

No. 771,665.

PATENTED OCT. 4, 1904.

W. E. PORTER.
CLOCK.

APPLICATION FILED APR. 16, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1

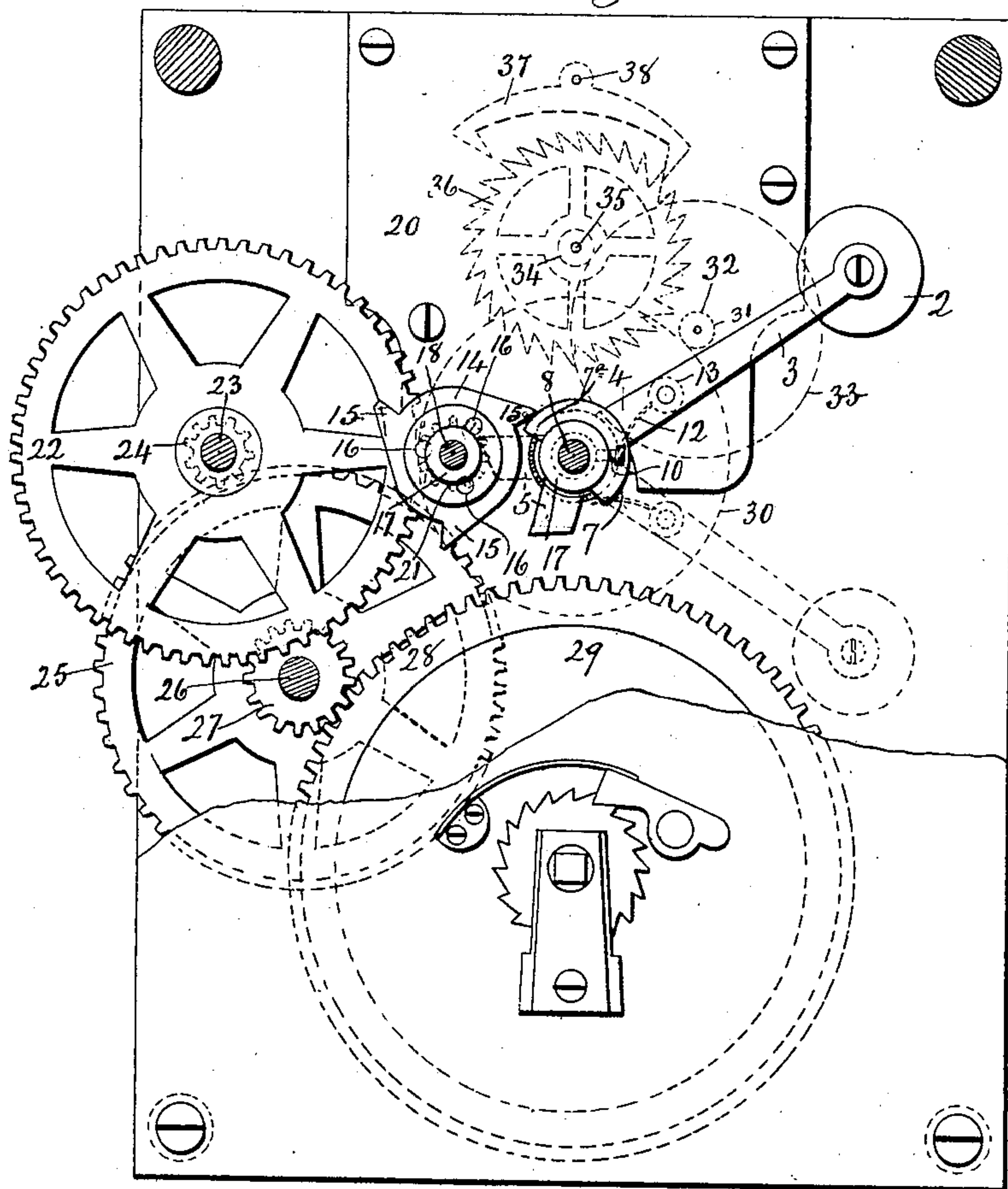
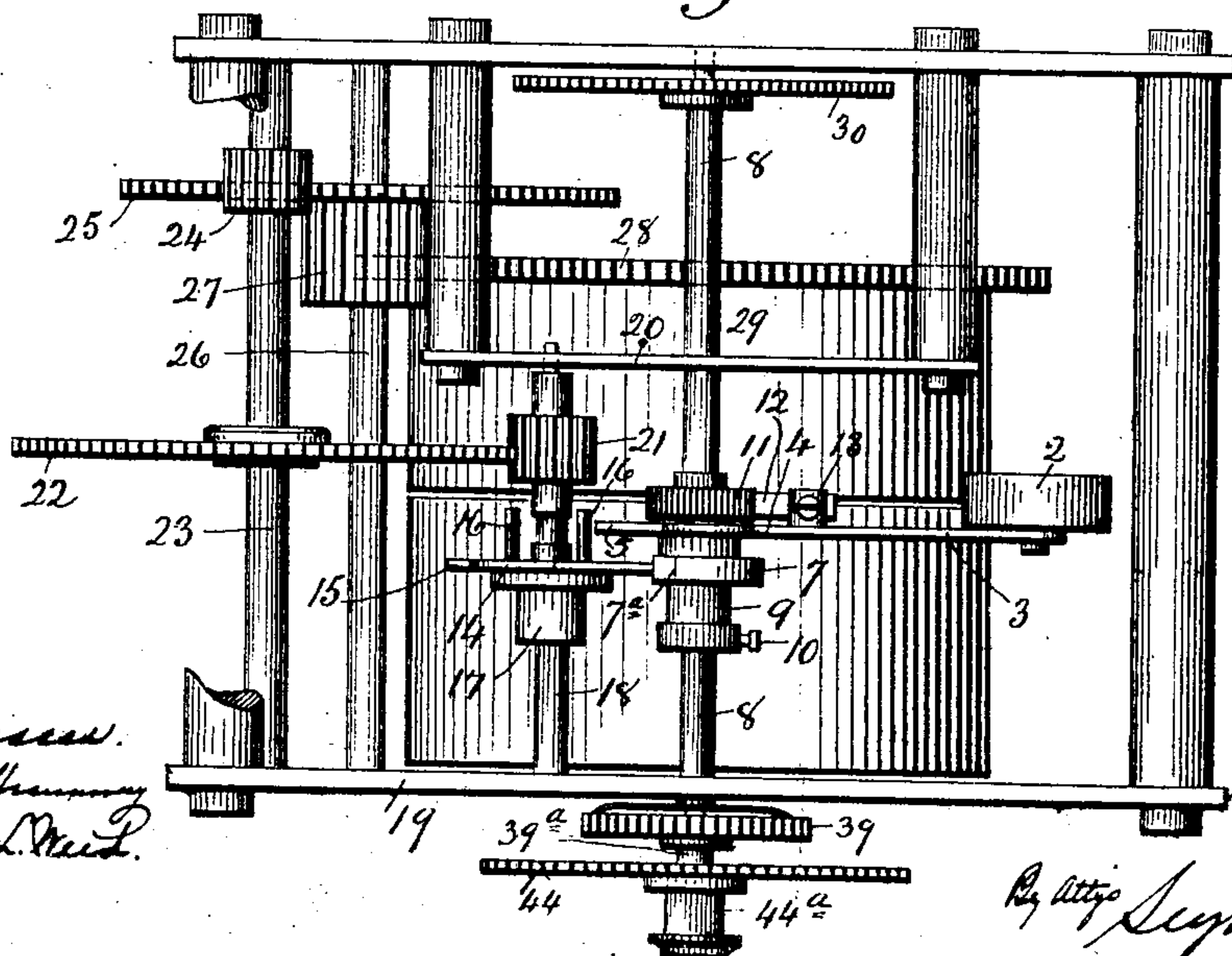


Fig. 2



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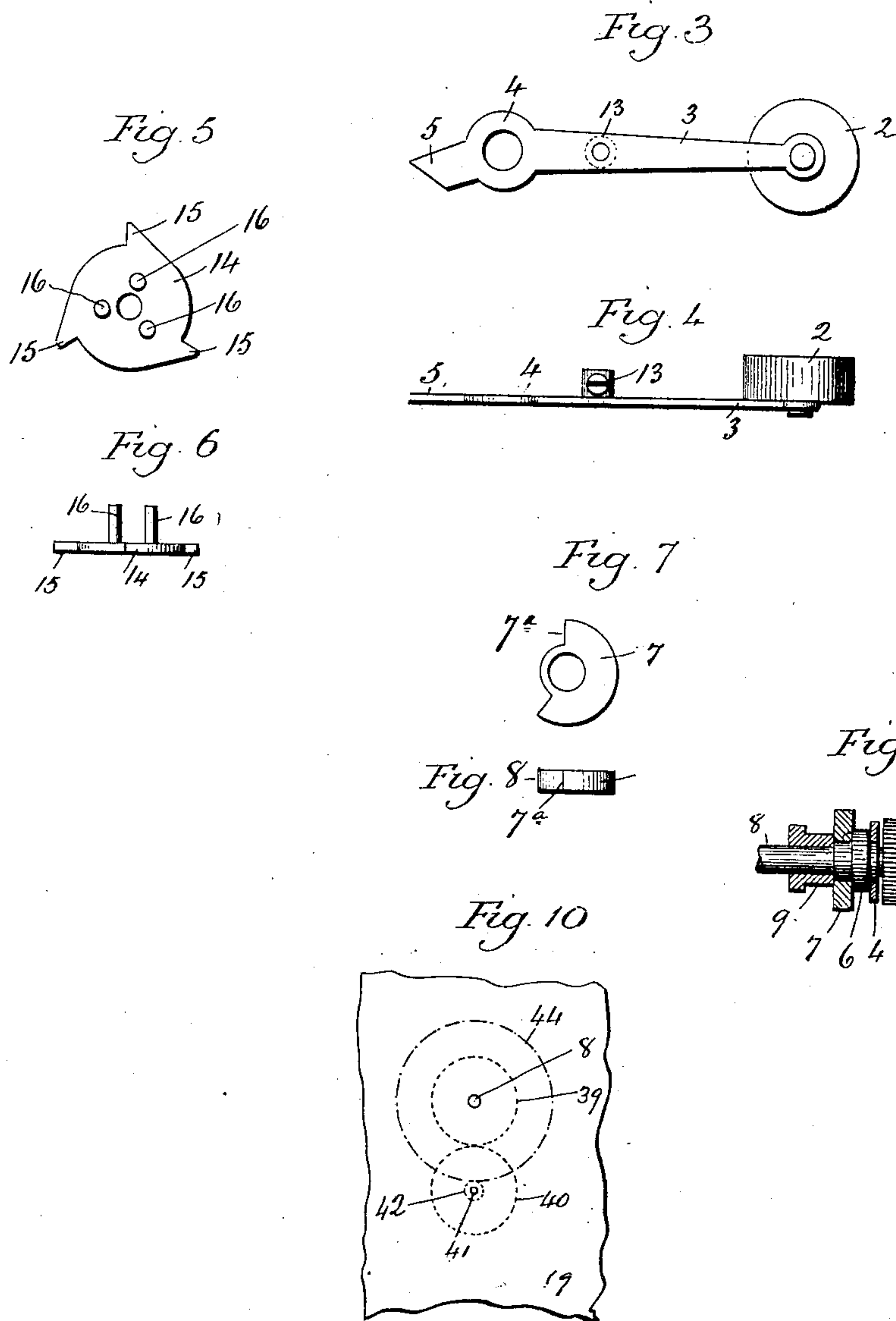
By Atty. Seymour & Co.

W. E. PORTER.
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APPLICATION FILED APR. 16, 1904.

NO MODEL.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILSON E. PORTER, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO NEW HAVEN CLOCK CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

CLOCK.

SPECIFICATION forming part of Letters Patent No. 771,665, dated October 4, 1904.

Application filed April 16, 1904. Serial No. 203,454. (No model.)

To all whom it may concern:

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

Figure 1, a view of a clock embodying my invention with the upper portion of the front movement-plate broken away; Fig. 2, a plan
15 view of the clock with the escapement mechanism removed; Fig. 3, a detached view in elevation of the weight and the two-armed lever which carries the weight and periodically lifts it; Fig. 4, a detached plan view thereof;
20 Fig. 5, a detached view, in rear elevation, of the let-off wheel; Fig. 6, a detached plan view thereof; Fig. 7, a detached view in elevation of the let-off cam; Fig. 8, a plan view thereof; Fig. 9, a broken view, partly in elevation
25 and partly in section, showing the two-armed lever, the let-off cam, the ratchet-wheel, and the adjustable collar mounted upon the center arbor; Fig. 10, a broken view, in front elevation, in the nature of a diagram to show the
30 time-train.

My invention relates to an improvement in remontoir clocks of the type in which the prime motor is employed to raise a secondary motor in the form of a weight the descent
35 of which is used to drive the time-train, the object being to produce a simple, durable, and reliable mechanism constructed with particular reference to reducing the friction of its remontoir features to the minimum and to pro-
40 longing the running-time of the clock on one winding.

With these ends in view my invention consists in certain details of construction and combination of parts, as will be hereinafter de-
45 scribed, and pointed out in the claims.

In carrying out my invention as herein shown I employ a weight 2, secured to the outer end of the long weight-carrying arm 3 of a two-armed lever 4, the short arm 5 of

which forms a weight-lifting or "weight- 50 kicking" arm, as will be described later on. The said two-armed lever 4 is fitted upon one shoulder of a doubly-shouldered hub 6, the other shoulder of which has fitted upon it a let-off cam 7, having a drop 7^a, and the said
55 hub being mounted upon the center arbor 8 so as to turn loosely thereupon, whereby the lever and cam are rocked in a vertical plane and as though made in one piece with the hub. The said lever and cam are held in place
60 upon the said arbor by means of an adjustable collar 9, having a set-screw 10, and by a fine-toothed ratchet-wheel 11, the said collar and wheel being secured to the said arbor on opposite sides of the said hub. The said wheel
65 has its teeth engaged by a pawl 12, mounted in a stud 13, secured to the inner face of the arm 3 of the lever 4. Preferably the pawl 12 will be constructed as shown and described in my pending application, filed February 5,
70 1904, and serially numbered 192,110, though this is not essential. The power of the weight 2 as it descends under the action of gravity operates through the pawl 12 and ratchet-wheel 11 to turn the center arbor 8.
75

The let-off cam 7 coacts with a cam-like let-off wheel 14, having, as shown, three teeth 15
80 arranged at equal distances from each other and located in the plane of the cam 7, so as to ride upon the periphery thereof. However, the number of the teeth 15 may be varied as desired. The said wheel 14 is also provided, as shown, with three weight-lifting or weight-
85 kicking pins 16, arranged symmetrically with the said teeth 15 and projecting inwardly into position to strike the upper edge of the short arm 5 of the two-armed lever 4. The wheel 14 is by preference made of steel and secured to a hub 17, mounted upon a let-off
90 arbor 18, journaled at its forward end in the front movement-plate 19 and at its rear end in the intermediate movement-plate 20. The said arbor 18 carries a pinion 21, meshed into by a large gear-wheel 22 on an arbor 23, carrying a pinion 24, meshing into a gear-wheel
95 25 on an arbor 26, carrying a pinion 27, meshing into the main wheel 28 on the spring-barrel 29, which needs no description further

than to say that it contains the mainspring, the power of which is periodically let off by the riding of the teeth 15 of the let-off wheel 14 over the drop 7^a of the let-off cam 7, where-
 5 by the said wheel 14 is permitted to make one-third of one revolution under the full power of the mainspring. The parts just described constitute an impact weight-raising mechanism for raising the weight by a sudden impulse
 10 to which the weight is free to respond untrammelled by any gearing, whereas in earlier remontoir clocks the weight employed to drive the time-train was raised by the power-train through the medium of gearing, and therefore
 15 gradually and always to a predetermined height.

The escapement mechanism and dialwork employed may be of any approved construction and will be varied according to the size and
 20 character of the clock in which my invention is embodied. As herein shown, the center wheel 30, mounted upon the rear end of the center arbor 8, meshes into a pinion 31 on an arbor 32, carrying a wheel 33, meshing into a pin-
 25 ion 34 on an arbor 35, carrying an escapement-wheel 36, coacting with a verge 37 on a verge-arbor 38. The escapement-train just above described corresponds to the ordinary escapement-train and does not need further
 30 description. It is so well known that it has been omitted from Fig. 2 of the drawings, and to avoid complication some of its pinions and wheels have been shown only diagram-
 35 matically in Fig. 1. As to the time-train, the projecting forward end of the center arbor 8 carries the minute-wheel 39, which meshes into the dial-wheel 40, which is mounted on a short stud 41 and carries a pinion 42, meshing
 40 into the hour-wheel 44, which has the usual socket 44^a for the attachment of the hour-hand, which is not shown. The minute-hand (not shown) is attached to a sleeve 39^a, extend-
 45 ing forward from the minute-wheel 39 through the hour-wheel 44 and the socket 44^a thereof. This time-train may of course be varied without affecting my invention.

In the operation of my improved clock the descent of the weight 2 under the action of gravity drives the time-train at a uniform rate.
 50 As the weight descends the let-off cam "turns under," so to speak, the particular let-off tooth 15 that happens to be engaged with it. The let-off wheel being under the full power of the mainspring is swiftly turned through a third
 55 of one revolution the instant the said tooth drops off the drop 7^a of the let-off cam and causes the corresponding weight-kicking pin 16 to strike the upper edge of the short arm 5 of the two-armed lever 4, whereby the same
 60 will be so swiftly turned on the center arbor 8, with the effect of lifting the weight, that the term "kicking" has seemed aptly descriptive

of this action, which will not always be the same, as the weight will be kicked higher at some times than at others, owing to the "run- 65
 ning down" of the mainspring or to other causes. However, variations in the height to which the weight is kicked will not affect the time-keeping qualities of the clock, though it will slightly vary the periodicity of the let- 70
 off of the mainspring; but that is immaterial.

I would have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such departures therefrom as fairly fall 75
 within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a clock, the combination with a power- 80
 train, of a time-train, a weight for driving the time-train, and an impact weight-raising mechanism interposed between the power-
 train and the weight and comprising a let-off 85
 cam operated by the said weight, a let-off wheel coacting directly with the said cam and driven by the power-train and means operat-
 ing by impact to suddenly raise the weight when the said wheel is let off by the said cam.

2. In a clock, the combination with a power- 90
 train, of a time-train, a lever having a weight-carrying arm and a weight-lifting arm, a weight carried by the said weight-carrying arm, a let-off cam connected with the said lever and operated thereby, a let-off wheel 95
 driven by the power-train and having teeth engaging with the let-off cam, and pins turning with the said wheel and engaging with the weight-lifting arm of the lever to turn
 the same and lift the weight. 100

3. In a clock, the combination with a power-
 train, of a time-train including a center arbor, a two-armed lever mounted so as to swing in a vertical plane upon the said center arbor, a weight carried by the long arm of the said 105
 lever for driving the time-train, a pawl carried by the said long arm of the lever, a ratchet-wheel mounted upon the said center arbor and engaged by the pawl, a let-off cam connected with the lever and turning therewith, 110
 a let-off wheel driven by the power-train and coacting with the said cam, and pins turning with the let-off wheel and coacting with the short arm of the said lever for kicking the weight into an elevated position when the 115
 power-train is released by the let-off cam.

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

WILSON E. PORTER.

Witnesses:

LUCY A. SULLIVAN,
 M. E. SMITH.