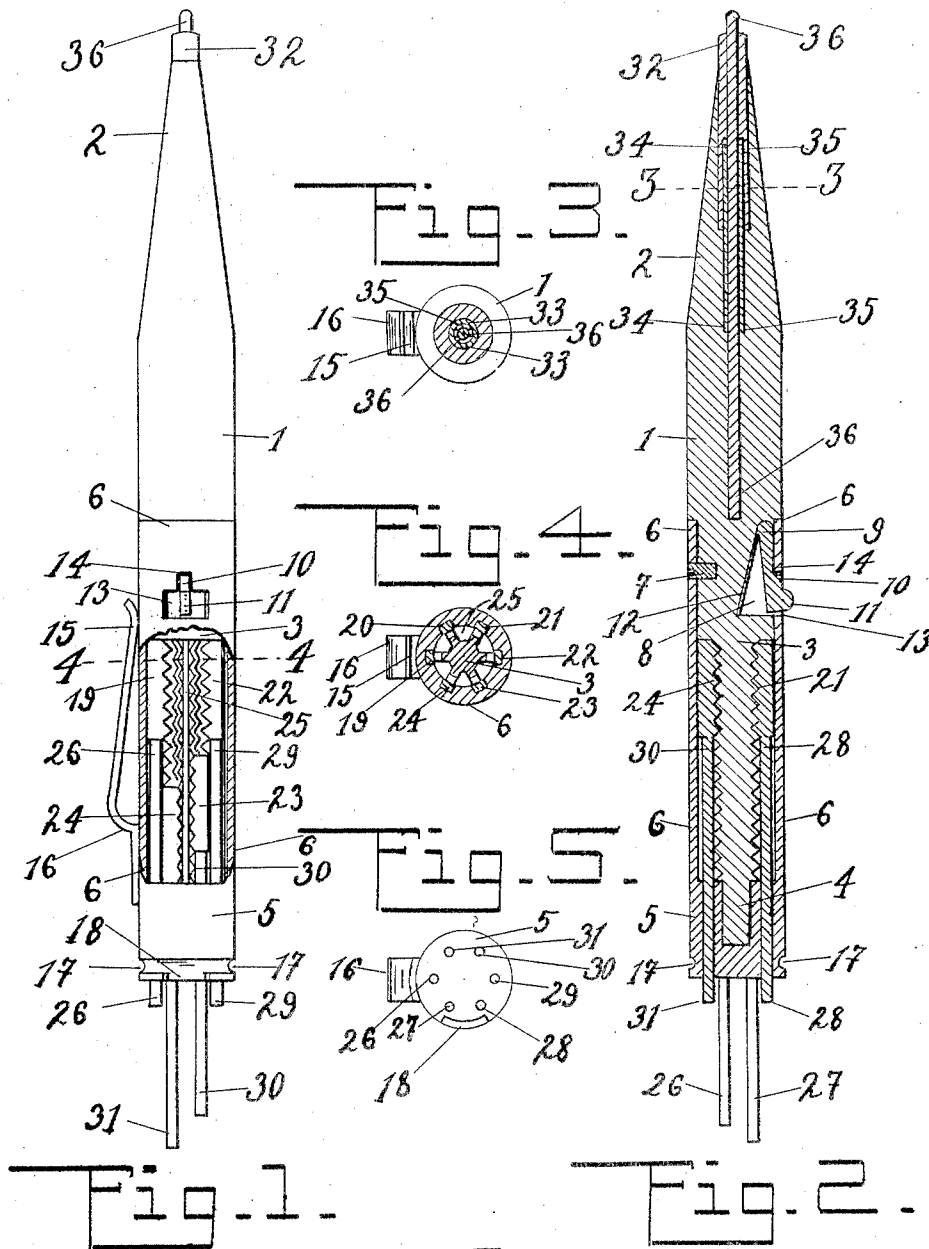


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COMBINATION LOCK OPERATING KEY
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Invetor.

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COMBINATION-LOCK-OPERATING KEY.

Original application filed March 5, 1923, Serial No. 623,074. Divided and this application filed January 2, 1924. Serial No. 684,083.

My invention relates to combination key adapted to operate specially a combination lock of the character set forth in my application for "combination lock and key", Serial Number 623,074, series of 1915b, filed on March 5, 1923. An object of this invention is to provide a key of this character that may be easily adjusted to conform to the adjustment of the lock. A further object of this invention is to provide a suitable key to operate any individual lock of this character whenever its combination is known. Still another object of my invention is to provide a combination lock-operating key and pencil-holder in compact form.

The full objects and advantages of my invention will appear in connection with the detailed description thereof and the novel features embodied in my inventive idea will be particularly pointed out in the claim.

In the accompanying drawings, which illustrate the application of my invention in one form the several figures are enlarged views; and Fig. 1 is a side-view of the entire combination key minus a portion of its casing to show its inner disposition; Fig. 2 is a longitudinal sectional view of the key; Fig. 3 is a cross-sectional view of the combination key on the line 3—3 of Fig. 2; Fig. 4 is a cross-sectional view of the combination key on the line 4—4 of Fig. 1; and Fig. 5 represents the combination key seen from its operating end.

Similar numerals refer to similar parts throughout the several views.

Referring more particularly to the character of reference on the drawings, 1—2 is a stick which has a stem 3 provided with a number of rows of, preferably, triangular teeth 25, adapted to receive the teeth of a number of slidable toothed bars 19, 20, 21, 22, 23, and 24. The end 4 of the stem 3 is cylindrical and enters into a proper bore made in the center of the socket 5, which forms an entire piece with the tubular casing 6.

The toothed bars 19, 20, 21, 22, 23, and 24 are provided with rods 26, 27, 28, 29, 30, and 31, respectively, passing through suitable drillings made in the socket 5, around the end 4 of the stem 3.

The tubular casing 6 is provided with longitudinal grooves wherethrough the back of the toothed bars 19, 20, 21, 22, 23, and 24 may slide. (See Fig. 4.)

If the tubular casing 6 is held while the stick 3 is turned one twelfth of turn, either to the right or to the left hand, the teeth 25 of the stem 3 will let go the teeth of the toothed bars 19, 20, 21, 22, 23, and 24 and therefore these bars may be slid through their respective groove in the tubular casing 6.

7 is a small screw set in the side of the stick 1 passing through small slot cut in the tubular casing 6, and is intended to hold the stick 1—2 in the casing 6, and at the same time to limit to one twelfth of a turn, in either direction, the motion of the casing 6 around the stick 1—2.

A spring-fastener 9 is lodged in a suitable mortise 8 cut in the side of the stick 1—2. The spring tongue 12 presses against the bottom of the mortise 8 causing the round end 11 of the fastener 9 to appear through a gap 13 cut in the tubular casing 6, while its edge 10 enters into a slot 14 communicating with the upper border of the gap 13, exactly at its middle line. Each of the slidable toothed bars is provided with an appended rod. Thus the bar 19 bears the rod 26, the bar 20 bears the rod 27, the bar 21 bears the rod 28, the bar 22 bears the rod 29, the bar 23 bears the rod 30, and the bar 24 bears the rod 31.

These rods 26, 27, 28, 29, 30, and 31 are the same length and they may be provided with equidistant marks to indicate to what tooth of the stem 3 the inner end of the corresponding toothed bar reaches.

The socket 5 is provided, all around, with a groove 17 which has about one sixth of its outer rim removed, as shown in 18.

A hook 15—16 attached to the tubular casing 6 serves to hold the key on the edge of a pocket, in the manner of a fountain pen, and also as a lever when the device is used as key.

The end 2 of the stick 1—2 is conical and is provided with a central bore adapted to receive the pencil-holder means.

32 is a tube whose end 33 is externally provided with screw threads, so that it may be screwed into the central bore of the stick 1—2.

34 and 35 are two half-pipes whose upper ends are inwards bent and may enter into the inner end 33 of the tube 32.

36 is a crayon.

The device works as follows:

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The toothed bars 19, 20, 21, 22, 23, and 24 may be slid in or out through their respective groove as much as the distance of ten teeth of the stem 3, so that there are ten different lengths for each of the rods 26, 27, 28, 29, 30, 31, which can be easily remembered by calling those lengths 1, 2, 3, 4, 5, 6, 7, 8, 9 and 0 (naught being the shorter length of the rod corresponding to the inner position of the toothed bar).

Now, as there are six of said toothed bars, it will be possible to adjust this key to any of one million combinations. Thus: starting at the rod 26—the one in line with the hook 15—16 the combinations from 000000 to 999999 may be represented.

When the toothed bars 19, 20, 21, 22, 23, and 24 are in their innermost position touching the body of the stick 1, only a small portion of the rods 26, 27, 28, 29, 30, and 31 emerge from the socket 5 and the key has the combination 000000. When the toothed bars 19, 20, 21, 22, 23, and 24 are touching the socket 5, the rods 26, 27, 28, 29, 30, 31 emerge the most from the socket 5 and the key has the combination 999999.

This key is intended to operate a lock with a number of wards provided with appended rods which must be pushed in more or less, according to a prearranged adjustment, in

order to bring the aforementioned wards to certain level or unlocking position before turning the bolt controlling member, what is done by the key itself. The keyhole of said lock being provided with as many holes as there are rods, (26, 27, 28, 29, 30, and 31), in the key. In these holes are lodged the rods of the wards of the lock.

The entrance of the key-hole of the lock is also provided with a small button which passing through the open portion 18 enters into the groove 17 of the socket 5 and when one twelfth of a turn is given to the key, to either side, prevents its falling out from the key-hole.

Having thus described my invention, what I do claim as new, useful, and desire to secure by Letters Patent is:

An adjustable bitted key embodying a number of slidable bars with appended rods, a casing provided with inner longitudinal grooves wherethrough the backs of said slidable bars slide, a socket united to the casing and provided with proper apertures wherethrough extend the rods or adjustable bits, and an outer groove on said casing adapted to receive a button attached to the entrance of the key-hole of a lock to prevent the falling out of the key from said key-hole.

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