

(No Model.)

J. H. WECKEL.
TELEPHONE SYSTEM.

No. 575,186.

Patented Jan. 12, 1897.

Fig. 1.

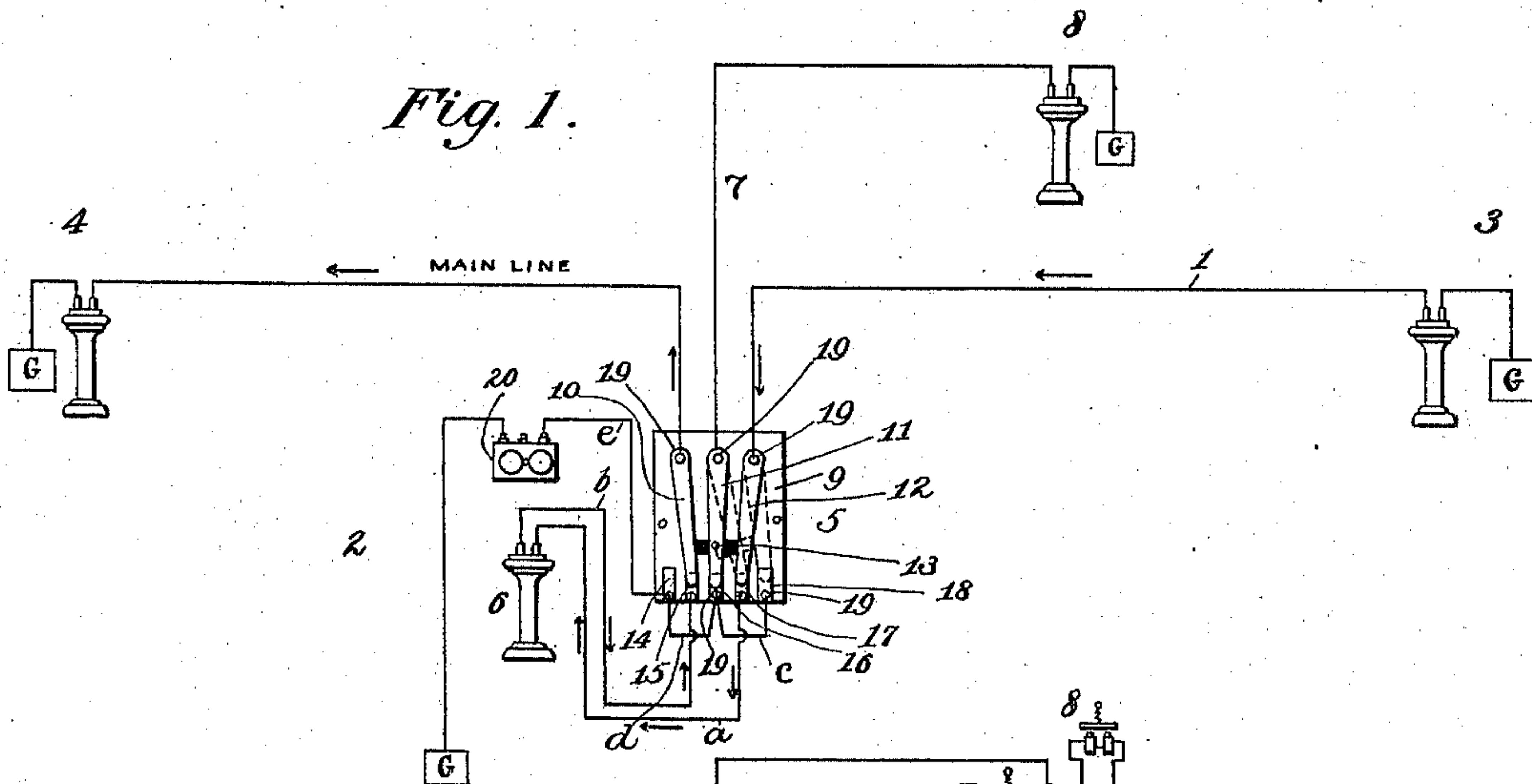


Fig. 2.

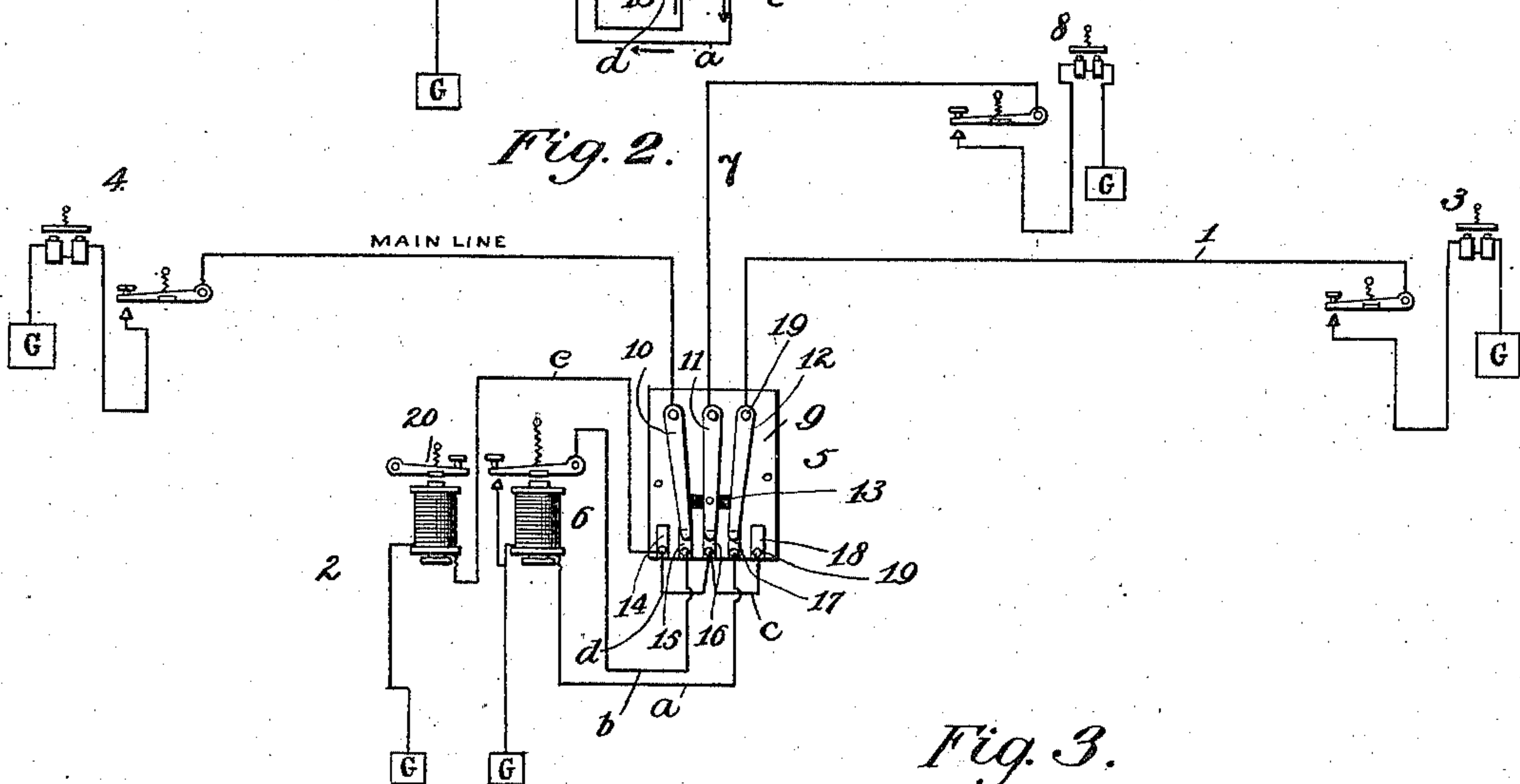
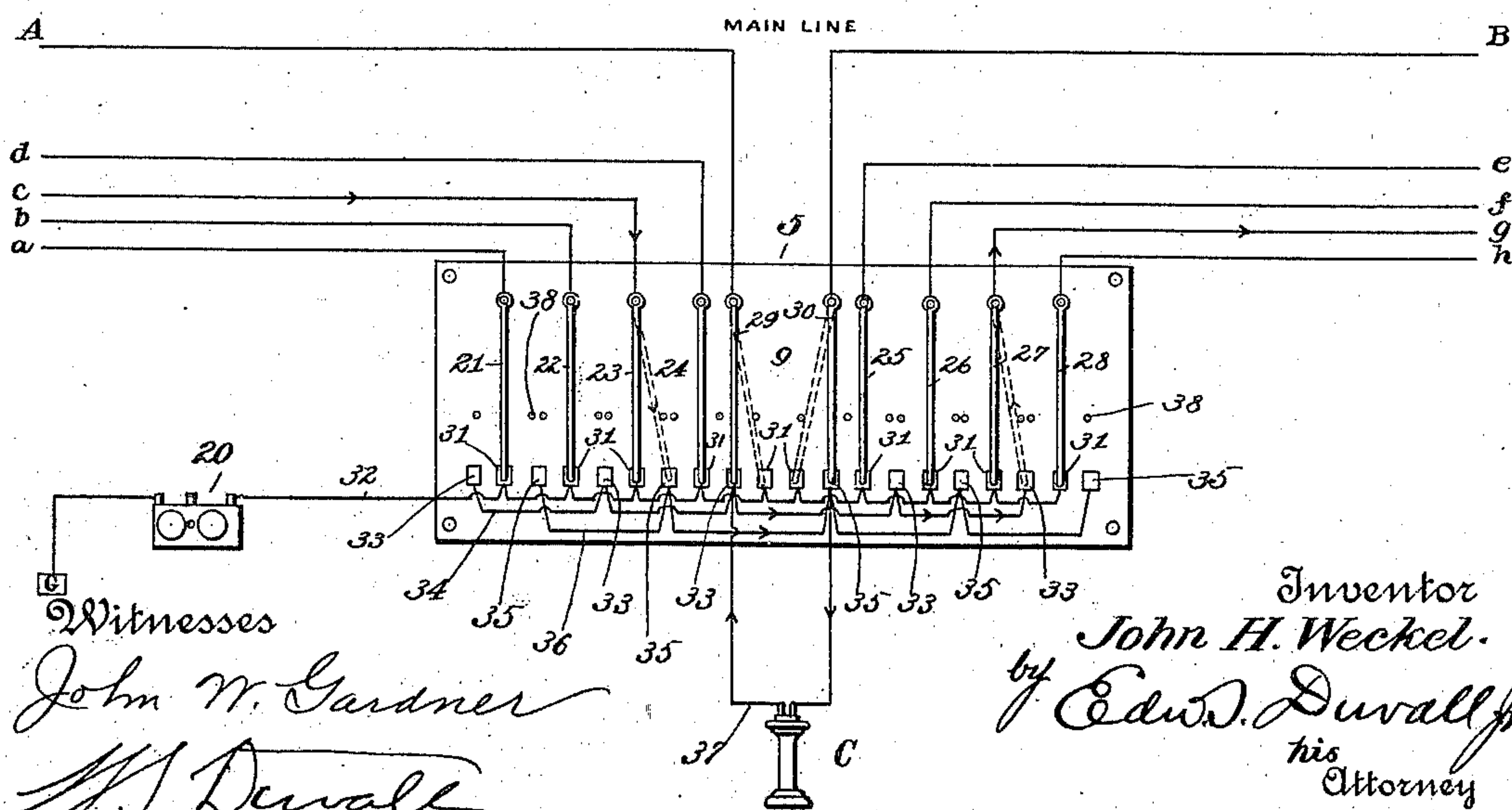


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TELEPHONE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 575,186, dated January 12, 1897.

Application filed March 7, 1896. Serial No. 582,254. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. WECKEL, a citizen of the United States, residing at Breakabeen, in the county of Schoharie and State of New York, have invented certain new and useful Improvements in Telephone or Telegraph Systems; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to improvements in telephone or telegraph systems; and the objects of the same are to provide means for easily and quickly placing or connecting any one of a series of side or branch lines in circuit with stations on the main line either above or below the point of exchange, and also to incorporate within said system a device for announcing with accuracy the calls from stations on such side or branch lines to the said point of exchange.

The greatest advantage of my invention, however, is that when used as a telephone system any private establishment can be provided with these means at small cost and thus easily and quickly place itself in communication with a desired station in the main line or at certain points therein. Where it is desirable, although improbable, to maintain an exchange under these conditions, means can be installed and an operator employed to superintend the same in conjunction with his other vocation, thus reducing to a minimum the cost of manual labor.

With these and other objects and advantages in view my invention consists in the novel construction and arrangement of parts hereinafter fully described and claimed, and clearly illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view of my improved system as applied to telephonic service; Fig. 2, a like view showing the system as applied to telegraphic service; and Fig. 3, a diagrammatic view illustrating a system having more than one side or branch line.

Like numerals and letters of reference designate like parts throughout the several figures of the drawings.

1 represents the main or trunk line of my system, and on this line I designate three sta-

tions, as 2, 3, and 4. I select three stations, as that number is sufficient to illustrate the purposes of my invention, although it will be apparent that the trunk-line will be supplied with more than that number of stations when the system is applied in a populous community.

At the station 2, which may be a regular central office or a private establishment, a switching device 5 is connected to the main line, and said main line has included therein, in a manner to be more fully described hereinafter, a complete telephone apparatus 6, including a transmitter and receiving instrument.

Running into the station 2, and connected with said switching device or apparatus 5, is a branch or side line 7, communicating with a station which I will designate as 8.

The switch 5 is constructed with a hard-rubber base 9, adapted to be secured in any suitable manner within close proximity of the operator of the apparatus 6. Pivotaly secured to the upper portion of the rubber base 9 are the conductor-arms 10, 11, and 12, the middle arm 11 being supplied with an insulator 13, attached thereto near the lower end and adapted to prevent short-circuiting between the said arm 11 and either of the arms 10 or 12.

Secured to the lower edge of the hard-rubber base 9 are the contact-plates 14, 15, 16, 17, and 18, and each of said contact-plates and each of the conductor-arms 10, 11, and 12 is supplied with a binding-post 19. The binding-posts secured to the arms are situated near their pivotal points, and connected to said binding-posts are the terminals of the main line 1.

The contact-plate 15, upon which normally rests the end of the arm 10, is wired or electrically connected with one of the binding-posts of the apparatus 6, while the contact-plate 17, upon which normally rests the end of the arm 12, is wired to the other binding-post of said apparatus.

The contact-plate 16, with which the arm 11 normally contacts, is wired with the contact-plate 18 and also the contact-plate 14, and from this latter plate the wire is grounded. Within the circuit, between the ground and the contact-plate 14, which latter is normally

in electrical connection with side-line instrument 8 through the medium of wire *d*, is placed a signal 20, which serves a purpose fully set forth in the following statement of the operation of my improved system.

The switch-arms being in their normal position, as indicated in full lines in Fig. 1, the current, as indicated by arrows, travels from station 3, (from which point we will suppose communication is desired with station 4,) through the arm 12 in contact with the plate 17 and through the wire connected therewith, which we will designate as *a*, to the transmitting and receiving apparatus 6. From there it takes its course through the wire *b* to the contact-plate 15 and up through the arm 10 to the main line on which is station 4, sounding the signals at both 6 and 4. The operator at 6 will then inquire the desire of the subscriber signaling, and upon learning that he desires to communicate with subscriber No. 4 will allow the switch-arms to rest in their normal position. Subscriber 4 will then be given his peculiar signal, such, for instance, as four rings of his bell, and when response is received subscriber 3 may deliver the desired message, after which he will ring off in the usual manner.

When the subscriber 8 on the side line desires to converse with No. 4, he signals the operator at 6 by grounding his own line, at which time the circuit is down the side line 7 to finger 11, to point 16, to wire *d*, to point 14, to wire *e*, to signal 20, which is located at the station of No. 6, to the ground. The operator at 6 then inquires the object of the call, and upon learning that communication is desired to be held with No. 4 he throws arm 11 to the right and therewith arm 12. Arm 11 is then resting upon point 17 and arm 12 upon arm 18. Thus it will be seen that subscriber at No. 8 will be in communication with subscriber No. 4, the circuit being side line 7, finger 11, point 17, wire *a*, apparatus 6, wire *b*, point 15, finger 10, on main line to subscriber 4.

During the conversation between subscribers 8 and 4 it will be noted that subscriber 3 may signal the operator at 6 through the medium of signal 20, the circuit from operator 3 being line 1, finger 12, point 18, wire *c*, point 16, wire *d*, point 14, wire *e*, and signal 20, to ground. When 8 and 4 have completed their conversation, the operator may call up 3 to learn to whom he wishes to speak.

If station 8 should wish to communicate with station 3 instead of station 4, the arm 11 would be moved to the left instead of to the right and the line from station 4 grounded.

In Fig. 3 I have illustrated my system as embracing the main stations A and B, with a central station C and more than one substation and side line. I provide for a series of substations or side lines, in this instance there being eight, *a*, *b*, *c*, *d*, *e*, *f*, *g*, and *h*, the terminals of which are connected in the order named to binding-posts upon the switch-arms

21, 22, 23, 24, 25, 26, 27, and 28 and are pivotally connected to the rubber base 9. The terminals of the conductors leading from stations A and B are similarly connected to posts upon arms 29 and 30.

The base 9 is provided with contact-plates 31, upon which the substations' switch-arms normally rest, the two centrally-located plates being normally unoccupied but designed to receive the main-line switch-arms 29 and 30 when it is desired to ground the terminals of the said main line. All of these contact-plates 31 are electrically connected, the conductor 32 being wired to the substations' annunciator 20 and then grounded.

Adjacent to the contact-plates 31 are situated other contact-plates 33, all of which are electrically connected by the conductor 34. The remaining contact-plates 35 are electrically connected by the conductor 36. This completes the wiring of the switchboard, with the exception of the line conductor 37, leading from the central station C, the terminals of which conductor are connected to the plates upon which the switch-arms 29 and 30 normally rest. Suitable insulator-stops 38 are supplied to limit the vibrations of each switch-arm.

To illustrate the operation of the system with a series of substations, we will suppose that substation *c* desires to communicate with substation *g*. The call of *c*, each substation being recognized by its individual signal, would be transmitted to the signal 20 through the medium of the line conductor 32, and immediately upon recognition of such signal or call by central C the switch-arm of that substation would be moved off the plate 31 to the adjacent plate 35, as indicated in dotted lines, and the switch-arm 30 vibrated in the opposite direction to a plate 31, which would ground that portion of the main line leading to station B and place the central operator in communication with the substation *c*. The circuit would be, as indicated by arrows, from *c* through the switch-arm 23 to the plate 35, through the line conductor 36 to plate 35, upon which normally rests arm 30, then down through conductor 37 to C, up through the remainder of same conductor to plate 33 and arm 29, contacting therewith to the main line leading to station A, to ground there. When the desire of said substation *c* is learned to be substation *g*, the operator grounds the main line leading from station A by moving its switch-arm to plate 31, and then opens up communication with the desired station by moving its switch-arm to the right to contact with plate 33 adjacent thereto. The circuit is then as indicated by arrows, and is from station *c* through the switch-arm 23 to the plate 35, through the line conductor 36 to plate 35, upon which normally rests arm 30, then down through conductor 37 to C, up through the remainder of same conductor to plate 33, upon which arm 29 normally rests, through the line conductor 34, connecting

said plate with plate 33, upon which arm 27 has been moved, and thence through said arm to the line leading to substation *g*. The same result can be arrived at by moving arm 23 to the left and vibrating arm 27 in the same direction.

Each station in this system, it will be understood, is provided with a suitable generator for actuating the signal 20 at the central office.

From the foregoing description of the construction and arrangement of parts it will at once be seen that I provide a telephone or telegraph system of extreme simplicity and in the former application one which can readily be installed in private establishments, adding greatly to the efficacy of the telephone for private use and enhancing its value to the individual subscriber or patron.

I do not desire to limit myself to the precise details of construction herein shown and described, but reserve to myself the right and privilege to alter the same without departing from the spirit of the invention.

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

1. In a system of the class described the combination with a main line, including in its circuit a plurality of stations each having a transmitting and receiving apparatus and a signal, of a central office normally in the circuit of the main line through the medium of a switchboard, a supplemental signal at the central office connected with the switchboard, and one or more side lines normally in circuit with said signal through the medium of the switchboard, said switchboard being adapted to throw the side line into circuit with one section of the main line and at the same time to throw the remainder of the main line into circuit with the supplemental signal.

2. In a system of the class described, the combination of a main line including a plu-

rality of offices each having a transmitting and receiving apparatus and a signal, and a central office having a telephone instrument and a switchboard, a series of points on the switchboard in connection with the main line and the central office instrument, a second series of points on the switchboard, a supplemental signal in electrical connection with said second series of points, one or more side lines provided with telephone apparatus normally in electrical connection with the said supplemental signal through the medium of a switchboard and means for operating the switchboard to throw the side line into circuit with a section of the main line and to simultaneously place the remainder of the main line in circuit with the supplemental signal.

3. In a system of the class described, the combination with a main line provided with a plurality of stations, each having a transmitting and receiving instrument and a signal, a central office provided with transmitting and receiving instruments and a signal, a switchboard provided with points in electrical connection with the central instruments, fingers adapted to normally place the main line in circuit with the central instruments, a second series of contact-points on the switchboard, a supplemental signal at the central station in circuit with said second series, one or more side lines normally in circuit with the supplemental signal through the medium of the second points, and means for operating the switchboard to place a side line in circuit with the central instruments and a section of the main line and for simultaneously placing the remainder of the main line in circuit with the supplemental signal of the central office.

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

JOHN H. WECKEL.

Witnesses:

LEVI WERLEY,
A. G. ROSEKRANS.