

No. 768,394.

PATENTED AUG. 23, 1904.

K. H. McINTYRE.
SPEED CLOCK.

APPLICATION FILED MAY 2, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

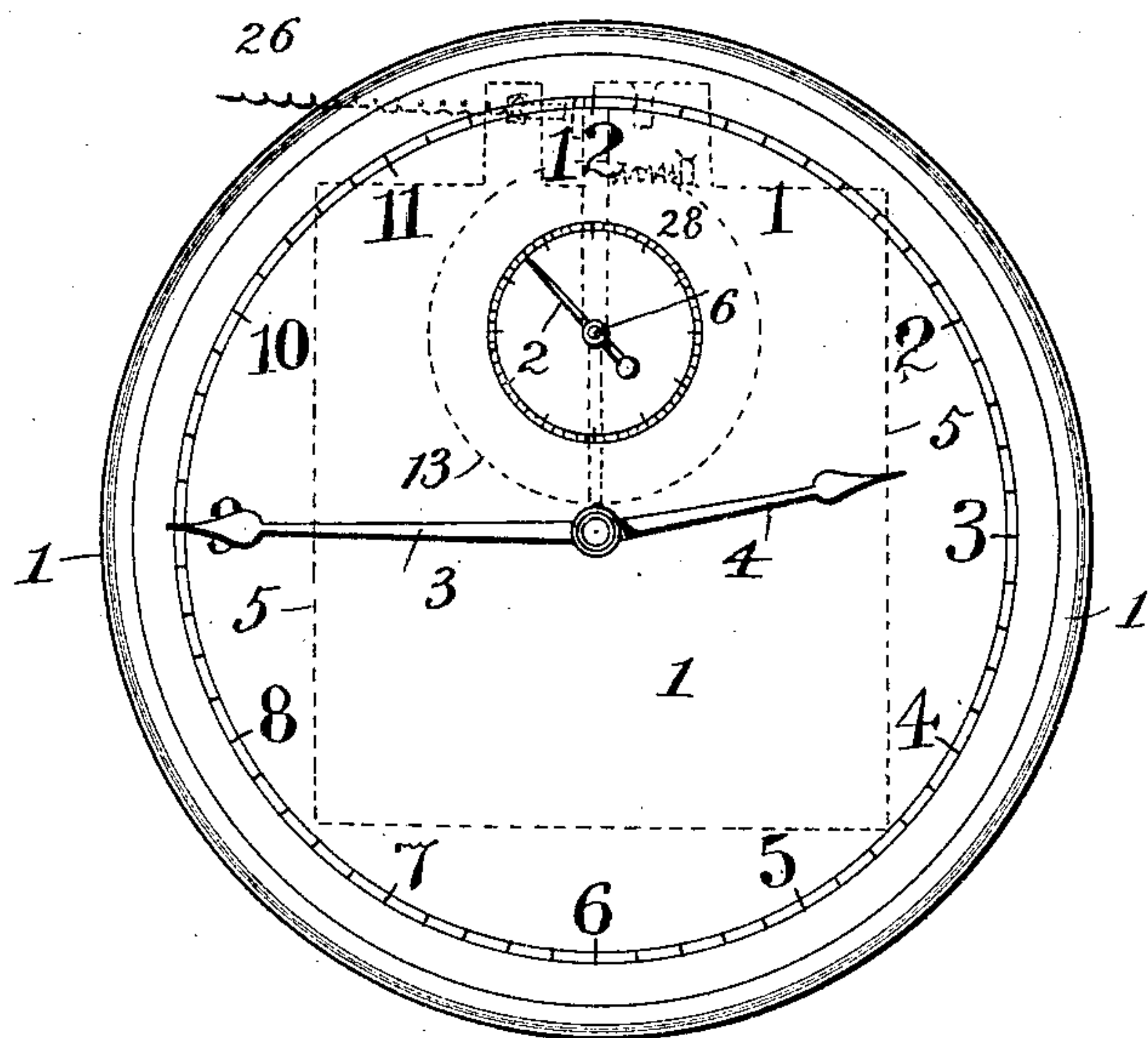
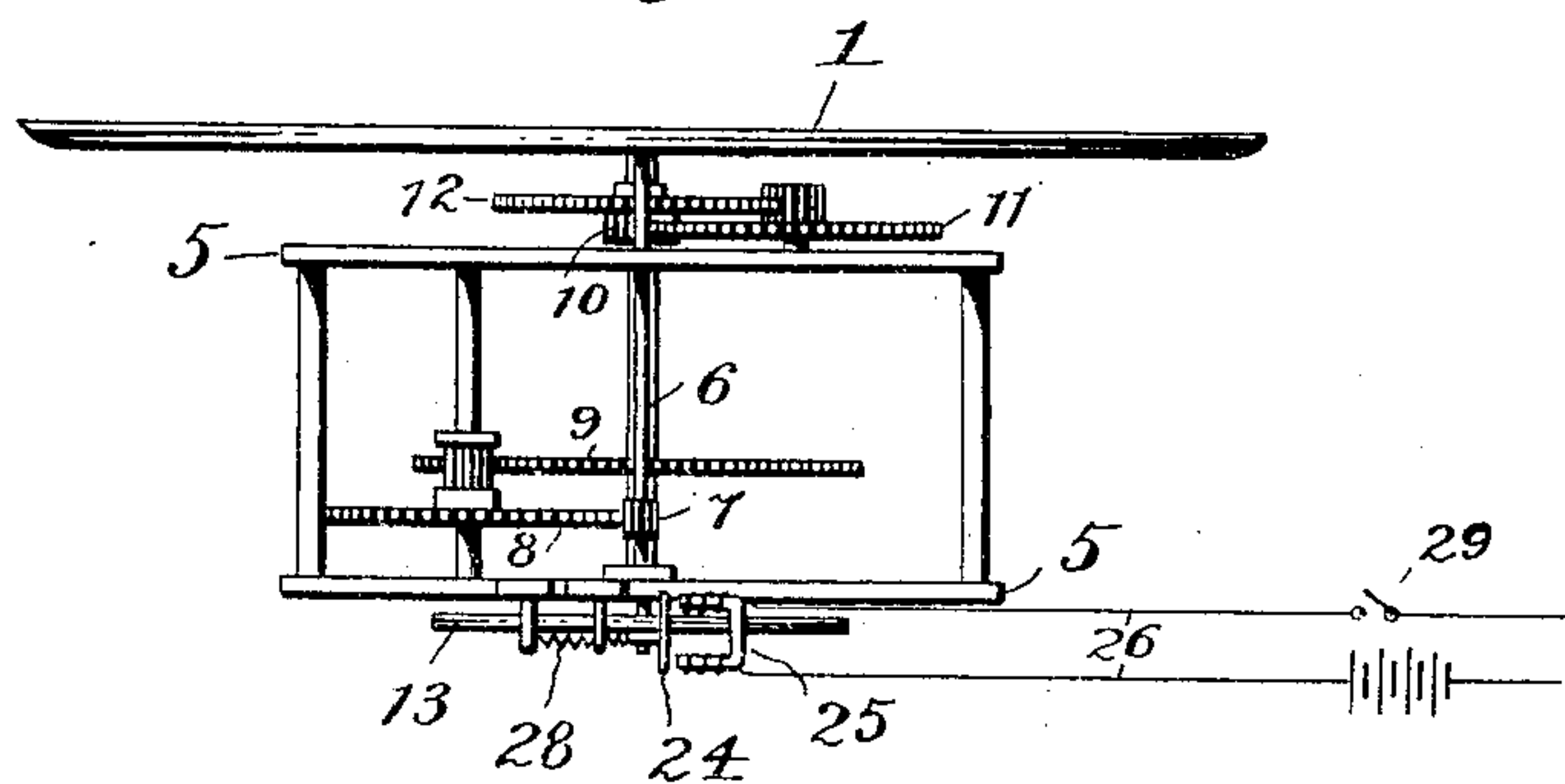


Fig. 2.



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No. 768,394.

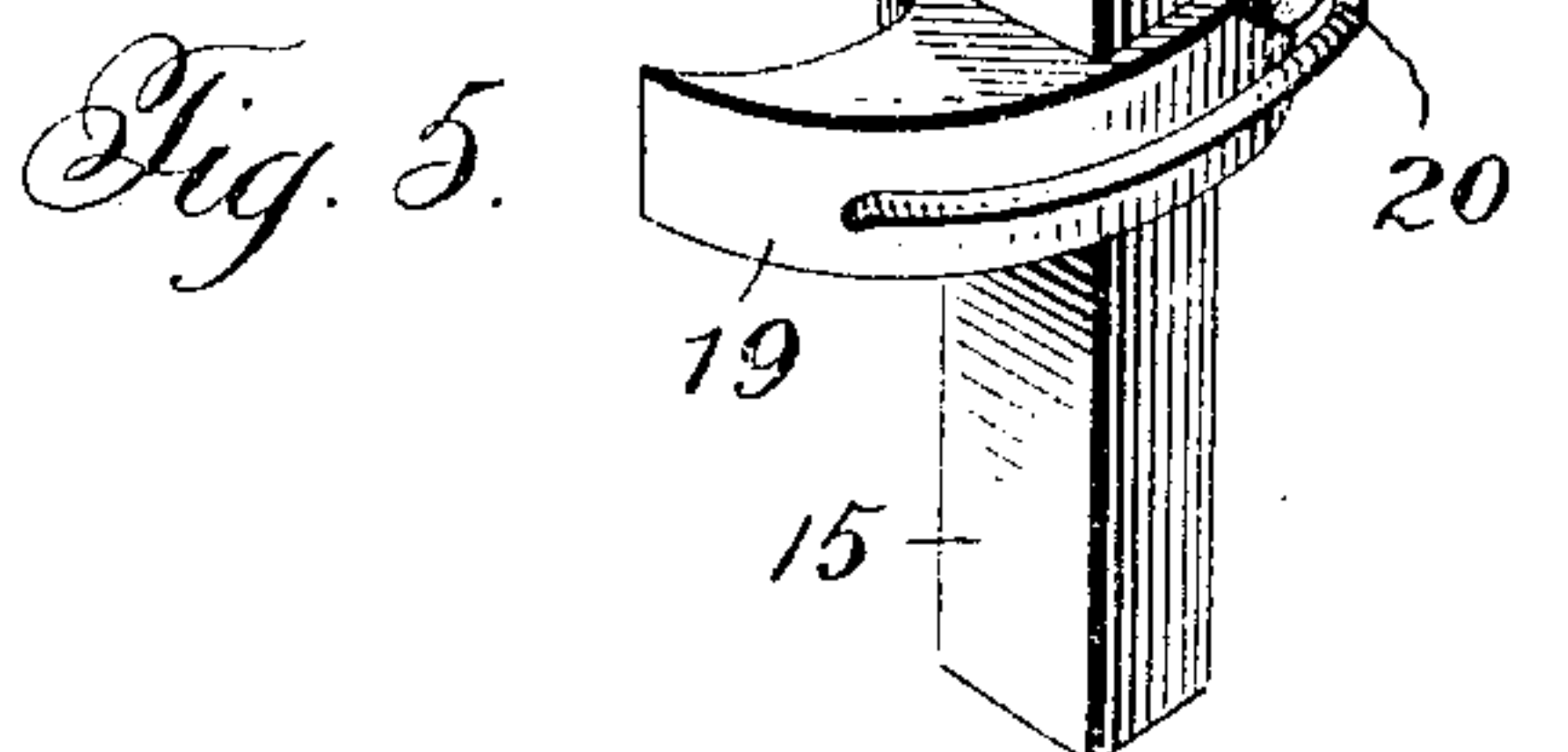
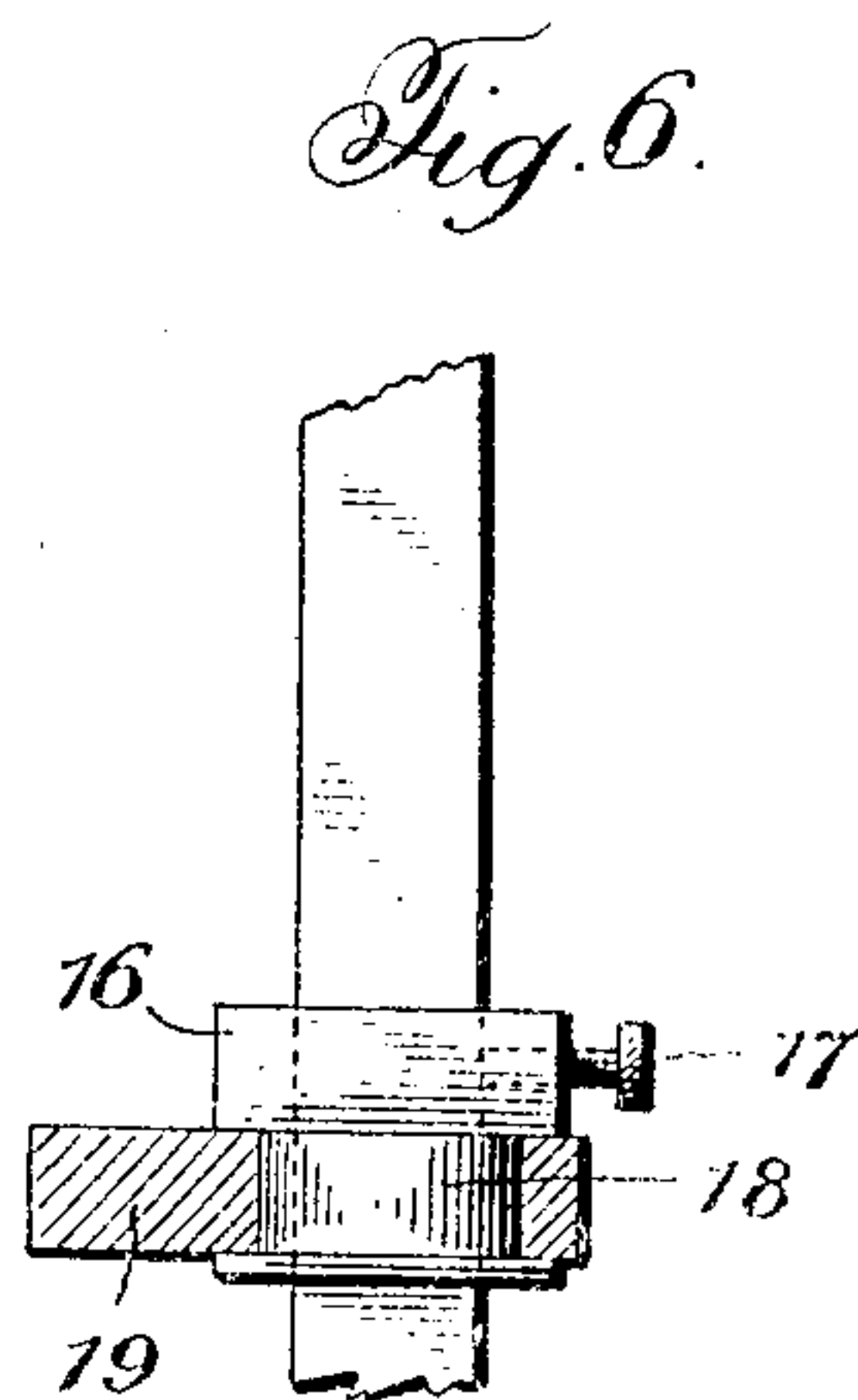
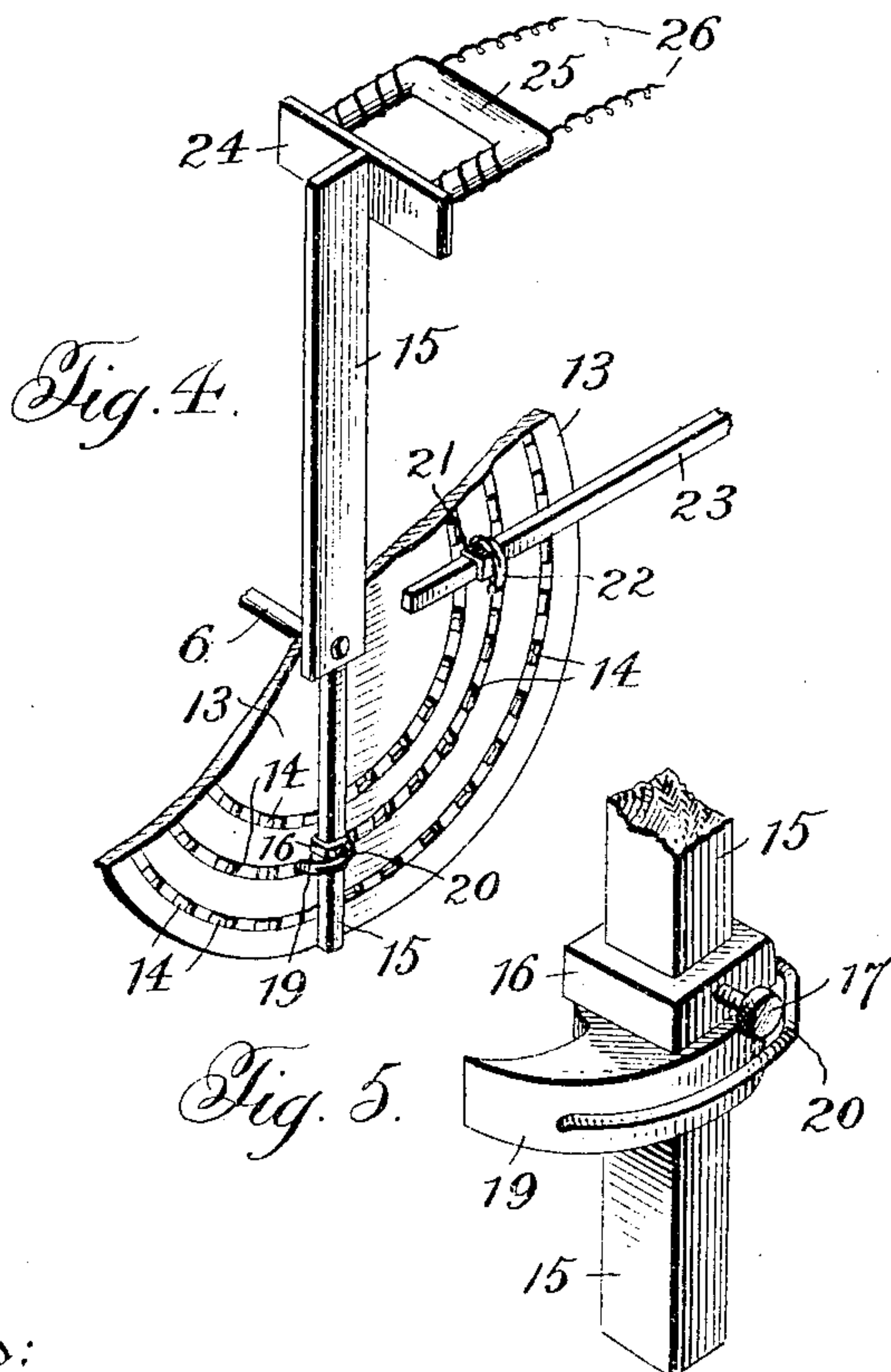
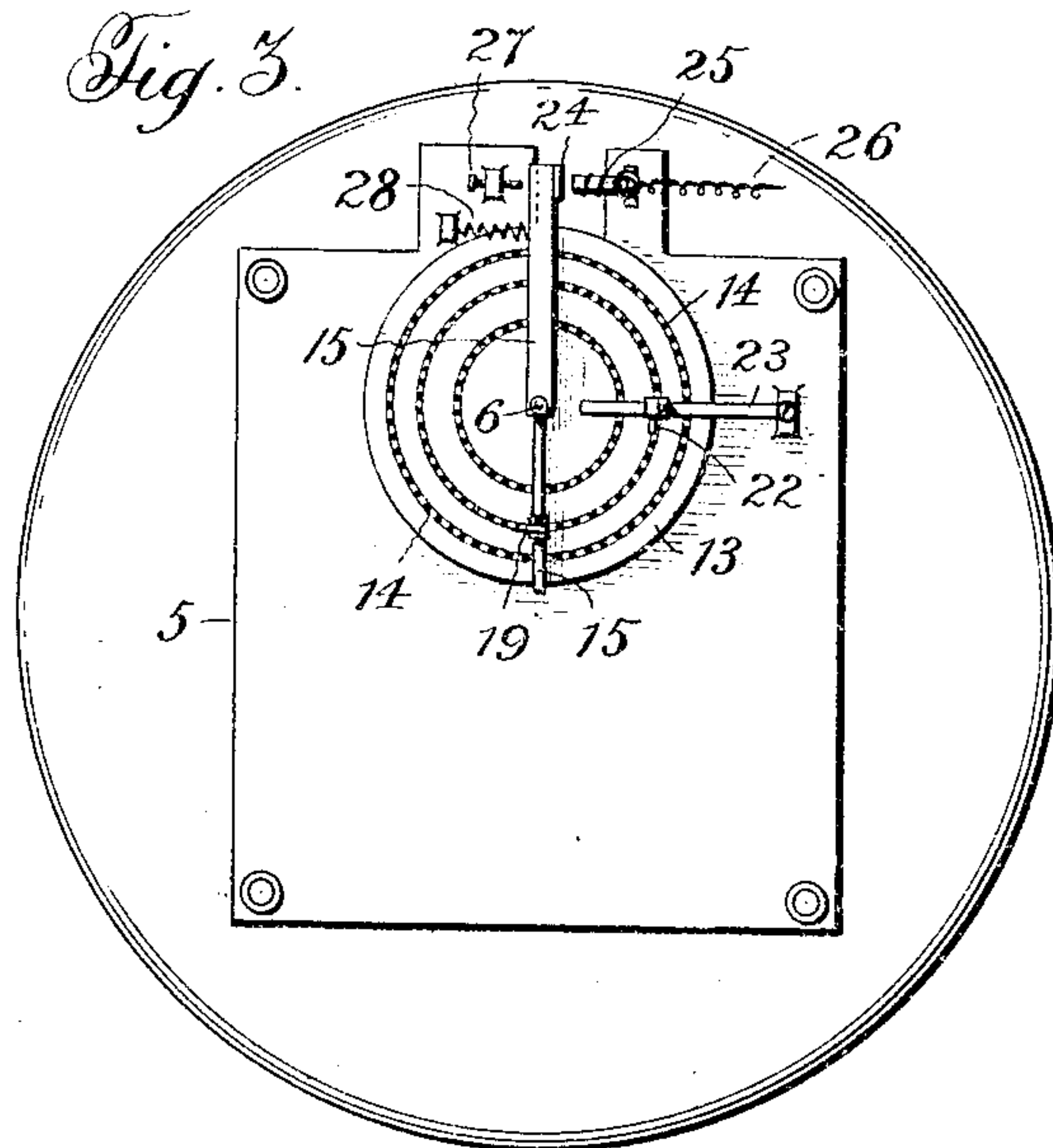
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

KENNETH H. MCINTYRE, OF CARL, NORTH CAROLINA.

SPEED-CLOCK.

SPECIFICATION forming part of Letters Patent No. 768,394, dated August 23, 1904.

Application filed May 2, 1904. Serial No. 205,946. (No model.)

To all whom it may concern:

Be it known that I, KENNETH H. MCINTYRE, a citizen of the United States, residing at Carl, in the county of Montgomery and State of North Carolina, have invented certain new and useful Improvements in Speed-Clocks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to speed or rotation clocks or speed-gages for machinery, the device being designed to indicate whether or not machinery is making a predetermined speed or number of rotations in a given time and to show how much time has been lost or gained when the machinery may be moving at rate other than that predetermined and desired.

The invention contemplates the provision of means which can be readily adjusted for use at different rates of speed. Thus if the clock has been adjusted for one rate of speed adjustment for a higher or lower speed can easily be made should the desired rate of speed of the machinery be altered.

Another object of the invention is to improve devices of this character with a view of attainment of more accurate results and also with a view of simplifying the general construction of the same.

An embodiment of the invention possessing all of the foregoing and other desirable characteristics is delineated for purposes of illustration in the accompanying drawings, forming part hereof, and upon inspection of which novel details in the construction and arrangement of the various parts will be apparent. However, it will be obvious that changes and alterations in the specific construction disclosed within the limits prescribed by the claims can readily be made and that the invention is susceptible of various other adaptations without in the least departing from its nature and spirit.

In the drawings like reference characters refer to corresponding parts in the several views, of which—

Figure 1 is a front view. Fig. 2 is a view looking from the top, showing the mechanism. Fig. 3 is a back view. Fig. 4 is an en-

larged view of the actuating mechanism. Fig. 5 is a view of the ratchet, and Fig. 6 is another view of the ratchet.

Referring more particularly to the drawings, 1 designates the face of a clock; 2, the seconds-hand; 3, the minute-hand; 4, the hour-hand, and 5 the frame of the clock. An arbor 6 extends through the frame to the face of the clock, where it carries seconds-hand 2, and the minute-hand 3 and hour-hand 4 are moved from arbor 6 through gearings 7, 8, 9, 10, 11, and 12, which impart the proper relative movements to the hands in a manner substantially similar to an ordinary clock.

Fastened to arbor 6, so as to rotate therewith, is a flat wheel 13, having in one face thereof recesses 14, arranged in circles concentric with said wheel, and the recesses of each circle being equidistant.

A bar 15 is mounted on arbor 6 and arranged to rock adjacent to wheel 13. The bottom part of bar 15 is made angular in cross-section, and on this part of the bar a collar 16 is longitudinally adjustable and is held in place by a set-screw 17, arranged to engage said bar. Upon a journal 18 of collar 16 is mounted a ratchet 19, which is caused to engage wheel 13 and recesses 14 therein by the exertion of a spring 20, mounted on said collar. It will thus be seen that when bar 15 is rocked on its pivot wheel 13 will be caused to move with each alternate movement of the bar by engagement of ratchet 19 in recesses 14. By moving collar 16 along bar 15 the ratchet 19 can be adjusted so as to engage any desired circle of recesses.

To prevent backward motion in wheel 13, a collar 21, similar to collar 16 and having thereon a pawl 22, is adjustably mounted on a bar 23, so that pawl 22 may be so placed as to engage the recesses of any desired circle.

Attached to bar 15 at or near its top is an armature 24, arranged in such position as to be capable of movement by the attraction of a magnet 25 when magnetized by an electric current conveyed from any suitable source through wires 26.

An adjusting-screw 27 is mounted adjacent to bar 15, and said screw and magnet 25 serve to limit the reciprocatory movement of the

top of said bar in an obvious manner. A spring 28 is so connected to bar 15 and to some other suitable support as to have a tendency to draw armature 24 away from magnet 25.

5 The electric current in wires 26 is made and broken by any suitable means with every rotation, revolution, reciprocation, or other movement of the machinery whose speed is to be indicated. A suitable switch 29 is provided in the circuit to disconnect the clock
10 from the machinery. When the circuit is made, magnet 25 will draw armature 24 there-against, and thus move bar 15 and wheel 13, and when the circuit is broken and the magnet becomes demagnetized the bar will be caused
15 by spring 28 to return to its original position. Screw 27 is so set that just a sufficient motion will occur in bar 15 to rotate wheel 13 the requisite distance, with the result that the recess next behind that last engaged will be engaged
20 by ratchet 19 when the bar is returned to its original position. It will thus be seen that with each rotation or other movement of the machinery wheel 13 is rotated the distance between two of recesses 14 in the circle en-
25 gaged by ratchet 19. Pawl 22 will prevent backward motion in wheel 13 during the return sweep of bar 15, this pawl being preferably set to engage the same circle of recesses
30 as ratchet 19.

The mechanism of the clock is so relatively arranged that one rotation of wheel 13 will cause the several hands on the face of the clock to move a space of one minute. The
35 number of recesses 14 in the concentric circles of wheel 13 are certain and determined in each circle; but the number decreases from the largest circle to the smaller. When, for instance, an engine electrically connected
40 with the speed-clock has had its governor set for a speed of a certain number of rotations per minute, ratchet 19 is set to engage the circle in wheel 13 containing the number of recesses equal to the required number of ro-
45 tations per minute of the engine, and therefore that number of rotations of the engine will be required to cause one complete rotation of wheel 13 and the movement of the hands the space of one minute. At the time
50 the speed-clock is started it will be set with an ordinary time-clock, and if the engine is maintained at the predetermined speed the speed-clock will at all times agree with the time-clock. However, if the speed of the
55 engine is greater or less than that predetermined the speed-clock will be faster or slower, respectively, than the time-clock. At the end of a working day or any other period of time the difference between the speed-clock
60 and the time-clock will indicate how much time within that period in the output of a factory has been lost or gained through variation of the speed of the machinery from that predetermined. When it is desired to set the
65 speed-clock for a speed which requires a greater

or less number of recesses on wheel 13 than the one then in use, that wheel can be removed and another substituted having the required number of recesses.

The provision of electrical connection be- 70
tween the machinery and the speed-clock will permit the clock to be placed at any distance desired from the machinery.

Having thus described my invention, what I claim as new, and desire to secure by Letters 75
Patent, is—

1. In a speed-clock, a wheel having radially-arranged recesses in one face thereof, a rock-
bar adjacent to said wheel, and means longi-
tudinally adjustable on said bar whereby said 80
wheel is rotated.

2. In combination with means for imparting motion to the hands of a speed-clock, a wheel having recesses arranged in concentric
circles in one face thereof, a rock-bar adjacent 85
to said wheel, and a longitudinally-adjustable ratchet on said bar whereby said wheel is ro-
tated.

3. In combination with means for imparting motion to the hands of a speed-clock, a 90
wheel having recesses arranged in concentric circles in one face thereof, a rock-bar adja-
cent to said wheel, a ratchet on said bar where-
by said wheel is rotated, and means for pre-
venting backward motion in said wheel. 95

4. In combination with means for imparting motion to the hands of a speed-clock, a wheel having recesses arranged in concentric
circles in one face thereof, a rock-bar adja- 100
cent to said wheel, a ratchet on said bar ar-
ranged to engage said recesses and whereby
said wheel is rotated, and a pawl engaging
said recesses whereby backward motion in
said wheel is prevented.

5. In combination with means for impart- 105
ing motion to the hands of a speed-clock, a wheel having recesses arranged in concentric
circles in one face thereof, a rock-bar adja-
cent to said wheel, a ratchet on said bar and
engaging said wheel, and electrical means 110
whereby said bar is moved and said wheel is rotated.

6. In combination with means for impart-
ing motion to the hands of a speed-clock, a wheel having recesses arranged in concentric 115
circles in one face thereof, a rock-bar adja-
cent to said wheel, a ratchet on said bar and
engaging said wheel, an armature on said bar,
a magnet whereby said bar is attracted and
said bar moved in one direction, and means 120
whereby said bar is moved in contrary direc-
tion.

7. In combination with means for impart-
ing motion to the hands of a speed-clock, a wheel having recesses arranged in concentric 125
circles in one face thereof, a rock-bar adja-
cent to said wheel, a ratchet on said bar and
engaging said wheel, an armature on said bar,
a magnet whereby said bar is attracted and
said bar moved in one direction, and a spring 130

whereby said bar is moved in contrary direction.

8. In combination with means for imparting motion to the hands of a speed-clock, a
5 wheel having recesses arranged in concentric circles in one face thereof, a rock-bar adjacent to said wheel, a ratchet on said bar and engaging said wheel, electrical means whereby said bar is moved and said wheel is rotated,
10 and means whereby movement of said bar is limited.

9. In combination with means for imparting motion to the hands of a speed-clock, a

wheel having recesses arranged in concentric circles in one face thereof, a rock-bar adjacent to said wheel, a ratchet on said bar and engaging said wheel, electrical means whereby said bar is moved and said wheel is rotated, and a set-screw whereby movement of said bar is limited. 15 20

In testimony whereof I affix my signature in presence of two witnesses.

KENNETH H. MCINTYRE.

Witnesses:

N. S. COCHRAN,
BEN T. WADE.