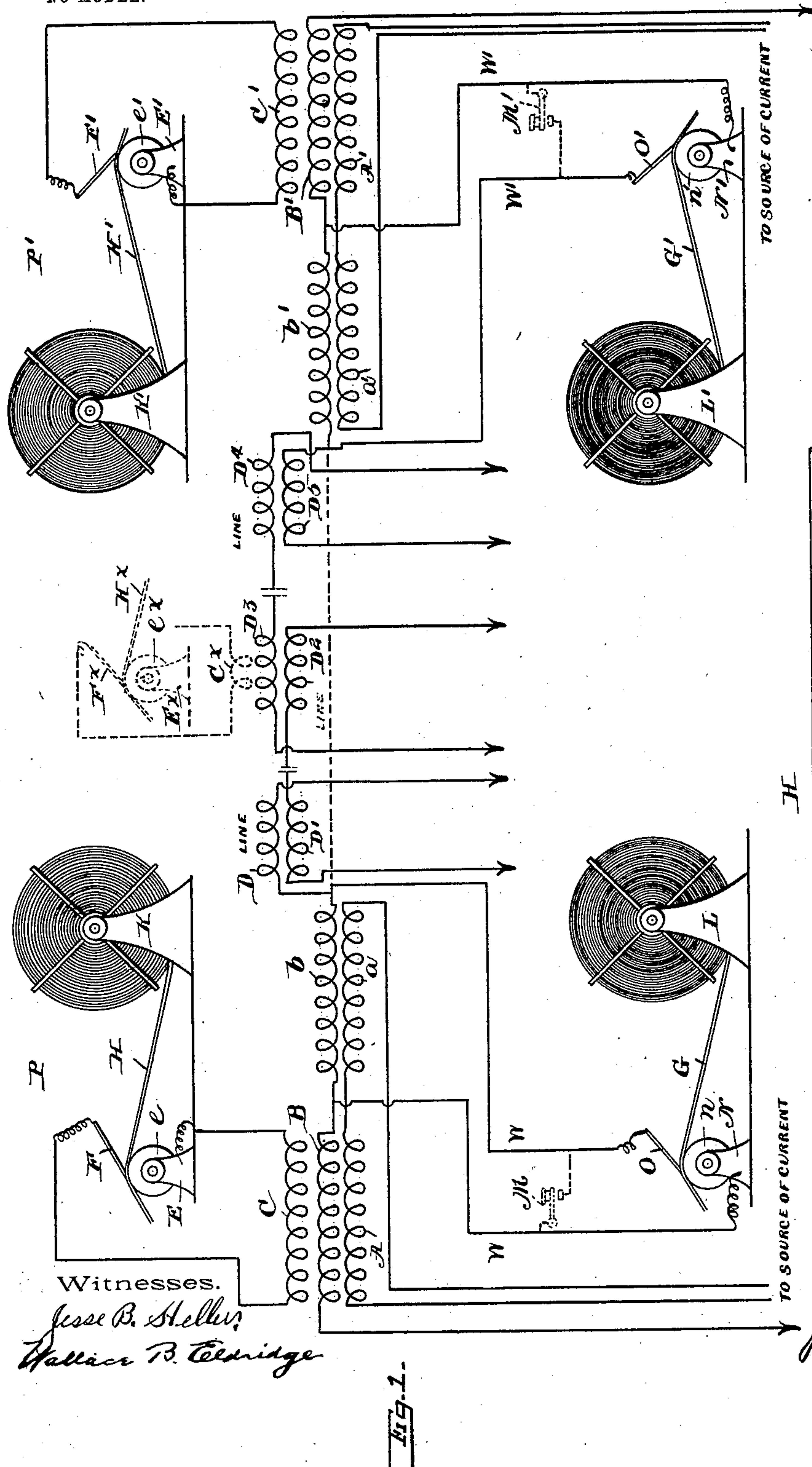
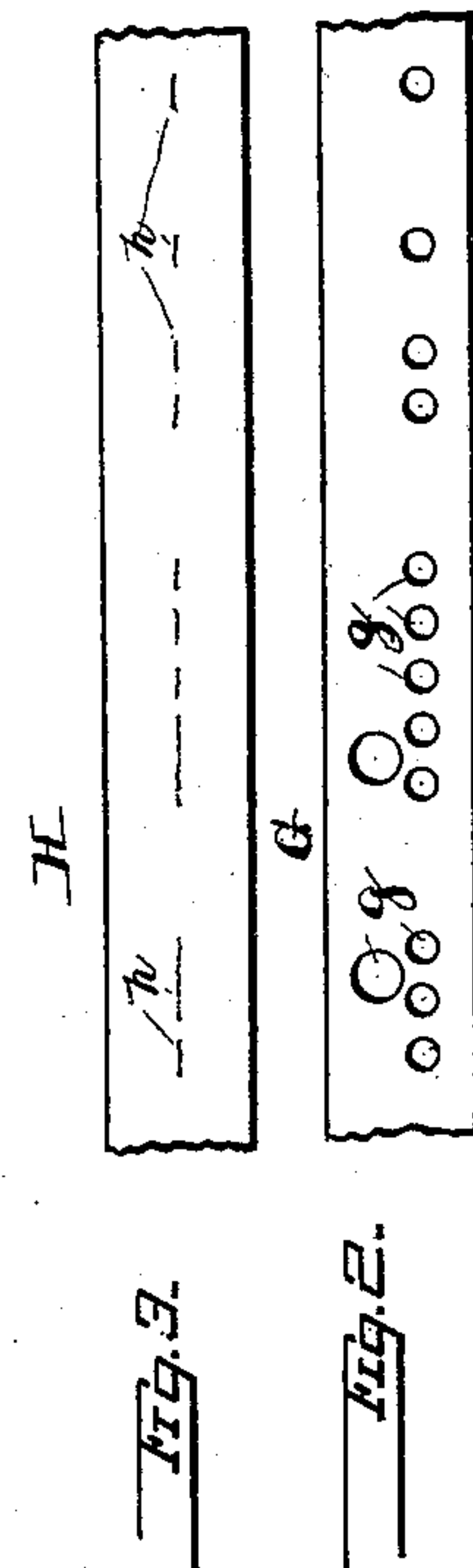


I. KITSEE.  
ELECTRIC TELEGRAPHY.  
APPLICATION FILED OCT. 18, 1895.

NO MODEL.



Witnesses.  
Jesse B. Heller,  
Wallace B. Clearidge



Inventor.  
I. Kitsee



# UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JAMES H. BELL, OF PHILADELPHIA, PENNSYLVANIA.

## ELECTRIC TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 722,852, dated March 17, 1903.

Application filed October 18, 1895. Serial No. 566,135. (No model.)

*To all whom it may concern:*

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

My invention relates to electric telegraphy in accordance with the alphabetical or Morse code.

The objects of my invention are to send messages according to the Morse code in a new and improved manner, to receive the same in a new and improved manner, and to obviate on the line the retarding effects of the extra and return currents, thereby enabling persons versed in the art to send and receive messages at a more rapid speed than is usually the case.

Referring to the drawings, in which similar letters indicate similar parts, Figure 1 is a diagram of a sending and receiving station in electrical connection with each other either through the unbroken line-wire, as illustrated in dotted lines, or through the different parts of a metallic line, as hereinafter more fully to be described. Fig. 2 is a plan view of the perforated strip usually employed in rapid telegraphy for sending messages. Fig. 3 is a similar view of a strip provided with the visible marks of the received impulses.

In Fig. 1, P is the sending and P' the receiving station, both being equipped with the same instruments, so that the receiving-station may act as the sending-station, and vice versa. A and *a* are parts of a primary coil connected locally to a source of electric current, which source has to be either alternating or rapidly interrupted. B and *b* are parts of a secondary coil connected to the line-wire, both B and *b* receiving the induced effects of the coil A *a*, connected to the source of current. From the terminals of the coil *b* extend the wires W W, which terminate in the metallic support N of the metallic roller *n* and the brush O, respectively. Between O and *n* is placed the perforated strip G, which strip is provided with the perforations *g* in a manner and for the purpose as is well known in rapid telegraphy; but instead of making and breaking through said strip the contact of a line with a battery or displacing such

battery I use the perforated strip to open or close a shunt-circuit around the coil or coil part *b*. I have illustrated in the drawings both the coils B and *b* as oppositely wound as to each other. If now a current rapidly recurring or alternating is sent through coils A and *a*, alternating currents will be induced in B and *b* simultaneously, but the induced impulses in B will flow in opposite direction from the induced impulses flowing in *b*. The effect, therefore, of the flow of such impulses in B and *b* upon the line in which they are inserted would be null if both coils A and *a* are equal and coils B and *b* are also equal; but I prefer to make the coil *b* of smaller capacity than the coil B. If now the perforated sending-strip, as illustrated in Fig. 2, is drawn between *n* and O, the shunt will be open as long as the strip itself is between O and *n*; but as soon as one of the perforations *g* is reached the shunt is closed through said perforations. As long now as the shunt is open only the very small portion of current which is induced in B in excess of the current induced in *b* travels over the line; but as soon as the coil *b* is short-circuited through the closing of the shunt-circuit the whole current force of B will be transmitted over said line.

The key M (illustrated in the drawings in dotted lines) may be used as a sender instead of the device above described.

If the station P is to be used as a receiving-station, the impulses transmitted from the station P' will flow through the coil B, thereby inducing impulses in the coil C, one terminal of which is connected to the metallic support E and through the same to the metallic roller *e*. The other terminal ends in the pen or stylus F. The winding of this coil C is such that the induced impulses are of a potential high enough to establish a partial path for the current, even if a strip of paper in its dry or slightly-moist condition is inserted between *e* and F.

The strip of paper H, which is designed to act as the medium on which the received impulses are to be recorded, can be chemically prepared in the usual manner; but I prefer the paper only in such a state that the high potential and alternating impulses may just establish a path in such manner that their



passage through the paper will leave a burn or scorch on the paper as the result of such passage. In Fig. 3 such burned places are designated by the letters *h h* and correspond  
 5 in value to the characters intended to be transmitted with the aid of the perforated strip G. The designation of the several parts of the station P' corresponds with the designation of like parts in station P, with the exception that each letter is also provided with  
 10 the numeral "1."

I have so far described the mode of sending and receiving the necessary impulses between two stations connected together by one  
 15 unbroken metallic line; but I prefer for very long lines the system as illustrated, where the first line-wire is carried only more or less far away from the sending-station to a distance more or less apart from the receiving-station  
 20 and where this line-wire is provided with a converting-coil and then connected to the ground and where in proximity to this coil a secondary coil is placed having one terminal connected to the ground and the other terminal  
 25 connected to a second line-wire, which line-wire is connected at the other terminal to another coil, the free terminal of which is again connected to the ground, and so on till the receiving-station is reached, where-  
 30 in the free terminal of the last coil is connected to one of the coils connected to the line and earth, respectively. I call these first coils, inserted between sending and receiving stations, "intermediate coils," and in the  
 35 drawings these coils are designated by the letters D D' D<sup>2</sup> D<sup>3</sup> D<sup>4</sup> D<sup>5</sup>, respectively, the downwardly-pointing arrows designating the ground. It is well understood that this arrangement is based upon the fact that an  
 40 alternating current flowing in a coil will induce alternating impulses in a neighboring coil, and the arrangement is preferred because

the retarding effects of the extra and return currents are greatly reduced, if not entirely obviated; but I have found that it is best to  
 45 so wind the coils that a so-called "step up" and "step down" of the potential of the current is brought about.

I have also illustrated in the drawings an intermediate receiving-station the several  
 50 parts of which are in dotted lines and designated as in the first figure, with the exception that each letter is provided with an additional "x."

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

1. In a system of the class described, a sending device consisting of the primary of a converter connected locally to a source of current, the secondary of said converter consisting of two parts wound or connected in opposition to each other, said secondary being  
 60 connected to the line-wire, a shunt-circuit around one part of said secondary, and means for opening and closing said shunt.

2. In a system of the class described, a sending device comprising two converters the primaries of which are connected to a localized  
 70 source of rapidly-recurring or alternating current, and the secondaries of which are connected to the line in such manner as to normally neutralize the flow of the current in said line, and means whereby said opposing influence is removed in accordance with the  
 75 value of the characters to be transmitted.

In testimony whereof I sign my name, this 16th day of October, 1895, in the presence of two subscribing witnesses.

ISIDOR KITSEE.

Witnesses:

LEO J. TIERNEY,  
 R. M. POPHAM.