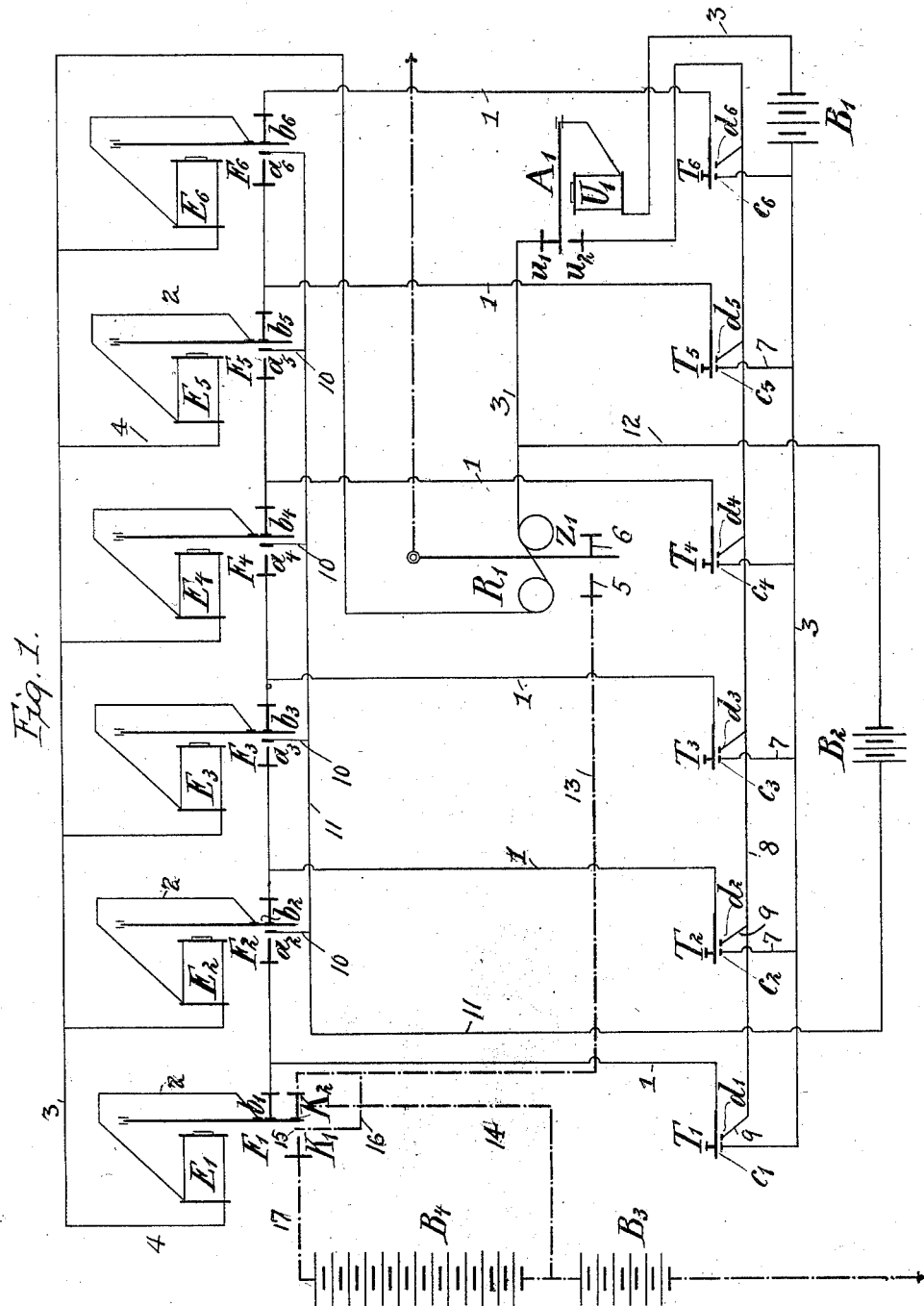


J. STOCKERT.
PRINTING TELEGRAPH.
(Application filed Dec. 5, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

Ella L. Giles
Admission

Inventor:

Joseph Stockert
1840
Richardson

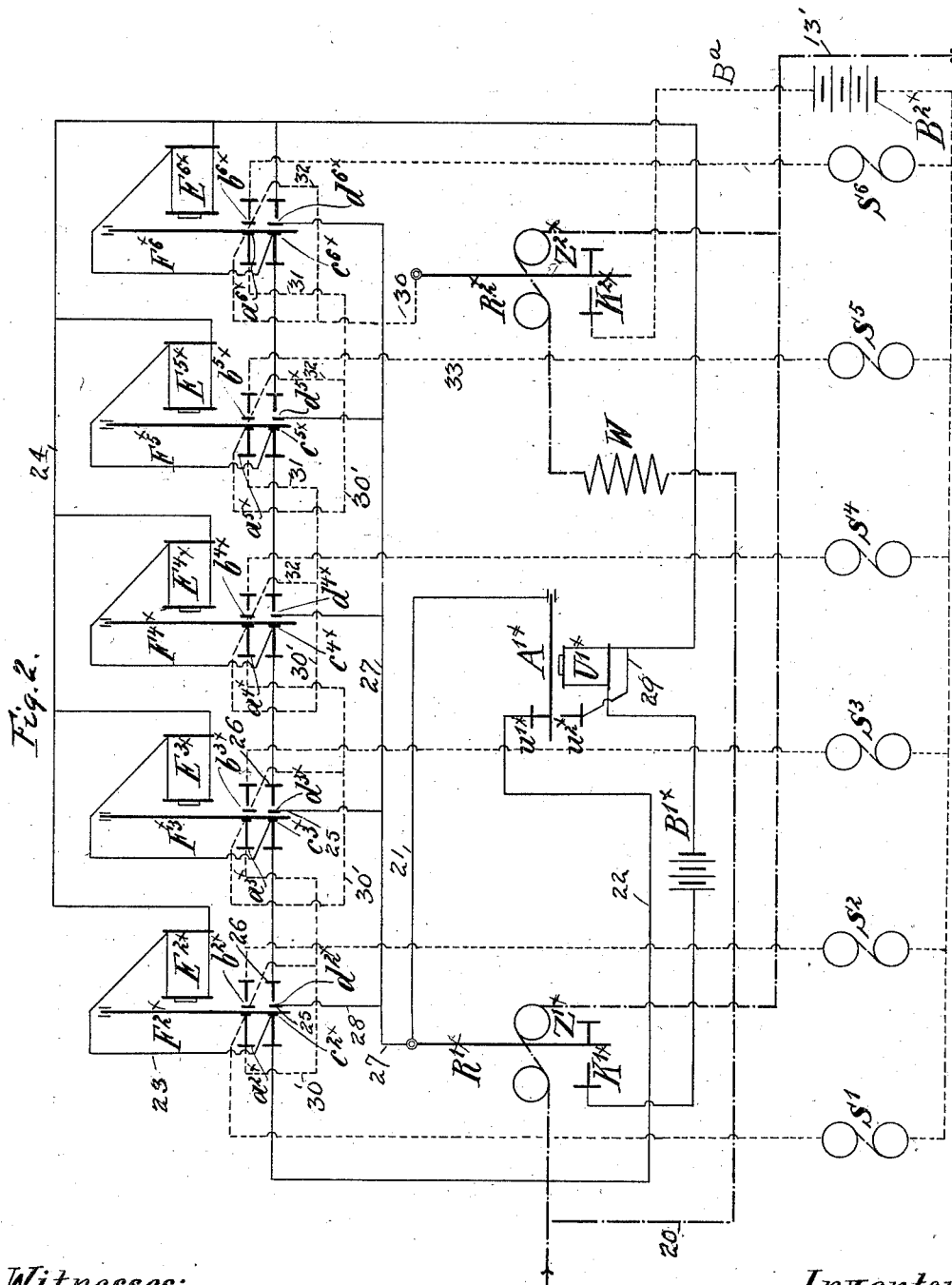
ATTORNEYS

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2 Sheets—Sheet 2.



Witnesses:
Ella L. Giles
O. J. Stockert

Inventor:
J. Stockert
Richardson
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOSEPH STOCKERT, OF KÖTHEN, GERMANY.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 649,893, dated May 15, 1900.

Application filed December 5, 1899. Serial No. 739,281. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH STOCKERT, a citizen of the Kingdom of Prussia, and a resident of Köthen, (whose post-office address is Holzmarkt 14,) in the Duchy of Anhalt, German Empire, have invented certain new and useful Improvements in Printing-Telegraphs, of which the following is a specification.

The object of the present invention is a printing-telegraph of simple construction and great capacity.

The new features of the telegraph consist in a number of self-interrupters in the transmitter and in the receiver corresponding to the types of a type-writer connected with the receiver and whose type-levers are attracted by electromagnets excited through these self-interrupters. The armatures of the self-interrupters are springs possessing all of them the same duration of oscillation, this duration being very short—for instance, one one-hundredth part of a second—to allow a great number of letters to be transmitted in the shortest possible time. As for each letter the corresponding self-interrupter and all the preceding ones are excited, the duration of the oscillations of the armatures of all these self-interrupters has to be taken into account. Therefore these oscillations must be of short duration.

The system is represented in the accompanying drawings.

Figure 1 shows part of the transmitter; Fig. 2, the corresponding part of the receiver.

The type-writer keys (marked T' to T⁶) are shown, diagrammatically, in Fig. 1. They are each connected by wires 1 with electromagnets of interrupters, (marked E' to E⁶,) there being an interrupter for each key. The wires 1 are connected to contacts, (marked b' to b⁶,) and electrical connection is made through these contacts with the electromagnets E' E⁶ by way of the wires 2. The electromagnets are connected also with a wire 3 by branches 4, and this wire includes in its circuit a relay R', comprising electromagnets, and an armature Z', with contacts 5 6, as will be hereinafter described. This wire 3 also includes in its circuit a contact u', an armature A' of an electromagnet U', which is also in the circuit, and finally the local battery B', branches 7

leading from the wire 3 to the various contacts c' c⁶, with which the keys make electrical contact when pressed down. Contacts d' to d⁶ are arranged to be engaged by the keys when pressed down, and these are connected with a contact u² of the interrupter U' by means of a wire 8 and branches 9. The wires 1, leading from the keys, also connect with contacts a³ a⁶ on the opposite side of the armatures F³ F⁶ from that upon which the contacts b³ b⁶ are located, and these contacts comprise movable members 10, which are connected through wire 11 with a local battery B³, which is also in circuit through the wire 12 with the wire 3 before mentioned.

When either armature F³ to F⁶ is operated leftward in the drawings, the member 10 will close upon the corresponding contact a³ a⁶.

The interrupters E' E⁶, I term "self-interrupters." The duration of oscillation of the armature A' of the interrupter U' is a little greater than those of the self-interrupters.

There are two line-batteries B³ B⁴, the line-wire being indicated at 13 leading to the receiver (see Fig. 2) and including in its circuit the contact 5 and the armature Z'. The current from the battery B³ passes to the line through the branch 14 and the contact K³, while from the battery B⁴ connection is made to the line only when the armature F' is moved to close the movable contact member 15 upon the contact K', the former being connected by a branch 16 with the line and the latter connecting with the battery B⁴ by the wire 17.

At the receiver a local battery B^{2x} is used to energize the electromagnets S' S⁶ for operating the levers of the type-writer. This battery is thrown into operation by a relay R² at the receiver, Fig. 2, and this relay is in a shunt 20 of the line 13, and in front of it a resistance W is placed, and sufficient current must be furnished to the line by the battery B⁴ to overcome this resistance before any one of the levers at the receiving-machine can be operated.

In pressing down any key at the transmitter—say, for instance, the key T⁶—the circuit of the local battery B' of the transmitter is closed through the line 3, wire 7, contact c⁵, wire 1, contact b⁵, armature F⁵, wire 2, magnet E⁵, wire 4; wire 3, relay R', contact u', ar-

mature A', magnet of interrupter U', and wire 3 back to battery B'. The electromagnets at E⁵, R', and U' are thus energized and attract their respective armatures F⁵, Z', and A'. The latter contacts with *u*² and is kept down in this position as long as the key T⁵ is held down, being thus limited to one movement, and the current from battery B' passing through contacts *c*⁵ *d*⁵, wires 7 and 8, contact *u*², armature A', magnet U', and wire 3 and holding the armature down. The armature Z' being now moved by the energizing of the magnets at relay R' contacts with 5, and thus throws the current from line-battery B³ into the main line 13. At the same time the magnet of the self-interrupter E⁵ attracts armature F⁵, thus opening contact at *b*⁵ and closing contact at *a*⁵ between the spring or movable member 10 and the contact *a*⁵. This closes the circuit of the second local battery B², the current from which passes over wire 11, contact member 10, contact *a*⁵, contact *b*⁴, and thence to electromagnet E⁴ by way of wire 2, the return taking place through wire 3, relay-magnets R', and wire 12. This current from the local battery B² now passes in succession through the self-interrupters which precede that of the key pressed, and it first energizes magnet E⁴, which attracts armature F⁴, thus interrupting the circuit at *b*⁴ and closing the circuit through movable or spring contact member 10 and contact *a*⁴. The current now passes from the local battery B² through contacts at *b*³, wire 4, to magnet E³, returning as before described. This action is repeated in each of the self-interrupters E² being energized next and switching the current finally into the magnet E' of the first interrupter. The armature of each interrupter performs one oscillation only. The very short impulses thus obtained all pass through the coils of the relay R', and the armature Z' oscillates only once and remains attracted to close the circuit at 5 during these impulses, as it does not follow them owing to the longer duration of its oscillation. Upon the energizing of the armature E' the contact 15 K' is closed by the armature F', and this connects the line-battery B⁴ with the line 13 by way of the branch 16, and the current thus intensified passes over the line 13 to the receiver.

When the key T⁵ of the transmitter is pressed down, the armature Z' of the relay R' of the transmitter closes the main line at 5, and this current from battery B³ passes to the receiver, and while this is sufficient in strength to swing the armature Z'^x of the receiver-relay R'^x to close contact with K'^x it is not sufficient to send a current through the shunt 20 owing to the resistance W, and thus the second receiver-relay R^{2x} is not energized.

The main line of the receiver is marked 13 and its return connection is indicated at 13'. The movement just mentioned of the armature Z'^x of the receiver-relay R'^x is synchro-

nous with that of the armature F⁴ of the transmitter.

When the contact at K'^x is closed by the armature Z'^x of the receiver-relay R'^x, the receiver local battery B'^x is thrown into circuit and the current passes through the contact K'^x, the armature Z'^x, the armature A'^x of the receiver-interrupter U'^x, by way of wire 21, through contact *u*^x, wire 22, contact *c*^{2x}, and wire 23 to the magnet of the first interrupter E^{2x} of the receiver, and thence by return-wire 24 back to the magnet of the interrupter U'^x and to the battery B'^x. The magnets at E^{2x} and U'^x are thus energized and attract their armatures F^{2x} and A'^x, respectively. F^{2x} closes the spring-contact at *d*^{2x}, comprising the movable member 25 and the fixed member 26. The current from battery B'^x of the receiver now passes through these contacts by way of wire 27 and branch 28 and thence to the contact at *c*^{3x}. This contact *c*^{3x}, as well as the contact *c*^{2x} before mentioned, is similar to the contact at *d*^{2x}, comprising a fixed and a movable contact-point, which is held closed by the armature and is adapted to open automatically when relieved from pressure of the armature. When contact at *d*^{2x} is closed, therefore, the contact at *c*^{2x} opens. The closing of the contact at *c*^{3x} enables the current to flow from battery B'^x through K'^x, wire 27, and a second branch wire 23 through the magnet at E^{3x} and thence by way of line 24 and magnet U'^x back to the battery. The armature A'^x is held down on the contact *u*^{2x} as long as the armature Z'^x of the first relay R'^x of the receiver remains in deflection, as a complete circuit is maintained through the armature Z'^x, line 21, armature A'^x, contact *u*^{2x}, wire 29, magnet U'^x, and battery B'^x. From the above it will be seen that the current from battery B'^x is switched from one interrupter to another in succession, beginning with the first, then the second, and so on, or in a direction reverse from that in the transmitter, where the first one is, for instance, E⁵, then E⁴, and so on back to the first, E'. As soon as the current from the local battery B³ of the transmitter has been sent through the first interrupter of the transmitter the armature F' is operated and switches the second battery B⁴ into the main line, and the main-line current thus intensified is able to overcome the resistance W, placed in the shunt 20 in front of the second relay R^{2x} of the receiver, and the armature Z^{2x} of the latter is now attracted and closes the circuit at K^{2x}. At the moment that the armature F^{5x} is swung by reason of the current flowing from the battery B'^x, as before described, through the armature Z'^x of the first receiver-relay, which remains in deflection, and at the moment, therefore, that the contact at *b*^{5x} is closed by swinging movement of the armature F^{5x} the current will pass from the second local battery through the wire B⁵, the contact at K^{2x} of the second

relay, through the armature Z^{2x} , the wire 30, the contact a^{6x} , wires 31 and 32, contact b^{5x} , wire 33, and thence to the magnet S^5 of the lever of the type-writer corresponding to the key T^5 at the transmitting-station.

The contacts a^{6x} and b^{5x} of Fig. 2 are spring-contacts and close on pressure being exerted. Fig. 2 represents the armature F^{6x} closing the contact at a^{6x} , because the said armature is swung to the left. This closes the connection between the wire 30, leading from the battery connection B^{2x} described to the wire 31, which through the wire 32 connects with the contact b^{5x} , which is shown as open, but which is closed as soon as the armature F^{6x} swings to the right upon the energizing of the magnet E^{5x} , as above described.

Each interrupter of the receiver has a wire, as 31 32, and they have also wires 30', which form connections for receiving current from the battery B^{2x} . For instance, when F^{4x} is the last interrupter to be operated the current from the battery B^{2x} after passing through wire 30, contact a^{6x} , and wire 31 of the interrupter E^{5x} would pass by way of wire 30', contact a^{5x} , and wire 31 of interrupter E^{5x} , and thence by way of wire 32 and contact b^{4x} of interrupter E^{4x} to the lever-operating magnet S^4 .

I claim as my invention—

In a printing-telegraph, the combination of a transmitter comprising the keys, a local battery B' , a series of self-interrupters, contacts controlled by each key with connections for sending the current from the bat-

tery B' through the corresponding interrupter, a relay R' for closing contacts in the main line, the magnets of said relay being in the circuit of the battery B' and with the keys and self-interrupter, an interrupter U' also in said circuit which is operative as long as the key is held down, the duration of oscillation of the armature of said interrupter U' being longer than that of the armature of the self-interrupters, a battery B^3 connected with the main line, a local battery B^2 with connections for energizing the magnets of the self-interrupters preceding that operated by the key and in succession, an auxiliary battery controlled by the armature of the first interrupter to intensify the current in the main line, and a receiver, comprising a relay in the main line, a local battery controlled thereby, connections from said battery to a series of self-interrupters for operating and sending a current through them in succession, an interrupter U'^x , a second relay in a shunt of the main line, a resistance in front of said relay, the magnets for the levers of the type-writer, and a second local battery in circuit with the second relay, the magnets, and with contacts controlled by the armatures of the interrupters.

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

JOSEPH STOCKERT.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.