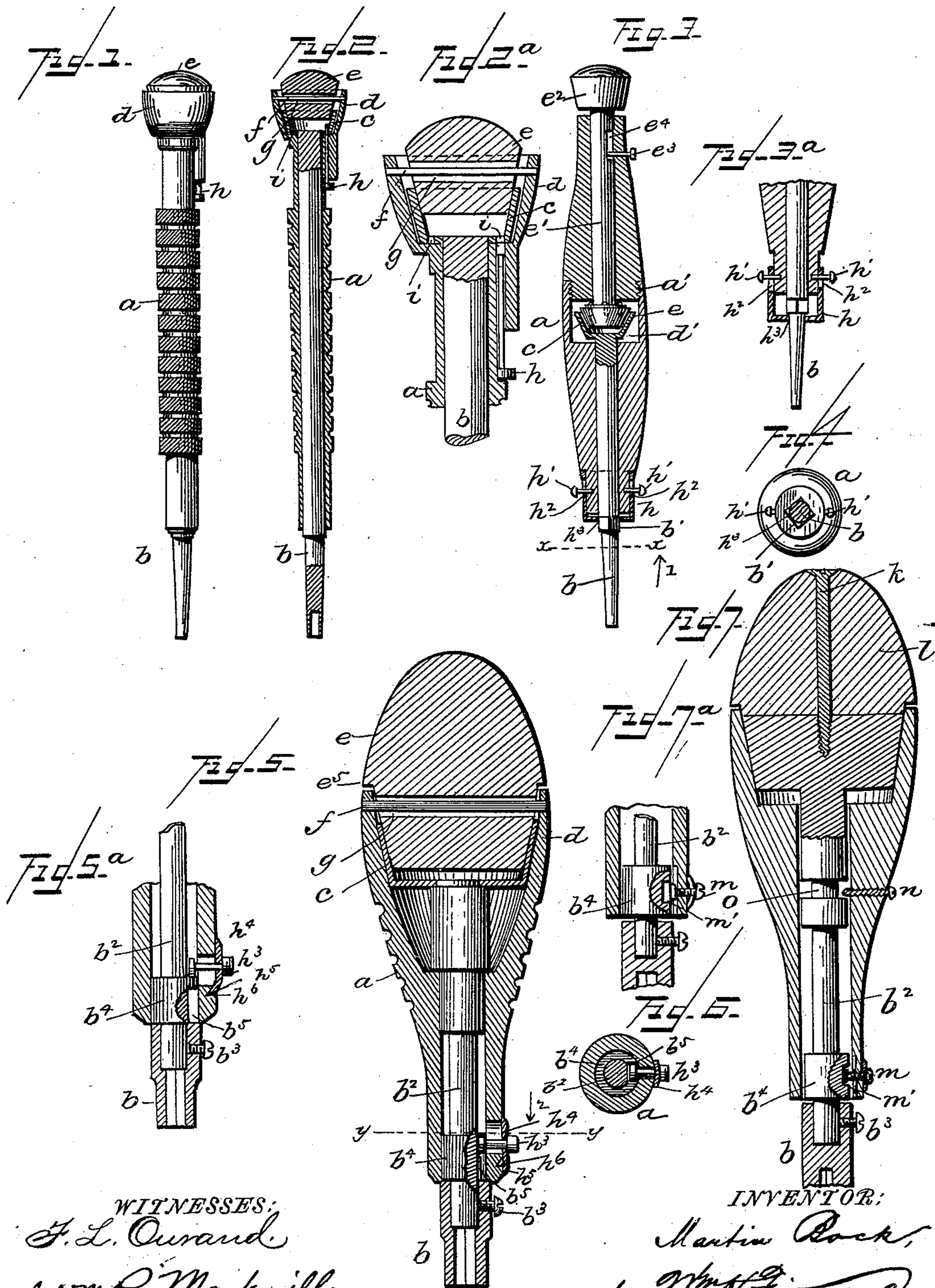


(No Model.)

M. BOCK.  
KEY FOR TIME PIECES.

No. 405,004.

Patented June 11, 1889.



WITNESSES:  
F. L. Curand.  
Wm R. Macknille.

INVENTOR:  
Martin Bock,  
by Wm H. Linsell,  
his Attorney.



# UNITED STATES PATENT OFFICE.

MARTIN BOCK, OF HAZLETON, PENNSYLVANIA.

## KEY FOR TIME-PIECES.

SPECIFICATION forming part of Letters Patent No. 405,004, dated June 11, 1889.

Application filed November 16, 1888. Serial No. 291,045. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN BOCK, a citizen of the United States, residing at Hazleton, in the county of Luzerne and State of Pennsylvania, have invented a certain new and useful Improvement in Keys for Time-Pieces, of which the following is a full, clear, and exact description.

The object of this invention is to provide a key or tool for unwinding or letting down the mainsprings of watches and clocks, and which is adapted also to winding such time-pieces.

The invention consists in a freely-rotating pipe to engage the post or arbor of the mainspring, combined with a friction-clutch by which the rotation of the pipe may be regulated, so as to let down the spring gradually and easily without danger of breaking and without accident or injury to the workman.

The invention also consists in a detent or locking device for such pipe, whereby its rotation may be permanently arrested for any purpose in letting down the spring and also for winding.

The invention further consists in details of construction, and in the combinations and arrangement of parts, all as will appear hereinafter.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a side elevation, and Fig. 2 a longitudinal section, of the watch-key with the parts locked, and Fig. 2<sup>a</sup> an enlarged vertical section with the parts unlocked. Fig. 3 is a longitudinal section of another form with the parts locked, and Fig. 3<sup>a</sup> a detail section with the detent unlocked; Fig. 4, a section taken in the plane of line *xx*, Fig. 3, and looking in the direction of the arrow 1. Fig. 5 is a longitudinal section of the clock-key with parts unlocked, and Fig. 5<sup>a</sup> is a detail section with the detent unlocked; Fig. 6 is a section taken in the plane of line *yy*, Fig. 5, and looking in the direction of arrow 2; and Fig. 7 is a longitudinal section of another modification, the parts being locked, and Fig. 7<sup>a</sup> a detail section with the detent unlocked.

This specification and the annexed drawings will serve to explain the principle of my invention; but I wish to be understood as not

limiting that principle to the several forms of the device set forth, inasmuch as it is susceptible of many modifications. For example, the form or construction of the handle may be altered, and so also may be that of the clutch and that of the pipe and that of the detent.

The handle *a* is tubular, and may be milled or otherwise roughened to afford a good grasping-surface. Within this handle is arranged the pipe *b*, having at one end one member *c*—say the female—of the friction-clutch. This member *c* may be cup-shaped or tapering outwardly, and it may be integral with or attached to the pipe. The head *d* of the handle in which this member *c* is arranged is shaped correspondingly with the said member. The other or male member *e* of the clutch may be (and preferably is) a block of hard wood shaped to enter the female member *c* and more or less firmly engage it according to the pressure put upon the male member. The male member *e* of the clutch is loosely arranged in the handle-head *d* upon a pin or cross-bar *f*, fitted loosely in a hole *g* in said male member and fixed in the walls of the handle-head. The hole *g* is larger than the pin or cross-bar *f*, and thus allows play of member *e* relatively to the member *c*. The pipe and its clutch member *c* are free to rotate axially in the handle, excepting as the male member *e* of the clutch is forced down into said member *c*, and thus by its friction therein restrains such rotation more or less, as may be desired.

In letting down a watch-spring the pipe *b* is placed upon the post or arbor of the spring, pressure is applied to the clutch to hold the pipe from rotation, the click of the spring-barrel ratchet is released, and then the pressure is decreased sufficient to permit the spring to unwind gradually and easily, the pipe rotating correspondingly under the action and control of the friction-clutch.

The spring may be wound by firmly applying the clutch; but I prefer to use a detent *h* for this purpose and thus save the clutch. Such a detent may consist of a push-pin arranged on the handle to engage a hole *i* or one of several such holes in the female member *c* of the clutch. Instead of such a detent either of the others hereinafter illustrated



may be employed, and indeed any well-known substitute may be used, my invention herein not consisting in the form or construction of detent.

5 In Fig. 3 the handle is made in two parts connected by a screw-threaded joint  $a'$  and having the clutch-cavity  $d'$ . The pipe  $b$  is provided, as in the former example, with the female member  $c$  of the clutch, while the  
10 male member is secured to a rod  $e'$ , arranged in the handle. The rod  $e'$  is provided with a hand-piece  $e^2$ , and, while having free longitudinal movement in the handle to operate, the clutch is restrained from rotation in any  
15 suitable manner, as by a pin  $e^3$  in the handle engaging a groove  $e^4$  in the rod. By inclosing the clutch in a covered cavity  $d'$  it is protected from dust, grit, and injury.

In the form of key shown in Fig. 3 the detent  
20  $h$  consists of a sleeve applied to the lower end of the handle by pins  $h'$  on the handle engaging slots  $h^2$  in the sleeve, so as to admit of said sleeve being moved longitudinally. A square hole  $h^3$  is made in the sleeve  
25 to engage a squared portion  $b'$  of the pipe when the pipe's rotation is to be arrested, and when the pipe is to rotate freely the sleeve is permitted to drop below said squared portion to the round portion of the pipe, as shown in  
30 Fig. 3<sup>a</sup>.

A heavier and more substantial tool may be needed for clock-work, and such is shown in Figs. 5 and 6. The handle  $a$  is rather more bulky, but otherwise may be substantially as  
35 in the examples already described. The pipe  $b$  is made detachable from the stem  $b^2$  for replacement by a pipe or pipes of different size, and for this purpose a set-screw  $b^3$  may be employed. The female member  $c$  of the clutch  
40 is on the stem  $b^2$ , and the male member  $e$  is secured, as in Figs. 1 and 2, to and in the head  $d$  of the handle. The member  $e$  is provided, by preference, with an offset  $e^5$ , so as to cover the head  $d$  as closely as possible, and said member is fitted in said head as closely as its necessary movement will admit, in order to exclude dust, &c., from the clutch. The detent  
45 consists of a pin  $h^3$ , inserted laterally through the handle and held in position by a spring or friction-plate  $h^4$ , and passing above a collar  $b^4$  on the stem  $b^2$ , as shown in Fig. 5<sup>a</sup>, to admit of the free rotation of the pipe and stem, and engaging a longitudinal groove  $b^5$  in said collar, as shown in Figs. 5 and 6, to  
50 arrest rotation of said pipe and stem. To retain the detent out of engagement with the groove in the collar, the plate  $h^4$  may have an inturned end  $h^5$  to engage a notch  $h^6$  in the handle, as shown in Fig. 5<sup>a</sup>. Either of the  
60 other forms of key may be made with a detachable pipe in the manner of the clock-key or otherwise. The detachability of the pipe may be effected in many other well-known ways. By using a proper pipe the key may  
65 be employed in winding stem-winders as well as key-winders.

By the term "clutch" I mean to include any and all of those mechanical devices which will subserve with relation to the pipe the same or substantially the same purpose as the  
70 parts  $c$  and  $e$  herein specified.

In Fig. 5 the cavity in the handle below the member  $c$  may be filled up with wood to form a support, or the stem may be shouldered, as shown, for a like purpose.

In Fig. 7 the handle is shown as forming the female member of the clutch, and in this case wood or metal may be used for such handle. The stem  $b^2$  is provided with the male member of the clutch, and if the handle be  
80 of wood then preferably this male member will be of metal. If the male member be of metal, it may be secured by a screw  $k$  to a push-piece  $l$ , of wood or metal, made hollow or solid, as desired. Another form of detent, as  
85 shown in this figure, may consist of a screw or friction-pin  $m$  in the handle adapted to engage a hole  $m'$  in the stem, as shown in Fig. 7, to lock the stem against rotation, said pin being retractible within the handle, as in  
90 7<sup>a</sup>, to permit freedom of rotation. The stem may be held from too great longitudinal movement in the handle and at the same time given perfect freedom of rotation by a screw or pin  
95  $n$  in the handle engaging a circumferential groove  $o$  in the stem.

What I claim is—

1. A key for time-pieces, comprising a handle, a pipe freely rotatable in either direction, and a manually-operated clutch one  
100 member of which is connected to the handle and the other member to the pipe for governing the rotation of the pipe to let down a spring gradually as well as to wind it, substantially as described.

2. A key for time-pieces, comprising a pipe freely rotatable in either direction, a handle therefor, and a manually-operated friction-clutch interposed between the handle and pipe  
105 to regulate and to arrest the rotation of the pipe to thereby let down a spring as well as wind it, substantially as described.

3. A key for time-pieces, comprising a rotary pipe having a friction-cup on one end and a handle having a friction-plug, of wood,  
115 movable thereon toward and from the friction-cup, but not rotatable independently of the handle, substantially as described.

4. A key for time-pieces, comprising a rotary pipe, a handle, and a detent interposed  
120 between the handle and the pipe and interlocking with a fixed or rigid portion of the pipe to positively lock the pipe against rotation in either direction, substantially as described.

5. A key for time-pieces, comprising a rotary pipe, a handle, a clutch interposed between the handle and pipe, and a detent also  
125 interposed between the handle and pipe, substantially as described.

6. A key for time-pieces, comprising a freely-rotating pipe to engage the post or arbor of  
130



the mainspring, combined with a manually-operated friction-clutch by which the rotation of the pipe may be regulated so as to let down the spring gradually and easily  
5 without danger of breaking and without accident or injury to the workman, substantially as described.

7. A key for time-pieces, comprising a freely-rotating pipe to engage the post or arbor of  
10 the mainspring, combined with a friction-clutch by which the rotation of the pipe may be regulated so as to let down the spring

gradually and easily without danger of breaking and without accident or injury to the workman, and a detent or locking device for  
15 such pipe, whereby its rotation may be arrested as desired, substantially as described.

In testimony whereof I have hereunto set my hand this 13th day of November, A. D. 1888.

MARTIN BOCK.

Witnesses:

EDWARD TURNBACH,  
PHILIP V. WEAVER.