

No. 673,519.

Patented May 7, 1901.

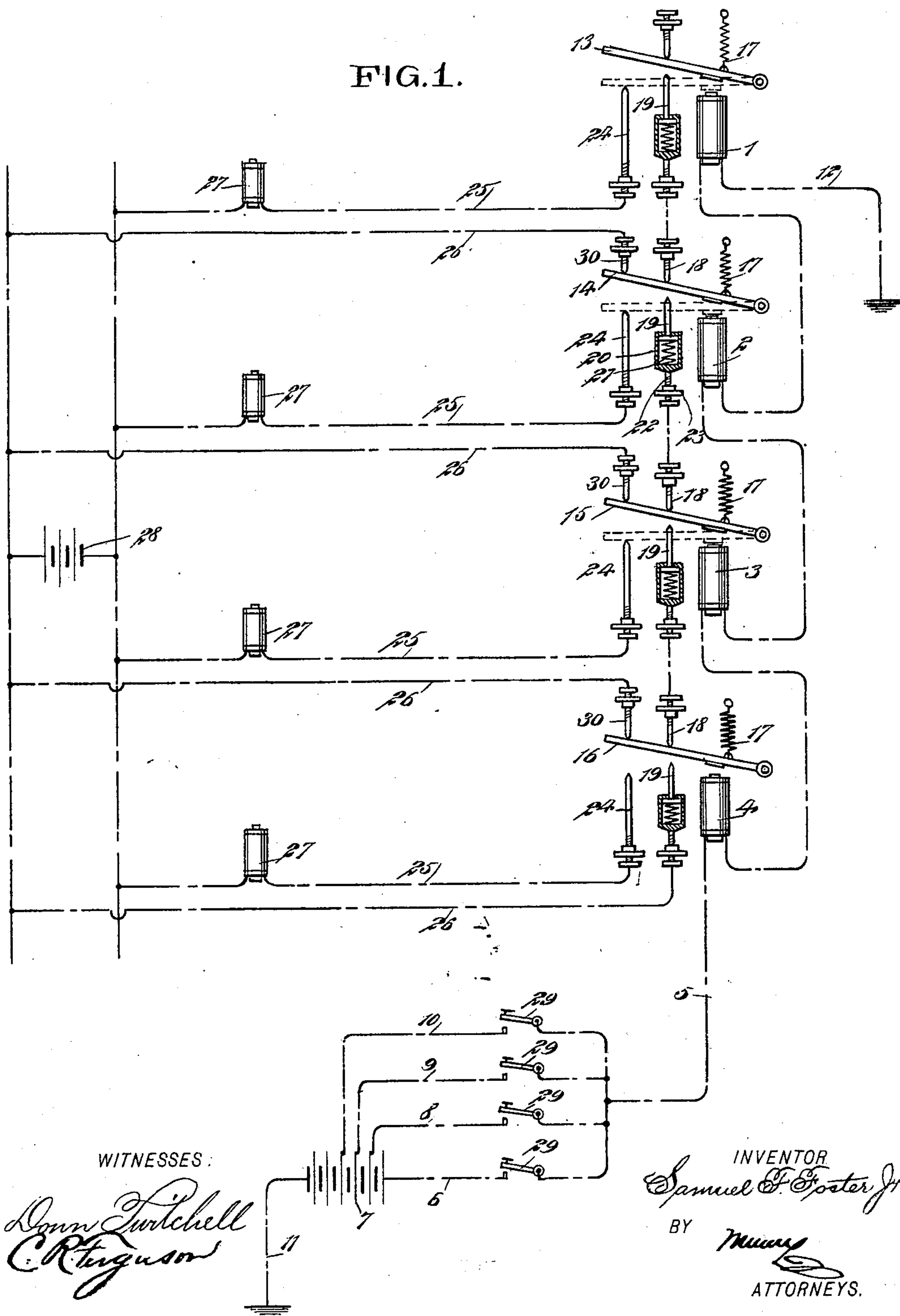
S. T. FOSTER, JR.
MULTIPLE TELEGRAPH.

(Application filed Mar. 14, 1899.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.



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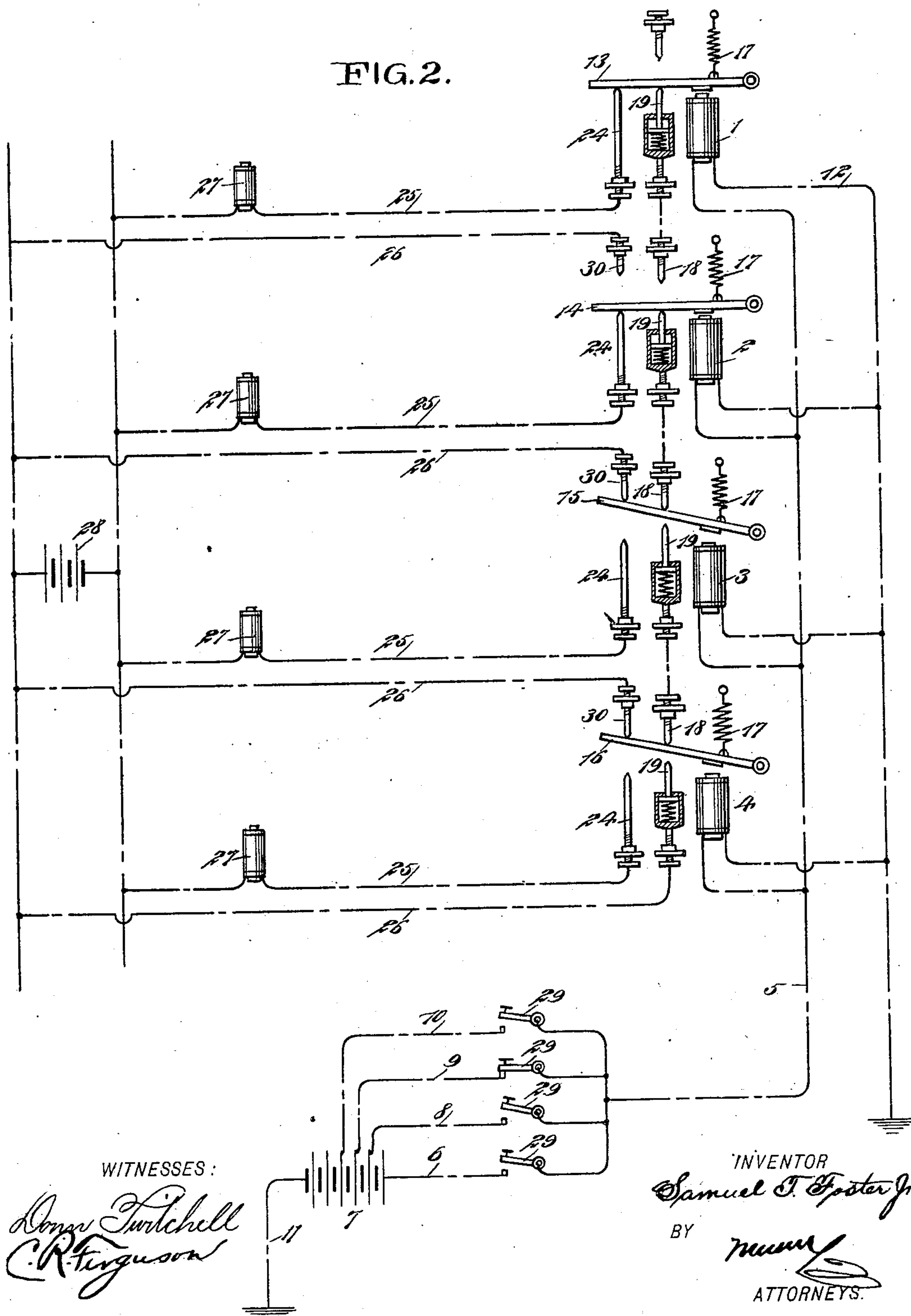
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2 Sheets—Sheet 2.

FIG. 2.



UNITED STATES PATENT OFFICE.

SAMUEL T. FOSTER, JR., OF LAREDO, TEXAS.

MULTIPLE TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 673,519, dated May 7, 1901.

Application filed March 14, 1899. Serial No. 709,004. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. FOSTER, Jr., of Laredo, in the county of Webb and State of Texas, have invented a new and Improved
5 Multiple Telegraph or Similar Device, of which the following is a full, clear, and exact description.

This invention relates to improvements in multiple telegraphs or similar devices; and
10 the object is to provide a simple device of this character by means of which any one of a number of instruments or translating devices at a distance may be operated over a single line-wire and by means of a single flow
15 of electric current through said wire.

I will describe a multiple telegraph embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying
20 drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a diagrammatic view of a device embodying my invention, and Fig. 2 is
25 a diagrammatic view showing a modification.

The device comprises a receiving-relay-controlling set, which in Fig. 1 is shown as consisting of a number of controlling devices in the form of electromagnets 1 2 3 4, con-
30 nected in series and arranged in the main line 5. While I have shown but four controlling devices, it is obvious that any desired number may be required—such, for instance, as one for each letter of the alphabet and also
35 one for each series of numerals.

The several controlling devices or electromagnets are of different resistance, and of course each requires a different voltage to operate it. For instance, the electromagnet
40 1 will require a certain predetermined voltage to energize it and the electromagnet 2 a still higher voltage, and the voltage required is thus increased throughout the whole series of controlling devices or electromagnets.

As here shown, the electromagnet 4 is connected, through the main 5, by means of a wire 6, with a source of electricity in such manner as to receive the whole or nearly all of the electro-
50 motive force of the battery 7. It is to be understood, however, that the electromotive force shall be sufficiently great or above the

amount required to energize the controlling devices to allow for the drop in the line-wire.

The controlling device 3 is connected, through the line-wire 5 and the wire 8, with
55 the battery 7 at a point providing a less voltage than that required to energize the magnet 4, but sufficient to energize the magnet 3, and the electromagnets 2 and 1 are connected, respectively, by wires 9 and 10 with the bat-
60 tery 7 at points to secure the required pressure, and this battery has a ground connection 11, while the electromagnet in the series having the lowest resistance has a ground
65 connection 12.

Coacting, respectively, with the controlling devices or electromagnets are armature-levers 13, 14, 15, and 16, each one of which is designed to close a local circuit for a translating device—such, for instance, as a linotype-
70 machine, a type-writer, a telegraph-sounder, or the like. Each armature-lever may have a retracting-spring 17, the several retracting-springs being of different degrees of tension, so as to form part of the resistance offered,
75 so to speak, by the electromagnets, but of course are no part of the circuits. Each armature-lever is designed to engage with contact-points 18 and 30 and contact-points 19 and 24, the adjacent contacts 18 and 30 and also
80 19 and 24 being in electrical connection when engaged by the armature-lever. Each contact-point (as here shown relative to the contact-point 19) is movable in a box 20, within which is arranged a spring 21, the said spring
85 bearing at one end against the end of the box and at the other end against the head or piston on the contact-point. The tension of the spring may be adjusted by means of a screw
90 22, passing through a fixed support 23. This arrangement of the contacts provides for a quick adjustment of the contacts, as it is obvious that they must have a fine adjustment to get their points in line with the armature-lever if one of each pair has not a yielding
95 movement.

Adjacent to each contact-point 19 is an adjustable contact-point 24, which is comprised in a local circuit consisting of wires 25 26, the wire 26 being in electrical connection with
100 the armature-lever, and in this local circuit is arranged an actuating device, (here shown

as an electromagnet 27,) and the several local circuits are energized from a battery 28. These actuating devices are designed to control any translating devices. For instance, they may be arranged underneath the key-levers of a type-writer, and when the actuating device is energized it will, by drawing upon said key-lever, force the desired character against the paper or strip on the type-writer.

In operation, assuming that it is desired to energize the actuating device in the local circuit controlled by the electromagnet 1, a finger-key 29 in the wire 10 is to be closed. This will send an electric current through the main of sufficient voltage to energize the electromagnet 1, but not of sufficient pressure to energize either one of the other electromagnets, although it passes through the same. When the electromagnet 1 is thus energized, its armature-lever 13 will be drawn into contact with its contact-point 19, closing the circuit from said contact-point through the contact 24, the wire 25, and the actuating device 27, thence through the battery 28, and thence through the wire 26 to the armature-lever 14 of the electromagnet 2, which has the next higher resistance. As the armature-lever 14 of the electromagnet 2 is in closed connection with its contact-point 18, it is obvious that the current will flow through said armature-lever, contact-point 18, and the contact-point 19 back to the closed armature-lever 13. It may be here stated that all of the local circuits are normally open. Should it be desired to energize the actuating device in the local circuit controlled by the electromagnet 3, the key-lever 29 in the wire 8 will be closed, so that the circuit will pass through the electromagnet 4 and thence through the electromagnet 3 and also through the several other electromagnets of lesser resistance. As the voltage now passing through the main is sufficient to energize the electromagnet 3, it will attract its armature-lever to close its local circuit, as before described, and the current will pass as before described. This current, which is of sufficient voltage to energize the electromagnet 3, will of course, as before stated, energize all the other electromagnets of lower resistance, so that their armature-levers will also be attracted; but the local circuits thereof will not be closed, because of the break in the connections between the armature-lever 15, the contact-point 18, the armature-lever 14, and the contact-point 18, which also breaks the circuit through the armature-lever 13.

The operation of the device is the same in the arrangement illustrated in Fig. 2 as that above described, the only difference being that in this example the several electromagnets are connected in parallel instead of in multiple.

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

1. A multiple telegraph or similar device, comprising a source of electricity of progressively-varying voltages, a single-wire main circuit in which the several electromagnets are connected, a source of electricity, with which said main wire has connections in varying voltages, an armature-lever operated by each electromagnet, and a local circuit for each armature-lever and adapted to be closed thereby and opened by the armature-lever of that electromagnet just above it in voltage when said electromagnet is operated, connections with contact-points in the local circuits such that each armature-lever will form a part of one local circuit normally and when drawn down by its electromagnet will open said local circuit and then form part of the next local circuit just above it in the series in such a manner that when several armature-levers of adjacent electromagnets are attracted simultaneously each closes its own local circuit but opens the one just preceding it so that only the local circuit closed by that armature-lever of that electromagnet having the highest resistance of all the group will be completed, substantially as specified.

2. The combination of a source of electric current, a series of controlling devices requiring currents of different strengths for their operation, a line-circuit in which are included permanently all of said controlling devices, a transmitter for sending currents of different strengths into the line-circuit, a movable circuit-closer operated by each of the controlling devices, a double set of contact-points adapted to be engaged by each of said circuit-closers except the one adapted to be operated by the current of least strength which circuit-closer has only one set of contact-points, one set of contact-points being adapted to engage the corresponding circuit-closer in its normal or inactive position, and the other set in the operative position, a connection from one contact-point of the active set of one circuit-closer to one contact-point of the inactive set of the next circuit-closer, a connection from the other contact-point of the active set of the first-named circuit-closer to the other contact-point of the inactive set of the second-named circuit-closer, a local source of electric current and an operating device controlled thereby, located in each of the second-named connections.

3. A multiple telegraph or similar device, for individually operating in rapid succession all of a group of translating devices by currents of different strengths, comprising a single main circuit, containing at the sending-station, a transmitter consisting of a number of keys for connecting into said main circuit batteries of different current strengths, and a series of batteries, and at the receiving-station a receiver-relay-controller set consisting of a series of controllers, each controller consisting of an electromagnet permanently included in said main circuit, a lever which carries an armature arranged to be op-

erated by one of the electromagnets, two sets
of contact-points, one set adapted to be elec-
trically connected by the armature-lever nor-
mally, the other set arranged to be electric-
5 ally connected by said armature-lever when
attracted by its electromagnet, all the said
electromagnets being of different resistances,
and connected in the order of their resist-
ances, so that any one will necessitate for its
10 operation more electrical energy than one of
the two next to it will necessitate, and less
electrical energy than the other one next to
it will necessitate; a group of as many local
circuits as there are keys in the transmitter,
15 each local circuit containing a battery, and
one or more translating devices, the two ter-
minals of each local circuit being connected,
one so as to make connection with one lever,
and the other so as to make connection with
20 another lever next to the former, and con-

tact-points so arranged relatively to these two
levers as to put them in electrical connection
with each other when one is attracted, and
the other is in its normal position, and so as
not to put them in electrical connection either 25
when both are attracted or when both are in
their normal position so that when any num-
ber of levers are operated at one time by their
respective electromagnets being energized,
only one local circuit will be completed and 30
that one will be the one whose terminals make
connection with those two adjacent levers re-
spectively of which one is attracted and the
other in its normal position, all substantially
as specified.

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Witnesses:

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