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Patented May 23, 1899.

F. LOMBARD & C. MILLER.
COMBINED LOCK AND WRENCH.

(Application filed Mar. 3, 1899.)

(No Model.)

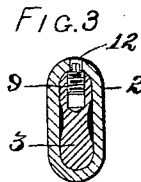
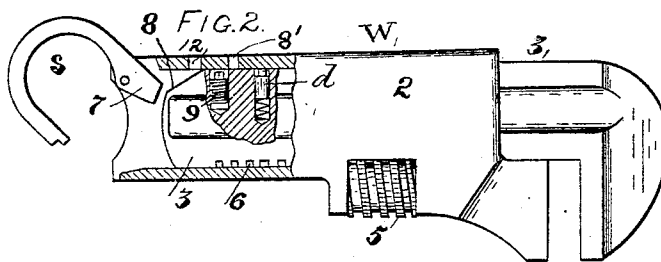
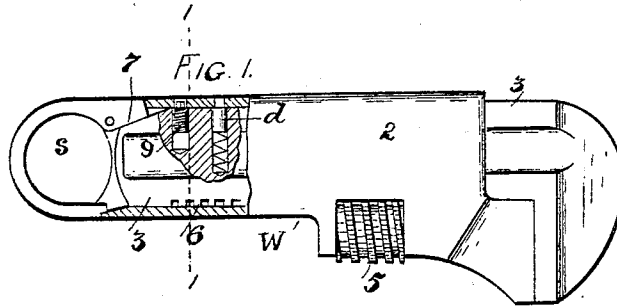


FIG. 4.

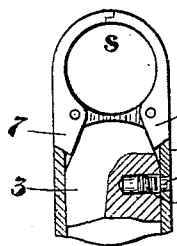


FIG. 6



FIG. 5

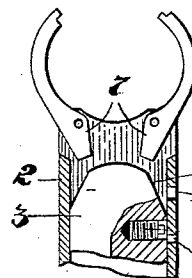


FIG. 7



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK LOMBARD AND CHARLES MILLER, OF HARTFORD, CONNECTICUT.

COMBINED LOCK AND WRENCH.

SPECIFICATION forming part of Letters Patent No. 625,341, dated May 23, 1899.

Application filed March 3, 1899. Serial No. 707,644. (No model.)

To all whom it may concern:

Be it known that we, FRANK LOMBARD and CHARLES MILLER, citizens of the United States of America, and residents of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in a Combined Lock and Wrench, of which the following is a specification.

This invention relates to what is commonly known as a "combined wrench and lock," one object of the invention being to provide a simple, inexpensive, and easily-manipulated implement or device capable of use as a wrench and as a device for locking two separable parts together, and especially adapted for locking a bicycle-wheel in a fixed position, and to so construct and organize said wrench and lock that it may be readily carried in a tool-bag without occupying much space.

With this object in view the invention consists in certain details of construction and in the combination and arrangement of the several parts of the implement, as will be hereinafter fully described, and set forth in the claims.

In the drawings accompanying and forming part of this specification, Figure 1 is a side elevation, partly in section, of a combined lock and wrench constructed in accordance with this invention and showing the parts in the position which they occupy when the locking device or shackle is in its closed and locked position. Fig. 2 is a similar view of the combined wrench and lock, showing the parts in the positions they occupy when the locking device is released and is in its open position. Fig. 3 is a cross-section taken in dotted line 1 1, Fig. 1, and showing the parts at the left of said line. Figs. 4 and 5 are details, partially in side elevation and partially in section, of the locking end of the wrench, showing a modified construction of locking device or shackle, Fig. 4 showing the shackle in its locked position and Fig. 5 showing the shackle in its open or unlocked position. Figs. 6 and 7 are side and end views, respectively, of the key for operating the sliding-bar-locking devices of the wrench.

Similar characters indicate similar parts in all the figures of the drawings.

The wrench proper, which is designated in

a general way by W, comprises the casing or main body portion 2, open at the handle end thereof and having a bur-grasping jaw at its opposite end; a sliding bar 3, seated in said casing and having at one end thereof a jaw 4, coöperative with the jaw of the casing, and having at the opposite end thereof a shackle-engaging face; a shackle pivotally supported at the handle end of the casing and of a construction for engaging said casing at a point opposite said pivotal point and also having a locking member or extension coöperative with said sliding bar; means for actuating said sliding bar, and means for locking the sliding bar in a shackle-holding position.

In the form thereof shown in the accompanying drawings the wrench proper is similar in a general way to the well-known "Billings" wrench, it consisting of the usual casing and a sliding bar having the jaw at one end thereof coöperating with the fixed jaw of the casing, and also having a thumb-screw or worm 5, engaging the teeth 6 in said sliding bar, for moving the same longitudinally. In contradistinction to implements of this class the casing is provided at what is herein termed the "handle" end with a shackle s, which in one form thereof (shown in Figs. 1 and 2) is pivoted to the end of the casing and has an extension or locking member 7 extending into said casing, which member has a locking-face coöperative with the locking-face 8 of the sliding bar, the locking-faces of the sliding bar and member being in the present instance shown as inclined.

In operation when it is desired to lock the shackle in the closed position shown in Fig. 1 the sliding bar 3 is by means of the screw or worm 5 moved backward until the inclined locking-face thereof tightly engages the corresponding face of the locking member or extension 7 of the shackle, and as a simple and convenient means for locking the bar in its retracted or shackle-engaging position we have provided a duplex locking device, comprising two locking members d and 9, respectively, the one, d, of which is in the nature of a spring-actuated detent carried by the sliding bar 3 and adapted automatically to engage in a stop-notch 8' in the casing and the other, 9, of which is in the nature of a lock-bolt having

a screw-threaded bearing in said sliding bar and having a portion 10 provided with a key-seat projectable into a keyway 12 in said casing and adapted to be operated by a key, as
 5 *k*, whereby the same may be moved outward or inward into its casing-engaging or casing-releasing position.

In the drawings two modified forms of shackle are shown, and it will be obvious that
 10 the present invention is not limited to any particular construction of form or shackle, as the same may be variously modified without departure from the present invention.

In Figs. 6 and 7 the device for operating the
 15 detent and bar-locking member is shown, and the operation of said device will be readily understood by reference to the drawings. When it is desired to unlock the shackle when the parts are in the position shown in Fig. 1,
 20 it is first necessary to screw the lock-bolt 9 inward by means of the end 13 of the key *K* until the same is in the position shown in Fig. 2 and afterward to depress the detent *d* to the position also illustrated in Fig. 2, after which
 25 by a movement of the thumb-screw or worm 5 the sliding bolt will be retracted to the position shown in said Fig. 2, out of engagement with the extension of the shackle, and permit opening movement thereof.

30 The object of providing duplex locking means such as described in connection with and effective for locking the sliding bolt 3 with relation to the casing 2 is not only to render the device more secure against tampering, but also to provide means that will automatically lock the bar 3 concurrently with the arrival of the key-actuated lock-bolt in register with the keyway 12. The spring-actuated detent *d* and its stop-notch *S'* are so
 40 disposed with respect to the key-actuated lock-bolt and the key-seat 12 that on the automatic engagement of the detent in the stop-notch *S'* the lock-bolt 9 will be in proper position to enter the keyway 12, which is of material advantage, as it obviates the necessity
 45 of advancing and retracting the bar 3 until the bolt 9 is in alinement with the keyway.

We claim—

1. The combination, in a wrench, of a casing
 50 open at the handle end thereof and having a fixed jaw at the opposite end thereof; a shackle pivoted to the handle end of said casing and having a locking member or extension which, when the shackle is in a closed or
 55 locked position, enters this open end; a bar seated for longitudinal movement in said casing and having at the forward end thereof a jaw coöperative with the fixed jaw of said casing, and also having at the opposite end
 60 thereof a face coöperative with the locking

member or extension of said shackle and adapted for locking said shackle against movement; and means carried by the bar and coöperative with the casing for holding said bar in a shackle engaging and locking position.
 65

2. The combination in a wrench, of a casing having a fixed jaw at the forward end thereof and having an opening at the opposite end; a shackle pivotally supported at the open end
 70 of said casing and having a locking member extending into said casing and furnished with an inclined locking-face; a sliding bar seated in said casing and having at the rear end thereof an inclined locking-face coöperative
 75 with the inclined face of the shackle for locking said shackle in its closed position and also having at the forward end thereof a jaw coöperative with the fixed jaw; and duplex locking means carried by the sliding bar and
 80 including two casing-engaging members one of which is automatic in its operation and determines the locking position of the other.

3. A wrench comprising a fixed jaw having a casing; a shackle pivotally supported at the
 85 handle end of said casing; a sliding bar seated in said casing and having a locking-face coöperative with the shackle for locking the same in its closed position, and also having a jaw coöperative with the fixed jaw; a spring-actuated detent carried by the sliding bar and coöperative with a notch in said casing for locking the jaw in its shackle-locking position.
 90

4. The combination in a wrench, of a fixed jaw having a casing; a shackle pivotally supported on the handle end of said casing; a sliding bar seated in said casing and having a locking-face at the rear end thereof in position to engage and hold the shackle against movement when said shackle is in its closed
 100 position and when said bar is in its retracted position, and also having a jaw at the opposite end thereof coöperative with the fixed jaw; and a duplex locking device carried by the sliding jaw and embodying a key-actuated bolt coöperative with a keyway formed in the casing, and a spring-actuated detent so disposed with relation to the bolt, and so operating, as to automatically engage the casing and lock the bar and casing against rela-
 105 tive movement concurrently with the arrival of the bolt in register with the keyway, and means for actuating the sliding bar.

Signed by us, at Hartford, Connecticut, this 25th day of February, 1899.

FRANK LOMBARD.
 CHARLES MILLER.

Witnesses:

PERCY ROTHWELL,
 L. H. BLOOD.