification, showing a key retained in the lock.

Reference being had to the drawings, the numeral 5 designates in a general way a reversing-lever, comprising an enlarged body portion 6 and a projecting shank 7 of less diameter than said body portion. Upon this shank is sleeved a handle 8, fitted for slight downward movement against the pressure of a spring 9, and this handle is provided adjacent to its lower end with laterally-projecting studs $8'$ 8^2, the former of which engages a locking-seat of any desired kind (shown as a notch $10'$) of a bar 10 when the reversing-lever is in a vertical position, as shown in Fig. 2, constituting a latch which locks said lever against movement until said pin is released by a slight longitudinal movement of the handle against the stress of the spring 9. This reversing-lever is usually mounted for swinging movement and may be connected with a link-motion or a throttle-valve by a rod 11 (see Fig. 1) or other means.

In the enlarged body portion 6 of the lever a perforation is made at $6'$, and sockets or recesses 6^2 6^3 are also formed therein for reasons hereinafter stated.

Designated by the numeral 12 is the plug or barrel of a lock, which is longitudinally slotted at $12'$ to receive a key 13, and this barrel is also provided with a series of recesses 12^2 to receive the spring-actuated pins hereinafter described, with a toothed surface 12^3, an eccentric 12^4, and a stud 12^5, by which the barrel is journaled in a cover 16.

Surrounding the barrel 12 is a casing 15, having a lateral extension $15'$, preferably integral therewith, carrying the plate 16 for covering the recessed and perforated body portion 6 of the lever and securing the barrel, its casing, and connected parts thereto.

Pins 17, normally pressed inward by springs 18, are located in perforations 15^2, passing through the extension $15'$, and these pins by entering the recesses 12^2 in the barrel 12 lock said barrel against movement. Other pins $17'$ are located in the recesses 12^2 of the barrel 12, such pins $17'$ being so proportioned

in length that when they are thrust outward by the insertion of the key 13 in the slot 12′ in line with the pins 17 the latter will be thrust back until their ends clear the barrel, thereby permitting the barrel to be rotated.

Threaded at its extremity into the end wall of the recess 6^3 is a bolt 19, having a reduced portion 19′, on which a gear-wheel 20, having a locking-seat 20′ in its periphery and in engagement with the toothed surface 12^3 of the barrel 12, is mounted, and surrounding the enlarged barrel of the bolt is a torsion-spring 21, secured at one end to the bolt and at the other to the gear-wheel, the tendency of the spring being to rotate the gear-wheel when such action is permitted, as will be hereinafter explained.

Fitted in a slot 22 in the front wall of the body portion 6 is a pin 23, provided with a stem 23′ and with a flat head or blade 23^2, reduced in width at its front end to form a shoulder 23^3, and surrounding the stem of this pin is a coiled spring 24, the tendency of which is to force the pin outward either to cause the shoulder 23^3 to bear against the side of the gear-wheel 20 or the wider portion of the blade to enter the locking-seat 20′ in said gear-wheel, and thereby lock it against movement.

While the pinion is shown notched at 20′ to constitute a locking-seat, any other form of locking-seat may be substituted, and the pin 23 may be of a different shape without departing from the invention.

Designated by the numeral 25 is a bolt having a slotted or yoke-shaped portion 25′, which is fitted over the eccentric 12^4 of the lock-barrel 12, and this bolt reciprocates in the space between the cover 16 and the side of the enlarged part 6 of the lever, a rabbet 6^5 being formed in said part to receive one edge of the bolt, as shown in Fig. 4.

As will be obvious, when the key is inserted in the slot 12′ of barrel 12 it will thrust outward the pins 17′ against the spring-actuated pins 17, thereby pushing them from the recesses 12^2 of the barrel, and by then turning the key the barrel will be rotated, thereby causing its eccentric portion 12^4 to withdraw the bolt from contact with the lug 8^2 of sleeve 8, thus unlocking said sleeve and permitting it to be depressed against the action of spring 9 to withdraw the pin or lug 8′ from the notch 10′ in bar 10 to release the reversing-lever 8. When the barrel 12 is turned by the key, as just described, the geared surface 12^3 of said barrel being in engagement with pinion 20, which passes through a slot 15^4 in casing 15, rotates around said pinion, which is then held stationary by the enlarged part of pin 23, the latter being then located in the notch 20′ of said pinion, the spring 21 of which is under tension; but should it be desired at any time quickly to shoot the bolt 25 to lock the reversing-lever without recourse to the key the operator simply presses in the pin 23 until its blade is withdrawn from notch 20′, and the pinion 20 will then be immediately rotated by the torsion-spring and will actuate the barrel 12 and cause its eccentric 12^4 to throw the bolt into contact with the lug 8^2 of sleeve or handle 8, thereby locking said handle against downward movement. It will be observed that the pin 23 and notch 20′ constitute a detent by which the spring 21 is restrained. When the key is inserted to unlock the reversing-lever 5, the pinion 20 will of course be rotated loosely around the reduced part 19′ of the bolt until the notch 20′ of said pinion comes opposite the shoulder 23^3 of the locking part of pin 23, thereby winding up the spring 21, and as soon as this result takes place the pin 23 will be shot forward by spring 24 and will again lock said pinion against rotation.

In assembling the parts the pinion 20 is mounted on bolt 19 and is connected with the torsion-spring 21, and the bolt is then threaded into the wall of part 6, thus locating the pinion in recess 6^3. The pin 23 is then placed with its reduced portion 23^2 in slot 22. (See Fig. 3.) The bolt 25 is then placed in the space between cover 16 and the end of casing 15, and the barrel 12 is inserted in the casing with its eccentric 12^4 in the yoke 25′ of the bolt and its journal 12^5 in an opening of the cover 16. The pins 17 and springs 18 are then placed in the perforations 15^2 of extension 15′ of the casing, and the casing and its connected parts are placed in position in the body part 6, (the casing and its extension being received in the perforation 6′ and recess 6^2.) The cover 16 is then secured to said body part by screws or otherwise.

As will be observed, the perforations pass entirely through the extension 15′ of casing 15, and the pins 17 and springs 18 can therefore be readily inserted in said perforations, the bottom wall of recess 6^2 serving to prevent the displacement of said pins and springs when the casing is placed in position in the body part 6, as shown in Fig. 5.

In the modification illustrated in Figs. 14 and 15 the construction is the same as that just described, with the exception that a key 13′ is employed having a notch 13^2, and cooperating with this key is a barrel-casing 30, having a circular inturned flange 30′. In Fig. 14 the blade of the key is shown in section in the slot 12′ of barrel 12, and when the parts are in this position the reversing-lever is locked and the key can be withdrawn; but when the key is turned to rotate the barrel 12 the edge of the flange 30′ of casing 30 enters the notch 13^2 in the blade of the key and prevents the withdrawal of said key as long as the reversing-lever is unlocked. By this construction the key is retained in the lock in plain view of the operator until the reversing-lever is shifted to stop the machine or, in other words, is brought to the vertical posi-

tion shown in Fig. 2 and is locked in such position, when the key may, as stated, be readily withdrawn.

My invention is not limited to reversing-levers, for the lock may be employed with other devices, nor is it limited to the exact details of construction shown, for many of the parts may be modified or others for accomplishing like purposes substituted without departure from the invention.

Furthermore, the invention is not limited to the use of the particular Yale or Corbin lock described, for other kinds of locks may be substituted to accomplish the desired result.

Having described my invention, I claim—

1. The combination, with a reversing-lever, of a notched bar; a handle movably mounted upon the reversing-lever and having a lug adapted to engage the notch in said bar; and means for locking said handle.

2. The combination, with a reversing-lever, of a handle upon the stem thereof; a spring located between said stem and handle; a notched bar; a lug on the handle in engagement with the notch of the bar; and means for locking the handle.

3. The combination with the reversing-lever and a notched bar, of a lock-barrel having an eccentric and adapted to be actuated by a key, a movable latch carried by the lever and adapted to engage the notched bar, and a bolt moved by the eccentric of the barrel into the path of said latch to prevent movement thereof.

4. The combination with the reversing-lever, of a bolt carried by said lever, means to move said bolt in one direction, a spring to throw said bolt in the opposite direction, and a detent to restrain the spring.

5. The combination, with a reversing-lever, of a barrel having an eccentric; a casing in which said barrel is located, said casing and barrel being secured to the lever; spring-actuated pins carried by a part of the casing and adapted to enter seats in the barrel; a bolt actuated by the eccentric of the barrel; and a key adapted to fit in the slot of the barrel and thereby withdraw the pins and actuate said barrel.

6. The combination, with a reversing-lever having a recessed body portion and a lock-barrel also having a geared surface, of a pinion in engagement with said geared surface; a torsion-spring applied to the pinion; a locking-bolt actuated by a part of the barrel; and means for releasing the pinion and thereby permitting the spring to rotate the pinion to turn the barrel and shoot the bolt.

7. The combination, with a reversing-lever having a stem, of a spring-actuated handle carried by said stem, said handle having a lug; a bar having a notch with which the lug is adapted to engage; a casing mounted in a perforation of the body of the lever; a barrel mounted for rotation in said casing and carrying a toothed surface and an eccentric; a pinion mounted for rotation in the body portion of the lever, the teeth of which pass through a slot in the casing and engage the teeth of the barrel; a locking-bolt actuated by the eccentric portion of the barrel; a spring the tendency of which is to turn said pinion; and means for locking said pinion against the action of the spring.

8. The combination, with a reversing-lever, of a handle carried thereby, said handle having a lug; a slotted casing fitted in a perforation of the body portion of the lever; a barrel having a toothed surface mounted in said casing; an eccentric carried by the barrel; a bolt threaded into the body portion of the lever; a pinion sleeved upon said bolt; a torsional spring connected to the pinion; a locking-bolt; and a pin having a flat head normally adapted to lock the pinion.

9. The combination, with a reversing-lever having an enlarged body portion, of a slotted casing mounted therein and carrying a perforated extension and a cover-plate; a recessed barrel mounted in the casing and having a toothed portion and an eccentric; a locking-bolt; a spring-actuated pinion mounted in the recess of the casing, the teeth of which pass through the slot of the casing and engage the toothed surface of the barrel, said pinion having a locking-seat; and a spring-actuated pin having a head normally in engagement with said locking-seat.

10. The combination, with a reversing-lever having a stem and an enlarged, recessed and perforated body portion, of a spring-controlled handle having a lug and mounted upon said stem; a bar having a locking-seat with which one of said lugs is adapted to engage; a slotted casing fitted in the perforation of the enlarged body portion of the lever, and carrying a perforated side extension fitting in the recess of the body portion, and a cover-plate; a slotted barrel having a toothed surface, an eccentric, and a journal, the latter being adapted to fit in a perforation of the cover-plate; a locking-bolt actuated by the eccentric; a bolt secured in the enlarged portion of the lever; a pinion loosely mounted on a reduced portion of the bolt; a coiled spring connected with said pinion and bolt; and a spring-actuated pin having a flattened head reduced adjacent to its end, the enlarged portion of said head being normally adapted to engage with the locking-seat of the pinion and thereby prevent said pinion from rotation on the bolt.

11. The combination, with a reversing-lever having an enlarged body portion, of a lock mounted in said body portion; a bolt actuated by the lock; a lock-casing having a flange; and a key having a notch with which said flange engages.

12. The combination, with a reversing-lever having a body portion, of a lock fitted in said body portion, the casing of said lock having an inwardly-turned flange; and a key having

a notch for the reception of said flange, whereby the key is prevented from being withdrawn while the reversing-lever is unlocked.

13. The combination, with a reversing-lever having an enlarged body portion and a stem, of a handle sleeved upon the stem and having laterally-projecting lugs; a coiled spring located between the end of the stem and the top of the handle; a bar having a locking-seat with which one of the lugs engages; a slotted casing seated in a perforation of the enlarged portion and carrying a perforated extension and a cover-plate; a spring-actuated locking-pin carried by the extension; a slotted plug or barrel having a recess to receive the pin, and carrying an eccentric and a journal; and a locking-bolt adapted to be actuated by the eccentric when the barrel is turned.

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