

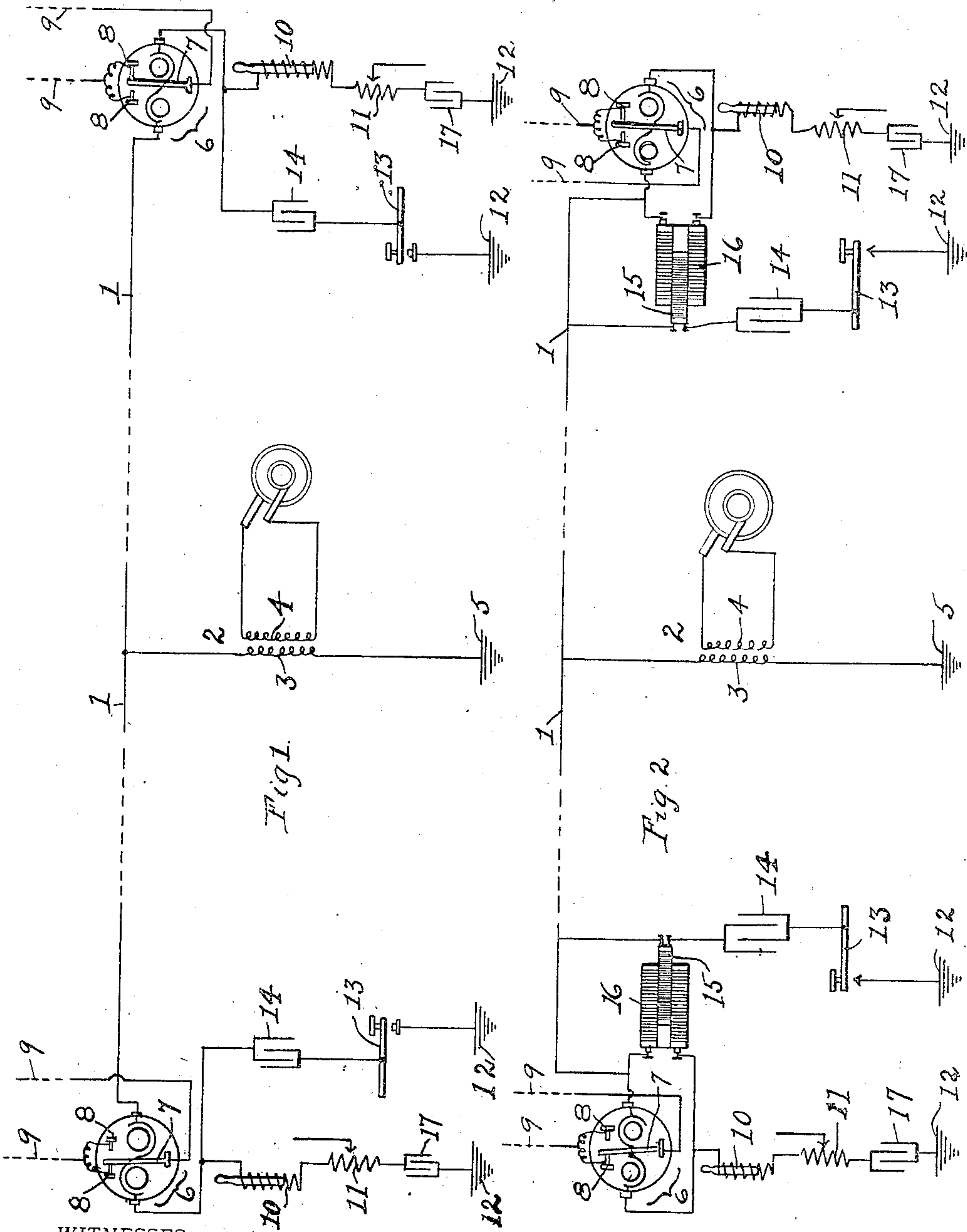
I. KITSEE.  
TELEGRAPHY.

APPLICATION FILED OCT. 10, 1907

921,715.

Patented May 18, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

*Edith R. Stalley*  
*Mary C. Smith*

INVENTOR.

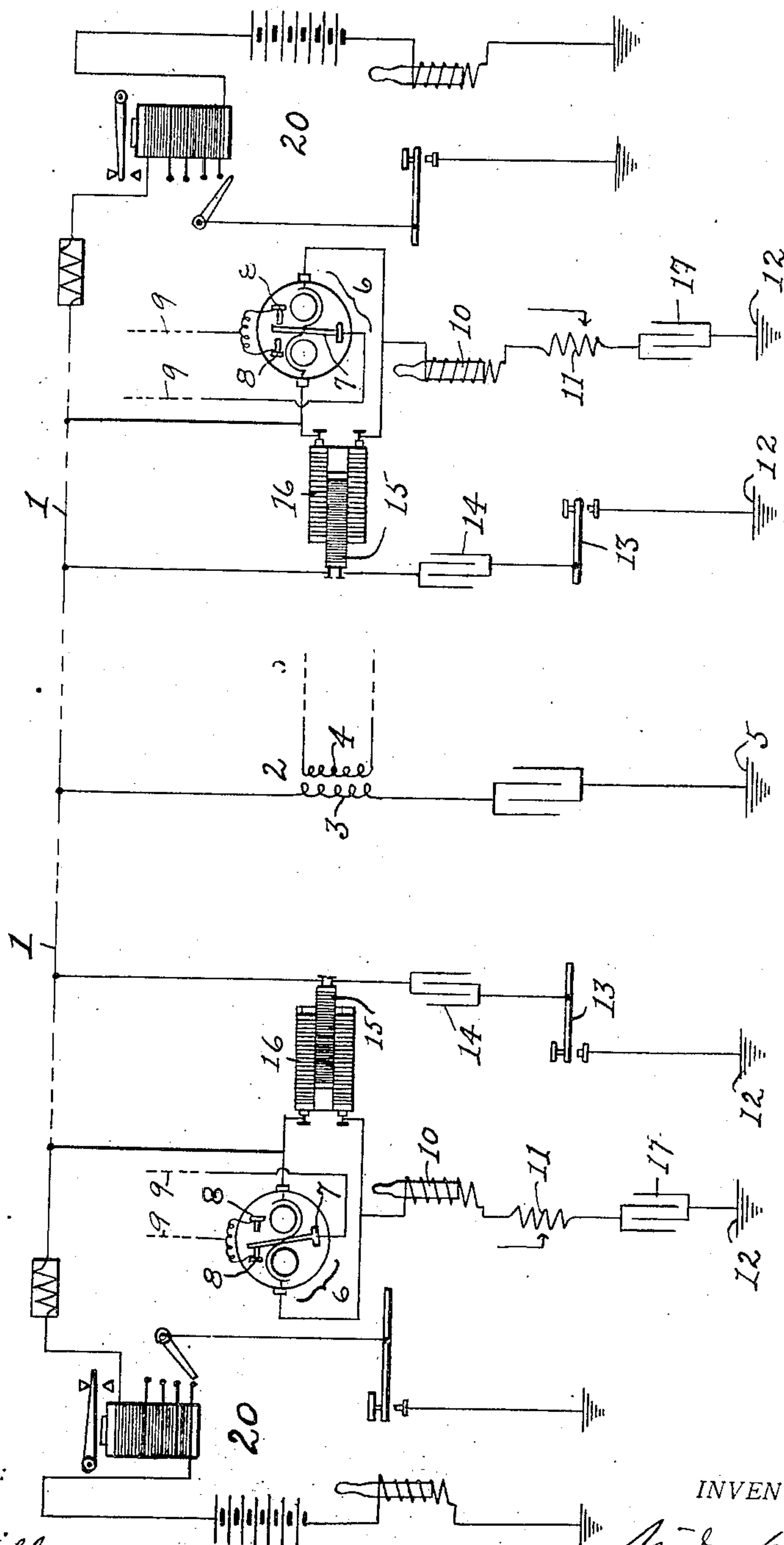
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2 SHEETS—SHEET 2.

Fig. 3



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# UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

## TELEGRAPHY.

No. 921,715.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed October 10, 1907. Serial No. 396,829.

*To all whom it may concern:*

Be it known that I, ISIDOR KITSEE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Telegraphy, of which the following is a specification.

My invention relates to an improvement in telegraphy.

It has more special reference to telegraphing with rapidly recurring or induced impulses.

The system substantially as outlined may be used as a simplex or as a duplex and when worked in connection with an arrangement wherein a straight or voltaic current is employed, such for instance as is illustrated in Figure 3, the system may be used as a quadruplex. It is obvious that the receiving relay may be connected to any localized arrangement, such for instance as a simple sounder or grouping of electro-magnets whereby the received impulses may be translated in a manner, so as to produce automatically typewritten copies.

Figs. 1, 2 and 3 are diagrammatic views illustrating my invention as adopted for simplex, duplex or quadruplex systems.

1, 1, is the line of transmission. This line is, about half way of its length, connected with the interposition of the secondary 3 of an inductorium 2 to the ground 5. The primary 4 of this inductorium is connected to any available source of current adapted to produce rapidly recurring or alternating impulses.

6 is a polarized relay provided with the armature 7 and the two stops 8. These stops are electrically connected with each other.

9, 9, are local circuits connected to the armature and stops respectively. The relay is connected in the line proper and is grounded, here shown with the interposition of the adjustable inductance 10 and adjustable resistance 11, to the ground 12. The inductance and resistance are shunted through the key 13 connected to ground 12.

In Fig. 2, the shunt around the resistances comprises, in conjunction with the key 13, the primary 15 of an inductorium, the secondary 16 of said inductorium being connected in shunt to the relay proper. In both figures, the condenser 17 is interposed between the relay and the ground and con-

denser 14, interposed between the shunt circuit including the key 13.

In Fig. 3, in conjunction with the system as shown in Fig. 2, the line is also provided with a system whereby the line can be duplexed with straight or voltaic current. This duplexing system is clearly illustrated and described in Letters Patent No. 863,853 dated August 20, 1907, and I designate this arrangement by the numeral 20 as an entirety.

I will now describe, first, my invention as applied to a simplex arrangement. As stated, about mid-way of the line, electrically considered, the same is provided with a source of rapidly recurring or alternating current. As the line is,—electrically considered—, divided into equal parts, the impulses will flow in the same proportion over the line to the ground on the right hand side and over the line to the ground on the left hand side. The instrument of both terminal stations will therefore always be operated and the armature will alternately move toward to and in contact with the right or left stop. The devices connected to the local have to be adjusted, so as to work somewhat sluggish, and as the impulses follow each other in quick succession, the armature will not remain on any of the stops long enough to operate the local. Should now the operator desire to send messages, he simply closes his key. Through the closing of this key, the impedance and resistance will be shunted and the impulses will flow nearly in their entirety through the shunt including the key, but will not be able to operate the instrument at the far off station. The relay, therefore, at the other terminal of the line will remain idle and the armature will remain positioned at one or the other of the stops 8, thus giving the local time enough to operate. In sending characters comprising dots and dashes, the operator manipulates his key in the same manner as the key is manipulated to-day. But instead of, as is the case to-day, operating the line relay through the depression of the key and to stop this operation when the key is released, the resultant effect of the arrangement as illustrated is just the opposite; that is, the line relay is normally operative but is made inoperative through the closing of the key.

I will now consider the invention as applied to a duplex. Here also the line relays are continuously operated on through the rap-



idly recurring or alternating impulses induced through the device 2. When now the operator depresses the key 13, the resistances at his own station are shunted just as is the case in the simplex, but the impulses flowing through the shunt will also flow through the primary 15, thereby inducing impulses in the secondary 16 and these impulses will actuate the home instrument, thereby making inoperative the local of said home instrument. At the far off instrument, the line relay will be made idle, for the reason that only a very slight part of the impulses generated through 2 will flow at the station to the ground. When now the operator at the far off station depresses his key simultaneously with the depression of the key of the first operator, the impulses will flow through the shunts of both stations. Each operator in working his key has to adjust the relation of the primary as to the secondary in a manner, so that the whole energy of the generated impulses is required to go through the primary for the purpose of actuating the home instrument. When now, through the depression of the key at the far off station, the former force of the impulse is one-half, this half passing through the primary will not suffice to make operative the home relay; therefore, both relays will be made idle through the depression of the keys of both stations; but as soon as one or the other of the keys is released, the whole force of the impulses will flow through that shunt which has the key depressed and only the relay at the far off station will be made idle; the home instrument will still be working.

Persons versed in the art will readily understand the working of this system and the ease with which the balance is obtained. It may be stated in this connection that the condenser 17 should be of a comparatively small capacity and the condenser 14 of a comparatively large capacity.

In Fig. 3, the resistance inserted between the batteries and the ground should be such as to effectually bar the passage of the induced impulses through these batteries to the ground.

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

1. A system of telegraphy comprising a line of transmission, polarized relays for each station inserted in said line, a source of alternating or rapidly recurring impulses normally connected to said line thereby normally operating said relays, a localized circuit for each of said relays, said localized circuit adapted to be operated only during the time that practically no current is flowing through said relays.

2. In a system of telegraphy, a polarized relay inserted in the line, a local circuit connected to said relay, rapidly recurring or induced impulses to normally operate said relay in quick succession and means to operate the local circuit only during the time that practically no current is flowing through said relay.

3. In telegraphy, means to transmit messages from one station to a second station, said means embracing a source of rapidly recurring or alternating impulses connected about midway to the line of transmission, a polarized relay for each station connected in the line and with the interposition of retarding devices to the return and means at each station to shunt said retarding devices in accordance with the characters to be transmitted.

4. In telegraphy, means to transmit messages simultaneously in opposite directions, said means embracing a source of rapidly recurring or alternating impulses connected, electrically considered, about midway to the line of transmission, a polarized relay for each station connected to the line and with the interposition of retarding devices to the return respectively, means to shunt said retarding devices and relay in accordance with the impulses to be transmitted and means to develop, through the closing of said shunt, local impulses adapted to flow through the home relay.

5. In telegraphy, in combination with means to duplex a line with the aid of a straight current, means to simultaneously duplex a line with the aid of rapidly recurring or alternating impulses, the means to duplex the line with a straight current embracing sources of current connected to the line in opposite direction, electro-magnet for each of said sources and means to shunt part of said electro-magnet in accordance with the characters to be transmitted; the means to duplex the line with the aid of rapidly recurring or alternating impulses comprising a source of said impulses connected normally to the line, polarized relays connected to the line and with the interposition of retarding devices to the return, means to shunt said relay and retarding devices in accordance with the characters to be transmitted and means to generate, through the closing of said shunt, impulses adapted to flow through the home impulses.

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

ISIDOR KITSEE.

Witnesses:

MARY C. SMITH,  
EDITH R. STILLEY.