No. 648,098. Patented Apr. 24, 1900.

C. W. BIRUM.

LOCK.

(Application filed Oct. 30, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

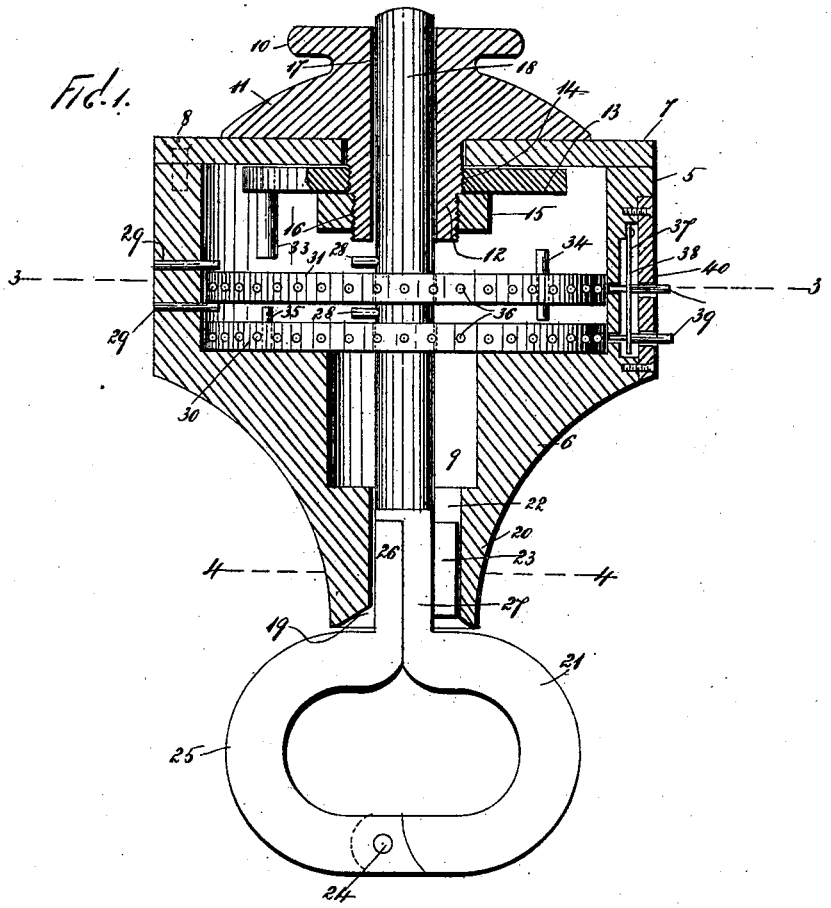
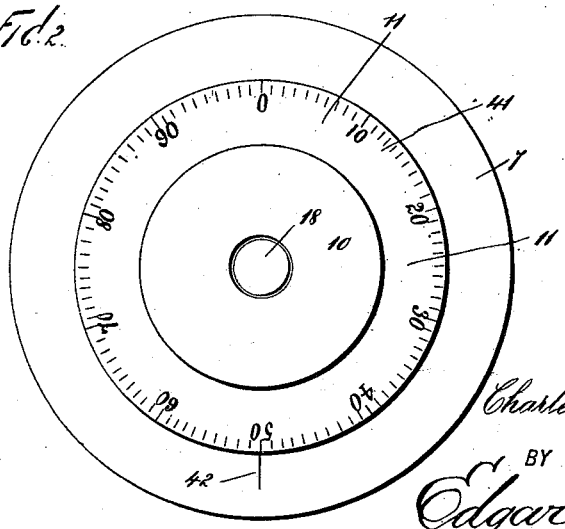


Fig. 2.



WITNESSES

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Fig. 3.

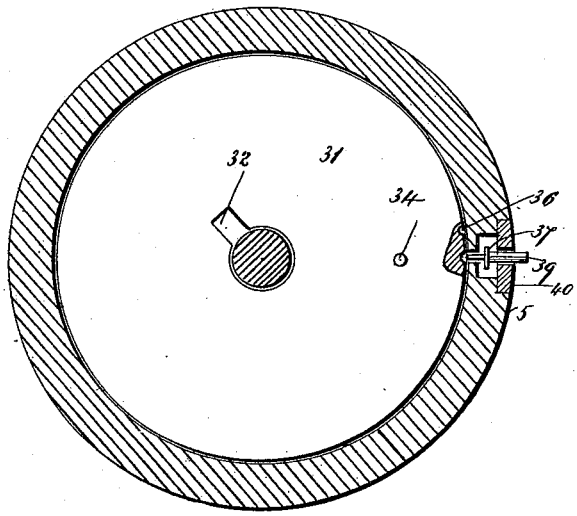
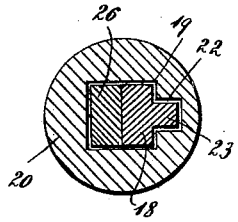


Fig. 4.



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CHARLES WATSON BIRUM, OF VICTOR, COLORADO.

LOCK.

SPECIFICATION forming part of Letters Patent No. 648,098, dated April 24, 1900.

Application filed October 30, 1899. Serial No. 735,202. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WATSON BIRUM, a citizen of the United States, residing at Victor, in the county of Teller and State of Colorado, have invented certain new and useful Improvements in Locks, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to combination-locks; and the object thereof is to provide a lock of the class described which shall be simple and efficient in its construction and operation; and the invention consists in the construction and arrangement of parts, all as fully described and claimed in the following specification, of which the accompanying drawings form a part, in which like reference characters denote like parts in the several views, and in which—

Figure 1 is a sectional elevation of a lock constructed according to my invention, several of the parts thereof being shown in full lines; Fig. 2, a top view thereof; Fig. 3, a section thereof on the line 3 3 of Fig. 1, and Fig. 4 a section thereof on the line 4 4 of Fig. 1.

Referring more particularly to the drawings, I have shown at 5 a lock-casing which is preferably tubular in form and is provided at its lower portion with a conical extension 6. The casing 5 is provided with a top plate 7, which is preferably riveted thereto, as at 8, and the conical extension 6 is provided with a chamber 9, which communicates with the interior of the casing 5.

An operating-knob 10, which is provided with a bulbous base 11, is revolubly mounted upon the top plate 7, being provided with a shank 12, which passes through an opening centrally of the top 7. An operating-plate 13 is passed upon the shank 12 directly beneath the casing-top 7, being connected with said shank by screw-threads 14, and a locking-nut 15 is screwed to the lower end of the shank 12, as at 16, securely retaining the operating-plate 13 in position.

The operating-knob 10 and base 11 and shank 12 thereof are bored, as at 17, and passed therethrough is a bolt 18, which also extends within the casing 5, through the chamber 9 of the conical extension 6, and through a bore 19 in the end 20 of said extension and terminating in a hook-shaped end 21, exterior of said extension 6. The bore 19 is, as shown in Fig. 4, square in form and provided at one side with a square extension 22, and the bolt 18, adjacent the head 21 thereof, is preferably squared and provided with a squared laterally-directed lug 23, which operates within said bore extension 22. Pivotally connected with the outer end of the hook-shaped head 21 of the bolt 18, as at 24, is a curved hook-shaped keeper 25 of similar form to the hook-shaped head 21 and provided at its inner end with a squared angular extension 26, which also operates within the bore 19, and a portion of the bolt 18 is, as shown at 27 in Fig. 1, flattened to receive the square extension 26, the resulting cross-section of said portion 27 of the bolt 18 and the angular extension 26 of the keeper 25 being of the same dimension as the diameter of the bolt 18, which is preferably cylindrical in form.

The bolt 18 is provided within the casing 5 with a pair of locking-pins 28, which are arranged longitudinally of said bolt upon the same side thereof. Firmly connected with the casing 5 at one side and extending thereinto are a pair of spaced guide-pins 29, and passed revolubly upon the bolt 18, beneath the guide-pins 29 and the locking-pins 28, is a circular disk-shaped tumbler 30. Passed upon the bolt 18, between the guide-pins 29 and the locking-pins 28, is a similar tumbler 31, and, as shown in Fig. 3, each of the tumblers 30 and 31 is provided with a radially-arranged transverse slot 32, which communicates with the opening therein, by means of which it is passed upon the bolt 18.

The operating-plate 13 is provided with a downwardly-directed operating-pin 33, and the tumbler 31 is provided with a transverse stop-pin 34, which projects above and below said tumbler. The tumbler 30 is provided with an upwardly-projecting stop-pin 35, which is arranged within the circular path of the stop-pin 34 of the tumbler 31 and so disposed as to be engaged by said stop-pin 34.

The peripheries of the tumblers 30 and 31 are provided with recesses 36, and the casing 5 is chambered at one side, as at 37. Mounted within said chamber 37 is a vertically-arranged spring 38, which is rigidly secured at

one end and free at the other end. The spring 38 is provided with a pair of sounding-pins 39, which operate within openings formed in the casing 5 and in openings formed in a plate 40, which closes the chamber 37. The inner ends of the sounding-pins 39 operate in connection with the recesses 36 in the peripheries of the tumblers 30 and 31.

The operation of my improved lock will be evident from the foregoing description when taken in connection with the accompanying drawings and the following statement thereof: The base 11 of the operating-knob 10 is provided with a circular scale 41, such as is commonly employed in combination-locks or as may otherwise be preferably employed, and said scale operates in connection with suitable graduations 42, formed upon the casing-top 7. The base 11 and knob 10 may be rotated upon the casing-top 7, and the scale 41 operates in connection with the graduations 42, as is customary in devices of this class, to revolve the locking-plate 13 and the locking-pin 33 to engage the stop-pin 34, which in turn engages the stop-pin 35. When the knob 10 has been operated in a manner predetermined by the combination or schedule which refers to the scale and which determines the operation by the operating-pin 33 of the tumblers 30 and 31, the locking-pins 28 will be brought into registration with the slots 32 in the tumblers 30 and 31, and the bolt 18 may be moved longitudinally of the casing 5, through the tumblers 30 and 31, and through the chamber 9 of the extension 6, withdrawing the squared lug 23 from the extension 22 of the bore 19 and allowing the angular extension 26 of the keeper 25 to be swung upon its pivot 24 out of said bore 19. It is understood that the hooked end 21 of the bolt 18 and the hook-shaped keeper 25 form together the member of my improved lock with which the device to be locked is operatively connected and that when said angular extension 26 is within the bore 19 any article which is passed through the space between the hook-shaped keeper 25 and bolt end 21, if of proper construction, cannot be withdrawn from said space while said extension 26 is within the bore 19. The sounding-pins 39 may be pressed inwardly, flexing the spring 38, and may engage the recesses 36 in the tumblers 30 and 31, thus allowing of operating the device according to the combination of moves thereof without visual reference to the scale 41 and graduations 42, said recesses 36 being spaced to correspond with the spacing of the graduations 42 and the graduations of the scale 41, it being evident that each time one of the sounding-pins 39 rides into one of the recesses 36 a click will result. The series of recesses 36 may be broken at some point, if desired, to cause a break in the clicks, thus assisting in reckoning thereby.

It is evident that the combination or governing schedule of moves of the operating-plate 13 and tumblers 30 and 31 may be varied at will, provided that the totality of the resultant moves is sufficient to bring the locking-pins 28 into registration with the recesses 32 in the tumblers 30 and 31. When the locking-pins 28 have passed downwardly through the recesses 32 and the laterally-directed lug 23 has passed out of the extension 22 of the bore 19, the bolt 18 may be turned so that the locking-pins 28 may pass out of said bore extension 22, allowing the withdrawal of the bolt 18 and its connected parts.

It is evident that I may make many variations in the construction and arrangement of the elements above described as embodying my invention without departing from the scope thereof.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A lock, comprising a casing, a bolt passed therethrough, a tumbler passed upon said bolt within said casing, devices for normally preventing the passage of said bolt through said tumbler, means for operating said tumbler, and allowing the passage of said bolt through said tumbler, and said bolt being provided at one end with a pivoted keeper which operates within a bore formed within said casing and through which said bolt passes, substantially as shown and described.

2. A lock, comprising a casing provided with a bored extension, a bolt passed through said casing and bored extension and provided with a laterally-directed lug which operates within an extension of the bore of said casing extension, a pivoted keeper connected with said bolt and provided with an angular extension which operates within the bore of said casing extension, a tumbler passed upon said bolt within said casing, devices for normally preventing the movement of said bolt through said tumbler, and means for operating said tumbler to allow the passage of said bolt through said tumbler and allow said angular extension of said keeper to be withdrawn from the bore in said angular extension of said casing, substantially as shown and described.

3. A lock of the class described, comprising a casing, a bolt passed through said casing, a pair of tumblers revolubly passed upon said bolt within said casing, a locking-pin arranged upon said bolt and normally disposed between said tumblers, another locking-pin arranged upon said bolt and normally disposed above said tumblers, said tumblers being provided with slots or recesses adapted to register with said locking-pins, and each of said tumblers being provided with a stop-pin which are arranged to coengage, an operating device revolubly mounted upon said casing and extending through an opening therein and provided with an operating-pin

which operates in connection with one of said stop-pins to bring said recesses into engagement with said locking-pins whereby said bolt may be passed through said tumblers, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 21st day of October, 1899.

CHARLES WATSON BIRUM.

Witnesses:
WILLIAM M. SUCKWORTH,
EDWARD H. NEWLAND.