No. 624,095. Patented May 2, 1899.

H. T. RICHARDS.

TELEPHONE REGISTER.

(Application filed Jan. 19, 1899.)

(No Model.)

Fig. 1

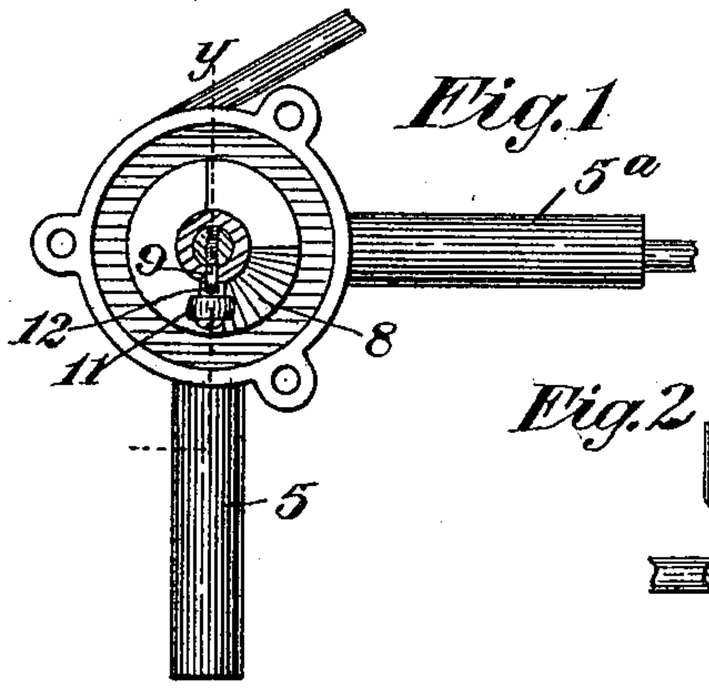


Fig. 2

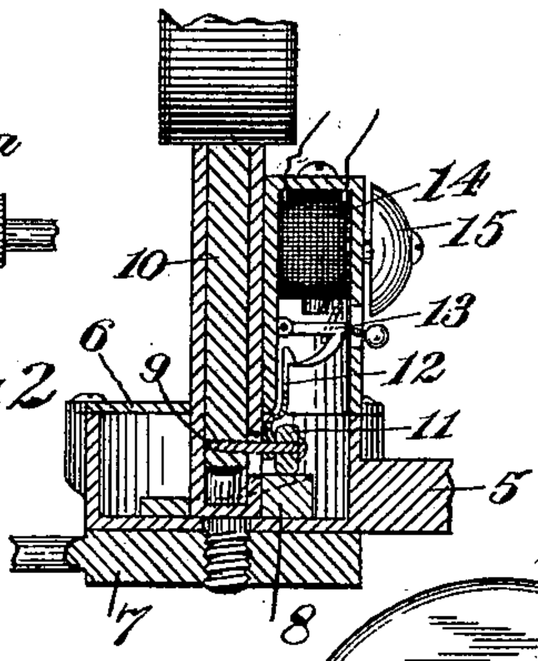


Fig. 3

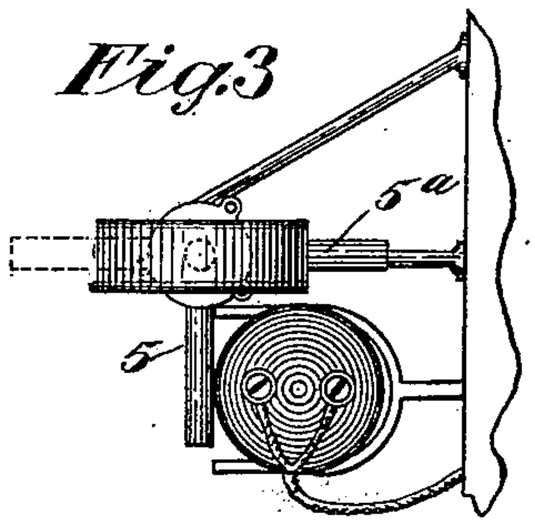


Fig. 4

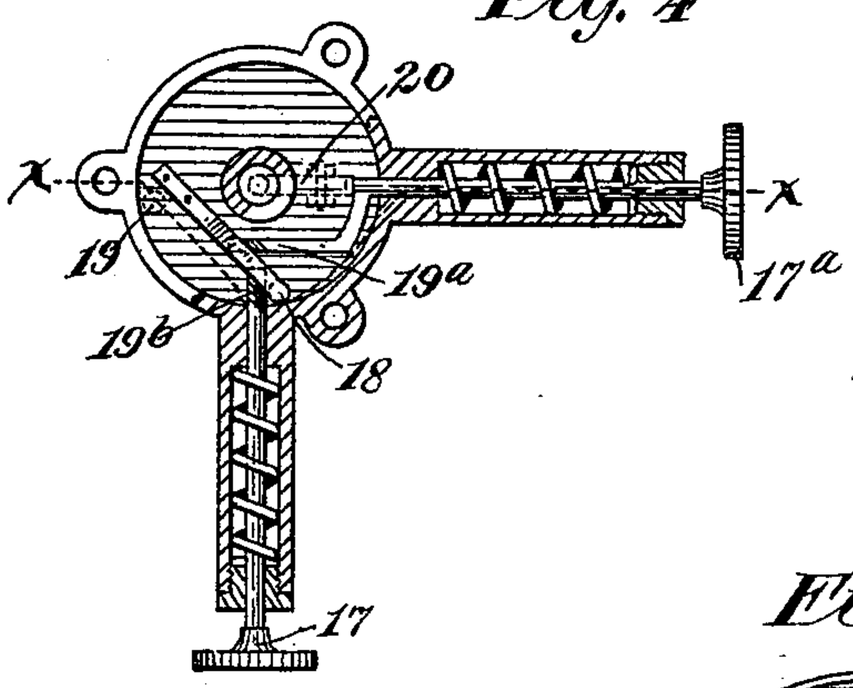


Fig. 5

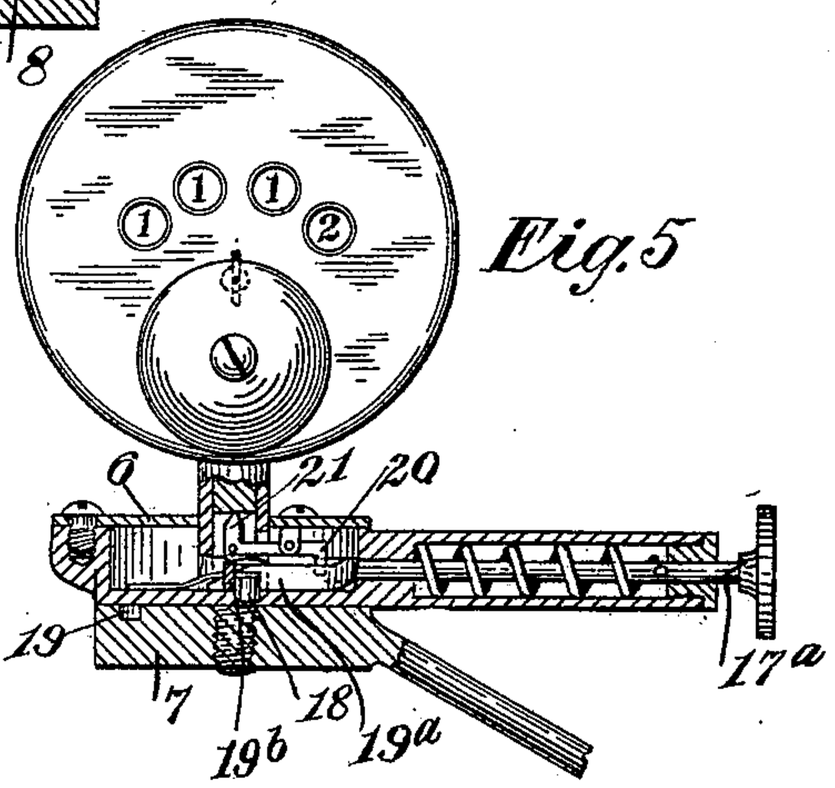


Fig. 6

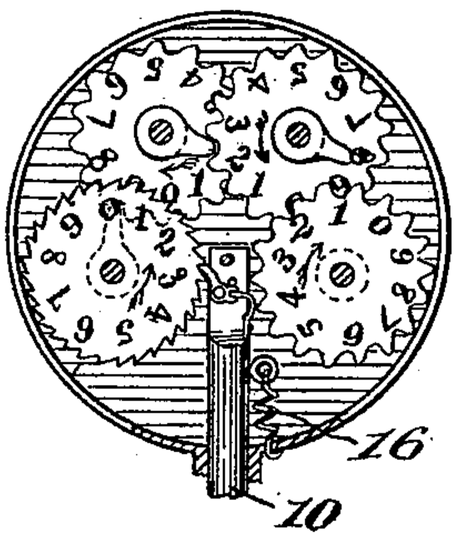
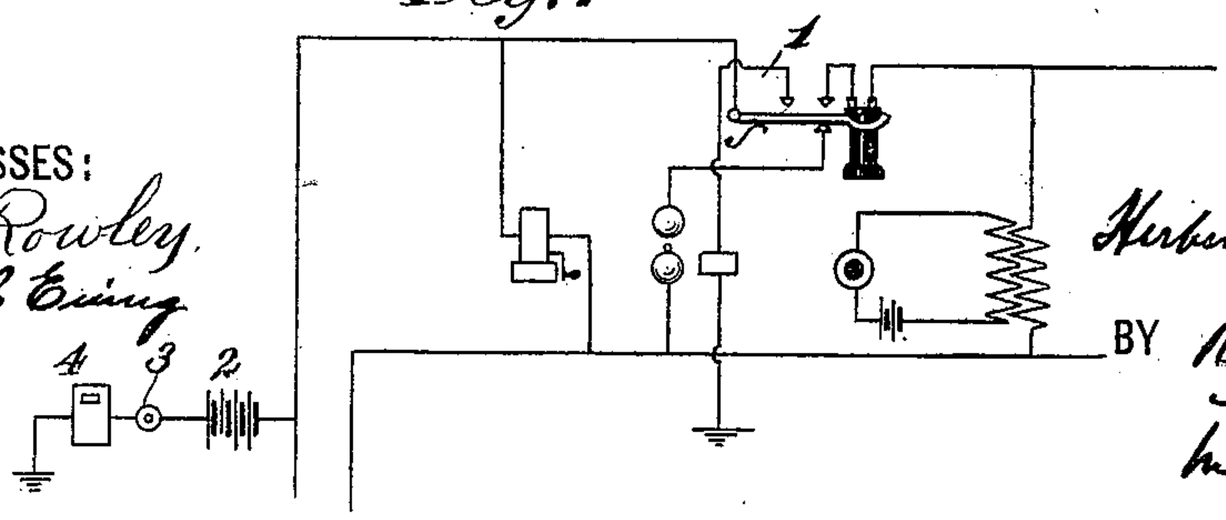


Fig. 7



WITNESSES:
Geo. B. Rowley.
Elizabeth Ewing

INVENTOR
Herbert T. Richards
BY Robt. H. Read
his ATTORNEY.

UNITED STATES PATENT OFFICE.

HERBERT T. RICHARDS, OF NEW YORK, N. Y.

TELEPHONE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 624,095, dated May 2, 1899.

Application filed January 19, 1899. Serial No. 702,637. (No model.)

To all whom it may concern:

Be it known that I, HERBERT T. RICHARDS, a citizen of the United States, and a resident of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Telephone-Registers, of which the following is a specification.

The object of this invention is to provide a telephone installation with devices by which a record may be kept of the number of calls made by a subscriber, so as to facilitate satisfactory and accurate accounts of the amount of service exacted from the telephone company in certain classes of telephone service where the charges are graded according to the amount of service exacted. It is important from the subscriber's standpoint that he may have in his station a device which indicates at any time the number of conversations he has held with other subscribers. At present a record is kept in the central office at great expense; but the subscriber has no check on errors made by central-office operators and considerable dissatisfaction arises therefrom.

In carrying out my invention I provide a device in the subscriber's station which obstructs the return of his receiver to its support or hook after having been used and necessitates upon his part the operation of a device in coöperative relation to a register in order to permit him to restore his hand-telephone to its supporting-hook. In some cases I may provide a purely local organization by which in order to restore the telephone the subscriber must operate the device which controls the register, but provide this device with means by which the restoration can be made without operation of the register in case he has not been able to secure communication with the called subscriber. In other cases I place the device which controls the connection between the supporting device and the register under control of the central office, thus permitting the central operator to force the subscriber to operate his own register in returning the telephone to its support. Where feasible, I prefer to adopt the latter system, since it admits of central-office control of the subscriber's circuit and may therefore be used to operate at the time the conversation is held a register at the central station, the same act which locks the subscriber's register into coöperative relation with the device which controls it serving to operate the central-office register, thus giving each party to the contract—namely, the telephone company and the subscriber—means for verifying the accuracy of the account and permitting also a correction of any error at the time it is committed.

My invention therefore comprises, generally speaking, a device in coöperative relation to the subscriber's telephone which permits the free removal of said telephone from its support for the purpose of establishing a call or receiving one, but which cannot be returned to its support without special control of the obstructing device, and thereby insuring the attention of the subscriber to the register.

More specifically, my invention comprises means for controlling at the central station a mechanical connection between the obstructing device and the register which puts the register in the subscriber's station under the control of the central operator when the subscriber's telephone has been removed from its support and forces the subscriber to operate the register when a conversation has been held, when he returns his telephone to its support.

The invention comprises other features, which will be more particularly hereinafter described and will be definitely indicated in the claims appended to this specification.

In the accompanying drawings, which illustrate the invention, Figure 1 is a top plan view of the obstructing device which controls the register and which is within control of the central-office operator. Fig. 2 is a sectional view of Fig. 1 on the plane indicated by the line *y y*. Fig. 3 is a plan of the organization shown in Fig. 2, showing its relation to the telephone and its support. Fig. 4 is a sectional view of an obstructing device to control the register, which is entirely under the control of the subscriber. Fig. 5 is a vertical section, part in elevation, on the plane indicated by the line *x x* of Fig. 4. Fig. 6 is a view of the registering mechanism with the cover removed, and Fig. 7 is a diagram of the circuit connections for the organization shown in Figs. 1, 2, and 3.

Referring first to the construction shown in Figs. 1, 2, 3, 6, and 7, which embodies the preferred form of my invention, I provide the supporting-hook of the telephone with an auxiliary contact connected with one side of the telephone-circuit when the telephone is removed from the hook and throwing on a ground connection which includes a magnetically-controlled locking device for insuring the operation of the subscriber's register when his telephone is returned to its hook. This branch circuit (indicated at 1 in Fig. 7) places the locking device in the subscriber's station under the command of the central-office operator. The arrangement of the circuit may vary with the type of telephone system. The organization shown in Fig. 7 is a type of system involving a metallic circuit extending from the central office to the subscribers's station and in which all the talking and calling instruments are connected in parallel relation to the two wires of the metallic circuit. In such a system I use one of the wires only for the register-controlling circuit, the branch 1 at the subscriber's station leading to ground when the telephone is removed from its hook and a ground connection from the subscriber's circuit being made at central station and including a battery or other source of current 2 and a switch or circuit-closer 3 to the central-office register 4. The operating parts of the subscriber's register comprise a pivoted turnstile 5, which when in its normal position occupies a relation to the telephone-hook, as indicated in Fig. 3, which obstructs the removal of the telephone from the hook; but when said telephone is removed from the hook the arm 5 of the obstructing device is moved to a position at right angles to that indicated in Fig. 3, bringing the arm 5^a into a position to obstruct the return of the telephone to its hook. The arms 5 5^a of the turnstile are firmly connected with or form part of a closed casing 6, which contains the operating devices of the register and surrounds the part of the register which is firmly connected to one of the supports 7 of the controlling apparatus. Within the casing is a curved block 8, having an inclined face which coöperates with a pin 9, secured to a vertical movable rod 10, (see Figs. 2 and 6,) which operates the wheel-train of the register. The pin 9 is provided with a shoe, which may be a roller 11, which latter in operative position rides upon the inclined surface 8. Connected with the pin 9 is a hook 12, coöperating with a detent 13, controlled by an electromagnet 14, which latter is included in the ground branch 1 (see Fig. 7) from one side of the subscriber's circuit. A bell-hammer may be connected to the armature 12 and be arranged in coöperative relation to a bell 15, so that when the central-office operator energizes the magnet the bell will give notice to the subscriber that his device has been put into condition to register and that the central-office register has been operated. This also performs another function in notifying the subscriber that he can have his desired conversation. The operation of the magnet releases the hook 12 and permits a spring 16 (see Fig. 6) in the register to draw down the rod 10, thus forcing the roller 11 against the bottom of the incline 8, the latter having been shifted by the removal of the subscriber's telephone from the hook, so as to bring the lowest part of the incline beneath the roller. When the conversation is finished, the subscriber in restoring his telephone to the hook is obliged to push the arm 5^a of the turnstile to the position indicated in Fig. 3, and this movement forces the roller 11 to rise on the incline 8 and lift the register-rod 10, moving forward a registering-wheel one digit and indicating the registry on the dial within view of the subscriber.

Thus it will be seen that the obstructing device may be moved freely for the removal or the restoration of the telephone, but that when the central office so desires it can establish a connecting device between the obstructing device and the subscriber's register, so as to necessitate the operation of the register when the telephone is restored.

While I have shown a device in the form of a turnstile as a convenient organization for coöperating with the telephone-hook, this is of course a non-essential feature, as any device capable of obstructing the return of the telephone to its hook will subserve the same function. In some cases it may not be feasible to establish the control of the subscriber's register by the central-office operator, and in such cases the electromagnetic mechanism may be dispensed with. In such a case a construction such as shown in Figs. 4 and 6 may be employed. In this organization the obstructing device is provided with two releasing buttons or rods 17 17^a, one of which unlocks the obstructing device, so that it can be shifted to admit the telephone to its hook, and the other of which similarly operates the releasing device, but simultaneously operates the register. The casing 6 contains a spring-controlled pin 18, which passes through a hole drilled in the bottom of the casing and bears against the surface of the support 7. A recess 19 is drilled in the upper face of the support 7 in position to register with the pin 18 when the turnstile is shifted to permit removal of the telephone. The pin 18 locks the turnstile to the support and prevents a return of the telephone to the hook until the pin 18 is lifted. This may be done by either of the controlling buttons 17 17^a, a spring-controlled rod connected therewith having beveled ends 19^a 19^b, which lift the spring to which the pin 18 is secured sufficiently to clear the recess 19 and permit the turnstile to be moved. The rod connecting with the button 17^a carries also a beveled arm 20, which when pushed inwardly lowers a supporting-pin 21, which bears against the operating-rod 10 of the register and permits the spring 16 to depress the

latter sufficiently to engage a fresh tooth of the ratchet-wheel in the register. Thus the subscriber whenever he removes his telephone instrument necessarily puts the obstructing apparatus into coöperative relation to the register; but he can elect whether or not to register in returning the telephone to its support. He must, however, in any event disconnect the locking device, which necessarily forcibly calls his attention to the registering apparatus.

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

1. A telephone-register comprising a movable device coöperating with the receiver-support adapted to obstruct the return of the receiver after removal therefrom and means for connecting or disconnecting said device with a register whereby the subscriber after making a call may operate the register and make a record of the conversation.

2. A telephone-register comprising a movable device coöperating with the receiver-support adapted to be moved in returning the telephone to said support, a register and a magnetically-controlled device adapted to mechanically connect or disconnect the register with said device when the telephone is used, and a circuit-controller at central office for operating said connecting device.

3. A telephone-register system comprising a register-controlling circuit connecting a central office and a subscriber's station, a register and circuit-controller at central office, a register at the subscriber's station, a magnetic connecting device controlled by the central-office circuit-controller and a circuit-closer therefor actuated by the telephone-hook whereby the subscriber's register can only be operated after removal of the telephone from its support.

4. A telephone system comprising a register-controlling circuit between central office and a subscriber; a circuit-controller therefor at central office, and means for completing said circuit when the subscriber's instruments are in use.

5. A telephone system comprising a metallic circuit connecting central office and a subscriber, talking instruments at the subscriber's station connected across the circuit, a ground branch at the subscriber's station including a normally open break controlled by the telephone-hook, a magnetically-controlled device in said branch, a subscriber's register, a register-operating device locked thereto at the will of the central office when the telephone is off its hook, and means for insuring the movement of said device when the telephone is returned to its hook.

6. A telephone-registering system comprising a circuit connecting central office with a subscriber, and a circuit-controller at central office, a normally open circuit-closer at the subscriber's station controlled by the telephone hook or support, a register-operating device in the path of the receiver when returned to its support, and a magnetically-controlled lock adapted to connect the register and its operating device upon closure of the circuit when the telephone is off its support.

In testimony whereof I have hereunto subscribed my name this 18th day of January, A. D. 1899.

HERBERT T. RICHARDS.

Witnesses:

ROBT. H. READ,

ALICK G. MACANDREW.