V. HIMMER.

Striking-Clock.

No. 209,616. Patented Nov. 5, 1878.

Fig: 1.

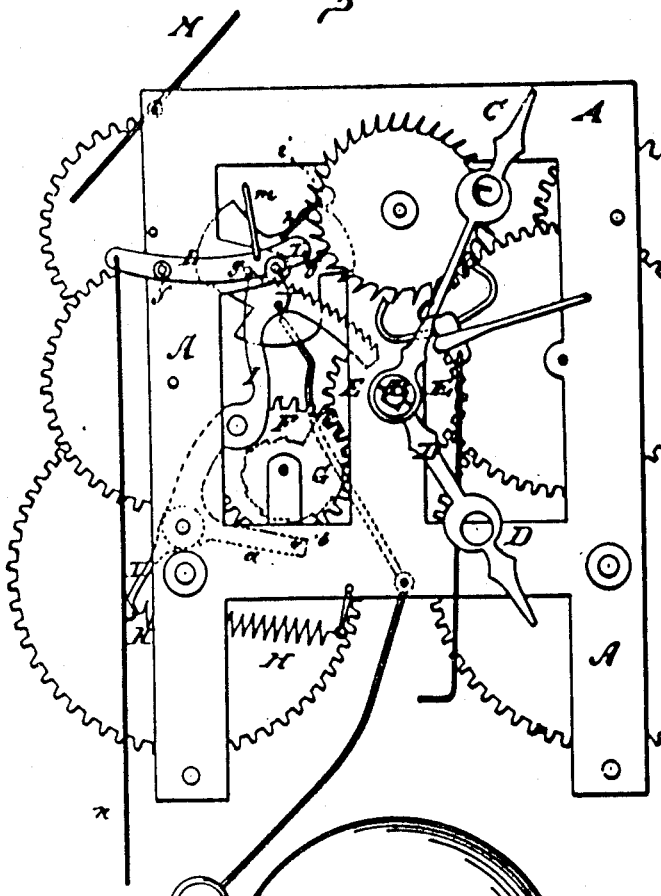


Fig: 2.

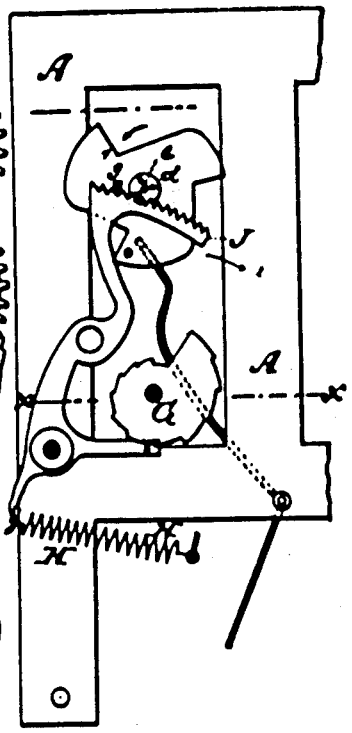


Fig: 3.

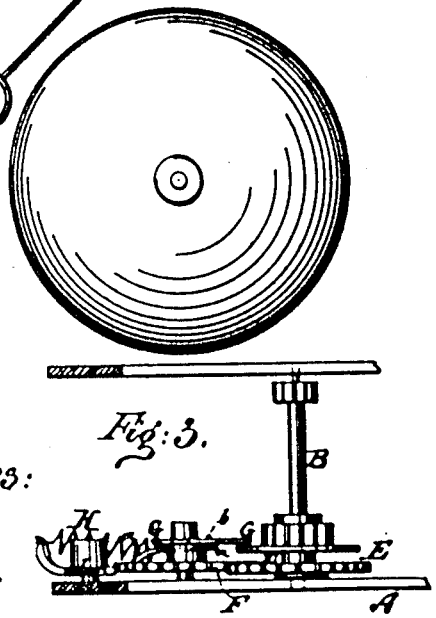
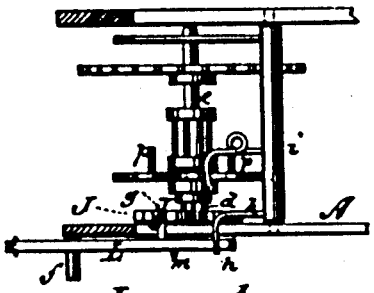


Fig: 4.



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IMPROVEMENT IN STRIKING-CLOCKS.

Specification forming part of Letters Patent No. 209,616, dated November 5, 1878; application filed March 19, 1878.

To all whom it may concern:

Be it known that I, VITALIS HIMMER, of New York city, county of New York, and State of New York, have invented an Improved Striking-Clock, of which the following is a specification:

Figure 1 is a face view of my improved striking-clock. Fig. 2 is a face view of a portion of the same, showing parts in different positions from what they are in Fig. 1. Fig. 3 is a horizontal section of the same on the line *x x*, Fig. 2. Fig. 4 is a top view, partly in section, of the same.

Similar letters of reference indicate corresponding parts in all the figures.

The object of this invention is to produce a striking-clock which will always strike the correct hours or parts of hours, even when the hands are set back.

The invention is more particularly intended as an attachment to the ordinary American clock-movements, and is of such simplicity and cheapness that it may be readily applied to ordinary American clocks without materially increasing their expense, and without making the clock-movements too complicated for ordinary clock makers or repairers to handle.

American striking-clocks, when made to permit the turning back of the hands without injurious interference with the striking mechanism, will always derange the relation between the striking part and the hands. For example, if a clock runs too fast and the hands are turned back so that the minute-hand will, in being turned back, pass beyond the figure 12 of the dial, the subsequent striking action of the clock will invariably be wrong. If a clock which struck 12 is, at quarter past 12, set back to a quarter before 12, it will afterward, when pointing to 12, strike 1.

My improved clock is so constructed that even when the hands are set back over the entire dial the clock may always strike exactly in accordance with the position of the hands.

My invention consists of the peculiar arrangement or combination of the parts hereinafter more fully specified.

In the accompanying drawing, the letter A represents the frame of an ordinary American striking-clock. B is the spindle which carries the minute-hand C, and upon which the hour-hand D is also placed. E is the toothed wheel in the clock-movement for imparting motion to the hour-hand. This toothed wheel is shown to be in gear with another toothed wheel, F, of the same size and number of teeth, so that the two wheels E and F will revolve with equal velocity, and so that their motions will correspond with those of the hour-hand. Upon the arbor of the wheel F is also mounted an ordinary snail-like plate, G, of the kind used in striking devices of various clocks, for regulating the number of strokes of the striking mechanism. By a spring, H, the pin *b* on an arm, *a*, of a lever, I, is sought to be brought in contact with the edge of the snail G, said arm *a* being a spring plate or bar capable of lateral spring motion, and provided at or near its end with the pin *b*, which is to be brought into proper contact with the edge of the snail-plate G, in manner shown in Fig. 2. The upper part of the lever I is formed into a toothed segment, J, which segment has twelve teeth for a clock of usual construction. In addition thereto, said segment may have one or three notches at one end, of less depth than the remaining notches, whenever it is desired to let the clock strike half-hours or quarter-hours. Into the toothed edge of the segment J mesh the teeth of a pinion, *d*, that is mounted upon the arbor *e* of the clock-movement, to which arbor rotary motion in the direction of the arrow 1 in Fig. 2 is imparted by the mainspring of the striking mechanism, whenever such striking mechanism is released for action. The arbor *e* is found in all American striking-movements, and also the pinion *d* thereon. The lever I, carrying the toothed segment J, is placed, as shown in the drawing, against the inner side of the frame A, so as not to project outside thereof, and the wheel F, likewise with its snail, is placed into the inner part of the frame, so that the parts which I have added to the striking mechanism are not in the way of the case or dial, or otherwise calculated to interfere with the convenient handling of the movement. In fact, the lever I is substantially in line with the wheel E, as indicated in Fig. 3.

L is a lever, which is at *f* pivoted to the frame A, and which carries a pin, *g*, that drops behind the edge or end of the toothed segment

J whenever the striking mechanism is at rest, as indicated in Fig. 1, or otherwise locks said segment. This lever L is held down by a projecting wire, *h*, that is formed on the oscillating arbor *i* of the movement, said wire being the substitute for that which, in the ordinary American striking-clocks, extends from the arbor *i* to the edge of the dividing or counting wheel.

In my mechanism the toothed segment J takes the place of the usual dividing or counting wheel of the American striking-clocks.

Another wire arm *j*, projecting from another oscillating arbor, bears against the under side of the lever L, and serves at the proper time to raise said lever L and release the lever I from the effect of the teeth or pin *g*. The wire *j* is the same which, in the ordinary American striking-clocks, is used to lift the wire *h* out of the counting-wheel. Now, whenever the hour-hand arrives in line with the figure 12 of the dial, (or, if the clock is to strike every quarter or half hour, arrives in position with that part of the dial at which the striking is to take place,) the wire *j* is moved in the usual manner of American striking-clocks—that is to say, upward—and thereby lifts the lever L and disengages the teeth *g* from the segment J. The spring H thereupon draws the lever I, so as to carry its arm *a* and the pin *b* thereon into contact with the edge of the snail G. The wire *j* having dropped away from the lever L, said lever L is pressed back into its normal position by the wire *h*, but does not lock the lever J before the same has been moved back from the position shown in Fig. 2, into which it was moved by the spring H, into the position shown in Fig. 1, which is its normal position. Into this normal position the lever I is moved by the action of the rotary pinion *d*, which, revolving, moves the toothed segment in the direction of the arrow 2 (shown in Fig. 2) until, finally, the normal position has been attained. The lever L then drops its tooth *g* into place for locking the lever I in its proper place.

As already stated, the position of the wheel F harmonizes with that of the hour-hand, and so does consequently also the position of the snail G, and therefore, whenever the clock is caused to strike, the lever I is moved more or less to the left, according as the snail has been turned to permit a greater or less degree of motion to said lever. The striking is produced by the return motion of the lever I to its normal position, and this return motion is shorter if the snail is so placed as to reduce the preceding motion of the lever I, and longer if the snail allows a larger motion of the said lever I. Thus at 12 o'clock the shortest part of the snail will be in line with the advancing pin *b*, and the lever will therefore have an opportunity of taking a full swing on its pivot, and consequently, when afterward it returns to its normal position, all of its twelve counting-teeth will be exposed to the action of the operating-pinion, and the clock will strike 12, whereas at 1 o'clock the snail will oppose its longest portion to the lever and reduce the motion of the said lever to the left, consequently also reducing its return motion to the normal position.

The striking-clapper itself is operated by pins *p* on the rotary arbor *e*, there being as many pins *p* on that arbor as there are teeth on the pinion *d*, that operates the segment.

The lever L is provided with an upwardly-projecting arm, *m*, which, when said lever is raised by the wire *j*, or, for repeating purposes, by a handle, *n*, (shown in the drawing,) will come into the way of the vane M, used on all striking mechanisms of American clocks, and arrest the motion of said vane, to prevent the striking mechanism from operating until after the lever L has first been moved down again under the influence of the wire *h*. The object of this stop *m* is to prevent the clock from striking until the handle *n* is let go, as otherwise the clock would strike during all the time that said handle was being pulled, and would consequently never indicate the correct number of strokes. Thus, for example, if it was about 11 o'clock and the rod *n* was pulled to let the clock repeat, the striking will take place as soon as the rod is let go, and consequently the number of strokes will be eleven. If, however, the lever L were not provided with the projecting arm *m*, the striking would commence from the moment that the lever L was being swung away from the segment, and would continue before the lever L is let go, and after that until the segment reached its normal position. Consequently the number of strokes would be more than eleven, and would not correctly indicate the position of the hour-hand.

I desire it to be understood that instead of mounting the snail G upon a separate wheel, F, it may, in some cases, be mounted directly upon the wheel E; but I prefer the arrangement which I have indicated.

I claim—

1. The locking-lever L, combined with the lifting-wire *j*, and with the depressing-wire *h* and segment J of a striking-clock movement, substantially as and for the purpose specified.

2. The locking-lever L, having the pin *g*, for stopping the motion of the toothed segment J, and provided with the projecting wire or arm *m*, for operating in combination with the vane M, substantially as herein shown and described.

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