(No Model.)

W. H. GARVEN.

DISTRICT TELEGRAPH CALL.

No. 525,649. Patented Sept. 4, 1894.

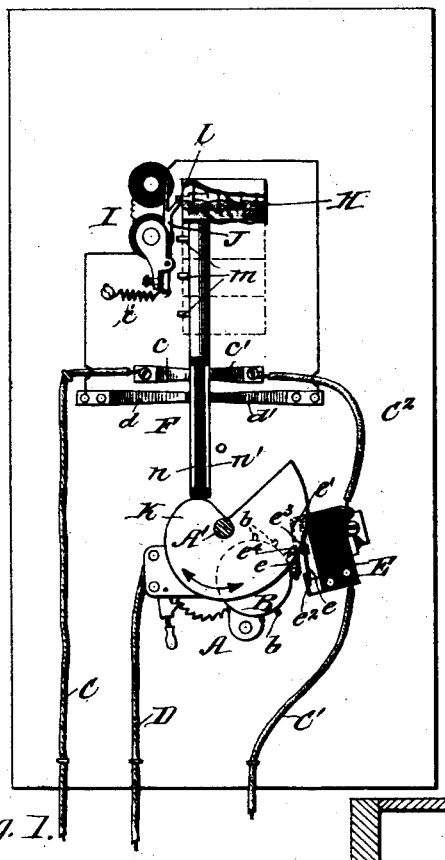

Fig. 1.

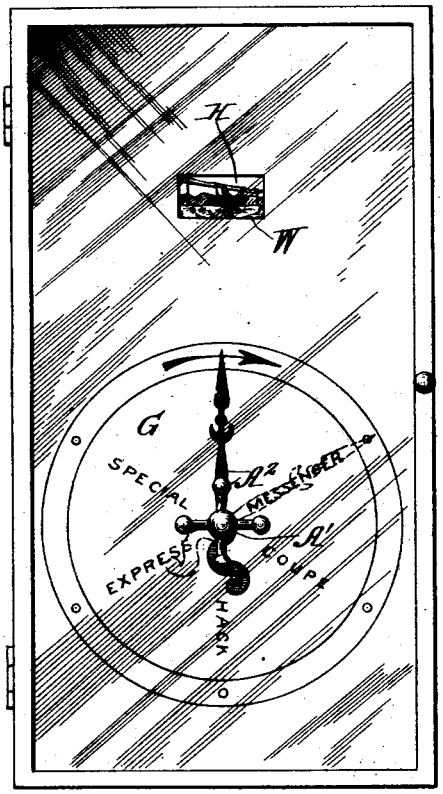

Fig. 2.

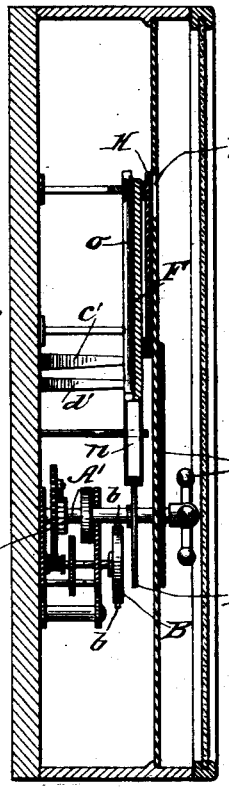

Fig. 3

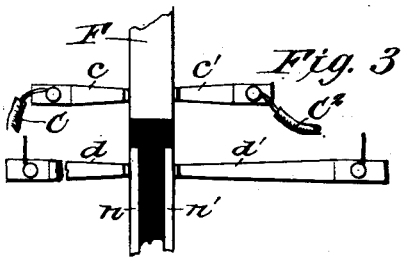

Fig. 5.

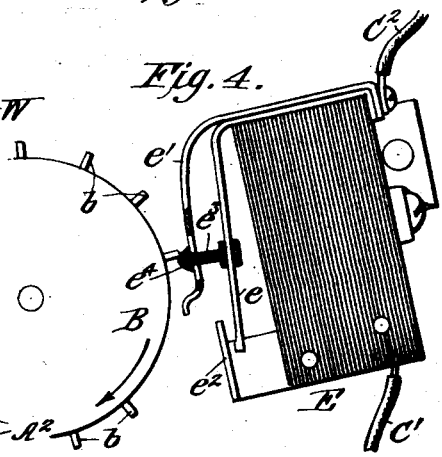

Fig. 4.

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DISTRICT-TELEGRAPH CALL.

SPECIFICATION forming part of Letters Patent No. 525,649, dated September 4, 1894.

Application filed February 19, 1894. Serial No. 500,699. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY GARVEN, of Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in District-Telegraph Calls, of which the following is a specification.

My invention is in the nature of an improved district telegraph box designed to call to a central station for messenger, police, fire department, carriage, express, &c.

It consists in the peculiar construction and arrangement of the box which when operated shows on its face in a pictorial way the thing called for, and which call goes into the central office on two different circuits, and is printed on tapes by two different registers, and which box also notifies the party who sent the call that it has been received and is being attended to, all as hereinafter more fully described with reference to the drawings, in which—

Figure 1 is a view of the internal mechanism of the box, the front part of the case being removed. Fig. 2 is a view of the front of the box. Fig. 3 is a vertical longitudinal section. Fig. 4 is an enlarged detail view of the circuit breaking devices, and Fig. 5 a detail view of the gravity bar.

Referring to Fig. 1, A represents an ordinary form of clock mechanism; consisting of a coil spring, a train of gears, and an escapement, which is wound through the shaft A′ provided with an index hand and winding handle A^2 on the outside. One of the shafts of this clock gear is extended beyond its frame work and is provided with a metal disk B around whose periphery in a series of holes are arranged projecting pins *b*. These are the circuit breaker pins, and they are arranged in such groups as to make a different succession of signals for each station, *i. e.* one box at one station may have a group of two pins followed by a group of three pins for 23, another a group of two pins followed by a group of four for 24, and so on, the pins being adjustable in the periphery of the disk so as to permit this grouping to be made in any desired succession to provide for a different signal for each of a great number of boxes. In the plane of this circuit breaker disk B is arranged a double circuit contact breaker that is operated upon by the pins of the disk.

C C′ are the wires of the continuous metallic circuit that starts at the central office, traverses all the instruments on the line, and returns again to the central office. This main line circuit enters the instrument through the wire C, passes through connections hereinafter described to C^2, thence to the circuit breaking devices, and then leaves through wire C′.

The ground circuit is made through the wire D, which at one end connects with the metallic frame of the clock mechanism, and at the other end is grounded for a short circuit to the central station.

On an insulating block E are held in the plane of the circuit breaker disk two contact springs *e* and *e′*, both of which are connected to the line wire section C^2. One of these springs rest against a stop e^2 which forms the terminal of the line wire C′ and has a non-conducting stem e^3 that is adapted to be struck by the pins of the disk to force back the spring *e* away from the stop e^2 and thus break the main circuit between them. In front of this spring *e* is the other contact spring *e′* which is slotted and embraces the non-conducting stem, and has its end bent inwardly toward the circuit breaker disk. This contact spring presses toward the said disk but is prevented from touching it by a head e^4 on the end of the non-conducting stem e^3 outside of the slot in said spring. When, however, a pin on the disk passes this spring it temporarily touches it and establishes a connection between the main line section C^2 and the ground wire D through the metal frame of the clock work.

On the winding shaft of the clock mechanism is rigidly fixed a spiral cam K, and in its plane is arranged a sliding gravity bar F which is lifted by the cam as the shaft of the clock mechanism is wound up, the extent of the elevation of said bar being commensurate with the movement of the clock mechanism shaft and cam, *i. e.* when the shaft and cam are rotated a complete revolution, the bar is lifted the entire distance by the cam; when the shaft and cam are rotated one sixth of a

revolution the bar is lifted one sixth of its full adjustment; and when said shaft and cam are moved two sixths of a revolution the said bar is moved two sixths of its full movement, and so on.

The front of the box is provided with a glass door in which appears concentrically with the winding shaft and index hand a dial G which is divided into five equal subdivisions marked respectively "Messenger," "Coupé," "Hack," "Express," and "Special." The movement of the index hand on the winding shaft over each of these subdivisions is so arranged in relation to the circuit breaking disk as to make a complete revolution of said disk for every movement of the index hand over each of these subdivisions. Thus for instance if the circuit breaker disk has a group of two pins followed by a group of four, one revolution of this disk will indicate 24 and will be caused by the movement of the index hand to the first subdivision marked "Messenger" and its return to the starting point. If the index hand is turned over two subdivisions to "Coupé" and is then released, the clock mechanism makes two complete revolutions of the circuit breaker disk, and the signal 24 is repeated which calls for a coupé. If the index hand is turned to the next subdivision for a hack, the signal 24 is given three times and so on.

Now in order that the sender of the call may know that his call has been properly made, a pictorial representation of whatever he calls for is made to appear in a window W in the upper part of the case by the act of sending in the call. For this purpose the gravity bar F is provided and is given an adjustment through the cam exactly commensurate with the movement of the index hand on the dial. Said gravity bar has attached to it an elongated plate H which slides with the bar immediately behind the window W in the front of the case. This plate is divided into just as many subdivisions as there are subdivisions in the dial, and on each of these subdivisions is delineated a picture of the several things called for, arranged successively from top to bottom in the order of progression of the index hand, *i. e.* on the top part of this plate will be a view of a messenger boy, next below it a coupé, then a hack, and so on. Now as the adjustment of this plate H is made commensurate with the movement of the index hand through the cam, it will be seen that when the index hand is moved to any want on the dial, a picture of that want will appear at the window W, and remain there until the call is answered from the central office. This call is answered back from the central office as follows:

I is a small electro-magnet arranged beside the gravity bar, and having its pole pieces extended and provided with an armature J which is normally held away from the poles by a spring *i*. This armature has on its side a detent tooth *l* which engages with and holds the gravity bar to the position to which it may have been elevated. For this purpose there are pins *m* on the side of the gravity bar which are engaged by the tooth of the armature. When this electro-magnet is energized, and its armature is attracted, the gravity bar drops. This movement is effected from the main office by simply closing a current through these electro-magnets which constitutes the answer back. For this purpose the gravity bar has its upper half made of metal, and the lower half of rubber or other non-conductor with two insulated plates *n n'* on opposite sides of the same.

To guide the gravity bar and allow it to move easily it is channeled and made to slide on a central guide rod *o* Fig. 3. On the opposite sides of the gravity bar are two flat springs *c* and *c'* which are connected respectively to the line wire sections C and C^2. Beside these two flat springs are two other flat springs *d* and *d'* arranged also on opposite sides of the gravity bar. These springs *d* and *d'* are connected respectively to the two terminals of the electro-magnet. Now when the gravity bar is in its lowest position, the line current is closed between the springs *c c'* because they rest on the upper metal end of the gravity bar, as in Fig. 5 and the line current can pass from C to C^2 through the contact springs *c c'*, and thence through the circuit breaking springs to C', and out to line again, while the electro-magnets are cut off because their flat springs *d d'* rest upon the insulated plates *n n'* which have no electrical connection on the gravity bar. When however the gravity bar is raised by the operations of the call box both the sets of springs *c c'* and *d d'* pass onto the insulated plates, and the current can now pass through the electro-magnets by the following path: from C, to *c*, to insulated plate *n*, thence to *d* to the electro-magnet, from the magnet to *d'*, thence to insulated plate *n'*, to spring *c'*, thence to C^2, then to the circuit breaking devices at E and the line wire C'.

It will thus be seen that this instrument sends a call through the continuous metallic circuit C C', and also through a short circuit by way of the ground wire D. It automatically and pictorially indicates the nature of the call, and permits of an answer back from the central office, thus giving the assurance that the call has been received and is being attended to.

It is obvious that the dial and mechanism may be arranged for any number of calls.

To prevent the making and breaking of the main line current at E from interfering with the action of electro-magnet I and prematurely dropping the bar F, the armature J of the electro-magnet is adjusted so that it does not respond to the working main line currents, but will respond to an extra battery of higher voltage, and when the "answer-back" magnet is to be operated a current from this extra battery is thrown on the line.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a district telegraph call; of a cam arranged on its winding shaft, a slide bar adjusted by the cam an extent commensurate with the movement of the winding shaft, and a plate bearing pictorial illustrations of the different calls arranged to be progressively brought to view, according to the throw of the winding shaft and cam, substantially as shown and described.

2. The combination with the circuit breaking disk of a district call box; of the duplex spring contacts *e* and *e'*, and their stops e^3 and e^4, one of said springs being arranged to make and break circuit through its stop and the other through the circuit-breaking disk substantially as shown and described.

3. The slide bar F having a metallic portion at one end with pins or teeth, and a non-conducting portion at the other end with insulated metal plates *n n'*; in combination with the electro-magnets I, and armature J with detent for engaging the pins of the slide bar, the contact springs *c c'* and *d d'*, the circuit wires, and the adjusting cam K, and circuit-breaking devices, substantially as shown and described.

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Witnesses:
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