

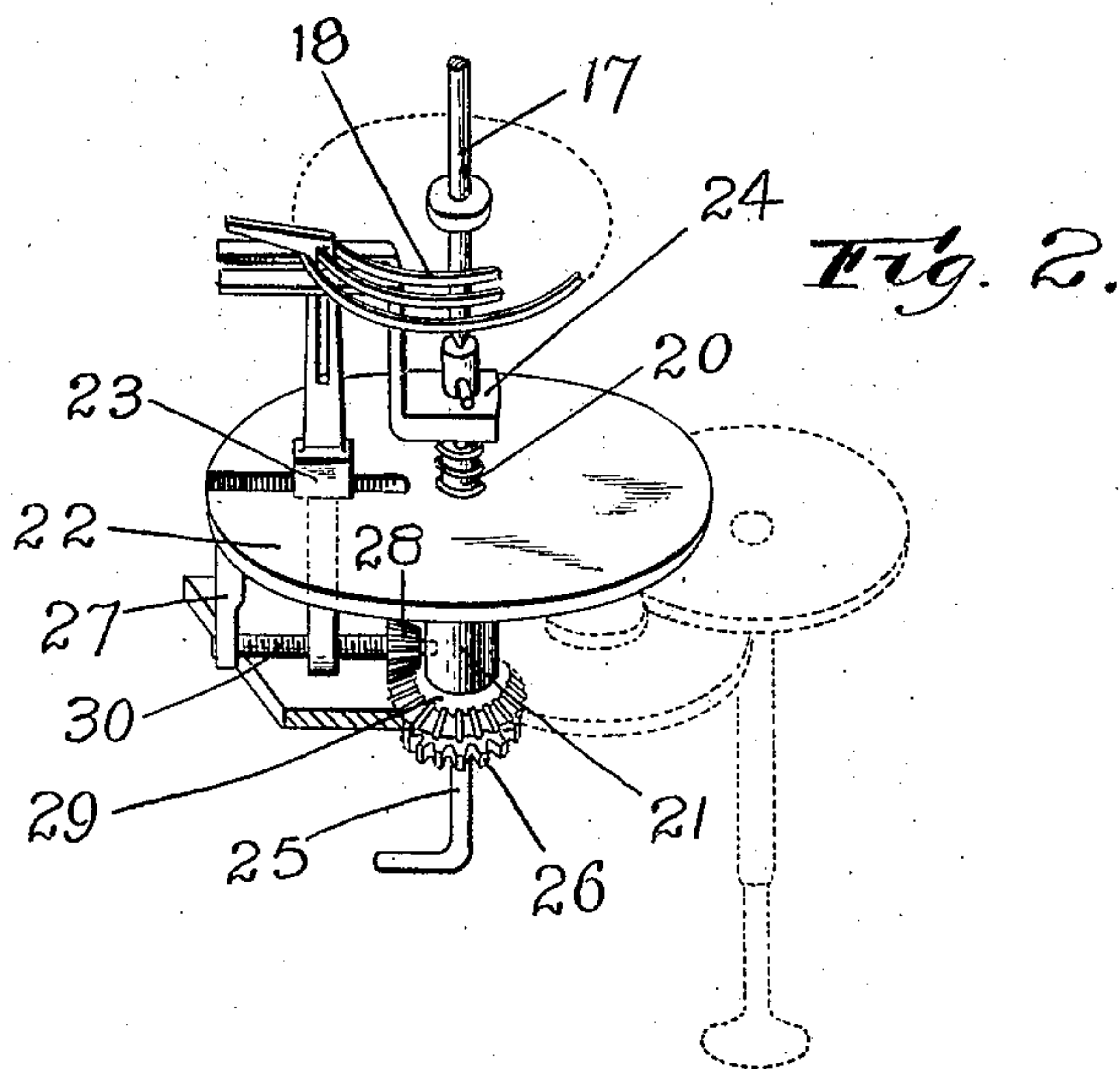
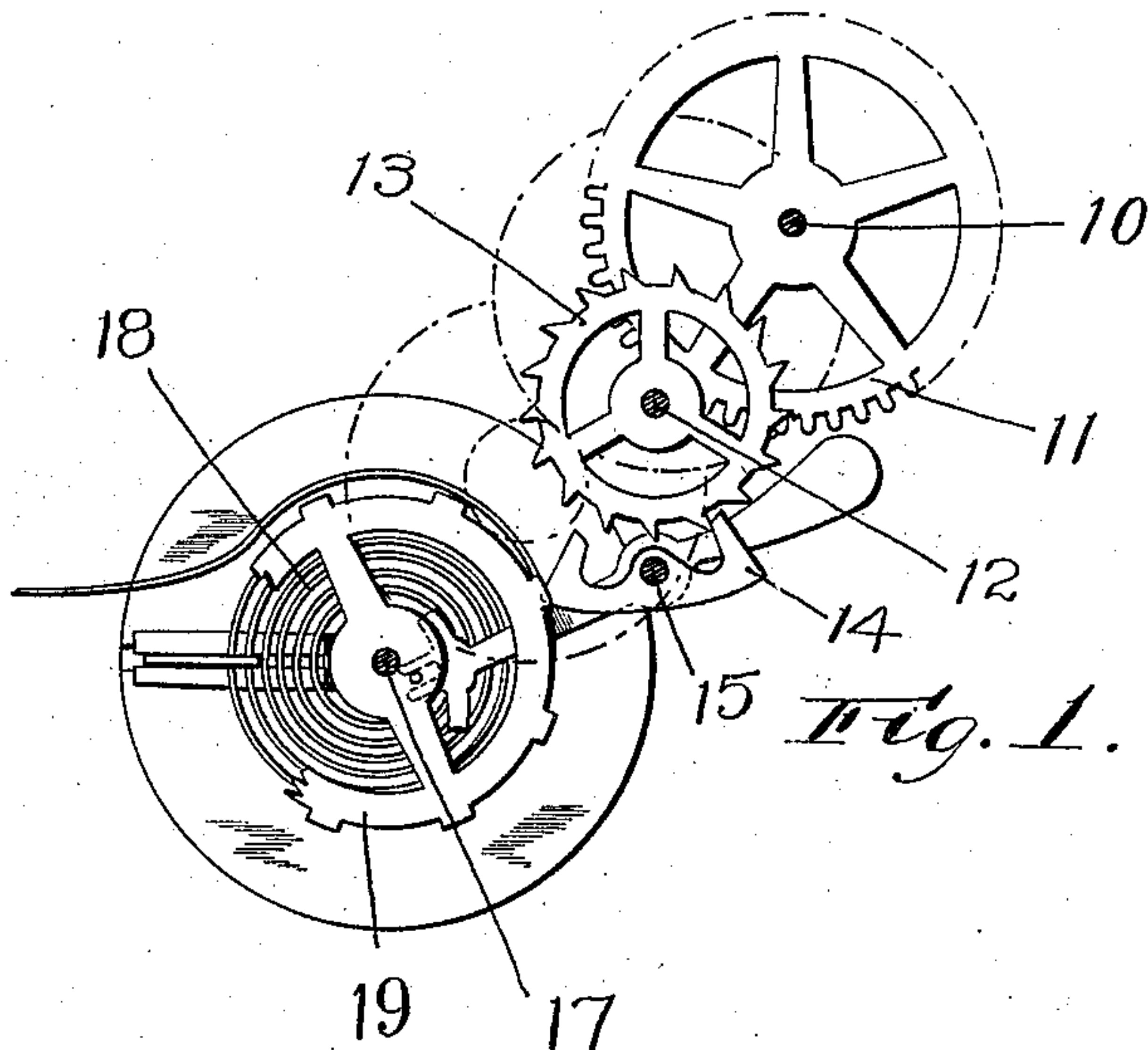
No. 760,343.

PATENTED MAY 17, 1904.

J. H. MORRISSETTE.
REGULATOR FOR METRONOMES.

APPLICATION FILED MAY 23, 1902.

NO MODEL.



Witnesses:
C. F. Wilson.
M. C. Regan.

Inventor:
J. H. Morrissette
By
Southgate & Southgate
Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH H. MORRISSETTE, OF ASHLAND, MASSACHUSETTS.

REGULATOR FOR METRONOMES.

SPECIFICATION forming part of Letters Patent No. 760,343, dated May 17, 1904.

Application filed May 23, 1902. Serial No. 108,641. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. MORRISSETTE, a citizen of the United States, residing at Ashland, in the county of Middlesex and State of Massachusetts, have invented a new and useful Regulator for Metronomes or Similar Purposes, of which the following is a specification.

This invention relates to a regulating apparatus for controlling the hair-spring of an escapement.

The especial object of this invention is to provide a regulating apparatus having a sufficiently-wide range of adjustment so that the same is adapted for metronomes or other constructions in which wide variations are required. To accomplish this object, a regulating apparatus constructed according to my invention consists of the parts and combinations of parts as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a sectional plan view showing sufficient parts of an escapement-train to illustrate the application of my invention thereto; and Fig. 2 is a perspective view of the take-up piece and of the connections for imparting a complete spiral movement to said take-up piece to set the same to different desired positions.

In ordinary regulators for escapement-trains—such, for example, as the regulators employed in clocks and watches—the active length of the escapement hair-spring can be adjusted by a take-up piece carried by a pivoted regulating-arm which can be swung or turned to different positions.

In practice the range of movement of the ordinary regulating-arm is usually sufficient for the regulation of the ordinary time-trains; but for use in constructions where wide ranges of adjustment are required—such, for example, as in metronomes—the ordinary time-train regulator cannot be employed to advantage—that is to say, in order that a metronome should be capacitated to mark the required ranges of musical time the metronome should be capable of adjustment from forty to over two hundred beats per minute.

The especial object of my present invention

is to provide a construction having an increased range of adjustment of the take-up piece which regulates the active length of the escapement hair-spring. To accomplish this result, a regulating apparatus constructed according to my invention comprises the escapement hair-spring, its take-up piece, and means for imparting a complete spiral movement to the take-up piece to set the same to different adjusted positions. The take-up piece is preferably combined with a clamp for gripping the hair-spring at any desired portion of its length, the spiral movement of the take-up piece permitting the same to travel in between the coils of the escapement-spring, so that practically any desired range of adjustment may be secured.

Referring to the accompanying drawings for a detail description of a regulating apparatus constructed according to my invention, 10 designates one of the final shafts of an ordinary clockwork-train. Secured on the shaft 10 is a gear 11, meshing with a pinion on the escapement-shaft 12. Secured on the escapement-shaft 12 is an escapement ratchet-wheel 13, coöperating with which are the escapement-pallets 14, carried by lever-shaft 15, which is oscillated from shaft 17, carrying balance-wheel 19. The escapement hair-spring 18 has its outer end secured to any fixed point, while its inner end is connected to the shaft 17. These parts may be of substantially the same construction as the parts ordinarily employed in a clockwork-train and need not be herein described at length.

As shown in Fig. 2, 20 designates a fixed stud, on which the balance-wheel shaft 17 is pivoted. Journaled on the fixed stud 20 is a hub 21, which carries a slotted disk 22. Mounted in the slot of the disk 22 is a radially-adjustable take-up piece 23. The take-up piece 23 is provided with a vertical slot receiving one of the coils of the escapement hair-spring 18. Coöperating with the take-up piece 23 is a slotted clamp-piece 24, having its hub mounted on the stud 20. Extending up through the stud 20 is a releasing-rod 25, having a pin extending out over the hub of the clamp-piece 24 to pull the same down against the tension of a spring arranged on the stud 20 between

disk 22 and clamp-piece 24, which normally holds the clamp-piece up into position to clamp the hair-spring in place in the take-up piece. The upper part or the face of the clamp-piece 5 24, which engages the hair-spring 18, is preferably slightly inclined downward in toward the shaft 17, so that that part of the same inside of the take-up piece 23 will not touch the hair-spring. Secured on the lower end of the 10 bushing 21 is a pinion 26, by means of which the hub 21 and slotted disk 22 may be turned by means of a setting-train, if desired, as indicated by dotted lines. Journaled at its ends in the hub 21, which carries disk 22, and in a 15 bearing-piece 27, is a lead-screw 30, which is threaded through the take-up piece 23 and is provided at its inner end with a bevel-pinion 28, meshing with a stationary bevel-gear 29. By means of this construction in order to set 20 the regulating apparatus to secure any desired timing of the escapement-train the releasing-rod 25 is first drawn down to release the clamp-piece 24. The slotted disk is then turned through the adjusting-train, so that 25 the lead-screw and its operating connections, before described, will feed the take-up piece toward or away from the center as it is rotated, thus causing the same to be set in or out upon a spiral, which preferably conforms, 30 substantially, to the spiral in which the coiled spring is wound. By this construction the take-up piece can follow a complete convolution or a plurality of convolutions of the hair-spring accurately and without distorting or 35 affecting the same, the limits of movement of the take-up piece being practically the points of attachment of the hair-spring to the stationary part and to the shaft 17. By means of this construction the take-up piece will follow 40 in between the coils of the escapement hair-spring to secure substantially any desired active length of spring, so that an extremely wide range of adjustment may be secured.

45 I am aware that many changes may be made by those who are skilled in the art of my regulating apparatus without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the particular construction I have here- 50 in shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

55 1. In a regulating apparatus, the combination of a hair-spring, an escapement, a take-up piece for changing the active length of the hair-spring mounted so that it can describe a complete revolution, and means for causing

the same to follow a complete spiral path to engage a plurality of the spiral convolutions 60 of the hair-spring.

2. In a regulating apparatus, the combination of the hair-spring, an escapement, a take-up piece for changing the active length of the hair-spring, and means for imparting a circular 65 movement to the take-up piece and corresponding radial movement thereto, so that the same can follow a plurality of the spiral convolutions of the hair-spring.

3. In a regulating apparatus, the combination 70 of the hair-spring of an escapement, a take-up piece for changing the active length of the hair-spring, and means for adjusting the take-up piece, comprising a lead-screw and means for turning the lead-screw when 75 the parts are rotated to impart a spiral movement to the take-up piece.

4. In a regulating apparatus, the combination 80 of an escapement hair-spring, a take-up piece, a spring-pressed clamp-piece cooperating therewith for gripping one of the convolutions of the escapement hair-spring, and means for releasing the clamp-piece when the parts are to be adjusted.

5. In a regulating apparatus, the combination 85 of an escapement hair-spring, a take-up piece, a clamp-piece cooperating therewith to grip one of the convolutions of the escapement-spring, means for releasing the clamping-piece, and means for imparting a complete 90 spiral movement to the take-up piece so that the same will follow a plurality of the spiral convolutions of the hair-spring.

6. In a regulating apparatus, the combination 95 of the escapement hair-spring, a take-up piece having a slot for receiving one of the convolutions of the hair-spring, a slotted clamp-piece pivoted on the bearing-stud of the hair-spring shaft, a releasing-rod for opening the clamp-piece when the parts are to be adjusted, 100 a slotted disk in which the take-up piece is mounted, means for turning the slotted disk, and a lead-screw carried by the slotted disk and threaded through the adjusting-piece, said lead-screw being provided with a pinion 105 at its inner end meshing with a stationary gear whereby the lead-screw will be turned when the parts are rotated and a spiral motion will be imparted to the take-up piece.

In testimony whereof I have hereunto set my 110 hand in the presence of two subscribing witnesses.

JOSEPH H. MORRISSETTE.

Witnesses:

PHILIP W. SOUTHGATE,
LOUIS W. SOUTHGATE.