(No Model.)

T. W. NESS.

TELEPHONE SWITCH.

No. 505,170. Patented Sept. 19, 1893.

Fig. 1

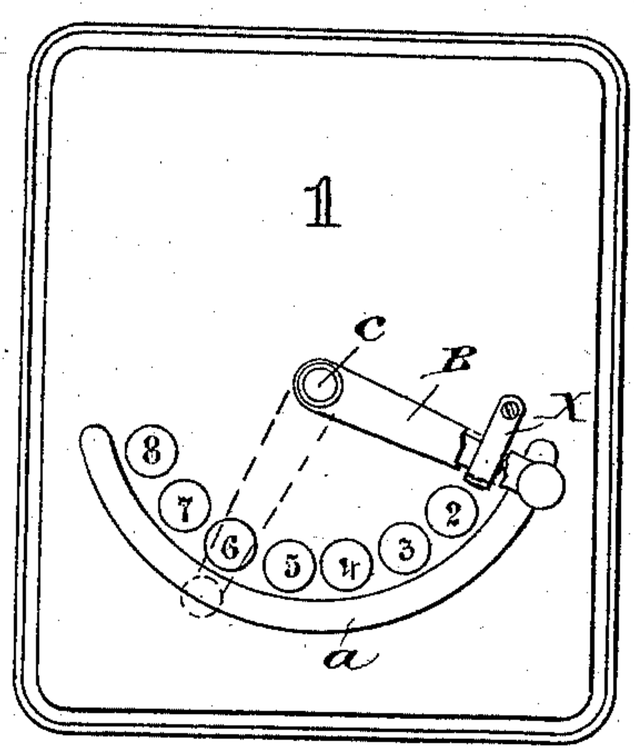


Fig. 2

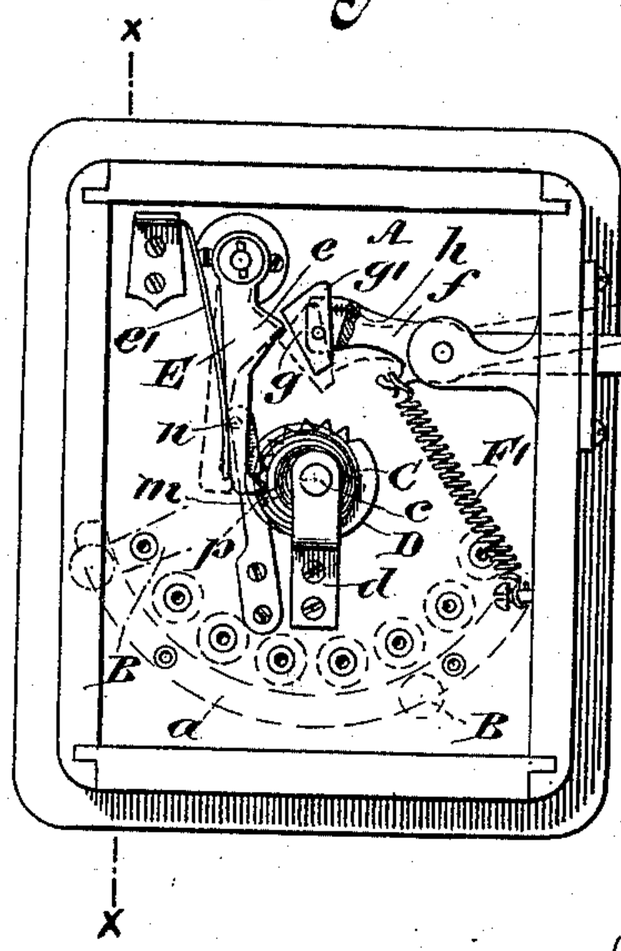
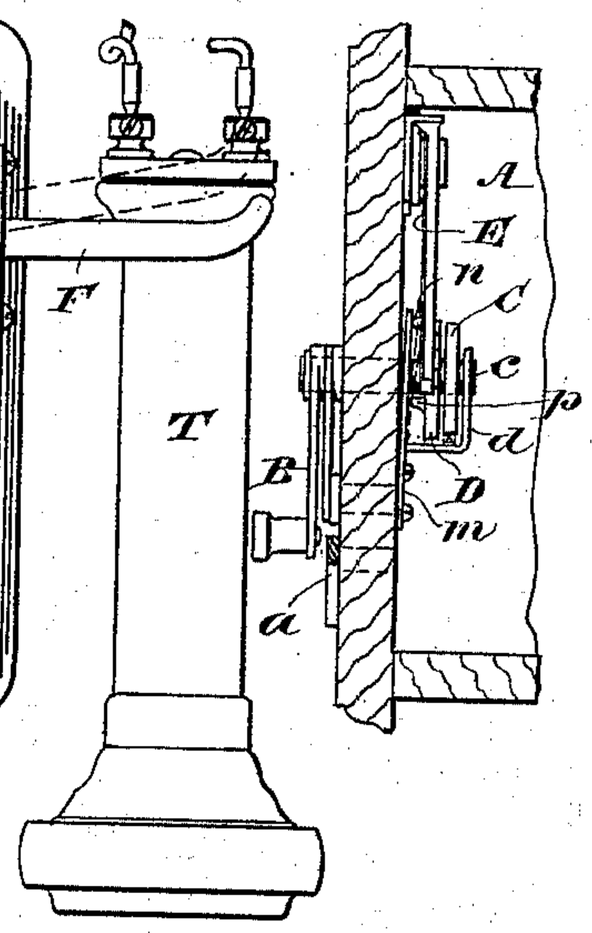


Fig. 3



Witnesses

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THOMAS W. NESS, OF MONTREAL, CANADA.

TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 505,170, dated September 19, 1893.

Application filed May 22, 1893. Serial No. 475,182. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WOOD NESS, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have invented certain new and useful Improvements in Telephone-Switch-Operating Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to the switch mechanism of ware house or local telephone systems in which each department or office has a segmental key-board with an independent axially mounted spring key or switch bar adapted to be shifted by hand from a normal resting point or line terminal segment to any of the other line terminal segments or points of the key-board to secure the necessary line connection with other departments or offices of the system, the object of the invention being to provide an automatic return for such key or switch after the user has finished talking so as to avoid all chances of the key not being returned, as is required by the nature of such systems. For full comprehension however of the invention, reference must be had to the annexed drawings forming a part of this specification in which like symbols indicate corresponding parts and wherein—

Figure 1 is a front view of the usual box or casing carrying the key-board telephone hook wire terminals, bell, &c., all of which with the exception of the key board, the key and telephone hook are not shown since they form no part of my invention. Fig. 2 is an interior view of such box or casing and Fig. 3 a vertical section thereof on the line *x x* Fig. 2.

The key-board is as usual composed of the several line terminals 1, 2, 3, &c., and calling or battery circuit bar *a*.

B is the switch key mounted on a rotatable axis or spindle *c* which passes through the usual door of the box A and has a bearing therein as well as in an arm *d* carried on the inside of such door. The key or switch bar B is rigidly secured to the outside end of such spindle and in being moved to its different points from the normal position in which it is shown in Fig. 1 and where it fits into a spring, or yielding check X, serves to rotate such spindle and this being the case I have found that by connecting with such spindle a controllable yielding resistance device having a permanent tendency to rotate such spindle in the direction required to return the key to its normal position, I am able through a detent and releasing device such as the usual telephone hook mechanism to control such yielding resistance device and consequently secure an automatic return of the key to its normal position through such medium. The yielding resistance used is preferably in the form of a spiral spring C encircling the spindle *c* and having one end attached thereto while the other end is screwed to the arm *d*, and the controlling mechanism for such spring comprises in addition to the telephone hook mechanism when such is used preferably the following parts: A ratchet wheel D, mounted rigidly on the spindle *c*, a pivoted pawl-lever E, normally engaging such ratchet and provided with a projection *e*, whereby a yielding pressure dog *g*, pivoted in the forked end of the inner arm *f* of the pivoted telephone hook or lever F and thrown normally outward by a spring *h*, can operate such pawl lever E to disengage it from the ratchet D whenever the outer end of such hook is depressed as by hanging the telephone T upon it; the pawl-lever, and the yielding pressure dog *g* acting in conjunction with the telephone hook as detent mechanism to control the parts which act to return the key to its normal position after having been moved to, say, the point 6, shown by dotted lines in Fig. 1. The outer end of the telephone hook F is automatically elevated in the usual way by a spring such as F′.

As an auxiliary or safeguard against the detent mechanism accidentally locking the yielding resistance or parts acting to return the key before this latter is returned to its normal position, I use a spring detent *m* secured to the door of the box at one end and carrying on its free end a projection *n* adapted when the pawl lever E is disengaged from the ratchet D to be projected in front of and so retain it until a lateral projection *p* on the side of the ratchet wheel D comes in contact with and presses the spring *m* backward thus freeing the pawl in order that it may re-engage the ratchet.

The operation of the device is as follows:—The normal position of the parts is shown in

full lines Fig. 2 the telephone being hung on and depressing the hook F so that the upper side g' of the dog g is by the elevation of the inner arm of such hook located above the projection e on the pawl lever E and the free end of this latter thrown into engagement with the ratchet wheel D by the spring e' or other arrangement by force of gravity if desired. The switch key is free to be moved to the direction of any of the terminal points 1, 2, 3, &c., and the yielding pawl lever E being normally engaged with the ratchet wheel D while allowing of its rotation in either direction will hold the key, through such ratchet wheel, at whatever point it is moved to until the pawl lever is disengaged from the ratchet. After the key is moved to the required point for connection with another department the telephone is naturally taken off the hook and the inner arm of this latter is consequently drawn down by spring and passing the projection e on the pawl lever the dog g yields or is forced backward against the pressure of the spring h which acts to throw it forward again, as soon as the projection e is passed, to the position shown by dotted lines in Fig. 2 and with its upper side g' beneath the projection e so that when the telephone is replaced on the hook and the inner arm thereof elevated the dog will bear against the projection and as the pressure will be in line with or against the pivoted point of the dog and not against the spring h the pawl lever will be forced out of engagement with the ratchet wheel D and the yielding resistance parts being freed will return the switch key to its normal position. By means of this automatic return of the switch key all chance of its being left in a position which would interfere to some extent with the working of the system is avoided.

What I claim is as follows:

1. The combination of the key board of a warehouse or local telephone system, an independent switch key therefor, and the telephone hook mechanism, with means whereby said independent switch key is, after being moved to the several points of such key board by hand, automatically returned to its normal position.

2. In combination with the key board of a warehouse or local telephone system, having an independent switch key adapted to be moved to the several points of such key board by hand, a detent, a releasing device and automatic return for such switch key.

3. In combination with the key-board of a ware-house or local telephone system, the independent switch key thereof and the telephone hook mechanism, an automatic return for such key or switch under the control of said telephone hook mechanism, as set forth.

4. In combination with the key-board of a ware-house or local telephone system, the independent switch key thereof and the telephone hook mechanism, a controllable yielding resisting device acting to return said key or switch to its normal position after effecting a line connection, as set forth.

5. In combination with the key-board of a ware-house or local telephone system, the independent switch key thereof and the telephone hook mechanism, a yielding resistance device tending to return said key to its normal position after effecting a line connection, and detent mechanism acting to control such yielding resistance device, as set forth.

6. In combination with the key-board, of a ware-house or local telephone system, the switch key B; the rotatable axis or spindle c thereof and suitable bearings for same; the telephone hook mechanism; the spring C; ratchet wheel D; a yielding pressure pawl lever engaging said ratchet wheel, and a yielding pressure contact dog g on the inner end of said telephone hook, all substantially as and for the purposes set forth.

7. In combination with the key-board of a ware-house or local telephone system, the switch key B; the rotatable axis or spindle c thereof and suitable bearings for same; the telephone hook mechanism; the spring C; ratchet wheel D; a yielding pressure pawl lever engaging said ratchet wheel, and a yielding pressure contact dog g on the inner end of said telephone hook, detent m and means on said ratchet wheel for operating same, all substantially as and for the purposes set forth.

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