

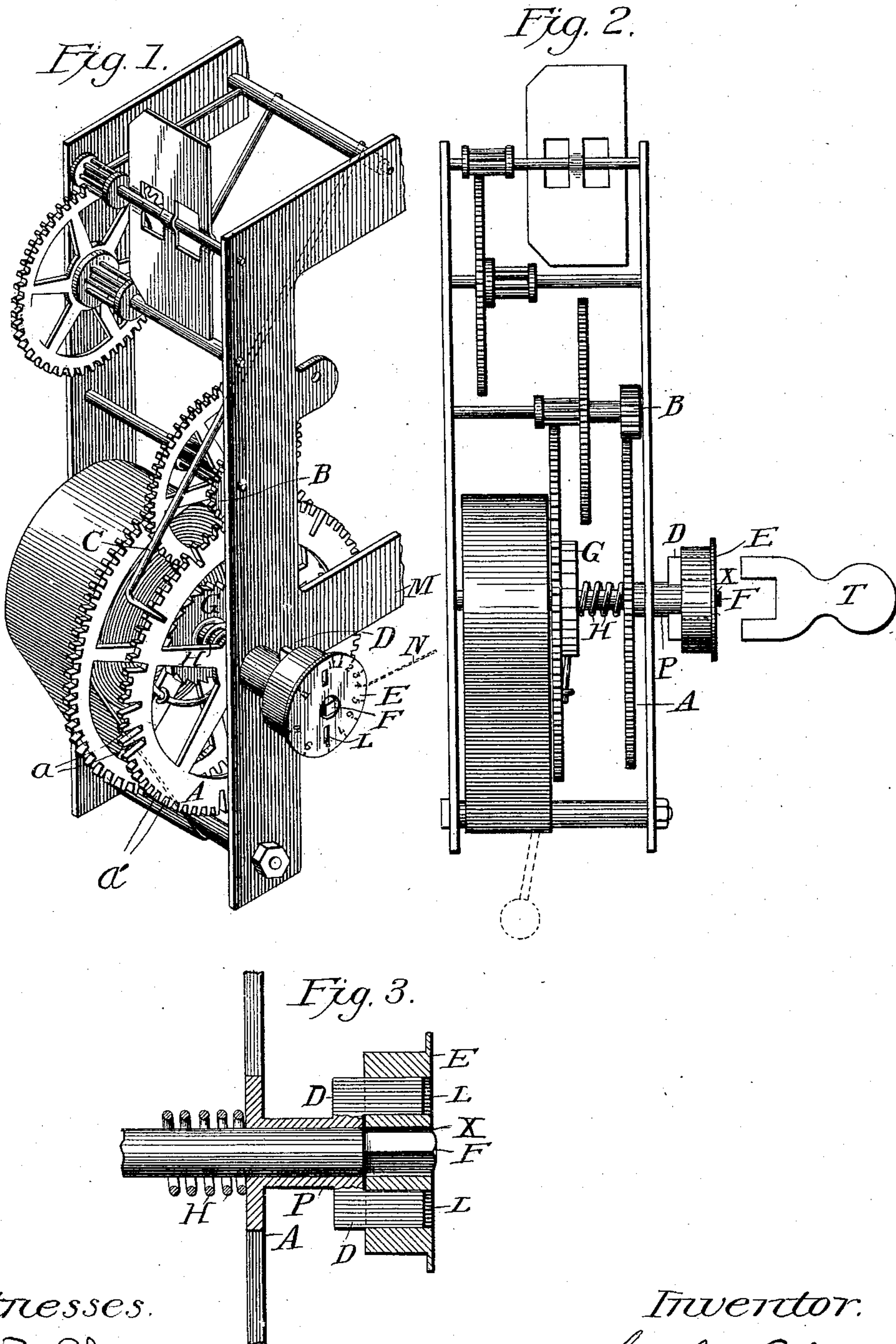
(No Model.)

3 Sheets—Sheet 1.

G. M. BILGER.
STRIKING MECHANISM FOR CLOCKS.

No. 555,203.

Patented Feb. 25, 1896.



Witnesses.
B. F. Chase.
C. L. Thompson

Inventor.
Geo. M. Bilger

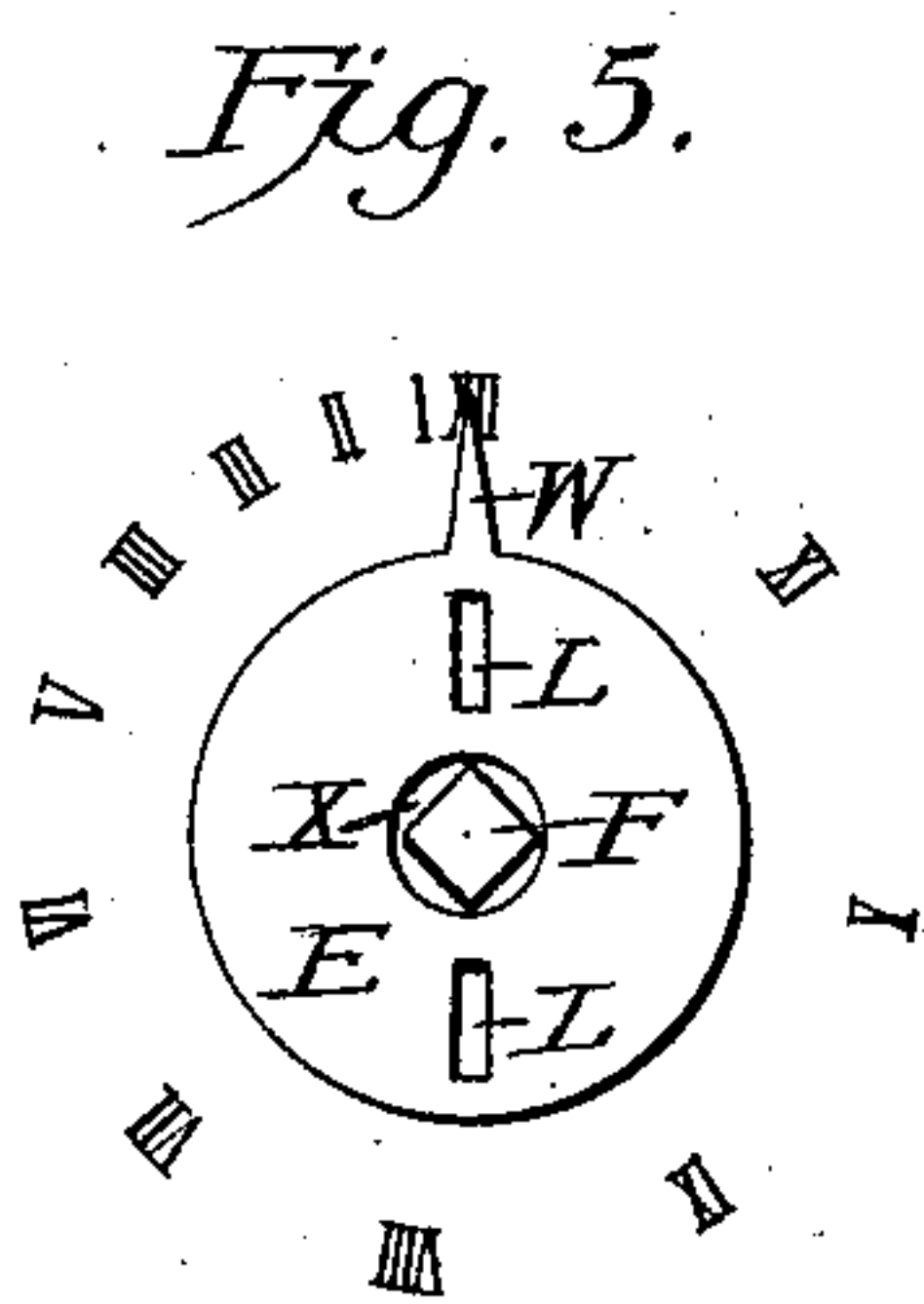
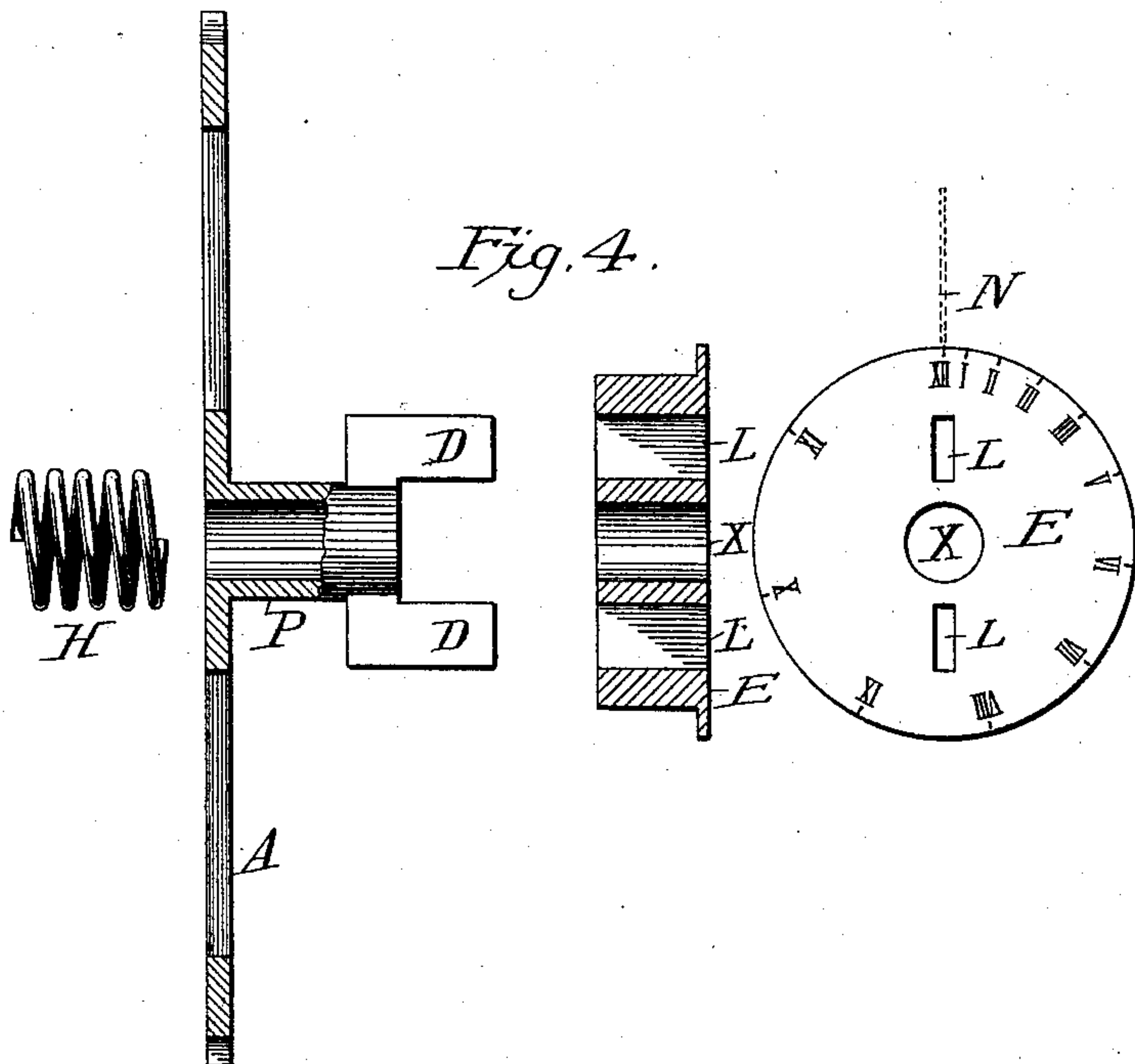
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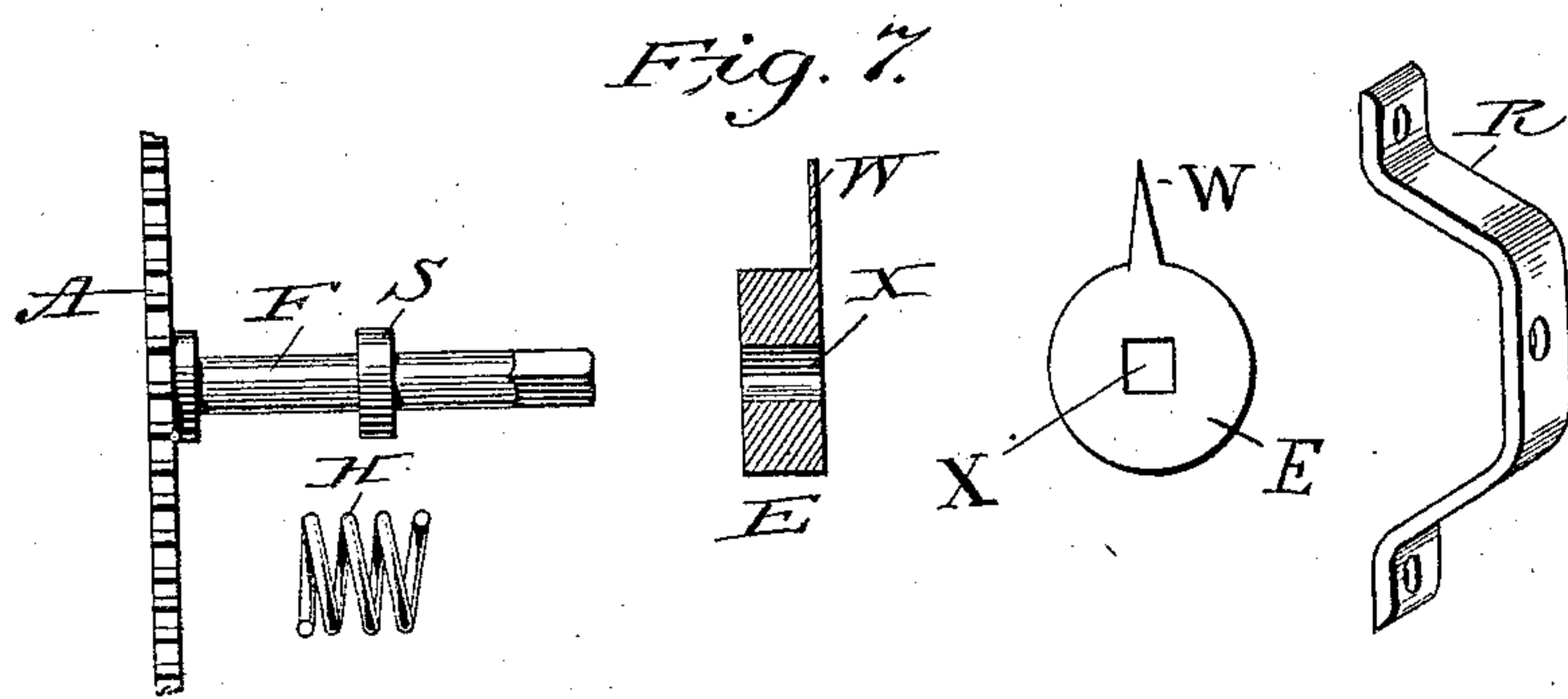
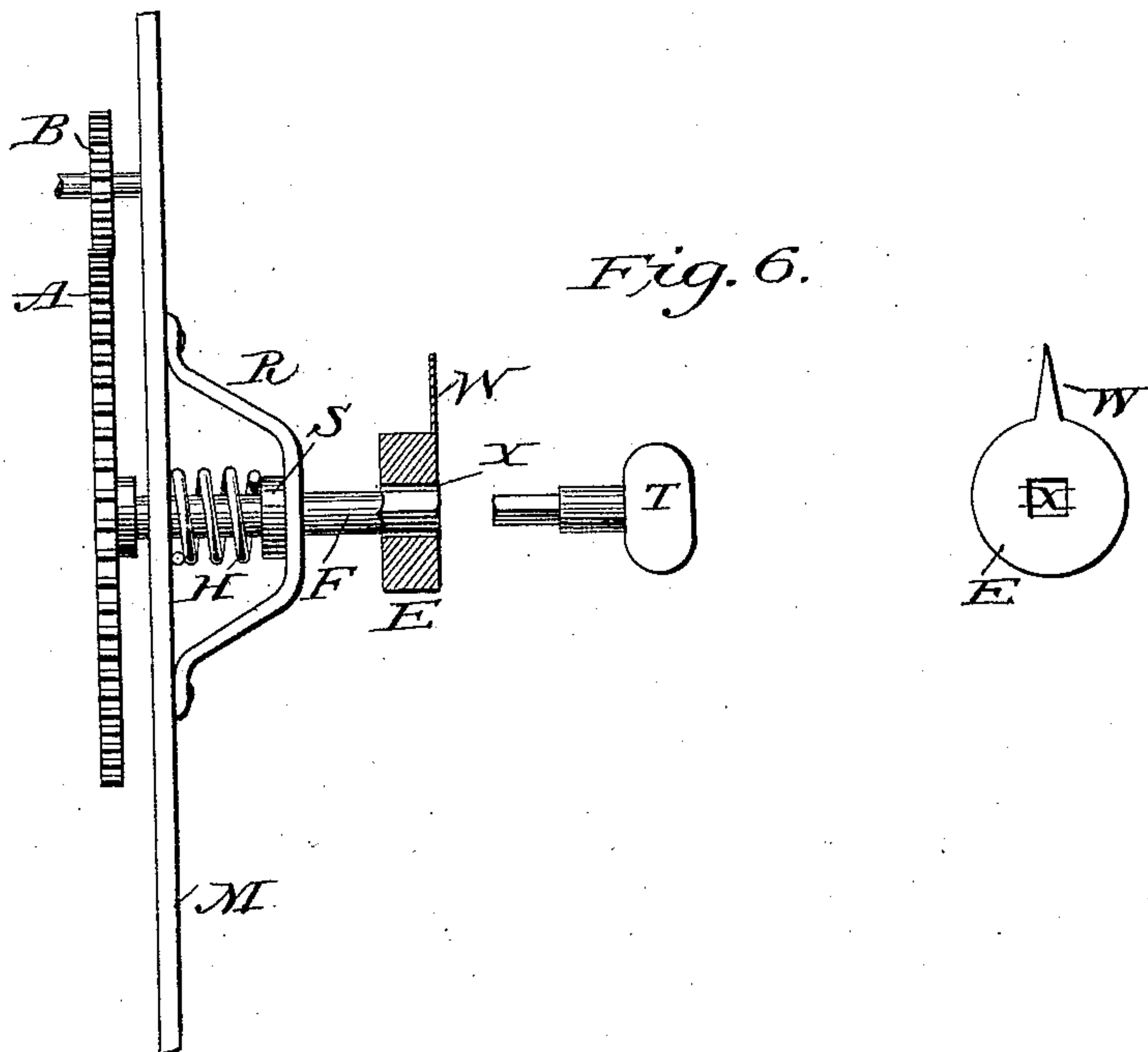
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UNITED STATES PATENT OFFICE.

GEORGE M. BILGER, OF CLEARFIELD, PENNSYLVANIA.

STRIKING MECHANISM FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 555,203, dated February 25, 1896.

Application filed April 2, 1895. Serial No. 544,183. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. BILGER, a citizen of the United States, residing at Clearfield, in the county of Clearfield and State of Pennsylvania, have invented a new and useful Improvement in the Striking Mechanism of Clocks, of which the following is a specification.

My invention relates to that class of clocks having a count-wheel with shallow grooves around the perimeter of the same, into one of which a catch falls at each stroke, and having deeper grooves at regularly-varied distances around the same to regulate the stroke by the catch falling into the same and the count-wheel being stopped when the desired number has been struck; and the objects of my invention are, first, to have an outside indicator moving with the count-wheel, which shall indicate, at all times, in which deep groove the catch rests, and, consequently, the number which the clock will next strike, and, second, to enable any person to correct the stroke of the clock by moving the indicator to any desired number without striking the clock to that number as now required in that class of clocks. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents the striking mechanism of the clock with the improvement attached. Fig. 2 represents a side view of the striking mechanism without the catch C, with a vertical section of the improvement attached, together with one form of key to be used in operating the improvement. Fig. 3 represents a portion of the count-wheel with the spring H and a vertical section of the balance of the improvement. Fig. 4 represents the several parts of the improvement. Fig. 5 represents a modified form of outside indicator. Fig. 6 represents a modified form of the improvement attached to the frame of the clock and showing a modified form of key and indicator and regulator, and Fig. 7 represents the several parts of the modified form of improvement.

Similar letters refer to similar parts throughout the several views.

A represents the count-wheel; *a*, the deep grooves, and *a'* the shallow grooves around the same; B, a cog-wheel meshing with the

count-wheel A and moving the same; C, a bar with a catch falling into the grooves *a* and *a'*; D D, extended arms on each side of the sleeve P and extending into the openings L L in the small outside indicator and regulator E.

F is the axle of the count-wheel A, and which also serves as the winding-bar for spring of striking mechanism, excepting in the modified form as shown at Fig. 6; G, a ratchet-wheel.

H is a spring to throw the count-wheel A forward into position.

N is a mark upon the face or outside of the clock to which the numbers on the indicator and regulator are to be brought.

T represents two forms of key to work the improvement.

W is a hand upon the modified form of indicator and regulator E.

X is an opening in the center of the indicator and regulator E through which the axle F extends.

S is a shoulder on the axle F in the modified form of improvement against which the spring H rests.

M is the front of clock-frame; R, a bracket attached to frame M to form a bearing for the axle F.

In the preferred form the count-wheel A is attached permanently to the sleeve P, which in turn has the arms D D extending into the openings L L of the indicator and regulator E. The count-wheel A, the sleeve P, and the indicator and regulator E all move together loosely upon the axle F, which extends through the face of the clock. The indicator and regulator E is a small plate, say, one inch or less in diameter, either placed around the winding-bar F of the striking mechanism or at any other place on the clock, and joined by appropriate gearing to the sleeve P. It has two openings L L for the arms D D and an opening X in the center for the winding-bar and axle F. A space is left between the count-wheel A and the ratchet-wheel G, which is occupied by the spring H, so placed as to throw and hold the count-wheel A forward in position.

The modified form of improvement shown at Fig. 6 is applicable to that class of clocks in which the count-wheel is not hung upon the winding-bar, but is placed upon a sepa-

rate axle. The sleeve P, the arms D D, and the openings L L are all absent in this form, while the opening X in the indicator and regulator E is square instead of circular in form.

- 5 In this case F serves as the axle for the count-wheel A and the connection between it and the indicator and regulator E, taking the place of the sleeve P in the preferred form, and the count-wheel A is fixed solidly to it.
- 10 An additional bearing for the axle F is supplied by the bracket R, attached to the front of the clock-frame M, while the count-wheel A is thrown forward by the spring H, placed between the frame M and the shoulder S.
- 15 The key to be used in this form is a simple square key to fit the square opening X. (See Fig. 6.)

In the preferred form when the striking mechanism is set in motion the count-wheel A is moved around the axle F by the cog-wheel B, and the catch C rises and falls with each stroke into one of the shallow grooves a' , and when the desired number of strokes has been struck the catch C falls into one of the deep grooves a and the count-wheel A is stopped. As the count-wheel A moves, it carries with it the sleeve P, the arms D D, and the indicator and regulator E. If the striking mechanism be started when the mark N is at any number, say V, it will turn until stopped at VI, &c., the hand W on the indicator and regulator E (see Fig. 5) or the mark N (see Fig. 4) always pointing to the number which will next be struck, and always indicating into which deep groove a of the count-wheel A the catch C rests. The numbers upon and around the indicator and regulator E should be placed at the same relative and regularly varied distances from each other as are the deep grooves a upon the count-wheel A—that is, the greatest distance between XII and I and the shortest distance between I and II. The order of the numbers around the indicator and regulator E (see Fig. 5) and those upon the indicator and regulator E (see Fig. 4) is reversed.

The great difficulty with clocks of this class has been that when one of the same is striking the wrong number—for instance, striking twelve when the hour and minute hands are at XI—there is no way of correcting the stroke excepting by causing the clock to strike until the clock has struck clear around to XI, or rather until the catch C has fallen into every shallow and deep groove a' and a from XII around to XI. This is obviated by my invention. When the clock is striking the wrong hour, the ends of the key T are inserted into the holes L L of the indicator and regulator E and pushed against the arms D D, when the sleeve P will push the count-wheel A back against the spring H and toward the ratchet-wheel G, and until the count-wheel A is freed from the catch C and the cog-wheel B, when a turn of the key T will bring the count-wheel A around to any desired point. When the key T, after pressing back the arms D D, is

turned until the hands of the indicator and regulator E (see Fig. 5) or the mark N (see Fig. 4) points to the number which it is desired shall next be struck, the key T is withdrawn, and the spring H throws the count-wheel A forward so that it meshes with the cog-wheel B and the catch C slides into the proper deep groove a , and the sleeve P moves forward until the arms D D are again even with the surface of the indicator and regulator E.

In the modified form the same result is reached without the use of the arms D D or the sleeve P. The key T is inserted into the opening X and pressed against the end of the axle F, which is shoved back and carries with it the count-wheel A, which is attached to the axle F. When the key T is turned, both the indicator and regulator E and the count-wheel A move around, together with the axle F, until the hand W points to the desired number, when the key T is withdrawn and the spring H, set against the frame M, pushes against the shoulder S and throws the count-wheel A forward into position.

I am informed that repeating clocks are made having a snail to regulate the stroke, which is geared to the central arbor to which the hands are fastened. I do not claim this, but

What I do claim is—

1. The combination, in a clock, of the other parts of the striking mechanism with the count-wheel and an indicator and regulator, connected with the count-wheel, substantially as shown, for the purposes set forth.

2. The combination, in a clock, of the other parts of the striking mechanism with an indicator and regulator connected with a count-wheel, movable out of the plane of the cog-wheel B and the catch C, substantially as described.

3. The combination, in a clock, of the other parts of the striking mechanism with the count-wheel and an indicator and regulator, connected with the count-wheel, and having marks upon the same in the same relative positions and at the same regularly-varied distances from each other as are the several parts of the perimeter of the count-wheel, all substantially as set forth.

4. The combination, in a clock, of the other parts of the striking mechanism with the count-wheel A, attached to the indicator and regulator E by the sleeve P, and all movable together upon the axle F, substantially as shown.

5. The combination, in a clock, of the other parts of the striking mechanism with the count-wheel A, the spring H, the sleeve P, the arms D D, the openings L L and X and the indicator and regulator E, substantially as shown.

GEORGE M. BILGER.

Witnesses:

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JAMES H. KELLEY.