(No Model.) 2 Sheets—Sheet 1.

W. A. HOUTS & L. G. NILSON.

TELEPHONE SWITCH BOX.

No. 574,245. Patented Dec. 29, 1896.

Fig. 1.

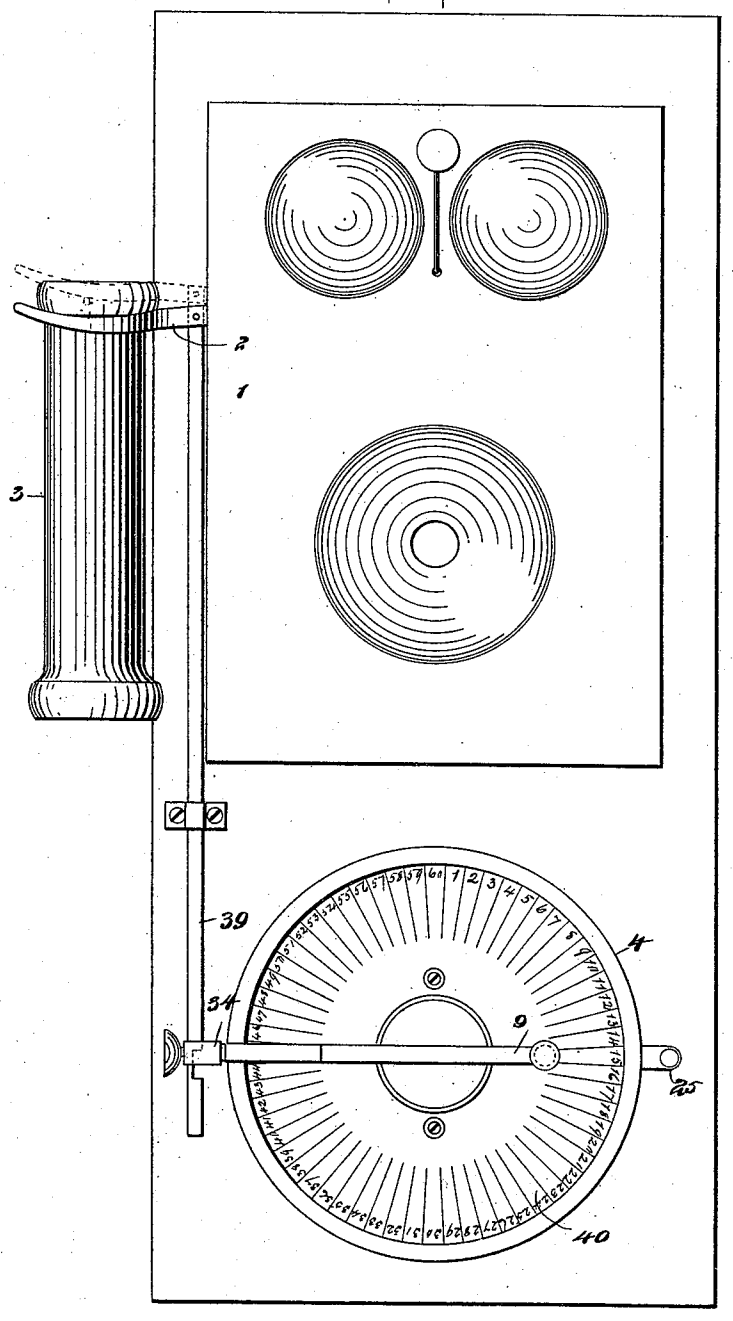
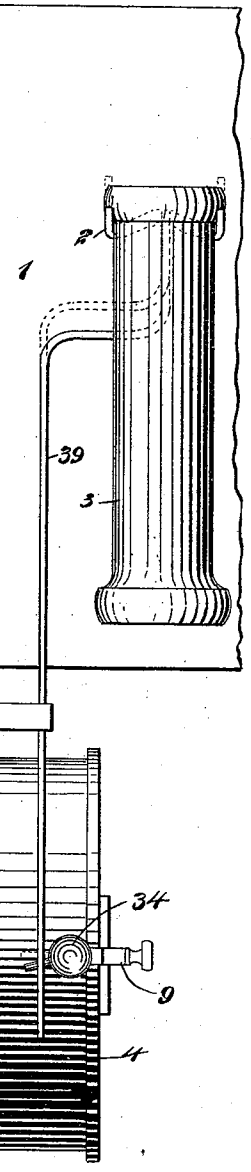


Fig. 2



WITNESSES:

H. Kellyer.

C. A. Ferguson

INVENTORS:

W. A. Houts

BY L. G. Nilson

Munn & Co.

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

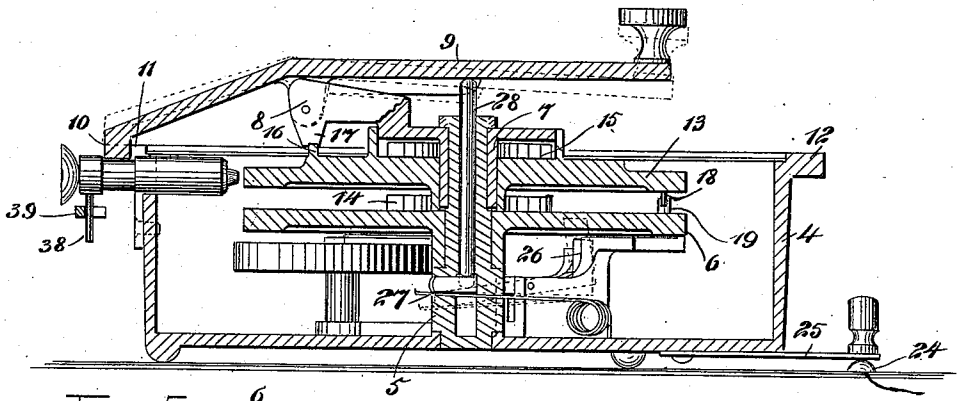


Fig. 5.

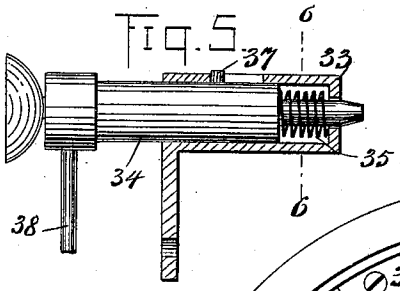


Fig. 6.

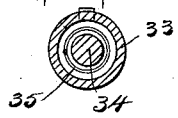
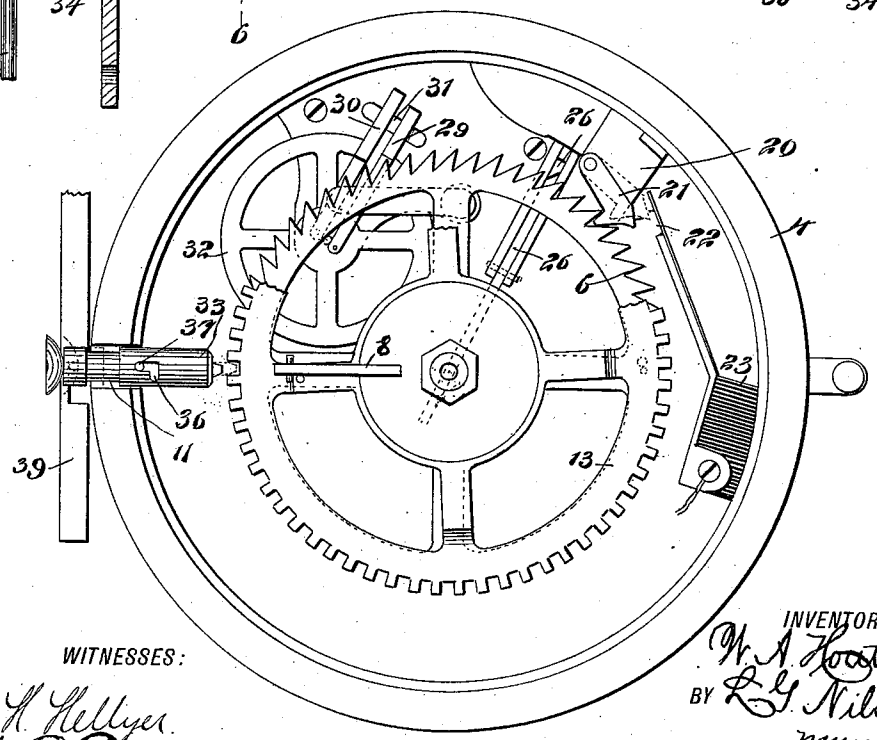


Fig. 4.



WITNESSES:

H. Hellyer.

C. R. Ferguson

INVENTORS:

W. A. Houts

BY L. G. Nilson

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WALLACE A. HOUTS, OF PARKER, SOUTH DAKOTA, AND LARS G. NILSON, OF SIOUX CITY, IOWA, ASSIGNORS TO THE HOUTS AUTOMATIC TELEPHONE SWITCH COMPANY, OF PARKER, SOUTH DAKOTA.

TELEPHONE SWITCH-BOX.

SPECIFICATION forming part of Letters Patent No. 574,245, dated December 29, 1896.

Application filed August 25, 1896. Serial No. 603,830. (No model.)

To all whom it may concern:

Be it known that we, WALLACE A. HOUTS, of Parker, in the county of Turner and State of South Dakota, and LARS G. NILSON, of Sioux City, in the county of Woodbury and State of Iowa, have invented a new and Improved Telephone Switch-Box, of which the following is a full, clear, and exact description.

This invention relates to switch-boxes for telephone systems; and the object is to provide a mechanism whereby upon hanging up the receiver the parts will be automatically returned to a normal position or to a position in which the call of the particular box will be automatically placed in circuit, and, further, to so construct the parts that any number of stations, all connected by wire with a central station, may be connected to any one of the others automatically.

We will describe a switch-box embodying our invention, and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of a telephone mechanism embodying our invention. Fig. 2 is a side view thereof. Fig. 3 is a sectional view of the calling device. Fig. 4 is a front elevation thereof with certain parts omitted. Fig. 5 is a partial section and partial elevation of a stop-pin employed, and Fig. 6 is a section on the line 6 6 of Fig. 5.

Referring to the drawings, 1 designates a transmitter of any desired construction and having a forked lever 2 extended outward from it and designed to make and break connections in the usual manner and also to support a receiver 3, which, when hung upon said lever 2, will cut out the transmitting-circuit.

Arranged below the transmitter 1 is a call box or mechanism comprising a casing 4, in the central portion of which is an outwardly-extending tubular stud 5. Mounted to rotate on this tubular stud 5 is an escapement-wheel 6, and also mounted to rotate on this stud 5 outside the escapement-wheel 6 is a sleeve 7, carrying a bracket 8, to which is pivoted an operating-lever 9, one end of which has an inwardly-extended lug 10, adapted to engage in a notch 11, formed in the periphery or flange 12 of the casing 4.

Mounted to rotate on the sleeve 7 is a toothed wheel 13. Surrounding the hub portion of this toothed wheel 13 is a spring 14, one end of which is engaged with a pin on the escapement-wheel 6, the other end being engaged with the hub of said wheel 13, and arranged in a barrel on the outer side of the wheel 13 is a spring 15, one end of which is engaged with the wheel 13 and the other end engages with the sleeve 7. Extended outward from the wheel 13 is a lug 16, adapted to be engaged at a certain time with the inwardly-extended portion 17 of the bracket 8, and on the inner side of said wheel 13, near its periphery, is a pin 18, designed at a certain time to engage with a pin 19, extended outward from the escapement-wheel 6.

Mounted to a swing on a block 20, having an electrical connection with the casing 4, is a circuit-closer 21. This circuit-closer 21 is held in engagement with the escapement-wheel 6 by gravity and during the rotation of said escapement-wheel, as will be hereinafter described. The said circuit-closer 21 is designed to alternately make and break connections with a contact-finger 22, extended from a block 23 of insulating material secured to the inner side of the casing 4, and from this contact-finger 22 a line-wire extends, the other line-wire having connection with the contact-point 24, designed to be engaged by a switch 25, pivoted on the casing 4.

A stop-lever 26 is pivoted between cheek-pieces extended from the rear wall of the casing 4, and this lever has a dog portion or outwardly-extended portion adapted to engage between the teeth of the escapement-wheel and hold the same from rotary motion. The said lever, however, is held normally out of engagement with said escapement-wheel by means of a spring 27, engaging with the end of said lever 26, that passes through a trans-

verse opening in the stud 5. The portion of the lever 26 within the stud 5 is engaged by a longitudinally-movable pin 28, which extends outward through the stud 5 and is engaged by the inner side of the lever 9.

Reciprocating pallets 29 30 are mounted to slide in guideways 31, extended from a casting secured to the inside of the casing 4. These pallets 29 and 30 are designed to engage alternately with the teeth of the escapement-wheel, and to control their movements we employ a balance-wheel 32, pivoted on a stud extended from the casting on which the guide 31 is mounted, and the inner ends of the pallets 29 and 30 are respectively pivoted to said balance-wheel near its hub. It will be seen that these pallets are so located with relation to the teeth of the escapement-wheel that they are alternately moved by the teeth of said wheel, which will impart an oscillatory movement to the balance-wheel, and this movement will retard the running movement of the escapement-wheel.

We will now describe a means for locking the toothed wheel 13 and the means for automatically releasing the same. Movable in a sleeve 33, extended inward from a side wall of the box, is a pin 34. This pin is movable radially with relation to the wheel 13, and is adapted to engage its inner end between the teeth of said wheel. The pin 34 is normally held outward by means of a spring 35, abutting at one end against the sleeve 33 and abutting at the other end against a shoulder formed on the pin 34. Extended radially from the pin 34, and adapted to move in a bayonet-slot 36, formed through the sleeve 33, is a lug 37. A finger 38 extends laterally from the outer end of the pin 34, and this finger 38 engages in a slot formed in a push-bar 39, extended through a suitable guide mounted on the base of the telephone and pivotally connected at its upper end with the lever 2. Obviously by pushing the pin 34 inward to engage its inner end between the teeth of the wheel 13, and then rotating the said pin to engage the lug 37 against the shoulder in the bayonet-slot extending transversely of the sleeve, the said pin will hold the wheel from rotary motion. Upon hanging up the receiver 3 the lever 2 will be rocked downward and consequently push the push-bar 39 downward, and the upper wall of its slot engaging against the finger 38 will rotate the pin 34 sufficiently to disengage its lug 37, and then the spring 35 will move said pin outward and out of engagement with the wheel 13.

Secured to the outer side of the wheel 13 is a disk 40, provided around its edge with a series of numbers designating in sequence the several telephone-numbers in a circuit comprising this particular telephone.

The operation of the device is as follows: By pressing downward the finger end of the lever 9 its lug 10 will be disengaged from the notch 11, and this rocking movement of the lever 9 will rock the lever 26 to engage it with the escapement-wheel. Then by turning the lever 9 the wheel 13 and the disk 40 will at the same time be rotated, and when the desired telephone call-number on said disk 40 shall have reached the point opposite the pin 34 the said pin is to be pushed inward to lock the wheel 13, as before described, and then the rotation of the lever 9 is continued until its lug 10 reaches the notch 11, and then the said lever must be released and allow its lug to engage in said notch. As soon as this occurs, the pressure on the lever 26 having been removed, the spring 27 will move said lever out of engagement with the teeth of the wheel 6, and then under the influence of the spring 14 the escapement-wheel 6 will be rotated a distance corresponding to the distance through which the wheel 13 was rotated, and during this rotary movement of the escapement-wheel the proper number of its teeth will successively move the swinging contact 20 into engagement with the contact-finger 21, thus making and breaking the electrical connections a proper number of times to make a call. After finishing the conversation through the telephone the receiver must be returned to the lever 2, and the weight of this receiver drawing down the lever 2 will move the rod 39 to release the pin 34 from the wheel 13, as before described, and then the spring 15 will turn the wheel with the disk 40 backward to the original position and with the particular call-number of this telephone, say "45," opposite the pin 34. During this backward movement of the wheel 13 the lug 18 on its inner side will engage with the lug 19 on the outer side of the wheel 6, and thus carry said wheel 6 to its normal position.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. An automatic call for telephones, comprising a casing, an escapement-wheel mounted therein and adapted to make and break an electric circuit, a locking device for said escapement-wheel, a second wheel mounted to rotate relatively to the first-named wheel and carrying a disk having telephone call-numbers thereon, a spring connection between said wheels, a locking device for said last-named wheel, and means for automatically releasing said locking device through the weight of the telephone-receiver, substantially as specified.

2. An automatic call for telephones, comprising a casing, an escapement-wheel mounted to rotate therein, electrical contacts adapted to be closed by said escapement-wheel and transmit electrical impulses, a second wheel mounted in the casing and adapted to rotate relatively to the first-named or escapement wheel, a spring having one end engaged with the escapement-wheel and the other end engaged with the second-named wheel, a numbered disk on said second wheel, a radially-movable pin for engaging between teeth of said second-named wheel, a locking device for

said pin, a spring for moving said pin outward, and a push-bar having connection with the lever supporting a receiver and engaging with a part extended laterally from said pin, substantially as specified.

3. An automatic call for telephones, comprising a casing, a tubular stud in said casing, an escapement-wheel, means for retarding the movement of said escapement-wheel, a locking-lever for said escapement-wheel, a toothed wheel also mounted on the stud in the casing, a spring connection between said two wheels, a pin on one of the wheels adapted to engage with a pin on the other wheel, a sleeve mounted to rotate on the stud, a spring connection with said sleeve and the toothed wheel, a bracket carried by said sleeve, a lever fulcrumed to said bracket and adapted to engage one of its ends in a notch in the periphery of the casing, a rod extended through the tubular stud, for operating the lock of the escapement-wheel, a pin adapted for locking engagement with the toothed wheel, and a connection with the receiver-hanging lever for releasing said pin, substantially as specified.

4. An automatic call for telephones, comprising a casing, circuit making and breaking devices substantially as described arranged therein and comprising a toothed wheel, a sleeve supported by the casing and extended radially of said wheel, a pin movable in said sleeve and having a lug extended through a bayonet-slot in said sleeve, a spring for normally holding said pin outward, a finger extending laterally from the outer end of said pin, and a push-bar extended through a bearing in the telephone-casing or base-board, the said rod being pivoted at its upper end to the lever for supporting a receiver and having a lost-motion engagement at its lower end with said laterally-extended finger, substantially as specified.

WALLACE A. HOUTS.
LARS G. NILSON.

Witnesses to the signature of Wallace A. Houts:

A. H. HAMMARSTROM,
W. R. WOOD.

Witnesses to the signature of Lars G. Nilson:

A. M. VANDERBURG,
C. A. SELGREN.