

No. 646,643.

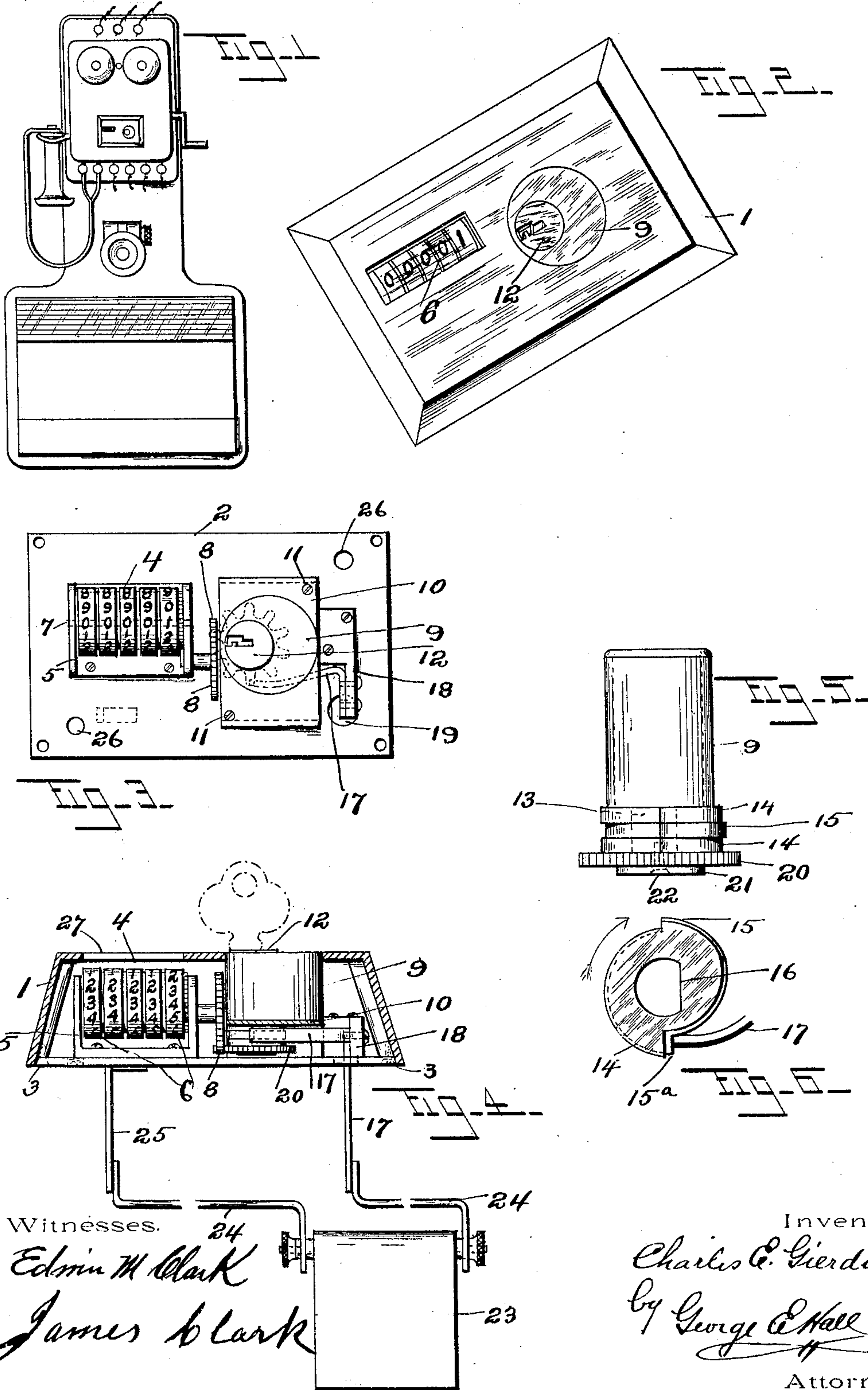
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C. E. GIERDING.

INSTRUMENT FOR MEASURED SERVICE TELEPHONES.

(Application filed Apr. 4, 1899.)

(No Model.)



Witnesses.

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INSTRUMENT FOR MEASURED-SERVICE TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 646,643, dated April 3, 1900.

Application filed April 4, 1899. Serial No. 711,655. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. GIERDING, a citizen of the United States, residing at West Haven, in the county of New Haven and State
5 of Connecticut, have invented certain new and useful Improvements in Instruments for Measured-Service Telephones, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention relates to a device for use in connection with telephones having the measured-service system, and is designed to register the number of calls or connections and to inform the central office when the registration
15 has been made, so that the required connection can be made.

It is one object of my invention to construct a device having the above-mentioned functions that can be operated by a key which
20 must be inserted and turned before the connection is made, and, again, to provide a registering mechanism which will be operated by the rotation of the said key and indicate the number of times the key has been rotated,
25 thus registering the number of connections made by the central office.

A further object of my invention is to construct the device of few parts that are simple in design and which can be manufactured at
30 a slight cost and to so shape the exterior parts that when the device is attached to the telephone it will have a pleasing and attractive appearance.

To this end my invention consists in the device having certain details of construction and combination of parts, as will be hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, in which like
40 numerals designate like parts in the several views, Figure 1 is a view of a telephone with my device attached thereto. Fig. 2 is a perspective view of the device complete. Fig. 3 is a plan view of the interior mechanism, the
45 outer case being removed. Fig. 4 is a side view thereof, the bridge and the outer case being shown in vertical section. Fig. 5 is a side elevation of the key-cylinder and contact mechanism, and Fig. 6 is a plan view of the
50 contact-disks.

Prior to my invention a person using a tele-

phone having a measured service was required to drop a coin or a token into a receptacle attached to the instrument when instructed to do so by the central office before
55 the required connection would be made. At certain stated periods, usually a year, the telephone company owning the instrument furnished the subscriber with several hundred of these tokens, each of the tokens entitling
60 the subscriber to a single local connection by the central office.

The method of making connections above described is defective in that considerable space is required to store the tokens. The
65 tokens are small and liable to be lost. The receptacle attached to the telephone for holding the tokens is necessarily large and bulky and detracts from the appearance of the instrument. An employee of the telephone com-
70 pany must make frequent visits to the telephone and remove the rapidly-accumulating tokens. The telephone cannot be used if a token or a coin of the proper denomination is not at hand. The token system cannot be
75 used in connection with desk-telephones. Neighbors and strangers can use the telephone provided they have a token or a coin of the proper denomination, causing considerable annoyance to the subscriber, and if
80 they have deposited a bad coin or token the subscriber is held responsible. All of these difficulties I have overcome in my device by discarding the use of the token or coin and by operating the same with an ordinary pin-
85 lock key and attaching a train of registering-wheels which indicate the number of connections made by the central office. By using a key no one can operate the telephone except
90 such as have the proper key, and every subscriber can be provided with a different key, and by discarding the tokens the device can be made to occupy but a very small space, and therefore can be attached to a desk as well
95 as a wall telephone.

In the drawings, the numeral 1 designates the outer case, formed, preferably, as the frustum of a pyramid with an open bottom, and 2 the base-plate of the device, which is
100 secured to the outer case by the screws 3. The registering mechanism 4 is fastened to the base-plate 2 by suitable screws and con-

sists of a standard 5 and a series of indicating-wheels 6, mounted upon the shaft 7, which is supported at either end on the said standard, and a star-wheel 8, the rotation of which
5 operates the said registering-wheels.

The particular construction of the registering mechanism is immaterial to my invention, and I have not therefore shown the same in detail, it being apparent that any of the well-known forms of registering devices may be
10 used.

The key mechanism is the same as that of the well-known pin-lock, the details of construction of which are matters of common
15 knowledge, and I have therefore not deemed it essential or necessary to illustrate the same any further than to show its connection with my device.

Referring to the drawings, the numeral 9
20 designates the cylinder fastened upon the top side of the bridge 10, which is secured to the base-plate by the screws 11 11, and 12 the inner cylinder. The upper end of the cylinder 9 projects through a hole in the top of the
25 outer case, the top surfaces being flush with each other. Secured below the bridge 10 upon the lower end of the plug 13 within the inner cylinder is the contact mechanism, which comprises two notched metal disks 14 14 and
30 an intermediate insulating-disk 15, preferably of hard rubber or fiber. The disks have two notches each and are prevented from turning upon the said plug by flattening one side of the said shaft and forming the central
35 hole in the said disks to conform thereto, as shown at 16. Upon one side and for substantially one-half of the circumference of the said disks the disk 15 projects slightly beyond the disks 14 14, and for the remaining one-
40 half of the circumference the disks 14 14 project beyond the said disk 15, as illustrated in Figs. 5 and 6. The end portion of the contact-strip 17 bears constantly upon the periphery of the said disks and prevents the
45 rotation of the same in one direction by means of the diametrically-opposed notches. Contact-strip 17 is made of sheet metal, being fastened at the center to the block of insulating material 18, secured to the base-plate and
50 projecting through the hole 19. (See Fig. 4.) At 15^a the notch in the disk 15 is in advance of the notches upon the disks 14 14, which prevents a contact of the end of the strip 17 with the said disks 14 when the contact mechanism is at rest. A star-wheel 20 of substan-
55 tially the same size and having a like number of teeth as the star-wheel 8 and meshing therewith is secured upon the lower end of the plug 13 and held thereon by means of the disk 21 and screw 22. The numeral 23 designates an electrical buzzer, which is of the ordinary construction and which may be located in any convenient part of the telephone,
60 and 24 24 wires leading therefrom and connecting with the contact-strip 17 and the strip 25, which is rigidly secured to the base-plate 2.

The current of electricity necessary to op-

erate the buzzer is obtained by connecting one of the wires 24 with the battery in the telephone. When the telephone is not in use, 70 the end of the contact-strip 17 is bearing against the periphery of the disk 15. The circuit being open, the buzzer does not operate; but when the disks are rotated the strip bears against the periphery of the disks 14 75 during a portion of its rotation and by closing the circuit causes the buzzer to operate until the contact-strip is released from the metal disks and it again rests upon the fiber or insulating disks. 80

The device may be attached to any convenient part of the telephone and is preferably secured thereto by means of screws which pass through from the rear and enter the base-plate 2 in the threaded holes 26 26, the strips 85 17 and 25 being of sufficient length to extend therethrough.

The operation of my device is as follows: The subscriber inserts his key in the cylinder and turns it around, as in an ordinary 90 lock, the plug 13, disks 14 and 15, and star-wheel 20 rotating with it. When it has turned sufficiently to prevent its withdrawal, the end of the contact-strip 17 which has been resting against the insulating-disk 15 rides upon 95 the metal disks 14 14 and completes the buzzer-circuit, thereby operating the buzzer, which continues to operate until the key has been turned completely around, where it may be withdrawn and the circuit opened again by 100 the insulating-disk 15 being brought against the contact-strip 17. The star-wheel 20, whose teeth intermesh with those of the star-wheel 8, causes a rotation of the said star-wheel 8 and through it operates the said indicating-wheels, which register the number 105 of times the key has been inserted and rotated. A hole 27 is cut through the top of the outer case 1 over the top of the said indicating-wheels, so that the numerals upon the 110 said wheels can be read from the outside. As soon as the key has been turned completely around, thereby increasing by one the total of the registering-wheels, and the buzzer-circuit is opened the central office makes the 115 required connection. The central office hears the hum of the buzzer, and as the connection is not made until the same has ceased it is therefore necessary that the subscriber turn his key completely around and advance the 120 train of indicating-wheels before he is able to use the telephone. A backward rotation of the key and a consequent backward rotation of the registering mechanism is prevented by the notches in the disks 14 15 and 125 the contact-strip 17, as before described.

I have only illustrated and described a buzzer as an alarm or sounding mechanism in connection with my device; but it will operate equally as well with a bell or any other 130 kindred mechanism which can be heard by the central office.

The device is compact and simple in construction, can be attached to a desk or a wall

telephone, and the use of tokens is avoided, a single key only being necessary to operate the device, which may remain in the cylinder or may be carried on the person at the discretion of the subscriber.

I am aware that contact mechanisms for making and breaking contacts are old, and I do not therefore claim this construction, broadly, but only as set forth in the combinations of the claims hereunto appended.

It is apparent that there are many minor changes and alterations that can be made within my invention, and I would therefore have it understood that I claim all that falls fairly within the spirit and scope of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, the combination with a registering mechanism having a plurality of indicating-wheels upon a common shaft, and secured upon a base member with its axis parallel thereto; of a rotatable key-actuated mechanism also secured to said base member with the axis thereof at a right angle thereto; mechanism for imparting a rotary movement to said registering mechanism from the said key mechanism, as intermeshing wheels upon each of said mechanisms; and means for preventing the backward rotation of said key mechanism; substantially as described.

2. In a device of the character described, the combination of a registering mechanism having a plurality of indicating-wheels upon a common shaft, a rotatable key mechanism, operative connection between the said key mechanism and the said shaft, whereby the said shaft is rotated, an alarm mechanism and a circuit maker and breaker operated by the said key mechanism and adapted to operate the said alarm mechanism during a portion of the rotation of the said key mechanism, substantially as described.

3. In a device of the character described, the combination of a rotating key mechanism having a star-wheel and disks of insulating and non-insulating material secured thereto, a registering mechanism having operative con-

nection with the said key mechanism through the said star-wheel, an alarm mechanism, and means, as a contact device, for operating the said alarm mechanism, substantially as described.

4. In a device of the character described, the combination with registering mechanism, of a rotating key mechanism having alternate contact-disks of insulating and non-insulating material secured thereto, a contact-strip resting upon the peripheries of said disks, alarm mechanism and means for operating the same through the said contact-disks, substantially as described.

5. In a device of the character described, the combination with a registering mechanism, of a key mechanism having alternate notched contact-disks secured thereto, and a contact-strip resting against the peripheries of said contact-disks whereby the said key mechanism may be rotated in one direction only, substantially as described.

6. In a device of the character described, the combination of a registering mechanism, a rotating key mechanism, an alarm mechanism, means for operating the said alarm mechanism during the rotation of the said key mechanism and means for causing the said alarm mechanism to operate until the said key mechanism is brought to its original position, substantially as described.

7. In a device of the character described, the combination of the registering mechanism having the star-wheel 8 rotatably secured thereto, a key mechanism having a rotating plug 13, contact-disks 14 and 15 and star-wheel 20 secured to said plug 13, the teeth of the said star-wheel 20 meshing into the teeth of the said star-wheel 8, an alarm mechanism, and a circuit breaker and maker consisting of the contact-strip 17, one end of which rests against the periphery of the said disks, substantially as described.

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

CHARLES E. GIERDING.

Witnesses:

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F. C. BOYD.