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Patented May 1, 1900.

E. E. YAXLEY & C. C. CADDEN.
LATCH DROP DEVICE FOR TELEPHONE SWITCHBOARDS.

(Application filed Sept. 15, 1899.)

(No. Model.)

Fig. 1.

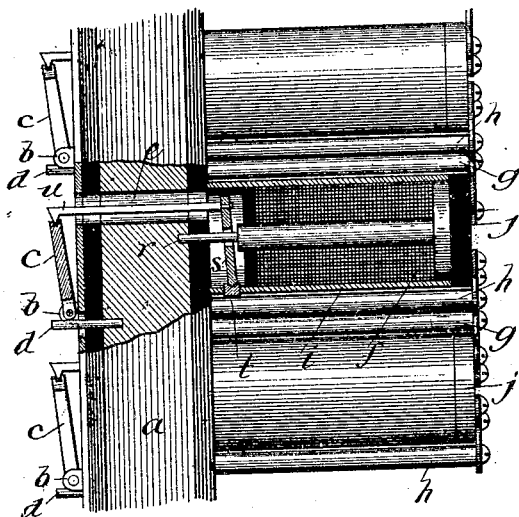


Fig. 2.

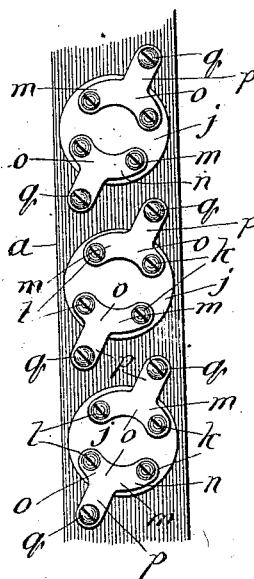
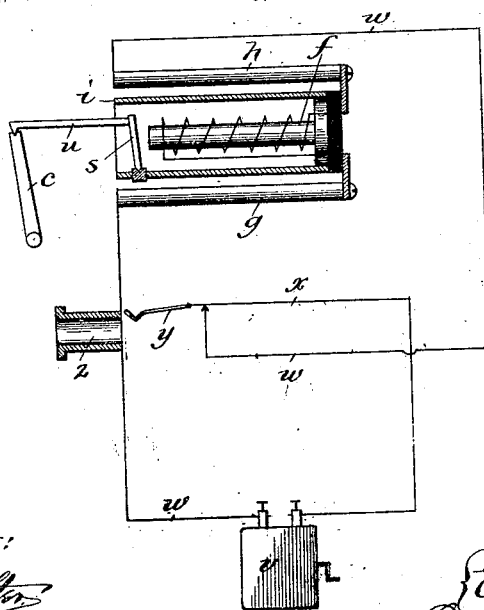


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ERNEST E. YAXLEY AND CHARLES C. CADDEN, OF CHICAGO, ILLINOIS, ASSIGNORS TO THE VICTOR TELEPHONE MANUFACTURING COMPANY, OF SAME PLACE.

LATCH-DROP DEVICE FOR TELEPHONE-SWITCHBOARDS.

SPECIFICATION forming part of Letters Patent No. 648,647, dated May 1, 1900.

Application filed September 15, 1899. Serial No. 730,566. (No model.)

To all whom it may concern:

Be it known that we, ERNEST E. YAXLEY and CHARLES C. CADDEN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Latch-Drop Devices for Telephone-Switchboards, of which the following is a specification.

Our object is to provide a novel and particularly-desirable construction of latch-drop device for signaling the operator at a telephone-switchboard.

Our improved construction of latch-drop is shown in the accompanying drawings, in which—

Figure 1 represents a broken portion of a telephone-switchboard equipped with several of our improved latch-drop devices, one of which is shown in section. Fig. 2 is a view of the same in rear elevation, and Fig. 3 a diagrammatic representation of the improved latch-drop in a circuit between a subscriber's telephone and the switchboard.

On the face of a switchboard *a* of any suitable general construction are drops *c*, pivotally supported at their lower ends between bars *b b*, to fall, when released, as hereinafter described, into horizontal position, at which they are stopped and supported by rest-pins *d*, projecting from the switchboard below each drop. Adjacent to each pivotal drop there is provided an opening *e*, extending through the switchboard, behind which is removably supported, in the manner hereinafter described, an electromagnet *f* of usual or any suitable construction involving a core wound with insulated wire. Rods *g* and *h*, preferably of brass, project backward rigidly from the switchboard along each electromagnet, respectively above and below the same, and afford means for supporting the magnet in place from its rear end. The magnet is inclosed, to protect it and render it dust-proof, in an iron shield *i*, at the rear end of which is a closing disk-shaped head *j*, of insulating material, having fastened to it by metallic screws *k l* metal clips *m*, each having the two, preferably curved, arms *n* and *o*, through which, respectively, the screws *k* and

l pass into the head *j*, and an arm *p*, through which it is fastened by a screw *q* into the end of the respectively-coincident rod. These clips *m* form the magnet-terminals. For supporting the magnet at its forward end a pin *r* is shown projecting from the corresponding end of the core into the back of the switchboard. Within the shield, in front of the magnet-core, is the armature *s*, pivotally resting at its lower V-shaped edge in a correspondingly-shaped bearing *t* on the inner wall of the shield, and the pin *r* passes through an opening shown (see Fig. 1) in the armature and tends to prevent displacement of the armature, as by jarring. A latch *u*, which may be composed of brass, projects rigidly from the upper end of the rocking armature through the switchboard-opening *e* and engages at its forward end with the upper edge of the drop *c*, as at a notch therein, to hold the drop releasably in its normally-raised position.

Each latch-drop device on the switchboard is in the circuit of a subscriber's telephone, (indicated at *v* in Fig. 3,) so arranged that operating the telephone to call "central" will energize the circuit to effect release of the drop *c* to permit it to fall to its signaling position, and deenergizing the circuit will release the armature and permit the latch to assume its normal position for engaging the drop when raised.

The circuit shown in Fig. 3 may be traced as follows: by the wire *w* from one side of the telephone to the rod *g*, thence through the magnet to the rod *h*, and from the latter to the switchboard-jack, represented conventionally at *y* in Fig. 3, adjacent to which is the opening *z* for the insertion of the operator's answering-plug, (not shown,) and from the jack a wire *x* leads to the other side of the telephone. By inserting the operator's answering-plug into the opening *z* it separates the jack from the line *w* to exclude the drop from the talking-circuit.

When the subscriber's telephone is operated, the circuit is energized and energizes the magnet to attract its armature *s*, thereby turning it on its bearing *t* to lift the latch *u*

out of engagement with the drop c, which when thus released falls by its own gravity to the signaling position.

As advantages of the construction of our improved latch-drop the following may be particularly mentioned: With the armature loose and merely resting to rock on its bearing in the shield and with the magnet supported removably at its forward and rear ends the magnet may be readily removed for repairs from the switchboard and as readily replaced by a perfect one without material loss of time and without attendant difficulty in readjusting the armature in place, and the shield thoroughly protects the magnet from dust.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a latch-drop device for telephone-switchboards, the combination of an electromagnet, a shield inclosing said magnet, an armature loosely supported at its lower end on a bearing in the shield in front of the magnet-core, a latch projecting from the armature and a switchboard-drop supported to be engaged by said latch, substantially as described.

2. In a latch-drop device for telephone-switchboards, the combination of an electromagnet having a supporting-pin projecting from the forward end of its core, a shield inclosing said magnet, an armature loosely supported at its lower end in a bearing in the shield in front of the magnet-core and having an opening through which said pin extends,

a latch projecting from the armature and a switchboard-drop supported to be engaged by said latch, substantially as described.

3. In combination with a telephone-switchboard, having a pivotal drop on its face, rods projecting from the back of the switchboard, an electromagnet, a shield inclosing said magnet, metallic terminal clips on the rear end of said magnet at which it is fastened to said rods to support it removably between them, an armature pivotally supported in the shield in front of the magnet-core, and a latch projecting from the armature through the switchboard to engage said drop, substantially as described.

4. In combination with a telephone-switchboard having a pivotal drop on its face, rods projecting from the back of the switchboard, an electromagnet, a shield inclosing said magnet, metallic terminal clips on the rear end of said magnet at which it is fastened to said rods to support it removably between them, a supporting-pin projecting from the forward end of the magnet-core into the switchboard, an armature pivotally supported in the shield in front of said core and a latch on the armature projecting through the switchboard to engage said drop, substantially as described.

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In presence of—
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