

970,198.

E. E. DUNGAN.
CLOCK.
APPLICATION FILED APR. 26, 1910.

Patented Sept. 13, 1910.
2 SHEETS—SHEET 2.

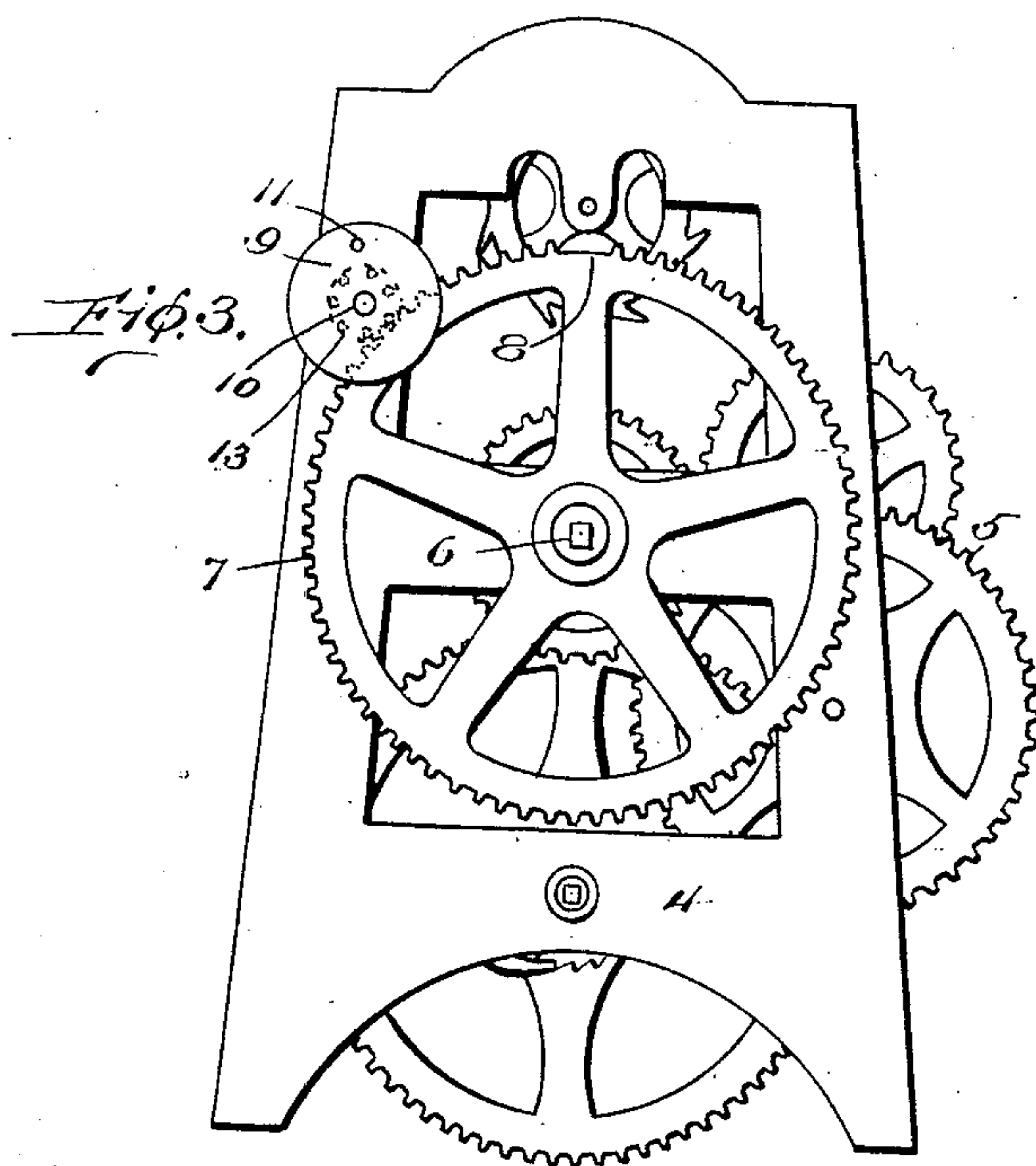
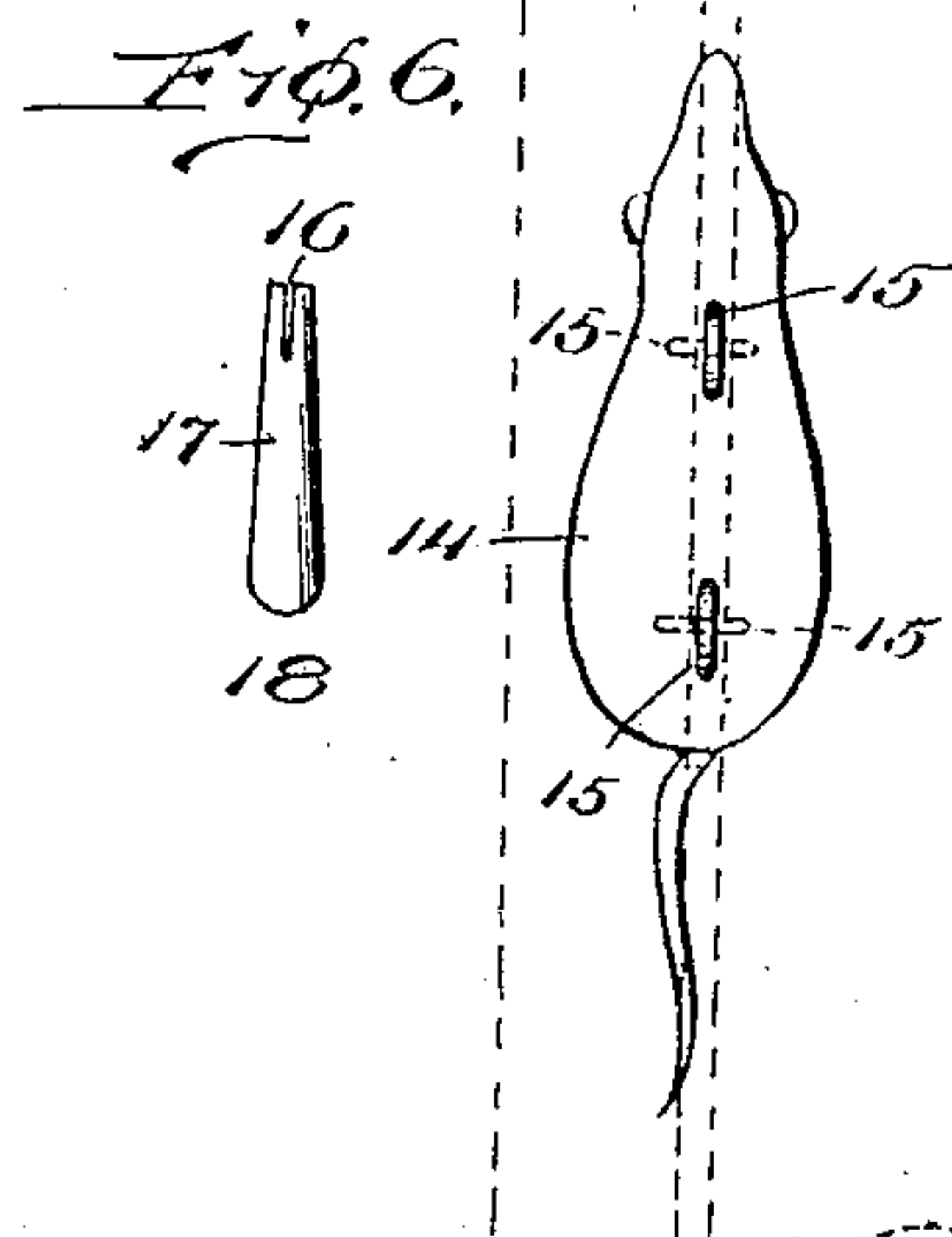
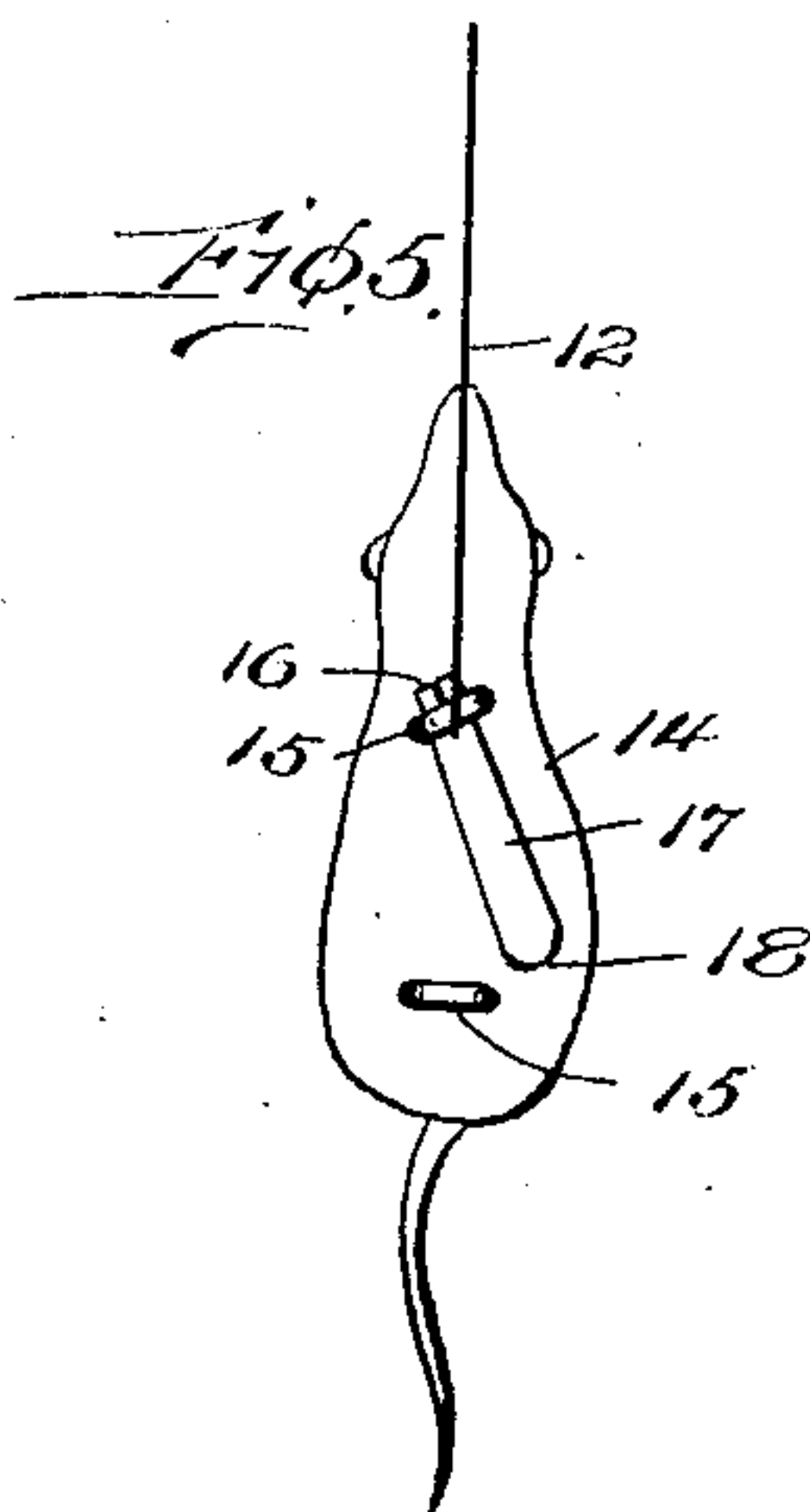
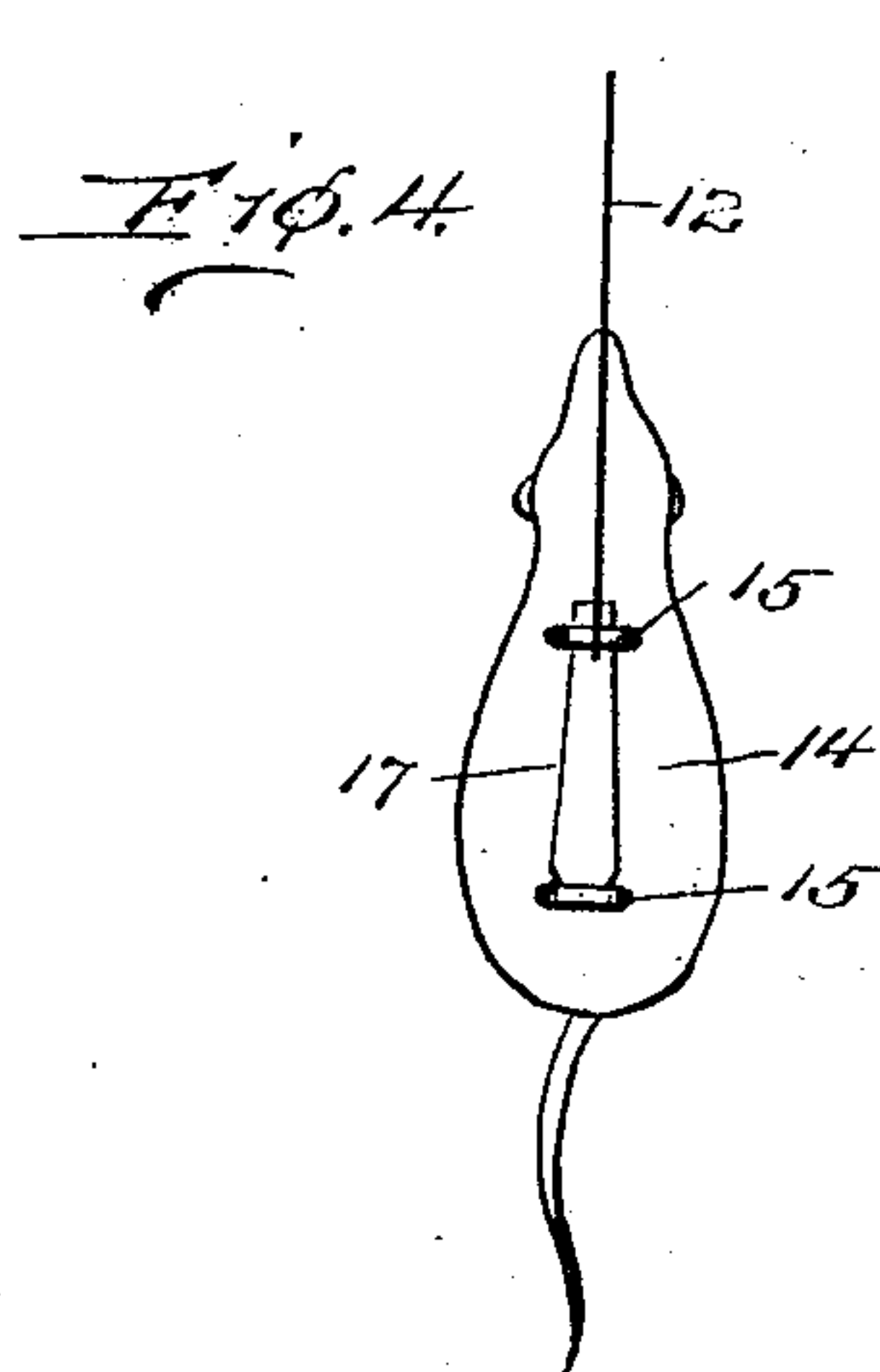


Fig. 7.



Witnesses
J. M. Fowler Jr.
A. Strauss

By

Inventor
Elmer E. Dungan

E. A. Bond
Attorney

UNITED STATES PATENT OFFICE.

ELMER ELLSWORTH DUNGAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO CHARLES M. KLUMP, OF PHILADELPHIA, PENNSYLVANIA.

CLOCK.

970,198.

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To all whom it may concern:

Be it known that I, ELMER E. DUNGAN, a citizen of the United States of America, and resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Clocks, of which the following is a specification.

This invention relates to clocks, and more especially to that class of clocks wherein a figure or pointer or movable object is carried over the face of a vertical scale indicating hours and divisions thereof, and wherein when a predetermined hour is reached, the figure or pointer or movable object is automatically returned to a starting point.

The present invention has for its object among others to provide a simple and cheap, yet efficient attachment to the works of an ordinary clock whereby the desired result is attained.

It has for a further object to provide simple and efficient means for affixing the figure or movable object to the cord or ligament by which it is carried. I employ a mutilated gear wheel affixed to the hour arbor of an ordinary clockwork, the same meshing with the teeth of a pinion on the shaft of a drum mounted on the frame of the clockwork and around this drum is wound a cord attached to the figure or movable object. As the cog wheel revolves, the cord is wound upon the drum until the toothless portion of the gear wheel comes to a point opposite the pinion when, by reason of non-engagement, the weight of the figure or movable object causes the same to drop, unwinding the cord and as soon as the next tooth of the gear wheel comes into engagement with the pinion, the cord again commences to be wound up. I dispense with complicated mechanism and am enabled to employ the same mechanism for any height of clock, as well as for all styles thereof.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a front elevation of a clock constructed in accordance with my present

invention. Fig. 2 is a vertical section from front to rear as on the line 2—2 of Fig. 1. Fig. 3 is an enlarged face view of the clock mechanism with my attachments applied thereto. Fig. 4 is a rear view of the figure or movable object with the cord attached. Fig. 5 is a similar view showing the securing pin just as it is about to be sprung into locking position. Fig. 6 is a detail of the locking pin. Fig. 7 is a detail showing the manner of placing the guiding means for the movable object through the slot in the top face.

Like numerals of reference indicate like parts throughout the several views.

Referring to the drawings, 1 represents the front of a vertical clock case the back of which is preferably movably attached to the body of the case, as for instance by hinges 2, so as to permit ready access to the interior of the case and the inclosed mechanism when desired.

3 is a vertical slot in the front of the case, upon one side of which is a vertical series of figures or marks beginning at 1 at the bottom and running consecutively to the number 12, and terminating with the numeral 1 at the top. These designate hours, and between each two figures the spaces may be divided by marks indicating any desired divisions of the hours; in the present instance, these marks indicate the halves and quarters of hours, five minutes, etc.

Suitably supported within the upper end of the case is a frame 4 in which is supported an ordinary clock mechanism 5, minus the hands. On the hour arbor 6 of this clock mechanism, I affix, by friction or any other means, a gear wheel 7 having one or more teeth removed, as shown at 8 in Fig. 3, so as to leave a small untoothed portion.

9 is a drum preferably flanged, as seen in Fig. 2, so as to prevent the cord from being wound off the end thereof, and this drum is mounted on a stub shaft 10 supported in the framework 4 at any desired point, preferably in the location shown in Figs. 2 and 3 where it is out of the way of the rest of the clock mechanism. Fast to this drum at a suitable point, as for instance as indicated at 11 in Fig. 3, is one end of a cord or other suitable ligament 12 adapted to be wound upon said drum as the gear wheel 7 revolves and to be unwound therefrom at a

predetermined time, as will be hereinafter explained. Fast upon the shaft 10 and movable with the drum 9 is a pinion 13 with which the gear wheel 7 meshes. The other end of the ligament 12 is designed to be connected with a figure or movable object 14, which, in this instance, is in the form of a mouse. While the end of the ligament may be attached to the figure 14 in a variety of ways, I have shown in the present instance a simple and efficient means which I have found well adapted for the purpose. It comprises two screw eyes 15 screwed into the back of the figure, the said screw eyes being turned so that their eye portions extend lengthwise of the figure 14, so as to be readily inserted through the slot 2 in the face 1, as indicated by full lines in Fig. 7, and then turned transversely of the length of the slot, as indicated by dotted lines in said figure and in full lines in Figs. 2, 4 and 5, so as to prevent outward displacement of the figure, the shanks of the screw eyes moving in the slot 3 and guiding the figure in its movements. After the screw eyes have been inserted through the slot 3, the bottom eye is first turned horizontally, as seen in Fig. 5, and then the end of the ligament 12 is inserted in a slot 16 in a pin 17, the smaller end of which is then inserted in the eye of the upper screw eye which is turned at an angle to the perpendicular, as seen in Fig. 5, and then the pin which has a rounded end 18 is turned into a position lengthwise of the figure 14, bringing the upper eye 15 into its crosswise position, the rounded end 18 of the pin springing into the lower eye 15 and the ligament is firmly held. Any tendency of endwise movement of the figure with relation to the ligament serves to more firmly hold the ligament in place.

In operation, the hour arbor revolves once in twelve hours, and any desired combination or multiple of cogs may be given to the gear wheel 7 and pinion 13 to raise the cord and movable object 14. When, once in every twelve hours, the untoothed portion 8 of the gear wheel reaches a point opposite the pinion 13, there will be no contact with the latter and consequently, nothing to restrain the reverse movement thereof and, consequently, of the drum 9, so that the weight of the indicator will cause it to drop back, unwinding the ligament 12 from the drum or spool 9 until it is all run off or unwound and the indicating figure 14 reaches the starting point. The gear wheel continuing to revolve will soon again contact with and start to revolve the pinion 13, so as to again rewind the cord upon the drum and raise the indicator. A proper adjustment of the point of attachment of the cord to the drum or spool cares for and prevents any possibility of cog collision at the beginning of the rewind, the weight of the figure acting

as a plumb bob to bring the teeth of the pinion in proper and uniform place and position for the rewind at each descent of the mouse.

The pin 17 will serve effectually without the slot in the end thereof, the end of the ligament being bound firmly between the pin and the adjacent surface of the screw eye.

From the above, it will be seen that I have devised an efficient mechanism for the purpose stated which can be readily applied to a conventional form of clock movement, and while the structural embodiment of the invention as herein disclosed is what I at the present time consider preferable, it is apparent that the same is subject to changes, variations and modifications in detail without departing from the spirit of the invention or sacrificing any of its advantages. I, therefore, do not intend to restrict myself to the details of construction hereinbefore set forth, but reserve the right to make such changes, variations and modifications as come properly within the scope of the protection prayed.

In Fig. 1 I have shown in dotted lines a bell and a bell hammer within the case, the hammer arm being in position to be engaged by the upper screw eye on the mouse so that as the mouse approaches the top of the slot, the hammer arm is moved into the upper dotted position and when the mouse descends in a manner hereinbefore described, the hammer falls into its position indicated by the lowermost dotted lines and strikes one stroke of the bell. While this is desirable, it is obvious that the same may be omitted without destroying the efficiency of the clock in the other respects noted.

What is claimed as new is:—

1. In a clock, a frame, a vertical scale, an object movable thereover, a mutilated gear wheel attachable to the hour arbor of a clock, a drum revoluble by said gear, a ligament passed over said drum and connected with said object, and a pinion movable with said drum and meshing with said gear wheel.

2. In a clock, a vertical scale, an object movable thereover, a frame, a clock mechanism mounted therein, a mutilated gear mounted on the arbor of the clock, a drum, a ligament connected with the drum and with said object, and a pinion on the shaft of the drum and movable therewith, said pinion coöperating with the gear to raise the drum, and when coincident with the mutilated portion of the gear allowing said object to fall by gravity.

3. In a clock, a vertical scale, a movable object movable thereover, means for moving said object, a ligament, and wedge means for connecting said ligament to said object.

4. In a clock, a vertical scale, a movable object movable thereover, means for mov-

ing said object, a ligament, screw eyes in
said object, and a fastening pin engageable
at one end with said ligament and one of
said eyes and at the other end with the other
5 eye.

5. In a clock, a vertical scale, a movable
object movable thereover, means for mov-
ing said object, a ligament, screw eyes en-
gaged in said object, and a fastening pin
10 having one end engageable with said liga-
ment and one eye and the other end adapted
to be sprung into engagement with the other
eye to turn the first-named eye into a posi-
tion parallel with the other of said eyes.

15 6. In a clock, a clock face having a ver-

tical slot, an object movable along said slot,
a ligament, and means for moving the object
along the slot and to automatically release
the same to return by gravity to its lower-
most position, and swiveled means in said 20
object for attachment of the ligament and
for allowing of the application of the said
object to the slot.

Signed by me at Philadelphia, Pa., this
25th day of April 1910.

ELMER ELLSWORTH DUNGAN.

Witnesses:

CHAS. BENTLEY COLLINS,
WILLIAM J. KENNEDY.