

No. 710,335.

Patented Sept. 30, 1902.

W. PALMER, JR.

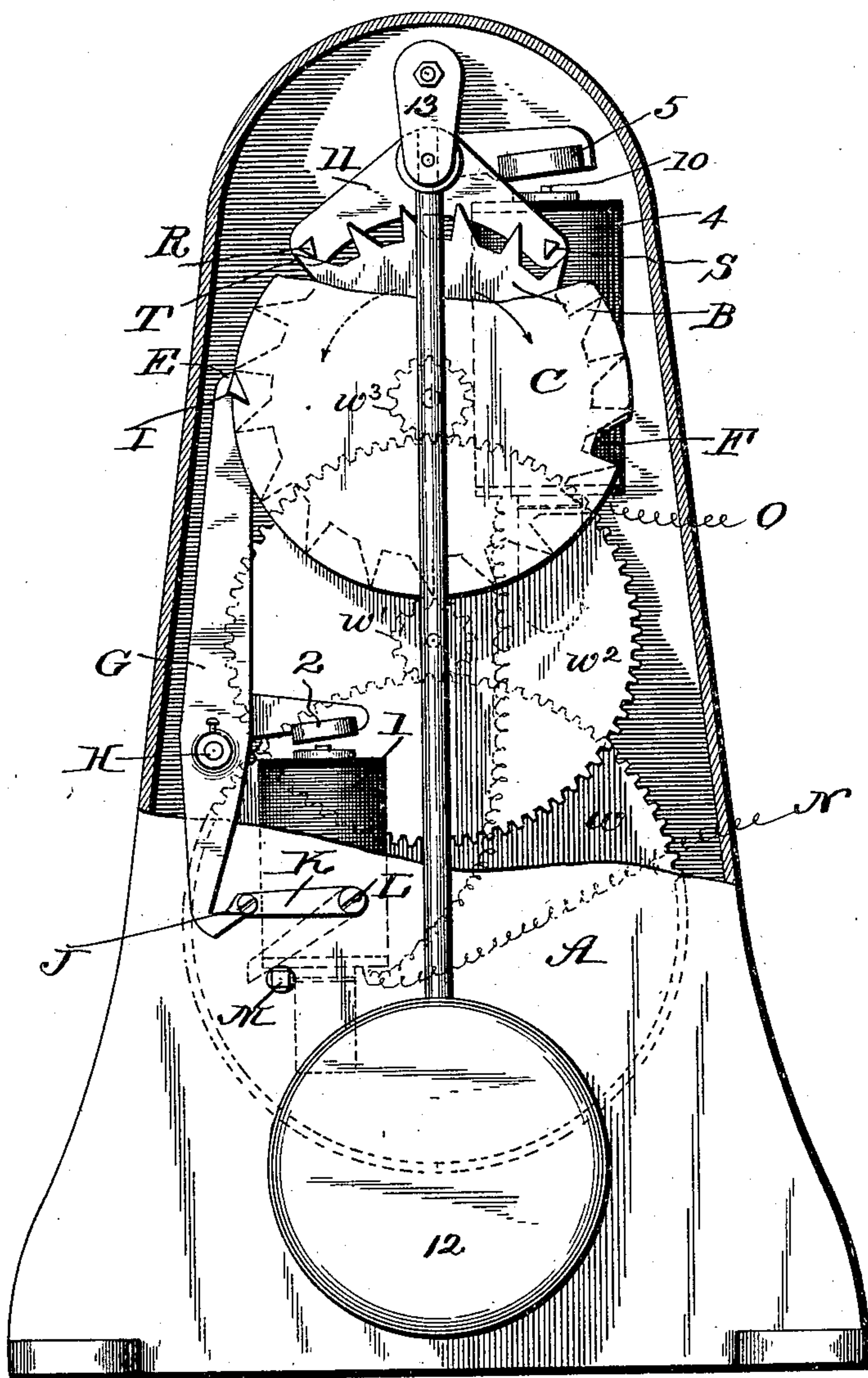
SELECTIVE CALL FOR TELEGRAPH OR TELEPHONE LINES.

(Application filed Dec. 11, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

Fred. D. Bagford
Edw. W. Byrn

INVENTOR

William Palmer Jr.

BY *Munn & Co.*

ATTORNEYS

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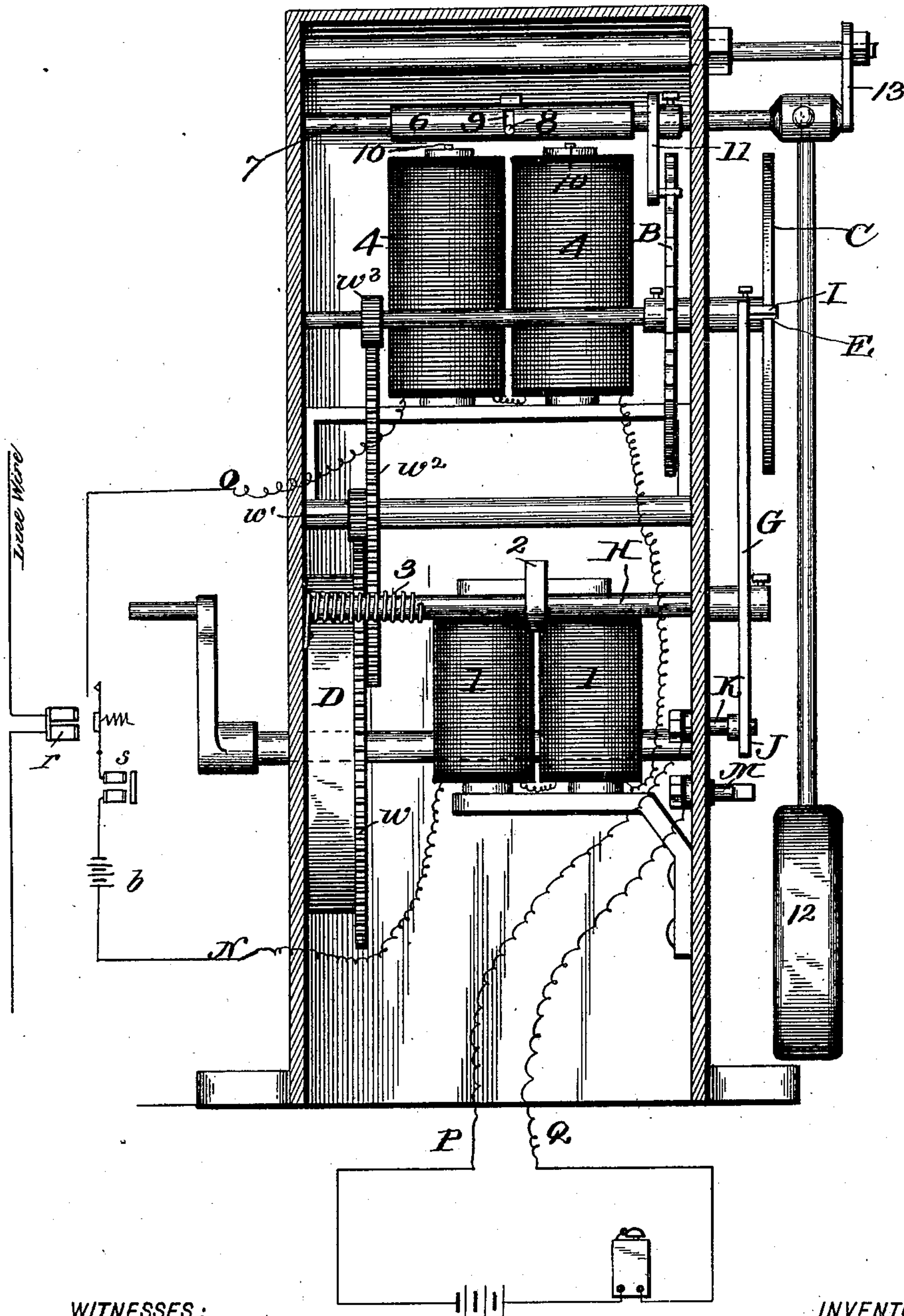
SELECTIVE CALL FOR TELEGRAPH OR TELEPHONE LINES.

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(No Model.)

2 Sheets—Sheet 2.

Fig. 2.



WITNESSES:

Fred. D. Bradford.
Edw. W. Byrnes.

INVENTOR

William Palmer Jr.

BY *Munn & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM PALMER, JR., OF RINCON, TERRITORY OF NEW MEXICO, ASSIGNOR
OF ONE-HALF TO CHARLES H. DASCOMB, OF EL PASO, TEXAS.

SELECTIVE CALL FOR TELEGRAPH OR TELEPHONE LINES.

SPECIFICATION forming part of Letters Patent No. 710,335, dated September 30, 1902.

Application filed December 11, 1901. Serial No. 85,444. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PALMER, Jr., a citizen of the United States, and a resident of Rincon, in the county of Donna Ana and Territory of New Mexico, have made certain new and useful Improvements in Selective Calls for Telegraph or Telephone Lines, of which the following is a specification.

The object of this invention is to enable an operator or train-despatcher on a telegraph-line to cause an alarm-bell to ring at any one or more of the distant stations without ringing the bells at the other stations and to enable a subscriber or central office of a telephone-line to accomplish the same results under similar conditions.

Figure 1 is a front view of the instrument shown with the upper portion of the front casing cut away. Fig. 2 is an end view of the operative devices, the frame-casing being shown in section.

The instrument is provided with a spring-motor for the purpose of rotating the escapement-wheel B and the disk C. The main-spring D, Fig. 2, is secured to the shaft in the usual way and is provided with a ratchet and pawl. (Not shown.) The power of the main-spring D is transmitted to the escapement-wheel B by the gears $w w' w^2 w^3$. The escapement-wheel B and disk C are keyed on the same shaft. The disk C has two notches E and F, Fig. 1, cut in its edge. The notch E has a depth of about one-sixteenth of an inch, which is termed the "holding-notch," and has its lower edge cut at an angle pointing below the center of the disk, for the purpose hereinafter described, while the notch F has a depth of three-sixteenths of an inch and is termed the "alarm-notch." The alarm-notch, as shown in Fig. 1, is located at a point ten teeth of the escapement-wheel back of the holding-notch E. I therefore designate this instrument as No. 10, while instrument No. 5 would have its alarm-notch five teeth back of the holding-notch, &c., there being no two instruments on the same telegraph or telephone line with their alarm-notches F located at the same relative position from the holding-notch E.

The upright lever G is keyed to the rock-shaft H and has its upper end provided with

a hook-shaped dog I, which enters the notch E and holds the disk C and escapement-wheel B in the position as shown in Fig. 1. The lower end of the lever G has a trip projection J, which supports the free end of the switch-lever K, and the opposite end of the switch-lever K is connected loosely with the binding-post L in such a manner as to allow the free end of the switch-lever K to drop onto the binding-post M whenever the support J is drawn out. The binding-posts L and M connect with wires P Q, which are the terminals of a local circuit having a battery and an electric bell, as seen in Fig. 2, the bell to be located in the office or in the operator's room, or both places. The action of the free end of the switch-lever K falling onto the post M completes the circuit and rings the alarm-bell until the contact is broken by placing the switch-lever K on the support J.

The electromagnet 1 has an armature 2 keyed to the shaft H. The object of the magnet 1 and its armature 2 is to pull the dog I into the notches E and F against the tension of the spring 3, coiled around the shaft H. This spring is fastened to the shaft at one end and at the other end is secured to the stationary frame-casing. The beveled edges of the notch E and the hook shape of the dog I hold the dog in the notch against the tension of spring 3 until the escapement-wheel is turned back a little, which allows the spring 3 to pull the dog out of the notch, the spring 3 holding the dog out until the armature 2 is attracted by the magnet 1, which attraction overcomes the tension of the spring and pulls the dog into the notch. The tension of the spring is such as to pull the hook-shaped dog I out of the holding-notch E only when the disk C is moved backward, as will be explained.

The electromagnet 4 has an armature 5, whose approach to the magnet is limited by pins 10. The arm of the armature is provided with a sleeve 6, which fits loosely around the pendulum-shaft 7. The shaft 7 has a pin 8, which projects through a transverse slot 9 in the sleeve 6. The object of this pin and slot is to start the pendulum to swinging by a tap-pet action and to allow the pendulum to continue its swing a little past where it would be

stopped by the armature 5, resting upon the pins 10. The pins 10 are for preventing the residual electricity in the magnet 4 from holding the armature. The object of the magnet 4 is to start the pendulum 12 to swinging, which will effect the release of the disk C from the dog I. This is brought about by the pin R striking against a tooth T when the pendulum swings to the right, which causes the escapement-wheel B to rotate initially a little backward, as indicated by the dotted arrow, which allows the spring 3 to pull the dog I out of the notch E and hold it out so long as the circuit is open. This will allow the escapement-wheel B and disk C to rotate in the direction of the full-line arrow until the dog is pulled into the notch E, which will stop the instrument. The dogs I are pulled into the notches E by closing the circuit just as the notches are opposite the dogs, as hereinafter described.

The escapement 11 and pendulum 12 are secured to the pendulum-shaft 7.

13 is a support for the front end of the pendulum-shaft.

The wires N and O are a part of a local circuit at the way-station, including a battery b, sounder s, and relay r, which local circuit is directly controlled by the line-wire.

R and S are the escapement-pins, of which R plays an important part in the operation of the instrument, as it gives the backward movement of disk C necessary to unlock the dog I.

One of the instruments is to be connected in a local circuit at each station, and each local circuit is closed by means of a relay under the control of the main line. The instruments number from one to twenty, or they can be constructed for a greater number by making more teeth in the escapement-wheel.

The operation is as follows: Wind all the instruments and place the dogs I in the notches E. We will now suppose that we have twenty instruments on a line between Washington and New York, inclusive, and that a No. 5 instrument was in the Baltimore office, a No. 10 in Philadelphia, and a No. 20 in New York. Now if the train-despatcher at Washington wished to ring the alarm-bell at Philadelphia he would close the circuit with his telegraph-key. This would cause the magnets 4 in each of the instruments along the line to attract their armatures, which would cause the pendulums 12 to swing a little to the left. The circuit should then be opened, which would allow the pendulums to swing to the right past the center, and when it has reached the end of its travel in that direction the circuit should be again closed, which causes the magnets 4 to again attract their armatures; but this time the pendulums swing a little farther to the left, when the circuit should again be opened in order to release the armatures from their attraction and allow the weight of the pendulums to swing to the right. By repeating this opening and closing of the circuit as

above at each movement the pendulums will swing a little farther, until at the end of, say, a dozen strokes the pendulums will acquire sufficient movement to make their full swing. This is the action of the magnets 4 and their armatures upon the pendulums 12, and the purpose is to secure a synchronous movement of all the pendulums at all of the stations. After the pendulums have made about five strokes each escapement-pin R commences striking against the tooth T of the escapement-wheel. This occurs each time the pendulum swings to the right. This striking of the tooth T ultimately causes the escapement-wheel B to turn backward, and with a full stroke of the pendulums would allow the spring 3 to pull the dog I out of the notch E if it were not for the magnet 1 attracting its armature 2 and pulling the dog back in the notch E each time the circuit is closed. Thus the pendulum swinging to the extreme right releases the dog, and the magnet 1 pulls it back. After the pendulum in the despatcher's office is under full swing he ceases to close the circuit, and the pendulums of all the instruments along the line will then be swinging in unison, which allows the escapement-wheels B and disks C to revolve, as the dogs are then held out of the notches E. The despatcher counts the strokes of the pendulum, and when it has made ten strokes he closes the circuit through N O just as the pendulum starts toward the left and at the time the pendulum makes half a stroke. This closing of the circuit attracts the armatures 2 and pulls all the dogs in toward the disks; but as No. 10 instrument at Philadelphia was the only one with the alarm-notch F opposite the dog at that time it would be the only place that the alarm-bell would ring, because at that station only the dog drops into the alarm-notch and only there is the support J drawn from under the free end of the switch-lever K, and the switch-lever there falling onto the post M connects the bell-circuit and rings the bell. The despatcher should close the circuit when the disk C has completed its revolution, which will pull the dogs into the holding-notches and stop the instrument.

It is to be understood that the ordinary telegraphing will not start the instruments, as the circuit must be opened and closed as above described.

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

1. A selective-call device consisting of a pendulum under the control of an electromagnet arranged to be set in motion from a remote point, a notched disk and mechanism for rotating it, and a tripping device for an alarm-circuit arranged to be set into action by the notched disk and tripping mechanism substantially as described.

2. A selective-call system, comprising for each station a pendulum vibrating synchronously with the pendulums of other stations,

electromagnets for starting said pendulums by electric impulses from a distance, a notched disk with a vibrating mechanism for each instrument, a tripping mechanism set 5 into action by the notched disk, and a switch with local circuit and bell arranged to be closed by the said tripping mechanism substantially as described.

3. A selective-call device comprising a pendulum - escapement, an electromagnet for 10 starting the pendulum into action through electric impulses, and a tripping device for closing a local alarm-circuit consisting of an escapement-wheel and a rigidly-attached 15 notched disk with locking-hook arranged to be released by the initial backward movement of the escapement substantially as described.

4. A selective-call device comprising a pendulum - escapement, an electromagnet for 20 starting the pendulum into action, a notched disk operated by said escapement, a locking-

lever arranged to engage the notched disk, a spring for throwing the lever out of engagement with the notched disk, an electromagnet 25 for throwing said lever against the tension of said spring, and a switch arranged to be closed by the movement of the lever in response to its electromagnet, and a bell-circuit arranged to be closed by said switch substantially as described. 30

5. In a device of the kind described, a pendulum - escapement, an electromagnet for starting the pendulum-escapement, and an armature acted upon by said electromagnet 35 and having a loose connection with the pendulum to start the latter to swinging by a tappet or impact action without obstructing its swing substantially as described.

WILLIAM PALMER, JR.

Witnesses:

LEANDER F. ELLIOTT,
FRANKLIN S. BONNER.