A. LARSSON.

SWITCHBOARD JACK AND PLUG.

APPLICATION FILED APR. 23, 1909.

950,107.

Patented Feb. 22, 1910.

Fig. 1.

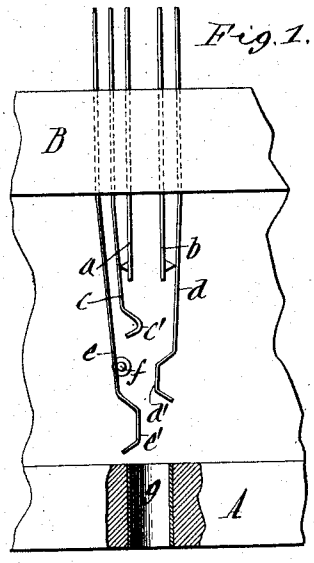


Fig. 2.

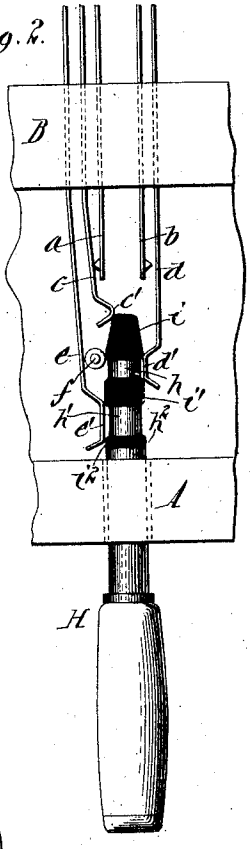
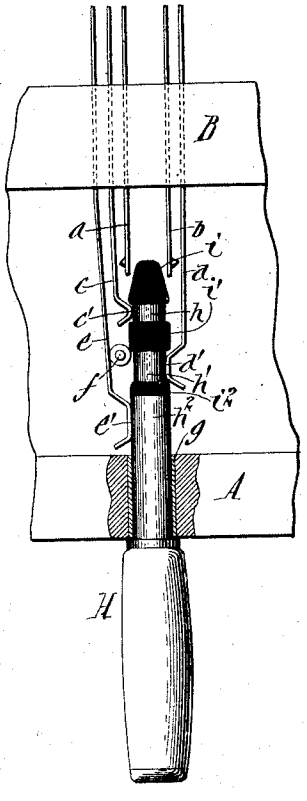


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SWITCHBOARD JACK AND PLUG.

950,107. Specification of Letters Patent. Patented Feb. 22, 1910.

Application filed April 23, 1909. Serial No. 491,752.

To all whom it may concern:

Be it known that I, ALFRED LARSSON, a subject of the King of Sweden, residing at Stockholm, Sweden, have invented a new and useful Improvement in Switchboard Jacks and Plugs, of which the following is a specification.

This invention relates to an improved jack and plug designed more particularly for telephone switch-boards. Its object is to so construct the jack and plug that the jack-springs cannot come in contact with any of the plug-sleeves except those with which they are intended to make connection when the plug is fully inserted, in order to prevent short-circuiting of the springs or the plug conductors.

In the accompanying drawings: Figure 1 is a top plan view of the improved jack, with the plug removed and the springs in normal position. Fig. 2 is a similar view of the jack and plug showing the latter partly inserted. Fig. 3 is a similar view showing the plug fully inserted.

Similar letters of reference indicate corresponding parts in the views.

A and B indicate the fixed front and rear bars of the jack-strip of a switch-board. The particular jack shown comprises a pair of inner springs *a*, *b* having the usual contact points; a pair of opposing outer springs *c*, *d* of different lengths coöperating therewith, and an outer spring *e* longer than the last-named springs and resting normally against an insulated stop pin *f*.

g indicates the customary jack-base or bushing seated in the front bar A and adapted to receive a corresponding plug H.

The several jack-springs *c*, *d* and *e* are provided on their inner sides with salient contact-faces c^1, d^1 and e^1, respectively, each of a different length or dimension from the contact faces of the remaining springs. In the construction shown, the contact faces of the several springs progressively increase in length toward the front of the jack.

The plug H has a number of contact sleeves *h*, h^1, h^2 corresponding to the number of movable jack springs, which is three in the example herein shown. The tapering tip *i* of the plug is of ivory or other suitable non-conductive material and its contact sleeves are separated by suitable insulators i^1, i^2, these insulators and the base or largest portion of the tip being raised above the surface of said sleeves, as shown. The several sleeves progressively diminish in length toward the tip to correspond to the respective contact faces c^1, d^1, e^1 of the jack-springs, but the face of the front spring *e* is longer than the intermediate plug-sleeves *h*, h^1 and the face of the intermediate spring *d* is longer than the front plug-sleeve *h*, so that when, in inserting the plug, a given sleeve thereof comes opposite a contact face of a jack-spring other than its companion, said face will bridge the raised insulators on opposite sides of said sleeve and remain out of contact with the latter. In other words, the contact-face of each spring is longer than the plug-sleeve or sleeves in advance of the sleeve with which that face coöperates. By reference to Fig. 2 which shows the plug partly inserted, it will be observed that the contact face of the intermediate spring *d* bridges the front sleeve *h*, and the contact face of the foremost spring *e* bridges the intermediate sleeve h^1. When, however, the plug is fully inserted, as shown in Fig. 3, the sleeves come opposite the contact-faces of the respective jack-springs and clear the insulators, permitting them to make connection with the companion springs and establishing the desired circuits.

It will be seen from the foregoing that inasmuch as none of the plug-sleeves can contact with any of the jack-springs unless the plug is fully inserted, all liability of short-circuiting the springs or the conductors of the plug is effectually obviated. The usual plug-conductors may be connected with the corresponding sleeves in any suitable or well known manner. They form no part of the invention and are not therefore illustrated in the drawings.

I do not wish to be confined to the particular embodiment of the invention herein shown and described as various changes in the construction of the parts may be made within the scope of the appended claims, and the number and arrangement of the jack-springs may obviously be varied to suit different telephone systems or circuit requirements.

I claim as my invention:

1. The combination of the jack-springs having contact faces, and a coöperating plug having contacts corresponding to the respective spring-faces and intervening insulators raised above said plug-contacts, the plug-

contacts diminishing in length toward the front of the plug and the contact-face of each spring being longer than the plug-contact or contacts in advance of its companion plug-contact.

2. The combination of the jack-springs having contact faces which progressively increase in length toward the front of the jack, and a plug having corresponding contacts which progressively diminish in length toward the front of the plug.

3. The combination of the jack-springs having contact-faces and a coöperating plug having a non-conductive tip and contact sleeves corresponding to the respective spring-faces and progressively diminishing in length toward said tip and insulators separating said sleeves and raised above the surface thereof, the contact-face of each spring being longer than the plug-sleeve or sleeves in advance of its companion sleeve.

4. A switch-board jack comprising a number of springs adapted to coöperate with corresponding contact sleeves of a plug, the salient contact-face of each spring differing in length from the faces of the other springs of the jack.

5. A switch-board jack having springs each provided with a salient contact face, the contact faces of the several springs increasing in length toward the front of the jack.

6. A switch-board plug having a non-conductive tip, a plurality of contact sleeves and insulators separating said sleeves and raised above the surface thereof.

7. A switch-board plug having a non-conductive tip, a plurality of contact sleeves progressively diminishing in length toward the tip, and insulators separating said sleeves and raised above the surface thereof.

Witness my hand this 5th day of April, 1909.

ALFRED LARSSON.

Witnesses:
CARL FRIBERG,
HENRIK PETTERSON.