

W. P. ANDRICK, E. LOWE & H. W. HAFF.
KEY CONSTRUCTION AND RELEASE FOR TELEPHONIC APPARATUS.
APPLICATION FILED SEPT. 2, 1911.

1,081,712.

Patented Dec. 16, 1913.

2 SHEETS—SHEET 1.

FIG. 1.

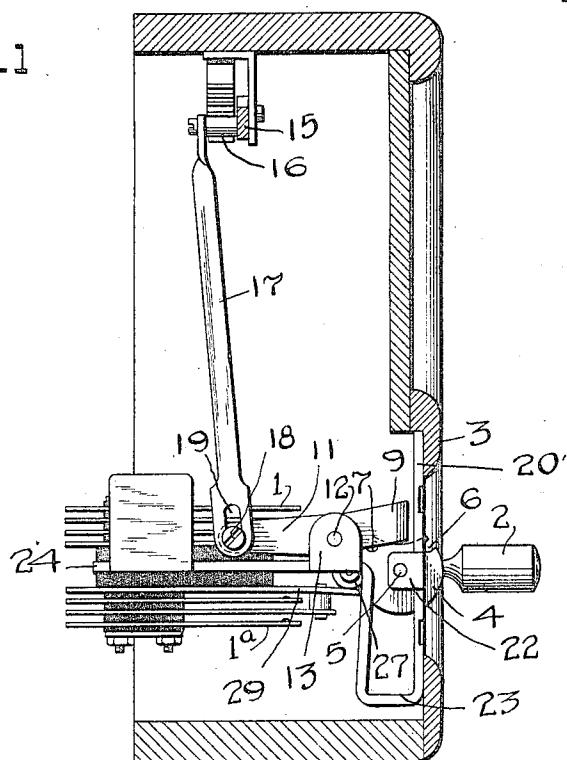
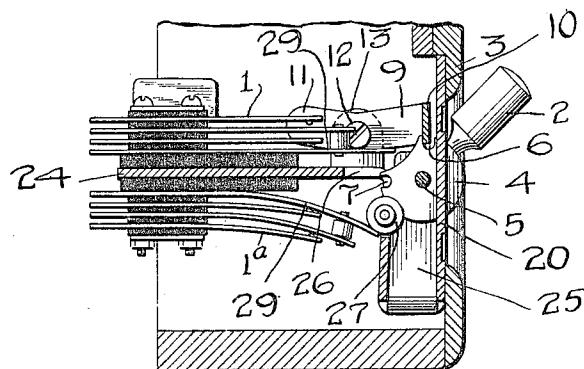


FIG. 1.



WITNESSES

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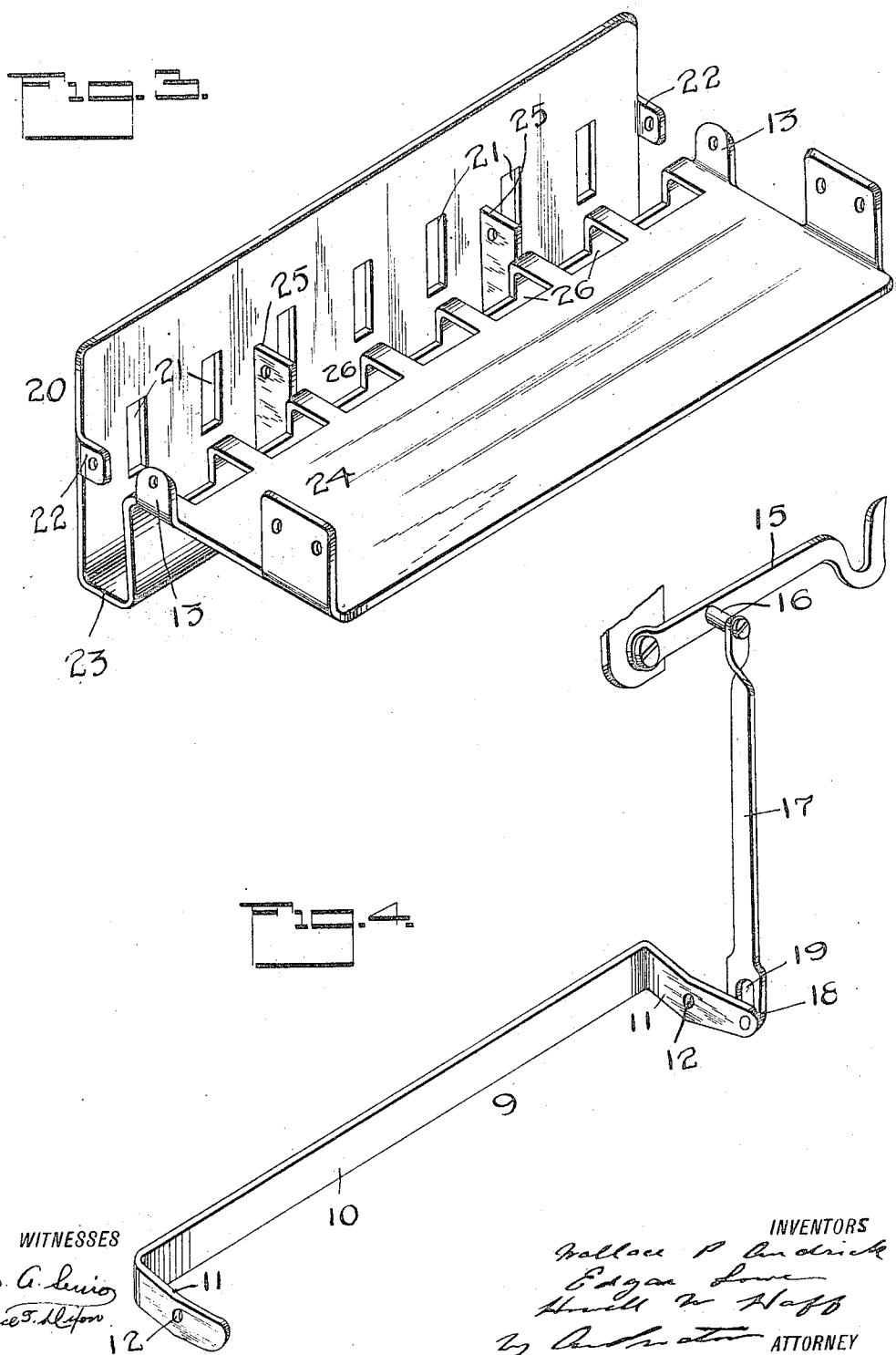
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UNITED STATES PATENT OFFICE.

WALLACE PFAU ANDRICK, EDGAR LOWE, AND HOWELL W. HAFF, OF JAMAICA, NEW YORK, ASSIGNEES, BY MESNE ASSIGNMENTS, TO GENERAL ACOUSTIC COMPANY, A CORPORATION OF NEW YORK.

KEY CONSTRUCTION AND RELEASE FOR TELEPHONIC APPARATUS.

1,081,712.

Specification of Letters Patent.

Patented Dec. 16, 1913.

Application filed September 2, 1911. Serial No. 647,375.

To all whom it may concern:

Be it known that we, WALLACE PFAU ANDRICK, EDGAR LOWE, and HOWELL W. HAFF, citizens of the United States, residing at Jamaica, in the county of Queens and State of New York, have invented a new and useful Improvement in Key Construction and Release for Telephonic Apparatus, of which the following is a specification.

10 This invention relates to a key construction and support for telephonic apparatus.

The object of the invention is primarily to provide keys which control the circuits of various stations or lines, which may be 15 placed to complete the circuits of any particular line, which automatically stay displaced as long as communication is desired, and which automatically return to their 20 normal positions when communication is terminated. In addition to this it is an object of the invention to provide keys which may each be displaced in two different directions to complete the circuits of different lines to different stations, and which remain 25 automatically displaced in either direction, further automatically returning to normal condition when communication is terminated. Besides this it is an object to provide 30 means for mechanically effecting the functions before described, and in such a way as to be efficient, cheap to construct and durable.

Another object of the invention consists 35 in the provision of a frame plate which is not only adapted to constitute a support for the key-levers, but which further constitutes an escutcheon plate, or the support for an escutcheon plate, in the instrument and which supports all of the spring blades in 40 double or duplicate groups and which is of great simplicity and cheapness combined with adequate inherent rigidity and strength.

With these objects in view the invention 45 consists in the improved telephone transmitting station and key construction herein-after set forth.

In the drawings,—Figure 1, is a vertical sectional view through part of a station 50 illustrating an embodiment of the invention; Fig. 2, is a sectional view on a slightly different plane to that of Fig. 1 and showing the parts in a different position; Fig. 3, is a perspective view of the frame, and Fig. 4,

is a detail perspective view of the switch hook and certain mechanical connections thereto.

The invention will include a plurality of keys each comprising the usual group of spring blades 1 and a handle or lever 2, the latter being pivoted in rearwardly extending ears 22, 25 of a front plate 3 of the instrument and projecting therethrough so as to be accessible for convenient manipulation. The handle or lever 2 forms part of a 65 rocking body 4 which has a pivot pin 5 passed therethrough, and as illustrated, this body is substantially flat or disk shaped with notches 6 and 7 on an upper portion of the edge. The purpose of two notches will be 70 presently apparent in connection with the description of a duplicate construction of the spring blades of the key as will be later pointed out.

9 denotes a bail-shaped lever constituting 75 a universal detent, and for this purpose the long or parallel bar 10 of the bail 9 extends parallel with the axes of the keys and along the entire length of the instrument. In this way the bar or detent 10 co-operates equally 80 well with any of the keys and constitutes a universal detent for all of them. This universal detent is controlled in any suitable way, as for example by being fixed to rigid 85 arms or extensions 11 pivoted at the points 12 to ears 13 of the frame later described.

15 denotes a switch hook having a pin 16 from which depends a link 17 having a connection 18 with the universal detent 10. In order to insure that the switch hook closes 90 all of its switch hook contacts, as well as operating the universal detent, and further in order to permit a lifting of the universal detent independent of the switch hook, and further to insure adequate inertia or impact 95 to operate the universal detent under all circumstances, there is a lost motion connection 19 in the operative connection between the switch hook and the universal detent. It will be observed that on account of the 100 weight of the bar 10 the universal detent falls by gravity.

The detent 10 drops into a notch 6 or 7 of the key body 4 when the key is either moved upward or downward to its limit of movement in either direction. The form of the key body between the notches 6 and 7 is adapted to permit the free displacement of

the key until the detent drops into a notch. But besides this the form of the key body between the notches 6 and 7 is such as to permit a downward movement of the universal detent corresponding in extent to a holding position, even when the key is in its intermediate or normal position. This occurs when the detent is locking some other depressed key.

10 In the best constructions embodying the invention there will be provided duplicate groups of spring blades above and below an intermediate supporting plate or member. In this way the key co-operates with one group or the other according to whether it is displaced upward or downward. When the key is in an intermediate position as in Fig. 1, neither group of spring blades is displaced. The respective groups of spring blades are respectively designated 1 and 1^a in Figs. 1 and 2.

15 A part of the invention relates to an improved frame or support in its separate and in its combination aspects. In the best constructions the support will be composed of sheet metal substantially in a shape as shown in Fig. 3. That is to say, there will be a front plate 20 with openings 21 for the keys, side ears 22 through which a stiff wire 5 is passed serving as a universal axle for all the keys, a deep bottom channel 23 and a rearwardly extending flat table 24 of considerable area, the same extending the entire length of the instrument. In addition to these features there may be lugs 25 thrown up from the bottom of the groove 23, stiffening the latter, and also supporting the axle 5 for the keys. The lugs 13 previously mentioned may be integrally provided as shown.

20 26 denotes a series of deep recesses respectively opposite the openings 21 of the front plate, and these recesses permit an operative movement of the keys with respect to the lower groups of spring blades 1^a, as clearly shown in Figs. 1 and 2. The upper groups of spring blades 1 are fastened on the upper side of the table 24 in a manner which has already been described in pending application of Wallace P. Andrick, Edgar 25 Lowe and Howell W. Haff Serial No. 614,047, which relates generally to this type of supporting plate for the keys. The present invention includes certain additional or improved features in this plate as will be sufficiently obvious without special description. Particularly the present application relates to the use of a very deep channel 23 and the recesses 26 and the group or groups of spring blades 1^a on the under side of the table 24 and co-operating with the keys as shown in Fig. 2. This plan virtually doubles the capacity of the instrument without increasing its size.

25 Each key will be tensioned to normally maintain a position where it does not press

the springs of any group into engagement with one another. In the best constructions the spring blades themselves will keep the key under this tension. As illustrated each key has a roller 27 adapted to press against a comparatively long spring blade 29 adjacent to the key, and this spring blade not only serves as a means for transmitting the motion of the key to the other spring blades, but also serves as a means for restoring the key itself to normal position. The key is pressed upward by the lower group of spring blades and downward by the upper group of spring blades and is neutral when in the middle or central position. In operation it will be evident that the displacement of the key either up or down permits the universal detent to drop into a notch of the displaced key and hold it in such displaced position. The line circuit of the upper or lower spring blades of that duplicate group is thereby completed. When the communication is finished the receiver is always by established custom placed on the switch hook and this automatically lifts the universal detent and permits the displaced key to return to its normal position automatically. It is evident that the action takes place in the same way for any key of the series, and it is further evident that two or more keys may be held displaced simultaneously if desired. All are however simultaneously released and returned to normal position when the receiver is put back on the switch hook.

30 What is claimed as new and patentable is,—

1. In a telephone transmitting station, a pair of groups of spring blades, a key movable in two directions to engage the respective groups, a detent for holding the key in either displaced position, a switch hook and a lost motion connection therefrom, for releasing the detent when the telephone communication is terminated.

2. In a telephone transmitting station, a series of groups of spring blades, a series of keys displaceable to engage the respective spring blades, a universal detent for holding said keys in displaced position, a switch hook and a lost motion connection therefrom for releasing said detent when the telephone communication is terminated.

3. In a telephone transmitting station, a series of duplicate groups of spring blades, keys displaceable in two directions from an intermediate off position whereby any group of spring blades may be selectively engaged, a universal detent for holding any key in either displaced position, and means for releasing said detent when the telephone communication is terminated.

4. In a telephone station of the class described, a supporting frame or plate comprising a piece of metal having a front face extending along the entire length of the

keyboard and having a deep groove or channel and having a rear plate or table also extending the entire length of the keyboard, groups of spring blades on the upper and lower sides of the table, and keys in the front plate displaceable in two directions to selectively engage any group of spring blades.

5. In a telephone station of the class described, a supporting frame or plate comprising a piece of metal having a front face extending along the entire length of the keyboard and having a deep groove or channel and having a rear plate or table also extending the entire length of the keyboard, groups of spring blades on the upper and lower sides of the table, keys in the front plate displaceable in two directions to selectively engage any group of spring blades, and a universal detent for holding said keys in either displaced position.

10 6. In a telephone station of the class described, a supporting frame or plate com-

prising a piece of metal having a front face extending along the entire length of the keyboard and having a deep groove or channel and having a rear plate or table also extending the entire length of the keyboard, groups of spring blades on the upper and lower sides of the table, keys in the front plate displaceable in two directions to selectively engage any group of spring blades, a universal detent for holding said keys in either displaced position, and means for releasing the said detent when the telephone communication is terminated.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses, this 28th day of August 1911.

WALLACE PFAU ANDRICK.

EDGAR LOWE.

HOWELL W. HAFF.

Witnesses:

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J. B. REUP.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."