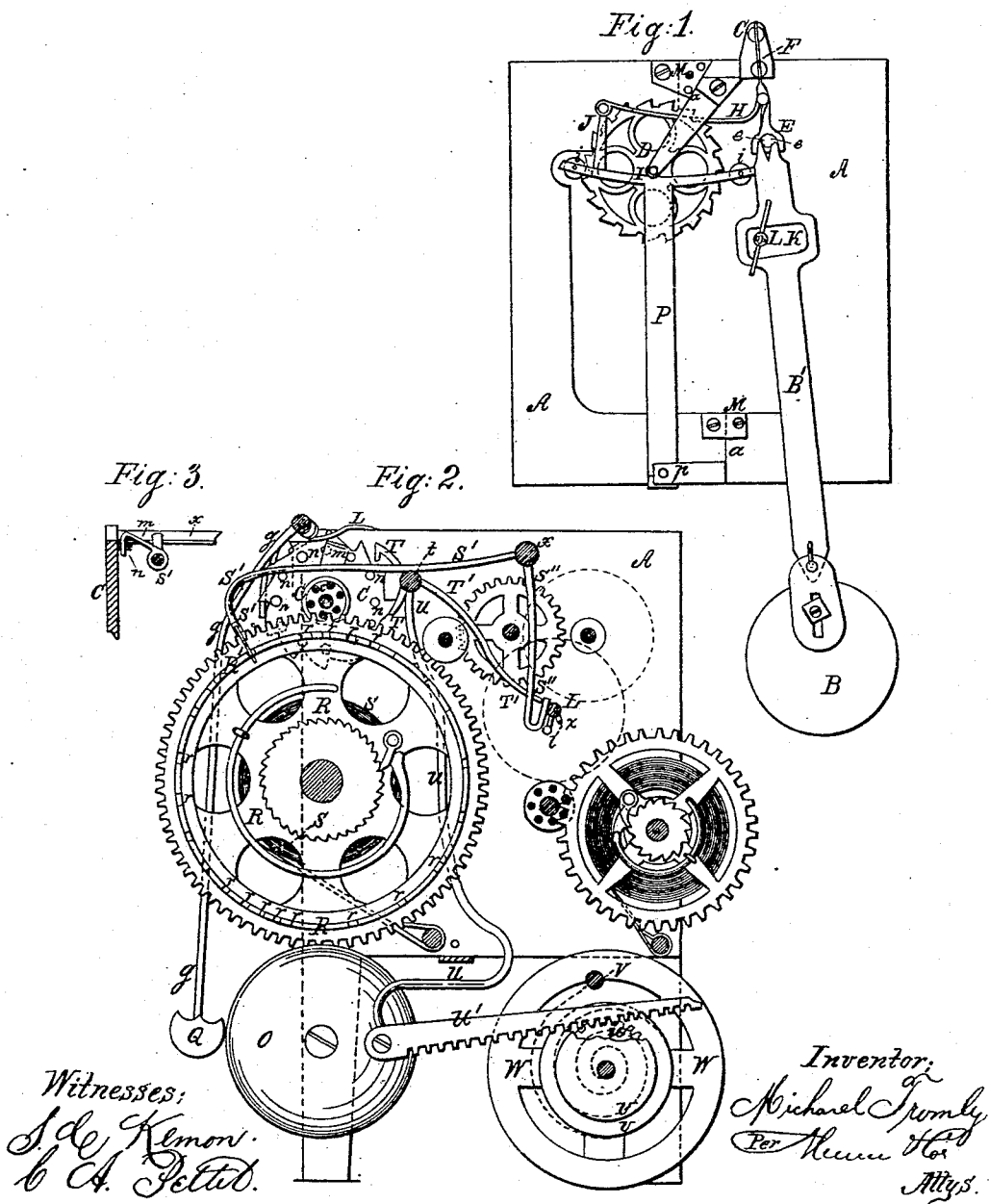


M. TROMLY.
Clock Movement.

No. 83,802.

Patented Nov. 3, 1868.



United States Patent Office.

MICHAEL TROMLY, OF MOUNT VERNON, ILLINOIS.

Letters Patent No. 83,802, dated November 3, 1868.

IMPROVEMENT IN CLOCK-MOVEMENT.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, MICHAEL TROMLY, of Mount Vernon, in the county of Jefferson, and State of Illinois, have invented a new and improved Clock-Movement; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front view of the escapement and pendulum.

Figure 2 is a longitudinal vertical section of the striking-apparatus.

Figure 3 is a detached view of the stop that regulates the striking of the hours.

This invention consists, first, in a novel apparatus, whereby the use of the winged fly-wheel, for regulating the striking-movement, is dispensed with; and secondly, in an improvement upon the escapement-apparatus, whereby a smoother and easier action is obtained than in the clock-movements heretofore in use.

In the drawings, A represents the frame that supports the clock-mechanism, B, the pendulum, and B', the pendulum-rod. The latter is, at its upper end, hung to a stirrup, E, which is suspended, by a spring, F, from a pin, G, and is connected, by a rod, H, to the pallet I, or to an arm, J, extending upward from the pallet.

The pendulum-rod, near its upper end, is cast with a loop, K, through which passes the spindle L, that holds the hands. The motion of the pendulum is limited by the length of the slot or loop K, so that if the clock be inclined very much to one side or the other, the pendulum will rest against the spindle, and be kept in position thereby, the loop and spindle together operating as a guard, thus, to protect the pendulum from injury.

In order that the pendulum shall hang more firmly, and swing more steadily, and with less resistance from the air, I make the rod in the form of a thin flat plate, of considerable width, and attach it to the stirrup by means of two or more hooks, *e e*.

In constructing my escapement, I support the pallet I upon a swaying rod, P, pivoted at *p*, and provide it with two smooth friction-rollers, *i i*, one at each end of the pallet.

This arrangement of parts causes the escapement to act more smoothly, easily, and uniformly, than in any apparatus for the purpose heretofore brought into use.

The striking-apparatus is shown very fully and clearly in fig. 2. It consists of a bell, O, hammer Q, spring S, and great wheel R, the latter having a rim, R', spaced off for the twelve hours, with notches *r r*, and operating in connection with a stop, *s*', which sinks into the notches when the hour is struck, and thus stops the action of the mechanism.

Thus far the striking-apparatus is constructed in the common and well-known manner, and needs no particular description.

My improvement consists in the devices used in connection with it, and which I will now describe in detail, by which the action of the striking-apparatus, above described, is rendered uniform and perfect, to a degree never heretofore attained.

The great wheel R gears into a lantern, *c*, the shaft of which carries an escapement-wheel, C. As the great wheel is rotated by the main-spring S, it actuates the scape-wheel C, and would cause the latter to revolve at a high speed, were its speed not controlled by a pallet, T. From the axis *t* of the pallet, a rod, U, extends down below the other machinery, where it is attached to a bar, U', having a rack on its under side, which gears into a lantern or cog-wheel, *w*, attached to this side of a balance-wheel, W. As the scape-wheel C moves, it operates the pallet T and sways the rod U, communicating a rocking motion to the balance-wheel W. Y is a pin above the rack-bar U', to prevent its being accidentally thrown out of gear with the wheel *w*. In order to bring the pallet "into beat" with the balance-wheel, the rack may be shifted along to right or left on the cog-wheel *w*, and a coiled spring, *v*, may be connected to the shaft of the balance-wheel, operating in connection therewith in a manner somewhat similar to that of the hair-spring of a watch.

It is evident that this provides a uniformly-acting and perfectly-adjustable escapement for the regulation of the striking-apparatus; which obviates the multiplication of gear-wheels, and the use of the fly-wheel, by which the motion of such apparatus has heretofore been controlled.

The means for operating the striking-apparatus at the proper time are very simple and efficient. The stop *s*' is made in the form of a fixed arm, projecting from a rock-shaft, X. Another fixed arm, *s*', projects downward from said shaft to the side of the hand-spindle L, and is actuated by a dog, *x*, on the spindle, in such a manner that just before the hour is struck the stop *s*' is lifted out of the notches *r r*, leaving the great wheel free to run, so far as the stop is concerned. It cannot run, however, without actuating the scape-wheel C and the pallet T, and the latter is prevented from moving, just at this time, by an arm, T', which also projects to the side of the spindle L, and at this moment is so in contact with a dog, *x*', attached to the spindle, that it stops the movement of the pallet, and, in consequence thereof, restrains the apparatus from striking. At the precise moment that the hands reach the hour, the arm T' slips off of the dog *x*', and, there being no longer anything to prevent the great wheel from revolving, the hour is struck.

The striking is effected by the teeth of the scape-wheel striking and lifting the rod *g*, which supports the hammer. When they slip from under it, the hammer falls by its own weight, and strikes the bell. It may be assisted, if thought necessary, by a spring, *z*, which will cause it to strike with greater force.

The stop *s*', in addition to its means for acting upon the great wheel R, may be provided with an arm, *m*,

which will act as a stop against pins, *n n*, projecting from the side of the scape-wheel C. In this case the rod S' simply becomes a double stop, one jaw acting to stop the wheel R, the other acting to stop the scape-wheel C. The chances of striking erroneously, in consequence of any temporary derangement of the machinery, are thereby greatly diminished.

It will be observed that, as the dog *x'* presses against the arm T', the turning of the spindle L causes it gradually to force the arm T' back, or to the left, as seen in the drawing, and with it the rod U and rack U', rocking the balance-wheel to the left also. The moment the dog passes the arm T', the balance-wheel swings back to the right, and the movement of the pallet T is thus commenced, without any effort whatever on the part of the mechanism above. By this means power is saved, and an easy, uniform, and unfailing operation of all the parts is effectually secured.

For convenience in taking out the machinery that actuates the time-movement, on the right-hand side of the clock, I make the face-plate of the supporting-frame A in two parts, connected together by buttons or splices, M M', the adjacent edges of the two parts being shown at *a a*. The part to the right of the line *a* can be independently removed, exposing all the machinery behind it, the part to the left remaining all the while in position undisturbed.

When the face-plate is not constructed in more than one piece, all the striking-machinery must be disturbed and exposed in order to get at the time-movement. The latter cannot be even oiled or cleaned without interfering with the former. This has been no great source of inconvenience heretofore, because the striking-movement required as much oiling and cleaning

as the time-movement, and even more, and therefore had to be opened quite as often; but my improved movement, not being geared up till a small feather fly-wheel can control it, as heretofore, but running with nearly the whole force of the main-spring, will require neither oiling nor cleaning, except to save the parts from unnecessary wear, and therefore need not be opened for years. It will, in fact, run till it wears out, without having its action in any degree impeded by the want of oil, the hardening of the lubricant, or the accumulation of dust and dirt. It is, therefore, a matter of great convenience to have the face-plate made in two parts, so that the striking-apparatus need not be disturbed in oiling or cleaning the time-movement.

Having thus described my invention,

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

1. The arrangement of the escapement-wheel D, the pallet I, with its rollers *i i*, oscillating on the rod P, and connected, by the link H, with the pendulum-rod, substantially as shown and described.

2. The combination of the balance-wheel W, spring *r*, rack-bar *u'*, rod *u*, pallet T, and scape-wheel C, when employed to regulate and control the action of a striking-apparatus for clocks, substantially as described.

3. The arrangement of the dogs *x' x'*, arms S'' T', rock-shafts X *t*, stop S', and pallet T, substantially as set forth.

To the above specification of my improvement, I have signed my hand, this 8th day of May, 1868.

MICHAEL TROMLY.

Witnesses:

CHAS. A. PETTIT,
SOLOM C. KEMON.