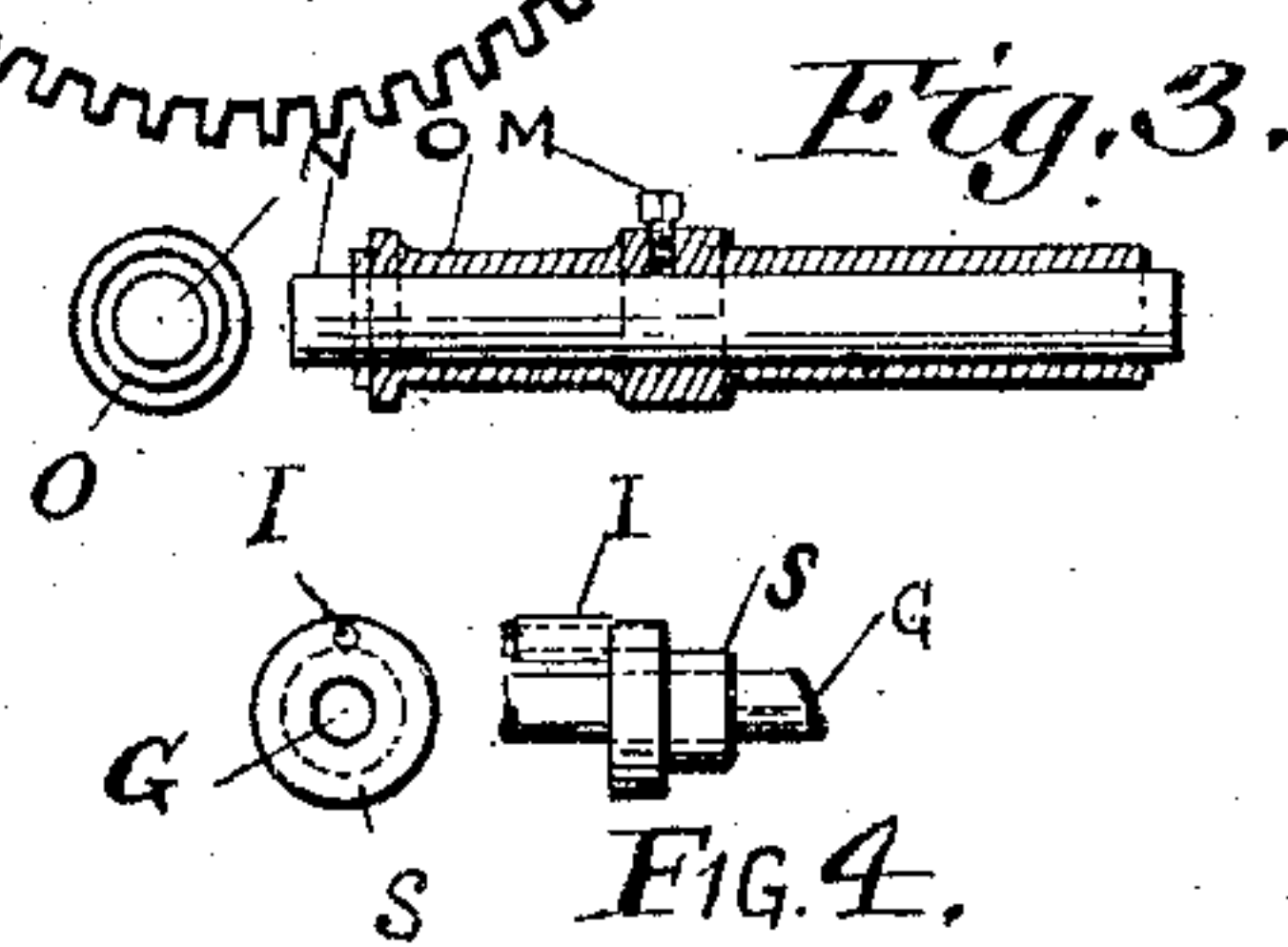
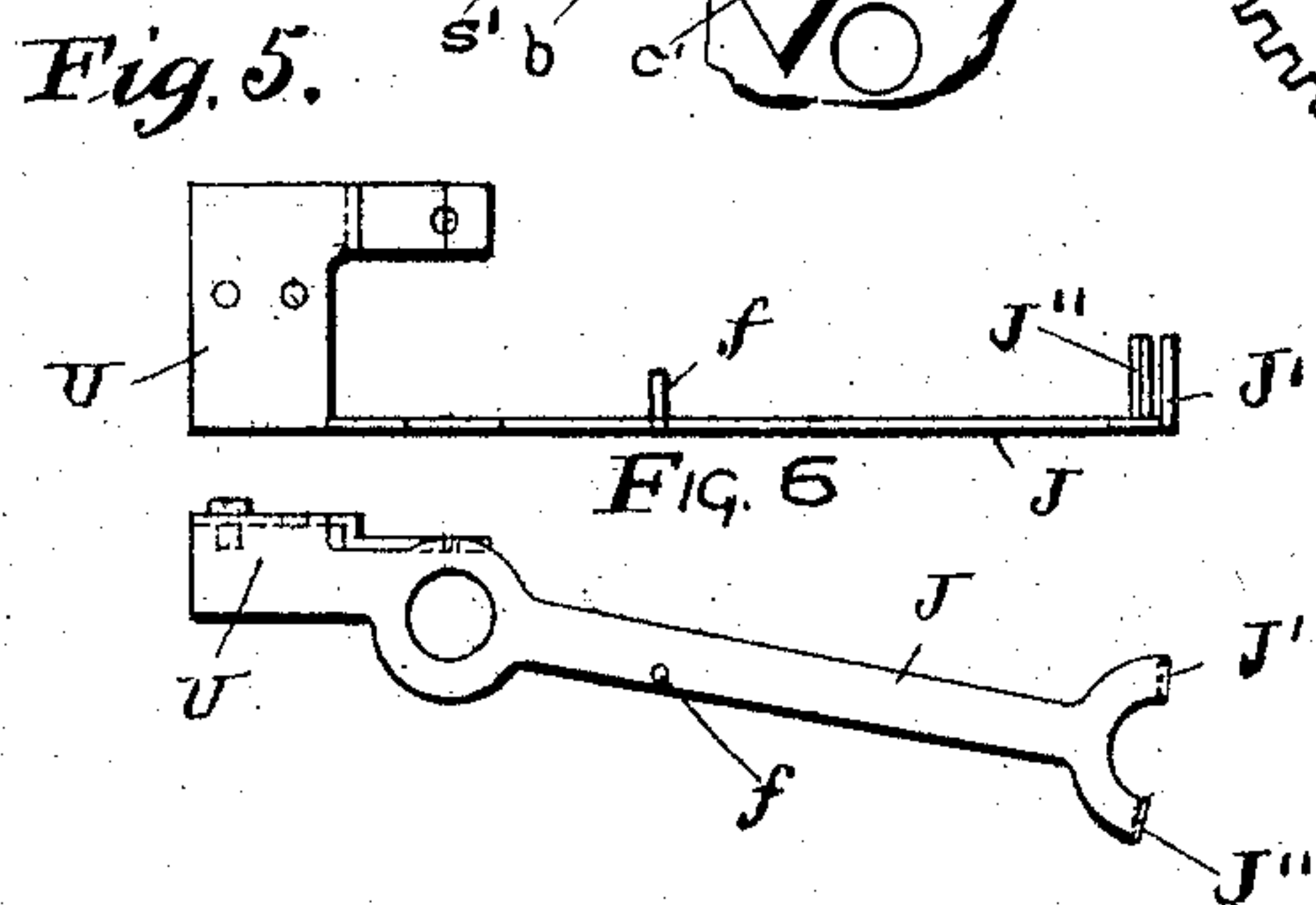
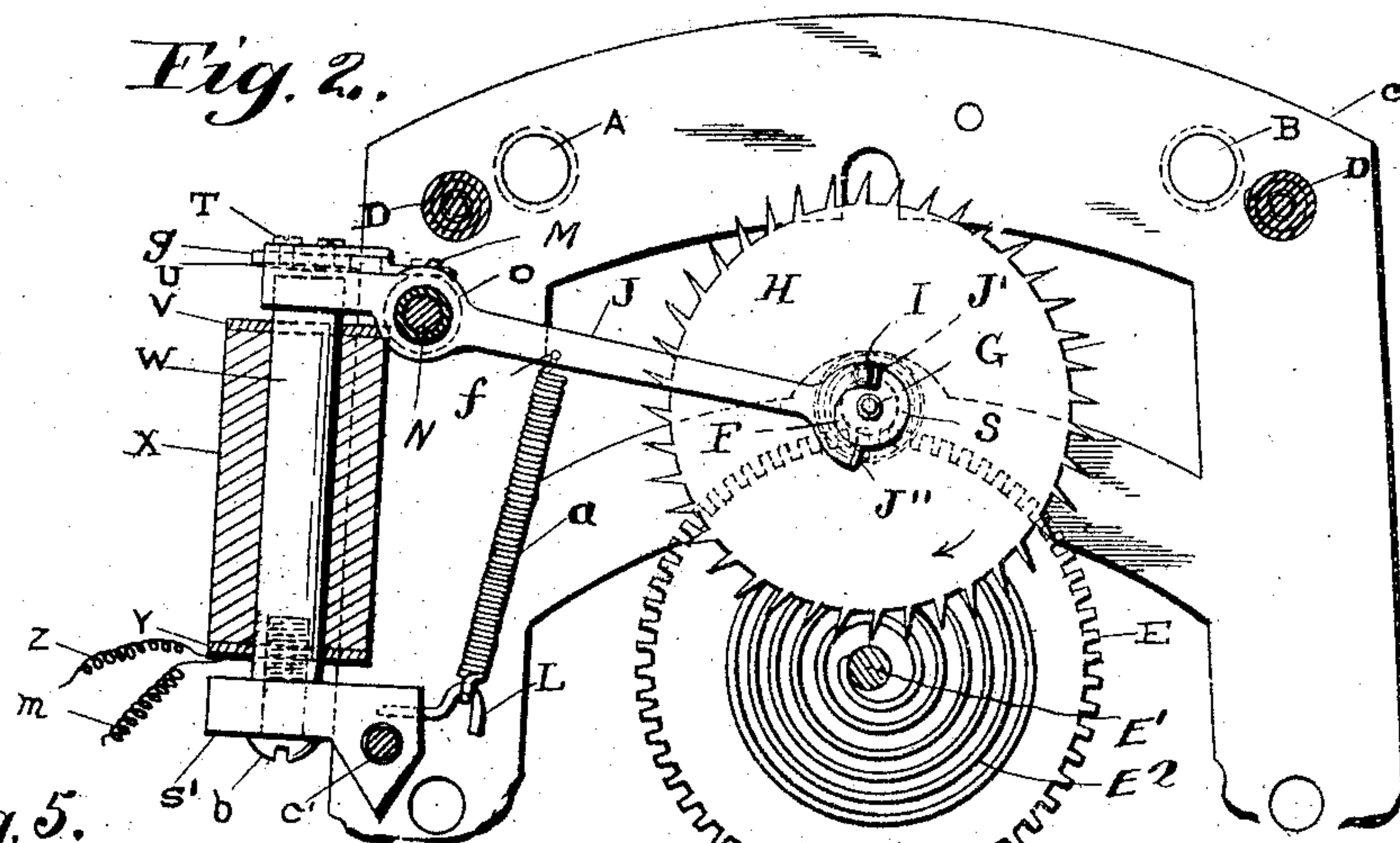
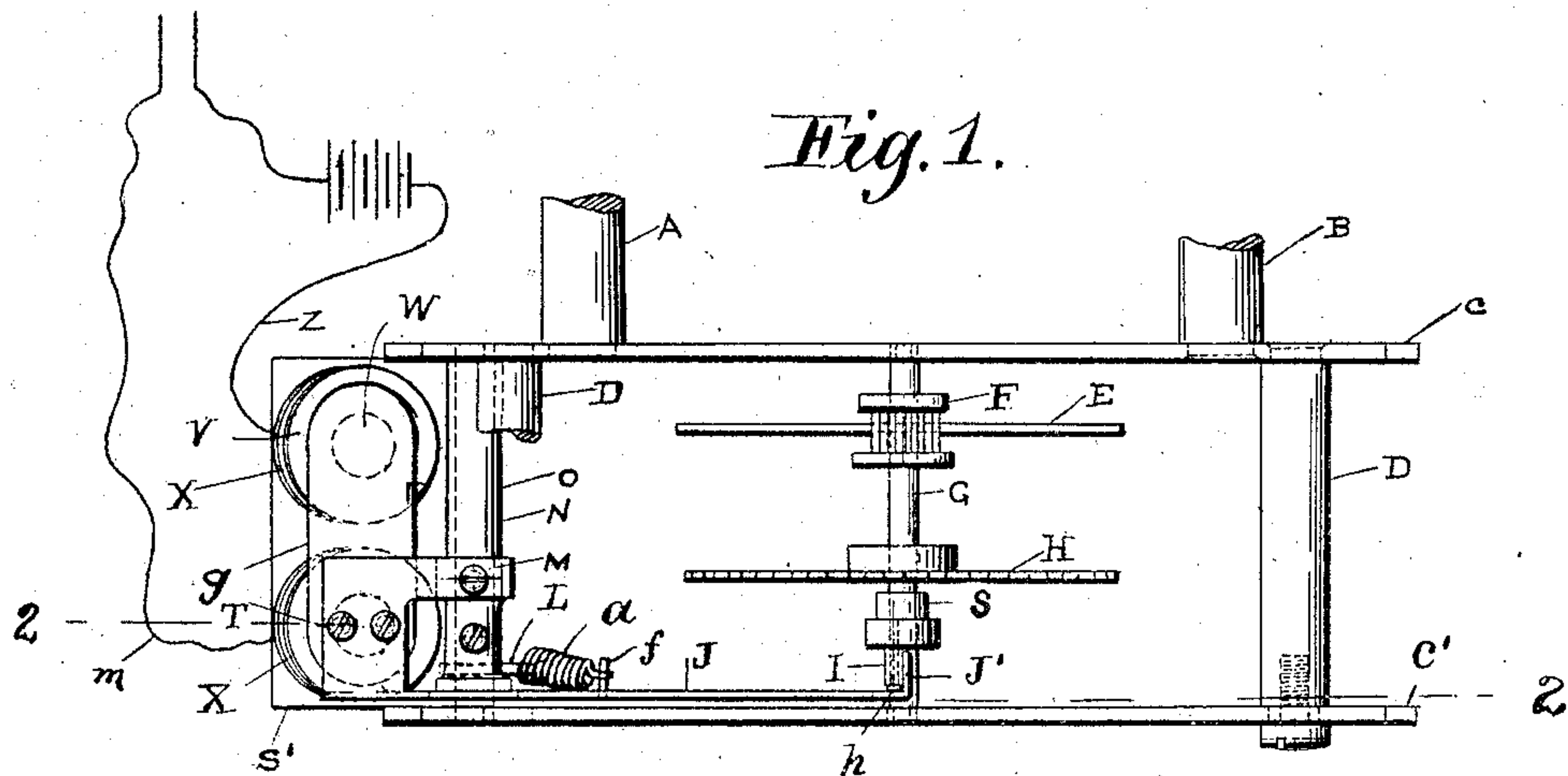


No. 881,404.

PATENTED MAR. 10, 1908.

C. F. HOLLISTER.
ELECTRIC ESCAPEMENT FOR TIME MOVEMENTS.
APPLICATION FILED MAR. 25, 1907.



WITNESSES

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ELECTRIC ESCAPEMENT FOR TIME MOVEMENTS.

No. 881,404.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed March 25, 1907. Serial No. 364,288.

To all whom it may concern:

Be it known that I, CHARLES FREDERICK HOLLISTER, a citizen of the United States, and resident of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Electric Escapements for Time-Movements, of which the following is a specification.

This invention relates to new and useful improvements in electric escapements or synchronizers for clock movements.

It is the purpose of my invention to design an escapement for clock movement, which is adapted to be applied to an ordinary mechanical movement and to take the place of the escapement ordinarily used, such as the pendulum escapement or lever escapement; to provide a simple construction of electrical appliance which may be connected to the escapement shaft and be substituted for the common form of yoke escapement generally used in connection with time movement of this class; further to design the mechanism, so as to insure a complete rotation of the escapement shaft with each operation of the magnet and to divide said rotations into two parts, each representing substantially a half turn of the shaft.

Upon the accompanying drawing forming a part of this specification similar characters of reference denote like or corresponding parts throughout the several figures and of which,

Figure 1, shows a top plan view of a portion of a clock movement having my improved electrical escapement applied thereto. Fig. 2, is a sectional elevation of the mechanism shown in Fig. 1 and taken on line 2—2 of said figure. Fig. 3, is a detail end and a longitudinal sectional view of the shaft and rocker hub upon which the escapement arm is pivoted. Fig. 4, is a detail end and a side view of a part of the escapement shaft G shown in Figs. 1 and 2. Fig. 5, is a detached plan view, and Fig. 6, is a detached side elevation of the pivotal escapement arm operated by the magnets.

In the production of my device I provide a pair of magnets for manipulating the armature end of escapement arm. This arm is designed to so engage a pin of the hub mounted upon an escapement shaft that the latter is permitted to rotate a complete period with each cycle of operation of the said armature.

Referring in detail to the characters of reference marked upon the drawing *c* and *c'* represent the back and front plates respectively of a clock movement, and D posts secured to and intermediate of said plate to retain and properly space the plates to accommodate the operating mechanism mounted therebetween.

A—B indicate supports by means of which the movement may be held in any suitable inclosure.

E indicates a gear mounted upon a shaft *E'* that may be driven by the clock spring *E²* or may be connected to operate by other devices, but is normally under tension to turn in a forward direction whenever free to do so, and is thus designed to operate the smaller pinion F with which it meshes and that is fixed to the escapement shaft G journaled in the side plates *c* and *c'* before mentioned. As shown the said escapement shaft G is provided with the usual form of escapement wheel H and adjoining said wheel is also mounted upon said shaft a hub *s* having a pin I, extended from its front side and located eccentric of the shaft G for engagement with the escapement arm as will later be explained.

Intermediate of the front and back plates of the frame is mounted a bracket *s'* which serves to support the magnets X—X wound upon the cores W secured to said bracket by screws *b*. V and Y represent the end plates of the magnets and Z and *m* the wires connected thereto for charging the magnets.

g is a yoke connecting the upper ends of the magnets, and designed to attract the armature end U of the escapement arm J secured to the sleeve O and pivoted to the rod N secured to the plates *c* and *c'*. Said armature is normally held raised from the magnets by the action of the spring *a* secured to the pin *f* of the escapement arm J and the hook L attached to the bracket *s'*. The inner end of the escapement arm is branched and provided with two fingers *J'* and *J''* which are deflected inward at a right angle and adapted to alternately engage the pin I of the hub attached to the shaft G.

From the foregoing it will be seen that each time the magnet is charged the armature will be attracted thereto against the resistance of the spring *a* in order to throw the arm J up and its lower branch against the shaft and release the upper finger *J'* from the pin I, and permit the same and shaft to ro-

tate by reason of its connections with the driving shaft E'. The lower finger J'' is thus brought into the line of travel of the said pin I so as to retard the movement with each one half turn of the escapement shaft until the magnet releases the armature and the spring moves the arms back to its original position which serves to allow the pin to continue its movement and the shaft to complete a single rotation.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. An electrically operated escapement for clock movements, comprising a shaft and means for operating the same, a hub mounted upon the shaft and bearing a pin disposed parallel with said shaft, a magnet, an armature operated by the magnet and bearing an arm having a pair of fingers disposed parallel with and upon two sides of the shaft, and a spring connected to the arm to retract the same when released by the magnet.

2. An electrically operated escapement for clock movements, comprising a shaft having means for operating the same, a wheel carried on the shaft bearing a pin upon one side

disposed parallel with the shaft, a pivoted arm having branches to straddle the shaft and a finger upon each arm disposed parallel with the shaft, a magnet and spring for operating the arm to alternately throw the fingers of the arm in line with the movement of the pin in the wheel to check and release its escapement.

3. An electrically operated escapement for clock movements, comprising a shaft with means for operating the same, a hub attached thereto having a pin disposed parallel with the shaft, a divided arm pivoted to the movement and having one branch disposed upon one side of the shaft and the other upon the opposite side, and a finger projected from each of such branches and parallel with the shaft, a magnet to retract the arm and spring to operate the arm when released by the magnet.

Signed at Waterbury, in the county of New Haven, and State of Connecticut, this 15th day of March, A. D. 1907.

CHARLES FREDERICK HOLLISTER

Witnesses:

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