(Model.)

H. P. PRUIM.

CLOCK MOVEMENT.

No. 347,737. Patented Aug. 17, 1886.

Fig. 1.

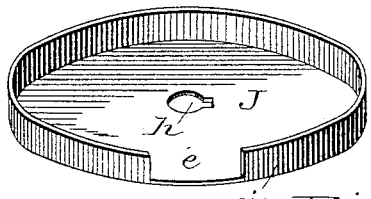


Fig. 2.

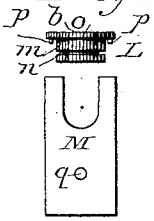
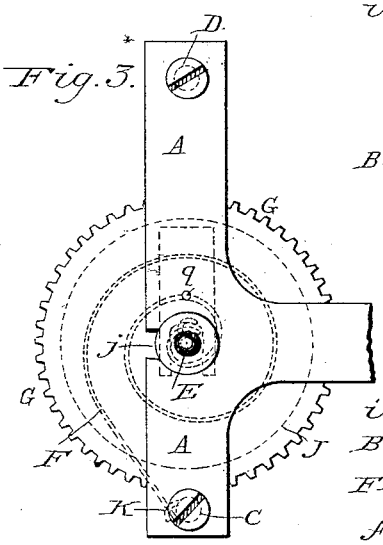


Fig. 3.



i. Fig. 5.

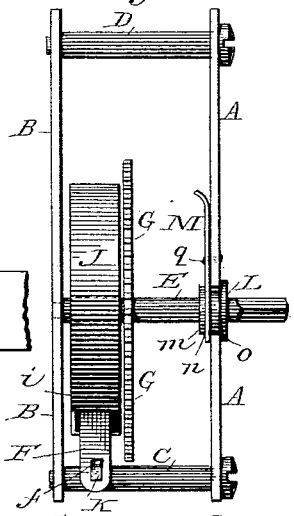


Fig. 4.

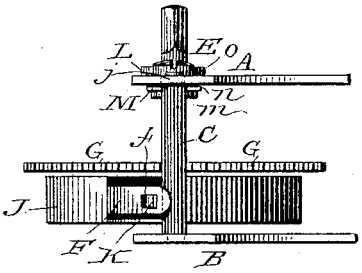


Fig. 6.

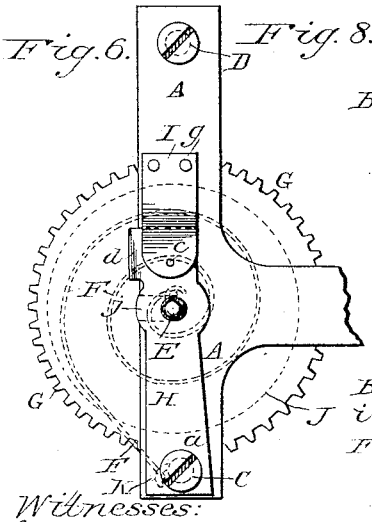


Fig. 8.

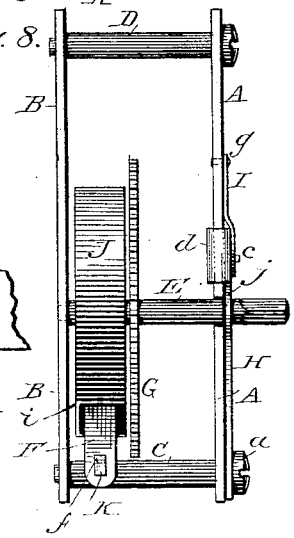
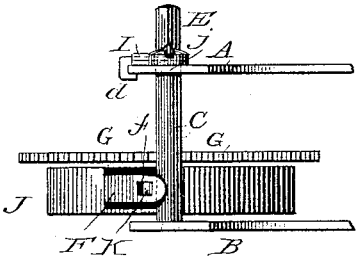


Fig. 7.



Witnesses:

J. B. Haines.

J. Kennie

Inventor:

H. P. Pruim

By McCleary & Chesney,

Attorneys.

UNITED STATES PATENT OFFICE.

HIRAM P. PRUIM, OF GRAND HAVEN, MICHIGAN.

CLOCK-MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 347,737, dated August 17, 1886.

Application filed July 19, 1884. Serial No. 138,251. (Model.)

To all whom it may concern:

Be it known that I, HIRAM P. PRUIM, a citizen of the United States, residing at Grand Haven, in the county of Ottawa and State of Michigan, have invented a new and useful Improvement in Clock-Movements, of which the following is a specification.

My invention relates to improvements in that class of clocks in which springs are used for the purpose of propelling the movements; and the objects of my improvements are, first, to facilitate the removal and the replacing of mainsprings; second, to provide against the danger of mainsprings expanding sufficiently to interfere with the adjacent movements of the clock; and, third, to provide against the danger of the edges of the mainsprings catching upon the heads of the rivets that hold the pawls or dogs and springs upon the main wheel of the clock, and interfering with the free action of the movements. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the shield or guard J. Fig. 2 is a side elevation of my detachable collar or journal-box and key. Fig. 3 is a sectional view of the front of a clock-movement, showing main wheel, mainspring, guard J, hook K, detachable collar or journal-box L, and spring-wedge M. Fig. 4 is an end elevation of the same. Fig. 5 is a side elevation of the same. Fig. 6 is a front view of a section of a clock-works, showing the main wheel, mainspring, the guard J, the hook K, and a movable plate, H, and spring I, that may be used in lieu of the detachable collar or journal-box L. Fig. 7 is an end elevation of the same, looking upon the movement from below; and Fig. 8 is a side elevation of the same.

Similar letters refer to similar parts throughout the several views.

The front plate, A, the back plate, B, the posts C and D, the arbor or shaft E, the mainspring F, and the main wheel G constitute the portion of the movements of a clock to which my invention may be applied.

The shield or guard J, the hook K, the detachable collar L, and the spring-key M constitute the main features of my invention. The detachable collar L is formed with a body, *m*, having a groove, *n*, which is situated just back of the plate A, for the reception of the key M, a projecting head, *o*, situated just in front of the plate A, to prevent the collar from dropping or working through and out of the plate, provided with a pin or pins, *p*, projecting back through corresponding holes in the plate A, for the purpose of preventing the collar from turning round, or from being displaced by the action of the movement. The body of the collar passes through or is situated in a hole in the plate A, and the collar is held in place by means of the projecting head *o* on the one side, and the key M, or a nut may be used in lieu of the key, on the other side. The collar is also provided with a hole, *b*, for the reception, support, and free movement of the upper end of the main shaft or arbor E. There is a slot cut in the plate A, from the outer edge to the hole in which the collar L is situated, for the purpose of allowing the shaft E to be conveniently removed and replaced. The spring-key M is made in the form of a fork, one tine of which goes each side of the body of the collar L back of the plate A, and fits closely in the groove *n*, for the purpose of binding the collar to the plate. It is prevented from falling or working out by means of a pin, I, situated in the plate A, and passing through a corresponding hole in the key. The same result may be attained by the use of a movable plate, H, for the support of the upper end of the shaft E, made of sufficient length to reach from the end of the plate A to and back of the spring I, and provided with a lip, *d*, passing over the edge of the plate A, and forming a groove, which fits over the plate A closely, and a pin, *e*, upon the opposite side, which passes through a hole in the end of the spring I, for the purpose of holding this end of the plate H firmly in place. The opposite end of this plate may be secured to the main plate by means of the screw *a*, passing through the two plates and into the post C, and the spring I may be attached to the main plate A, at *g*, by means of screws or rivets, all as shown by H, I, *a*, *e*, *d*, and *g*, Fig. 6; but I greatly prefer the use of the detachable collar, as being less cumbersome, less expensive, more substantial, and more readily adjusted. The shield or guard J is arranged with a narrow rim or flange turned back to cover the face of the

mainspring, a portion of this rim or flange being cut away, as at *e*, to allow the end of the mainspring to pass out, for the purpose of attaching it to the hook K upon the post C; and in the center of the shield or guard is a hole, *h*, of sufficient size to allow the shield or guard to pass loosely over the shaft E. This guard may be made of sheet-brass or of any other suitable material, and should be made of a proper diameter to allow of a full working expansion of the mainspring without interfering or allowing the mainspring to interfere with the adjacent movements of the clock. It is situated upon the shaft E, between the main wheel and the mainspring of the clock, and rests loosely upon the shaft, with the flange *i* projecting over the face of the mainspring. The mainspring F is attached at one end to the arbor or shaft E, in the usual way, within the guard J, with the other end projecting through the aperture *e* in the flange of the guard, and provided with a slot, *f*, or other convenient appliance to pass over or attach to a hook or other device upon the post C, for the purpose of securing the end and supporting the tension of the spring. The post C is provided with a hook, K, of any convenient form, rigidly attached to the post and arranged to fit into a slot, *f*, or other device in or upon the end of the mainspring.

To remove the main shaft or arbor, main wheel, and mainspring from a clock, raise the key M over the pin and draw it back out of the groove in the body of the collar, (or unscrew the nut from the lower or back part of the collar, as the case may be,) draw the collar out of the plate, unclasp the mainspring from the post C, allowing it to expand and fill the shield or guard, raise the shaft out of the back plate, remove the other end from the slot in the front plate, detach the inner end of the mainspring from the shaft E, and remove the mainspring and the shield or guard together, the guard acting as a clamp to hold the spring in place. If the "movable plate" H is used instead of the "detachable collar," it may be removed by drawing the screw *a*, raising the spring I off of the pin *e*, and sliding the groove *d* off of the plate A.

To insert a new mainspring, place the clamped spring within the shield or guard, remove the clamp and allow the spring to expand and fill the guard, replace the spring and guard upon the shaft, make the necessary attachments, and return all to position.

I am aware that prior to my invention spring-clocks have been made having the front plate provided with a slot or slots arranged for the convenient removal of the mainspring-shaft, and with a detachable collar, boss, or other device for the purpose of supporting the upper end of the mainspring-shaft, and for the purpose of facilitating the removal and replacing of the same. I therefore do not claim such a combination, broadly; but

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

1. The combination, in a clock, of a slotted front plate, A, a back plate, B, supporting-posts C and D, mainspring-shafts E, mainspring F, and detachable collar or boss L, provided with pins P, and a groove, *n*, with a spring-key, M, a guard or shield, J, and a hook, K, substantially as and for the purpose set forth.

2. The combination, in a spring-clock, of a slotted front plate, A, with a detachable collar or boss, L, having a projecting head, O, provided with pins P, a body, *m*, provided with a groove, *n*, and a hole passing through said collar lengthwise, a spring-key, M, a guard, J, and a hook, K, substantially as and for the purpose set forth.

3. The combination, in a spring-clock, of a slotted front plate, A, and a detachable collar or boss, B, with a spring-key, M, made in the form of a fork and arranged to fit into the groove *n* in the body of the detachable collar or boss L, and secured by means of a pin, I, a guard, J, and a hook, K, substantially as and for the purpose set forth.

4. The combination, in a spring-clock, of a slotted front plate, A, and a detachable collar or boss, L, with a spring-key, M, a guard, J, having a rim or flange, *i*, turned down to cover the face of the mainspring, an opening, *e*, for the free passage of the end of the mainspring, and the hole *h*, to receive the mainspring-shaft, a hook, K, and a slot, *f*, in the end of the mainspring, substantially as and for the purpose set forth.

5. The combination, in a spring-clock, of a slotted front plate and a detachable collar or boss with a spring-key, M, a guard, J, a hook, K, rigidly attached to the supporting-post C, and arranged to hook into a slot in the end of the mainspring, and a slot, *f*, in the mainspring, substantially as and for the purpose set forth.

6. In a clock-movement having the front and back plates, A and B, the supporting-posts C and D, the mainspring-post E, and the mainspring F, the combination of the detachable collar L, the wedge M, the slot in the front plate, and the shield or guard J, with the hook K, attached to the post C, and arranged to fit in a slot or other device in or upon the end of the mainspring, substantially as and for the purpose set forth.

HIRAM P. PRUIM.

Witnesses:
I. J. CILLEY,
T. A. TAYLOR.