

A. GAGNON.
SELECTIVE TELEPHONE SYSTEM.

APPLICATION FILED NOV. 8, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig-1.

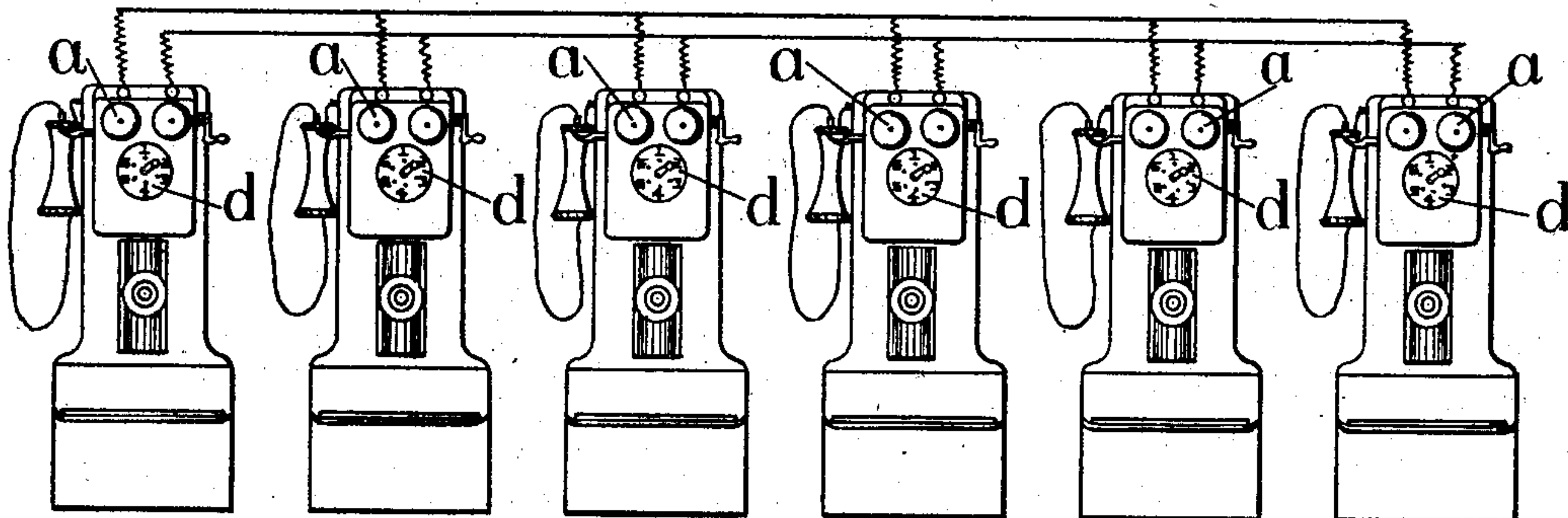
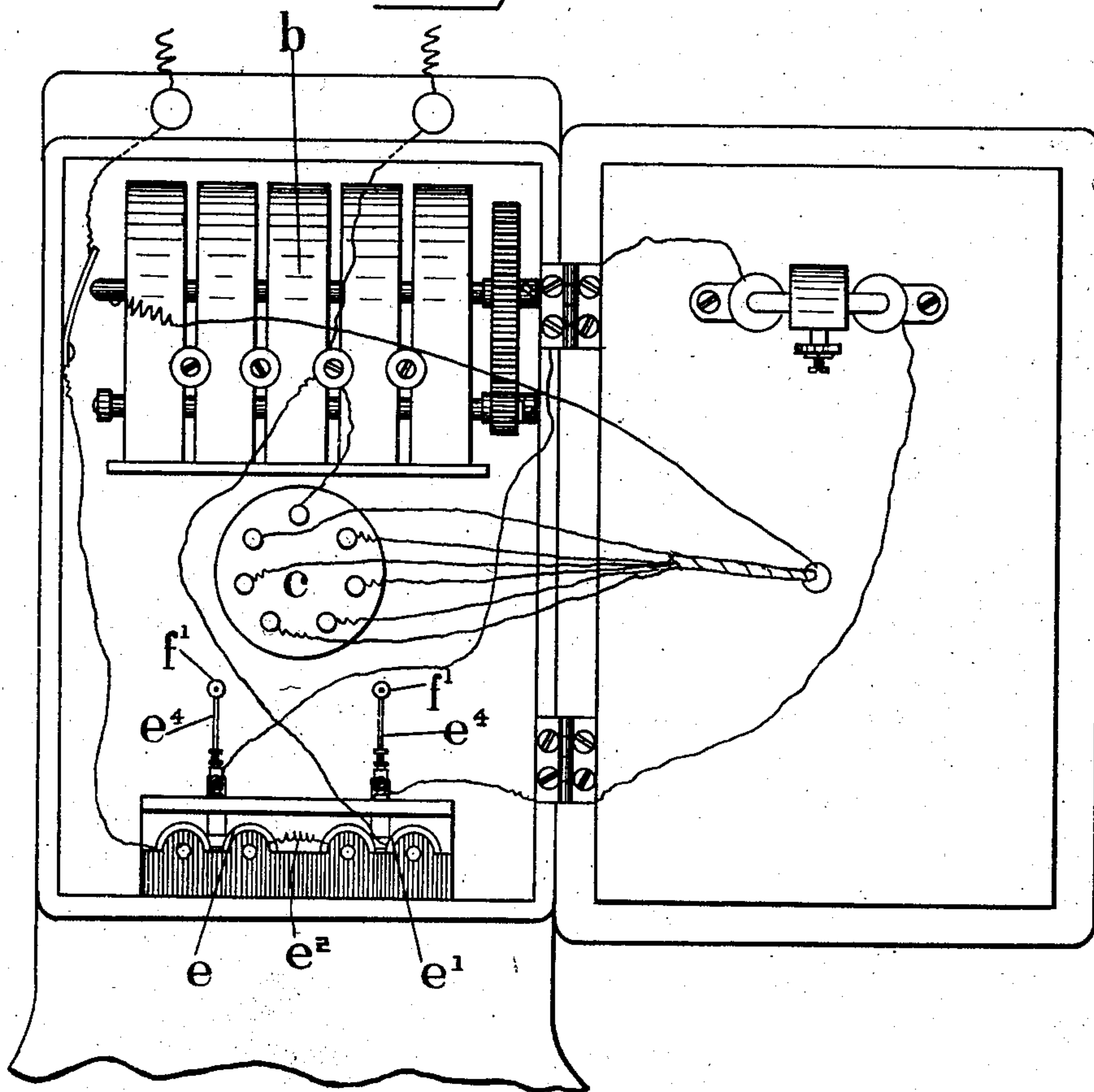


Fig-2.



Witnesses

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No. 746,065.

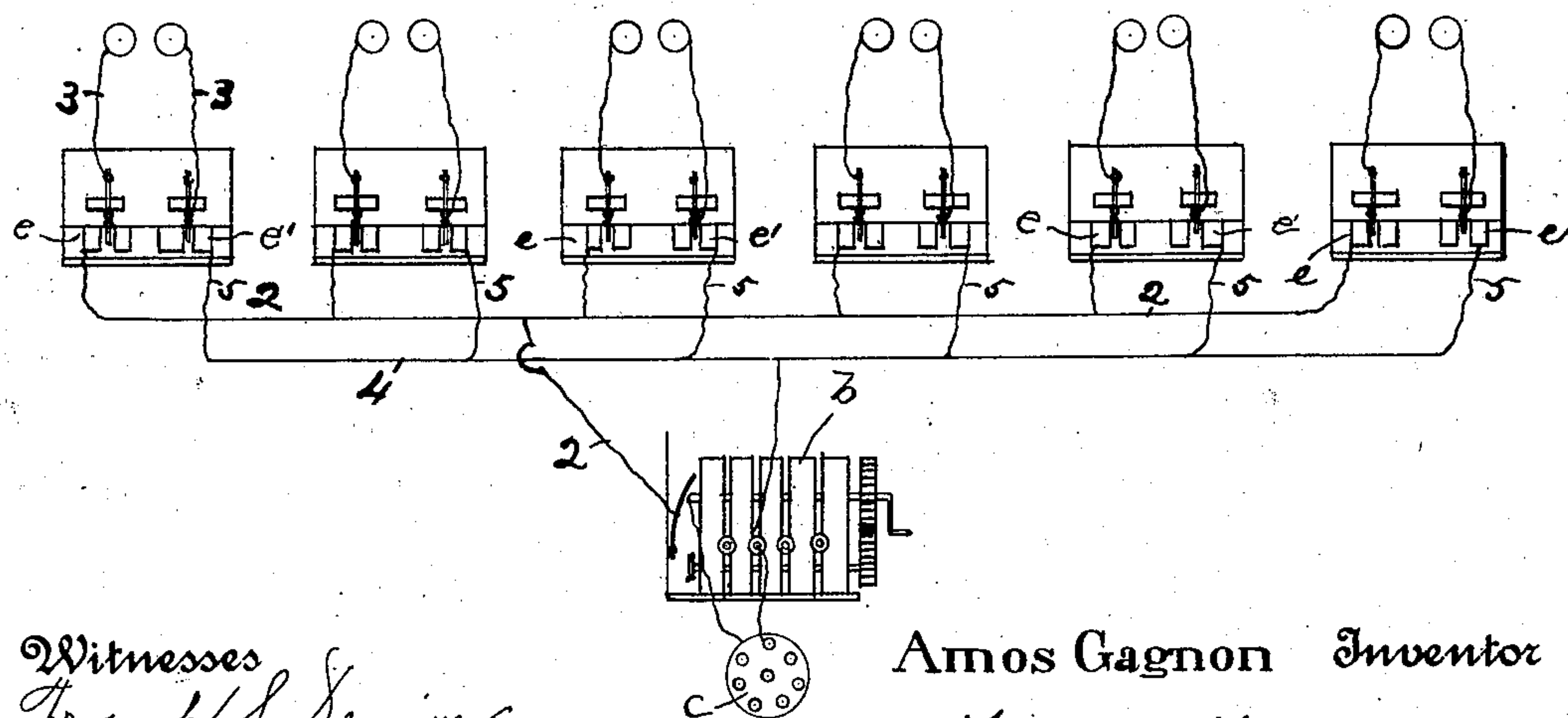
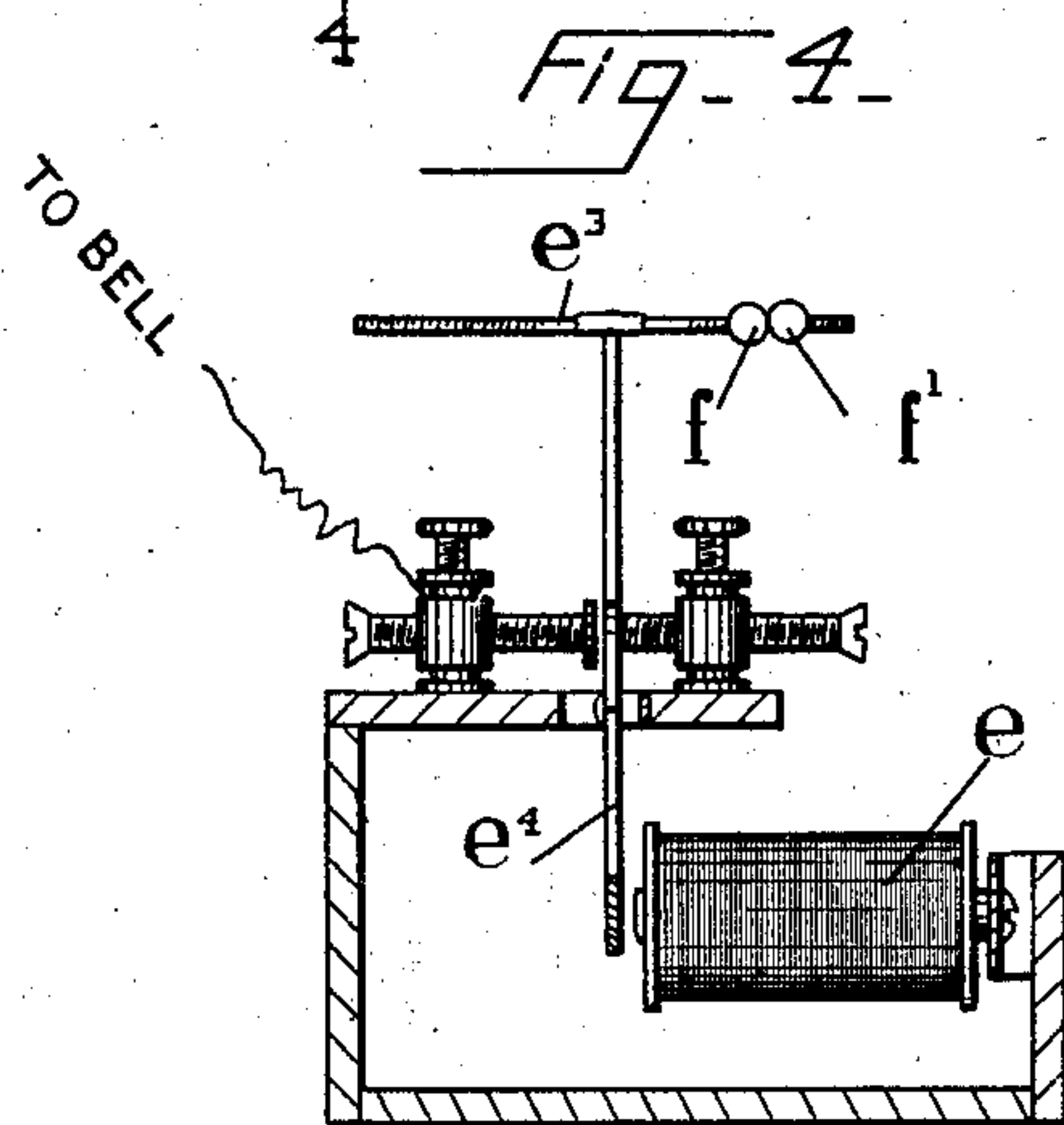
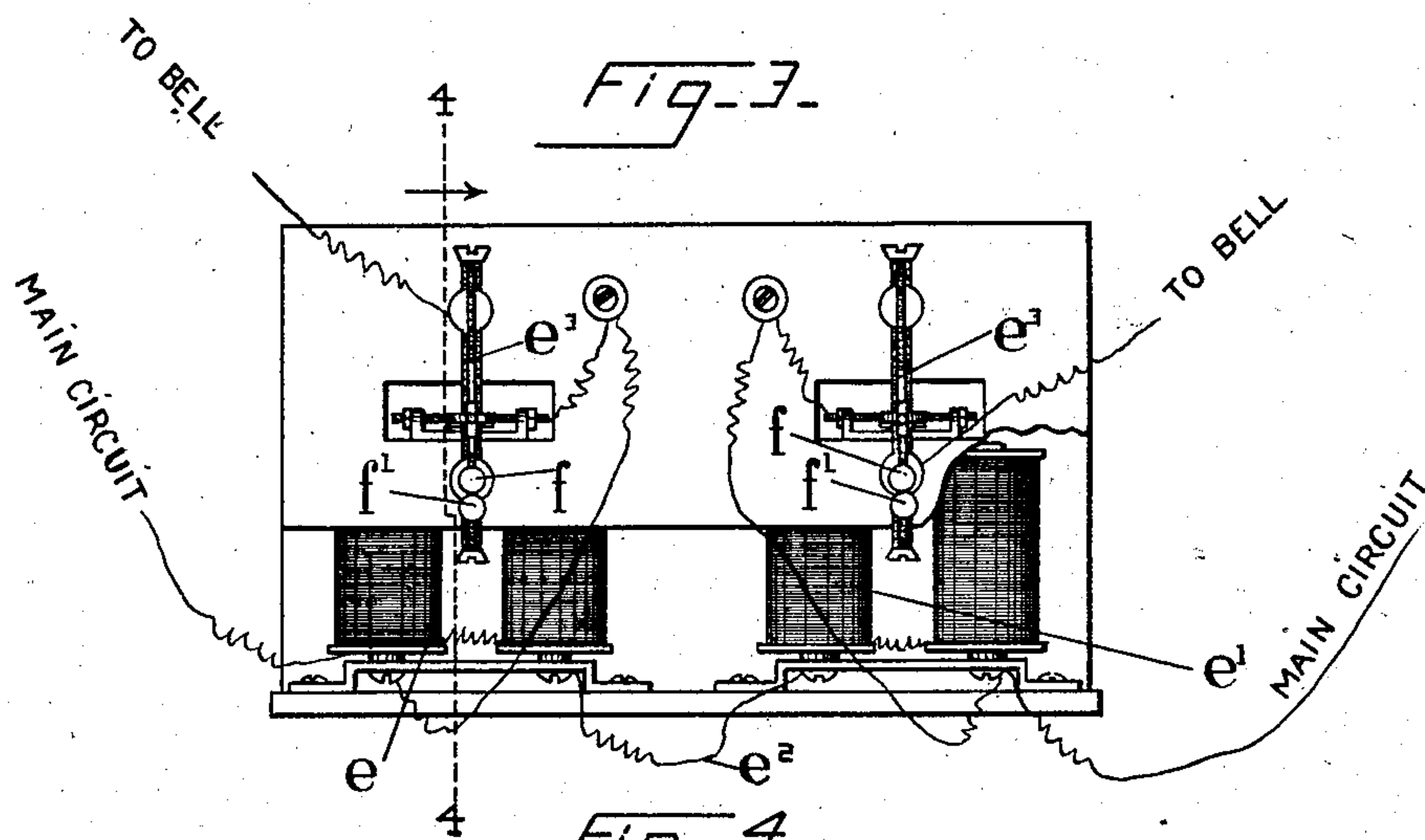
PATENTED DEC. 8, 1903.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

AMOS GAGNON, OF STAFFORD SPRINGS, CONNECTICUT.

SELECTIVE TELEPHONE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 746,065, dated December 8, 1903.

Application filed November 8, 1902. Serial No. 130,517. (No model.)

To all whom it may concern:

Be it known that I, AMOS GAGNON, a subject of the King of Great Britain, residing at Stafford Springs, in the county of Tolland and State of Connecticut, have invented certain new and useful Improvements in Selective Telephone Systems, of which the following is a full, clear, and exact description.

This invention is in so-called "selective" telephone systems in which any desired station may be rung up without disturbing any of the other stations on the line.

My improvements are in that class of selective systems in which the bell-circuits are operated under different resistances, and my present purpose is to provide exceedingly simple, cheap, and efficient means for controlling the bell-circuits of such lines.

The annexed drawings aid in explaining my said invention.

Figure 1 is a diagrammatic view of a six-station line embodying my improvements. Fig. 2 is an enlarged front view of one of the call-boxes, the door of said box being shown opened to expose the magneto resistance-coils and my improved means for controlling the bell-circuit. Fig. 3 is a plan view of the said bell-circuit-controlling devices. In Fig. 4 I have illustrated a cross-section of the devices of Fig. 3, taken on the line 4 4. Fig. 5 is a diagrammatic view.

For the sake of convenience and simplicity I have here illustrated my invention as applied to a single line including six stations, but it should be understood that any number of party-lines may be operated in connection with a central station, in which case any station on each party-line may call any other station on that particular line without the aid of "central" and without ringing up any station other than the one with which it is desired to talk or connection may be made through central with any station on any of the other party-lines of the system.

Referring to the drawings, the reference-letter *a* denotes a call-bell, and *b* a magneto, wired in circuit with said bell and operating in the usual manner.

c denotes a set of six resistance-coils that forms one element of a main circuit, which also includes a switchboard *d*, (which may be the front of the rheostat,) by means of

which any desired resistance within the range of the apparatus may be readily switched into the main circuit.

e e' indicate electromagnets that are connected in series by wires *e²* and are also included in the main circuit. These electromagnets are wound with equal resistance, but their armatures are adjusted (as I shall explain more fully later) to operate under currents of different strengths.

When the apparatus is not in service, the call-bell circuit is closed at all of the magnets *e'* and open at all of the magnets *e*. Fig. 3 shows both closed.

In operating my device to call station No. 1 the switch-lever controlling the resistance-coil *c* is first moved to the No. 1 on the switchboard *d*. The magneto is then brought into service, resulting in passing a current through the entire main circuit—that is to say, through all the instruments on the line. As the current passes through station No. 1 the armature *e¹* of magnet *e* in said station is rocked to close the bell-circuit, and the bell is rung, the current then in use being too weak to move the weighted armature of the companion magnet *e'*. The armatures of all the other stations remain meanwhile in their normal and inoperative positions, because of the fact that the current necessary to energize the magnets of station No. 1 is too weak to energize the magnets of the said other stations.

When it is desired to call station No. 2, the switch-lever is first moved to No. 2 on the switchboard *d*, thus switching in the proper current to actuate the magnets of station 2. As a result, the armature of magnet *e* of station 2 is immediately rocked to close the bell-circuit of that station, this current being then, however, too weak to energize the companion agent *e'* (station 2) sufficiently to move its armature. Meanwhile the armatures of both magnets in station 1 are energized, because of the increased strength of current, resulting in simultaneously closing the circuit at magnet *e* (station 1) and breaking the circuit at magnet *e'*, (station 1,) thus cutting out the bell-circuit of station 1. Meanwhile the armatures of stations 3, 4, 5, and 6 are not affected, because of the fact that the current in use is too weak. When station No. 3 is to be called the switch-lever is moved to

No. 3 on the switchboard, thus switching the proper current to operate the magnets of station 3 in the same manner as I have described in connection with the calling of stations 1 and 2. Thus it will be seen that the bell of any given station may be rung by switching in the resistance to which the electromagnets of such station are adapted and adjusted and that the bell-circuits of all the other stations will be kept open and inoperative.

The current to ring the bells or any one of them comes from the magneto-generator. No batteries are used with the bell-circuits. When the magneto *b* is started into action, the current generated thereby passes through that particular circuit whose armatures are adjusted to that particular strength of current, and all the other circuits remain inoperative.

The peculiar arrangement of magnets and armatures is best seen in Figs. 3 and 4. Secured to each armature is a threaded rod e^3 , that is parallel with the plane of movement of said armature, and upon the rods e^3 are nuts $f f'$, that serve as weights that may be readily adjusted to vary the sensibility of the armature. Obviously springs could be successfully substituted for the said weights, but I prefer the weights, as they are of simple construction and reliable in action.

Allowance is made for the alteration in resistance of main circuit when the magnets and the bell-circuit are placed in parallel by the closing of the local circuit.

The circuit traversed by the electric current will be best understood by reference to the diagrammatic Fig. 5. Assuming that it is desired to ring bell No. 1 at the extreme left-hand end of said Fig. 5, the proper resistance is switched into the circuit at the rheostat *c*, as has already been described. The generator *b* is then operated to produce a suitable electromagnetic current, which current passes through wire 2 to the magnet *e*, and thus rocks the armature e^4 and permits the said current to pass through the bell-circuit 3, including the magnet e' , whose armature is normally closed, as first above explained. Said current then passes to the rheostat *c* through wire 4 and finally to the generator *b*. Meanwhile the current also passes through wire 2 to and through the magnets of the several other bell-circuits; but inasmuch as the armature e^4 of said "other" magnets

are not energized the current follows the wire 5 and then returns to the main wire 4 through the bridge-wire 5. The two magnets governing each bell-circuit are connected in series and the several relays of magnets are bridged onto the main circuit, and it will be obvious that the current must pass through all of the said relays, but only that bell-circuit will be energized whose weighted armature e^4 is adjusted to the current then in use.

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

1. In selective telephone systems, the combination with a call-bell and a magneto, a main circuit, electromagnets in said circuit, armatures for said magnets, the circuit of the magnets being permanently closed, said call-bell circuit being normally closed at one magnet and normally open at the other, means for adjusting the sensibility of said magnet, and means whereby the magneto is in circuit with the call-bell only when the local circuit is closed by said magnets.

2. In selective telephone systems, the combination with a call-bell and a magneto, a main circuit, a resistance therein, electromagnets connected in series and included in said main circuit, armatures for said magnets, the circuit of the magnets being permanently closed, said call-bell circuit being normally closed at one magnet and normally open at the other, means for adjusting the sensibility of said magnets, said magneto being in circuit with the call-bell only when the local circuit is closed by said magnets.

3. In selective telephone systems, the combination with a call-bell and a magneto, a main circuit, electromagnets connected in series and included in said main circuit, armatures for said magnets, the circuit of the magnets being permanently closed, said call-bell circuit being normally closed at one magnet and normally open at the other, and means for adjusting the sensibility of the said magnets, said magneto being in circuit with the call-bell only when the local circuit is closed by said magnets.

Signed at Norwich, Connecticut, this 29th day of October, 1902.

AMOS GAGNON.

Witnesses:

FRANK H. ALLEN,
FRANK S. DEWIRE.