

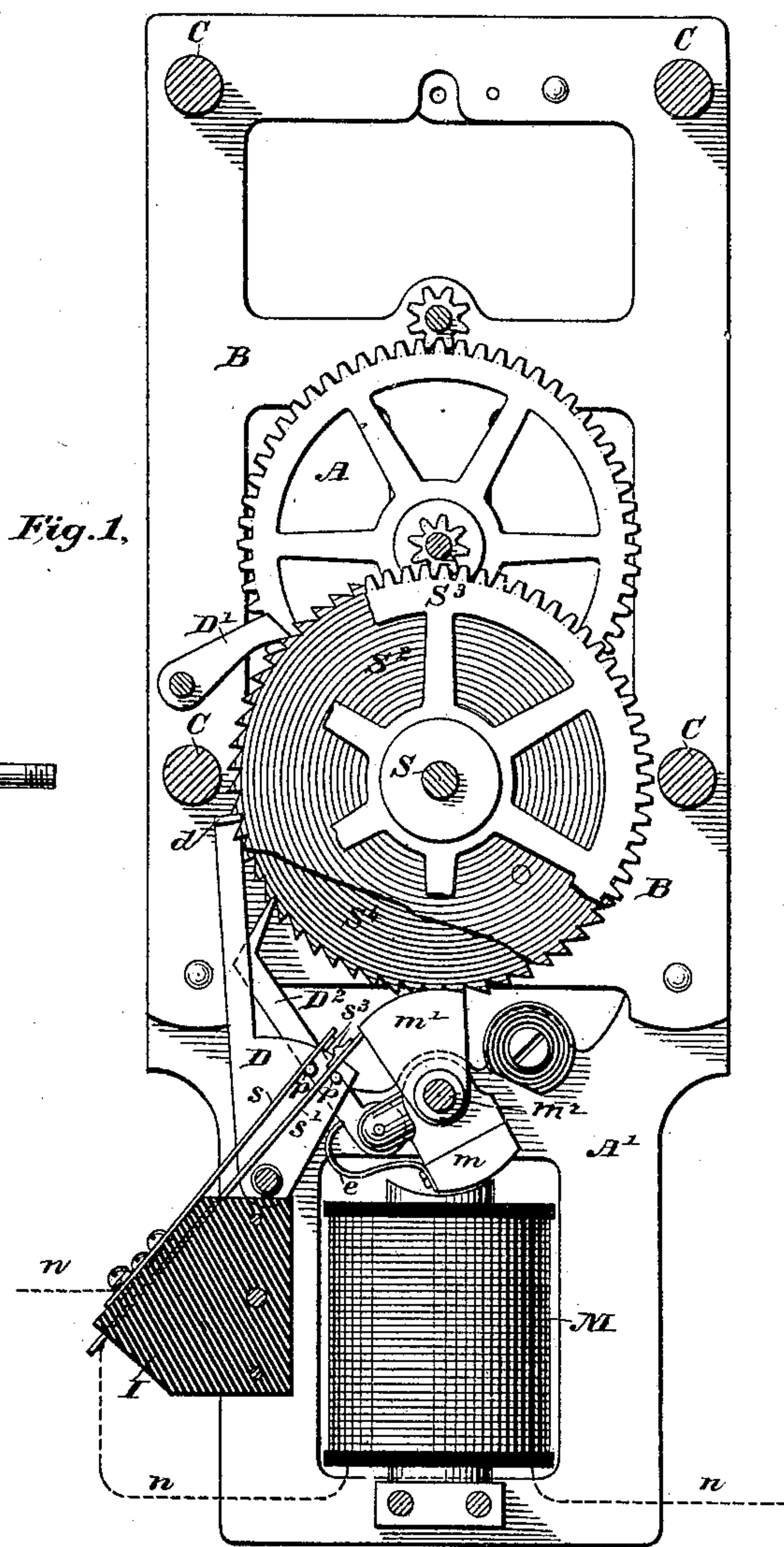
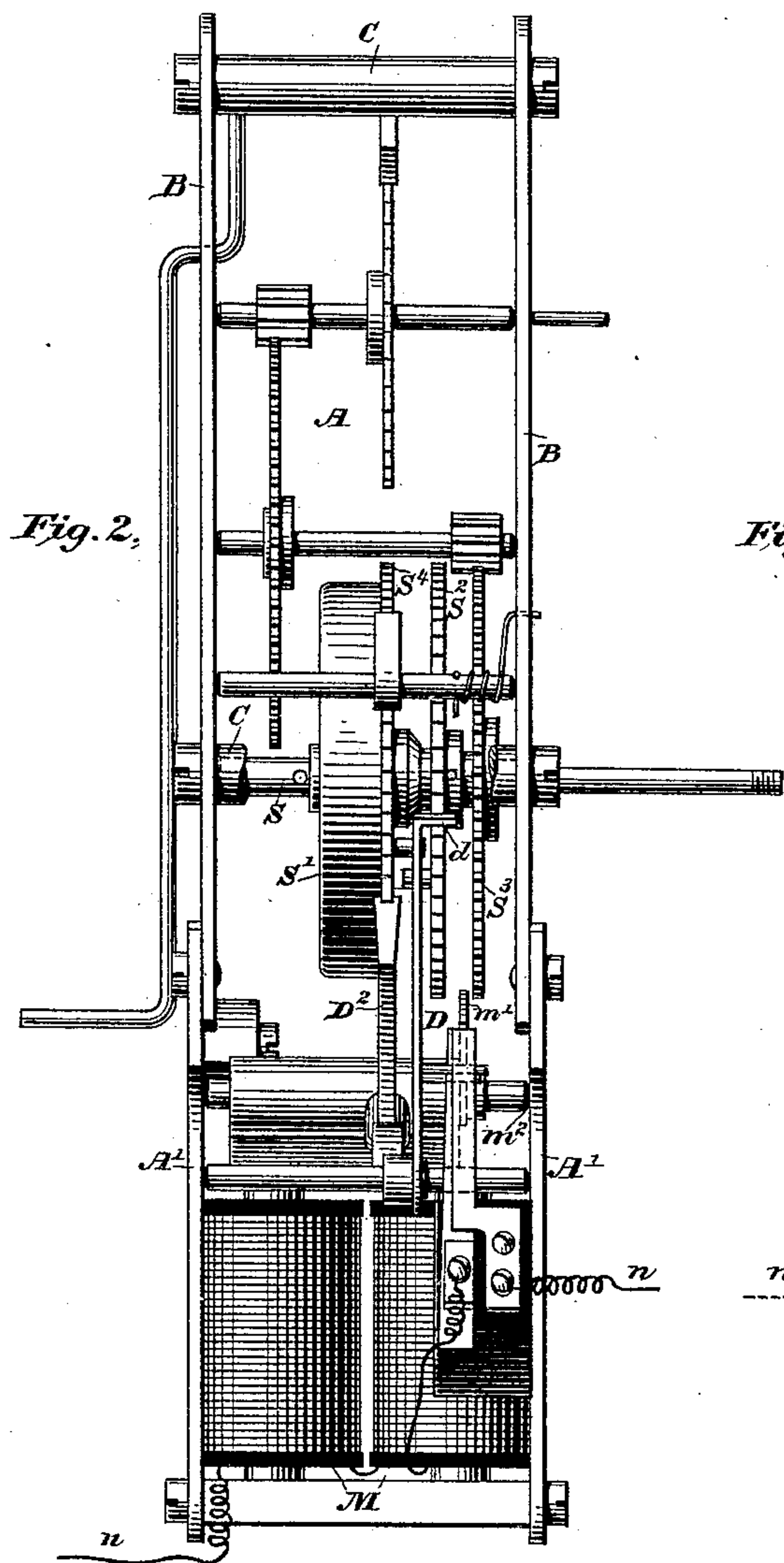
(No Model.)

2 Sheets—Sheet 1.

J. H. GERRY.  
ELECTRIC SELF WINDING CLOCK.

No. 405,089.

Patented June 11, 1889.



Witnesses  
Geo. W. Breck.  
Carrie E. Ashley

Inventor  
James H. Gerry  
By his Attorneys  
Pope, Edgcomb & Terry

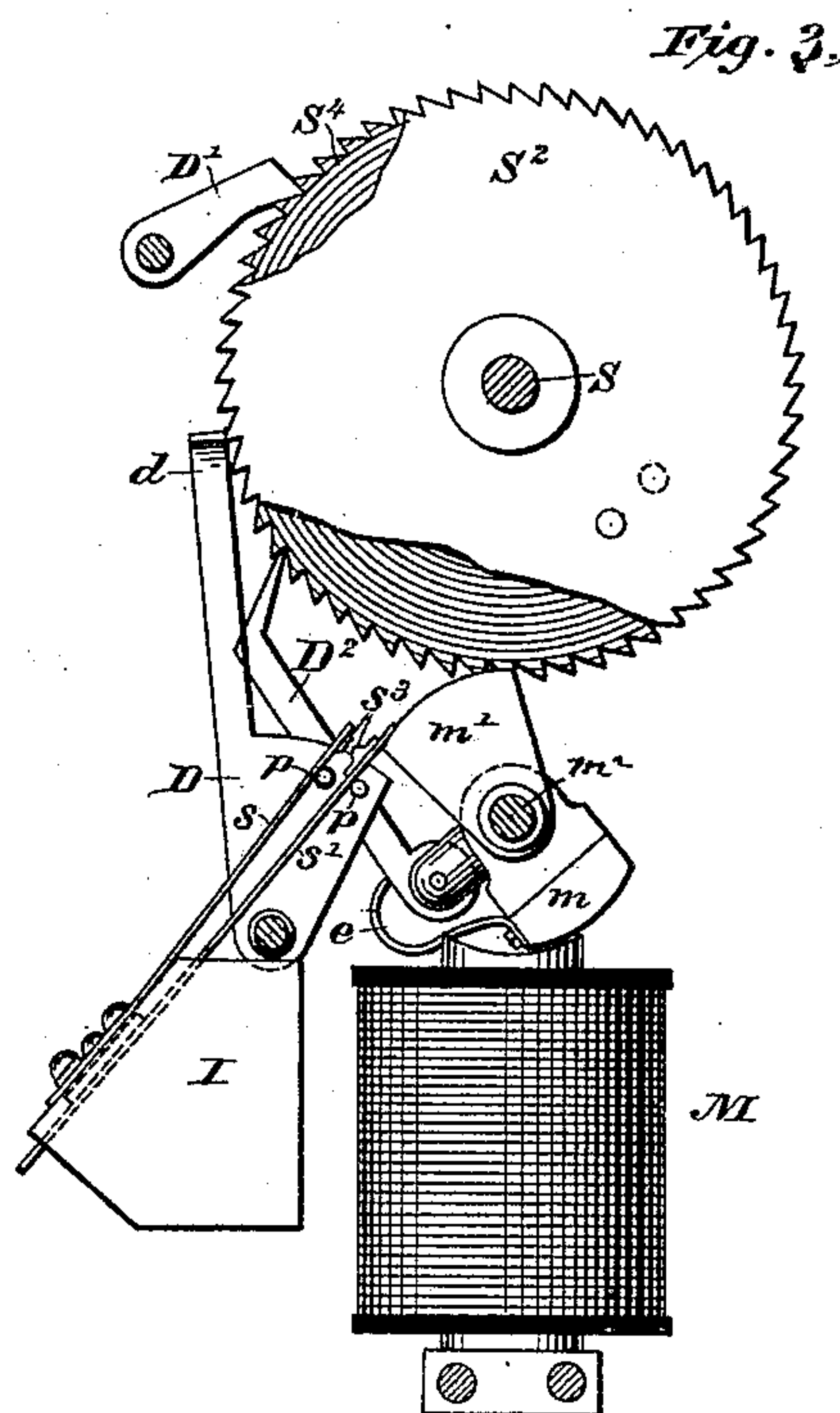
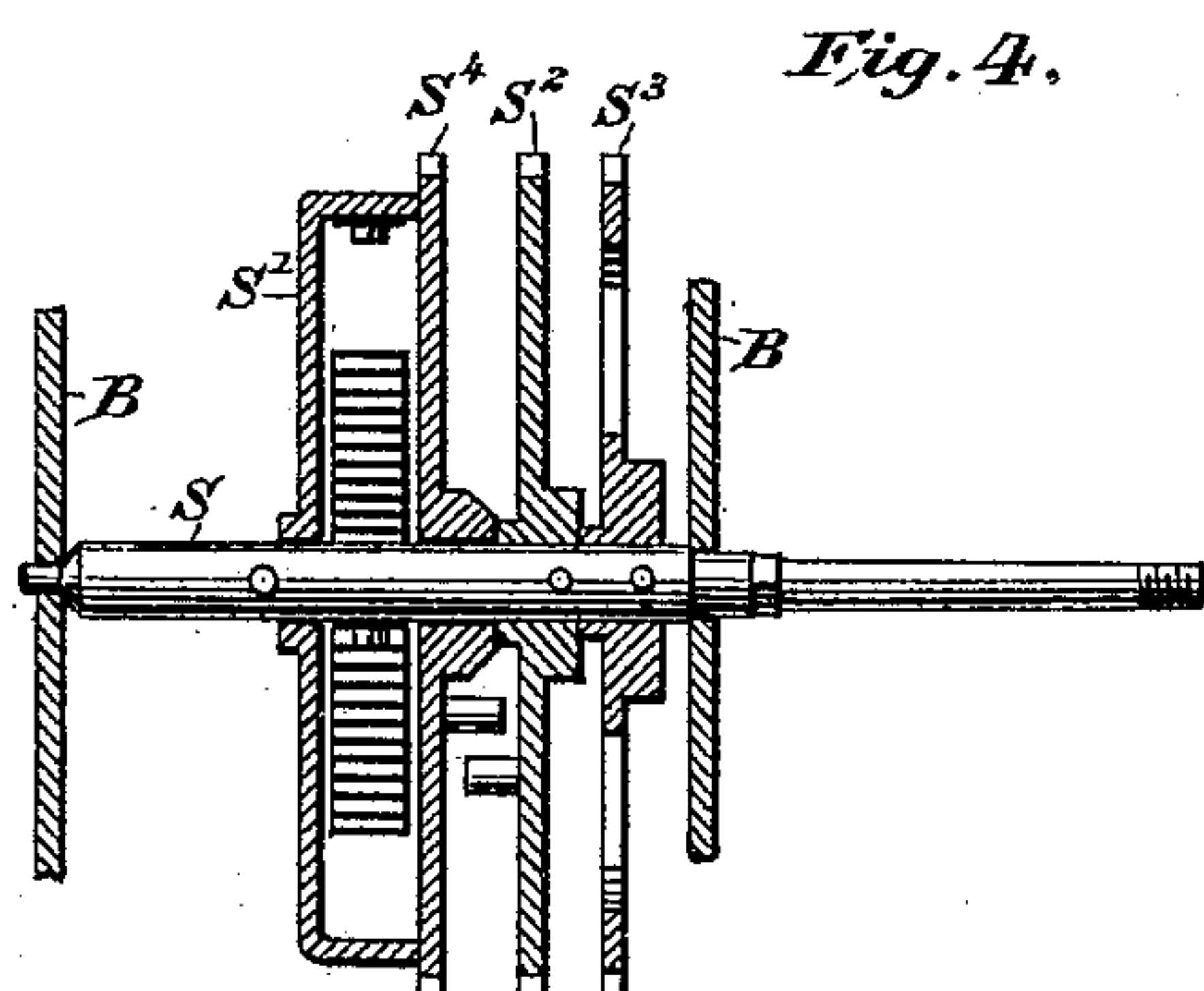
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2 Sheets—Sheet 2.

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ELECTRIC SELF WINDING CLOCK.

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# UNITED STATES PATENT OFFICE.

JAMES H. GERRY, OF BROOKLYN, ASSIGNOR TO THE SELF WINDING CLOCK COMPANY, OF NEW YORK, N. Y.

## ELECTRIC SELF-WINDING CLOCK.

SPECIFICATION forming part of Letters Patent No. 405,089, dated June 11, 1889.

Application filed March 21, 1889. Serial No. 304,111. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. GERRY, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Self-Winding Clocks, of which the following is a specification.

The invention belongs to the class of clocks which wind themselves through the action of an electro-magnet, and are known as "step-by-step" winders.

The invention will be readily understood by those skilled in the art by inspection of the accompanying drawings, in which—

Figure 1 is a front view of a clock-movement with the winding apparatus partly in section; and Fig. 2 is a side elevation of the same. Figs. 3 and 4 illustrate details.

Referring to the drawings, the movement A is included in the frame B, of the usual form, consisting of two sides held together by the posts C. To the lower part of the frame is secured an additional frame A', which carries the greater part of the winding mechanism. This consists, principally, of the electro-magnet M, the pole-pieces of which are curved, as shown, and the armature *m* has its face also curved to correspond with the pole-pieces, and the armature turns upon the axis *m*<sup>2</sup>. To this axis is secured, nearly at one end of the armature, the sector *m*', projecting on the opposite side from the armature *m*. The main shaft S of the movement carries the box S', which contains the spring and the extra wheel S<sup>2</sup>, preferably placed between the main wheel S<sup>3</sup> of the movement and the spring-box S'. The armature *m* is normally held on one side of the pole-pieces of the magnet and stands in the position shown in Fig. 3. When the magnet M is vitalized, the armature *m* is drawn downward, turning upon its axis *m*<sup>2</sup>, and at the end of its movement is in the position shown in Fig. 1. The two springs *s* and *s*', carrying at their ends circuit-closing points *s*<sup>3</sup>, are fastened to the insulating-block I, so that they are insulated from each other, and these are connected with the opposite poles of the battery by means of the wires *n n*. These two springs *s* and *s*' are normally held apart from each other, as shown both in Figs.

1 and 3; but once each minute they are allowed to approach, so that the circuit-closing points *s*<sup>3</sup> touch, when the magnet is vitalized and the armature changes from the position shown in Fig. 3 to the position shown in Fig. 1. The springs *s* and *s*' are held in their positions by means of the pins *p p*, which are fixed upon the segment D of a lever, the upper end of which *d* passes over the teeth of the extra wheel S<sup>2</sup>.

The winding is effected one tooth at a time through the dog D<sup>2</sup>, which is attached to the armature *m*, acting upon the spring-wheel S<sup>4</sup>, while the dog D' prevents the return of the spring-wheel S<sup>4</sup>, when the dog D<sup>2</sup> is released.

The operation is as follows, the parts being in the position shown in Fig. 3: The lower spring *s*' rests upon the top of the sector *m*', and the circuit-closing points *s*<sup>3</sup> are held apart by the pins *p*. It will be noticed that the upper end *d* of the dog of the lever D is nearly at the end of a tooth upon the wheel S<sup>2</sup>. This wheel being attached to the main shaft of the movement is being carried forward thereby, and presently the end of the lever *d* will fall upon the next tooth. When that takes place, it will be seen that the circuit-closing points *s*<sup>3</sup> will be brought together, because the upper spring *s* will be allowed to drop toward the spring *s*', and as the latter rests upon the edge of the sector *m*' it cannot follow the pin *p*, which supports it. As soon as the circuit-closing points *s*<sup>3</sup> are brought together the magnet M is vitalized, the armature *m* turns into the position shown in Fig. 1, the dog D<sup>2</sup> pushes forward the spring S<sup>4</sup> one tooth, while the dog D' also falls over one tooth. As soon as the armature *m* has reached the position shown in Fig. 1 the spring *s*' drops down against the end of the sector *m*', as shown, and the circuit-closing points *s*<sup>3</sup> are separated. The two springs *s* and *s*' each rest upon the pins *p p*, and the continued going of the clock carries the end *d* of the lever D out toward the end of a tooth upon the wheel S<sup>2</sup>, and presently raises the two springs *s* and *s*' far enough to allow the sector *m*' to pass under the spring *s*'. As soon as this is done the slight recoil of the mainspring upon the dog D<sup>2</sup> throws the armature back into the position shown in



Fig. 3, and this is assisted by the curved spring *e* attached to the armature. The further recoil of the mainspring is stopped by the dog *D'*, which always falls a little beyond the tooth when the wheel *S*<sup>4</sup> is carried forward by the dog *D*<sup>2</sup> in the process of winding. When the armature *m* moves back from the position in Fig. 1 to the position in Fig. 3, it carries the dog *D*<sup>2</sup> with it over one tooth of the wheel, and it is then ready for the next operation, as has been described.

The advantages of the invention are, the operation is noiseless, the winding is effected without shock to the train, the electric current passes through no part of the movement, and the current is broken the instant the work is accomplished.

I claim as my invention—

1. The combination of a clock-train, a mainspring for actuating the same, an electro-magnet, an armature therefor, said armature being arranged to turn upon an axis parallel with the pivots of the clock-train, a lever attached to said armature and engaging with the wheel connected with said mainspring, the segment or lever *m*<sup>2</sup>, the springs *s* and *s'*, the extra wheel *S*<sup>2</sup> upon the main shaft of said train, and the lever *D*, operated by said wheel *S*<sup>2</sup>.

2. The combination, with the clock-train having a mainspring for driving the same, of the electro-magnet *M*, having curved pole-pieces, the armature *m*, with its face curved to correspond with said pole-pieces, the sector *m'*, the springs *s* and *s'*, having the circuit-closing points *s*<sup>3</sup>, the wheel *S*<sup>2</sup> upon the main shaft of the clock-train, the lever *D* engaging therewith, and the dogs *D'* and *D*<sup>2</sup>.

3. The combination, with the clock-train having a mainspring for driving the same, of the electro-magnet *M*, having curved pole-pieces, the armature *m*, with its face curved to correspond with said pole-pieces, the sector *m'*, the springs *s* and *s'*, insulated from each other and from the train, having the circuit-closing points *s*<sup>3</sup>, the wheel *S*<sup>2</sup>, upon the main shaft of the clock-train, the lever *D* engaging therewith, the pins *p p*, which control the positions of the springs *s* and *s'*, and the dogs *D'* and *D*<sup>2</sup>.

In testimony whereof I have hereunto subscribed my name this 20th day of March, A. D. 1889.

JAMES H. GERRY.

Witnesses:

DANL. W. EDGECOMB,  
CAROLINE E. DAVIDSON.