

991,236.

Patented May 2, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

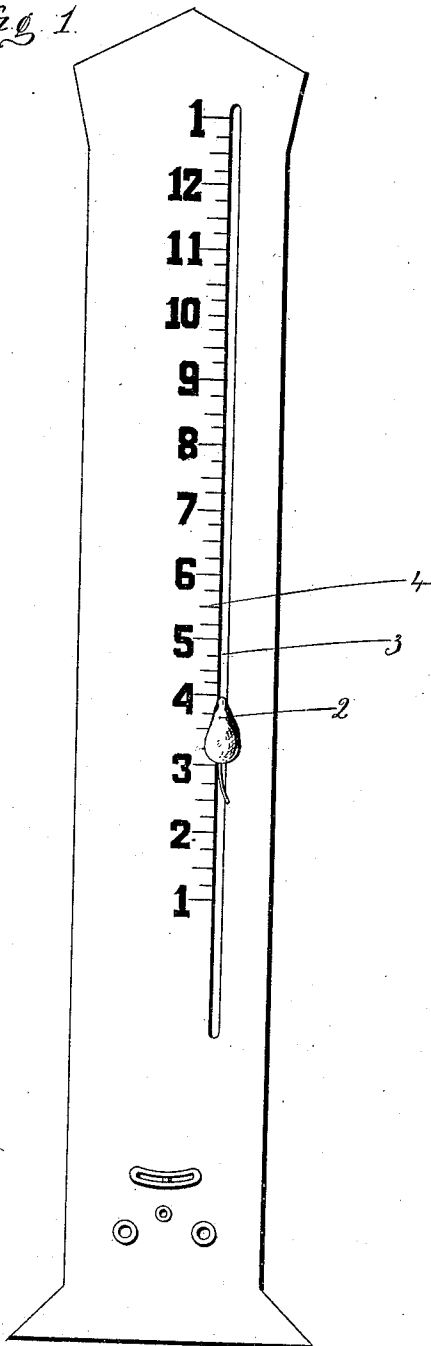
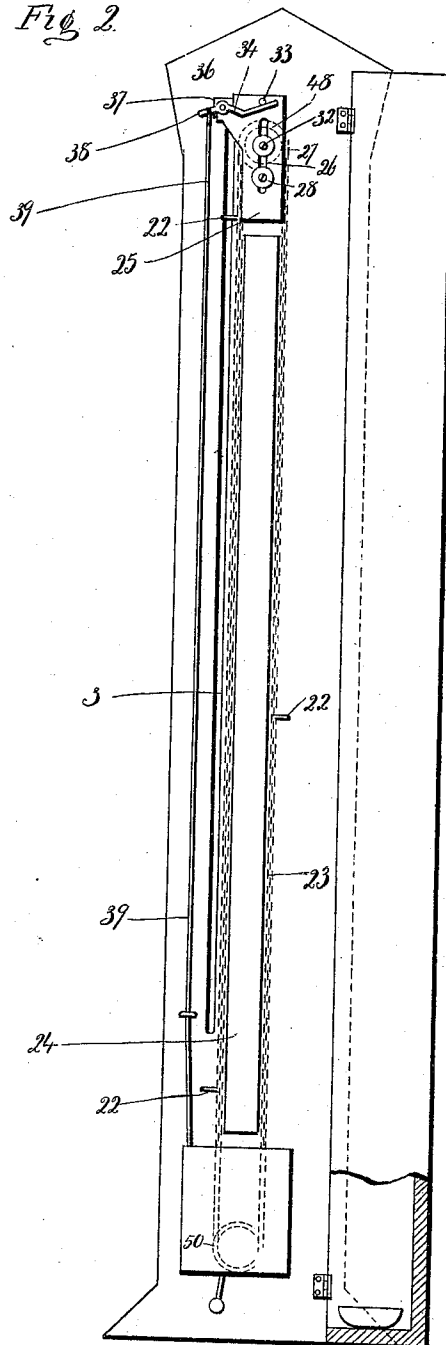


Fig. 2.



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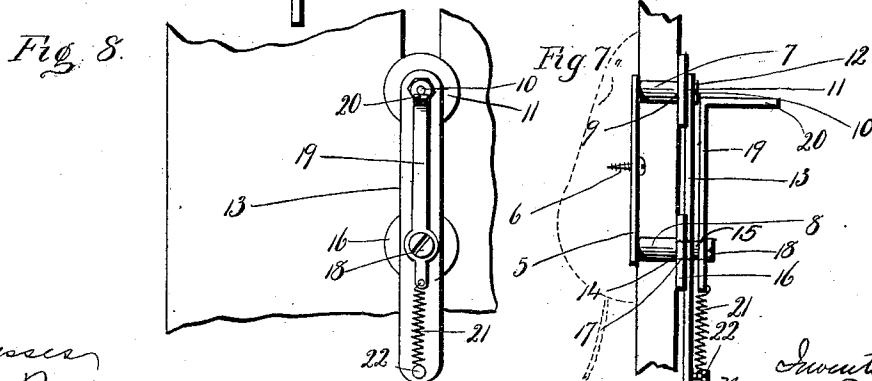
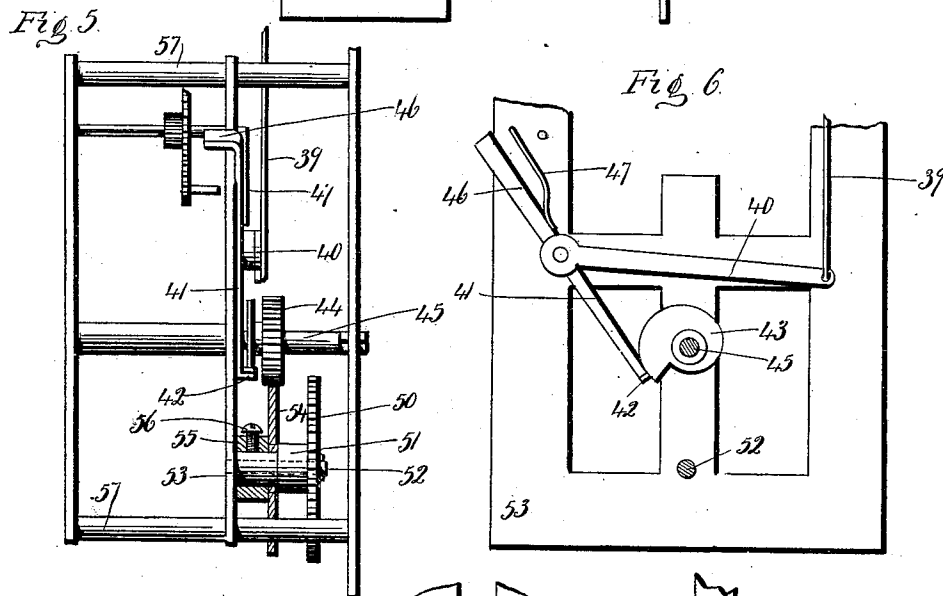
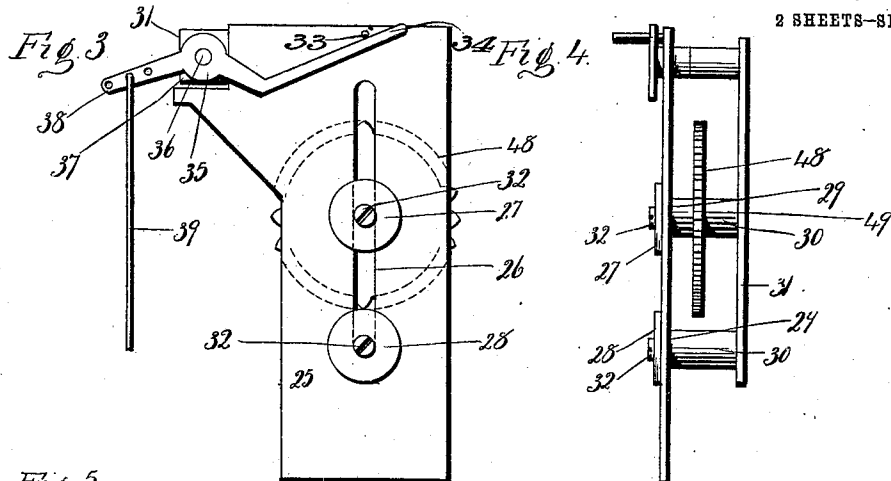
W. E. PORTER.
CLOCK.

APPLICATION FILED OCT. 23, 1909.

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2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

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CLOCK.

991,236.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed October 23, 1909. Serial No. 524,172.

To all whom it may concern:

Be it known that I, WILSON E. PORTER, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Clocks; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a view in front elevation of a "mouse clock" constructed in accordance with my invention. Fig. 2 a side view of the clock showing its door which forms its dial, open. Fig. 3 a detached view in inside elevation of the throw-off plate located at the top of the dial, showing also the sprocket-wheel for the upper end of the sprocket-chain. Fig. 4 a side view of the same parts. Fig. 5 a view in side elevation of the time-movement with particular reference to showing the adjustable character of the lower sprocket-wheel. Fig. 6 a broken view of the time-movement showing the operating-lever employed for actuating the throw-off mechanism. Fig. 7 a broken view partly in section and partly in side elevation showing the mounting of the mouse in the dial and its yielding suspension-lever. Fig. 8 a view of the same parts in inside elevation.

My invention relates to an improvement in that class of clocks known to the trade as "mouse clocks" from the fact that time is marked by a mouse which, so to speak, climbs a line of figures reading from the bottom up, and running from 1 to 12 with an additional 1 at the top above the 12. When the clock strikes one, the mouse falls to the figure 1 at the bottom of the line, and so illustrates the old rhyme,—

"Dickory, dickory dock,
The mouse ran up the clock,
The clock struck one,
The mouse fell down,
Dickory, dickory dock."

The object of my present invention is to produce at a low cost for manufacture, a clock of the above description constructed with particular reference to simplicity, to fewness of parts, and to reliability of performance.

With these ends in view my invention

consists in a clock having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention, I employ a dummy mouse 2 made of wood or other material and painted white or other color. This mouse is placed over a long, narrow vertical slot 3 formed at one side of the vertical center of a long, narrow vertical clock dial 4 upon which figures from 1 to 1 are arranged in a vertical line, beginning with 1 at the bottom and running up to 12 and terminating in 1 at the top above the twelve. These figures are regularly spaced and separated by the ordinary graduations of a clock face. The figure 1 above the 12 is necessary as the time must be told from 12 to 1 as well as from 1 to 2. The said mouse 2 is provided upon its flat inner face with a narrow plate 5 fastened to it by a screw 6 and provided at its opposite ends with guide-posts 7 and 8 which extend through the slot 3 and guide the mouse by their engagement with the side walls of the slot. The said post 7 is reduced at its inner end to form a shoulder 9 and provided with a threaded stem 10 which receives a retaining-washer 11 bearing against, and riding up and down upon the inner face of the clock dial 4 at points adjacent to the slot 3 therein. A nut 12 applied to the stem 10 holds the washer 11 in place, as well as the upper end of a plate 13 corresponding to, but longer than the plate 5, the upper end of the plate 13 being perforated to pass over the stem 10 before the application thereto of the nut 12 which thus secures the upper end of the plate 13 as well as the washer in place.

The inner end of the post 8 is reduced in diameter to form a shoulder 14 and a short neck 15 for the reception of a washer 16 corresponding to the washer 11 aforesaid. The neck 15 also passes through a perforation 17 in the lower end of the plate 13. The post 8 instead of being provided with a threaded stem like the post 7, is counter-bored and threaded at its rear end for the reception of a shouldered screw 18 the shoulder at the outer end of which forms a bearing for a suspension-lever 19 formed at its upper end with a suspension-arm 20, and having its lower end connected by a spiral spring 21 with a stud 22 in the lower

end of the plate 13. The parts just described provide for mounting, guiding and suspending the mouse. The said suspension arm 20 is successively engaged with lifting fingers 22 projecting laterally from a sprocket-chain 23 arranged upon the back of the clock-dial so as to travel upon opposite sides of a strip 24 applied thereto. The fingers 22 are suitably spaced upon the chain 23 according to the length of the chain and the speed at which it is moved so that any finger will move from the figure 1 at the bottom of the clock-dial to the figure 1 at the top thereof in just twelve hours. From this it follows that the mouse which is successively lifted by the fingers 22, will take just twelve hours to climb the entire length of the line of figures on the clock-dial.

To fulfil the requirements of the old rhyme, the mouse must be tripped so as to be allowed to fall back to his starting point as the clock strikes one, or when he reaches the end of his upward journey to the top of the clock-dial. For this purpose, I employ a vertically movable throw-off plate 25 formed with a vertical guide-slot 26 and held in place by washers 27 and 28 against shoulders 29 upon the inner ends of posts 30 located one above the other in a frame-plate 31 secured to the back of the clock-dial, the inner ends of the two posts 30 being counterbored for the reception of screws 32 which hold the washers 27 and 28 in place. At its upper end the plate 25 carries a throw-off pin 33 for coaction with the inner arm 34 of a lever 35 hung upon a stud 36 mounted in an arm 37 offsetting from the upper end of the frame-plate 31, the outer arm 38 of the lever 35 being provided with a series of holes for the reception of the hooked upper end of an operating wire 39 the lower end of which is connected with the outer end of a supplemental lever 40 formed integral with the lifting lever 41 of the strike mechanism of the time-movement, and turned at its end to form a finger 42 which rides upon a twelve-hour snail cam 43 carried by a pinion 44 upon the center arbor 45 of the time-movement which is secured to the back of the lower end of the dial and which needs no detailed description. The levers 40, and 41 are also formed integral with a warning-lever 46 engaged by a spring 47 but needing no description. The upper of the two studs 30 carries a sprocket-wheel 48 having a sleeve 49 and receiving the upper loop of the sprocket chain 23 which as it travels turns the wheel 48 upon the stud 30.

The lower loop of the sprocket-chain 23 passes over a sprocket-wheel 50 made rigid with a shouldered sleeve 51 turning upon a stud 52 mounted in the back plate 53 of the time-movement. Upon the inner end of the sleeve 51 I mount a driving wheel 54 meshed into and driven by the pinion 44

aforesaid, and having a sleeve 55 carrying a set screw 56 which is normally used to bind the sleeves 51 and 55 together so as to insure the rotation of the sprocket-wheel 50 and the driving-wheel 53 as one piece. However, by loosening the screw 46 the sprocket-wheel 50 may be freely turned without disturbing the driving-wheel 54 so as to permit the tripping-fingers 22 carried by the chain 23 to be properly positioned with respect to the mouse in setting up the clock.

It will be understood from the foregoing, that the sprocket-chain 23 is moved sufficiently once in twenty-four hours to lift the mouse from figure 1 at the bottom of the series of figures twice in that time, and also that through the strike-mechanism the tripping plate 25 will be lifted and let fall once every hour, although it is lifted and let fall idly twenty-two times out of the twenty-four. Or in other words, the plate 25 is ineffectively operated at every hour except 1 in the afternoon and 1 at night. Under this construction, the mouse crawls up the dial, so to speak, at a regular pace. As he nears the end of his journey the suspension-arm 20 of the suspension-lever 19 is lifted under the cam or bevel 56 of the plate 25 which is being lifted just ahead of the mouse. Then when the finger 42 of the strike-lever 41 drops off the drop of the cam 43 the lever 40 is allowed to lift so as to release the lever 31, the arm 34 of which drops so as to permit the plate 25 to drop. When the plate 25 drops, its cam or bevel 56 engages with the arm 20 of the lever 19 and turns the same upon its stud 18 until the arm 20 has been pushed off and disengaged from a lifting finger 22 on the chain 23. The mouse now being unsupported, falls to the bottom of the slot, and there meets another lifting finger 22 in readiness to engage with the arm 20 of its lever 19 so that the mouse immediately begins a return trip to the top of the dial, and so on.

It will be observed that in the construction described, the entire mechanism is secured directly to the back of the wooden dial. I have already specified that the plate 31 is secured directly to the back of the upper end of the dial. The time-movement which may be of any approved construction, is carried by pillars or posts 57 mounted in a plate 58 secured directly to the back of the dial at the lower end thereof.

I do not in this application broadly claim the operation of a throw-off mechanism located at the upper end of the clock-case by a time-mechanism located at the lower end of the clock-case, by means of a connecting wire constituting a connection between the two mechanisms independent of the sprocket-chain relied upon for lifting the mouse, that combination being the subject of broad

claims in my co-pending application filed on the same date herewith and serially numbered 524,171.

I claim:—

- 5 1. In a mouse clock, the combination with a dial having a vertical slot, of a dummy mouse, a suspension-device carried by the mouse, a time-movement located adjacent to the lower end of the said slot, a throw-off mechanism located adjacent to the upper end of the said slot, a sprocket-chain driven by the time-movement and provided with lifting-fingers for coacting with the said suspension-device to lift the mouse from the lower to the upper end of the slot, and connection independent of the said chain, extending between the throw-off mechanism at the upper end of the said slot and the center-arbor of the time-movement at the lower end of said slot, whereby the throw-off mechanism is operated to dislodge the mouse from the chain when the mouse reaches the limit of its upward excursion.
2. In a mouse clock, the combination with a dial having a vertical slot, of a dummy mouse applied to the front of the dial through the said slot by which its travel is guided, a suspension device carried by the mouse, a time-movement located adjacent to the lower end of the said slot, a sprocket-chain driven by the time-movement for lifting the mouse the height of the slot, and a throw-off mechanism located adjacent to the upper end of the slot and comprising a vertically movable throw-off plate and a throw-off lever by means of which lever the plate is lifted and dropped, and connection between the said throw-off lever and the time-movement, whereby the said plate is dropped for releasing the mouse from the chain at one o'clock, permitting the mouse to drop back and begin over again.
3. In a mouse clock, the combination with

a dial having a vertical slot, of a dummy mouse applied to the front of the dial over the said slot by which it is guided in its travel, a suspension-device carried by the mouse, a time-movement located at the lower end of the dial and including a cam revolved once an hour and a lever operated thereby, a sprocket-chain continuously driven by the time-movement, a throw-off mechanism located adjacent to the upper end of the said slot, and connection between the throw-off mechanism and the said lever, whereby the throw-off mechanism is operated hourly, and therefore at one o'clock in the morning and at one o'clock at night when the mouse reaches the limit of its upward movement from which limit it then falls back to begin over again.

4. In a mouse clock, the combination with a dial having a vertical slot, of a dummy mouse, a suspension-device carried by the mouse, a time-movement located at the lower end of the slot, a cam upon the center-arbor of the said movement, a lever operated by the said cam, a sprocket-chain continuously driven by the time-movement and provided with fingers co-acting with the suspension-device for lifting the mouse, a vertically movable throw-off plate located adjacent to the upper end of the slot and co-acting with the said suspension-device when the mouse reaches the limit of its upward excursion, a throw-off lever for lifting the said plate, and an operating wire connecting the said throw-off lever with the lever operated by the cam of the time-movement.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WILSON E. PORTER.

Witnesses:

GEORGE D. SEYMOUR,
CLIFFORD J. REED.