

(No Model.)

E. M. & M. MOULTON.

CLOCK.

No. 389,852.

Patented Sept. 18, 1888.

Fig. 1.

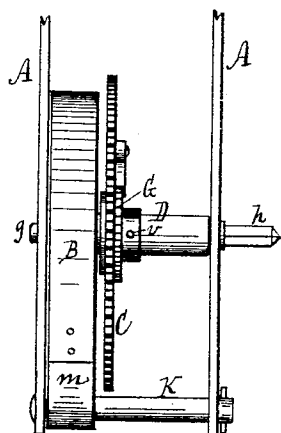


Fig. 2.

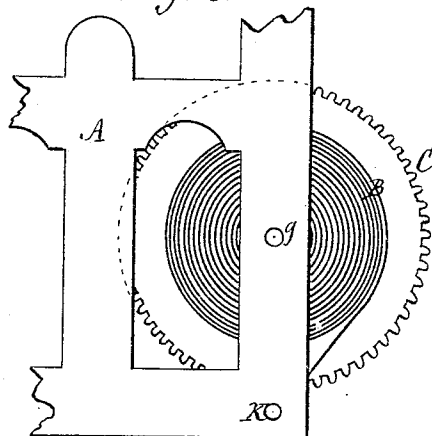


Fig. 3.

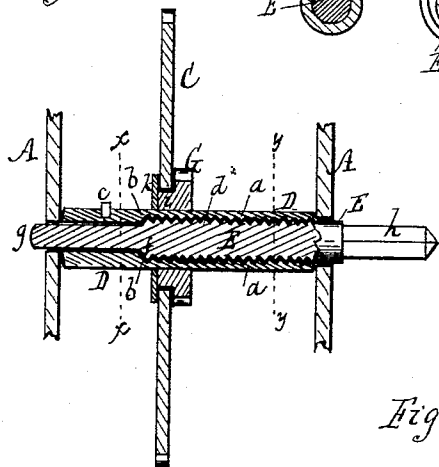


Fig. 4.



Fig. 5.

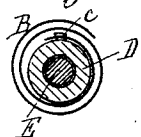


Fig. 8.

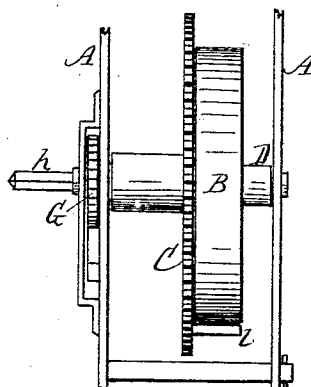


Fig. 6.

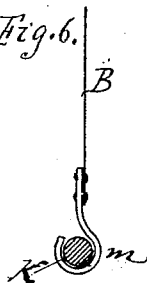
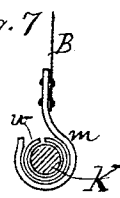


Fig. 7.



Attest.
Edw. Adams
Chas. B. Videner

Inventors.
Edward M. Moulton,
Mark Moulton,
Per R. F. Osgood, atty.

UNITED STATES PATENT OFFICE.

EDWARD M. MOULTON AND MARK MOULTON, OF ROCHESTER, NEW YORK;
SAID MARK MOULTON ASSIGNOR TO SAID EDWARD M. MOULTON.

CLOCK.

SPECIFICATION forming part of Letters Patent No. 389,852, dated September 18, 1888.

Application filed February 8, 1886. Serial No. 191,256. (No model.)

To all whom it may concern:

Be it known that we, EDWARD M. MOULTON and MARK MOULTON, both of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Clocks; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

The object of our invention is to render the mainspring and mainspring-wheel removable from the clock-frame without disturbing the rest of the gearing or any of the working parts. In clocks now in use, in order to remove the mainspring and wheel, it is necessary to so loosen the plate on one side of the frame that the bearings of the arbors can be lifted out, and this so loosens and disarranges the other gearing that it is a considerable and perplexing labor to replace the parts, even by an experienced workman. This is especially the case in striking-clocks, as the teeth of the gears have to be adjusted to a given position in replacing in order to produce the proper motion of the striking mechanism. Devices for removing the spring and wheel without disturbing the other parts are desirable for the reasons above mentioned.

In the drawings, Figure 1 is an edge elevation of a portion of a clock-frame, showing the mainspring, mainspring-wheel, and its connections, and exhibiting my improvement for readily removing the spring and wheel from place. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged horizontal section through the arbor of the mainspring-wheel. Figs. 4 and 5 are cross-sections of Fig. 3, respectively in lines *xx* and *yy*. Figs. 6 and 7 are views showing the devices for connecting the mainspring-wheel with one of the pillars of the frame. Fig. 8 is an elevation similar to Fig. 1, but showing a modification.

Our invention consists, essentially, in the combination, with the mainspring-wheel, of a hollow internally-threaded sleeve, on which the wheel is placed, provided with a spur for the attachment of the spring, and an arbor running through the sleeve, having an external thread which engages with the thread of the sleeve, and a stop which strikes a shoulder of the sleeve

to clamp the parts in place, the ends of the arbor projecting outward, forming the bearings in the frame, also the winding stem on one side, the whole so arranged that the arbor can be unscrewed and removed endwise from the sleeve, leaving the sleeve, with the mainspring and wheel attached, free to be removed bodily from between the side plates of the frame.

In the drawings, A A show the two side plates of the frame of a clock-movement. B is the mainspring, and C the mainspring-wheel. The other gearing of the clock is not shown, being of the usual construction and arrangement.

Our improvement is as follows: D is a hollow sleeve, of a length just sufficient to fit easily between the two side plates, A A. On the inside the sleeve is cut with an internal thread, *a*, extending any desired portion of the length, and having at its inner end a shoulder, *b*, produced by contracting the bore of the sleeve. At one end the sleeve has a spur or hook, *c*, standing up from the periphery, for the attachment of the end of the mainspring.

E is a screw forming the arbor. It is cut with an external thread, *d*, that fits the internal thread of the sleeve, and it also has a shoulder, *f*, which, when the arbor is screwed in place in the sleeve, strikes the shoulder *b* of the latter, thus clamping the screw to the sleeve by the frictional contact, and not depending upon the screw to prevent the sleeve turning on the arbor. At one end the arbor has a journal, *g*, and at the other a square stem, *h*, that forms the winding-stem, both ends projecting out through the side plates and forming the bearings. The arbor is of such diameter its whole length that it can be unscrewed and drawn endwise out through the bearings in the plate, leaving the sleeve free, and the latter can then be removed without difficulty from the frame.

G is the ratchet-wheel. As shown in Fig. 1, it is made fast on the outside of the sleeve, and has a hub, *i*, on which the driving-wheel C turns loosely, being retained in place by a washer, *k*, on the opposite side, riveted to the hub of the ratchet. A pawl or click engages with the ratchet in the usual way. To wind

the clock the key is applied to the winding-stem *h*, as in common clocks, and the arbor and sleeve are turned as one fixture, the screw-threads having a tendency to tighten, and the stops of the arbor and sleeve binding closer together, and when the movement is running the arbor and sleeve also turn together, forming practically one arbor.

The above describes one form of clock, in which the turning of the arbor gives motion to the driving-wheel by means of a ratchet and click, and the improvement is applicable both to the time and the striking mechanism. It is applicable, also, to that class of clocks in which the arbor remains stationary while the time-movement is running, the spring being attached at one end to the arbor and at the other to a lug, *l*, of the driving-wheel, as shown in Fig. 8. This form is known as the "going-barrel." It is also applicable to what are known as "French clocks."

K is an ordinary riveted pillar, to which the free end of the spring is attached by a hook, *m*, as shown in Figs. 6 and 7. The pillar connects the two sides of the frame in the usual way. The hook is attached to the end of the mainspring by one or more rivets, as shown. It is attached to the pillar by simply hooking on, as shown in Fig. 6, and it can be as readily removed by unhooking. When unhooked, the mainspring and wheel can be removed without displacing any other parts. The frame is connected by the usual pillars or posts and requires no change whatever in construction. The hook is made of sufficient strength to sustain the strain, and its great advantage is the facility it affords for readily connecting and disconnecting the mainspring. In some cases a piece of split tube, *w*, forming a bearing, is used, as shown in Fig. 7, the same being fitted on the pillar *K*. When the hook has been sprung around the pillar, this bearing is slipped endwise into the hook and expands fully in the opening of the same, and forms a bearing around the pillar. Its object is to prevent the hook being forced off from the bearing by any back action. To remove the hook the bearing is slipped out endwise away from it.

By the means before described the driving-wheel and mainspring can be readily removed and replaced without difficulty and loss of time, and without loosening the frame of the

clock-work, and without disarranging the gearing. The combined sleeve and arbor allows this separation to be made, and is much more effective than extra plates applied to the main frame to hold the journals of the arbor. The arbor can be screwed tight enough into the sleeve to insure perfect clamping of the parts together. If desired, a small pin or screw, *v*, Fig. 1, may be driven through a hole in the sleeve and arbor to attach them together and prevent unturning of the screw if the arbor is turned backward. In the form shown in Fig. 8 no such pin is required, and the ordinary pillar is used simply to hold the plates in position.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a clock, the combination, with the main wheel and spring, of a sleeve fitting between the sides of the clock-frame and provided with internal threads, and a winding-arbor having external threads fitting those of the sleeve, the ends of said arbor projecting and forming bearings in the frame and removable from said frame, to permit the subsequent removal of the sleeve and spring without detaching the sides of the frame, substantially as described.

2. In a clock, the combination, with the driving-wheel and mainspring, of a hollow sleeve fitting between the sides of the clock-frame, provided with an internal thread and shoulder, and an arbor having an external thread and shoulder fitting those of the sleeve, the ends of the arbor projecting and forming the bearings in the frame, as shown and described, and for the purpose specified.

3. In a clock, the combination, with the mainspring, of a hook attached to the free end thereof, and a split bearing resting on the pillar with which the hook connects, said bearing being capable of being slid into and out of the hook, as set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

EDWARD M. MOULTON.
MARK MOULTON.

Witnesses:

JACOB SPAHN,
R. F. OSGOOD.