(No Model.) 2 Sheets—Sheet 1.

C. J. REED.

PRINTING TELEGRAPH.

No. 477,384. Patented June 21, 1892.

2

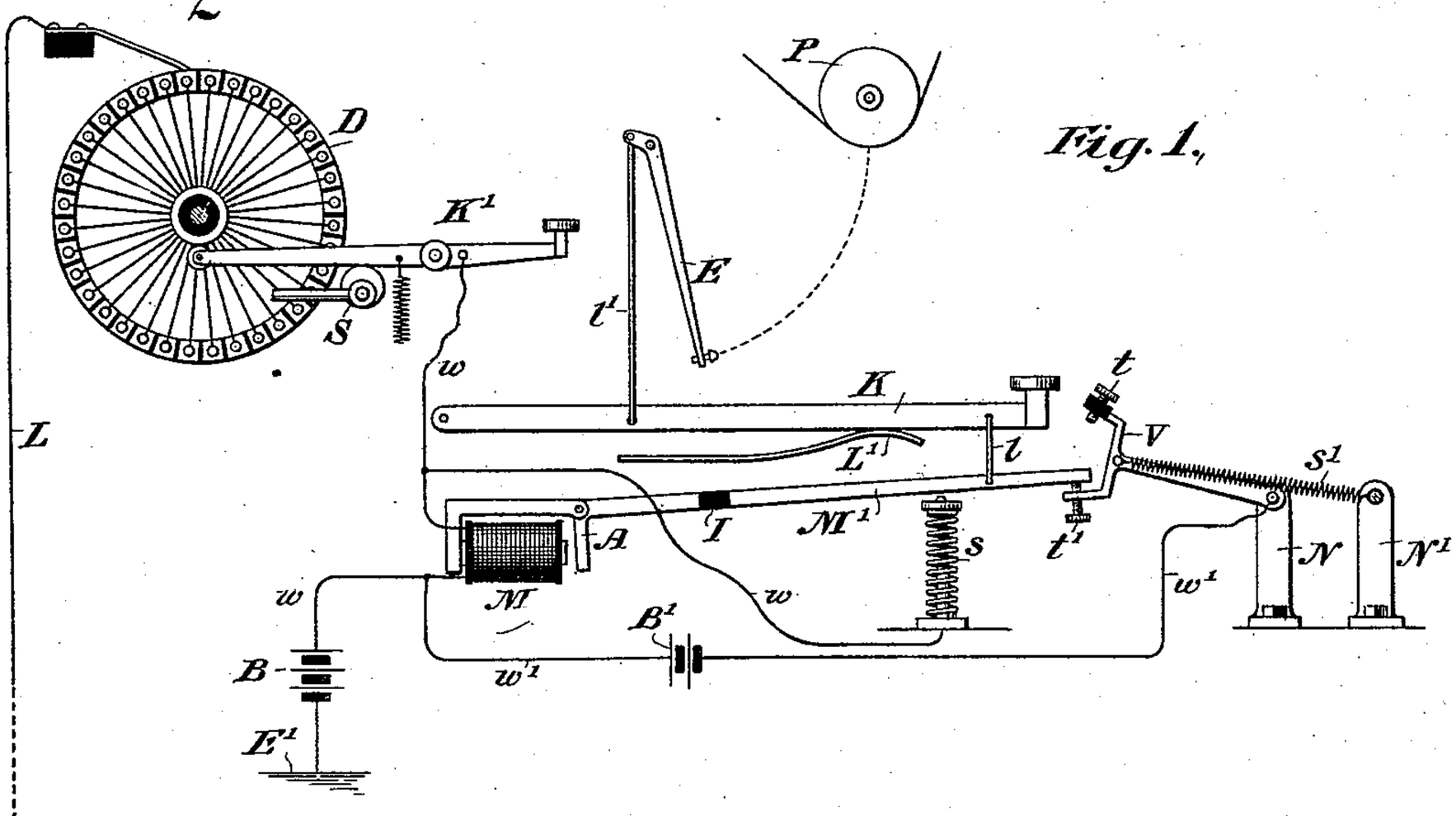

Fig. 1.

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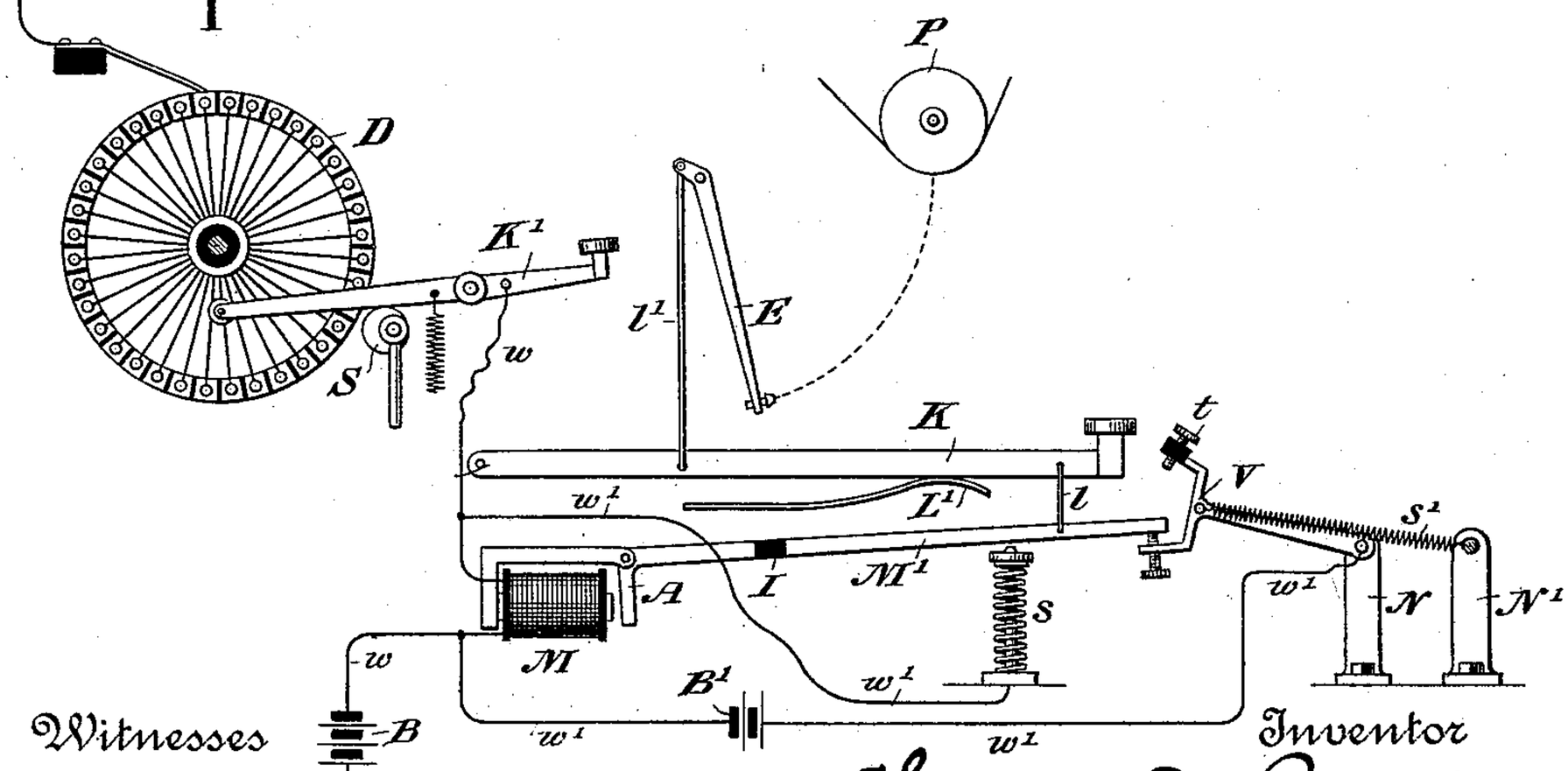

Witnesses
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Inventor
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By his Attorney
Charles J. Kintner

(No Model.) 2 Sheets—Sheet 2.

C. J. REED.

PRINTING TELEGRAPH.

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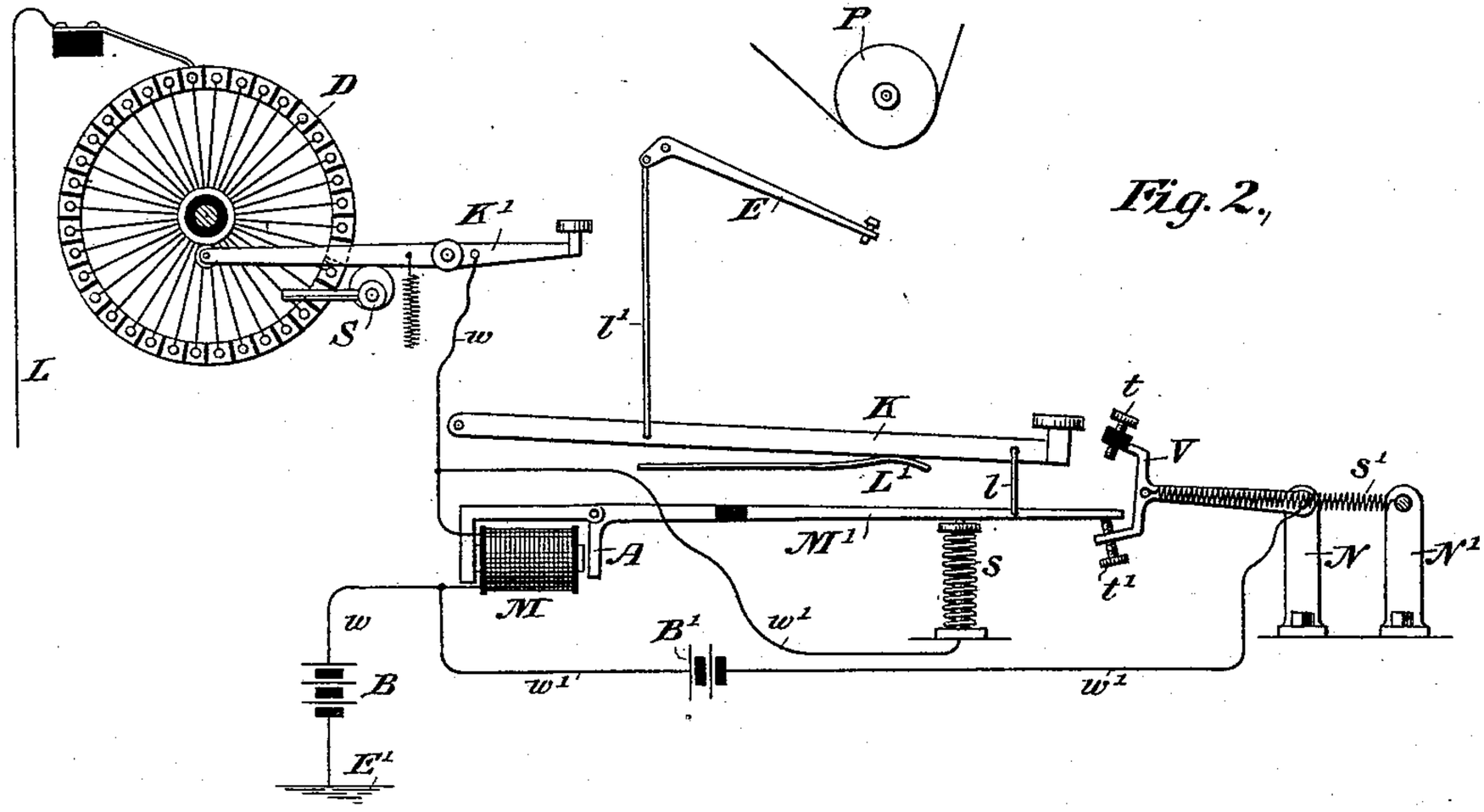

Fig. 2.

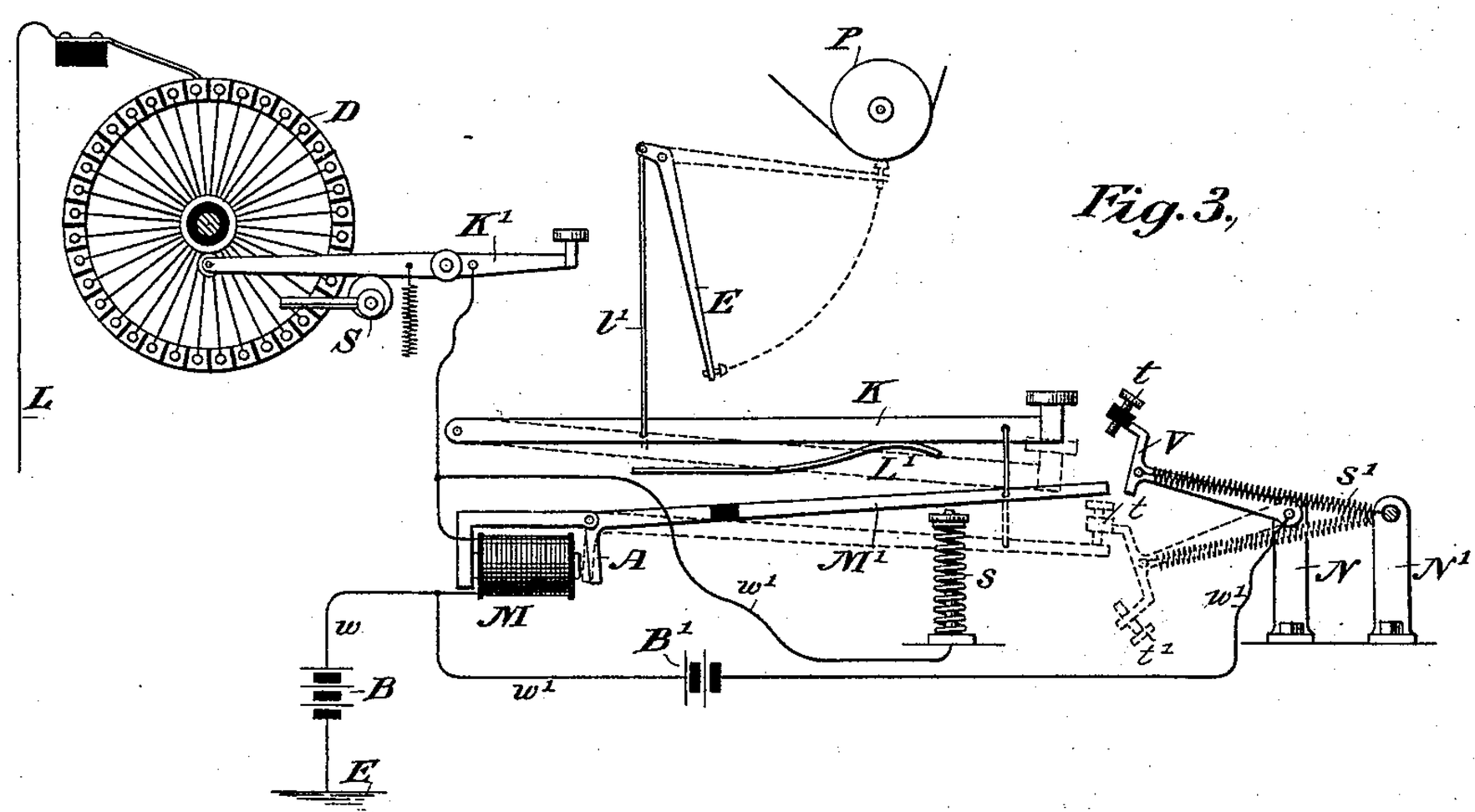

Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES J. REED, OF ORANGE, NEW JERSEY.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 477,384, dated June 21, 1892.

Application filed July 6, 1891. Serial No. 398,474. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. REED, a citizen of the United States, residing at Orange, county of Essex, and State of New Jersey, have made a new and useful invention in Printing-Telegraphs, of which the following is a specification.

My invention has for its object the combination of an electrical or telegraphic circuit with two or more type-writing machines of well-known form in such manner that the operators thereof may be located at different stations and be enabled to transmit and receive type-written messages at will; and to this end it is directed to improvements upon a prior invention of mine disclosed in an application filed by me in the United States Patent Office on the 27th day of May, 1891, bearing Serial No. 394,258.

My invention will be fully understood by referring to the accompanying drawings, in which—

Figure 1 is a diagrammatic view disclosing the entire apparatus located at two independent stations connected by a single main line, while Figs. 2 and 3 are diagrammatic views illustrating the apparatus in different operative positions.

Referring to the drawings in detail, L represents an ordinary telegraph-line operatively connected with a pair of distributers D, located, respectively, at stations 1 and 2, said distributers being connected through conducting-keys K′, earth-wires *w*, electro-magnets M, and batteries B to earth at E′.

S S are switch-levers adapted to place the inner ends of the key-levers K′ into contact with or remove them from contact with a series of conducting-rings carried by a shaft which supports the distributers D.

The arms M′, attached to the armature-levers A, are connected by links *l* to the key-levers K of any of the well-known forms of type-writers, one of said key-levers being shown at each station as connected through a link *l′* with a type-lever E, adapted to print upon paper carried by a platen P.

All of the features so far described are found in my prior application above referred to, to which reference is had for a further understanding thereof. My present invention includes these features in combination with details of construction, which I now proceed to describe, these details or improvements being directed to an arrangement whereby the type-writers may be operated by local batteries and local electro-magnets and the operation thereof made more certain and effectual than is possible with the apparatus described in my prior application. In the present instance I have shown for simplicity of illustration but one electro-magnet M at each station, and have connected with each of said electro-magnets a local battery B′, normally out of action, but so arranged that when the magnets M are energized by the main-line battery B the local batteries B′ will be brought into play, thereby converting the electro-magnets M for the time being into local electro-magnets.

It will be readily understood by those skilled in the art that the electro-magnets M may be utilized as relays which control the action of the local batteries B′ upon independent local magnets or the magnets M may be provided with individual local coils located in normally-open circuits, such matters being obvious to those skilled in the art. The arms M′ of the armatures A are of conducting material, but insulated, as shown at I, and adapted to be brought into contact with a yielding conducting-spring *s* when drawn forward under the influence of the armature-levers A.

V is a circuit-controlling device pivotally secured to a post or support N and provided with adjustable contact-screws *t t′*, the former being insulated, as shown.

s′ is a retractile spring secured at one end to an adjustable post or support N′ and at its other end to the circuit-closing device V and adapted when the latter is vibrated back and forth to give to it a sudden impulse in either direction at certain points of its journey, as will be described later on. This circuit-closing device is connected at its pivoted end by a conductor *w′* to the local battery B′, the conducting-spring *s* being in turn connected to the conductor *w′* through the magnet M.

The operation of the apparatus is as follows: Referring to Fig. 1, the switch at station 1 is in its lower position and at station 2 in its upper position, the operator at station 1 transmitting, while the operator at station

2 is receiving. The key-lever K′ at station 1 is disconnected from its distributer D for the time being and the distributers are running continuously in unison, the local circuits being open at both stations between the arms M′ and conducting-springs *s*. Fig. 2 illustrates the apparatus in the act of producing an impression of a letter upon the paper at both stations. The key-lever K′ having been depressed at the transmitting-station and placed in contact with the distributer D, the necessary impulse is transmitted through the magnet M and causes the armature A to be drawn forward for an instant with sufficient force to close the local circuit from battery B′ by wire *w′*, magnet M, conducting-spring *s*, arm M′, adjustable conducting contact-screw *t′*, circuit-closing device V back by wire *w′* to battery. The magnet is therefore energized by the local battery B′ and the armature is drawn forward the full length of its stroke, thereby causing the circuit-controlling device V to pass through its intermediate positions to that shown in Fig. 3 in dotted lines, the spring *s′* being brought into play after the circuit-controlling device has reached such a position that the outer end of said spring passes the center of support of the circuit-controlling device V, thereby causing the latter to be suddenly snapped into the lower position shown in Fig. 3, thus instantly interrupting the circuit, demagnetizing the magnet M, and allowing the leaf-spring L′ under the key-lever K′ to lift the arm M′ to its original position, said arm carrying with it the circuit-closing device V by virtue of its action upon the insulated contact-screw *t* and ultimately causing said circuit-controlling device to assume the position shown in full lines in Figs. 1 and 3, thus leaving the local-battery circuit open until again closed through the agency of the key-lever K′. With this arrangement of parts I am enabled to cause a simple electrical impulse transmitted over a main line to actuate a relay and cause it to close a local circuit through a local electro-magnet operatively connected with one of the keys of a type-writer and to insure absolute certainty of action for each impulse transmitted.

I have shown for convenience the relays M M provided with local-circuit connections *w′ w′* through local batteries B′ B′; but it is obvious that these "relays," as they are here termed, might be in the nature of relays proper of comparatively high resistance for line use, located directly in the main circuit and actuating local electro-magnets in independent local circuits operatively connected with the batteries B′ B′, the armatures of the relays M M in this instance acting to close the local circuits momentarily through the batteries B′ B′ and to actuate the armature-levers M′, which would be connected in that instance to the circuit-controlling devices V in a manner at once obvious to those skilled in the art. In other words, relays proper would be interposed in the main circuit *w*, which would momentarily close the circuit through the local electro-magnets taking the place of the magnets M M and operating in every sense as do the magnets M M as now shown. It will be understood, of course, that there are as many relays M, with their attached parts, as there are key-levers upon each type-writer. In other words, that all of the details of construction herein shown as connected to a pair of type-writers and distributers are simply multiplied in proportion to the number of key-levers in actual use upon the type-writers utilized.

My improvement may be used in connection with ordinary type-writers for manipulating them with delicate touch, and in order to accomplish this result I would simply do away with the circuit-wires *w* and operate the apparatus as a type-writer solely by circuits from the local battery B′, said circuits being closed by delicate touch upon the key-levers K′, a complete stroke of the type-lever E being accomplished by and through the agency of the local electro-magnets M after the arms M′ have been caused to touch the conducting-springs *s*.

I make no claim in the present specification to the combination of two or more distributers with independent electro-magnets at each station, having their armatures operatively connected to the key-levers of ordinary or well-known forms of type-writers and adapted to be used at will for transmitting and receiving in opposite directions, as these features constitute the subject-matter of my prior application above referred to.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A pair of distributers joined by an electrical conductor, a series of key-levers for each distributer, and a series of relays having local-circuit connections through electro-magnets operatively connected to the key-levers of a type-writer at each end of the conductor, said local-circuit connections including means for holding the local circuits closed for a short time after the main circuit is broken, substantially as described.

2. A pair of distributers joined by an electrical conductor and a series of key-levers and relays connected to each distributer, the relays at each station having local electrical and mechanical connections with the key-levers of an independent type-writer, said local connections including means for holding the local circuits closed for a short time after the main circuit is broken, substantially as described.

3. A printing telegraphic receiver consisting of an electrical distributer operatively connected with a series of receiving-relays, in combination with a series of local electrical and mechanical connections with the relays and the key-levers of a type-writer, said local connections including means for holding the local circuits closed a short time after the

main circuits are broken, whereby the type-writer may be operated from a distant station, substantially as described.

4. A distributer having circuit connections with a single conductor and a series of relays, in combination with a series of local-circuit connections through the relays with the key-levers of a type-writer, said local-circuit connections including means for momentarily holding the local circuits closed after the main circuit has been broken, substantially as described.

5. A type-writer provided with a number of electro-magnets equal to the number of key-levers, the armatures thereof being connected to said key-levers, in combination with circuit connections and automatic circuit-interrupters including spring-actuated levers operatively connected with the armatures of the electro-magnets, whereby the keys may be lightly touched by the operator and caused to complete their stroke through the agency of the magnets and finally returned to normal position, substantially as described.

6. A type-writer provided with an electro-magnet for each key-lever, having its armature connected thereto, an electrical generator, and electrical and mechanical connections including spring-actuated automatic circuit-controlling devices, whereby the keys need only be lightly touched, substantially as described.

7. A pair of type-writers, a pair of distributers, a relay for each key-lever, local circuits and spring-actuated circuit-controlling devices for each relay, and mechanical and electrical connections between the relays, the local circuits, and the key-levers, whereby the transmitting-keys need only be lightly touched, substantially as described.

CHARLES J. REED.

Witnesses:
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M. L. BUTLER.