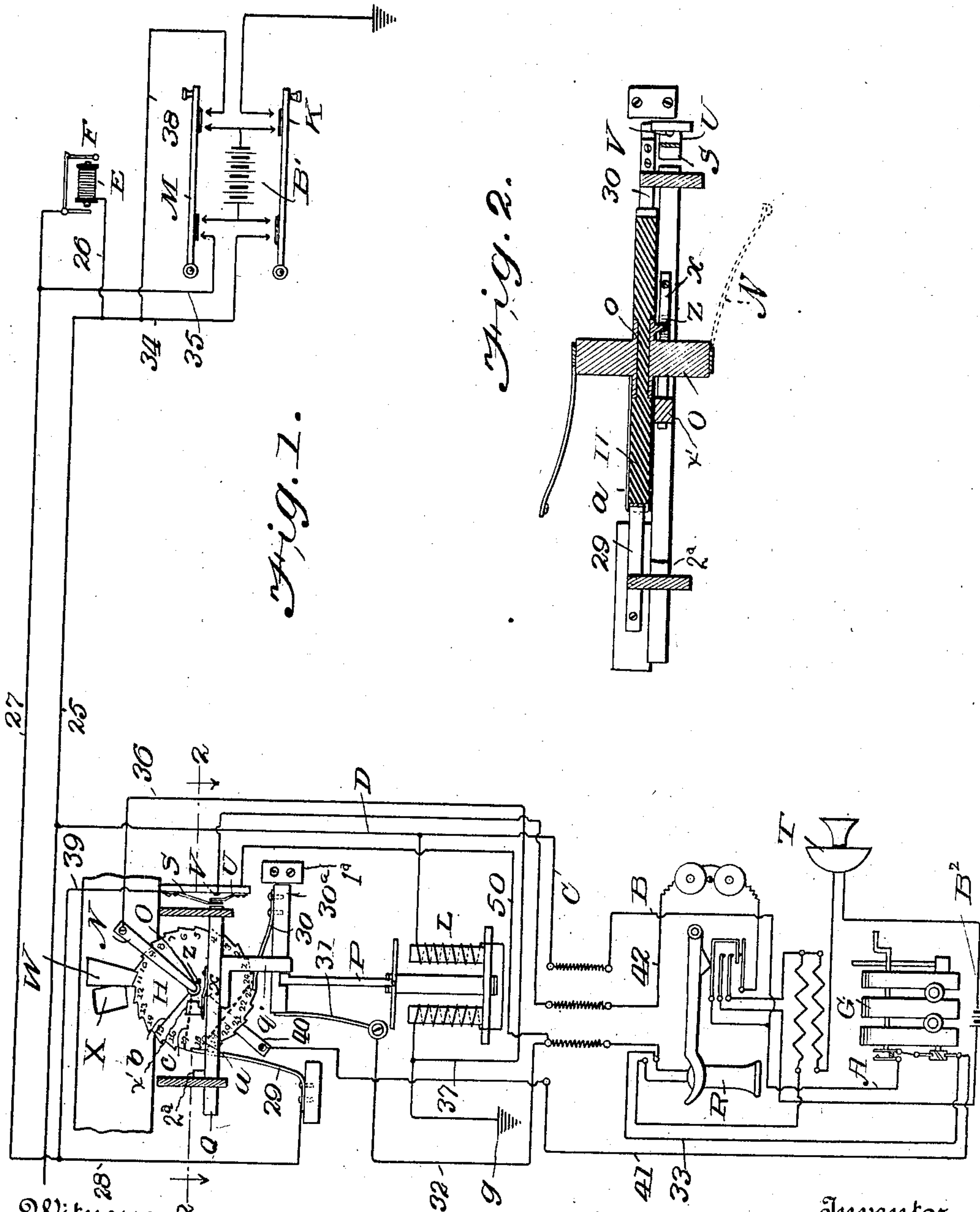


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H. J. FISHER,
TELEPHONY.

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TELEPHONY.

No. 847,283.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HAROLD JACKSON FISHER, a citizen of the United States, residing at Hotchkiss, in the county of Delta and State of Colorado, have invented new and useful Improvements in Telephony, of which the following is a specification.

This invention is a selective telephone system employing ratchet-wheels at the various stations controlled by an operator at "central" to establish the various connections by means of polarized electromagnets.

A feature of the invention is that the local batteries are not connected to the selective apparatus, so that they are not sapped of their current every time a subscriber in the system is called.

A further feature is that the bells are disconnected when at normal, so that any current may be produced on the line without ringing the bells; but all generators are in connection, so that any subscriber can call central at any time without the use of any emergency or auxiliary apparatus.

The apparatus at one station and connections to central are illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view thereof. Fig. 2 is a section on the line 2 2 of Fig. 1.

The drawings being largely diagrammatic, the construction and operation will be jointly described, after stating that H is the selecting ratchet-wheel made of insulating material and having notches corresponding to the stations on the line, B² is the local battery, B' is the central battery or source of energy, and E is the electromagnet at central controlling the drop-signal F of the line. The parts are shown connected up for station No. 15, but in normal position—that is, the talking-circuit is not established.

To call central, when the crank of the generator G at the station is turned a current passes through lines A B C D 25 26, coil E, drop F, lines 27 28, to a spring 29, which bears against a tooth 18, as shown, of the ratchet-wheel H and thence via a wire *a*, carried by said wheel, to another tooth 24 and to a spring 30, slide 30^a, spring 31, lines 32 33, and back to generator. This operates the drop F and calls central, which has the usual talking connections, (not shown,) and the operator can then call the desired subscriber. Thus to call No. 15, the station

shown, the key K is depressed a sufficient number of times to turn the ratchet-wheel from normal until the spring 29 engages tooth No. 15 of the wheel, which in the instance shown will be twenty-two times, the wheel having twenty-four teeth and the spring normally resting on tooth No. 18. The depressions of the key K cause a corresponding number of pulsations to pass over lines 34, 25, and D, through polarized magnet L, to ground *g*. At each pulsation the pivoted armature P of the electromagnet swings to the left. The armature extends at its upper end into a notch in the slide 30^a, carrying the spring 30, engaging the ratchet-wheel, and at each swing the slide is moved to the left, turning the wheel one step or tooth. The spring 31 returns the slide and armature each time. The tooth 15 being thus brought into contact with spring 29, the ringing and talking circuit is established as follows:

The key M at central is depressed and the current flows through lines 35 27 28 29, tooth 15, wire *b*, carried by the insulated wheel H, shaft O of the wheel, spring N, which bears against one end of the shaft, lines 36 37, and magnet L in the opposite direction, back to lines D, 25, and 38, causing the armature P to swing to the right. The upper end of the armature projects behind a depending arm *q* on a slide Q, so that when it swings to the right it moves the slide in the same direction and pushes contact-springs S and U against point V, where they remain until the slide is retracted in a manner to be hereinafter described, being held by a spring *x*, which is fastened to the slide and snaps into a notch in the end of a block *x'*, supported on the frame of the instrument. This connects the telephone to lines 25 and 27 via line 39, connecting spring S, to line 27, line 42 connecting point B to bell-circuit, and line 50 connecting spring U to the circuit of the receiver R and transmitter T.

A similar operation brings in any other station on the line. Thus to connect No. 10 telephone with No. 15 the former is first brought in by depressing the key K seventeen times, which brings tooth 10 in contact with spring 29. Then key M is depressed and No. 10 telephone is connected. Key K is then depressed five times more, which brings tooth 15 in contact with spring 29. Then lever M is depressed again and No. 15

telephone is connected in the manner described.

One tooth of the ratchet-wheel at each station is appropriated to a busy signal which 5 may be set by central when the line is in use. In the instance shown it is the tooth No. 17. To set the signal, (the telephone connection with the stations having been established as above set forth,) the key K is depressed twice 10 more, which brings tooth 17 in contact with spring 29 and brings a sign W, carried by the wheel, opposite the window X, through which the busy signal thus shows. The wheel and other parts stand in this position 15 until the subscribers are through talking or until central wishes the line, and there are only two telephones connected to the line, so that other parties cannot listen in; but the generators at all the stations are connected 20 as follows: At the stations where the telephones are disconnected a current may pass from the generator G through lines A B C D 25 26, coil E, drop F, lines 27 28, and spring 29 to the tooth 17, which is connected 25 by a wire c, carried by the wheel H, to the end of the shaft O opposite that heretofore referred to and thence by spring 40, in contact with said end, and line 41 back to generator, so any party can call central. The 30 opposite ends of the shaft O are insulated from each other, as shown at o. If then the operator wants to cut off the stations using the line, the line-key K is depressed and magnet L energized again, so that armature P 35 swings to the left and slide 30^a and spring 30 turn wheel H into normal position again—that is, with spring 29 on tooth 18, and during this movement a projection Z on shaft O strikes the spring x on slide Q and disengages 40 same from the notch in block x', allowing the spring S to push said slide back, breaking the circuit at contacts S, U, and V and cutting off the telephones.

It is to be noticed that the slide Q is operated by the armature swinging to the right 45 and the slide 30^a by swinging to the left. 1^a is a stop for the slide 30^a, and 2^a is a stop for the slide Q. The parts are all inclosed in a suitable casing and supported in a suitable 50 manner to operate as indicated, no extended description of such minor features being considered necessary.

I claim—

1. In a selective telephone system, in combination, a central station, local stations, a 55 selecting-wheel at each local station, a polarized magnet at each local station normally connected on one side to the central station, and having an armature operatively connected to the wheel and responsive to im-

pulses in one direction to turn the wheel, means part of which are carried by the wheel to connect the magnet on the other side to central, normally open contacts in the talking-circuit of each station, and means operated by the armature and responsive to im- 65 pulses in the opposite direction to close the contacts.

2. In a selective telephone system, in combination, a central station, local stations, a 70 selecting-wheel at each local station, a polarized magnet at each local station, connected to and controlled from the central station and having a swinging armature, a slide operatively connected to the armature and to 75 the wheel and adapted to turn the latter when the former swings one way, normally open contacts in the talking-circuit of each station, a slide connected to the armature and movable thereby when it swings the other way to 80 close the contacts, and means actuated by the wheel, when restored to normal position, to retract the latter slide to open said contacts.

3. In a selective telephone system, the combination with a central station, and local stations, of a selective apparatus at each station comprising a toothed wheel having a conducting connection between two of its teeth, a spring connected to line and normally in 90 contact with one of said teeth, a slide having a conducting connection to the generator at such station and having a spring normally in contact with the other of said teeth, a polarized magnet connected on one side to a selected tooth of the wheel and on the other 95 side to the central station, means actuated by the magnet to move the slide and turn the wheel to contact the selected tooth with the said spring connected to line, and means actuated by the magnet, when said contact is 100 made, to connect the telephone to the line.

4. In a selective telephone system, in combination, a central station, local stations, a 105 selecting-wheel at each local station, signal and selective connections between the central and local stations, part of said connections being carried by the wheel, and means controlled at central station to operate the wheel and connect selected local stations and 110 to maintain the signal connections from the other stations to central during the time the selected stations are connected.

In testimony whereof I have signed my name to this specification in the presence of 115 two subscribing witnesses.

HAROLD JACKSON FISHER.

Witnesses:

GEO. H. DUKE,
FRED W. SIMONDS,