





# UNITED STATES PATENT OFFICE.

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## PARTY-LINE LOCK-OUT.

No. 845,328.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed January 27, 1906. Serial No. 298,272.

*To all whom it may concern:*

Be it known that I, MARK P. BOONE, a citizen of the United States, residing at Peru, in the county of Miami and State of Indiana, have invented certain new and useful Improvements in Party-Line Lock-Outs, of which the following is a specification.

In Patent No. 798,561, issued to me August 29, 1905, means is shown for preventing members of a party-line system of telephones from cutting into the line when it is in use by any member; but the arrangement is such that when intercommunication between two members of a party-line service is desired there may be considerable noise in the receiving-circuit of the calling-phone during the time of establishment of the desired connections.

The object of my present invention is to provide means by which the desired connection of parties may be obtained which shall be more simple than that disclosed in my prior patent and to also provide means for permitting intercommunication of such character as to be free from noise during the time of establishment of connections.

The accompanying drawing illustrates diagrammatically a two-party line equipped with my improvements.

In the drawing, 10 indicates the common battery at central, the positive side being grounded at G in the usual and well-known manner.

T and S indicate the tip and sleeve sides, respectively, of the main line from exchange extending from central to the party group of telephones, and t and s indicate, respectively, the tip and sleeve side of the corresponding office-jack. The battery is connected to the line-wires T and S through suitable inductance or resistance coils I and I', respectively, which should be equal for satisfactory service.

The two telephones X and Y are connected to the line-wires T and S in the usual way, each station having the usual terminals s', t', and g', terminal s' being connected by a wire 11 with main wire S, terminal t' being connected by a wire 12 to the main-line wire T, and terminal g' being connected by wire 13 with a ground G'. In the diagram terminal t' is connected to a spring terminal 15 through the transmitter 16 and the primary coil of

the induction-coil of the receiver 17 in the usual manner, and this terminal is held normally out of contact with a terminal 18 by the weight of the receiver on the receiver-hook 19. Terminal 18 is connected to terminal s' by a circuit 20, which consists in part of a normally closed switch 21, which may be manually opened by means of a lever 22. Bridging the switch 21 is a condenser 23, the purpose of which will appear.

Leading from the terminal s' is a wire 24, which is connected to one end of the coil of an electromagnet 25, the opposite end of said coil being connected by a wire 26 with the ground-terminal g' of the station. Arranged adjacent magnet 25 is a detent-arm 27, which when in its position nearest the electromagnet lies in the path of movement of terminal 15, so that said terminal may not move into engagement with terminal 18, the general operation being similar to that shown in my patent already mentioned.

In practice I find that in a selective ringing system the alternating ringing-currents passing over the sleeve side of the main line are likely to cause a chattering of the detent-arms 27, and in order to prevent this I provide means controlled by the receiver-hook for normally holding the arm 27 in position to prevent movement of terminal 15, the arrangement being such, however, that so soon as the receiver is withdrawn from the hook the arm 27 will drop away from the path of movement of the terminal 15 unless the electromagnet 25 has been properly energized. For this purpose I provide the hook 19 with an arm 19', adapted to engage a shoulder 27', carried by the arm 27, the arrangement being such that when the hook 19 is in the position shown in the drawing by reason of the weight of the receiver arm 19' will engage shoulder 27' and hold the arm 27 up tightly against the pole of the magnet 25. Arm 19 is also provided with an arm 19'', adapted to engage a shoulder 15'' formed on an extension of terminal 15, said shoulder being substantially concentric with the pivot of hook 19, so that the initial movement of hook 19 in an upward direction, which will permit arm 27 to drop, will retain terminal 15 until after arm 27 has dropped out of the path of movement of the terminal 15.



As a convenient means for indicating when the line is busy I provide the terminal 15 with an extension which carries at its lower end a target 15' and provide an opening in the inclosing casing (not shown) which will disclose the target when it has been moved to the left, so that if a subscriber takes down his receiver and the target 15' fails to appear he will know that the line is busy.

In operation under normal conditions there will be no potential in the circuit between the terminal  $s'$  of any station and its ground  $g'$ . If subscriber Y, however, takes down his receiver, the detent-arm 27 of his station will immediately drop out of the path of movement of the adjacent terminal 15, and said terminal will come into contact with the adjacent terminal 18, thus establishing a circuit which will provide a potential in the main-line wires. Consequently when the operator plugs in, the sleeve sides of all stations of the party-line being connected with wire S in parallel through the coils of magnets 25 to the ground, there will therefore be a sufficient energization of the several magnets 25 to hold the detent-arms 27 in position to prevent movement of the corresponding terminals 15, so that if subscriber X should take down his receiver the corresponding detent-arm 27 would not be allowed to drop out of the path of movement of the corresponding terminal 15, and consequently no circuit could be established through the transmitter and receiver of station X. If subscriber Y, however, desires to communicate with subscriber X, he will notify central, and central will then instruct him to operate his lever 22, so as to open his switch 21. This will while open prevent the passage of direct currents, and all of the magnets 25 will consequently be deenergized, and the detent-arms 27 will be freed from their magnets 25 and held in place by the adjacent receiver-hook. Central will then call station X by any of the well-known systems of calling, and when subscriber X takes down his receiver the detent-arm 27 of his instrument will drop out of the path of movement of the terminal 15 thereof and permit an establishment of a talking-circuit through station X. When subscriber X talks through his transmitter, he will set up a pulsating current in the line through station Y, which will pass the condenser 23 of station Y, and consequently will energize the receiver of station Y, so that the calling subscriber Y will hear the answer of subscriber X. Thereupon he will release his lever 22, so as to reestablish the circuit through his switch 21, and thus energize all of the magnets 25 of the line and keeping all of the detent-arms 27, except those of his own station and that of the called subscriber X up into the paths of movement of the adjacent terminals 15, and thus prevent the cutting in of any other subscriber.

I claim as my invention—

1. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, and means normally controllable by the user for permitting engagement of said terminals, of electrically-controlled means for preventing contacting of said terminals, a switch in series with said terminals, and a condenser bridging said switch.

2. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, and means normally controllable by the user for permitting engagement of said terminals, of electrically-controlled means for preventing contacting of said terminals, a normally closed switch in series with said terminals, means for opening said normally closed switch, and a condenser bridging said switch.

3. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, a movable receiver-hook normally separating said terminals, an electromagnet connected with one side of the talking-circuit, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a switch in series with said terminals, and a condenser bridging said switch.

4. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, a movable receiver-hook normally separating said terminals, an electromagnet connected with one side of the talking-circuit, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a normally closed switch in series with said terminals, means for opening said normally closed switch, and a condenser bridging said switch.

5. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, of a movable receiver-hook normally separating said terminals, an electromagnet connected with one side of the talking-circuit, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a switch in series with said terminals, a condenser bridging said switch, and means for normally holding said detent-arm up to its magnet.

6. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, of a movable receiver-hook normally separating said terminals, an electromagnet connected with one side of the talking-circuit, a de



tent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a normally closed switch in series with said terminals, means for opening said normally closed switch, a condenser bridging said switch, and means for normally holding said detent-arm up to its magnet.

7. In a party-line telephone, the combination with the talking-circuit thereof consisting in part of a pair of separable terminals, of a movable receiver-hook normally separating said terminals, an electromagnet connected with one side of the talking-circuit, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a switch in series with said terminals, a condenser bridging said switch, and means carried by the receiver-hook to hold the detent up to the magnet.

8. In a party-line telephone, the combination with the talking-circuit thereof consisting in part of a pair of separable terminals, of a movable receiver-hook normally separating said terminals, an electromagnet connected with one side of the talking-circuit, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a normally closed switch in series with said terminals, means for opening said normally closed switch, a condenser bridging said switch, and means carried by the receiver-hook to hold the detent up to the magnet.

9. In a party-line telephone system, the combination with a central grounded battery and the main-line wires connected thereto, of a plurality of telephones connected to said main-line wires, each of said telephones comprising a talking-circuit consisting of a pair of separable terminals, means normally controllable by the user for permitting contacting of said terminals, a grounded electromagnet connected to the grounded side of the main line, means influenced by said magnet for preventing contacting of the separable terminals in the talking-circuit, a switch in series with said terminals, and a condenser bridging said switch.

10. In a party-line telephone system, the combination with a central grounded battery and the main-line wires connected thereto, of a plurality of telephones connected to said main-line wires, each of said telephones comprising a talking-circuit consisting of a pair of separable terminals, means normally controllable by the user for permitting contacting of said terminals, a grounded electromagnet connected to the grounded side of the main line, means influenced by said magnet for preventing contacting of the

separable terminals in the talking-circuit, a normally closed switch in series with said terminals, means for opening said normally closed switch, and a condenser bridging said switch.

11. In a party-line telephone system, the combination with a central grounded battery and the main-line wires connected thereto, of a plurality of telephones connected to said main-line wires, each of said telephones comprising a talking-circuit consisting of a pair of separable terminals, a movable receiver-hook normally separating said terminals, a grounded electromagnet connected to the grounded side of the main line, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a switch in series with said terminals, and a condenser bridging said switch.

12. In a party-line telephone system, the combination with a central grounded battery and the main-line wires connected thereto, of a plurality of telephones connected to said main-line wires, each of said telephones comprising a talking-circuit consisting of a pair of separable terminals, a movable receiver-hook normally separating said terminals, a grounded electromagnet connected to the grounded side of the main line, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a normally closed switch in series with said terminals, means for opening said normally closed switch, and a condenser bridging said switch.

13. In a party-line telephone system, the combination with a central grounded battery and the main-line wires connected thereto, of a plurality of telephones connected to said main-line wires, each of said telephones comprising a talking-circuit consisting of a pair of separable terminals, a movable receiver-hook normally separating said terminals, a grounded electromagnet connected to the grounded side of the main line, a detent-arm arranged within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a switch in series with said terminals, a condenser bridging said switch, and means controlled by the receiver-hook to hold the detent up to the magnet.

14. In a party-line telephone system, the combination with a central grounded battery and the main-line wires connected thereto, of a plurality of telephones connected to said main-line wires, each of said telephones comprising a talking-circuit consisting of a pair of separable terminals, a movable receiver-hook normally separating said terminals, a grounded electromagnet connected to the grounded side of the main line, a detent-arm arranged



within the influence of said magnet and having a portion adapted to prevent contacting of the separable terminals of the talking-circuit, a normally closed switch in series with said terminals, means for opening said normally closed switch, a condenser bridging said switch, and means controlled by the receiver-hook to hold the detent up to the magnet.

15. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, a receiver-hook engaging one of said terminals and normally holding the same separated an electromagnet, a detent-arm within the influence of said magnet for preventing engagement of said terminals when said arm is influenced by said magnet, and means controlled by the receiver-hook for holding the detent-arm against vibration.

16. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, a receiver-hook engaging one of said terminals and normally holding the same separated, an

electromagnet, a detent-arm within the influence of said magnet for preventing engagement of said terminals when said arm is influenced by said magnet, means controlled by the receiver-hook for holding the detent-arm against vibration, a switch in series with said terminal, and a condenser bridging said switch.

17. In a party-line telephone, the combination, with the talking-circuits thereof consisting in part of a pair of separable terminals, of electrically-controlled means for preventing contacting of said terminals, a receiver-hook, and means controlled by the receiver-hook for normally holding the electrically-controlled means in position to prevent contacting of said terminals.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 15th day of January, A. D. 1906.

MARK P. BOONE. [L. S.]

Witnesses:

HORTENSE P. BOONE,  
ARTHUR M. HOOD.