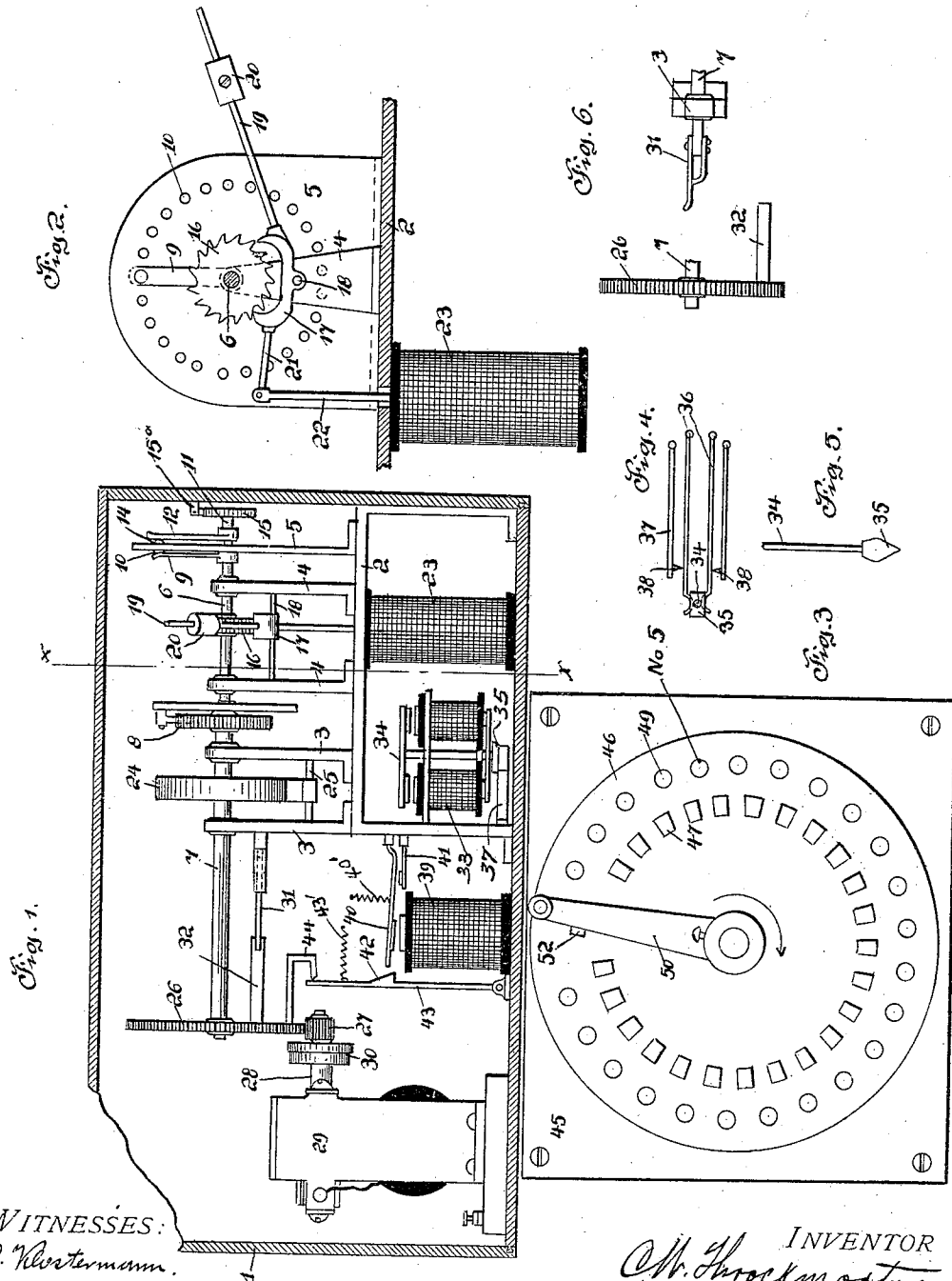


C. W. THROCKMORTON.
 LOCKOUT DEVICE FOR TELEPHONES.
 APPLICATION FILED MAR. 12, 1907.

946,287.

Patented Jan. 11, 1910.
 2 SHEETS—SHEET 1.



WITNESSES:
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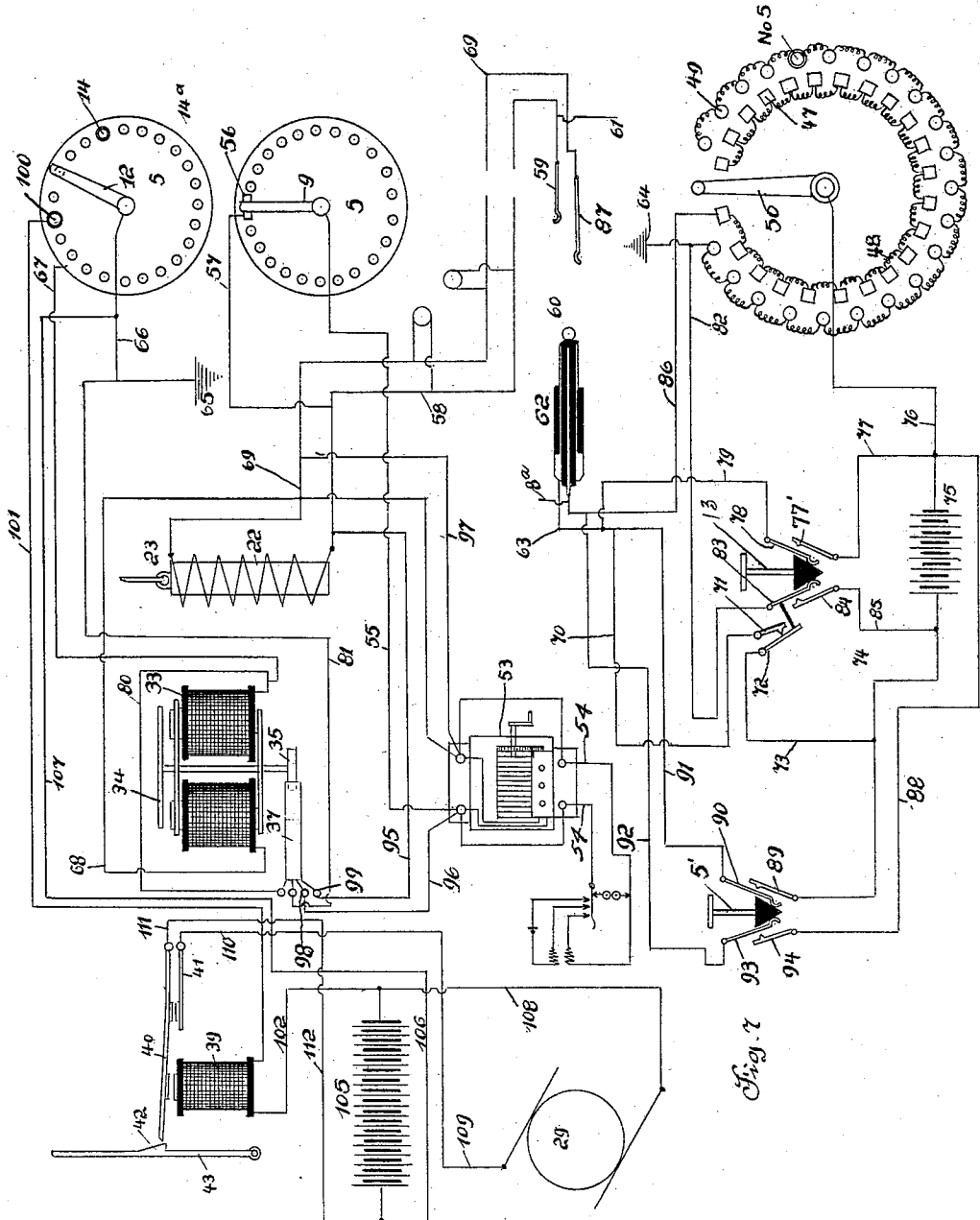
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UNITED STATES PATENT OFFICE.

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LOCK-OUT DEVICE FOR TELEPHONES.

946,287.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed March 12, 1907. Serial No. 361,996.

To all whom it may concern:

Be it known that I, CHARLES W. THROCKMORTON, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Lock-Out Devices for Telephones, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to lock-out devices for telephones, and the invention has for its object to provide a novel device for automatically controlling a party line of a telephone system, the device being actuated to lock-out other telephones, while a message is being transmitted or received over the party line by one or more telephones.

To this end, I have devised a lock-out device one part of which is located upon a telephone and another part at the central station of a telephone system. The operation of the device is controlled from the central station, and can be easily and quickly operated to "lock-in" a certain telephone or telephones, and lock-out the remaining telephones, thereby insuring an uninterrupted message being transmitted over a party line.

The detail construction of my improved lock-out device will be hereinafter more fully described and then specifically pointed out in the appended claims, and referring to the drawing forming part of this specification, like numerals of reference designate corresponding parts throughout the several views, in which:—

Figure 1 is a longitudinal sectional view of a box or casing carried by a telephone, illustrating the mechanism thereof in side elevation, Fig. 2 is a cross sectional view of a portion of the mechanism shown in Fig. 1, on an enlarged scale and taken on the line *x—x* of Fig. 1, Fig. 3 is a front elevation of the dial employed in connection with my improved apparatus and located at the central station of a telephone system, Fig. 4 is a diagrammatic view of an automatically operated switch used in connection with my improved device, Fig. 5 is a detail view of the lower end of an armature employed in connection with apparatus for operating said switch, Fig. 6 is a detail view of the spring held operating lever of the dial of the central station, and Fig. 7 is a diagrammatic view of my improved lock-out device illustrating the various electrical circuits.

In describing the operation of my improved lock-out device for telephones, reference will first be had to Figs. 1, 2, and 3, wherein I have illustrated the mechanical or structural elements of my invention, and then reference will be had principally to Fig. 7 of the drawing, wherein the electrical connections of these elements are illustrated, and the various circuits employed to accomplish a lock-out of all party lines except the one in use, will be described.

In the drawings, 1 designates a box or casing adapted to be secured to a telephone similar to a battery box, said box or casing being conveniently located upon a telephone whereby it will not interfere with the use of the same. In the box or casing 1 is mounted a bracket 2 carrying bearings 3 and 4, and a stationary dial 5. In the bearings 3 and 4 are mounted two separate and longitudinally alining shafts 6 and 7, which shafts 6 and 7 are connected by a ratchet mechanism 8. The shafts 6 and 7 are independently actuated, but at certain times are operated together through the medium of said ratchet mechanism 8. The shaft 6 extends through the stationary dial 5 and is provided upon the inner side of the dial 5 with a revoluble hand 9 adapted to contact with a plurality of circumferentially arranged contact blocks 10 carried by said dial. Upon the opposite side of the dial 5 is an adjustable indicator 12 carried by an extension shaft 11 rotatable with the shaft 6 but insulated therefrom, the indicator being adapted to engage stationary plugs 14 mounted in one of a plurality of plug openings 14^a of said dial. The shaft 11 is provided with a ratchet wheel 15, engaged by a pawl 15^a to prevent a rearward movement of the shaft while the spring 24 is being wound as hereinafter explained.

The shaft 6 between the bearings 4 is provided with an escapement wheel 16 and engaging said wheel is an escapement lever 17, fulcrumed between the bearings 4 upon a rod 18. One end of the escapement lever is provided with an arm 19 having an adjustable weight 20 thereon, while the opposite end of said escapement lever 17 is connected to the extension 21 of the core 22 (see Fig. 7) of a solenoid 23, said solenoid being situated within the box or casing 1 beneath the bracket 2.

Surrounding the shaft 7 between the brackets 3 is a helically wound band spring 24 one end of said spring being fixed to the

shaft 7, while the opposite end of said spring is fixed to the bearings 3 by a rod 25. Upon the inner end of the shaft 7 is mounted a gear wheel 26 meshing with a pinion wheel 27 adapted to be driven by the armature shaft 28 of a motor 29, said motor being located in the box or casing 1. A friction clutch 30 of a conventional form is interposed between the pinion 27 and the armature shaft 28, whereby after the spring 24 has been placed under tension, the armature shaft 28 will continue to revolve independently of the pinion 27. The motor 29 is simply employed to wind the spring 24, as will be hereinafter described.

To limit the movement of the wheel 26 I provide one of the bearings 3 with a pivoted spring held arm 31 adapted to swing in one direction while the spring is being placed under tension. Normally engaging said arm 31 is the free end of an extension 32 carried by the large gear wheel 26. In employing the spring arm 31 and the clutch 30 it will be observed that the spring 24 can be placed under tension and temporarily held under tension until it is gradually released by the escapement mechanism carried by the shaft 6.

The spring-held arm serves the purpose of a stop to the wheel 26 when it has completed one revolution in the operation of winding the spring 24. As the wheel 26 rotates the extension arm 32 thereon moves with the wheel, the latter being driven by the springs 24 which is released by the energizing of the solenoid 23 which pulls down the escapement 17. When the wheel 26 has completed one revolution it is started in the opposite direction by means of the motor 29 which is started by an automatic apparatus, hereafter described. When the gear 26 completes one full revolution it is stopped by arm 32 engaging the arm 31, which, as before stated, moves in one direction only, thereby stopping the wheel 26 which would otherwise move farther from the momentum of the armature 28 after the current has been shut off from the motor by the aforesaid automatic apparatus.

In the box or casing 1 beneath the bracket 2 is located a double polarized electromagnet or lock-out coil 33 having an armature 34 provided with a horizontal bar at its upper end and a horizontal bar near its lower end and being formed with a spear-shaped lower end 35, said spear-shaped end being employed to alternately make or break contact between the arms 36 of a switch 37, located beneath the double electromagnet 33, according to the circuit which is energized, as will be explained more completely hereafter. The contact arms 36 are adapted to engage contact points 38 forming part of the switch 37.

To control the operation of the motor 29, I locate within the box or casing an electro-

magnet 39 having a pivoted spring tensioned armature 40 adapted to make contact with a fixed contact arm 41 carried by the bracket 2, and a lug 42 carried by a spring held pivoted member 43, said pivoted member being normally held out of engagement with the armature 40 by an angular arm 44, carried by the large gear wheel 26 on the shaft 7.

The arm 43 is held in its normal position yieldably by a spring 43'. The armature 40 is not normally in contact with arm 41, but is held away therefrom by a spring indicated at 40', but when the magnet 39 is energized the arm 40 is pulled down and comes in contact with the arm 41, and at the same time the arm 43 is pulled over by the spring attached thereto and the arm 40 engages beneath the catch 42, on the arm 43. The motor 29 is then started by the current as hereinafter described, and rotates the wheel 26 one complete revolution, carrying the angular arm 44 with it. When the arm 44 has completed one revolution it engages the arm 43 disengaging it from the arm 40 and releasing the catch 42 thus allowing the arm 40 to again resume its normal position through the action of the spring 40'.

The mechanism just described is located in the box or casing of a telephone, and reference will now be had to that part of my device located at the central station of a telephone system.

The reference numeral 45 designates a plate of insulation which is secured to a suitable support. The plate 45 carries an annular metallic disk or dial 46 having a plurality of circumferentially arranged contact blocks 47, said blocks being suitably insulated from the disk 46 and connected together by wires 48 (see Fig. 7). Surrounding the insulated contact blocks 47 are a plurality of plug openings 49, said plug openings corresponding in number to the plug openings 14^a carried by the stationary dial 5. Revolvably mounted upon the disk or dial 46 is an arm 50 preferably held under tension by a suitable spring (not shown). The arm 50 is limited in its movement in one direction by a conventional form of stop 52, carried by the disk or dial 46. An ordinary telephone plug is adapted to be inserted in one of the plug openings 49, and the arm 50 is adapted to contact with said plug and also with the contact blocks 47 while approaching said plug.

Reference will now be had to Fig. 7 where the reference numeral 53 designates an ordinary telephone, which is in circuit by wires 54 with the talking and ringing circuit of a central telephone station. A circuit from the telephone 53 is normally through wire 55 to the hand 9 of the stationary dial 5 through contact block 56 carried by said dial, wire 57 to wire 58, which extends to the sleeve side 59 of a switch board jack 60 and connects with the ringing circuit

through wires 61. The sleeve side and tip side 62 of the switch board plug 60 connects by wires 8 and 63 with the operator's talking circuit.

5 When the operator desires to call a party, say station number 5, on the party line she first inserts her plug 60 into the jack of that line. The contact pin is then inserted into the fifth hole of the series 49 in the central station calling device. The lever arm 50 is then released. This arm passes over the contacts 47 closing the following circuit as each contact is passed—from battery 75 to wire 76, 50, 47, 48, 86, tip of plug 60, 59, 58, 15 solenoid 23, 69, 87 sleeve side of plug 63, 70, 71, 72, 73, 74 to the battery 75. This energizes the electromagnet 23 at each contact, causing the ratchet to release the spring pressed arms 9 and 12 rotating them step by step. At the first movement the normal telephone bridge is broken at 9, 56. At each step the electromagnet 33 at one of the substations is legged from the sleeve to ground through 68, 33, 67, dial 5, 14, 12, 66 to 65; 25 at the first station on the first step and so on in sequence. When the lever arm 50 reaches the fifth position, the contacts 12, 14, will thus be closed and the arm engaging the pin in the fifth hole of the series 59 will complete the following circuit—battery 75, 30 76, 50 to pin of 49, to ground 64, ground 65 at substation 66, 12, plug 14, 67, double electromagnet 33, 68, 69, sleeve side, 63, 70, 71, 72, 73, 74 back to negative side 75. The 35 magnet 33 is energized to close the contacts 36, 38 and completing the following bridge of the line—from tip side of line through 95, 99, 38, 36, 96, local set 97 to sleeve side. It will be apparent that the subscriber may 40 by removing his receiver bridge his telephone set on the main line and communicate with the operator. It will also be apparent that since all the subscribers have had their normal bridges opened at 9, 56 and through 45 contacts 36, 38 not being closed they will be locked out. When the conversation is completed and the operator desires to restore the system to normal she first presses the button 13 separating 71 and 72 and closing 50 83 and 84 and 78, 77'. This completes the following circuit—battery 75, 77, 77', 78, 79, 63, 69, 68, 33, 80, 37, through the now closed upper contacts 36, 38, 81, 65 to ground 64 at central,—82, 83, 84 to 75. This energizes 55 33 in the reverse direction and breaks the contacts 36, 38, opening both the telephone bridge and the electromagnet leg. The arm 50 is then moved until the rotation is complete. This steps the arms 9 and 12 at all 60 the local stations around until they rest on the last contact which is the one just before the one upon which they normally rest, (there being one more contact point at the substations than at central). The operator 65 now presses down the key 5', completing

the following circuit—battery 75, 74, 89, 90, 91, 63, sleeve 62, 87, 69, 23, 58, 59, 60, 92, 93, 94, 88 to 75. Through this the magnet 23 is energized, permitting the arms 9 and 12 to be returned to normal. In assuming 70 the original position the arm 12 passes over contact 100, closing the following circuit—101, 39, 102, 105, 106, 107, 66, 12, 100. This energizes 39, which draws the armature 40 down to closing contacts 40, 41, and completing circuit through 105, 108, 29, 109, 75 110, 41, 40, 111, 112, back to 105. This energizes the motor 29, causing it to rotate the shaft and wind up the spring 24. When the armature 40 was attracted the catch 42 80 sprung over it retaining it until the motor completes the revolution of the shaft 7, the armature is released by 44, engaging the catch as above described. The system is now at normal and the spring 24 rewound. 85

It will be apparent from the illustration of my invention that I have devised positive means for automatically controlling the use of telephones upon a party line, and it is obvious that the various batteries used 90 in connection with the device can be located in close proximity to a telephone to reduce the amount of wiring to a minimum. Such variations in the type of electrical mechanisms as are permissible by the appended 95 claims, may be resorted to without departing from the spirit and scope of the invention.

What I claim and desire to secure by Letters Patent, is:— 100

1. A lockout device for party line telephones comprising a talking circuit, a ringing circuit, a selective circuit-controller at the central station, spring actuated complementary means at each subscriber's station 105 governed by said circuit-controller, and automatic means for keeping said spring wound.

2. A lockout device for party line telephones comprising, a talking circuit, a ringing circuit, a selective circuit-controller at the central station, spring actuated mechanism complementary to said circuit controller at each subscriber's station, means 110 for automatically winding said spring, and 115 electromagnets for locking in or locking govern said spring operated means, electromagnets governed by said circuit controller.

3. A lockout device for telephones comprising, a talking circuit, a ringing circuit, 120 a selective circuit controller at the central station, spring operated mechanism arranged at each subscriber's station, a solenoid operated by the circuit-controller to govern said spring operated means, electro- 125 magnets to lock in and lock out the selected circuits, a motor for winding said spring, and an electromagnet for closing a circuit to start said motor.

4. A lockout device for telephones com- 130

prising, a talking circuit, a ringing circuit, a selective circuit-controller at the central station, a spring operated mechanism arranged at each subscriber's station complementary to said circuit-controller, a mechanism for locking out or locking in the selected circuits, a motor for winding said spring, said motor being operated on the return of said circuit controller to inoperative position.

5. A lockout device for telephones comprising, a talking circuit, a ringing circuit, a selective circuit-controller at the central station in the form of a dial, a plurality of stationary contacts on said dial, a plurality of openings for the reception of one or more

movable contact plugs, a spring-governed arm co-acting with said contacts, a complementary mechanism arranged at each subscriber's station comprising a spring-tor-
sioned shaft, a winding mechanism for said spring, hands rotating with said shaft one on either side of a dial plate carrying contact points and adapted to co-act with the said circuit controller to control the various
circuits, and an automatic lockout switch.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES W. THROCKMORTON.

Witnesses:

MAX H. SROLOVITZ,

A. J. TRIGG.