(No Model.)

J. ZELLY.

WINDING AND SETTING ATTACHMENT FOR CLOCKS.

No. 381,603. Patented Apr. 24, 1888.

Fig. 1.

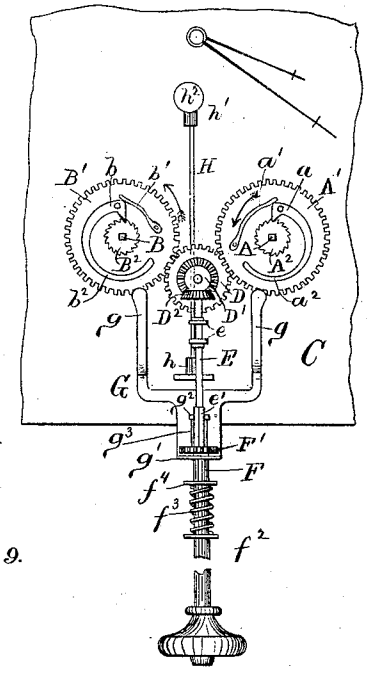


Fig. 2.

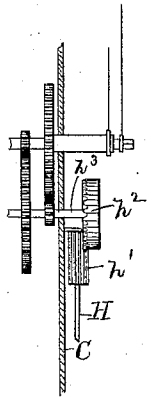
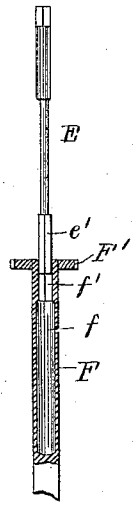


Fig. 3.



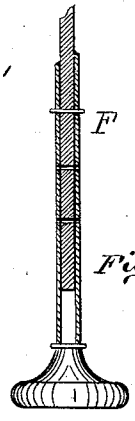


Fig. 9.

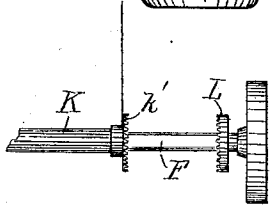
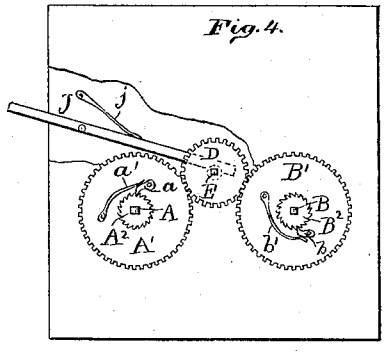


Fig. 7.

Fig. 4.



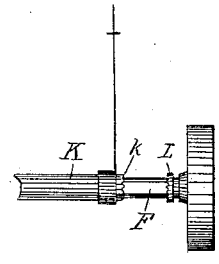
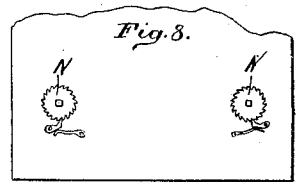


Fig. 6.

Fig. 8.



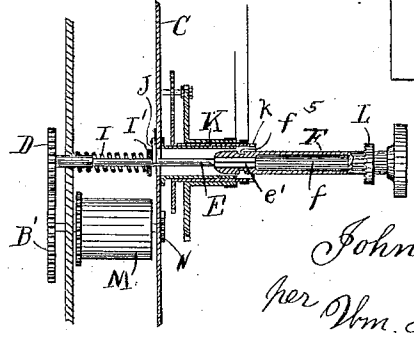


Fig. 5.

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UNITED STATES PATENT OFFICE.

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WINDING AND SETTING ATTACHMENT FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 381,603, dated April 24, 1888.

Application filed July 1, 1887. Serial No. 243,068. (No model.)

To all whom it may concern:

Be it known that I, JOHN ZELLY, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Winding and Setting Attachments for Clocks, of which the following is a specification.

The several features of my invention and the advantages arising from their use conjointly or otherwise will be apparent from the following description.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation of the lower part of a hanging clock provided with my improvements. Fig. 2 is a side elevation, on an enlarged scale, of part of the mechanism shown in Fig. 1. Fig. 3 is an enlarged view showing the winding-stem and upper part of the operating-rod. Fig. 4 is a rear view of a standing clock embodying my invention, part of the rear plate being broken away. Fig. 5 is a central sectional elevation of the clock shown in Fig. 4. Fig. 6 is a side elevation, on an enlarged scale, of the device for setting the hands, as shown in Fig. 5. Fig. 7 illustrates a modification of the device for setting the hands. Fig. 8 is a view of a portion of the front plate of the clock. Fig. 9 illustrates the construction of the operating-rod.

My device may be attached to any form of clock. For hanging clocks the handle for winding and setting the clock projects downward. For standing clocks the mechanism is modified so that the handle for winding and setting projects from the face of the clock. It has also been necessary to adapt the mechanism to clocks provided with a spring and barrel and those having a spring without the barrel. This latter form of mechanism is also applicable to clocks provided with weights. In clocks having a spring without a barrel the spring is wound by and in turn imparts its motion to the arbor which passes through its center. The device shown in Fig. 1 is adapted for use with such a clock.

A represents the central arbor of the time-spring, and B the central arbor of the striking-spring.

C represents the front plate of the clock.

On each of the arbors A and B is a loose toothed wheel, (respectively designated A′ B′,) both of which wheels gear into the idler D. The ratchets A^2 B^2 are rigidly attached to the arbors A and B and rest against the faces of the wheels A′ B′. The pawls *a b* are attached to the wheels A′ B′, and are held into the ratchets by the springs *a′ b′*. Each of the pawls *a b* terminates in a long tail, a^2 b^2, curving around the arbor. The idler D has rigidly attached to its face the beveled gear-wheel D′, which meshes with the beveled gear-wheel D^2 on the top of the stem E. The stem E is supported in suitable brackets, *e e*, projecting from the face of the plate C, and terminates in the squared end *e′*, which is larger in diameter than the stem above it. The stem E is received into the upper end of the rod F. The upper end of the rod F is provided with a chamber, *f*, which is large enough to allow the rod F to be rotated about the enlarged head *e′* of stem E. The entrance *f′* of the chamber *f* is contracted and squared, so as to fit the head *e′*. The rod F, projecting downward, passes through an opening in the bottom of the case, (not shown,) and the friction there is sufficient to support the rod F.

The yoke G is attached to the plate C by the pin g^2, which passes through the slot g^3, this arrangement allowing the yoke G to slide up and down on the plate C a limited distance. The arms *g* of the yoke G, when raised, impinge against the tails a^2 b^2 of the pawls *a b*, liberating the pawls from the ratchets. The yoke G is provided with the flange *g′*, through which the rod F passes. The collar f^2 is rigidly attached to the rod F, and the spiral spring f^3 rests on it and has above it the sliding collar f^4. The rod F is provided at its upper end with the gear-wheel F′. The stem H is placed behind the idler D, and is provided at its ends with the gear-wheels *h h′*, the stem being supported in suitable bearings projecting from the plate C, so that it can be rotated. The wheel *h′* meshes with the crown-wheel h^2, which is mounted on the arbor h^3 of one of the train of wheels which moves the hands.

The mode of operation of the device is as follows: When the parts are in the position

shown in Fig. 1, the clock is ready for winding. On rotating the rod F the stem E is similarly rotated, and through the bevel D′ D² and idler D imparts motion to the wheels A′ B′. If the rod F be rotated to the right, the wheels A′ and B′ will be turned in the direction of the arrows. The effect of this movement will be to wind the time-spring; but the striking-spring will remain unaffected, the pawl *b* slipping over the ratchet B². When the rod F is rotated in the opposite direction, the striking-spring will be wound. These springs may be wound either by a succession of short oscillatory rotations in opposite directions, or each spring may be completely wound separately. In unwinding the springs turn the ratchets in opposite directions, which motions would mutually stop each other if the wheels A′ B′ were left connected to the ratchets. To prevent this stoppage, they are disconnected by raising the yoke G, whose arms *g*, striking against the tails of the pawls *a b*, throw these pawls out of gear with the ratchets. The yoke G is raised by pushing the rod F, which causes the collar f^4 to strike against the flange *g′*, thus raising the yoke. The parts are so adjusted that raising the yoke G sufficiently to liberate the pawls *a b* does not compress the spring f^3.

When it is desired to set the hands of the clock, the rod F is pushed up until the wheel F′ meshes with the wheel *h*. In this position the head *e′* is received in the chamber *f*, and when the rod F is rotated no effect on the winding mechanism is produced; but this rotation of the rod F serves to put in motion the mechanism for moving the hands. In setting the hands the spring f^3 is compressed and serves to return the rod F to its proper position after the hands are set.

It is sometimes desirable to have the rod F quite long—in fact, several feet long. To accommodate this length and to adjust it to any desired length, it is preferably made in sections, which telescope together and are fixed in position by cross-pins, as illustrated in Fig. 9.

In the modification shown in Figs. 4, 5, and 8 the stem E is attached directly to the idler D and projects forwardly through the front of the clock. The spring I surrounds the stem E, and is headed by the movable collar I′. The rod F is much shorter in this form of device than in the other. Near its end it is provided with the annular groove f^5, and when it is pushed down on the stem E, compressing the spring I, the lever J is forced into the groove f^5 by the spring *j* and holds the rod F in its position. In this position of the rod F the enlarged head *e′* of the stem E is received in the chamber *f*, and, turning the rod F, produces no effect on the clock mechanism. When the lever J is raised, the rod F is released and thrown forward by the spring I. It may now be adjusted in the position shown in Fig. 5, with the contracted squared opening *f″* engaging the head *e′* when it is in position for winding the clock, which operation is the same with this form of device as with the other.

The device for setting the clock consists in providing the minute-hand arbor K with teeth *k* and the rod F with the crown-wheel L. To set the hands it then only becomes necessary to force the rod F down until the crown-wheel L engages with the teeth *k*, when by turning the handle of the rod F the hands may be set as desired. The device for setting the hands may also be arranged as shown in Fig. 7, where a crown-wheel, *k′*, is attached to the minute-hand, and the crown-wheel L is correspondingly enlarged in diameter. With this arrangement it is necessary to have the minute-hand rigidly secured to the arbor K.

When the springs are surrounded by drums M, as shown in Fig. 5, they are wound, as usual, by rotating the central shaft; but in unwinding the motion of the spring is imparted to the barrel, and not to the shaft, which latter is held stationary by the ratchet N. It is therefore unnecessary in this form of device to detach the ratchets A² B² from the wheels A′ B′.

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

1. The combination of the gear-wheels A′ B′, mounted loosely on the spring-arbors A B, means for connecting these wheels to and disconnecting them from the spring-arbors A B, idler D, meshing with wheels A′ B′, and rod for rotating idler D, substantially as and for the purposes specified.

2. The combination of the gear-wheels A′ B′, mounted loosely on the spring-arbors A B, means for connecting these wheels to and disconnecting them from the spring-arbors A B, idler D, meshing with wheels A′ B′ and having on its face beveled gear-wheel D′, and stem E, provided with beveled gear-wheel D², meshing with beveled gear-wheel D′, substantially as and for the purposes specified.

3. The combination of the gear-wheels A′ B′, mounted loosely on the arbors A B, ratchets A² B², rigidly attached to the arbors A B, pawls *a b*, provided with tails *a² b²*, springs *a′ b′*, idler D, meshing with wheels A′ B′, sliding yoke G, provided with arms *g g*, and means for operating idler D, substantially as and for the purposes specified.

4. The combination of the gear-wheels A′ B′, mounted loosely on the arbors A B, ratchets A² B², rigidly attached to the arbors A B, pawls *a b*, provided with tails *a² b²*, springs *a′ b′*, idler D, meshing with wheels A′ B′, beveled gear D′, attached to idler D, stem E, having beveled gear D², meshing with beveled gear D′ and provided with the enlarged squared head *e′*, rod F, provided with the chamber *f* and contracted squared opening *f′*, and sliding yoke G, provided with arms *g g* and flange *g′*, substantially as and for the purposes specified.

5. The combination of the crown-wheel *h²*, mounted on arbor *h³*, gear-wheel *h′*, stem H,

gear h, and movable rod F, provided with gear-wheel F′, spring f^3, and movable collar f^4, and a stop against which the collar f^4 impinges in compressing spring f^3, substantially as and for the purposes specified.

6. The combination of gear-wheels A′ B′, loosely mounted on spring-arbors A B, ratchets A^2 B^2 and pawls and springs, idler D, stem E, rigidly attached to idler D and provided with squared head e', spring I, provided with sliding collar I′, sliding rod F, provided with chamber f and contracted squared opening f', annular groove f^5, lever J, and spring j, substantially as and for the purposes specified.

7. In a device for setting and winding clocks, the combination of the sliding shaft having annular chamber, one portion of said chamber being contracted, with flat sides for engaging the sides of the winding-shaft and carrying pinion and idler D, and the wheels A′ B′, each provided with ratchet affixed to its shaft, pawls a b, and springs a' b', the sliding shaft carrying pinion for actuating the clock-hand shaft, the last-named pinion being located at the front of the clock, substantially as and for the purpose specified.

JOHN ZELLY.

Witnesses:
O. M. HILL,
W. P. GULICK.