

G. R. FAWKES.
 TELEPHONE CALL RECORDING DEVICE.
 APPLICATION FILED NOV. 19, 1908.

Patented Nov. 16, 1909.

2 SHEETS—SHEET 1.

940,140.

Fig. 1.

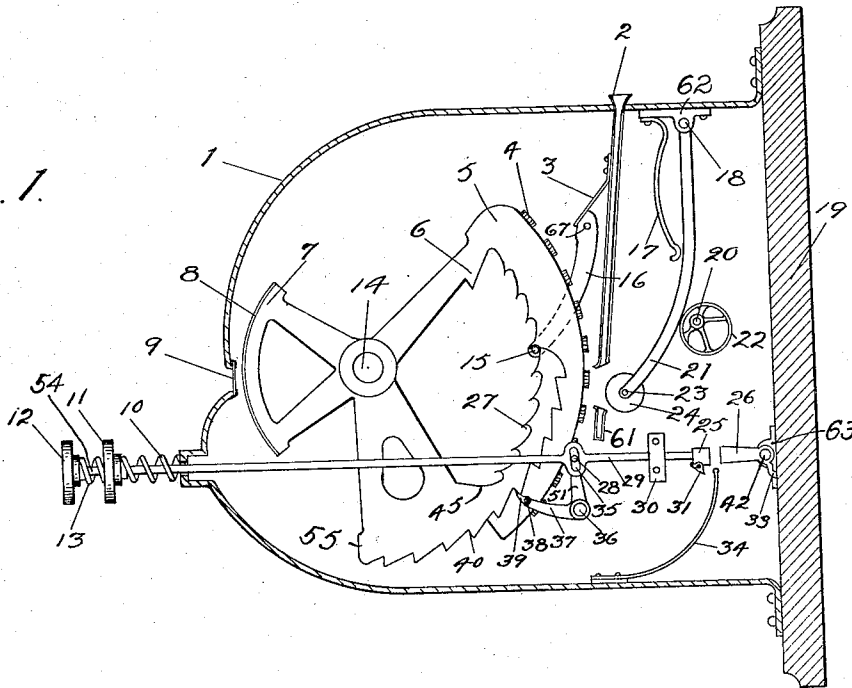
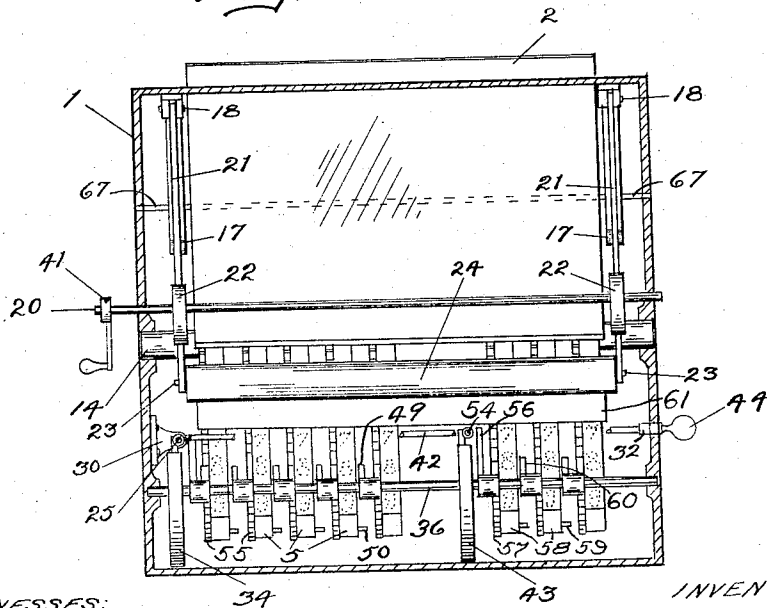


Fig. 2.



WITNESSES:

H. B. Burr.
 J. W. Scott.

INVENTOR

George R. Fawkes

BY G. C. Kennedy.
 ATTORNEY.

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2 SHEETS—SHEET 2.

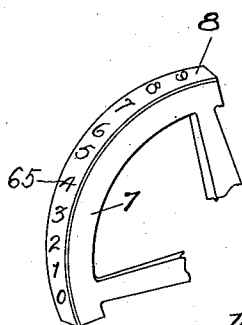


Fig. 3.

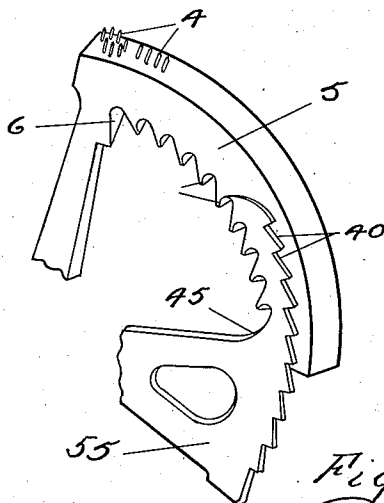


Fig. 4.

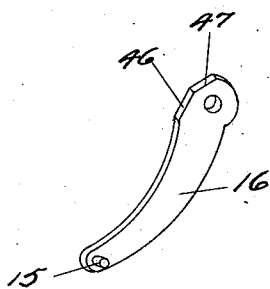


Fig. 5.

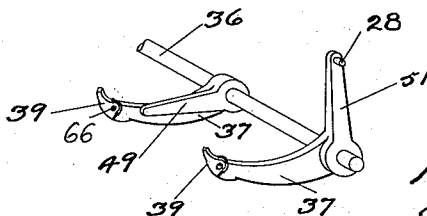


Fig. 6.

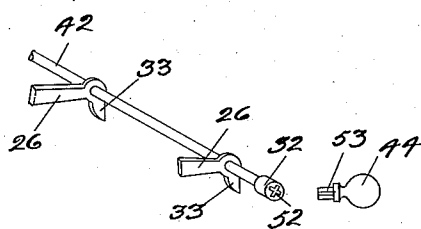


Fig. 7.

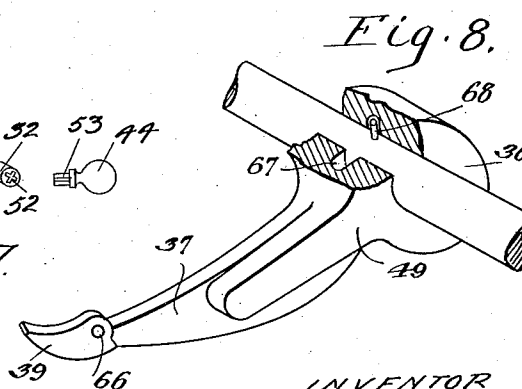


Fig. 8.

WITNESSES:

H. B. Burr.
I. A. Scott.

BY

George R. Fawkes
G. R. Kennedy.
ATTORNEY

INVENTOR

UNITED STATES PATENT OFFICE.

GEORGE R. FAWKES, OF WATERLOO, IOWA.

TELEPHONE-CALL-RECORDING DEVICE.

940,140.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed November 19, 1908. Serial No. 463,366.

To all whom it may concern:

Be it known that I, GEORGE R. FAWKES, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Telephone-Call-Recording Devices, of which the following is a specification.

My invention relates to improvements in telephone-call recording devices, and the object of my improvement is to provide means whereby a record may be made and kept of the calls, whether local or long-distance, made by a subscriber and user of a telephone, to be used as a basis for computing the service value of the instrument. This object I have accomplished by the means which are hereinafter fully described and claimed, and which are illustrated in the accompanying drawings, in which:

Figure 1 is a right-hand side elevation of my improved telephone-call recording device, its casing being sectioned away. Fig. 2 is a rear elevation of my said device. Fig. 3 is a detail perspective of one of the number-bearing front sectors. Fig. 4 is a detail perspective of one of the rear sectors. Fig. 5 is a detail perspective of one of the swinging engaging arms. Fig. 6 is a detail perspective of a portion of the fixed cross-shaft and of two of the driving-pawls pivoted thereon. Fig. 7 is a perspective detail of the rock-shaft which carries the locking-arms for the plunger-rods. Fig. 8 is a broken perspective detail of one of the driving-pawls showing the method of its mounting on the fixed cross-shaft.

Similar numbers refer to similar parts throughout the several views.

My improved recording device is conveniently housed in a casing 1 secured to a backing 19. The side-plates of said casing are provided on their interior surfaces with socket-bearings for the reception of the ends of the main shaft 14 on which are mounted the recording sectors 5 and 58, spaced apart from each other, to rock thereon. Each recording sector 5 has nine internal obliquely-directed or inclined teeth 27, the roots of which afford ten engagements for the detent 15 on the swing-arm 16. The curved edge of the sector is made broad and supplied with projecting pins 4, the latter being arranged in a series of figures or numerals beginning at the top and running serially toward the bottom, being the numerals 0 to 9 con-

secutively. The pins are pointed and slightly spaced apart in the outlines of said numerals, and act in piercing a record-card to impress or puncture therein the respective numeral when the sector has been rocked to a predetermined position by the proper action of the apparatus.

Projecting from the right-hand side of each sector 5, with its rear edge indented a distance from the edge thereof, is an auxiliary sector 55, the upper angle of which is located at about the middle of the arc of the sector 5, while its lower angle extends a considerable distance beyond the lower angle of the latter. The sector 55 has ten inclined teeth with a corresponding number of intermediate roots on its exterior curved edge, and which are adapted to engage the prop-jointed pawl on the forward member 37 of the bell-crank lever 51. The upper sector 5 has an inclined detent 6 projecting inwardly from the inner edge of its upper radial arm, while the lower sector 55 has an inclined surface 45 extending from the root of its lowermost internal tooth 27 to the inner edge of its lower radial arm, and the use of each will be fully explained hereinafter. Extending forwardly from the hub of the sector 5 and integral therewith is another sector 7, having both a shorter arc and radius. The broadened exterior curved edge 8 of the sector 7 is supplied with a consecutive series of the primary numerals at 65, beginning at the lower angle of the sector with 0 and running upwardly serially to 9. As many of the recording rock-devices composed of said sectors 7, 5 and 55 are supplied in the apparatus as desired, the rock-device at the right-hand being used for units, while the consecutive rock-devices placed on the shaft 14 toward the left are employed in recording successively for the different denary series of numerals in hundreds, thousands and upward. Each of the said rock-devices are exactly alike, and are operatively connected to coact by means of the following described means.

A plunger-rod 29 furnished with an exteriorly placed push-button or disk 11, is adapted to slide through a bearing orifice in the front of the casing 1 and through an interior bracket-bearing 30. A compression spring 10 is seated about said rod between said button and said casing to keep said rod ordinarily retracted forwardly. The rear end of said rod 29 is supplied with an an-

nulus 25, and the latter carries a detent 31 pivoted thereto by a prop-joint to limit its forward swing. A spring sounder 34 has its lower end secured to the bottom of the casing 1, with its free upper end lying in the path of movement of the detent 31. When the rod 29 is pushed back, the detent 31 engages and moves back the free end of the said spring sounder passing it, and in returning said detent swings rearwardly on its pivot to pass over said sounder to arrive at its first position. A drop-block or rock-arm 26 is secured to a rock-shaft 42, the latter having its ends mounted in bearing-orifices in said casing, and by bearing-brackets 63. Each arm 26 has a depending stop 33, to prevent its lowering beyond the horizontal position shown in Fig. 1, in which position said arm 26 is interposed in the path of movement of the rod 29, thus preventing the shifting of the latter to make a record when the lessee of the telephone so desires. The left-hand end of the rock-shaft 42 is provided with an expansion 32 containing a key-way or seat for a separable key 44 having wards 53 to fit said key-seat, and such key is used to rock said arm 26 into or out of the path of movement of the plunger-rod 29. The plunger-rod 29 has a vertical flat expansion provided with a nearly vertical slot 35 to receive a stud 28 projected from the upper member of the bell-crank lever 51 to slide therein. The forward end of the lower member 37 of said bell-crank lever has a pawl 39 pivoted to it by a prop-joint to limit its downward movement, and said pawl is adapted to engage the teeth 40 of the lower sector 55, said pawl giving enough to slide past the teeth when the sector is moved up.

2 and 61 are registering slideways and receptacles for a card or slip of paper, the said receptacles being separated from each other by a narrow horizontal space in line with one row of the puncturing teeth characters taken horizontally along the entire series of rock-devices 5 and 58. A horizontal roller 24, constructed of some soft and yielding elastic material is placed to the rear of said space between the receptacles 2 and 61 and aligned therewith, with its pintles 23 pivotally mounted in the lower ends of depending arms 21, the latter having at their upper ends pintles 18 pivoted in bracket-bearings 62 secured to the casing 1. Depending springs 17 are adapted to bear resiliently against the front of each arm 21 to keep them pushed back when not in use. A rock-shaft 20, having an exteriorly placed crank 41, has cams 22 secured thereto, the latter being in contact with the rear surfaces of the arms 21, and when the crank is turned, the cams push forward the roller 24 to engage the back of a card deposited in the receptacles 2-61 and thus push the card

against the row of pin-outlined characters 4 to cause the latter to prick a line of punctured characters on the card.

In front of the receptacle 2, and spaced apart therefrom is a horizontal rod 67 whose ends are supported by the casing 1. On this rod are pivoted the upper ends of a plurality of swing-arms 16, one for each rock-device 5 and 58. Referring to Fig. 5 it will be seen that each arm has at its lower end on its right-hand side a projecting stud or pin 15 which extends within the interior hollow of the adjacent sector 5 to the right, and is adapted to engage the root of abutting teeth on the interior arc of the sector. A flat spring 3 is secured to the forward surface of the receptacle 2 just over each arm 16, whose free end engages the flattened part of the arm at 47 when the arm is in its lowered position, and which engages another flattened part of said arm at an inclination to the other when said arm is in its lifted position. The spring 3 therefore tends to keep the arm below it with its pin 15 in engagement with the teeth 27 of the sector 5 when engaging the flattened part 47, and when engaging the part 46 the spring tends to keep the said arm lifted away out of contact with said teeth.

Rock-arms 37 are pivoted on the transverse rod 36 at proper intervals to permit their prop-jointed pawls 39 (the latter pivoted on pintles 66) to engage the exterior teeth 40 on the adjacent sector 55. Only the right-hand arm 37 has a bell-crank member 51, the other arms 37 having a bell-crank member 49 placed at a different inclination thereto. This free arm 49 is contacted by a stud 50 which projects from the left-hand side of the sector 55 to the right, when the two adjacent sectors are in a certain relative position to each other. Each of these other arms 37 has in its hub a hollow 67 extending a part of the way around the shaft 36 and into which a pin 68 projects from said shaft to limit the play of the arm upon the shaft. In said casing 1, at the left-hand side thereof, is a plurality of rock-devices 57-58, which are the same in all respects as to construction and mode of operation, as the rock-devices 5-55 already described, and which are actuated by means of a separate plunger-rod 54 having a button 12, and intermediate mechanism, consisting of a bell-crank lever 51, connection 28, 35, and annulus and detent adapted to engage a sounder spring 43, similar to the like mechanism employed as above described. The rock-devices 57-58 and their connecting and actuating mechanism are entirely independent of the first-described rock-devices, and are used solely to record long-distance calls, as will be hereinafter described, the first-described rock-devices 5-55 being used alone to record local calls.

The apparatus is actuated and used in the following manner. The casing 1 is placed sufficiently near to the transmitter of a telephone so that the sound of the spring-sounder 34 when struck, or the sounder 43 as the case may be, may be heard by the central-station operator. When the central-station operator is called up by the subscriber the latter is directed by the former, after the connection has been made with the receiver of the message, to push in the button 11. This done, the detent 31 strikes and moves backward and forward over the said sounder 34, which produces a sound which is heard by the operator. The operator then connects the line of the subscriber with the line of the receiver of the message.

The moving back of the plunger-rod 29, causes the pin 28 to slide to the bottom of the slot 35, and then the member 15 is impelled rearwardly throwing up the arm 37, the pawl 39 then pushing up the sector 55 in the space of one tooth which brings the character 1 of the series 4 in line with the space between the receptacles 2—61. In the same way each succeeding call is made, and the sector 55 is pushed up by degrees, the pin 15 on the arm 16 catching each time between two of the teeth 27 as it slides thereover. When the pawl 39 pushes up the sector 55 for the tenth time, the pin 15 contacts with and rides out over the inclined part 45 of the sector, which causes it to move out enough to bring the flat-spring 3 in engagement with the flat place 46 on the said arm 16, and the spring then holds it out of contact with the teeth 27. As, impelled by the coiled spring 10, the pawl 39 is retracted away from the teeth 40, the released sector 55 influenced by its own gravity, falls. The pin 15 then is contacted by the inclined plane 6 which forces it inward so that the spring 3 slips from the plane part 46 to the plane part 47 of the arm 16, the pin then engaging the first root in the series of teeth 27 ready for another movement thereover. As the sector 55 moves up for the tenth time its pin 50 engages the free end of the bell-crank member 49 to its left, lifting the sector 55 to the left which has the tens series 4 through the space of one tooth, where its character 1 will appear in the space between the receptacles 2 and 61, which indicates a registration of 10, the first sector 5 being in its lowest position with its character 0 in line in said space. Each successive actuation in a like manner moves the rock-devices described, until the last actuation, when the series of sectors may be thrown back to the zero position by an additional pushing in of the button 11.

The independent series of rock-devices 57—58 which is used only to record for long-distance calls, is manipulated and actuated in like manner to the mechanism already de-

scribed, the subscriber pushing in the button 12 once for each submultiple of the total fee for the call.

When desired, the total of calls recorded may be ascertained by looking through a transparent plate 9 in the front part of the casing, the total appearing in the alined figures 65 on the respective sectors 7. The total may be recorded at any time on a slip of paper inserted in the communicating receptacles 2 and 61, by turning the crank 41 which impels the cams 22, and roller 24 to carry the paper upon the pins 4, puncturing a record on the paper.

The apparatus forms a reliable and easily manipulated means for keeping a record of the number of calls made by a subscriber, when it is desired to thereby determine the service value of the annexed telephone.

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

1. In an apparatus for the purpose set forth, the combination of a plurality of recording devices mounted to rock on a common shaft, each of said recording devices being formed of oppositely located integral sectors, each of which is provided on the edge of its arc with a denary series of numerals, each of the numerals on said sectors being formed of separated characters outlined in projecting pins of even length which move in the same arc, the pin-bearing sectors having on one side both outwardly and inwardly projecting ratchet-teeth, a manually operable actuating device adapted for reciprocation, a driving-pawl connected with said actuating device and adapted to engage the outwardly projecting ratchet teeth on one of said recording devices only to move the latter through the space of one tooth during each reciprocation of said actuating device; a spring-controlled holding-pawl engaging the inwardly-directed ratchet teeth on each recording device, each of the said recording devices having the lower and upper ends of its range of inwardly-directed ratchet-teeth terminating in an inclined plane, the lowermost plane being adapted to throw said holding-pawl out of and the uppermost plane to push it back into engagement with said ratchet-teeth, said pawl being so formed and engaged by its controlling-spring that the latter will keep it out of engagement with said ratchet-teeth after said pawl is raised away therefrom by the first-mentioned inclined plane and until it is returned to its first position by said second-mentioned inclined plane, engaging-means on said recording devices adapted when one of said devices has moved by steps to the last of its series of numerals to co-act to move the next adjacent recording device one step in its numerical series, and independent means for holding and carrying

a blank at will into engagement with alined pin-outlined numerals in one certain row only on the several recording devices to thereby puncture on said blank a record therefrom.

5 2. In an apparatus for the purpose set forth, the combination of a plurality of devices mounted to rock on a common shaft, each of said devices being formed of op-
10 positively located integral sectors, each of which has on its edge a plurality of characters, such sectors each having both out-wardly and inwardly projecting ratchet-teeth, a manually-operable actuating device
15 adapted for reciprocation, a driving-pawl connected with said actuating device and adapted to engage the outwardly projecting ratchet teeth on one of said sectors only to
20 move the latter through the space of one tooth during each reciprocation of said actuating-device, a holding-pawl engaging the inwardly-directed ratchet-teeth on each

sector, each of the said sectors having at the limit of each of the lower and upper ends of its range of inwardly-directed ratchet-teeth means respectively adapted to disengage or reengage said holding-pawl from or with said ratchet-teeth, means adapted to keep said holding-pawl disengaged from said ratchet-teeth after it is elevated therefrom and until it is returned to its holding position by the shifting-means at the upper end of each row of said ratchet-teeth, and engaging-means on said sectors adapted when one of the sectors has moved
35 by steps to the last of its character series to coact to move the next adjacent sector one step in its character series.

Signed at Waterloo, Iowa, this 31st day of Oct. 1908.

GEORGE R. FAWKES.

Witnesses:

G. C. KENNEDY,
O. D. YOUNG.