No. 771,853. PATENTED OCT. 11, 1904.

H. ABBOTT.

TELEPHONE CALL RECORDER.

APPLICATION FILED AUG. 17, 1901. RENEWED MAR. 7, 1904.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 1.

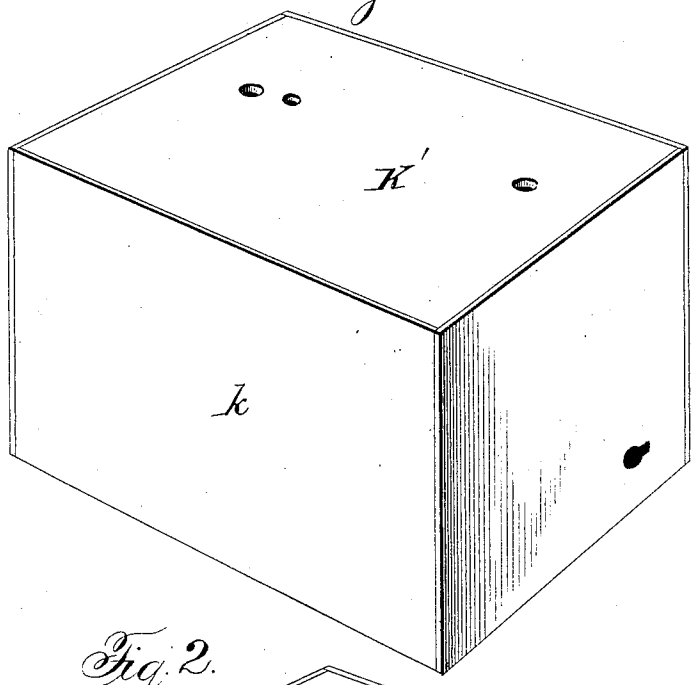
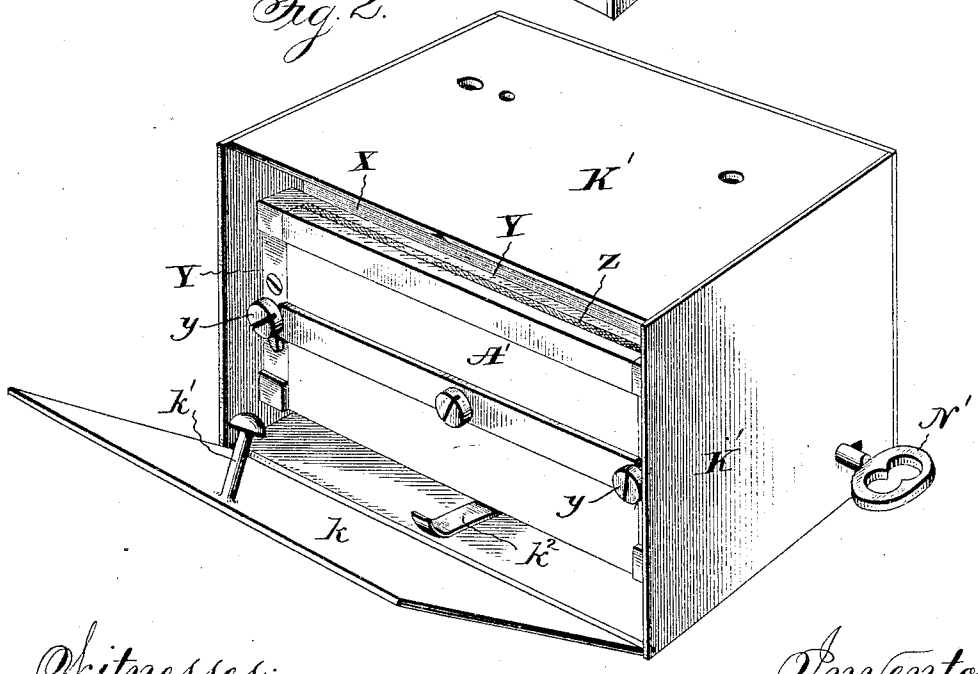


Fig. 2.



Witnesses:
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Henry C. Hazard

Inventor.
Henry Abbott, by
Prindle and Russell, his Attys.

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NO MODEL. 5 SHEETS—SHEET 2.

Fig. 3.

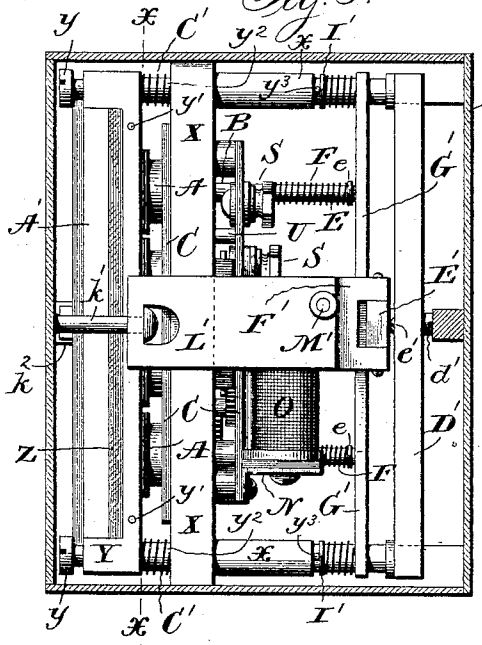


Fig. 4.

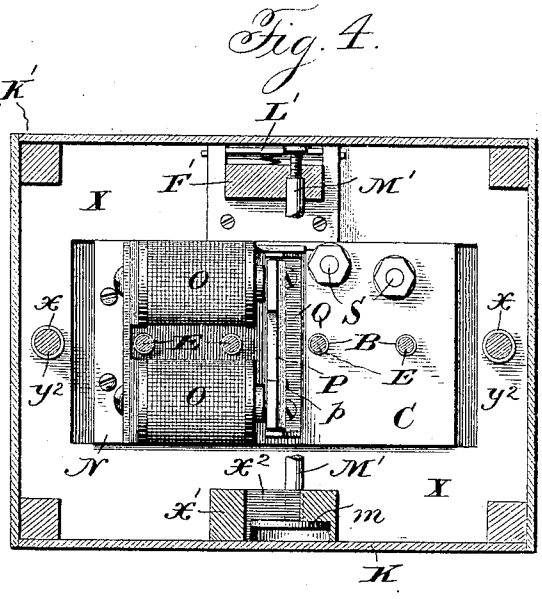
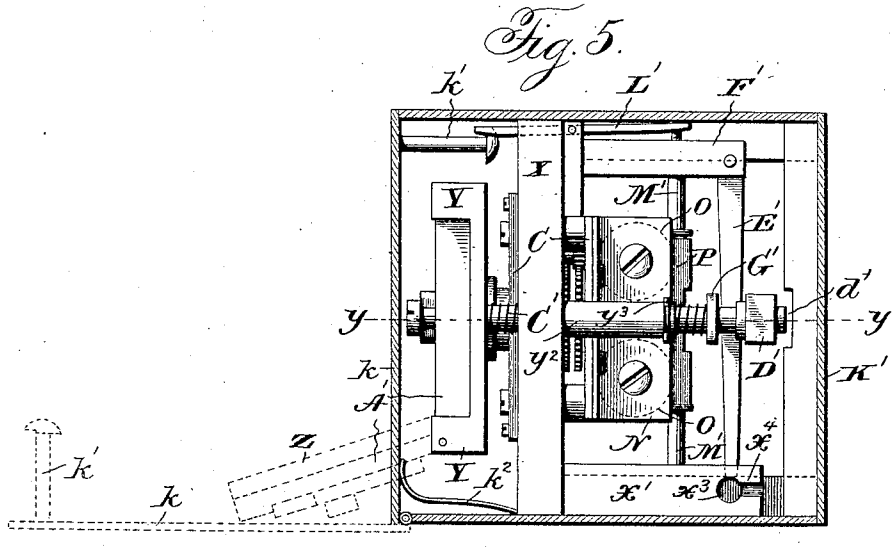


Fig. 5.



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NO MODEL. 5 SHEETS—SHEET 3.

Fig. 6.

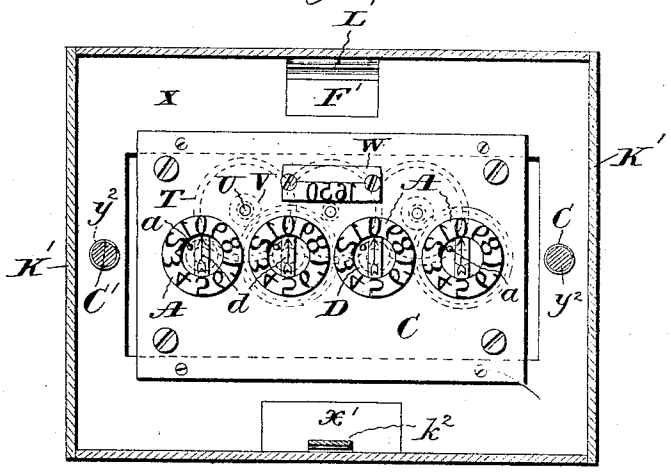
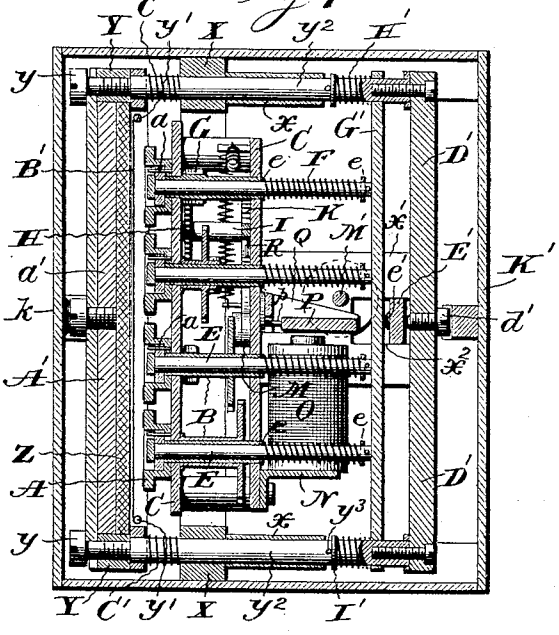


Fig. 7.



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NO MODEL. 5 SHEETS—SHEET 4.

Fig. 8.

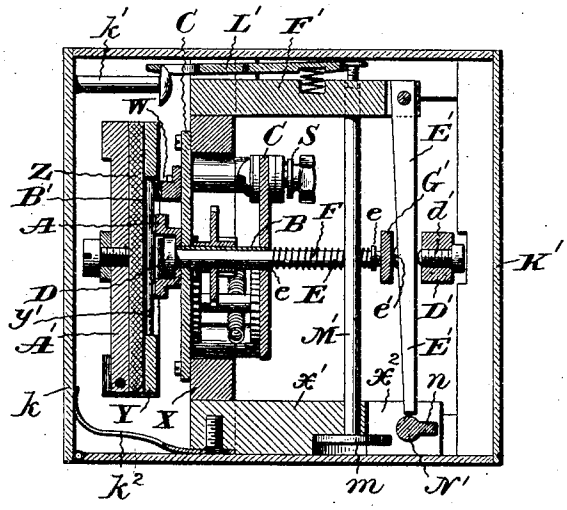
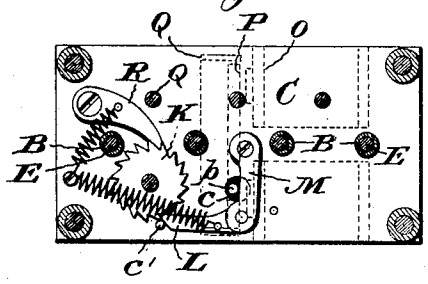


Fig. 9.



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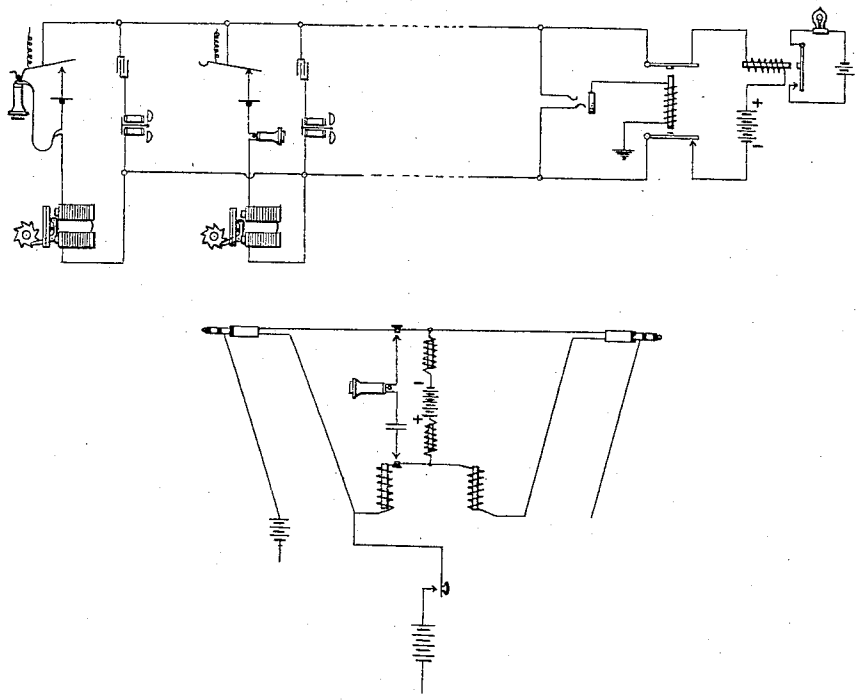
NO MODEL. 5 SHEETS—SHEET 5.

Fig. 10.



Witnesses:
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Pindle and Russell, his Attys

No. 771,853. Patented October 11, 1904.

UNITED STATES PATENT OFFICE.

HENRY ABBOTT, OF NEW YORK, N. Y.

TELEPHONE CALL-RECORDER.

SPECIFICATION forming part of Letters Patent No. 771,853, dated October 11, 1904.

Application filed August 17, 1901. Renewed March 7, 1904. Serial No. 196,984. (No model.)

To all whom it may concern:

Be it known that I, HENRY ABBOTT, of the borough of Manhattan, in the city of New York, in the county of New York, and in the State of New York, have invented certain new and useful Improvements in Telephone Call-Recorders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are perspective views of my telephone call-recorder, the casing-door being shown closed and opened, respectively. Fig. 3 is a top plan view of the recorder, the casing being in section. Fig. 4 is a vertical transverse section of the recorder. Fig. 5 is a side elevation, the casing being in section. Fig. 6 is a vertical section on the line *x x* of Fig. 3. Fig. 7 is a horizontal section on the line *y y* of Fig. 5. Fig. 8 is a vertical section from front to rear. Fig. 9 is a detail view, partly in elevation and partly in section, showing the recorder-operating mechanism, and Fig. 10 is a diagrammatic view showing a telephone-circuit which includes the recorder and enables the latter to be operated by the central-station operator.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is the provision of a call-recorder for telephones used by measured service, from which a printed record can be made and which is adapted to be placed at the subscriber's station, and to this end my invention consists in the mechanism having the construction substantially as hereinafter specified.

Generally stated, my invention comprises mechanism designed to be located at the station of the subscriber having a measured service and placed upon or adjacent to his telephone or in some other convenient place and which has a counter that is operated each time the subscriber calls and has means by which a record can be taken from the counter that will show the total number of calls for a particular period of time.

As preferably constructed the meter or counter comprises a series of four numeral-bearing dials A and A, each having type-figures running consecutively from "0" to "9" and secured to one end of an arbor B, journaled in openings in a pair of plates C and C, which for the sake of distinction I shall term "front" and "back," respectively, and which are joined by posts and screws. Concentric with each dial in a cavity therein is a disk D, having on its outer face an index in the form of an arrow *d*, pointing to the zero-mark on the dial. The disk is connected to the dial by a pin *a* on the dial, that enters a hole in the disk, the disk being thereby made to rotate with the dial, although free to be moved in an axial direction independent of the dial. The numerals on the dial and the index on the disk lie in different planes, the plane of the index being within that of the numerals, so that an imprint or impression can be taken from the latter without one from the index, and the latter can be moved sufficiently beyond the plane of the numerals to permit it to be printed without at the same time printing the numerals. Thus taking, first, an imprint from the dial and then after the dial and index have been rotated with the paper in the same position and taking an imprint from the index the impression taken from the latter will point toward some other number or place on the dial than the zero.

The disk D is secured to the end of a rod E, passing through the arbor B and reaching to a point in rear of the back plate C, and between two collars *e* and *e*, respectively, on the end of a rod and engaging the end of the arbor a coiled spring F is placed on the rod, that yieldingly holds the disk within the dial-cavity with the index-arrow within the plane of the dial-numerals.

On the arbor of the units-dial A is a pinion G, with which meshes a gear-wheel H on an arbor I, journaled in holes in the two plates C and C. Also on said arbor I is a ratchet-wheel K, which is given a step-by-step movement by a pawl L, carried by a lever M, which is pivoted to the inner side of the back plate C. Supported by a bracket N, fastened to the back plate C, is an electromagnet O, the armature P of which is pivoted between the arms of a bracket Q, secured to said back plate, and has a projection *p*, that reaches through an open-

ing c in the back plate and engages the pawl-lever M. A stud or pin c' on the back plate C in position to engage the end of the pawl when it is moved by the armature limits its movement by the latter. The retraction of the pawl is effected by a spring Q, attached at one end to the pawl and at the other end to the back plate C. For preventing back rotation of the ratchet-wheel there is an ordinary detent R. Binding-posts S and S, mounted on the bracket N, are provided for placing the magnet in an electric circuit that is hereinafter described.

The pinion G on the arbor of the units-dial meshes with a gear-wheel T on an arbor U, that has a pinion V, which meshes with a wheel on the tens-dial arbor, and by a train of gears (not requiring description) power is thence transmitted to the remaining dials.

On the front plate C is placed a printing-die W, containing a number that is the same as the number of the subscriber whose service is measured.

The counter is supported by a frame X, to which it is fastened by screws that pass into the frame through the front plate C. In front of the counter is a platen that comprises a frame Y and a pad Z, of rubber or other yielding material, that is mounted on a plate A', which is pivoted at its bottom to the frame Y, so that it may be moved from its position for printing for the insertion or removal of a ticket or sheet of paper on which the record is to be printed. For holding the pad in position for printing there may be used any desired latch device—such, for example, as that shown—which consists of a bar a', pivoted to the plate A' and engaging with its ends the heads of pins or screws y and y on the frame Y. Supported by a pair of rods y' and y', extending across the opening in a frame Y thereof, is an inked ribbon or band B'.

The platen is movable to and from the printing-type to cause an impression to be made on the ticket or sheet of paper by the dials and the die bearing the number of the telephone, and for this purpose a pair of horizontal rods y^2 and y^2 are attached to the frame Y, which respectively pass through guides x and x on the frame X. By means of a coiled spring C', encircling each rod between the frames X and Y, the platen is held yieldingly away from the printing-type. To the rear ends of the rods y^2 and y^2 is attached a cross-bar D', which is adapted to be engaged at its mid-length by a vertical lever E', that is pivoted at its upper ends to a bracket F', fastened to the rear side of the frame X. By means of this lever (operated as hereinafter described) the platen is moved to print from the dials and the telephone-number W. Preferably the bar D' has a bearing for the lever consisting of a screw d', whose end protrudes sufficiently beyond the bar to form the only bearing-point for the lever.

For printing the indexes d and d they are moved toward the platen by a cross-bar G', that engages the inner ends of all the index-rods E and E, and is itself engaged by the lever E' on the side thereof opposite the bar D' and is moved by said lever when it is moved in the direction the reverse of that to move the bar D'. Said index-moving bar G' is slidingly mounted on the platen-carrying rods y^2 and y^2, and it is retracted after having been moved by the lever E' by means of two coiled springs H' and H', that are respectively mounted on said rods y^2 and y^2 and bear at one end against the bar and at the other end against a collar or washer I' on the respective rod y^2, said washer being supported against the pressure of the spring by a pin y^3 run through the rod y^2. Preferably a head or protuberance e' on the lever E' forms the bearing for the cross-bar G'.

The mechanism as above described is inclosed in a casing that may consist of a simple box K', having a hinged front or door k, that is adapted to be opened only by a key, so as to prevent unauthorized access to the mechanism. The lock consists of a spring-actuated latch-plate L', pivoted intermediate its ends to the bracket F' on the frame X and a headed pin or bolt k' on the door k, which is engaged by the latch-plate. At its end opposite that engaged by the bolt k' the latch-plate is engaged by the upper end of a vertical rod M', the connection between plate and rod being a loose one to permit the movement of the latch-plate independent of the rod when the bolt moves into engagement with said plate. The rod M' is guided at its upper end by the bracket F', through which it passes, and at its lower end by a rearwardly-extended arm x' on the frame X, through which it also passes. On its lower end it has a disk or enlargement m, to accommodate which the arm has a cavity or recess, and which enlargement is adapted for engagement by the bit n of a key N'. When the latch-plate is free from its bolt, the door k is swung open automatically by a spring k^2 on the casing-bottom, which presses against the door. In the end of the arm x' is a slot x^2 to permit the key to turn, and in the projections of the arm which are formed by the slot there are holes x^3 and x^3, respectively, for the key-shank. In the arm projection nearer the side from which the key is inserted a slot x^4 is provided for the passage of the key-bit in inserting and removing the key. The lower end of the lever E' hangs in the slot x^2 in position to be engaged by the key-bit, so that when the key is revolved in the direction to release the latch to open the casing the lever will be moved and, acting through the cross-bar G', will move the indexes d and d and print therefrom, and when the key is revolved in the reverse direction, as it must be preliminary to its removal and the relocking

of the casing, it will move the lever E′ in the opposite direction and, acting through the cross-bar D′, will move the platen and print from the dials and the telephone-number.

It will be understood that at the beginning of the period, the calls during which are to be counted and recorded, the proper person having the key will insert the latter and turning it in the direction to unlock the casing its bit *n* will first engage and swing the lever E′, and then passing out of engagement with the lever said bit will engage the rod enlargement *m* and depress the rod and rock the latch-plate, freeing the door. The plate A′, on which the platen-pad is mounted, is now swung down and a card or ticket placed in position in the platen, and said platen-carrying pad is returned to and locked in position for printing. Next the key is revolved in the reverse direction, as it must be for its removal, and the lever E′, having returned to the position from which it was moved by the key in its unlocking movement, will now be engaged by the key-bit and moved in the direction to engage and actuate the cross-bar D′, and thereby move the platen bodily, causing the imprint on the newly-inserted card or ticket of the dials and the telephone-number. The key is then removed and the casing-door closed and locked. At the expiration of the period of time of which the record is to be kept the proper person comes to the instrument to remove the ticket, and the described operation is repeated. As a result of the turning of the key to unlock the casing the indexes will be printed on the card or ticket previously placed in the instrument, and it will be impossible to open the instrument for the removal of said card or ticket without thus doing that which completes the record. The ticket having remained in precisely the same position it occupied when the dials were printed, if the position of the indexes has changed by reason of their revolution with the dials in the operation of the meter, it will be seen that when the indexes are printed those whose positions have changed will, as printed, point to some marking on the dials other than "0." The ticket thus completed and containing the record of the calls originating with the subscriber in the period covered is replaced by a blank one for the record of the next period. For making the record it is required, therefore, simply to turn the key, an act that is necessary for giving access to the casing for the removal of the record by the proper person for taking to the central office.

Any desired arrangement of circuit to include the electromagnet may be employed. Thus the circuit can be such that the subscriber himself will close it, as by pressing a button, moving a switch, or by taking the receiver from its hook some audible or visual signal at the switchboard apprising the operator that the counter has been operated, or the counter may be included in the talking or the ringing circuit, so that the operator can attend to the working of the counter from the central office, which arrangement will make it convenient to count only those calls in which the subscriber gets the party called. In Fig. 10 is shown a known form of party-line circuit, (see United States Patent No. 589,431, dated September 7, 1897,) which includes a counter for each subscriber in the circuit, the meter being located in the talking-circuit, which, as usual, is closed at the subscriber's station by removing the receiver from the hook. Answering and calling plugs P′ and Q′, respectively, of one set of plug-and-cord connections and a battery R′ in a bridge across the connections of the plug are illustrated, the current for the subscribers' transmitters being furnished by the battery. The counter-operating magnets are wound to a resistance which will prevent the counters being operated by the current from the battery R′, and for providing the current requisite to operate the counters a supplemental battery S′ is employed, adapted to be thrown into the circuit by a push-button T′ by the operator at the central station, the operator before cutting in the supplemental battery first ascertaining that the party called can be obtained. As the counter-circuit is only closed when the receiver is off its hook, it is apparent that no party's counter will be operated unless such party's receiver is off its hook.

It is to be understood that though the special features of construction herein shown and described constitute a desirable embodiment of my invention the scope of the invention is not limited thereto, but extends to and embraces other constructions, and it is to be understood that though designed especially for a telephone-counter I do not restrict my invention to this use, as it is adaptable to other uses.

Having thus described my invention, what I claim is—

1. The combination of a recorder, comprising a register having coöperating parts, a platen that is movable to print from one of said register parts, and means to move the other of said register parts to print therefrom, substantially as and for the purpose described.

2. The combination of a recorder, comprising a dial and an index, a platen, means to move the platen to print from one of said recorder parts, and means to move the other of said parts to print therefrom, substantially as and for the purpose described.

3. The combination of a recorder, comprising a dial and an index, a platen, means to move the platen to print from the dial, and means to move the index to print therefrom, substantially as and for the purpose described.

4. The combination of a recorder, comprising a dial and an index, a slidingly-mounted

platen, means to move the platen to print from one of said recorder parts, and means to move the other of said parts to print therefrom, substantially as and for the purpose described.

5. The combination of a recorder, comprising a dial and an index, one of said parts being movable for making an imprint therefrom, a platen, and a lever movable in one direction to actuate said platen and in another direction to actuate said movable part, substantially as and for the purpose described.

6. The combination of a recorder, comprising a dial and an index, the index being movable for making an imprint therefrom, a platen and a lever movable in one direction to actuate the platen and in the opposite direction to actuate said index, substantially as and for the purpose described.

7. The combination of a recorder, comprising a dial and an index, the index being movable for making an imprint therefrom, a platen, a bar adapted to move the index, a second bar adapted to move the platen, and an operating device for both bars that is interposed between them, substantially as and for the purpose described.

8. The combination of a recorder, comprising a series of dials and indexes, a rod connected to each index, a platen, rods attached to the latter, and passing through guides, a bar for engaging the index-rods, mounted on the platen-rods, a bar attached to the latter, and a lever extending between the two bars, substantially as and for the purpose described.

9. The combination of a recorder having a register comprising two coöperating parts from which imprints can be made, and key-actuated means for making an imprint from each of said parts actuated by movement of the key in opposite directions, substantially as and for the purpose described.

10. The combination of a recorder having a register comprising two coöperating parts from which imprints can be made, and key-actuated means for making an imprint from such parts in succession operated by movement of the key in opposite directions, substantially as and for the purpose described.

11. The combination of a register comprising two coöperating parts from which imprints can be made, key-actuated means for making an imprint from such parts in succession, and means whereby the succeeding impression must be made before the key can be withdrawn, substantially as and for the purpose described.

12. The combination of a meter having a register comprising two coöperating parts from which imprints can be made, and a key-actuated lever for making an imprint from such parts in succession, substantially as and for the purpose described.

13. The combination of a record-making mechanism, key-actuated means for making the record, and a key-unlocked casing, the same key serving to unlock the casing and make the record, said means for making the record being actuated by the key when it is moved to unlock the casing and when it is moved in the opposite direction, substantially as and for the purpose described.

14. The combination of a record-making mechanism, a casing therefor, having a door, a latch, a key-operated rod to release the latch, and a key-actuated lever for operating the record-making mechanism in the path of the key when it is moved to actuate said rod, substantially as and for the purpose described.

15. The combination of dials and indexes, means for electrically operating said dials and indexes, a platen, means for moving the same toward the dials, and means for moving the indexes toward the platen, substantially as and for the purpose described.

16. The combination of dials and indexes, means for electrically operating said dials and indexes, a platen, means for moving the same toward the dials, means for moving the indexes toward the platen, and an operating-lever for moving both the platen and the indexes, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of June, 1901.

HENRY ABBOTT.

Witnesses:
EDWIN A. CURRIER,
PERCY M. CURRIER.