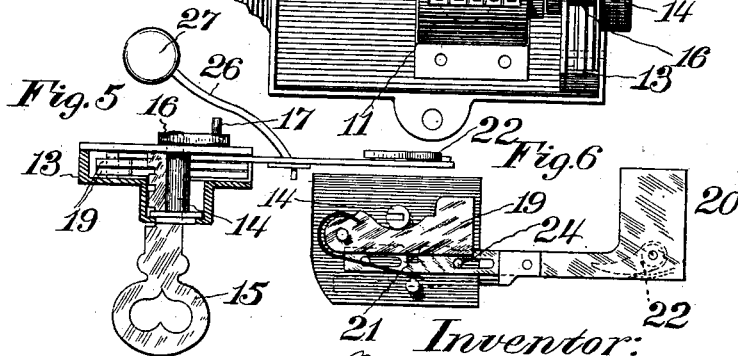
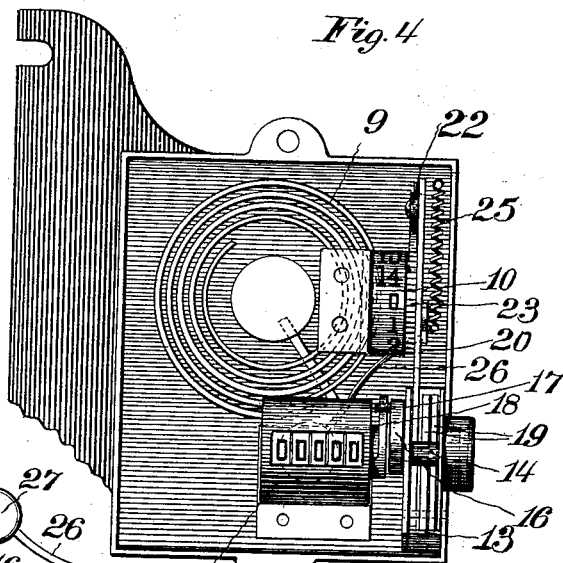
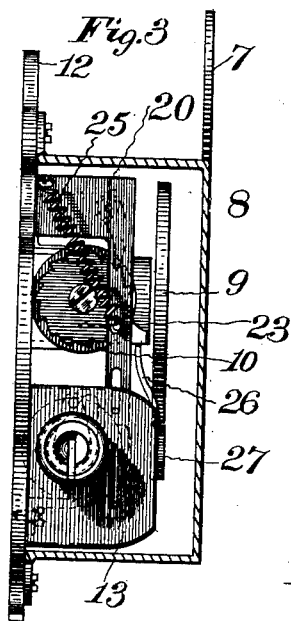
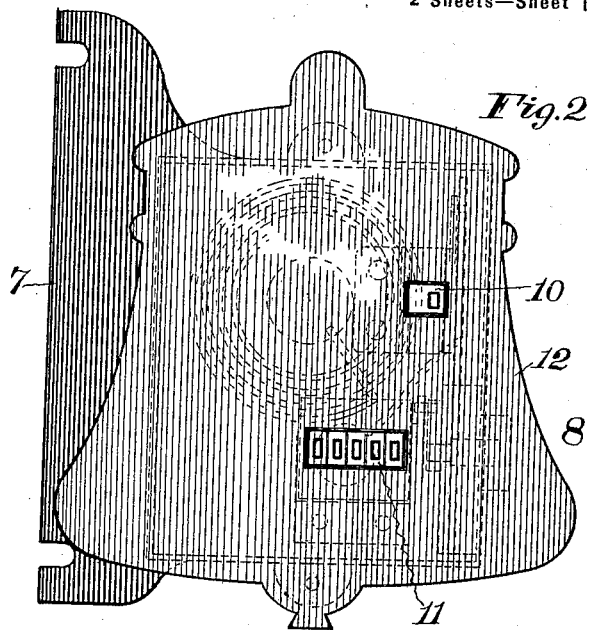
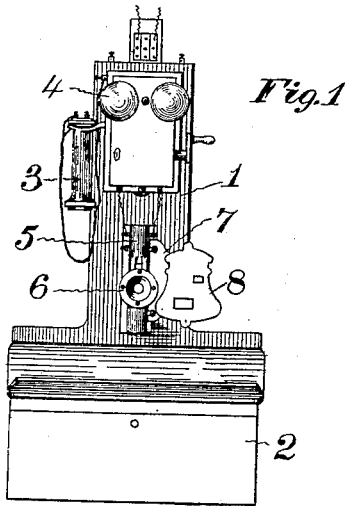


W. GRAY.
TELEPHONE CALL REGISTER.

(Application filed Oct. 12, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
William H. Barker.
Erma P. Coffin

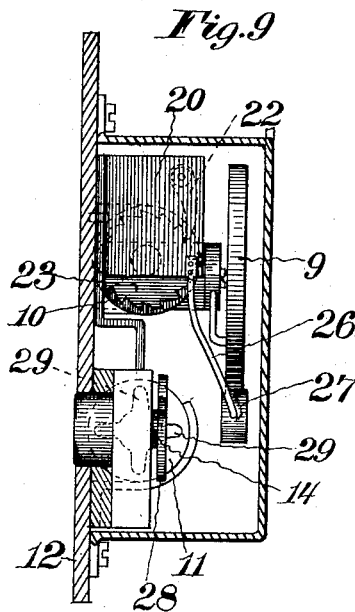
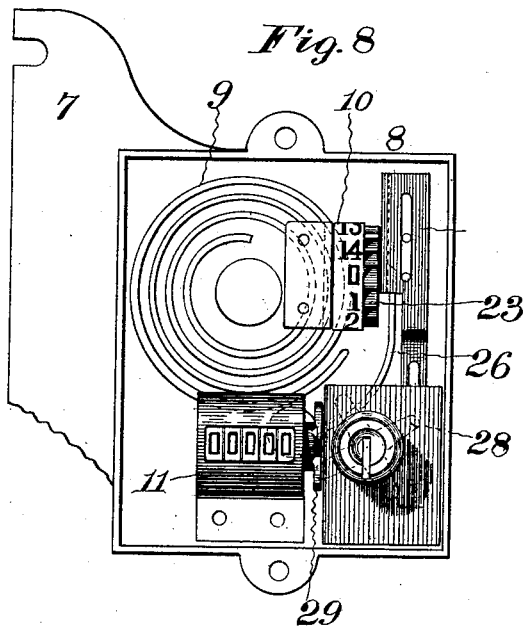
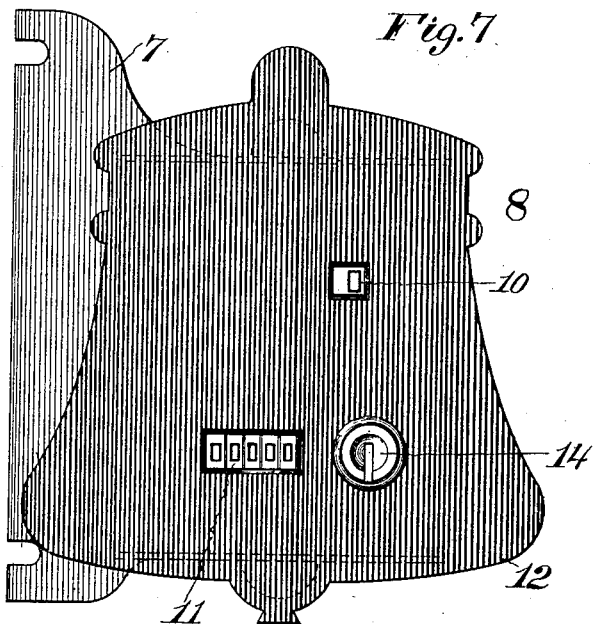
21 Inventor:
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TELEPHONE CALL REGISTER.

(Application filed Oct. 12, 1898.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

WILLIAM GRAY, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE GRAY
TELEPHONE PAY STATION COMPANY, OF SAME PLACE.

TELEPHONE-CALL REGISTER.

SPECIFICATION forming part of Letters Patent No. 645,917, dated March 20, 1900.

Application filed October 12, 1898. Serial No. 693,357. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GRAY, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State
5 of Connecticut, have invented certain new and useful Improvements in Telephone-Call Registers, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

10 My invention relates to the class of telephones provided with means for indicating each use made of the apparatus; and the object of my invention is to provide a device of this class in which such use shall be indicated
15 and recorded by simple means and in which such record may be determined at a glance.

To this end my invention consists in the device as a whole, in the combination of parts, and in details and their combination, as hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a view in front elevation of a set of telephone instruments embodying my invention. Fig.
25 2 is a detail front view, on enlarged scale, of the register-box. Fig. 3 is a detail edge view, on enlarged scale, in vertical section through the register-box and showing the mechanism. Fig. 4 is a detail front view, on enlarged scale,
30 of the register with the cover removed and showing the mechanism. Fig. 5 is a detail view, on enlarged scale, in section through the lock and in edge view of the reciprocating bolt. Fig. 6 is a detail front view of the
35 back plate of the lock, on enlarged scale, and showing the lock mechanism. Fig. 7 is a detail view in front elevation on enlarged scale, showing a modified form of the invention. Fig. 8 is a detail view, in front elevation, of
40 the same with the front plate removed. Fig. 9 is a side view of the parts shown in Fig. 8, the case being broken away to show construction.

In the accompanying drawings the numeral
45 1 denotes the backboard, 2 the battery-box, 3 the receiver, 4 the magneto-bells, 5 the coil-box, and 6 the transmitter, of a set of telephone instruments of the kind in common and ordinary use.

50 The numeral 7 denotes the back plate of a register-box 8, secured thereto in any desired

manner and provided with means whereby the box has an intimate union with the transmitter-support—in the present instance the coil-box—so that any sound formed within
55 the register-box may be readily transmitted therefrom over the line-wires.

A gong 9 is secured within the register-box, and a primary register 10 and a main register 11 are also secured within the register-box
60 in the form shown to the front plate 12 thereof. These registers are preferably of the rotary kind, as herein shown, a predetermined number of step-by-step movements of the primary register being recorded on the main register.
65 This arrangement of a primary and main register has special advantages. The primary register 10, as described, moves with a step-by-step movement, throwing into view at each
70 step successive numbers which serve as a visual signal to notify the operator that the use of the instrument has been recorded. In the present case fifteen such step movements of the primary register are required to change
75 the number on the main register, and this arrangement provides a registering device with a large record capacity as compared with its size and number of dials, for it is obvious that the recorded number of the main register must
80 be multiplied by fifteen to find the total number of calls recorded. A further advantage resides in the use of the pair of registers as combined and operated by the key and lock-bolt. It is to be noted that the lock-barrel
85 and main register are always in such position that the latter will be moved forward as soon as the key is moved to rotate the lock-barrel and the key does not come into engagement
90 with the lock-bolt 20 until it has been moved nearly a complete revolution. The bolt 20 is now engaged, operates the primary register,
95 and is released to strike the gong a positive blow just as the key finishes making its complete revolution. Thus the main register has been moved forward during the movement of
100 the key, so that the use of the instrument has been recorded on the main or record register before the primary register changes. The gong, however, is not sounded until the record has been made on both the main and primary registers. This combination of key and lock-bolt also serves as a convenient means

of preventing a backward movement of the key, as the position of the depression 21 is such that it can only be engaged during the forward movement of the key. It is evident
5 that the above-described combination of registers and operating means is such as to effectually prevent the illicit use of the instrument.

While there are numerous advantages, as
10 set out above, in combining the pair of registers, there is also this further advantage. A subscriber using this sort of instrument—that is, measured service—usually wishes with the least possible trouble to himself to know how
15 much the instrument is used during the day. Now if a single register with a record of five or six figures is displayed it would be very difficult to remember the record from time to time as the instrument is used. By using
20 two registers, however, one having a record capacity of only a few numbers, usually large enough for the calls of a single day, it is easy to remember the changes shown from, say, 1 to 15. As there are usually a certain number
25 of calls allowed per year for a predetermined price, this arrangement calls the attention of the subscriber to the number of calls made and prevents too free a use of the instrument with the consequent increased
30 cost of "overcalls." Thus a subscriber is enabled after using this system a short time to know whether it is better, so far as cost to him is concerned, to use this system of measured service with a restricted number of calls at a
35 reduced price or to take a contract on some other unlimited service.

A lock-case 13 is secured within the register-box and contains a barrel 14, adapted to receive a key 15. A crank 16 is secured to
40 the barrel 14 and has a crank-pin 17, adapted to engage the arm 18, secured to the cylinder of the register 11. Within the lock-case are arranged tumblers 19 and the lower end of the reciprocating bolt 20, the tumblers being
45 formed to register with the usual slots on the key 15. As the key is rotated, carrying with it the barrel and connected parts, it engages a recess 21 in the bolt, moving it lengthwise and causing a pawl 22, borne on the bolt, to
50 engage a ratchet 23, secured to the cylinder of the primary register 10. This bolt is mounted on guide-pins 24, and a spring 25 is employed to hold the bolt at one limit of its play. A hammer-arm 26 is carried by the bolt and
55 bears a hammer 27, located in proper position to strike the gong 9 as the bolt is thrown upward under the recoil of the spring 25. The hammer-arm is somewhat springy and is so mounted upon the reciprocating bolt as to
60 normally hold the hammer out of contact with the gong. As the bolt shoots forward under the impulse of the spring and is brought to a sharp stop by the pins 24 the hammer is thrown forward, striking the gong a quick blow with
65 a rebounding stroke, leaving it free to vibrate.

In the modified form of the invention shown in Figs. 7, 8, and 9 the apparatus is construct-

ed so that the key may be inserted from the front of the box. In this construction a star-wheel 28 is secured to the barrel 14, the arms
70 being arranged to engage with the arms of a star-wheel 29, located on the cylinder of the register 11, the mechanism being the same as that hereinbefore described.

In the operation of the device the key is inserted in the barrel and a complete rotation
75 given thereto. In this rotation the key engages the slots 21, carrying the bolt 20 downward, the engagement of the pawl 22 with the ratchet 23 rotating the primary register 10
80 forward one step. As soon as the key has been rotated to a certain extent it disengages from the slot in the bolt, which quickly draws backward under the impulse of the spring
85 25, causing the hammer 27 to sound the gong, thus indicating to the central office that the register has been operated. In this rotation of the barrel by the key the cylinder of the main register 11 has also been rotated, the
90 construction being such that when a certain number of predetermined step-by-step movements of the primary register have been made a numeral denoting such result will be thrown forward on the main register.

In the present case the main register 11 is
95 so constructed that a single revolution of the register-operating arbor 18 moves the units-wheel of the register one-fifteenth of a step—that is, the register-operating arbor 18 will have to be turned through one hundred and
100 fifty complete revolutions to cause a complete revolution of the units-dial of the main register. Therefore it is necessary to turn the arbor through fifteen complete revolutions to change the character displayed on the units-
105 dial of the main register.

I claim as my invention—

1. In a telephone-call register, in combination, a main register, a primary register, a register-operating device, and connections
110 between said device and the registers for changing the characters on the primary register at each operation and those of the main register at a succeeding operation of the register-operating device.

2. In a telephone-call register, in combination, a main register and a primary register, a sound-signal, a register-operating device, and connections between the register-operating device and registers for changing the characters displayed on the primary register at
120 each operation and for sounding the signal, and for changing the characters displayed on the main register at a succeeding operation of the register-operating device.

3. In a telephone-call register, in combination, a main register and a primary register, a rotary register-operating device directly connected with the main register and a reciprocating bolt connecting the register-operating device and the primary register for operating the latter upon a complete revolution
130 of the operating device.

4. In a telephone-call register, in combina-

tion, a main register and a primary register, a signal-sounding device, a rotary register-operating device connected directly with the arbor of the main register and a reciprocating bolt connecting the register-operating device and the primary register for operating the latter, and for sounding the signal after the arbor of the main register has been moved a complete revolution.

5. In a telephone-call register, in combination, a main register and a primary register, a key-operated rotary register-operating device having an arm adapted to engage an arm on the cylinder of the main register, and a reciprocating bolt connected with the primary register and operated through the medium of the key which rotates the barrel of the register-operating device.

6. In a telephone-call register, in combination, a pair of registers, a lock having a rotary barrel, tumblers mounted in operative relation to said barrel, a reciprocating bolt, and a key controlled by said tumblers and adapted to operate the bolt and move one of said registers during the entire movement and the other during a partial movement of the key.

7. In a telephone-call register, in combination, a main register, and a primary register, a lock having a rotary barrel, rotary connections between said barrel and one of said registers, a reciprocating bolt adapted to operate

the other register, tumblers mounted in operative relation to the lock-barrel, and a key controlled by said tumblers and adapted to operate the bolt upon the complete rotation of the key.

8. In a telephone-call register, in combination a main register and a primary register, a gong, a lock having a rotary barrel, inter-engaging connections between said barrel and one of said registers for operating the latter, a sliding bolt adapted to operate the other register and carrying a hammer adapted to strike the gong with a rebounding blow, tumblers operatively connected with the barrel of the lock and a key controlled by said tumblers and adapted to engage and move the bolt in one direction.

9. In a telephone-call register, in combination, a lock having a rotary barrel, a main register having its cylinder operatively connected with said barrel, tumblers operatively connected with the lock, a primary register, a reciprocating bolt for operating the primary register and a key controlled by said tumblers and adapted for engaging, moving and releasing actions with respect to the bolt.

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Witnesses:

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