

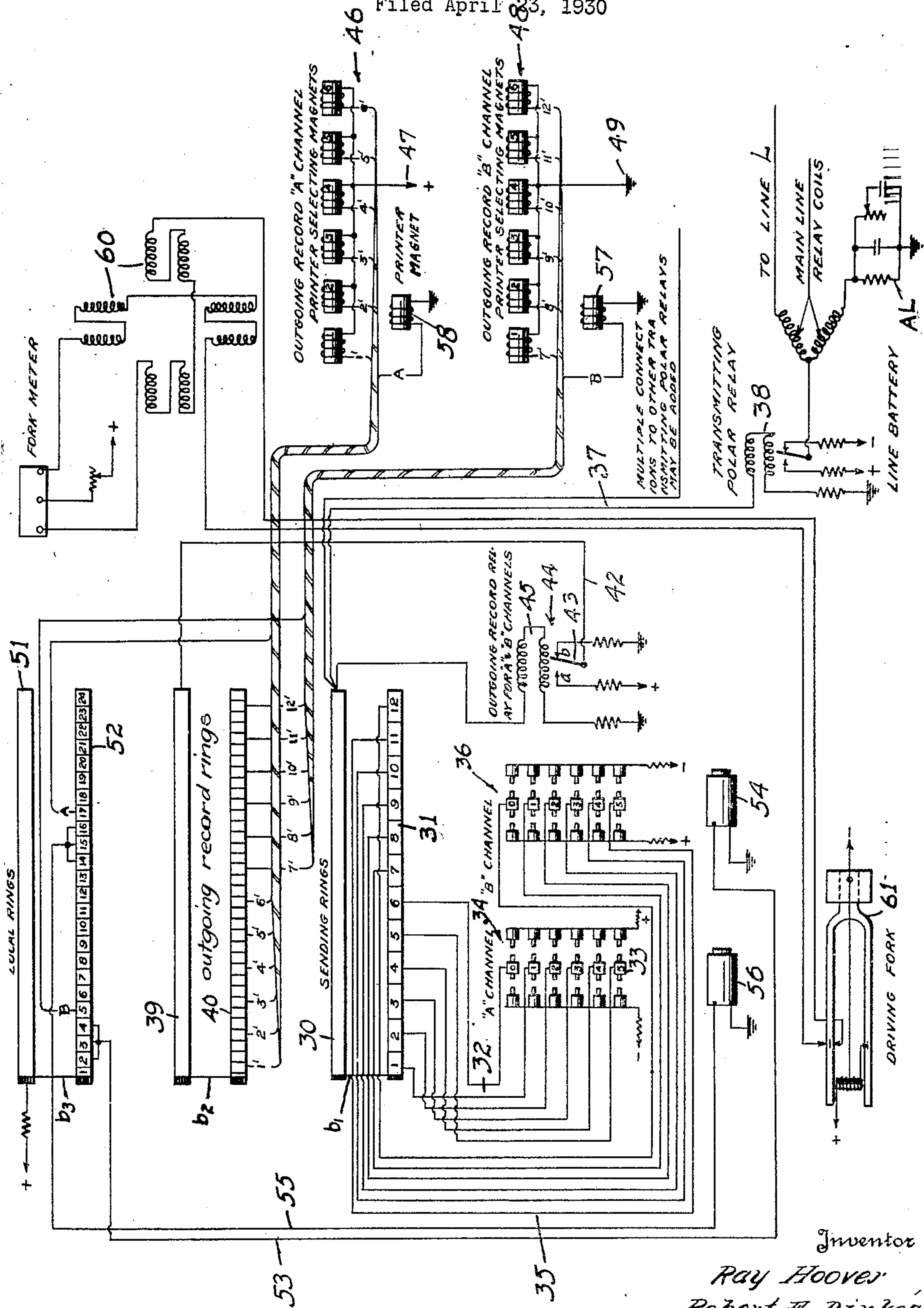
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MEANS FOR TAKING OUTGOING PRINTED RECORDS

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Inventor
 Ray Hoover
 Robert F. Dirkes
 Eugene C. Brow
 Attorney

UNITED STATES PATENT OFFICE

RAY HOOVER, OF NORTH PLAINFIELD, NEW JERSEY, AND ROBERT F. DIRKES, OF JAMAICA, NEW YORK, ASSIGNORS TO THE WESTERN UNION TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

MEANS FOR TAKING OUTGOING PRINTED RECORDS

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This invention relates to a multiplex printing telegraph system. Heretofore, in multiplex telegraph transmitting systems it has not been the customary practice to produce an outgoing printed record, at the receiving station, of the signals transmitted to the telegraph line. However, in certain types of business such a printed record of outgoing messages is desirable for monitorial purposes, especially where the transmission is of such nature that a transmitted error should be corrected promptly after its occurrence, as for instance, in the transmission of transactions and quotations of stocks and other commodities.

Accordingly, one of the objects of the present invention is to provide in a multiplex system a printed record at the transmitting station of the signals transmitted over the telegraph line.

A more specific object is to provide means responsive to the multiplex signals being transmitted, for simultaneously distributing them to the selecting apparatus of printing mechanism at the transmitting station, without the use of an added synchronous device.

Other objects and advantages of the invention will appear from the following description and claims taken in connection with the accompanying drawing.

In accordance with our invention, we provide a transmitting distributor having the usual sending rings for transmission to the outgoing lines, and in addition we provide a set of outgoing record rings upon which the marking and spacing signals corresponding to the transmitted signals are set up and distributed to the selecting mechanism of a printing apparatus to provide an outgoing printed record simultaneously with the transmission of the signals to the line. Local rings are also provided, which serves the twofold function of controlling the setting up of the signal combinations on the sending rings and operating the printer magnets of the outgoing record printers.

The invention will be more fully described in connection with the accompanying drawing, which is a diagrammatic view of a multiplex transmitting apparatus and the asso-

ciated mechanism for obtaining a printed outgoing record.

The transmitting distributor comprises a pair of sending rings, a pair of outgoing record rings, and a pair of local rings, the distributor being arranged for two channel multiplex operation. The sending rings comprise a solid ring 30 and a segmented ring 31, the latter having segments numbered 1 to 12. Segments 1 to 6 are connected by a group of conductors 32 to the contact tongues 33 of a tape transmitter 34 for operating into channel "A" of the multiplex system. Segments 7 to 12 are similarly associated through a group of conductors 35 with a tape transmitter 36 operating into channel "B". The tape transmitters serve to set up on the sending segments, combinations of positive and negative battery in accordance with a permutation code for transmission to the outgoing line. The tape transmitters may be of the type shown in Patent Number 1,298,440 to G. R. Benjamin, granted March 5, 1919. The solid sending ring 30 is connected by a conductor 37 to the winding of a polarized transmitting relay 38 for repeating the signals into a duplex line L.

The outgoing record rings comprise a solid ring 39 and a segmented ring 40. The solid ring 39 is connected by a conductor 42 to the tongue 43 of a polarized relay 44, the winding 45 of which has one terminal connected to the solid sending ring 30, and the opposite terminal grounded. The contacts *a* and *b* of the relay 44 are connected respectively to a source of positive potential and to ground. The ring 40 has thirty-six segments arranged so that every third segment, beginning with the second segment, comes opposite the middle third of the segments of sending ring 31, and these segments are connected to a group of conductors 1' to 12'. Conductors 1' to 6' are cabled and terminate respectively at one end of the windings of the printer selecting magnets 1 to 6 of the outgoing record "A" channel printer 46. The opposite terminals of the selecting magnets of the "A" channel printer are connected to positive battery at 47. Similarly, conductors 7' to 12' are connected to one terminal of

the windings of the printer selecting magnets of the outgoing record "B" channel printer 48. The opposite ends of each of the windings of the selecting magnets of the "B" channel printer are grounded at 49.

The local rings comprise a solid ring 51 connected to a source of positive potential, and a segmented ring 52 having twenty-four segments. Segments 2, 3 and 4 are connected by a conductor 53 to the operating magnet 54 of the "B" channel tape transmitter 36 and segments 14, 15 and 16 are connected by a conductor 55 to the operating magnet 56 of the "A" channel tape transmitter 34. The opposite terminals of the magnets 54 and 56 are grounded. Segment 5 of ring 52 is connected by a conductor B to the printer magnet 57 of the "B" channel printer 48 and segment 17 is connected by a conductor A to the printer magnet 58 of the "A" channel printer 46. The sending rings and local rings are each provided with brushes b_1 , b_2 and b_3 , respectively, adapted to be operated in unison over their respective rings by a phonic wheel, the field windings of which are shown at 60, controlled through a driving fork 61 in the usual manner.

As is common in multiplex operation, the polarity of the marking and spacing segments of channel "A" is opposite from that of channel "B" and as the circuit is arranged in the drawing, negative potential is employed as the marking current of channel "A", and positive battery as the marking current of channel "B". Accordingly, during the transmission of signals over channel "A", the tongue 43 of the outgoing record relay 44 moves to the contact b , to ground the relay tongue in response to marking signals and to contact a , to apply positive potential thereto in response to spacing signals, and during the passage of the brush over the segments 7 to 12, to transmit into channel "B", the relay tongue 43 is moved to contact a , in response to marking signals, and to contact b , in response to spacing signals. Therefore, during the transmission of the signals over channel "A", the spacing signals are set up on the receiving rings by applying a ground thereto through the relay 44 to complete the circuit from the positive source of potential 47 through the windings of the selecting magnets of the printer 46, and during the transmission of signals over channel "B" the marking signals are set up on the receiving rings by applying positive potential thereto to complete the circuit through the selecting magnets of printer 48 to the ground 49.

Consequently brush b_1 passes over the sending segments, the marking and spacing signals are transmitted to the line through relay 38 and simultaneously corresponding marking and spacing signals are set up on the segments of the outgoing record ring by

the relay 44 to operate the outgoing record printers. A printed record is thus produced which may be checked for errors and the same corrected promptly following the transmission thereof.

The local rings control the operation of the printer magnets of the "A" channel printer 46 during the time that the code combinations are being set up on the selecting mechanism of the "B" channel printer, and vice versa and similarly control the operation of the printer magnet 57 of the "B" channel printer while the succeeding code combination is being set up on the "A" channel printer.

It is obvious that various other arrangements may be provided for accomplishing the function of the present invention without departing from the invention. For instance, in place of operating the outgoing record relay 44 directly from the sending ring 30, it might be inserted in the artificial line AL of the duplex set. Therefore, we do not desire to be limited to the exact details shown and described except as required by the appended claims.

What we claim is:

1. In a multiplex telegraph system, a transmitting station, a rotary distributor disposed at said station, a plurality of channel transmitters for said distributor, a line arranged for duplex operation, an outgoing record printing mechanism at each station for each of said channel transmitters, means for transmitting signals simultaneously over said line in opposite directions and means for operating each of said printers in accordance with but independently of signals transmitted over said line by said rotary distributor.

2. In a multiplex telegraph system, a transmitting station, a rotary distributor disposed at said station having sending rings and outgoing record rings, a plurality of channel transmitters for said distributor, a line arranged for duplex operation, an outgoing record printing mechanism at said station for each of said channel transmitters, means for transmitting signals simultaneously over said line in opposite directions and a relay responsive to signals transmitted by said sending rings for setting up corresponding signals on the outgoing record rings, said relay being unresponsive to signals received over said line, and means for distributing signals from said outgoing record rings to each of said printing mechanisms.

3. In a multiplex telegraph system, a distributor having sending rings and outgoing record rings, means for setting up marking and spacing signal combinations on said sending rings for a plurality of channels, the marking signals of adjacent channels being of opposite polarity, a printing apparatus for each channel, means for setting up each of said marking signals on said outgoing record rings for distribution to said printing appa-

ratus, a duplexed line and means for simultaneously transmitting said signals to said line, said printing apparatus being unresponsive to signals received over said line.

5 4. In a multiplex telegraph system, a rotary distributor having sending rings, outgoing record rings and local rings, means for setting up signal combinations on said sending rings corresponding to a plurality of multiplex channels, means for applying said signals to said outgoing record rings, a duplex line associated with said sending rings, a plurality of printing mechanisms associated with said outgoing record rings whereby signals are simultaneously transmitted to said line and to said printing mechanisms and means comprising segments of said local ring for operating said printing mechanism of one channel while signals of another channel are being distributed to another of said printing mechanisms.

In testimony whereof we affix our signatures.

RAY HOOVER.
ROBERT F. DIRKES.