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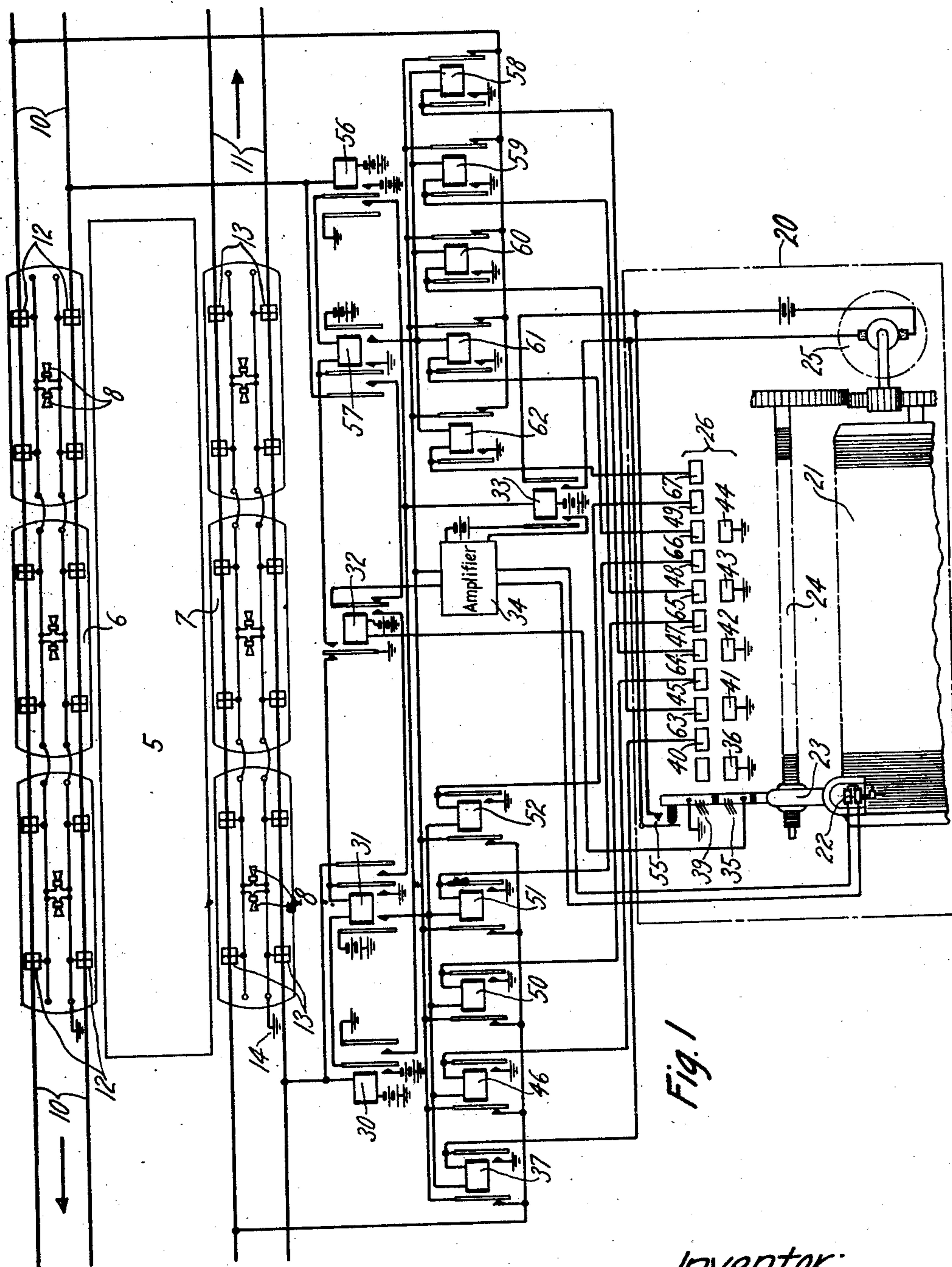
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A. J. EAVES

TRAIN ANNOUNCING SYSTEM

Filed June 12, 1925

2 Sheets-Sheet 1



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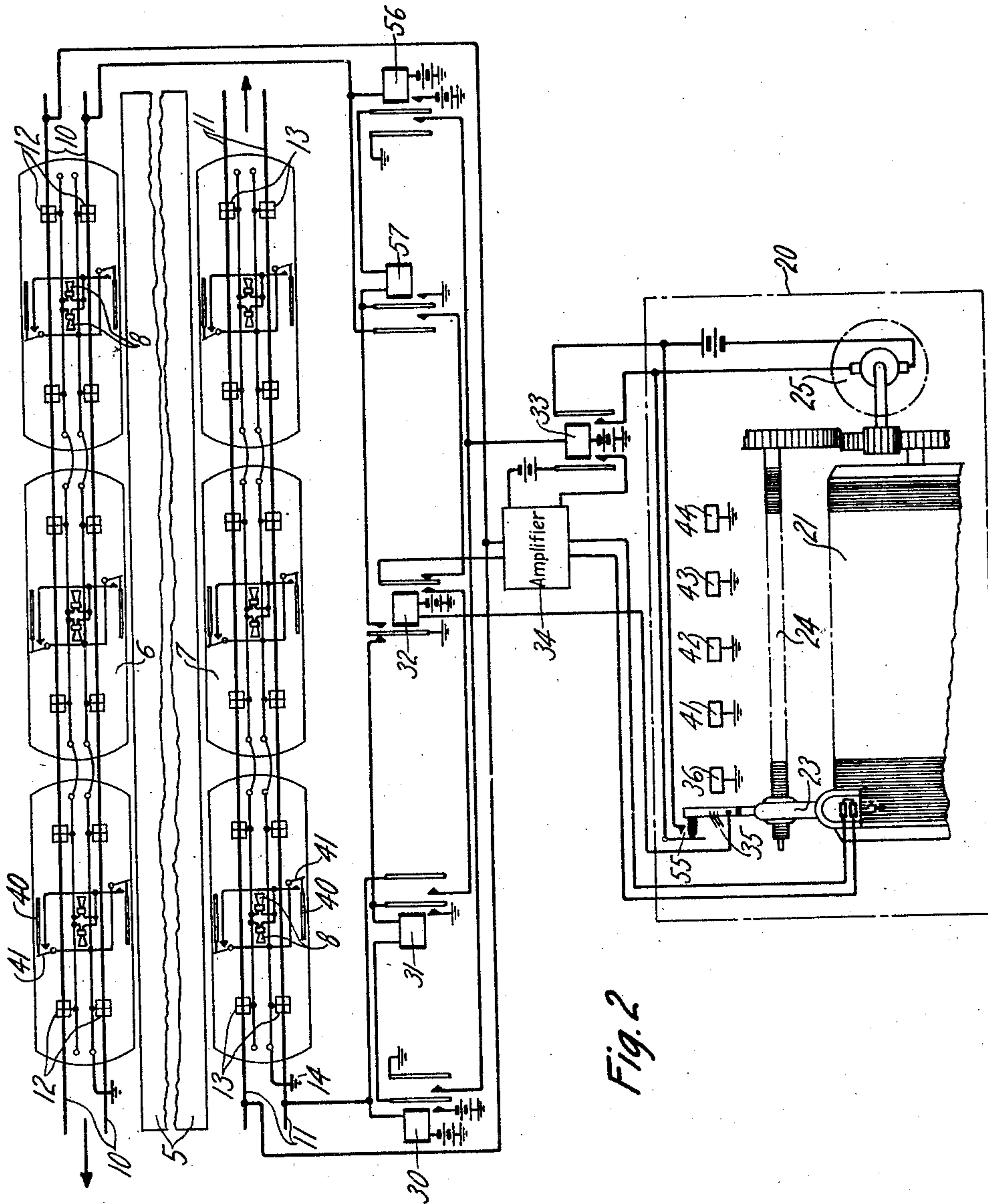
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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TRAIN-ANNOUNCING SYSTEM.

Application filed June 12, 1925. Serial No. 36,805.

This invention relates to train announcing systems and more particularly to systems for authority announcing in trains going in opposite directions to and from the same station.

An object of this invention is to provide a train announcing system that is entirely automatic in its actions, under the control of the trains themselves and functions accurately and efficiently to give the proper announcements in trains, when two trains are passing through the same station in opposite directions at the same time; when two trains are standing at a station, and when but a single train is approaching a station, standing thereat or departing therefrom.

To attain this and other objects of the invention, there is provided in accordance with one feature thereof, means whereby announcements are made alternately to two trains going through a station at the same time.

Another feature of the invention resides in the provision of means whereby partial announcements to a train are prevented.

Another feature is the provision of means whereby the announcement for each train is repeated a definite number of times.

Another feature of the invention is the provision of means whereby an announcement in a train may begin when the train approaching a station is at a certain distance from the station and continue until the train has departed a certain distance from the station or whereby announcements are made only while a train is standing at a station with its doors open.

Referring now to the drawings, Fig. 1 illustrates the invention arranged so that announcement may be made for a certain period before the trains reach the station and continue until the trains have departed a certain distance from the station while Fig. 2 shows a portion of this system so arranged that announcements may be made only while trains are standing at a station with the doors open.

Referring to Fig. 1, 5 indicates a station platform where 6 and 7 respectively represent trains at the station with arrows indicating the directions in which they are traveling. 8 indicates the usual loud speaking receivers or similar apparatus in the trains by which announcements are made to the

passengers. Pairs of conductors 10 and 11 represent trolley wires extending for a short distance beyond each end of the platform 5 while 12 and 13 represent contact brushes or shoes serving as contacting means between the receiving apparatus and the trolley wires. In the box 20 is shown diagrammatically a phonograph apparatus of the usual type having a cylindrical record 21 on which sound variations representing the train announcements are recorded. A reproducer 22 is shown associated with means for moving it over the record such means being represented by a carriage 23, screw 24 and the motor 25. Two contact brushes 35 and 39 attached to the carriage 23 are adapted to wipe over two groups of contact segments 26 as the reproducer moves over the record from one end to the other or from left to right. It should be understood that this part of the equipment enclosed in box 20 may be any well known apparatus for reproducing speech, such as an ordinary cylinder record Edison talking machine or the like. The remaining apparatus shown in Fig. 1, consists of the relays and circuits therefor arranged in accordance with this invention to connect in the reproducer 22 with the receivers 8 in the train at the proper times.

The operation of this particular arrangement of the invention will now be described by tracing the automatic functions produced by the trains as they approach and leave the station platform 5. If it is assumed, then, that for example, train 7 is approaching station 5, as soon as the brushes 13 on the first car come in contact with the trolley wires 11, a circuit will be closed as follows: battery, winding of relay 30, one of the trolley wires 11, a brush 13 to ground at 14. This circuit causes the operation of relay 30 which in turn closes an energizing circuit for relay 31 as follows: battery, inner right-hand armature and front contact of relay 30, winding of relay 31, left-hand armature and back contact of relay 32 to ground. Operation of relay 30 also closes an obvious energizing circuit to relay 33 at its outer right-hand armature and front contact. It will be noted that the operation of relay 33 closes the energizing circuit for motor 25 which now starts the phonograph apparatus. The operation of relay 33 also closes the usual battery supply circuits for an

amplifier circuit arrangement indicated by a box 34. This amplifier circuit has not been illustrated in detail as any well known type for amplifying speech may be used. It will be noted that the input circuit from the amplifier 34 is connected directly to the reproducer 22 while the output circuit may be connected to the receivers 8 as will hereinafter be described. The starting of motor 24 moves the reproducer 22 over the record 21 and when the brush 35 makes contact with segment 36, a circuit will be closed for the operation of relay 32 from battery, winding of relay 32, brush 35, segment 36 to ground. This causes the operation of relay 32 and the output circuit of amplifier 34 is now connected across the trolley wires 11 to the receivers 8 as follows: from one side of the output circuit through the right-hand armature and front contact of relay 32, outer right-hand armature and front contact of relay 31, the lower trolley wire 11, brushes 13, receivers 8, the upper brushes 13 and trolley wire 11, left-hand armature and back contact of relay 37 to the other side of the output circuit of amplifier 34. As the reproducer 22 now travels over record 21 for the distance represented by the length of the segment 36, an announcement recorded on the corresponding portion of the record is transmitted therefrom to the passengers in train 7 and when the brush 35 leaves segment 36 this announcement is at an end and a circuit is then closed for the operation of relay 37 as brush 39 has now come in contact with segment 40 the circuit for this relay is as follows: battery, left-hand armature and front contact of relay 31, winding of relay 37, segment 40, brush 39 to ground. Relay 37 in operating provides a locking circuit for itself to ground at its right-hand armature and front contact independent of the ground at segment 40. While brush 39 passes over segment 40, no announcement is made in train 7 as relay 32 is released when brush 35 leaves segment 36. During the period of travel of brush 39 over segment 40 an announcement would have been made in train 6 had it been in a position where its brushes 12 contact with trolley wires 10. The operations of the system for announcing in train 6 will be described later.

Returning now to the announcing in train 7, as brush 39 leaves segment 40, brush 35 will make contact with segment 41 and the circuit for relay 32 will again be closed through the segment 41 so that a connection will again be established between reproducer 22 and receivers 8 and the announcements on record 21 are so arranged that at this time the same announcement as was made when the brush 35 passed over segment 36 will be repeated to the passengers on train 7. Also the arrangement is such that as the brush 35 advances further this announcement will be repeated each time the brush passes over the segments 42, 43, and 44. It will be noted that when brush 39 comes into contact with segment 45, relay 46 will be energized and locked to battery at the left-hand armature and front contact of relay 31 and when this brush 39 comes in contact successively with segments 47, 48, and 49, relays 50, 51, and 52 will be respectively energized and locked to battery at relay 31. Therefore, when the last relay 52 is energized one side of the connection from the output circuit of amplifier 34 to the trolley wires 11 will be broken and no further announcements can be made from reproducer 22 to the receivers 8 in train 7. It will be noted that relays 37, 46, 50, 51, and 52 determine the number of announcements to be made to the trains arriving at a station. In this case five announcements are made. The number of announcements can be increased or decreased by increasing or decreasing the number of such relays and their corresponding segments which connect with brush 39. Therefore if a train stands at the station for a longer period than that consumed by the predetermined number of announcements there will be no repetition of announcements.

As the brushes 13 on the last car of train 7 leave the trolley wires 11, relay 30 will be released, and the release of this relay causes also the release of relays 31 and 33, relay 31 opening the locking circuits for relays 37, 46, 50, 51, and 52, while the release of relay 30 opens the circuit for relay 33, which in turn opens the operating circuits for motor 34 and amplifier 34. The circuit for motor 25 is however still closed through the contacts 55 which are arranged to be closed the moment the reproducer 22 leaves the normal position and the motor will therefore continue to operate the phonograph in any well known manner to return the carriage 23, reproducer 22 and brushes 35 and 39 to normal position at which time the contacts 55 are opened for example by the carriage 23 or in any other suitable manner to stop the motor.

If instead of train 7 passing through the station, train 6 had passed through the station the operations for announcing in this train would have been practically identical with the operations described above for announcing in train 7 except that instead of relays 30 and 31 being operated, relays 56 and 57 would have been similarly operated and announcements for this train would take place as brush 35 passed between the segments 36, 41, 42, 43, and 44 and the locking relays 58, 59, 60, 61, and 62 would have operated when the brush 39 passed over segments 63, 64, 65, 66, and 67 and when relay 62 operated the one side of the output circuit to the trolley wires 10 would have been broken at the right-hand armature and

back contact of this relay to discontinue the announcing.

It will be noted that relay 32 when operated extends one side of the output circuit of amplifier 34 to the trolley wires 11 and when it is released this side of the output circuit is extended to the trolley wires 10. In this manner in case both trains 6 and 7 are approaching or leaving the station and having their brushes 12 and 13 connected respectively to the trolley wires 10 and 11, announcements will be made alternately to the two trains, that is, announcements for train 7 will be made while the reproducer 22 is in a position where brush 35 makes contact with segments 36, 41, 42, 43, and 44 while announcements in train 6 will be made while the reproducer is in a position where brush 35 is passing between these segments.

In case one of the trains comes in contact with its trolley wires while the other train has been in contact with its trolley wires for a sufficient period to receive the same announcements a number of times, say twice or three times, it would seem that the second train would only receive one or two announcements as the reproducer is already some distance across the record, but this is not the case as the relays 37, 46, 50, 51, 52, 58, 59, 60, 61, and 62 are each provided with a connection to their left-hand armature and back contact for one side of the output circuit so that, for example, if brushes 35 and 39 are passing over segments 43 and 65 at the time train 6 first makes contact with its trolley wires 10, it will be seen that relay 32 is energized and relays 56 and 57 will therefore be operated, that is relay 57 will operate from the ground at the left-hand armature and front contact of relay 32. As soon as relay 57 is energized, relay 60 will become energized through the ground from brush 39 through segment 65. Therefore, when brush 35 leaves segment 43 and relay 32 deenergizes, a circuit will be closed from reproducer 22 to the receivers 8 as follows: one side of the output circuit of amplifier 34, right-hand armature and back contact of relay 32, outer left-hand armature and front contact of relay 57 to the trolley wires 10, brushes 12 and receivers 8 to the right-hand armature and back contact of relay 61 to the other side of the output circuit. Train 6 will, therefore, receive its first announcement while the brush 35 travels between the segments 43 and 44. Then when brush 35 comes into contact with segment 44 relay 32 is again energized and the connection from the reproducer 22 to the receivers 8 in train 7 will be completed and an announcement in this train will now be made. It will be thus seen that trains 6 and 7 will receive announcements alternately and ordinarily the phonograph would stop when brush 39 comes into contact with segment 67, return

to normal, open the contact 55 and stop at this point, but due to the fact that relays 58 and 59 have not been energized and that relays 56 and 57 are still operated, relay 33 remains operated and the circuit for the motor magnet 25 will still be closed. The reproducer and brushes will, therefore, commence to travel a second time over the record and segments so that train 6 will receive three more announcements, making a total of five announcements, until relays 58, 59 and 60 are energized by the brush 39 traveling over segments 63 and 64 and 65. However, as soon as relay 60 is energized the connection between the reproducer 22 and the receivers 8 will be opened at the right-hand armature and back contact of this relay and no more announcements will be made to this train. It will be noted, however, that when the reproducer reached the end of its first journey across the record, the operation of relay 52 when brush 39 passes over segment 49, caused the opening of the connection between the reproducer and the receivers 8 on train 7 so that no further announcements could therefore be made for this train even though the reproducer travels over the record a second time. In this manner no matter when a train makes contact with its respective trolley wires, no more than the required number of announcements will be made for each train even though both trains may be in contact with their trolley wires at the same time and thereby cause the reproducer to travel over the record twice in succession.

It will also be observed that if the brushes of a train come into contact with their trolley wires at a time when the brushes 35 and 39 and the reproducer are in a position where a portion of an announcement is being taken off by the reproducer, the remaining portion of the announcement will not be transmitted in the train as the circuit connection between the reproducer and the receivers will not be closed until the brush 39 reaches a succeeding segment. For example, if train 6 should approach the station 5 and the brushes 12 come into contact with trolley wires 10 when the reproducer is between segments 42 and 43, it will be seen that relay 32 will then be in operated position so that the relay 57 will not be energized from the ground at the left-hand armature of this relay until the brush 35 has come into contact with segment 43 and consequently the reproducer passes through a portion on the record 21 where an announcement for train 6 is recorded and an announcement for this train will therefore not start until brush 35 leaves segment 43. Consequently, no portion of an announcement will at any time be transmitted to a train but announcing will begin at the beginning of a period for an announcement.

Fig. 2 shows an arrangement of the invention where the announcing will only take place while the trains 6 and 7 are standing still at the station 5 as the circuits for the receivers 8 will only be closed across the brushes 13 or 12 when the doors 40 are open and the contacts 41 closed. In this case the trolley wires 10 and 11 need only be of sufficient length to have the brushes 12 and 13 make contact therewith when the trains are standing still at the station. In this case relays for opening the circuit connections between the reproducer 22 and the receivers 8 will not be necessary and consequently brush 39 and the segments controlled thereby will be eliminated and the one side of the output circuit for amplifier 34 is therefore connected directly to the trolley wires 10 and 11 instead of through the left-hand armatures and back contacts of relay 37, 46, 50, 51, 52, 58, 59, 60, 61, 62. Otherwise the circuits for the invention applied in this manner are identical with the circuits described in connection with Fig. 1.

What is claimed is:

1. In a train announcing system, trains and a station, and means for announcing in a train, said means operating automatically when said train, in approaching the station, is at a certain distance therefrom and automatically ceasing to operate when said train, in departing from the station, is at a certain distance therefrom.

2. In a train announcing system, trains and a station, and means for announcing in two trains alternately, said means operating automatically when said trains, in approaching the station, are at a certain distance therefrom, and automatically ceasing to operate when said trains, in departing from the station, are at a certain distance therefrom.

3. In a train announcing system, trains and a station, and means for repeating a certain announcement a certain number of times in a train, said means operating automatically to begin the announcing when said train, in approaching the station, is at a certain distance therefrom, and operating automatically to cease the announcing when the announcements have been repeated said certain number of times.

4. In a train announcing system, trains and a station, and means for repeating a certain announcement a certain number of times in a train, said means operating automatically to begin the announcing when said train, in approaching the station, is at a certain distance therefrom and operating automatically to cease announcing when the announcements have been repeated said certain number of times or when said train, in departing from the station, is at a certain distance therefrom.

5. In a train announcing system, trains

and a station, and means for repeating one announcement a number of times in one train alternately with the repeating of another announcement a number of times in another train, said means being automatically operated when said trains, in approaching the station, are at a certain distance therefrom, and arranged to automatically cease to operate when the particular announcement for each train has been repeated the required number of times.

6. In a train announcing system, trains and a station, means for repeating one announcement a number of times in one train alternately with the repeating of another announcement a number of times in another train, said means being automatically operated when said trains, in approaching the station, are at a certain distance therefrom, and arranged to automatically cease to operate when the particular announcement for each train has been repeated the required number of times, and means for preventing a portion of any announcement to be made in a train when said first mentioned means is actuated.

7. In a train announcing system, trains and a station, receiving apparatus in the trains, an announcement reproducing device at the station, and means for automatically associating the reproducing device with the receiving apparatus in a train and start said device to reproduce an announcement in said train when said train, in approaching the station, is at a certain distance therefrom and for automatically disassociating the reproducing device from said receiving apparatus to stop the announcing in said train when said train, in departing from the station, is at a certain distance therefrom.

8. In a train announcing system, trains and a station, receiving apparatus in the trains, an announcement reproducing device at the station including means for reproducing two different kinds of announcements alternately a definite number of times, means for automatically associating the reproducing device with the receiving apparatus in two trains to start the repeating of announcements of one kind in one train and to start the repeating of announcements of another kind in the other train when said trains, in approaching the station, are at a certain distance therefrom, and for automatically disassociating said reproducing device from the receiving apparatus in the trains when the corresponding announcements have been repeated said definite number of times.

9. In a train announcing system, trains and a station, receiving apparatus in the trains, an announcement reproducing device at the station including means for reproducing two different kinds of announcements alternately a definite number of times.

means for automatically associating the reproducing device with the receiving apparatus in two trains to start the repeating of announcements of one kind in one train and
5 to start the repeating of announcements of another kind in the other train when said trains, in approaching the station, are at a certain distance therefrom, and for automatically disassociating said reproducing
10 device from the receiving apparatus in the trains when the corresponding announcements have been repeated said definite number of times, and means for preventing a portion of any announcement from being

transmitted to the receiving apparatus in 15 any one of the trains.

10. In a train announcing system, trains and a station, and means for repeating one announcement a number of times in one train alternately with the repeating of an- 20 other announcement a number of times in another train, said means being automatically operated when said trains are at a station.

In witness whereof, I hereunto subscribe 25 my name this 11th day of June, A. D. 1925.

AUGUSTUS J. EAVES.