

No. 781,505.

PATENTED JAN. 31, 1905.

P. C. ENGLE.
TIMEPIECE.

APPLICATION FILED APR. 25, 1904.

2 SHEETS—SHEET 1.

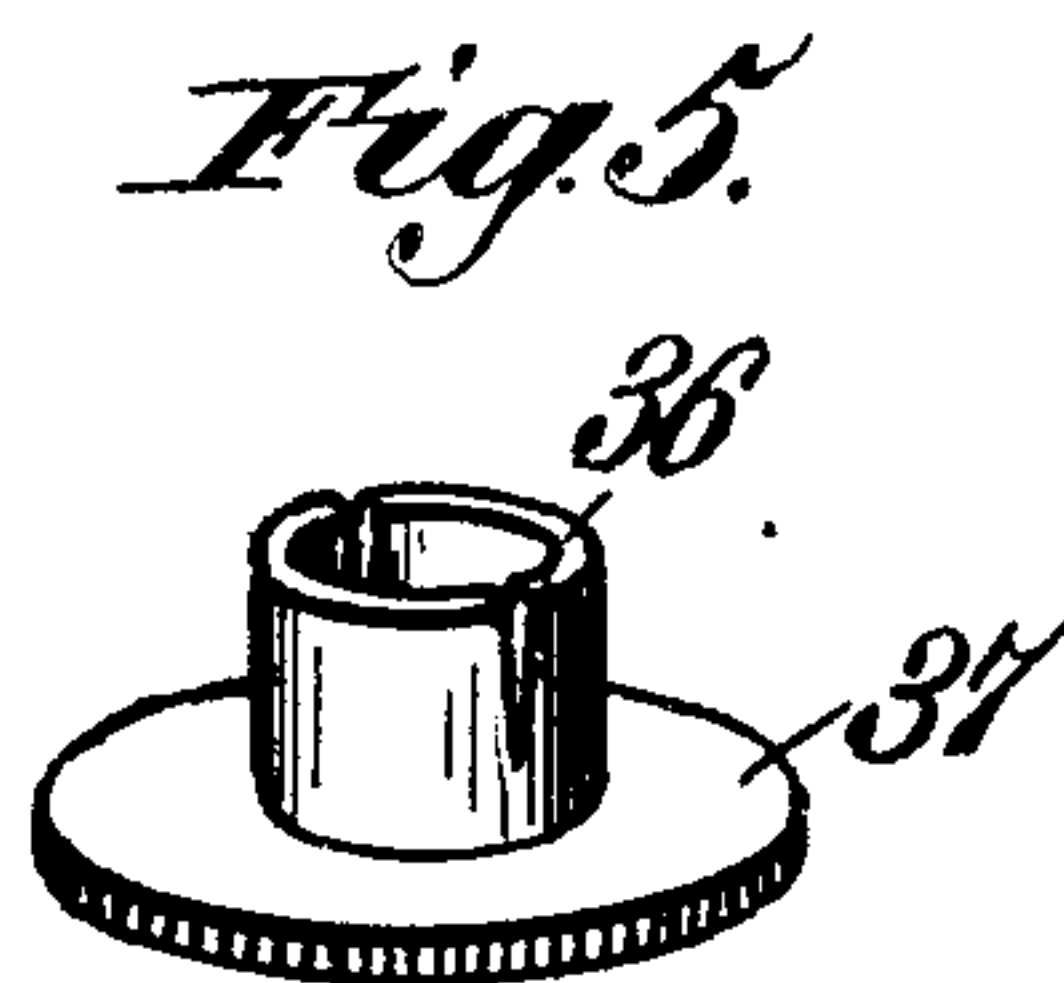
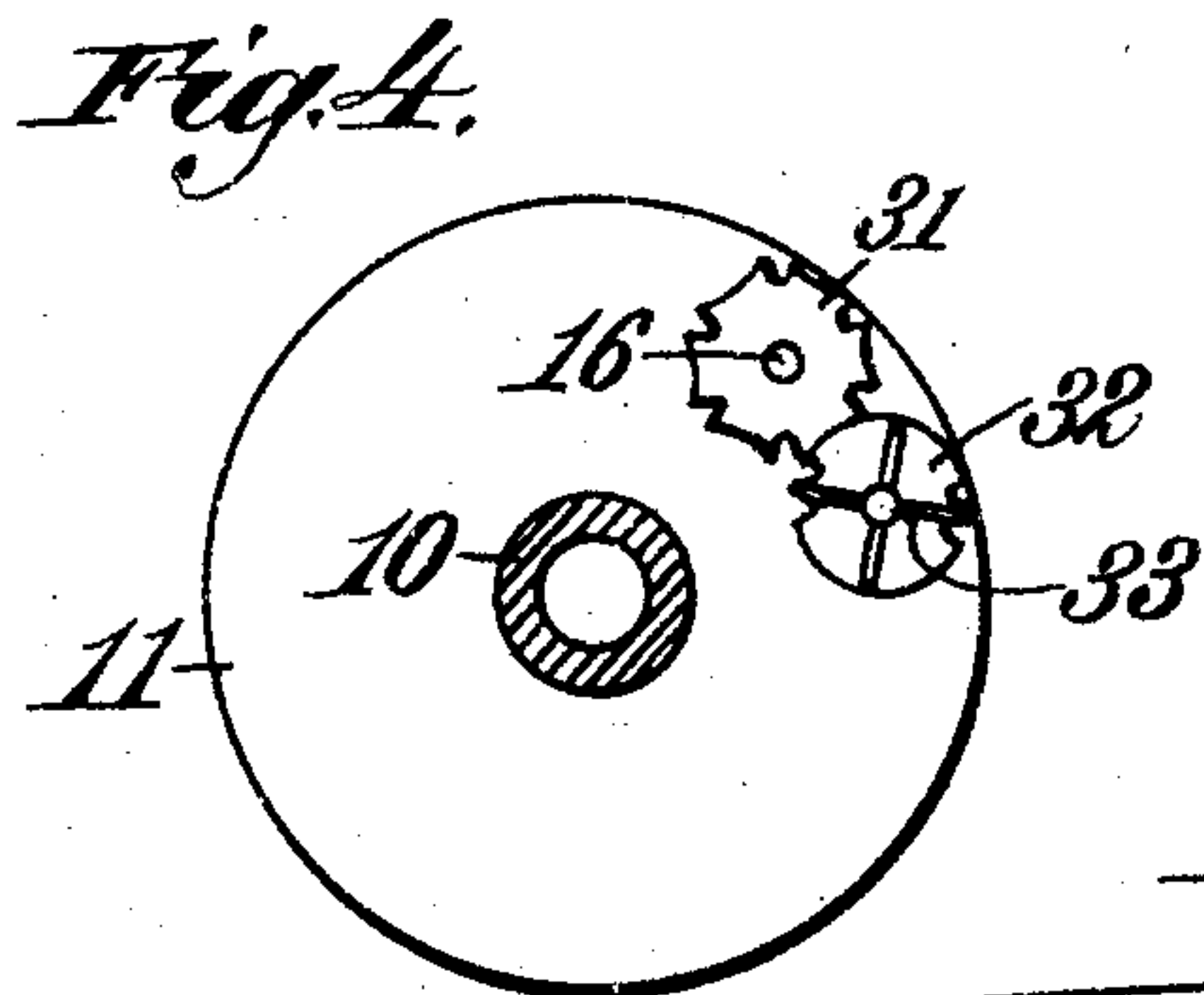
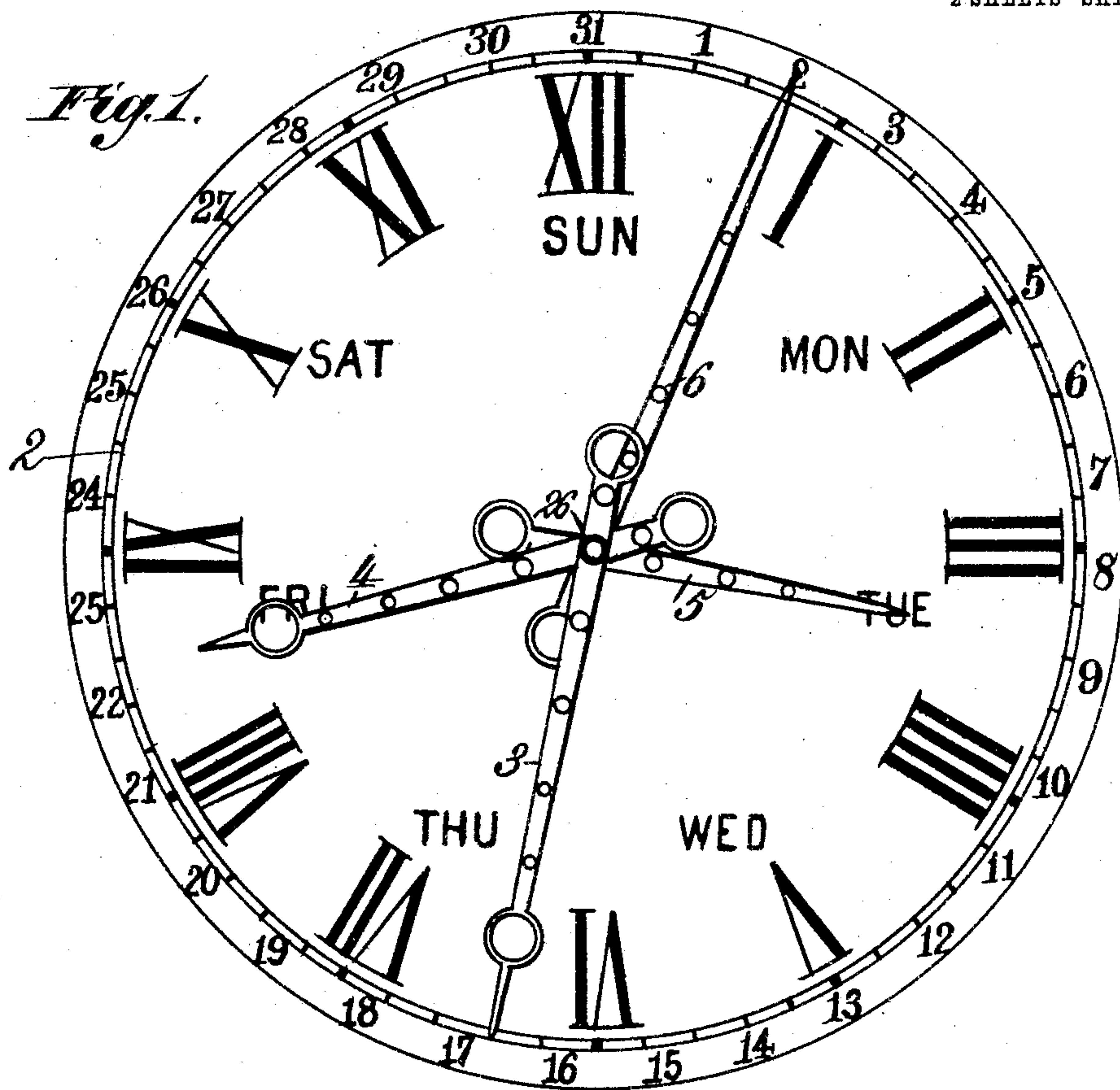
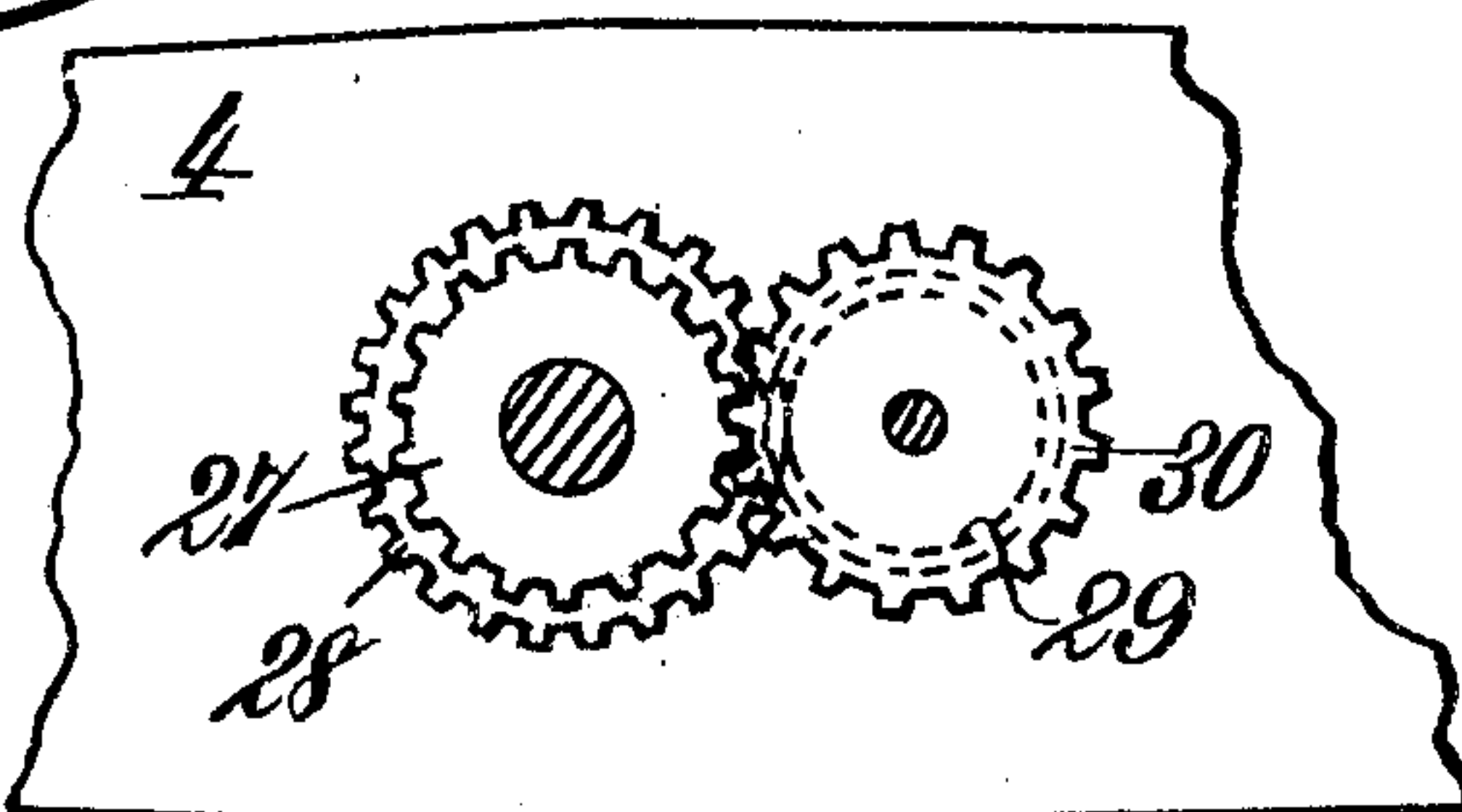


Fig. 6.



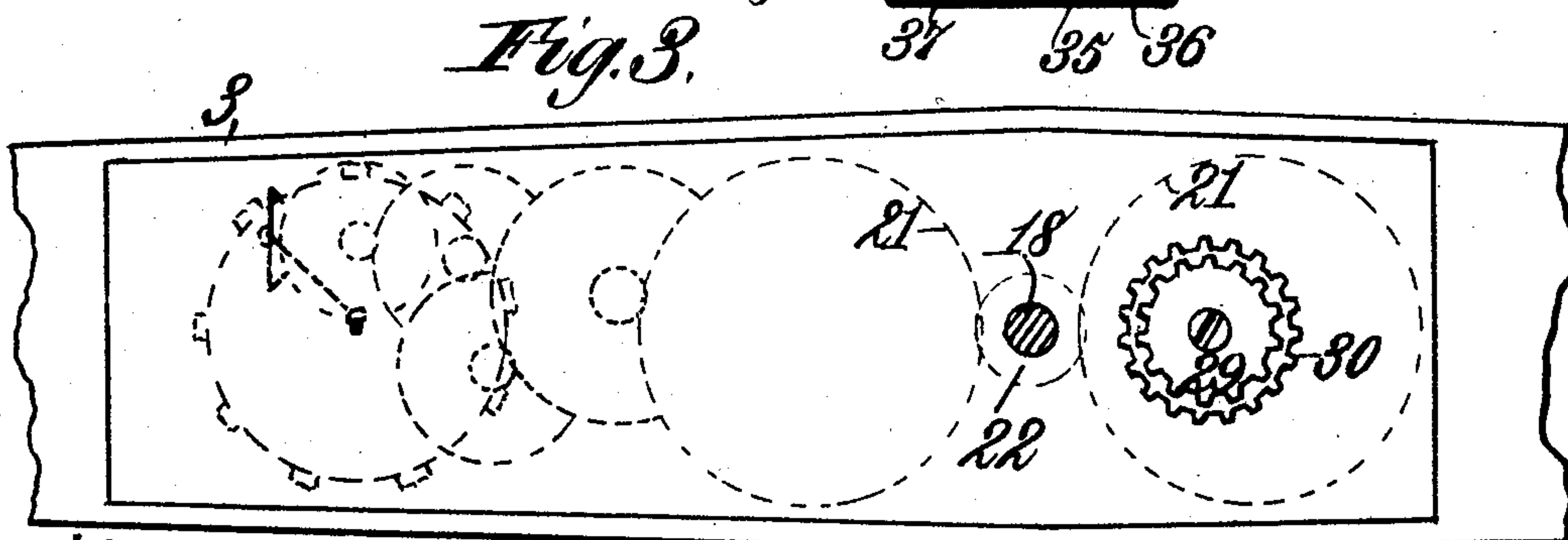
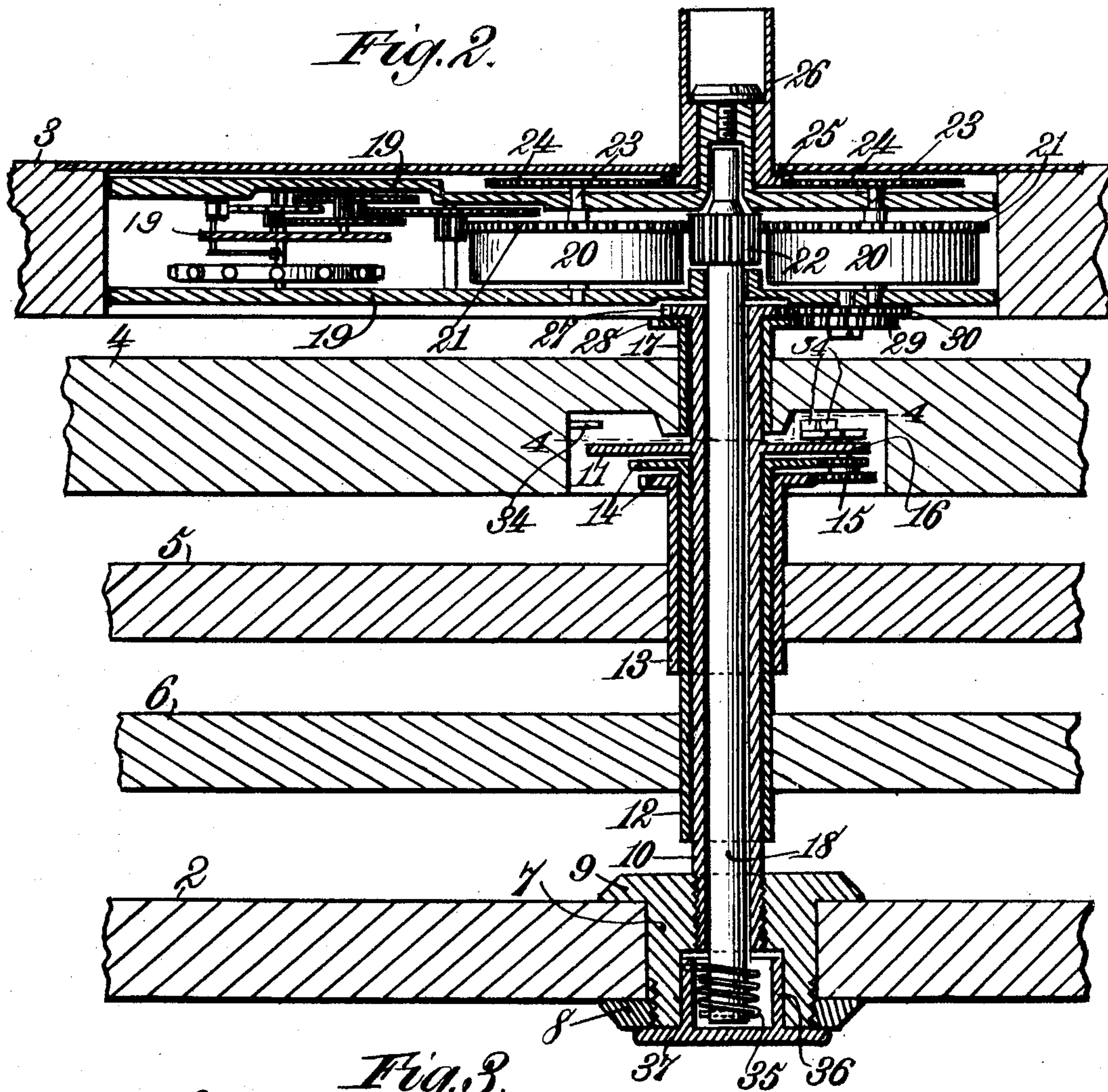
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2 SHEETS—SHEET 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

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TIMEPIECE.

SPECIFICATION forming part of Letters Patent No. 781,505, dated January 31, 1905.

Application filed April 25, 1904. Serial No. 204,834.

To all whom it may concern:

Be it known that I, PHILIP CARLTON ENGLE, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have
5 invented new and useful Improvements in Timepieces, of which the following is a specification.

This invention relates to timepieces, and especially to that kind thereof known as
10 "magic" or "mysterious" clocks, the object being to provide a simple and effective article of such character the parts of which are compactly disposed and are so arranged as to assure the accurate keeping of time by the im-
15 proved device.

The invention includes other objects and advantages, which will be set forth at length in the following description, while the novelty of such invention will be embraced by the
20 claims succeeding said description.

In the drawings accompanying and forming a part of this specification I illustrate in full one simple and convenient adaptation of the invention which will be explicitly disclosed in
25 said description. I wish to state at this point, however, that I do not limit myself to the showing thus made, for certain variations as to a number of points may be adopted within the scope of my claims.

Referring to said drawings, Figure 1 is a face view of a timepiece including the invention. Fig. 2 is a vertical central section on an enlarged scale. Fig. 3 is an inside face view of the minute-hand. Fig. 4 is a trans-
35 verse sectional elevation, the section being taken on the line 4 4 of Fig. 2. Fig. 5 is a detail view in perspective of a finger-operated member for causing the setting of the hands, and Fig. 6 is an inside face view of a plurality
40 of gear members hereinafter more particularly described.

Like characters refer to like parts throughout the several figures of the drawings.

The timepiece includes in its makeup a dial,
45 as 2, which is preferably, though not necessarily, made from transparent glass. With the dial 2 are associated four hands, a minute-hand, as 3, an hour-hand, as 4, and calendar-hands, as 5 and 6, respectively. The mount-

ing illustrated of the several hands will be here- 50
inafter set forth.

The dial 2 bears upon one of its faces the usual numerals and also calendar designations, the latter to indicate the names of the days of the week and also the numbers of the days of 55
the month. The minute-hand 3, as will hereinafter appear, incases or incloses what might be properly considered the works of the time-
piece—that is to say, the works are hidden from view so as not to be observable. In 60
order to heighten the mysterious effect of the timepiece, I form in the several hands thereof a multiplicity of closely-arranged perforations and perforated enlargements, so as to leave as
little as possible of the hands solid, which ap- 65
parently indicates that said hands are incapable of containing any of the numerous parts of the works.

The dial 2 is perforated, and the body of the sleeve 7 extends through the perforation, 70
what might be considered the "outer" end of said sleeve being externally threaded to receive the nut 8, bearing against one face of the dial 2, while the annular shoulder 9 upon the forward side of said sleeve bears upon the 75
opposite side of said dial. The means for sustaining the hands, as will hereinafter appear, are connected with the said sleeve. The forward portion of the sleeve 7 is internally threaded to be engaged by the externally- 80
threaded inner end of the elongated tube 10. From this it will be understood that said tube 10 is relatively stationary. At a point between its ends the tube 10 is provided with a circular flange 11, which flange, as will herein- 85
after appear, constitutes a support or carrier for certain power-transmitting elements. A second tube is shown at 12, said second tube being shorter than the one just described, for a purpose that will hereinafter appear. Such 90
second tube turns around and upon the first tube and is securely united in some suitable manner to the inner calendar-hand 6. A third tube is represented at 13 as rotative upon the second tube. The third tube is securely united 95
to the outer calendar-hand 5. The two tubes 12 and 13 extend between the flange 11 and the sleeve 7. Their outer ends have annular

offstanding flanges 14, arranged in proximity to each other and peripherally toothed. The teeth of these flanges mesh with the teeth of two gears, each denoted by 15 and suitably
 5 securely united to an arbor or spindle 16, rotatably carried by the flange 11, near the margin thereof. The gears 15 are located, as will be apparent, upon one side of the flange 11, while the means for actuating said gears are
 10 situated upon the opposite side of said flange and will be hereinafter described. A fourth tube is illustrated at 17, and it is securely united to the hour-hand 4 and rotates around the tube 10 in advance of the circular flange
 15 11. The fourth tube 17 rotates upon the first tube 10, and its forward end terminates adjacent the corresponding portion of said tube 10 for a purpose that will hereinafter appear. The shaft 18 is normally stationary, and its forward end projects beyond the sleeve 10 and
 20 rotatably receives the minute-hand 3.

The works of the watch, as previously indicated, are inclosed by the minute-hand 3, and for this purpose said hand is longitudinally recessed between its ends, and within the
 25 recesses the plates 19 are suitably fastened. There are three of these plates, and I have given them all the same character—namely, an inner plate, an outer plate, and an intermediate plate or bridge. The works are located
 30 between the inner and outer plates and are supported thereby and partly by the intermediate plate or bridge.

There are two barrels (each denoted by 20) arranged at opposite sides of the relatively
 35 stationary shaft 18, said barrels having peripherally thereof gear-teeth, as 21, adapted to mesh with a pinion 22, suitably securely fastened to the relatively stationary shaft 18, which latter is held from longitudinal move-
 40 ment by means of a spring 35 and disk 37, hereinafter described. The shafts for the barrels are designated by 23, and they carry at their outer ends gears, as 24, meshing with the intermediate pinion 25, by turning which
 45 latter the barrels can be wound up.

The outer plate 19 has a tubular extension around which the collar 26 is rotative, the latter being held in place by a screw tapped into
 50 said tubular extension. The inner end of this collar securely carries the pinion 25. Therefore by turning the collar 26 with the thumb and forefinger or otherwise the mainsprings in the barrels will be wound up in order to
 55 start the timepiece. I have shown in Fig. 2, at the left thereof, the usual train of gears which is common in an ordinary watch or timepiece, and therefore I do not deem it necessary to describe the same in detail. I should
 60 state, however, that I employ two spring-barrels, and the reason for this will be hereinafter set forth.

It will be remembered that the tube 10 has been set forth as relatively stationary. The
 65 forward end of said tube 10 is provided with

a toothed circular flange 27, the tube 17, to which, it will be remembered, the hour-hand 4 is connected, being provided with a similar flange 28. The two flanges are peripherally
 70 toothed to form gears, which flanges or gears mesh with gears, as 29 and 30 of the minute-wheel, pivotally supported upon the rear side of the minute-hand 3, eccentric with the axis of motion thereof. These two gears 29 and
 75 30 are securely united together to move as a single member, or they may be for this purpose made integral. The gears 29 and 30 of the minute-wheel are arranged in size so that when the minute-hand makes one revolution the hour-hand will make one-twelfth of a
 80 revolution.

The means represented for effecting the action of the calendar-hands will be set forth. In fact, I have set forth hereinbefore certain
 85 gears 15, whereby the sleeves connected with the two calendar-hands could be operated. It will be remembered that these two gears are carried upon the inner end of the shaft or arbor 16. The outer end of said shaft or arbor carries a wheel 31, which is one of two fam-
 90 ilar in a so-called "Geneva" stop. The other wheel of said stop is designated by 32, and it has on its outer side four equidistant radially-disposed ribs or spokes 33, with which an actuator or pin 34, carried by the hour-hand, is
 95 coöperative. This actuator or pin 34, it will be seen, is located in a longitudinal recess in the hour-hand, and, in fact, said recess incloses certain of the adjacent parts of the timepiece. When the hour-hand has made a full turn, the
 100 pin 34 thereof will be carried against a rib or spoke 33 on the wheel 32, thereby turning the latter. Upon the turning of the wheel 32 it turns the wheel 31, which, it will be understood, is securely carried on the outer end of
 105 the shaft 16. Upon the turning of the shaft 16 the two gears 15 are simultaneously turned in order to move the two calendar-hands the requisite distance.

The timepiece is set by turning the spindle
 110 or shaft 18. The inner end of this spindle or shaft is surrounded by the coiled spring 35, one terminal portion of which is connected with the spindle. The other terminal portion of the spring 35 is fitted in a slit extending in-
 115 ward in the forward edge of the flange 36. The circular flange extends forward from the disk 37. It will be apparent that by turning the disk 37 the spindle 18, through the agency of the spring 35, will be correspondingly
 120 turned in order to set the minute-hand, and thereby the other hands controlled therefrom. By splitting the flange 36 the latter will engage the plain portion of the inner wall of the sleeve 7 with a sufficient pressure to prevent
 125 under ordinary conditions the disk 37 from turning and also from lateral movement. Should the hand 3 be accidentally moved by a gust of wind, the spring 35 will be compressed in order to subsequently return the
 130

minute-hand to its correct position when the force acting thereagainst has been removed.

In the foregoing description I have used the terms "front" and "back" or words equivalent thereto. This is simply done for convenience, for it will be apparent that the hands may be run either forward or backward by reversing the mainsprings—that is, the hands can be connected with either side of the dial 2.

As two barrels are provided, I am enabled to make the hands very long, while by this relation I do not add anything to the width or thickness of the hands. Therefore the latter in practice are as light as possible, and by reason of their length the timepiece can be seen at a very much greater distance than would be possible where only one barrel is present. By reason of the perforations and perforated enlargements in the hands I heighten the mysterious effect of the article, as hereinbefore stated. Beside this the perforations in question reduce the weight of the hands. By virtue of the mounting of the collar or stem the latter has the appearance of a shaft for sustaining the hands.

Having thus fully described my invention, what I claim is—

1. A timepiece including a minute-hand, actuating means for said minute-hand, an hour-hand, a relatively stationary tube, a tube connected with the hour-hand and rotative around the other tube, each tube having a gear, two securely-united gears rotatably carried by the minute-hand meshing with said other gears and a manually-operable spindle inclosed by said first-mentioned tube, having an operative connection with said minute-hand to thereby set the same and hence the hour-hand.

2. A timepiece including a minute-hand, actuating means for said minute-hand, an hour-hand, a relatively stationary tube, a tube connected with the hour-hand and rotative around the other tube, each tube having a gear, two rigidly-united gears rotatably carried by the minute-hand meshing with said other gears, and a manually-operable spindle inclosed by said first-mentioned tube, having an operative connection with said minute-hand to thereby set the same and hence the hour-hand combined with calendar-hands, and means operative by the hour-hand for effecting the movement of the calendar-hands.

3. A timepiece including a minute-hand, a relatively stationary shaft provided with a pinion, two spring-barrels carried by the hand provided with gears meshing with said pinion, an hour-hand provided with a tube, a second and relatively stationary tube situated between the other tube and said relatively stationary shaft, said tubes having gears, and two rigidly-united gears carried by the minute-hand meshing with said other gears.

4. A timepiece including a sleeve, a tube connected with the sleeve, a shaft extending

through and beyond said tube, provided with a pinion at its forward end, a minute-hand rotative upon said shaft, provided internally with two barrels meshing with the pinion, a spring in each barrel, gears connected with the springs, a stem provided with a pinion for operating said last-mentioned gears, a second tube rotatably supported by the first tube, a third tube rotatably supported by the second tube, calendar-hands securely connected with the second and third tubes, respectively, an hour-hand provided with a tube rotative on the first tube, means operative by the minute-hand for actuating the hour-hand, and mechanism operative with the hour-hand for actuating the calendar-hands.

5. A timepiece including a sleeve, a tube connected with the sleeve, a shaft extending through and beyond said tube, provided with a pinion at its forward end, a minute-hand rotative upon said shaft, provided internally with two barrels meshing with the pinion, a spring in each barrel, gears connected with the springs, a stem provided with a pinion for operating said last-mentioned gears, a second tube rotatably supported by the first tube, a third tube rotatably supported by the second tube, calendar-hands securely connected with the second and third tubes, respectively, an hour-hand provided with a tube rotative on the first tube, means operative by the minute-hand for actuating the hour-hand, mechanism operative with the hour-hand for actuating the calendar-hands, and manually-operable means connected with the said shaft for operating the same.

6. A timepiece including a sleeve, a tube connected with the sleeve, a shaft extending through and beyond said tube, provided with a pinion at its forward end, a minute-hand rotative upon said shaft, provided internally with two barrels meshing with the pinion, a spring in each barrel, a gear connected with the springs and stem, provided with a pinion for operating said last-mentioned gear, a second tube rotatably supported by the first tube, a third tube rotatably supported by the second tube, calendar-hands securely connected with the second and third tubes, respectively, an hour-hand provided with a tube rotative on the first tube, means operative by the minute-hand for actuating the hour-hand, mechanism operative with the hour-hand for actuating the calendar-hands, and a spring connected with said shaft for imparting a retractile movement thereto when the same is accidentally advanced.

7. A timepiece including a sleeve, a tube connected with the sleeve, a shaft extending through and beyond said tube, provided with a pinion at its forward end, a minute-hand operative upon said shaft, provided internally with two barrels meshing with the pinion, a spring in each barrel, gears connected with the springs, a stem provided with a pinion for

operating said last-mentioned gears, a second
tube rotatably supported by the first tube, a
third tube rotatably supported by the second
tube, calendar-hands securely connected with
5 the second and third tubes, respectively, an
hour-hand provided with a tube rotative on
the first tube, means operative by the minute-
hand for actuating the hour-hand, mechanism
operative with the hour-hand for actuating
10 the calendar-hands, a disk provided with a
split flange seated in said sleeve and friction-
ally engaging the interior thereof, a coiled
spring surrounding the shaft and connected,
respectively, thereto and to said flange.
15 8. A timepiece including a tube provided

between its ends with a flange, an hour-hand
rotative about said tube, a minute-hand suit-
ably associated with said hour-hand, calendar-
hands suitably associated with the hour-hand,
each having a gear connected thereto, gears 20
supported by said flange, and means connect-
ed with the hour-hand for operating said gears.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

PHILIP CARLTON ENGLE.

Witnesses:

WM. E. REILLY,
W. H. MILLER.