No. 688,184. Patented Dec. 3, 1901.

J. B. LEE.

AUTOMATIC MONITOR FOR TELEPHONE EXCHANGES.

(Application filed Sept. 1, 1900.)

(No Model.) 2 Sheets—Sheet 1.

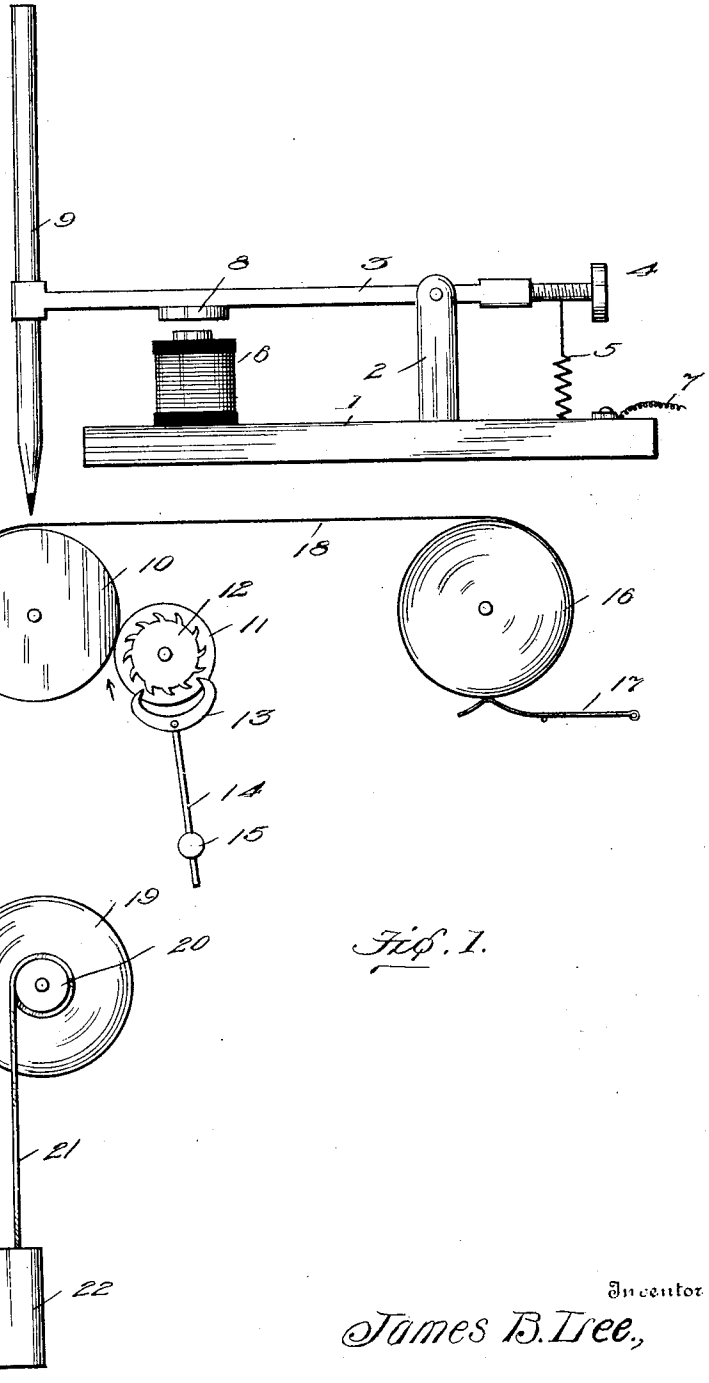


Fig. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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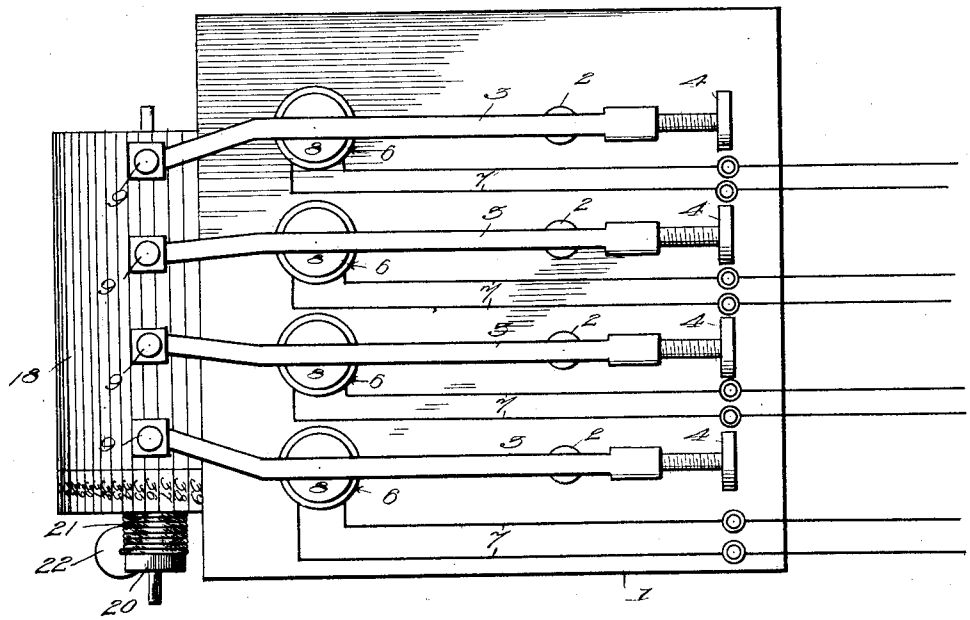
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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.



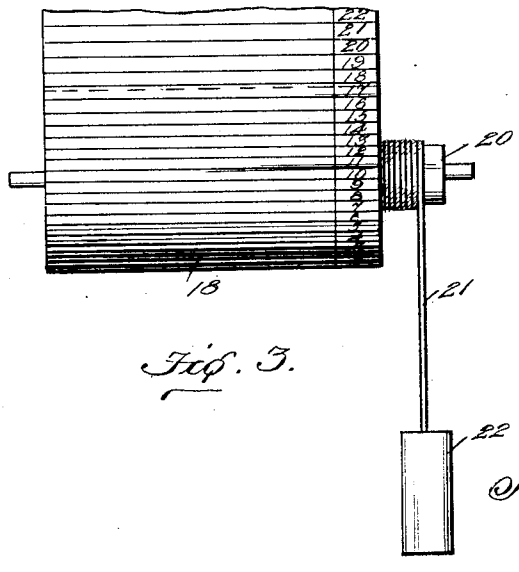


Fig. 3.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC MONITOR FOR TELEPHONE-EXCHANGES.

SPECIFICATION forming part of Letters Patent No. 688,184, dated December 3, 1901.

Application filed September 1, 1900. Serial No. 28,818. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. LEE, a citizen of the United States, residing at Charleston, in the county of Charleston and State of South Carolina, have invented new and useful Improvements in Automatic Monitors for Telephone-Exchanges, of which the following is a specification.

This invention relates to new and useful improvements in automatic indicators for use in telephone-exchanges, and it is especially adapted to dispense with the use of monitors. Its primary object is to provide a device which will measure and record the amount of time which elapses between the receipt of and the answer to a subscriber's call.

To these ends the invention consists in providing rollers upon which is mounted a strip of paper. Mechanism is provided for causing this paper to travel upon the rollers, and said paper is provided with lines ruled transversely thereon, which are adapted to pass a fixed point at regular intervals. Mounted above the paper is a marking device secured to the end of a lever. A magnet is arranged adjacent to this lever and is connected with the night-bell circuit on one section of the main switchboard. The armature of the magnet is secured to the lever, and it is obvious that when the magnet is energized the marking device will be thrown into contact with the paper.

The invention also consists in the further novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a side elevation. Fig. 2 is a plan view, and Fig. 3 is a front elevation of the driving-roller.

Referring to said figures by numerals of reference, 1 is a base upon which are mounted one or more standards 2. Within each standard is pivoted a lever 3, having an adjusting-screw 4 at the rear end thereof, to which is secured one end of a coil-spring 5, the opposite end of which is fastened to the base. The screw 4 is used for adjusting the tension of the lever. Secured to the base at a point below each lever 3 is a magnet 6, which is connected, by means of wires 7, to the night-bell circuit on one section of the main switchboard. An armature 8 is secured to each lever at a point above its magnet, and a pencil 9 or other marking device is secured to the front end of the lever. A roller-platen 10 is mounted at a point below the marking device and in close proximity thereto. This roller 10 contacts with and actuates a roller 11, having an escapement-wheel 12 secured thereto. This wheel is engaged by an escapement 13, having a pendulum or stem 14, provided with an adjustable weight 15. A roll of paper 16 is journaled at a point adjacent to the platen 10 and is normally contacted by a spring-strip 17, whereby the roll is prevented from moving too rapidly. The strip of paper 18 is placed over the platen 10 and secured to a roller 19, journaled at a point therebelow. A reduced cylindrical portion 20 extends from one side of this roll, and a cord 21 is adapted to be wound thereupon. This roller 19 is caused to revolve by a weight 22, secured to the cord 21, and such revolution will draw the strip 18 downward, causing roll 10 to revolve. Motion will then be imparted to the escapement-wheel 12, and a slow and steady movement of the paper is thus secured. This strip 18 is provided with transversely-extending lines, and numerals are arranged along the edge of the strip to indicate the time which it takes for two or more lines to pass beneath the marker.

When the subscriber signals the office, the signal will appear on its section of the switchboard, closing the night-bell circuit and energizing the magnet 6 thereof. This will obviously throw the marker in contact with the paper until the circuit is broken by returning the signal to its normal position. It will thus be seen that the elapse of time between the receipt of and the answer to the call will be clearly marked upon the paper. It will of course be understood that a spring could, if desired, be employed in lieu of the weighted cord upon the roller 19.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and altera-

tions as fairly fall within the scope of my invention.

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

The combination with an electrically controlled and operated marker, of a roll carrying a web of paper, a roll mounted in the same horizontal plane as the web-roll and over which the web passes, said second roller constituting the platen, a power-roller on which the web is received provided with an extension, a cord on the extension, and a weight on the cord, a roller 11 in frictional contact with the platen-roller, an escapement-wheel mounted on the roller 11, an escapement to contact with the escapement-wheel, and a pendulum secured to the escapement to regulate the movement of the mechanism, all arranged and combined to operate, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES B. LEE.

Witnesses:
ISRAEL I. FASS,
W. T. NELSON.