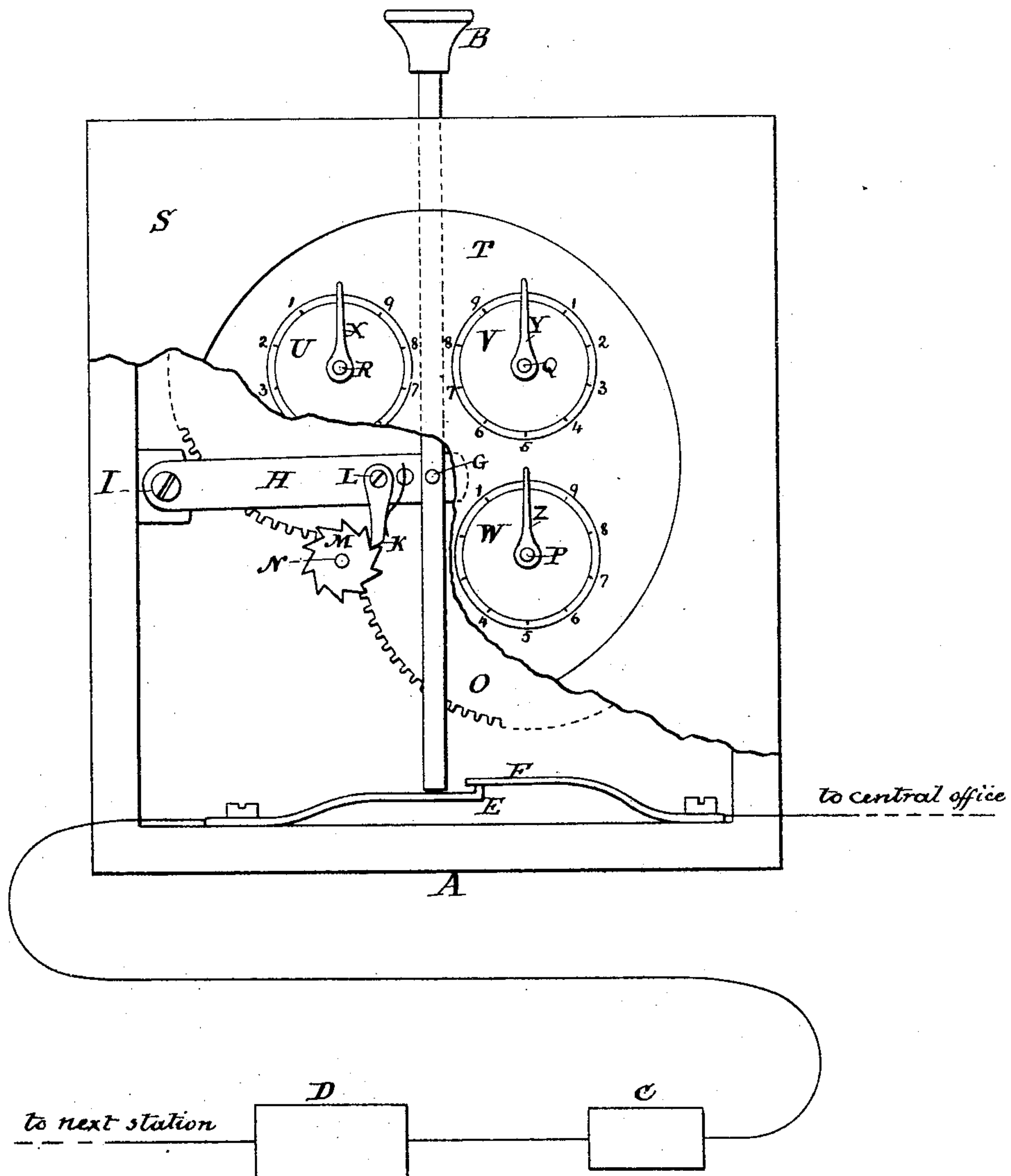


(No Model.)

C. J. BELL.
Telephone Call Register.

No. 229,302.

Patented June 29, 1880.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES J. BELL, OF BRANTFORD, ONTARIO, CANADA.

TELEPHONE CALL-REGISTER.

SPECIFICATION forming part of Letters Patent No. 229,302, dated June 29, 1880.

Application filed March 16, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JAMES BELL, of Brantford, Province of Ontario, Canada, have invented a new and useful Improvement in Telephone Call-Registers, which invention is fully set forth in the following specification.

It is the usual custom of telephone companies or administrations to make a fixed charge for connection with the central office of a telephone exchange, which is based on the average cost to the company or administration of each subscriber, and not upon the amount of service performed for him. This is found to operate unequally upon the subscribers, as a person who seldom uses his telephone is charged as much as one who employs it constantly in his business.

The object of my invention is to provide a means whereby a telephone company or administration may ascertain the exact amount of service performed for each subscriber, and thus be able to make a proportionate charge. For this purpose I combine with the call arrangement in each subscriber's office a registering apparatus for recording the number of times the call apparatus has been worked.

The telephone call-registers, like gas-meters, can be inspected periodically, and the amount of service performed for each subscriber be ascertained.

In order that the nature of my invention and its mode of operation may be fully understood by those skilled in the art, I shall show and describe one form of telephone call-registers adapted for the purpose.

The diagram illustrates the combination of the telephone call-register with the usual appointments of a telephone-station.

A is the registering device; B, the push-knob or key used for calling the central office; C, the call-bell by which a subscriber is called; and D, the telephone and transmitter, arranged in any convenient or suitable manner.

In the telephone system here illustrated a galvanic battery at the central office is placed in circuit with the line and instruments shown in the drawing. The depression of the push-knob or key B breaks the circuit by separating the contact-pieces E F, thereby causing a signal at the central office.

The push-knob B is attached at the point G

to the actuating-lever H, whose fulcrum is at I. The pawl K is pivoted to the lever H at L, and turns the ratchet-wheel M through one-tenth part of a revolution each time the push-knob is depressed.

The ratchet-wheel M is rigidly attached to an axis, N, which carries a pinion, (concealed from view by the ratchet-wheel M,) which gears into a large toothed wheel, O, upon the axis P. By a similar system of gearing the axes P, Q, and R are connected together, so that one revolution of R corresponds to ten of Q, one hundred of P, and one thousand of N.

The apparatus so far described is placed in a box, S, and the ends of the axes N P Q R project slightly through a circular plate or disk, T, upon which are four dials, three of which are shown at U V W. The figures 0 1 2 3 4 5 6 7 8 9 are arranged in a circle upon each dial at equal distances apart. Index-hands are rigidly attached to the axes N P Q R. Three of these are shown at X Y Z. The dials and index-hands are protected by a glass plate covering the face of the apparatus.

One depression of the key B causes the index-hand upon the axis N to shift from one figure upon its dial to the next, and ten (10) depressions of the push-knob cause it to make a complete revolution, and occasions the movement of the index-hand Z from one figure of its dial W to the next. If all the index-hands are set at zero, then the apparatus will indicate correctly the number of times the push-knob B has been depressed up to ten thousand, the units being indicated by the index-hand attached to the axis N, the tens by Z, the hundreds by Y, and the thousands by X.

The call arrangement of the telephone system here shown depends for effect upon a galvanic battery included in the circuit at the central office; but it is obvious that my invention can be equally applied to a system of telephones in which the call-signals are produced by magneto-electricity.

The contact-pieces E F can be used in place of the ordinary short-circuiting arrangement of the magneto-generator employed at the subscriber's office for the purpose of calling the central office. The depression of the push-knob B breaks the short circuit by separating the contact-pieces E F, placing the magneto-

generator in the main circuit, so that the central office can be called.

It is obvious, also, that my invention can be applied to systems of telephones in which the call-signals are occasioned by the contact instead of by the separation of contact-pieces. For this purpose it is only necessary that the contact-piece F be placed on the other side of E, but not in contact with it, so that the depression of the push-knob B should bring them together.

My invention can also be applied to telephone-exchange systems, in which the central office is called by switching the telephones from the ordinary or private wire to a special call-wire or common call-circuit. It is only necessary that the actuating portion H of the call-register should be attached to the switch employed in the exchange system, so that the switch cannot be moved to call the central office without turning the ratchet-wheel M.

I would here say that my invention is not limited to the particular form of registering apparatus shown, nor to any particular system of telephones, but includes within its scope the combination of any convenient or suitable form of registering apparatus with any telephone-exchange system, so that the operation of the apparatus used to call the central office causes the registering apparatus to indicate the number of times the call apparatus has been worked.

Although my telephone-register is primarily intended to be used in the office of each subscriber to a telephone-exchange for the purpose of ascertaining the amount of service performed for him by the company, it may also be placed in the central office itself, where it could be used for checking the records of the subscribers' instruments, or for ascertaining the amount of service on each telephone-circuit, or for recording the number of connections made by each operator, and for other

purposes useful to telephone companies or administrations.

Having thus fully described my said invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in a telegraph or telephone system, with an electrical circuit connecting a central office and a station or subscriber's office, of the apparatus by which the subscriber calls the central office, and a counting and recording register disposed with reference to said apparatus substantially as described, whereby the operation of calling the central office effects automatically the movement of said register.

2. The combination, with an electric circuit, of a push-knob, switch-key, or similar device for altering the electrical condition of the circuit, a counting and recording register, and electrical connections, as indicated, whereby the movement of the register is automatically effected by means of the operation of said push-knob, switch-key, or similar device, substantially as described.

3. In an electric-telephone system, comprising a central office with stations located upon circuits connected with said office for intercommunication, a telephonic apparatus through which the central office can be called and verbal messages conveyed, combined, substantially as described, with a registering or recording apparatus, whereby no message can be sent without being recorded, said telephonic and registering apparatus being located at the several stations, as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHAS. JAS. BELL.

Witnesses:

C. J. HEDRICK,
PHILIP MAURO.