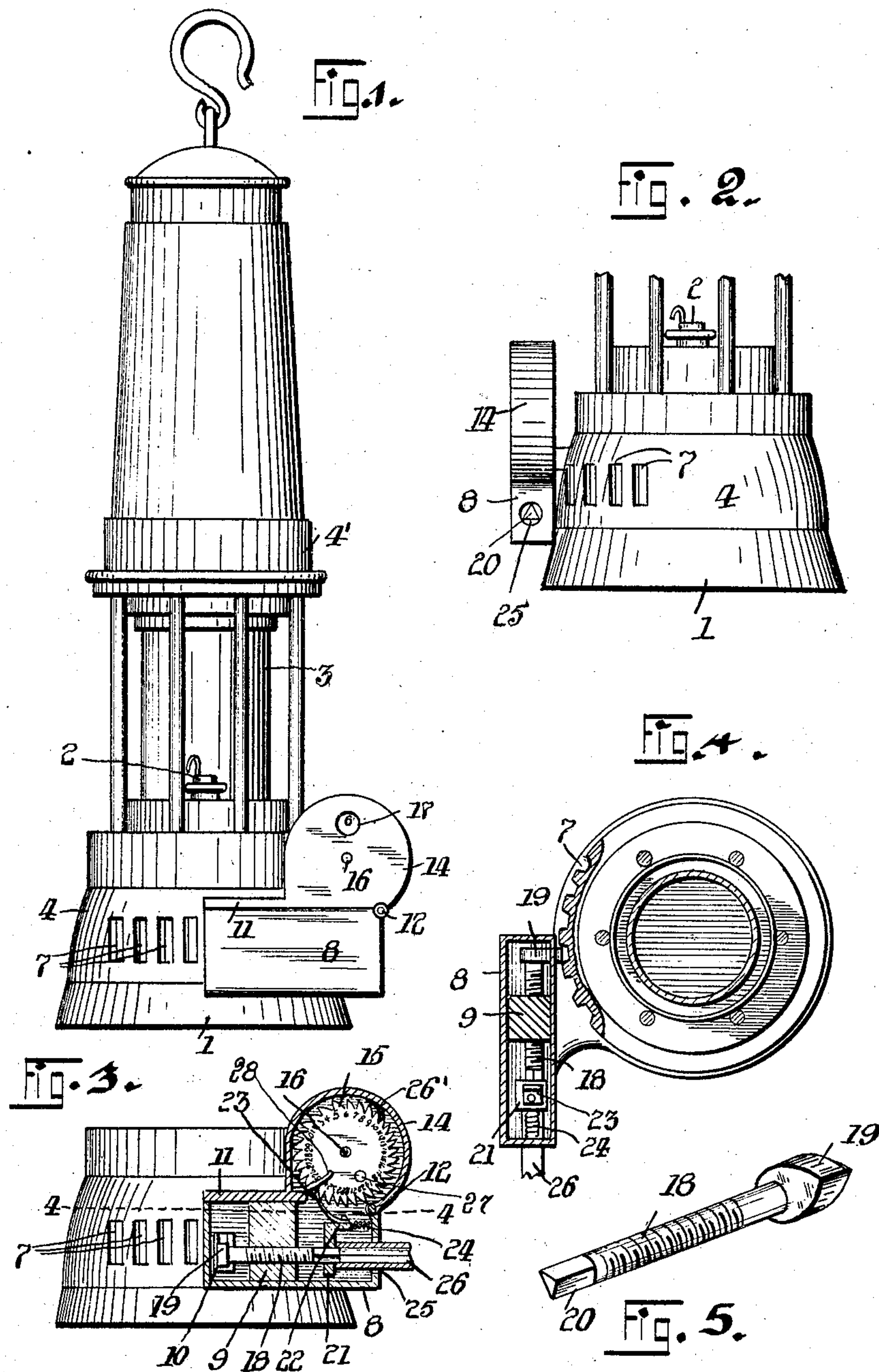


No. 775,782.

PATENTED NOV. 22, 1904.

R. C. SIMPSON.
MINER'S SAFETY LAMP.
APPLICATION FILED AUG. 3, 1904.

NO MODEL.



Witnesses.
C. Klostermann,
J. H. Butler,

Inventor.
R. C. Simpson.
by H. C. Ewert & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

RICHARD C. SIMPSON, OF JOHNETTA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM C. STEWART, OF JOHNETTA, PENNSYLVANIA.

MINER'S SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 775,782, dated November 22, 1904.

Application filed August 3, 1904. Serial No. 219,303. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. SIMPSON, a citizen of the United States of America, residing at Johnetta, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Miners' Safety-Lamps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to miners' lamps, and has for its object to provide a safety-lock for lamps of this character which will preserve a record of the number of times the lamp has been opened.

Another object of my invention is to provide novel means in connection with a miner's lamp whereby should the same be opened within the mine the operation of opening the lamp will be registered within the lock and the party performing said operation detected when the lamps are returned to the mine owners.

It is a well-known fact that the majority of explosions in mines are caused by the negligence of the miners in opening their lamps within the mine, where coal-damp and explosive gases are liable to exist. In providing my improved lock for miners' lamps I have endeavored to provide means whereby should the lamp be opened within the mine the same can be detected and should any explosion occur the responsibility of the same will be adjudged to the proper party and release the mine owners from the responsibility of any lives that may be endangered by such an explosion.

In lamps which are commonly employed in mines locks have been devised which may be tampered with to such an extent that the lamp can be opened and closed without detection; and the primary object of this invention is to construct a lock for use in connection with the lamp, which, should the lamp be tampered with, will register the number of times the lock has been tampered with, and upon the party using the lamp again depositing the same with the keeper of the lamps it will be possible to determine the number of times a lamp has been opened and place the responsibility upon

the proper party should any explosion occur, and by this means reduce the number of such explosions to a minimum and exonerate the mine owners from any responsibility that might be placed upon them by such explosions.

Briefly described, my improved lock consists of a casing which may be secured or formed integral with the oil-receptacle of safety-lamps, and in said casing is employed a locking-bolt which is adapted to engage the casing of the lamp. In connection with the locking-bolt I employ novel mechanism which will be operated upon a key being placed in the casing to unlock the lamp, this mechanism being operated prior to the operation of unlocking the lock, and in the casing I provide a register which will maintain a record of the number of times the lock has been tampered with or opened by a party using the same.

The above construction will be hereinafter described, and specifically pointed out in the claims, and, referring to the drawings accompanying this application, like numerals of reference indicate similar parts throughout the several views, in which—

Figure 1 is a side elevation of a safety mine-lamp, showing my improved lock secured thereto. Fig. 2 is a view of the same, showing a portion of the lamp broken away. Fig. 3 is a vertical longitudinal sectional view of the lock in position upon the lower casing of a lamp. Fig. 4 is a transverse sectional view on the line 4 4 of Fig. 3, and Fig. 5 is a detail perspective view of the locking-bolt.

In carrying my invention into effect I preferably employ a safety mine-lamp, such as illustrated in Fig. 1 of the drawings, this mine-lamp consisting of an oil-receptacle 1, carrying a burner 2, which is surrounded by an air-tight chimney 3, that protrudes into casings 4 and 4'. Upon one side of the casing 4 I provide a plurality of vertically-disposed grooves 7, and upon one side of the oil-receptacle is constructed my improved lock, said lock being secured to the receptacle by any suitable means or formed integral with it, as may be desired, to obtain the best results. The

lock proper consists of a rectangular casing 8, which carries a partition 9, and in the inner side of the rectangular casing 8 is formed a slot 10.

5 The reference-numeral 11 designates a lid or cover which is hinged, as indicated at 12, to the end wall of the rectangular casing 8, and in this lid or cover is mounted a register, while in the rectangular casing 8 is mounted
10 the locking mechanism. The lid or cover 11 may be locked upon the casing by any suitable means, and I form the one end of the lid or cover into a circular receptacle or casing 14, in which is pivotally mounted a toothed wheel
15 15 upon a shaft 16. The wheel 15 is preferably provided with teeth corresponding to the days of a month, and upon the side of the wheel adjacent to each tooth are arranged numerals which also correspond to the dates of
20 a month. The casing 14 of the lid or cover 11 is provided with an aperture 17, whereby one of the numerals will be visible there-through.

The locking mechanism consists of a locking-bolt which is threaded, as indicated at 18, this threaded portion passing through the partition 9, which is threaded to receive the same, and upon the one end of the bolt is provided an angular lug 19, while the other end of the
30 bolt is formed triangular, as indicated at 20. Upon the triangular portion of the locking-bolt is mounted an L-shaped arm 21, and to the horizontal portion 22 is secured a spring-pawl 23, which is adapted to engage one of
35 the teeth of the wheel 15. The reference-numeral 24 designates a spiral spring which is secured to the horizontal portion 22 of the L-shaped arm, while the other end of said spring is secured to the end of the casing 8, this spring
40 being maintained in a contracted condition to normally hold the spring-pawl 23 in the position shown in Fig. 3 of the drawings.

The end of the casing 8 is provided with an opening 25, through which the shank 26 of a
45 key is adapted to be inserted to engage the triangular end 20 of the locking-bolt in order to rotate the same.

The reference-numeral 26' designates a spring which is mounted in the circular casing 14, the spring being adapted to engage
50 one of the teeth of the wheel 15 to prevent a backward movement of the same.

We will assume that a supply of oil is to be placed within the lamp and it is desired to re-
55 move the oil-receptacle in order to accomplish the same. A key is inserted within the casing until the same engages the triangular end 20 of the locking-bolt 18, and upon forcing the shank of the key over the triangular portion the L-shaped arm 21 will be
60 forced inwardly, carrying with it the spring-pawl 23, and this inward movement of the pawl will cause the toothed wheel 15 to rotate and display the next consecutive number, which will be visible through the opening 17

of the casing. Upon the further insertion of the shank of the key the same will firmly grip the triangular end of the bolt, at which time the key may be turned to rotate the locking-bolt, and upon rotating the same the
70 angular lug 19 will be raised from disengagement with one of the vertically-disposed slots 7, in which it has been previously engaged.

The manner in which I intend to use my improved lock in connection with safety-lamps
75 is as follows: Each safety-lamp is provided with a number, and the miners employed by the company will also be given a number. As this character of lamps are generally owned and operated by the mine owners, it
80 will be impossible for a miner to obtain a lamp without the knowledge of the mine owners or the party attending to the lamps, and upon a miner calling for his lamp (which he knows by number) the keeper of the lamps
85 will observe the number visible through sight-opening 17 and will make a note thereof in the record opposite to the number given to the miner. The miner is then permitted to enter the mine, and upon returning from the
90 mine the lamp is deposited with the keeper of the lamps, who can refer to his record to observe what number was visible in the lock when the miner obtained the lamp, and should the number now visible when he returns the
95 lamp be different from the number of the keeper's record the keeper will be cognizant of the fact that the lamp has been opened or tampered with. It will thus be seen by my improved construction that even if the miner
100 did not succeed in unlocking his lamp that the attempt to do so would be registered within the lock and in due time discovered by the keeper of the lamp.

It will be noted by my improved lock that
105 all responsibility of the mine owners for the lives of the workmen within the mine is removed and placed upon the individual using the lamp, each miner being held responsible for the lamp which he uses, and should an ex-
110 plosion occur killing some of the workmen it will be possible to place the responsibility upon the miner who opens his lamp by observing the lamps which they use, this method of registering any tampering or unlocking of
115 the lamps exonerating the mine owners from all responsibility in connection with the explosions that might occur in the mines.

To prevent the register from being tampered with and to insure the perfect operation
120 of the same, it will be observed that I have provided a stop 28 and a pin 27, the pin being carried by the register-wheel and the stop by the casing, and the stop is adapted to be engaged by the pin when the numeral "31" has
125 reached the opening 17, at which time to further manipulate the register it is necessary that the casing be opened and the register rotated backwardly to again bring the numeral "1" to the opening 17. Any suitable means
130

may be employed for locking the cover or lid of the lock whereby access to the register cannot be had by the miners using the lamp.

I wish to call attention to the fact that my improved lock may be readily employed upon other devices than miners' lamps, and while I have herein shown the locking-casing and register as being mounted tangentially to the casing of the lamp I wish it to be understood that this locking-casing may be positioned upon the lamp at any angle which will be advantageous to the construction of the lamp, and it will be seen that by the construction of the lock that the illuminating power of the lamp, the weight, and general merits of the same would not be curtailed or render the lamp cumbersome or of a frail construction.

What I claim, and desire to secure by Letters Patent, is—

1. In combination with a mine-lamp, having an oil-receptacle, said lamp having an annular groove formed in its body portion near said oil-receptacle, a lock secured to said oil-receptacle, a locking-bolt adjustably mounted within said lock, a ratchet-wheel rotatably mounted within said lock, a plurality of numerals arranged upon said ratchet-wheel, said lock having an opening formed therein through which said numerals are visible, an L-shaped member mounted upon said locking-bolt and adapted to engage the ratchet-wheel, means to return the L-shaped member to its normal position when the same has been moved by the insertion of a key within the lock.

2. In combination with a mine-lamp having a casing provided with peripheral grooves or notches, a lock-casing secured to the first-mentioned casing and having a slot, a parti-

tion in said lock-casing, a locking-bolt threaded through said partition and having a lug to project through the slot in the lock-casing and engage in one of the peripheral grooves or notches, a numbered ratchet-wheel mounted in the lock-casing and adapted to have its numbers consecutively displayed through a sight-opening in the lock-casing, and means coöperating with the locking-bolt for rotating said wheel, substantially as described.

3. In combination with a lamp-body or the like, a lock embodying a casing secured to the body, a partition in said casing, a locking-bolt threaded in said partition and having a lug for engagement with the body carrying the casing, a numbered ratchet-wheel in said casing adapted to have the numbers thereof displayed through a sight-opening provided in the casing, and means coöperating with the locking-bolt to operate the ratchet-wheel, substantially as described.

4. In a device of the character described, a body, a lock-casing secured thereto and having a slot, a locking-bolt arranged in said casing and having means projecting through the slot and engaging the body, a numbered ratchet-wheel mounted in the casing and adapted to have the numbers thereon displayed through a sight-opening provided therefor in the lock-casing, and means coöperating with the locking-bolt to operate the ratchet-wheel, substantially as described.

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

RICHARD C. SIMPSON.

Witnesses:

C. S. HELMICK,

ORA L. HELMICK.