

(No Model.)

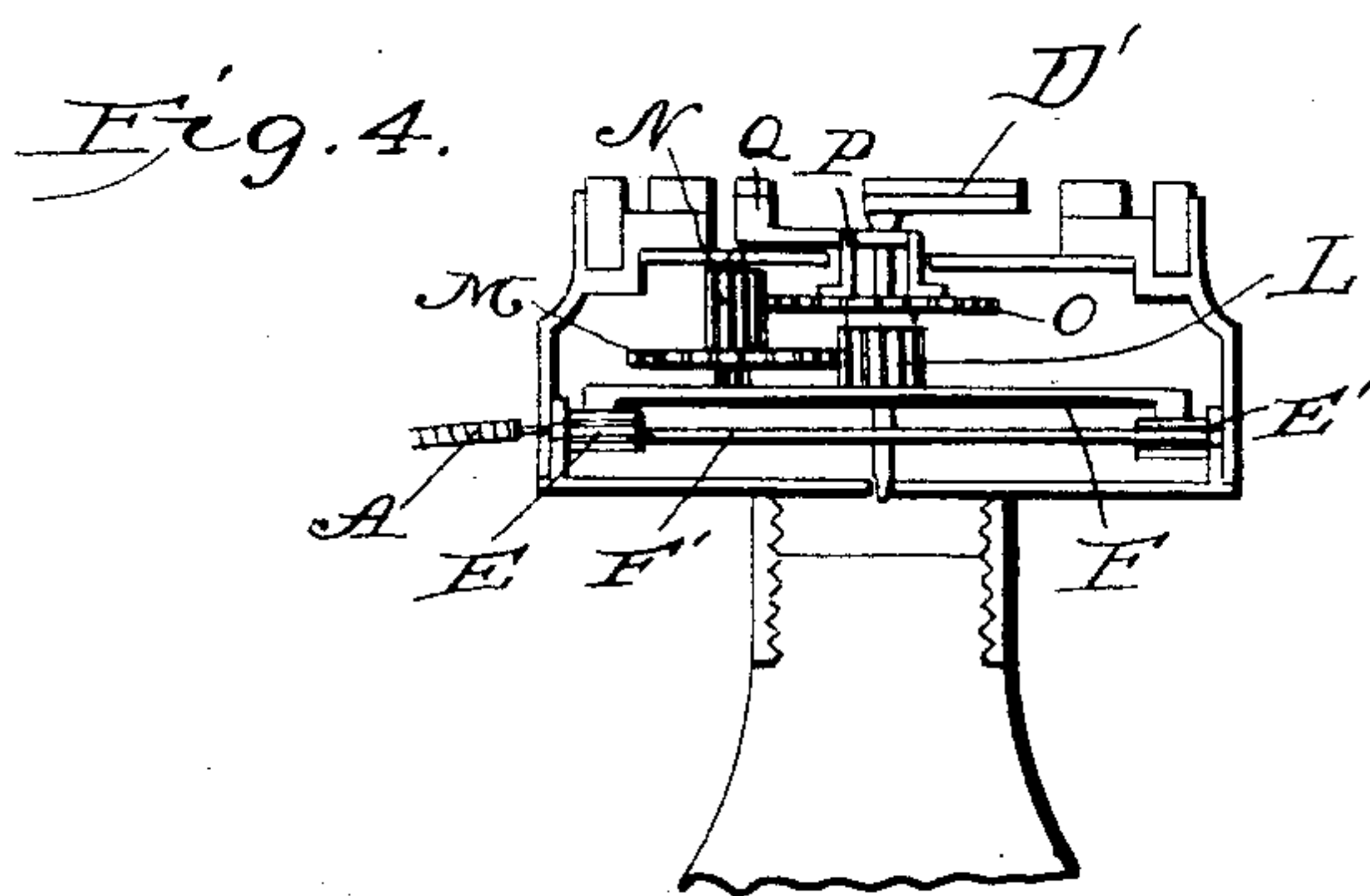
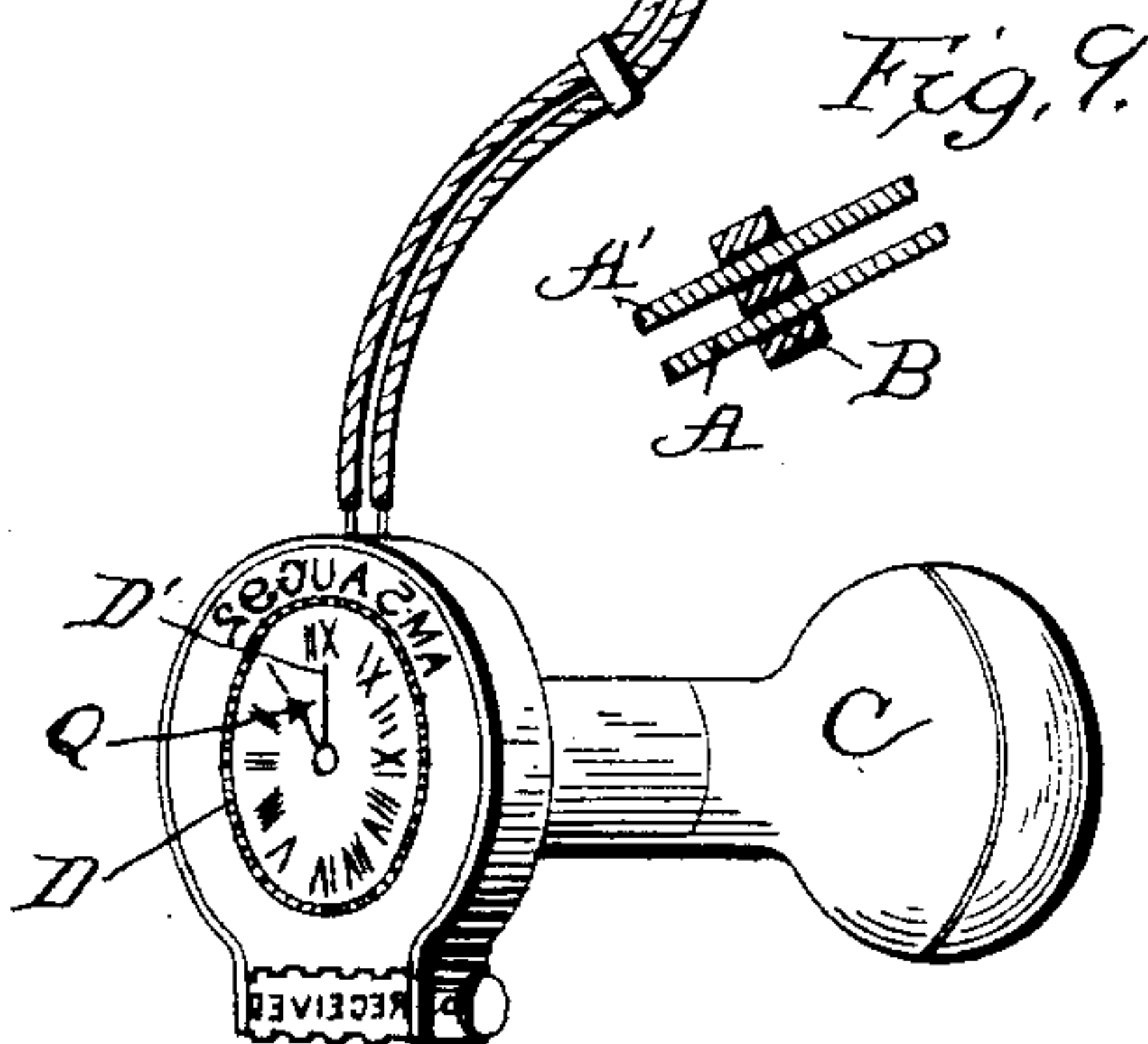
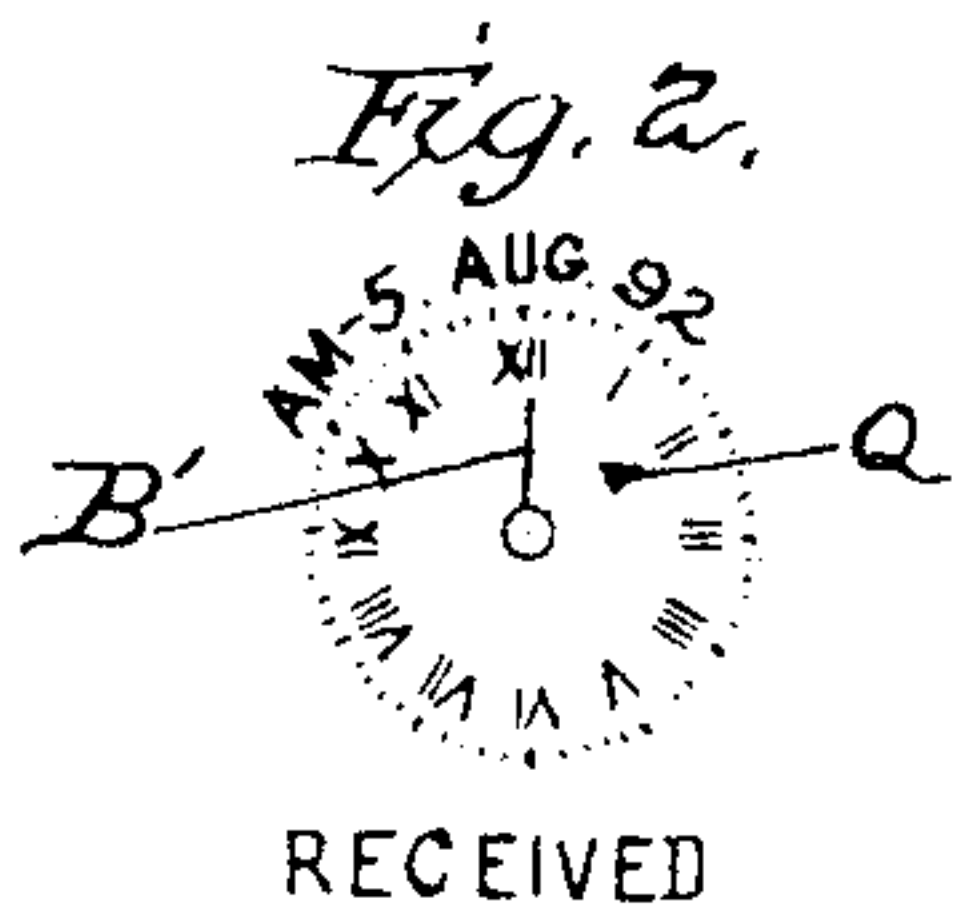
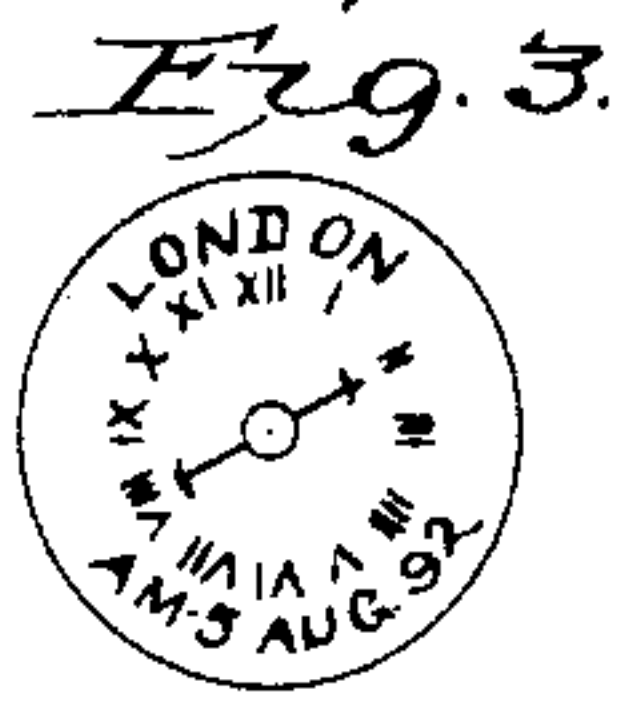
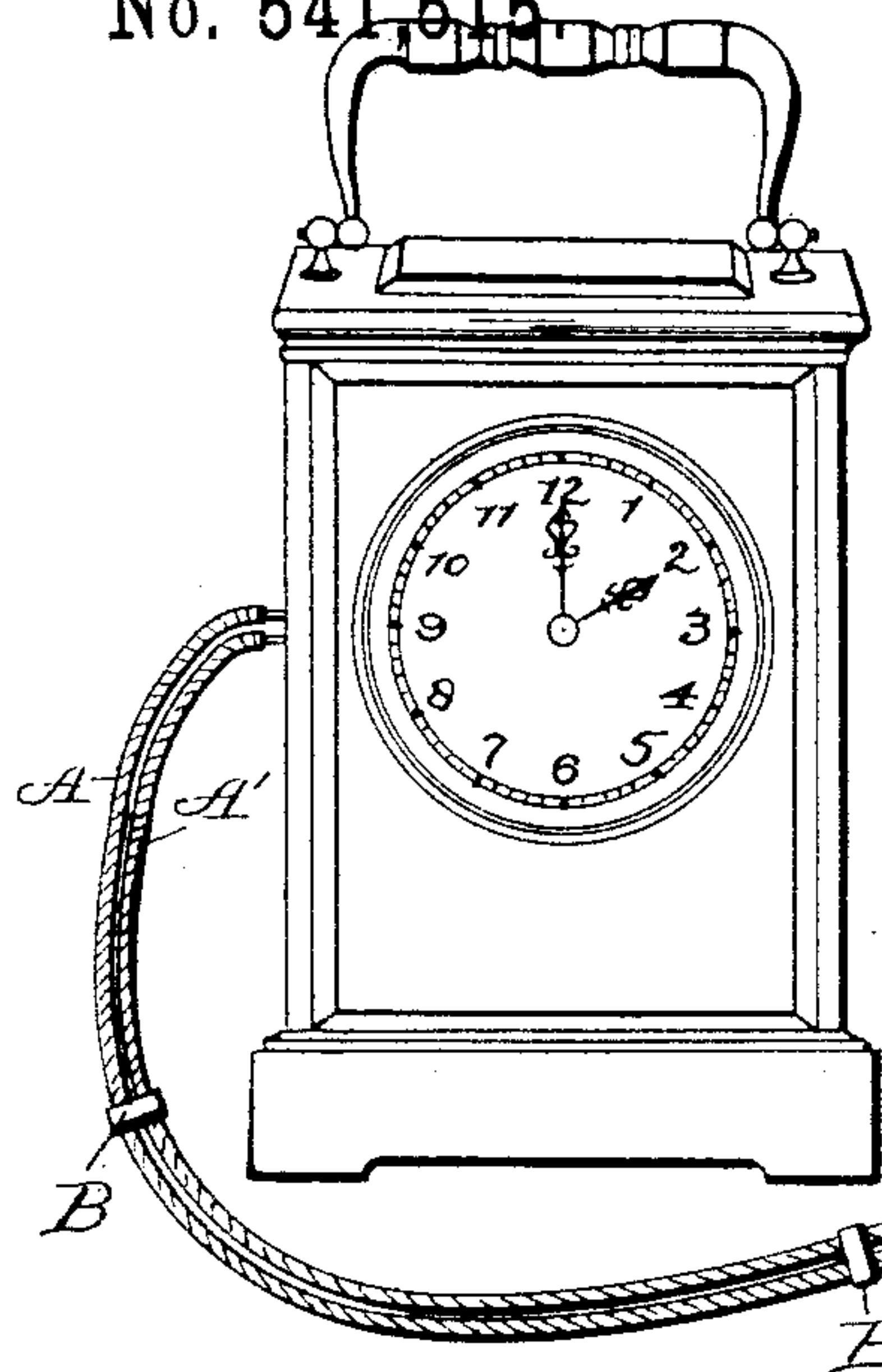
2 Sheets—Sheet 1.

B. W. WARWICK.

SELF NEUTRALIZING FLEXIBLE CONDUCTOR FOR TRANSMITTING
MOTION TO MOVABLE OBJECTS.

No. 541,515

Patented June 25, 1895.



Attest
Wm. F. Hall
J. L. Middleton

Inventor
B. W. Warwick
by Richard H. Co.
Atty.

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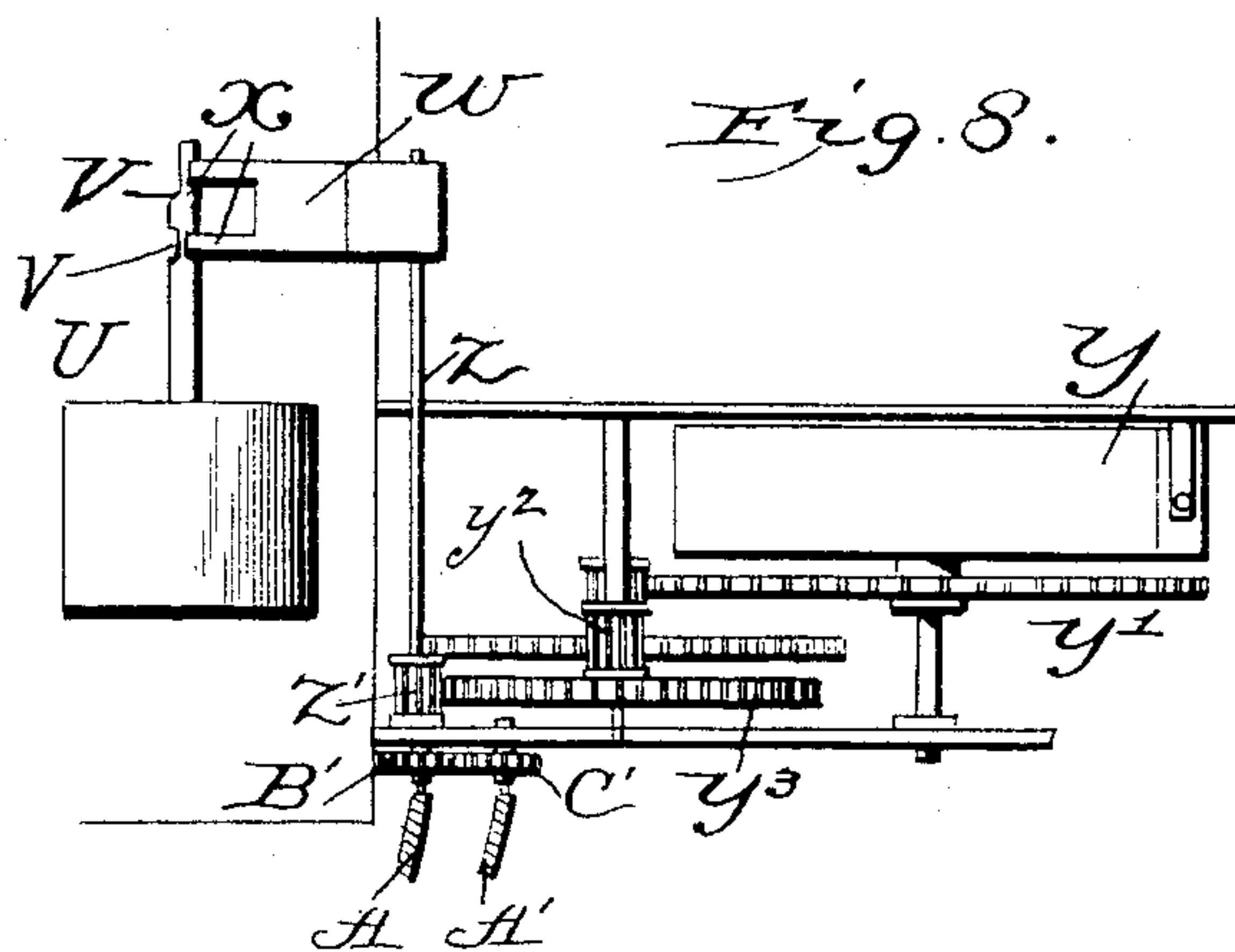
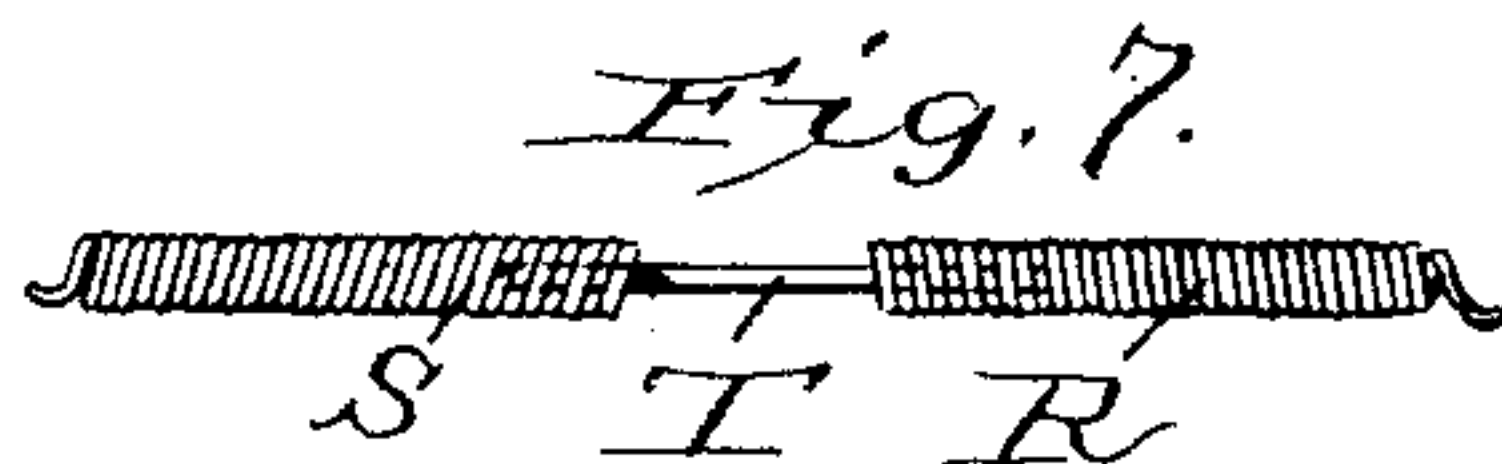
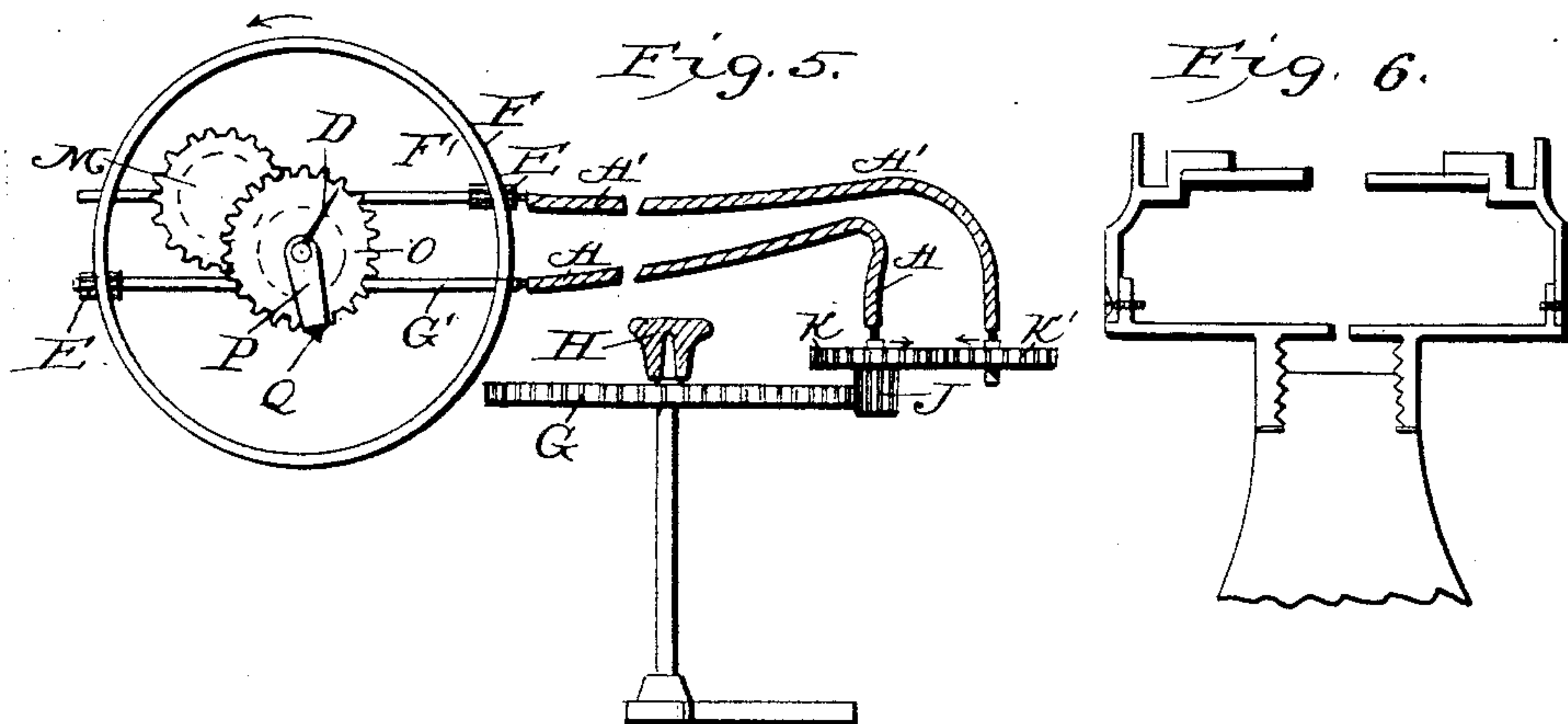
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UNITED STATES PATENT OFFICE.

BENJAMIN WILLIAM WARWICK, OF LONDON, ENGLAND.

SELF-NEUTRALIZING FLEXIBLE CONDUCTOR FOR TRANSMITTING MOTION TO MOVABLE OBJECTS.

SPECIFICATION forming part of Letters Patent No. 541,515, dated June 25, 1895.

Application filed September 3, 1892. Serial No. 445,024. (No model.) Patented in England August 10, 1891, No. 13,478; in Germany September 1, 1892, Nos. 68,485 and 69,572; in Switzerland September 1, 1892, No. 5,670; in France September 2, 1892, No. 224,106; in Belgium October 18, 1892, No. 101,771; in Italy October 20, 1892, No. 32,874; in Canada March 1, 1893, No. 42,125, and in Austria-Hungary June 21, 1893, No. 56,082 and No. 10,257.

To all whom it may concern:

Be it known that I, BENJAMIN WILLIAM WARWICK, a subject of the Queen of Great Britain, residing at 134 Highbury Hill, London, England, have invented a certain new and useful Self-Neutralizing Flexible Conductor for Transmitting Motion to Movable Objects; and I hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

The invention has been patented in the following countries: Great Britain, No. 13,478, dated August 10, 1891; Austria-Hungary, No. 56,082 and No. 10,257, dated June 21, 1893; Germany, Nos. 68,485 and 69,572, dated September 1, 1892; Italy, No. 32,874, dated October 20, 1892; Canada, No. 42,125, dated March 1, 1893; Switzerland, No. 5,670, dated September 1, 1892; France, No. 224,106, dated September 2, 1892, and Belgium, No. 101,771, dated October 18, 1892.

This invention consists mainly in the special means for conveying regular or intermittent motion from a clock or other progressive or reciprocating mechanism by the agency of a flexible or jointed conductor in such a manner as to allow attaching at its distant end receiving mechanism to be movable in any direction without interrupting the transmitting movements of the conductor or the relative accuracy between the stationary origin and the indications on the movable receiver.

This invention has reference in particular to that class of instruments known as hand stamps for time and date and other kindred machines for giving information. From a clock the motion may be taken off the minute axle, or center wheel axle, or off a more slowly moving part which may have to be added. The conductor may consist of a helical spiral, which conveys motion around curves. I may employ a second train to drive the flexible conductor liberated by the first clock at intervals. The motion may be conveyed around the walls of a building and used at various points as desired.

When a helical spiral is subjected to power tending to rotate it the coils are liable to yield

more or less or distend in the direction of the spirals and this tends to inaccurate indications. I obviate this by so joining up left and right-handed spirals as to neutralize these variations; or, by employing two or more conductors rotating in opposite directions so connected to the receiver as to neutralize their own inaccuracies.

Figure 1 is an external view of one form of the invention, the face of the stamp being shown for convenience in diagrammatic form, the detail of which appears in section in Fig. 4. In this case rotary motion is communicated from some part or parts of the clock-work to spirals A and A'. These spirals are held together at suitable places B, and communicate motion by suitable gearing in stamp C to hands on dial-plate D. D' is a minute-hand and Q is an hour-hand. The dial D is the reverse of an ordinary clock-dial and the hands D' Q are moved in a direction opposite to those of a clock. Fig. 2 is a representation of impression from dial-plate D. Fig. 3 is a representation of impression from a modified form of dial-plate adapted for postal purposes. Fig. 4 is an elevation of gearing within the stamp. Fig. 5 is a plan of same connected to the driving mechanism. Fig. 6 is a section of stamp-frame. Fig. 7 is a modified form of the flexible shafting. Fig. 8 shows a modified arrangement of motion for transmitting intermittent motion. Fig. 9 is a view of a detail.

To the set-hands H of the clock I attach the wheel G which acting on the pinion J drives the wheel K and the spiral A. The wheel K operating wheel K' drives the spiral A' in the opposite direction. The spiral A moves pinion E and axle F'. The pinion E drives crown wheel F. The spiral A' moves pinion E' and axle G'. The pinion E' also aids in driving crown wheel F. As the proper motion of spiral A' is the opposite to that of spiral A, but is communicated to the opposite side of crown wheel F it is obvious that the effect of the proper motions is to turn F in the same direction, but any variations in the spirals arising from distention or other cause common to both spirals produce no effect on crown wheel F, because they tend to give equal and opposite motions.

The crown wheel F carries the minute hand D'. To the crown wheel F is rigidly attached the pinion L, which by the ordinary clock motion, viz:—wheel M, pinion N and wheel O carries the piece P to which is attached the hour hand Q.

The right handed spiral R Fig. 7 is attached to rod T which at its farther end is attached to left handed spiral S. This combination may be divided into any suitable number of sections, but it is not so effective as the two spirals above described. This modification is designed to accomplish the same purpose as the two spirals A, A' before described in neutralizing the effect of any variations in the spirals, as one spiral is reversed from the other and whatever cause loosen or distend the coils of one spiral will have the opposite effect on the other spiral. The spirals are held to the rod T, by soldering or in any other desired way.

U, Fig. 8, is spindle of some part of clock work, say, the minute wheel. U has two flattened parts V, V. The piece W has its teeth X resting on the spindle U except when the flattened portions V come round. It is then freed and is forced round one revolution by the action of spring Y acting through suitable gearing Y' Y² and Y³ on pinion Z' of rod Z which rod is attached at one end to piece W and at the other end to spiral A. The wheel B' connected to spiral A operates on wheel C' and so gives reverse motion to spiral A'. Thus the revolution of pinion Z' is communicated

to the spirals and the motion is controlled by the master clock through the spindle U.

I do not limit myself to the forms herein shown, for my invention is capable of indefinite variations, especially as regards the dial portion, but I only show certain forms to indicate clearly the nature and scope of the invention.

I claim—

1. In combination, the movable time stamp having hands operating mechanism in the stamp, including a crown wheel F, a time motor mechanism and the flexible shafting comprising the two shafts A, A', connected to said motor mechanism to be rotated in opposite directions relatively to each other the pinions on opposite sides of the crown wheel and connected with the said shafts, substantially as described.

2. In combination, the movable time stamp having hands and operating mechanism therefor, the motor mechanism and the flexible shafting comprising the right and left sections of spirals arranged end to end and connected together, the said sections being of substantially the same diameter substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

BENJAMIN WILLIAM WARWICK.

Witnesses:

WILLIAM HENRY MUNNS,
WILLIAM ALFRED LYMES.