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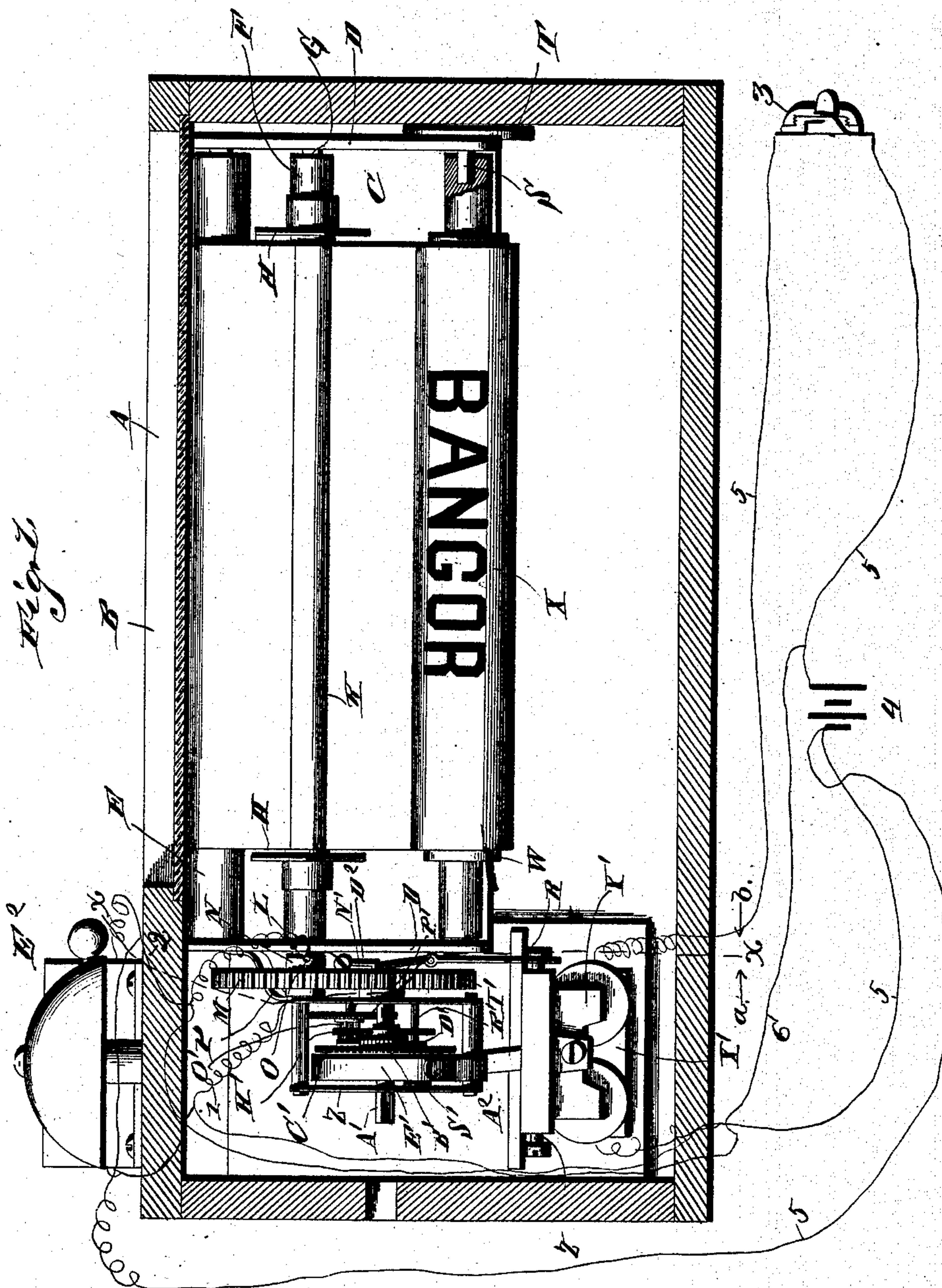
3 Sheets—Sheet 1.

G. H. KIRWAN.

ELECTRIC RAILWAY STATION INDICATOR.

No. 388,690.

Patented Aug. 28, 1888.



WITNESSES.

*W. H. Taylor,*  
*Geo. G. Warner*

INVENTOR.

*G. H. Kirwan,*

*by C. H. Snowles,*  
Attorneys.



(No Model.)

3 Sheets—Sheet 2.

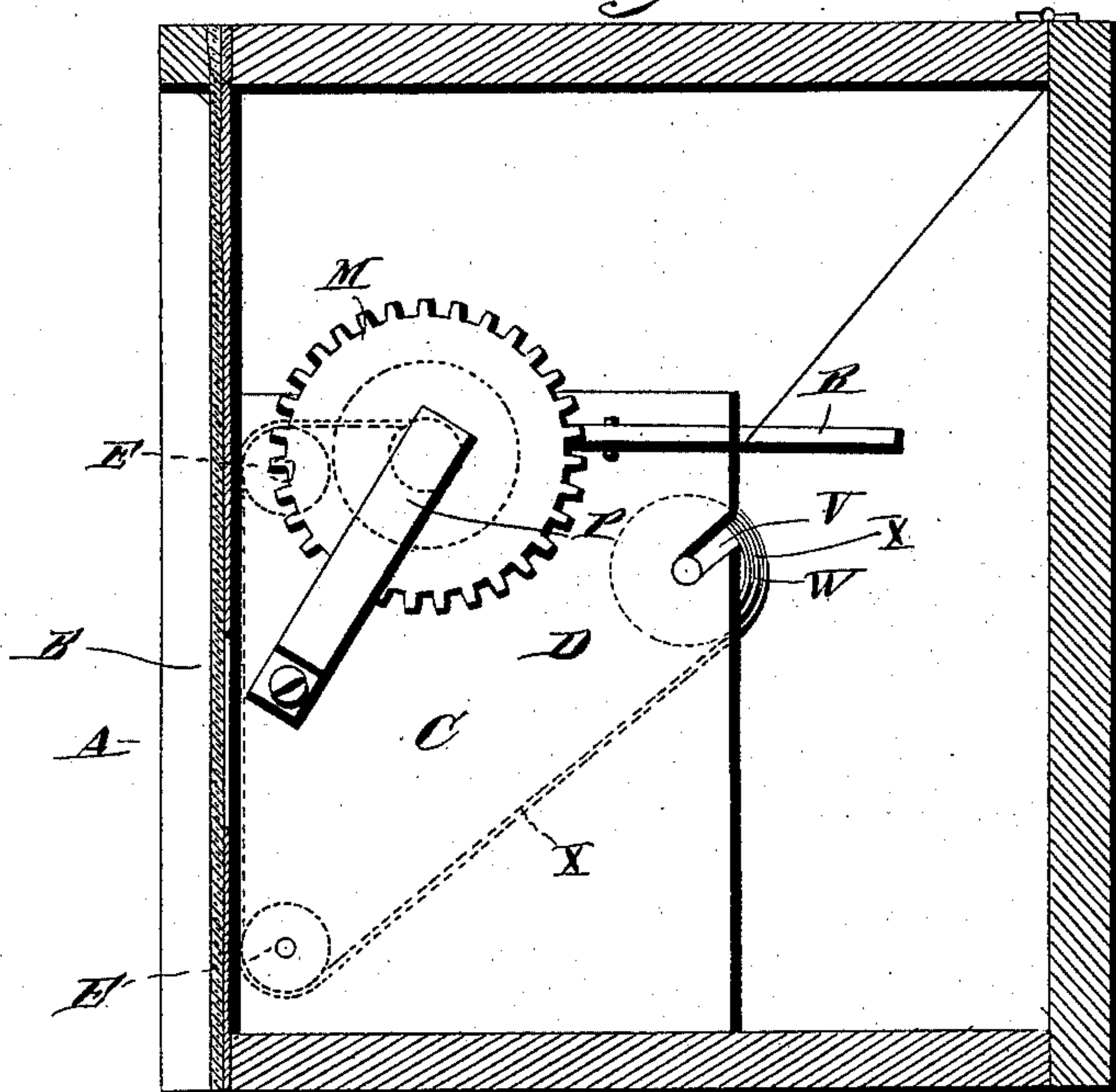
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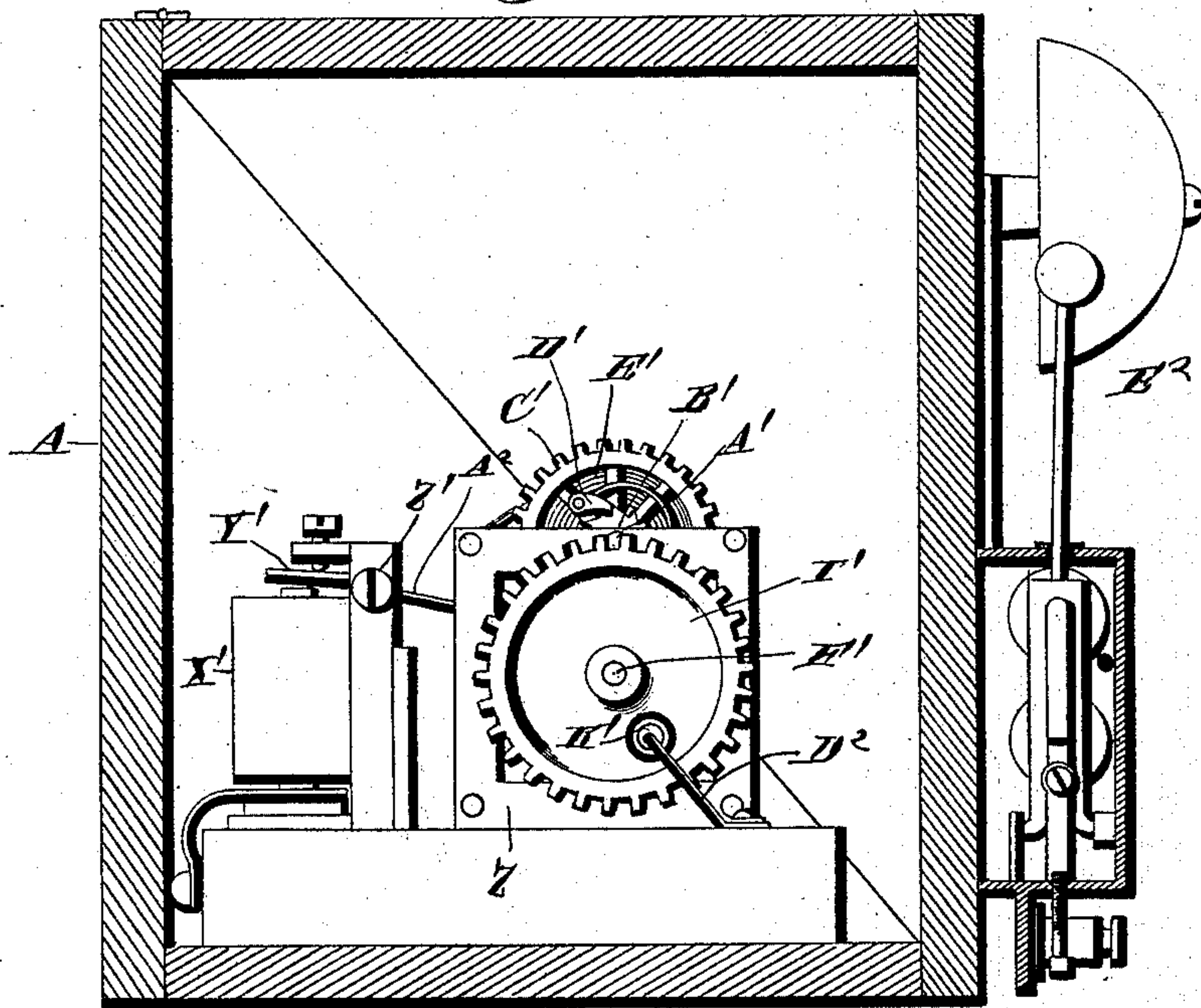
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*Fig. 2.*



*Fig. 3.*



WITNESSES.

*W. Taylor,*  
*J. V. Garner.*

INVENTOR,

*G. H. Kirwan,*

*by C. A. Snow & Co.*  
Attorneys.

(No Model.)

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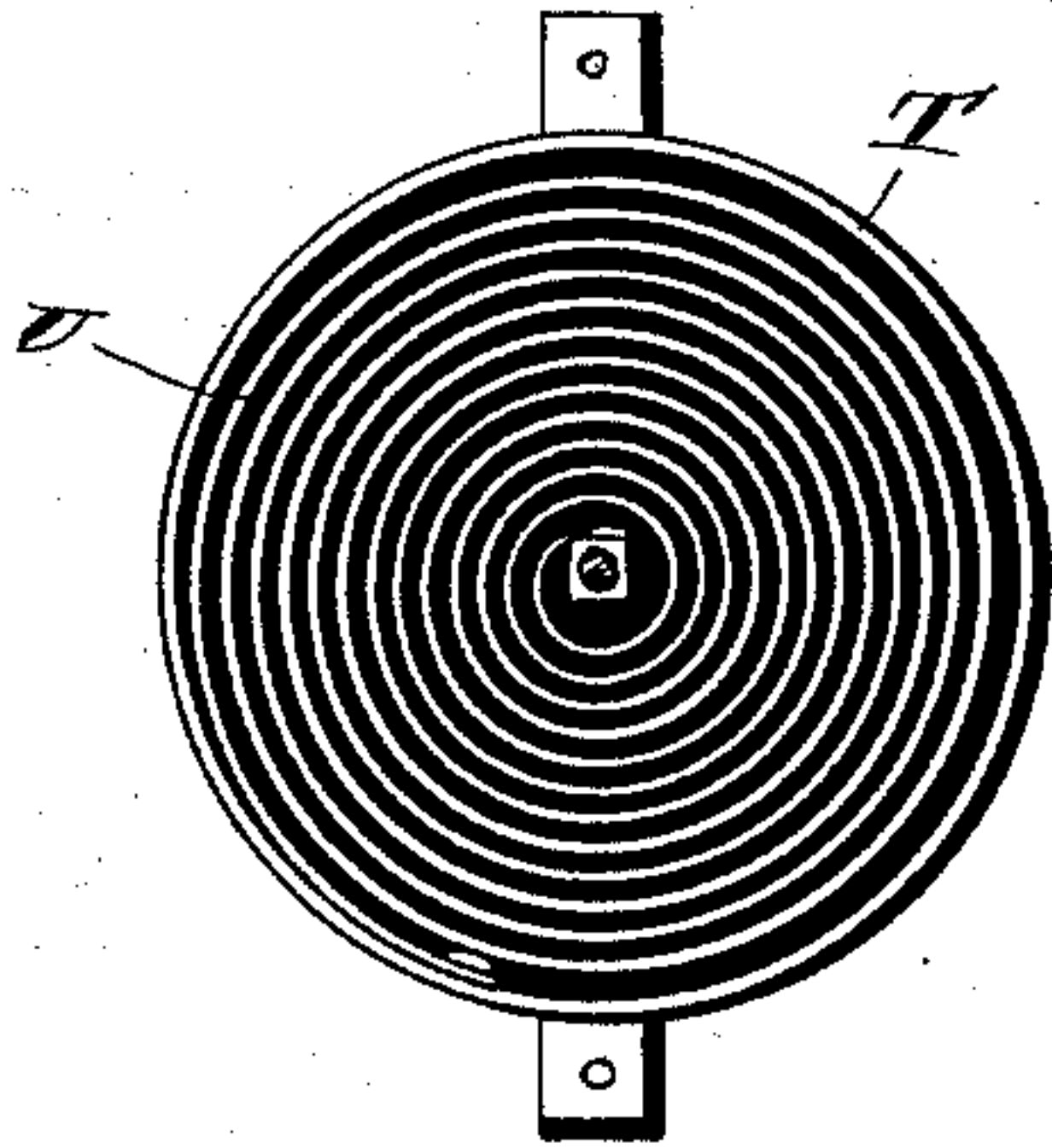
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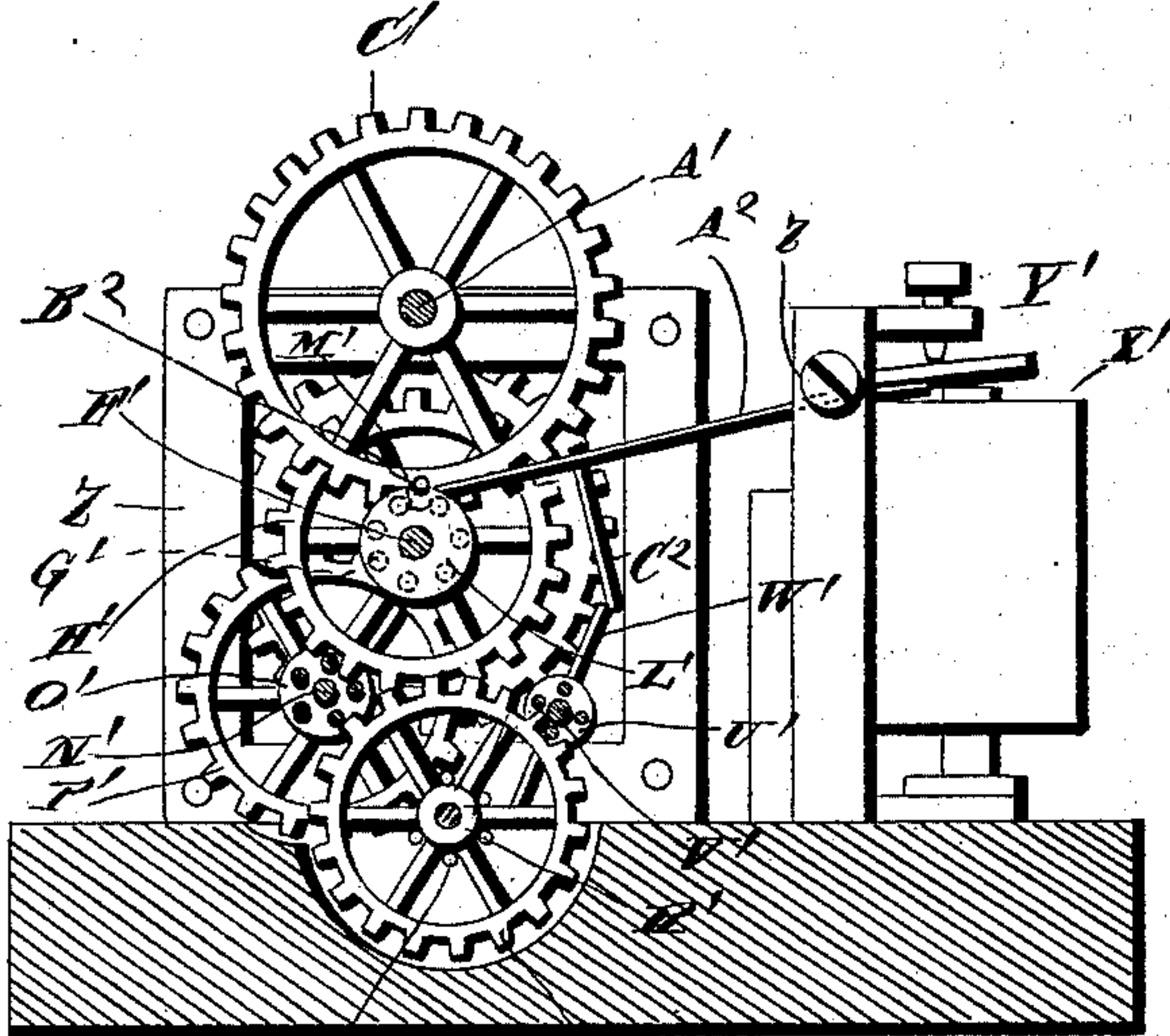
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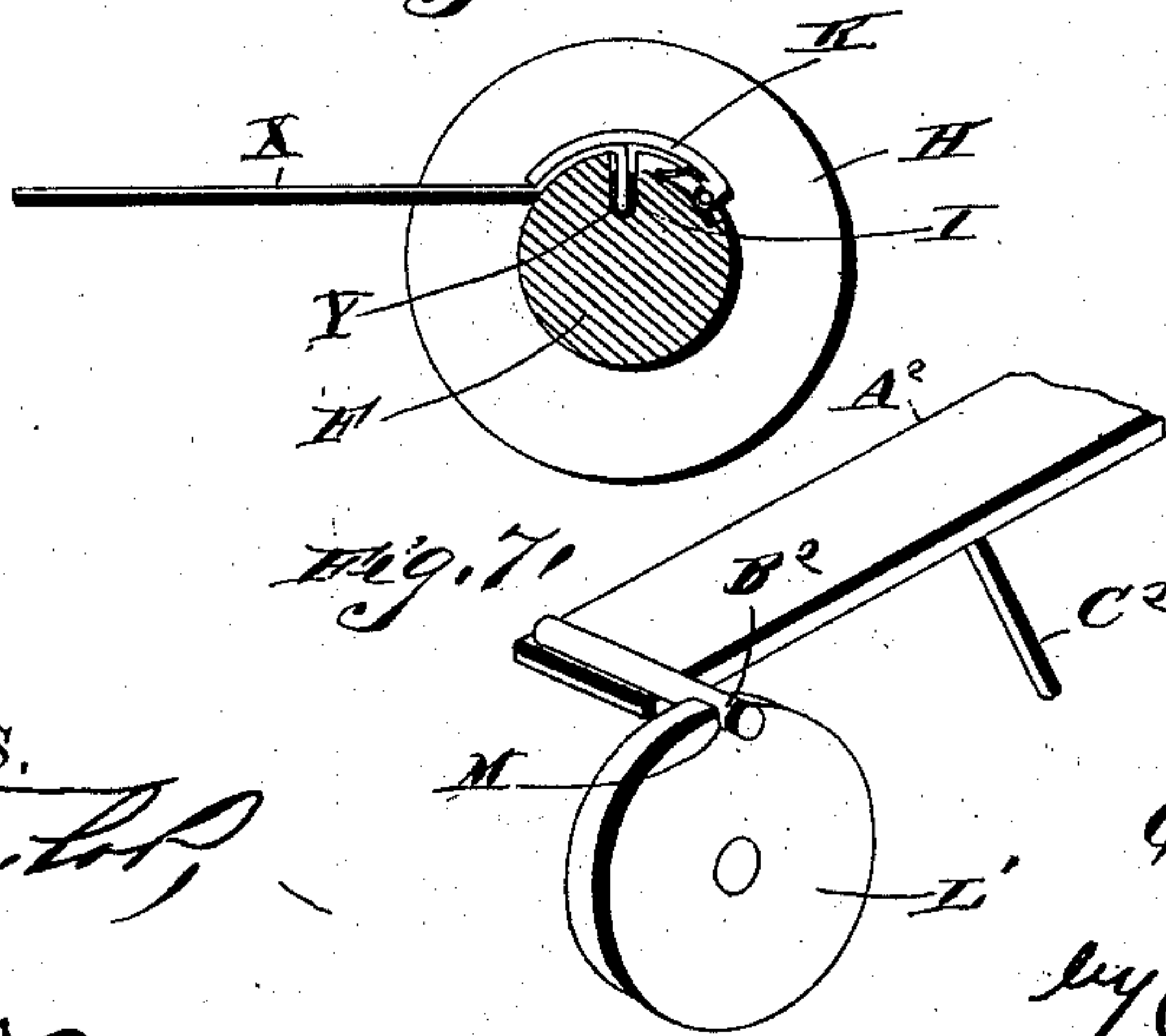
*Fig. 5.*



*Fig. 4.*



*Fig. 6.*



WITNESSES,

*W. B. Taylor,*  
*J. E. Warner*

INVENTOR,

*G. H. Kirwan,*

*by C. A. Howard & Co.*  
Attorneys.



# UNITED STATES PATENT OFFICE.

GEORGE H. KIRWAN, OF WILKES-BARRÉ, PENNSYLVANIA.

## ELECTRIC RAILWAY-STATION INDICATOR.

SPECIFICATION forming part of Letters Patent No. 388,690, dated August 28, 1888.

Application filed March 27, 1888. Serial No. 268,700. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. KIRWAN, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Improvement in Electric Railway-Station Indicators, of which the following is a specification.

My invention relates to an improvement in electric railway-station indicators; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a horizontal sectional view of an electric railway-station indicator embodying my improvements. Fig. 2 is a vertical sectional view of the same, taken on the line *x x* of Fig. 1, and looking in the direction indicated by the arrow *a* in the said figure. Fig. 3 is a similar view taken on the same line, looking in the direction indicated by the arrow *b*. Fig. 4 is a detailed elevation of the combined switch and annunciating operating mechanism. Figs. 5, 6, and 7 are detail views.

A represents an inclosing-case of suitable size and shape, the upper portion of the said case being hinged to the lower portion thereof and adapted to be opened so as to permit access to the mechanism in the case. In the front side of the case is a horizontal opening, B, of suitable length and width, and said opening is covered by a glass pane.

C represents a frame, which is arranged in the inclosing-case, is secured to the lower side thereof, and is provided with standards D at its ends. The front side of this frame is arranged opposite the opening B in the case, and in the lower and upper front corners of the said frame are arranged guiding-rollers E, which are journaled in suitable bearings in the standards D.

F represents a shaft, which is journaled in said standard on substantially the same plane with and at a suitable distance in rear of the upper roller, E. The said shaft F has a spindle, G, at one end, which projects beyond one end of the frame, and on the said shaft, at suitable distances from the ends thereof, are collars or circular flanges H. That portion of the shaft which is between the said collars or

flanges is provided with a radial longitudinal slot, I, of suitable depth, and on one side of the shaft is hinged a spring-actuated clasp, K, which is adapted to fit snugly on the shaft, so as to nearly cover the slot I. The spring which engages the said clasp forces the latter normally against the side of the shaft. From one side of the projecting spindle of shaft F, near the inner end of the said spindle, projects a pin or stud, L.

M represents a gear-wheel, which is loosely journaled on the said projecting spindle, and said gear-wheel has on its inner side a projecting collar or hub, N, provided with a notch or recess, O, the said notch or recess being adapted to receive the stud or pin L, and thereby lock the said wheel to the shaft F. A spring, P, bears against the outer side of the hub of wheel M and forces the latter normally inward on the spindle G, so as to keep the recess of its hub in engagement with the pin or stud L. It will be understood that the said hub or pin and said notched hub or collar constitute a clutch, by means of which the wheel M may be connected to or disconnected from the shaft F.

R represents a lever, which is fulcrumed on a suitable support and engages the inner side of wheel M, the function of the said lever being to move the said wheel outward on the spindle G against the tension of the spring P, and thereby disconnect the said wheel from its shaft.

S represents a spindle, which is journaled in one of the standards D of frame C and in a circular case, T, which is secured on the outer side of the said standard. The inner end of the said spindle is squared, and on that portion of the spindle which is between the standard and the case T is secured the inner end of a volute spring, U. The outer end of said spring is secured to a pin that projects from the standard, as shown. The opposite standard has an open upwardly-inclined slot, V.

W represents a roller, which has a spindle at one end adapted to enter the slot V, and is provided at the opposite end with a squared opening, which is adapted to receive the squared projecting end of the spring-spindle S, so as to secure the said roller to the said spring-spindle, and thereby cause the said spindle to rotate with the said roller. This



construction also enables the roller to be readily removed from the frame C, for the purpose to be hereinafter stated.

X represents a scroll or apron, which is made of cloth or other flexible material. The said scroll or apron has one end attached firmly to the roller W, is rolled on the said roller, and the free end of the said scroll is passed under the lower roller E, over the upper roller E, and is then inserted in the slot I of the shaft F and secured to the said shaft by means of the spring-clasp K. The end of this scroll or apron is tipped with metal, as at Y, to enable it to be readily inserted in the slot I. That portion of the scroll or apron which is stretched between the rollers E is displayed through the opening B, and on the said apron or scroll, throughout the entire length thereof, are painted or inscribed the names of the stations on the railroad, from the starting station to the terminal point thereof, in regular order, care being taken to have the said names slightly farther apart on the scroll or apron, starting from the free end thereof, so as to compensate for the gradually-increasing diameter of the scroll or apron as the same is wound upon the shaft F and unwound from the roller W. When this part of my invention is in its initial arrangement, the scroll is almost entirely wound upon the roller W and the spring U is entirely unwound. The said spring is coiled in the opposite direction from the scroll on the roller W, so that as the said scroll is unwound from the roller W and becomes wound upon the shaft F the said spring will be gradually wound.

Z represents a frame, which is secured in the lower side of the case A, opposite the end of frame C, on which the wheel M is journaled. In the upper side of the said frame Z is journaled a shaft, A', on which is rigidly secured a ratchet-wheel, B'. Loosely mounted on the said shaft is a spur-wheel, C', which is provided with a spring-actuated pawl, D', that engages the ratchet-wheel, and thereby locks the said wheel to the shaft when the latter is turning in one direction, and enables the said wheel to slip idly on the shaft when the latter is turning in the opposite direction.

E' represents a volute spring, which has its outer end secured to a suitable post on the frame Z, and has its inner end secured rigidly to the shaft A'. The said shaft A' is adapted to fit a suitable key, such as are commonly employed for winding clocks, and thereby said shaft may be turned while the wheel C' remains stationary, and caused to wind up the spring E'.

F' represents a shaft, which is journaled in the frame Z below the shaft A', is provided with a pinion, G', that meshes with the wheel C', has a spur-wheel, H', and is provided at one end, which projects from the inner side of the frame Z toward the frame C, with a spur-wheel, I', which engages the wheel M on the shaft F. The said wheel I' is made of brass or other suitable conducting material, and is provided with an opening, K', and the frame

Z and the shaft F' are also made of conducting material.

L' represents a circular disk, which is rigidly secured to the shaft F', and is provided on one side with a peripheral notch, M'.

N' represents a shaft, which is journaled in the frame Z, has a pinion, O', that meshes with the wheel H', and has a spur-wheel, P'.

R' represents a shaft journaled in frame Z, and having a pinion, S', that engages wheel P', and a spur-wheel, T', that engages a pinion, U', on a shaft, V'. Said shaft V' is also provided with a balance-fan, W'.

X' represents a horseshoe electro-magnet. An armature, Y', is journaled in suitable bearings, Z', and is arranged over the poles of the electro-magnet, and from the said armature projects a rocking arm, A<sup>2</sup>, having at its outer end a pin or stop, B<sup>2</sup>, which is adapted to engage the notch M' of the disk L'. From the said rock-arm depends a stop pin or rod, C<sup>2</sup>, which is arranged in the path of the escape-fan W', and is engaged with the said fan when the arm has its stop-pin in engagement with the notch disk, and thereby the train of gear-wheels hereinbefore described is prevented from being rotated by the spring E', and consequently the latter is prevented from running down.

D<sup>2</sup> represents an electrical switch-arm, which is resilient, and has its free end arranged in the center of the opening K' of the switch-wheel I' when the spring-motor or train of gears is not in operation.

E<sup>2</sup> represents an electrical bell, of suitable well-known construction, which is secured to the front side of the case A or to any other suitable support. A conducting-wire, 1, connects one electrode of the bell with the frame Z, and a wire, 2, connects the opposite electrode of the bell with the switch-arm D<sup>2</sup>. The case A is secured in one end of a railway passenger-coach, where it is distinctly visible to the passengers, and in the cab of the locomotive or in any other suitable portion of the train is a circuit-closer, 3, of the usual construction.

4 represents an electric generating-battery, which may also be located in the locomotive-cab or in any other suitable place on the train, and connecting the poles of the said battery with the electrodes of the circuit-closer 5. One of the wires 5 is connected to the wire 2, and is thereby put in circuit also with one of the electrodes of the bell, and a wire, 6, connects the opposite wire 5 or electrode of the battery with the switch-wheel I' or wire, and thereby connects the opposite electrode of the bell with the battery. The circuit-closer is normally open, as before stated. The switch, composed of the arm D<sup>2</sup> and the wheel I', is also normally open, and thereby the battery is connected in open circuit both with the electro-magnet X' and the electric magnet in the bell.

The operation of my invention is as follows: When the train reaches a station, the engineer or other person on the train appointed to do



the work presses the button of the circuit-closer, and thereby momentarily closes the circuit including the electro-magnet X' and the battery, and said electro-magnet is momentarily excited and caused to attract its armature, which instantly raises the rock-arm A<sup>2</sup> and causes the stop-pins thereof to disengage the notch in disk L' and to disengage the escapement-fan, and consequently set the spring-actuated motor in operation and cause the switch-wheel I' to be put in motion. As soon as the engineer releases the push-button of the circuit-closer, which he does in an instant, the circuit between the electro-magnet X' and the battery is broken, and thereby said electro-magnet ceases to attract the armature. The rotary motion of the switch-wheel I' causes the opening K', or insulator thereof, to move past the switch-arm or contact-point D<sup>2</sup>, and consequently the latter comes in contact with the said switch-wheel and establishes electrical connection between the bell and the battery, as will be readily understood, and consequently the bell is sounded as long as the said switch-wheel continues its movement. This rotary motion of the switch-wheel is communicated to the wheel M, which is geared thereto; consequently the shaft F is caused to revolve, so as to partly wind or coil the outer end of the scroll onto the shaft F, uncoil or unroll the said scroll from the shaft or roller W, and thereby move the name of the station which was before displayed through the opening B from the said opening and cause the name of the next succeeding station to be displayed through the said opening. The switch-wheel makes only one revolution, and as soon as the opening or insulator K' thereof comes opposite the point of the switch-arm, so as to open the circuit between the bell and the battery, and thereby interrupt the operation of the bell, the rock-arm A<sup>2</sup> by its own gravity causes its stop-pins to drop into the notch of the disk L' and into the path of the escapement fan W', and thereby arrest the motion of the mechanism, and consequently causes the name of the station which was last displayed through the opening B to remain opposite the said opening until the next succeeding station is reached, and the operation before described is repeated. By the time that the train reaches the terminal station the scroll has been completely unrolled from the shaft W and rolled upon the shaft F and the spring U is completely wound. The operator then moves the lever, so as to cause the wheel M to become disengaged from the shaft F, and the spring U in unwinding imparts retrograde rotation to the shaft W and causes the same to instantly rewind the scroll thereon from the shaft F. The scroll is disengaged from the shaft F and shaft W, and a similar scroll in which the stations are arranged in reverse to those on the scroll previously used, and adapted for the return trip of the train, is mounted, as in the previous in-

stance and the ends of the scroll connected to the shafts F and W, as before.

By means of an ordinary electric switch the instrument in each car may be cut out from the circuit, if desired; and suitable thumb-screw conductors or other similar devices will be used for connecting the wires between the cars, as will be readily understood.

Having thus described my invention, I claim—

1. The combination of the station-indicator, the motor to operate the same, and provided with the switch-wheel and arm or contact, the armature having the arm to engage and disengage the motor, for the purpose set forth, the electro-magnet to operate the armature, the battery, the circuit-closer, the bell, and the open circuits connecting the electro-magnet to the circuit-closer and the battery and connecting the bell, the switch, and the battery, substantially as described.

2. The combination, in a station-indicator, of the shaft F, the wheel M, loose thereon, the motor having the operating-wheel engaging wheel M, the clutch to connect the said wheel to the said shaft, the lever to operate said clutch, the shaft W, the spring U, connected thereto, and the scroll or apron rolled on the shaft W and connected to the shaft F, whereby when the latter is rotated the scroll will be unrolled from the shaft W onto the shaft F and the spring will be wound, substantially as described.

3. The combination of the spindle S, the spring U, attached thereto, the shaft W, having one end journaled in a suitable bearing and detachable therefrom, the opposite end of said shaft being secured to the spindle, the operating-shaft F, the scroll normally rolled on the shaft W, and having its free end detachably connected to shaft F, the wheel M, loose on shaft F, the clutch to secure said wheel thereto, and the motor having the wheel engaging said wheel M, substantially as described.

4. The combination of the station-indicator, the motor to operate the same, provided with the switch-wheel and with the revolving cam L', having the notch M', the annunciator connected in open circuit with the switch-wheel and with a battery, the armature having the arm provided with the stop to engage the notch in the cam, and the electro-magnet to operate the said armature, said electro-magnet being connected in open circuit with the battery and with a circuit-closer, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE H. KIRWAN.

Witnesses:

R. D. EVANS,  
H. W. SEARCH.