

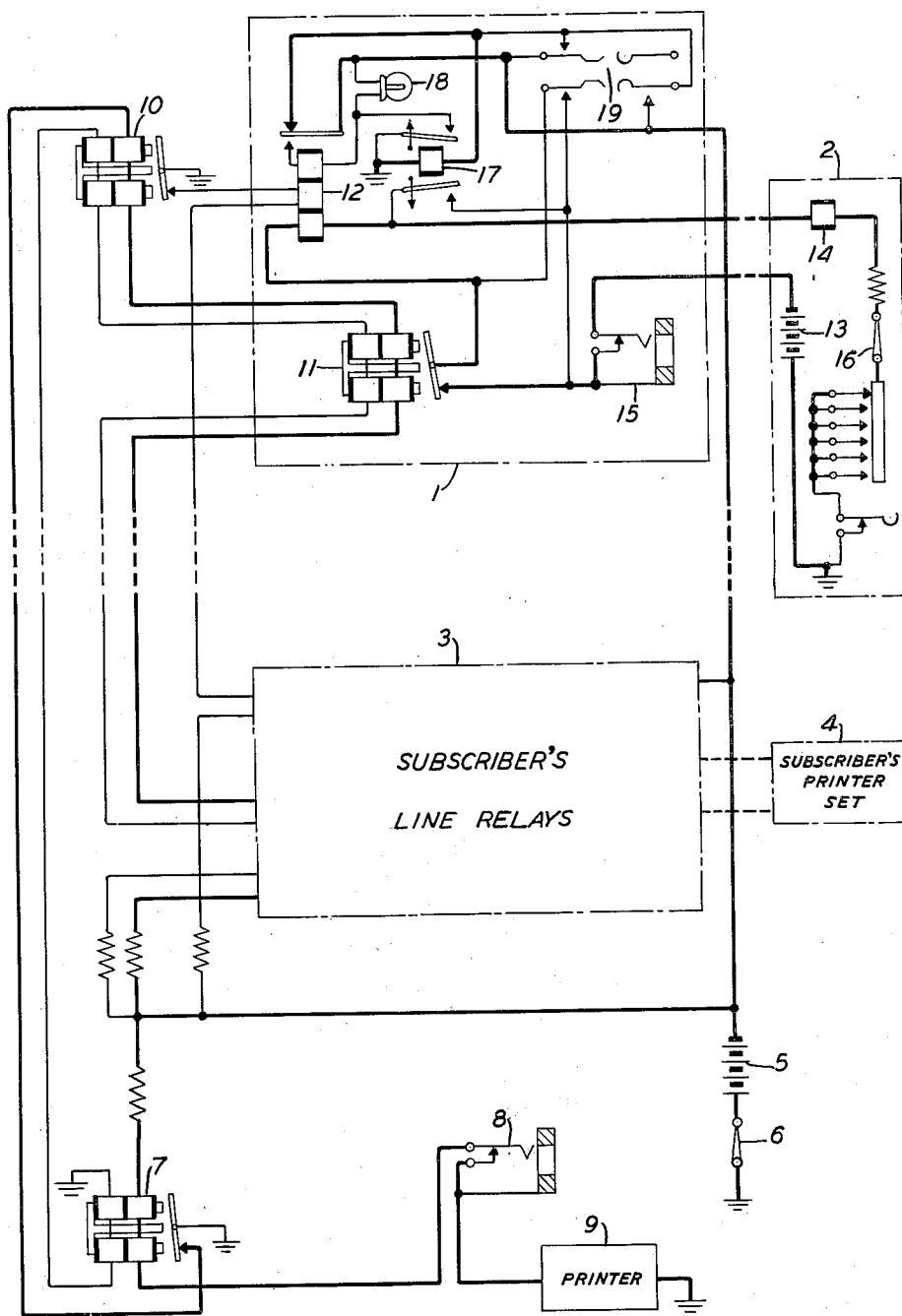
June 27, 1933.

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1,915,366

TELEGRAPH SWITCHING SYSTEM

Filed Jan. 30, 1932



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TELEGRAPH SWITCHING SYSTEM

Application filed January 30, 1932. Serial No. 539,840.

This invention relates to printing telegraph switching systems of the type wherein a central station is adapted to transmit messages simultaneously to a plurality of printer stations connected thereto. Systems of this type usually comprise a central switchboard having one or more printer transmitter sets and associated therewith printing telegraph stations located at a distance from the switchboard and individually connected thereto by transmission lines. The simultaneous transmission of signals to a plurality of printer stations connected to the system, commonly known as broadcasting, is usually effected by the operation of a key at the switchboard which automatically associates each printer station with a special broadcast printer set. Several such arrangements are disclosed in G. S. Vernam Patents 1,762,252, June 10, 1930 and 1,798,235, March 31, 1931, respectively, and in Patent 1,642,037 to Lomax September 13, 1927.

According to the arrangements heretofore employed, a printer station may signal the operator at the switchboard for disconnection from the broadcast circuit while still receiving broadcast messages. This disconnection would then be effected by the actuation of one or more switching devices at the switchboard.

It has been found, however, that for certain business organizations, it is often desirable in a telegraph system provided with the broadcasting feature, that a particular station receiving the broadcast signals be able to disassociate itself from the circuit and automatically to inform the operator at the switchboard of this action. Provided that this could be done, it would consequently be advantageous for the switchboard operator to be able to restore the disabled printer station to the receptive condition without the assistance of the subscriber.

One of the features of this invention enables a printer station connected to the switchboard to disassociate itself from the broadcasting circuit.

Another feature enables the operator at the switchboard to restore the disabled print-

er station for receiving the broadcast signals.

The preferred embodiment of this invention is a radial telegraph switching system comprising a switchboard and a plurality of printer stations connected thereto by means of two-wire lines. Serially connected in said lines and located at the switchboard are jacks which permit the insertion of a printer set for individual communication between a printer station and the switchboard. At the switchboard are circuit means which enable the operator to broadcast signals to all stations connected to the system. Lamp indicators are provided for informing the operator of the disconnection of a station circuit from the broadcasting arrangement. Associated with each line is a switching device for restoring the station circuit for the reception of broadcast signals.

The line relays and subsidiary apparatus for the subscribers' printer sets of a broadcasting system are located on a central switchboard.

In the single figure of the drawing, the switchboard relays and apparatus shown at 1 are associated with the subscriber's printer set represented by 2. A similar arrangement of switchboard relays and apparatus is indicated at 3 for another subscriber's printer set 4. Any convenient number of printer sets may be associated with the broadcasting system, and their respective line relays can be placed on the switchboard between relay groups 1 and 3.

The broadcasting circuit is represented as being in its normal condition for the transmission of signals by the "open and close" method, that is, by interrupting continuous current of a given polarity. In order to conserve the battery 5, the switch 6 may be opened during periods of non-transmission. Under normal conditions, current from battery 5 passes through relay 7 and jack 8 to the broadcasting printer 9. The purpose of jack 8 is to provide for the use of an auxiliary printer in case printer 9 becomes disabled. Interruptions of this current by the printer 9 actuate relay 7 which, since it is polarized by another winding carrying cur-

rent from battery 5, causes corresponding interruptions of the marking current, also from battery 5, in the broadcasting loop. These last interruptions cause the actuation of relays 10 and 11 which are polarized the same as relay 7. When relay 10 is in its normal condition, as is shown in the drawing, a biasing current from battery 5 flows through windings of differential relay 12. Each set of subscribers' line relays, as is indicated in the drawing, contains relays corresponding to relays 11 and 12 and are operated in a similar manner. Operation of relay 11, causes interruptions of the marking current from battery 13 in the subscriber's loop. This marking current passes through differential relay 12 to the subscriber's receiving relay 14. Jack 15 is introduced into that part of the subscriber's loop that is located on the switchboard in order to provide for the insertion of a printer for individual communication between the switchboard operator and a subscriber.

Under normal conditions, the effect on differential relay 12 of biasing current from battery 5 is neutralized by marking current from battery 13 thus leaving relay 12 unoperated. This allows control current from battery 5 to flow through the armature and top contact of relay 12 to operate slow-release relay 17.

To effect disassociation from the broadcast circuit, the subscriber momentarily operates switch 16 to an open position. This removes from differential relay 12 the influence of battery 13 thus permitting biasing current from battery 5 to operate relay 12. The operation of relay 12 removes the influence of battery 5 from relay 17 thereby causing relay 17 to become unoperated. The operation of relay 12 also allows the control current from battery 5 to now flow through the armature and bottom contact of relay 12 and subsequently through the top contact and upper armature of relay 17 to ground. At the same time, a parallel path is provided for the control current from battery 5 through signal lamp 18 to the top contact and upper armature of relay 17 to ground. The release of relay 17 also causes its lower armature to fall down on the bottom contact thus completing a short-circuit across the subscriber's loop. This short-circuit effectively prevents transmission of broadcast signals as it is tantamount to cutting out relays 11 and 12 from the subscriber's loop. It can readily be seen that it is advisable that relay 17 be of the slow-release type as an ordinary relay might be apt to be operated by a false disconnect signal, such as that caused by a long open period. Switch 16 may also be open during periods of non-transmission in order to conserve battery 13.

When the switchboard operator wishes to restore the disabled printer station to the

receptive condition, key switch 19 is moved to the release position at the right. This allows control current from battery 5 to flow through the lower right contact of switch 19 to energize relay 17. When relay 17 is operated, the bottom armature removes the short-circuit from the subscriber's loop, restoring it to its normal condition. At the same time, the top armature opens the circuit through relay 12 causing the armature of relay 12 to connect with the top contact. The operation of relay 17 also causes signal lamp 18 to become extinguished. Control current from battery 5 is now able to follow its normal path through the armature and top contact of relay 12 to relay 17. Thus, when switch 19 is subsequently released to the neutral position, relay 17 remains operated and the circuit is left in its normal condition.

Under certain conditions, it may be desirable that the subscriber remain disconnected for a longer length of time. Accordingly, instead of moving switch 19 to release position, it is moved to the hold position at the left. Control current from battery 5 now follows practically the same path to operate relay 17 that it followed when switch 19 was in the release position. However, the lower left contact of switch 19 completes an auxiliary short-circuit across the subscriber's loop. Broadcasting to station 2 cannot now take place because relay 11 is cut out of the subscriber's loop. When it is desired to return the circuit to its normal condition, switch 19 is moved to its neutral position. This causes the lower left contact to open the auxiliary short-circuit and reinstate relay 11 into the subscriber's loop.

In case the switchboard operator wishes to hold individual communication with station 2, switch 19 is moved to the hold position. Control current from battery 5 is thus provided with a by-path but has no additional effect on circuit conditions. However, the lower left contact of switch 19 closes the auxiliary short-circuit across the subscriber's loop and cuts out relay 11 as has been described. The operator can now insert another printer into the subscriber's loop by means of jack 15 and carry on individual communication.

What is claimed is:

1. A communication broadcasting system having a switchboard, a plurality of stations connectable thereto, and instrumentalities at the switchboard for disassociating a station from the broadcasting circuit, said instrumentalities being operated by the subscriber at the particular station desiring to be disassociated.

2. A communication broadcasting system having a switchboard, a plurality of stations connectable thereto by telegraph lines, instrumentalities at the switchboard for disas-

sociating a station from the broadcasting system, said instrumentalities operating in response to a change in the condition of any of the telegraph lines, and connecting means whereby the switchboard operator may reassociate a disassociated station with the broadcasting system.

3. In a communication broadcasting system, a central switchboard, a plurality of stations connectable thereto, and instrumentalities at the switchboard for disassociating a station therefrom and for lighting a signal lamp to notify the switchboard operator of the disassociation, said instrumentalities being responsive to control means at the particular station desiring to be disconnected.

4. In a communication system, a switchboard having a circuit for broadcasting to a plurality of stations, instrumentalities at the switchboard for disassociating a station from the broadcasting circuit and for lighting a signal lamp at the switchboard as an indication of the disassociation, said instrumentalities being operated in response to a disconnect signal transmitted from the particular station desiring to be disassociated, and connecting means at the switchboard for restoring a disassociated station to the broadcast receptive condition without the assistance of the subscriber.

5. A communication switching system having a central switchboard, a plurality of stations connectable thereto, instrumentalities at the central switchboard for disassociating a station from the central switchboard and for lighting a signal lamp at the switchboard as an indication of the disassociation, said instrumentalities being operated by the subscriber at the particular station desiring to be disassociated, and means whereby the switchboard operator may extinguish the lamp without restoring the disassociated station to the broadcast receptive condition.

6. In combination, a communication broadcasting system adapted to broadcast signals from a single broadcasting station to a plurality of subscribers' stations over circuits extending from a central switchboard, instrumentalities at the switchboard for the substitution of an auxiliary transmitting station for the broadcasting station, and switching means for disassociating a subscriber's station from the broadcasting system, said switching means operating in response to a cessation in the flow of current in the subscriber's loop.

7. A telegraph broadcasting system having a central station from which telegraph messages are broadcast, said central station including a central switchboard, a plurality of subscribers' stations each including a printing telegraph set for connection by telegraph lines to the switchboard to receive said messages, and instrumentalities at the switchboard for disassociating a station

from the broadcasting circuit, said instrumentalities being operated by the subscriber at the particular station desiring to be disassociated.

8. In a telegraph system, a central station from which telegraph messages are broadcast, said central station including a central switchboard having a circuit for broadcasting to a plurality of subscribers' stations each including a printing telegraph set for connection by telegraph lines to the switchboard to receive said messages, instrumentalities at the switchboard for disassociating a station from the broadcasting circuit and for lighting a signal lamp at the switchboard as an indication of the disassociation, said instrumentalities being operated in response to a disconnect signal transmitted from the particular station desiring to be disassociated, and connecting means at the switchboard for restoring a disassociated station to the broadcast receptive condition without the assistance of the subscriber.

9. In combination, a telegraph broadcasting system adapted to broadcast signals from a single broadcasting station to a plurality of subscribers' stations over circuits extending from a central switchboard at the broadcasting station, each subscriber's station including a printing telegraph set for connection by means of loops of telegraph lines from the subscribers' stations to the broadcasting station to receive said signals, instrumentalities at the switchboard for the substitution of an auxiliary transmitting station for the broadcasting station and switching means for disassociating a subscriber's station from the broadcasting system, said switching means operating in response to a cessation in the flow of current in the subscriber's loop.

In witness whereof I hereunto subscribe my name this 29th day of January, 1932.

FULLERTON S. KINKEAD.