April 30, 1935. M. J. ARNDT 1,999,497

TELEPHONE SWITCHBOARD

Filed Feb. 27, 1933 2 Sheets-Sheet 1

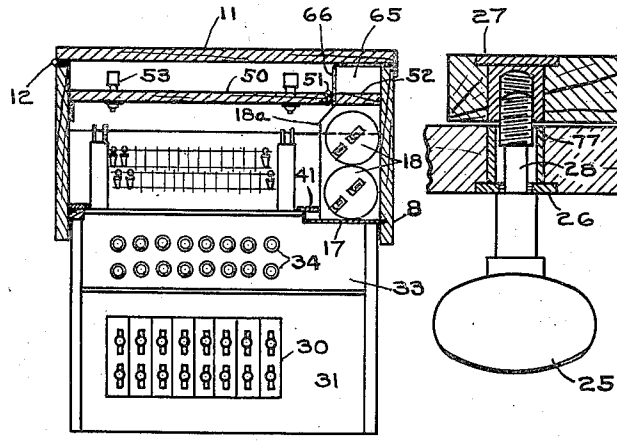


FIG. 7

FIG. 8

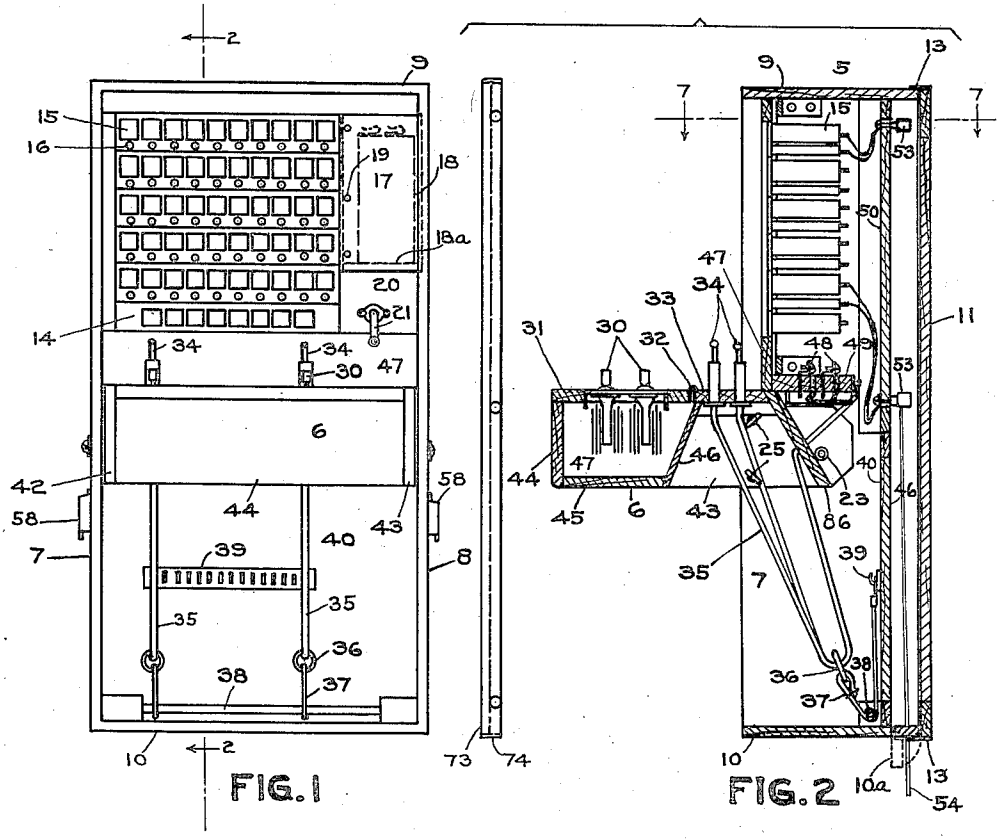


FIG. 1

FIG. 2

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TELEPHONE SWITCHBOARD

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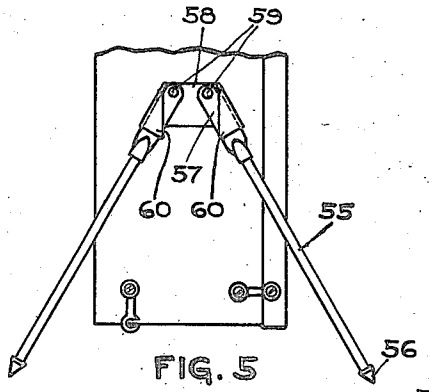


FIG. 5

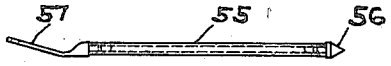


FIG. 6

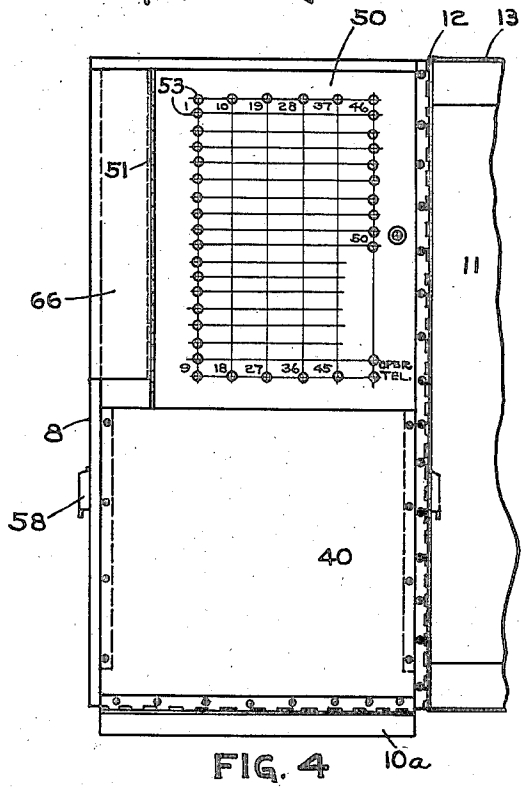


FIG. 4

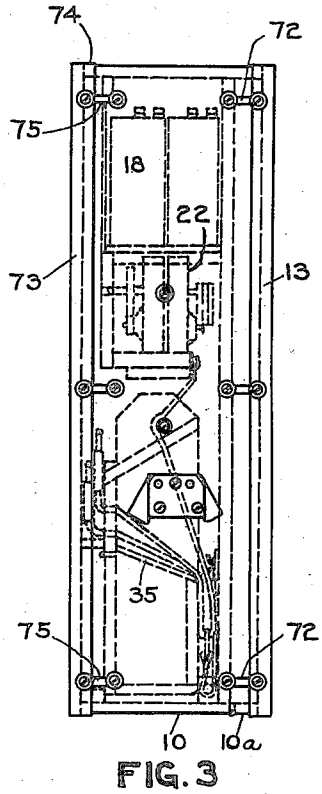


FIG. 3

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UNITED STATES PATENT OFFICE

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TELEPHONE SWITCHBOARD

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Application February 27, 1933, Serial No. 658,769

12 Claims. (Cl. 179—91)

This invention relates to telephone switchboards and more particularly to telephone switchboards of the portable type.

For many purposes, such as in military service, it is essential to have a portable switchboard which may be quickly set up, which may be easily and compactly stored away when not in use, and which nevertheless sacrifices none of the advantages or operating efficiency of a standard magneto switchboard.

In accordance with one feature of the invention, a switchboard is provided having a foldable key shelf support so mounted that the switchboard may be packed in a minimum amount of space when not in use.

A further feature of the invention relates to a foldable key shelf support in combination with a take-up device for the various cord conductors of the several cord circuits provided in the switchboard.

Another feature of the invention relates to a novel terminal rack for the various telephone lines, mounted within the switchboard.

These and other features of the invention will appear from the detailed description and claims when taken with the drawings in which Fig. 1 is a front elevation of a switchboard (in open or erected position) according to the present invention; Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1 also showing a removable cover which is used only when the switchboard is to be stored; Fig. 3 is a side view of the switchboard in closed position with the cover thereon, ready to be stored; Fig. 4 is a rear view of the switchboard with the rear door thereof in open position; Fig. 5 is a detailed view of a portion of one side of the switchboard showing the mounting for the supporting legs with these legs supported thereon; Fig. 6 is a view of one of the supporting legs; Fig. 7 is a section taken on the line 7—7 of Fig. 2; and Fig. 8 is a detailed sectional view showing the pivotal mounting for one end of the key shelf support and one of the locking means for holding the key shelf support in operating position, that is, at right angles to the main portion of the switchboard.

Referring to the drawings, 5 generally designates the vertical portion or body of a switchboard and 6 indicates a key shelf support pivoted on the body for movement from its open position shown in Fig. 2 to its closed or collapsed position shown in Fig. 3. The body of the switchboard includes the vertical sides 7 and 8, the top 9 and the bottom 10 which may be made of wood or other suitable material. The rear of the body is closed by a wooden panel 11 supported thereon by a piano hinge 12 (Fig. 7). The edges of this panel except where it is hinged to the body, are provided with a metal binding strip 13 which serves to give strength to the rear panel. The upper half of the front of the body is provided with a jack and drop field 14 in which there are mounted the well-known drops 15 and the jacks 16. This mentioned portion of body front is also provided with a removable panel 17 serving as a closure for a compartment which houses dry cells 18 normally supported on shelf 18a (Fig. 1). The mounting for the panel 17 includes a notch or groove in the vertical side 8 as shown best in Fig. 7, and suitable screws 19 (Fig. 1) which engage the vertical strip 41. The front of the body also has a panel 20 through which the crank 21 of a magneto generator 22 (Fig. 3) extends.

Below the drop and jack field with the related equipment just described, there is provided the mentioned key shelf support 6. This support is pivoted on bolts 23 extending through the vertical sides 7 and 8 and the sides of the key shelf support. This support includes two side pieces 42 and 43 connected at their front ends by a front board 44. The front board together with the bottom board 45 and the inclined board 46 which are joined at their ends to the side pieces 42 and 43, form a key pocket or compartment 47. A plug shelf 33 fixedly mounted on the upper edges of the side pieces 42 and 43 has hingedly connected thereto the key shelf 31 which serves to close the compartment 47. Key strips including the keys 30 are mounted on the key shelf and have their spring assemblies extending into the compartment 47. The plug shelf is provided with a series of pairs of openings and plug supports for plugs 34, which openings normally position each pair of plugs in alinement with a related key strip. As is well-known each plug has connected thereto at one end a cord 35 forming a part of an electrical circuit generally known as a cord circuit. The other end of each cord extends through a ring 36 of a take-up device to be described, and passes through an opening in a brace board 86, which is attached at its ends to the side pieces 42 and 43. After passing through the opening in the brace 86, the cord 35 has its conductors connected to contacts 48 mounted on a cord terminal shelf 49 supported in the body of the switchboard. It will be noted that the complete circuits employed in connection with the switchboard have not been shown

in the disclosure since they may be of the conventional type.

In order to hold the key shelf support in its open position, that is at right angles to the vertical portion of the switchboard, thumb screws 25 are provided. These thumb screws, as shown in Fig. 8, pass through a cap nut 26 mounted in an opening in the side pieces such as 43 of the key shelf support to engage an internally threaded packing nut 27 mounted in an opening in the side of the vertical portion of the switchboard and in registering relation with the cap nut 26 when the key shelf is in open position. It will be noted that the thumb screw 25 has a threaded portion 77 to make threaded engagement with the internally threaded packing nut 27. The thumb screw also has a reduced portion 28 so that the thumb screw can be withdrawn into the packing nut 26 when it has been disengaged from the packing nut 27. It will be further noted that the opening through which the stem of the thumb screw 25 passes is threaded so the thumb screw is normally held against withdrawal through the cap nut 26, but when desired can be removed by unscrewing the same through this cap nut.

In standard switchboards, a cord weight is suspended on each cord such as 35 tending to pull the cord and the plug 34 connected thereto into the position shown in Fig. 2 whenever its plug is disconnected from a jack. In a portable switchboard, such cord weights would be highly undesirable, not only because of the added weight thereof, but since these cord weights would be suspended from these cords, they would swing and mutilate the internal parts of the switchboard whenever the switchboard was being moved. In order to obviate this disadvantage, a novel form of cord take-up is provided. Each cord such as 35 passes through a ring 36, previously mentioned, to which there is connected an elastic element 37 which passes around a rod 38 anchored in the side walls of the vertical portion of the switchboard. The other end of the elastic take-up element is looped or fastened to a hook 39 on the fixed partition 40 within the body of the switchboard. With such an arrangement, it will be understood that the elastic element 37 tends to hold the cord 35 in the position shown, but is sufficiently elastic to permit the plug of the cord 35 connected thereto, to be inserted in any of the jacks at the front of the switchboard.

It has been mentioned that the drops 15 and the jacks 16 are mounted in the jack field at the front of the switchboard body. As is well known each jack and drop is individual to a telephone line. According to commercial telephone practice each telephone line terminates, outside of the switchboard, in a terminal rack which may be cross-connected to a related jack and drop. According to the present invention, the terminal rack is incorporated within the switchboard and takes the form of a wooden board 50 hinged at 51 to a strip 52 secured to the side 8 of the body. This board is provided with a plurality of pairs of coordinately spaced contacts 53 of which only a few are shown in Figs. 2 and 7. It will be noted from the last-mentioned views that the terminal board 50 as well as the fixed partition 40 in alinement therewith are spaced from the back panel 11 of the switchboard in order to provide a compartment for the telephone lines to pass therethrough. The bottom 10 of the switchboard body has hinged thereto a door 10a the free edge of which may be engaged and held closed by the binding 13 when the switchboard is packed away after being taken out of service. However, while the switchboard is in use, the door 10a is opened to the position shown in dotted lines in Fig. 2 so that the several telephone lines 54 may pass through the open door and through the space between the partition 40 and back panel 11, to the respective terminals 53 on the terminal board 50.

For simplicity in disclosure, the usual cable forms which include conductors extending to, the front of the terminal board, the drops, jacks, keys and cord conductors have been omitted, since they are of the well known arrangement, although herein modified, to permit the terminal board 50 to sway. However, in Fig. 2, two of the terminals on the terminal board are diagrammatically shown as connected to related jacks and drops.

Since the over-all height of the switchboard has been greatly reduced in order to make it compact, it is desirable to elevate the switchboard on legs so that the key shelf will be at a convenient height when the operator is seated. The legs which are provided for this purpose are demountable and each includes a main shaft 55 terminating at one end in a spud 56, and at its other end in an apertured flattened connecting portion 57. On the sides 7 and 8 of the switchboard body there are provided mounting brackets 58 which carry pins 59 and downturned lugs 60. When it is desired to mount the legs on the switchboard, the apertured end of the connecting piece 57 is placed on a pin 59, after which the shaft 55 is swung away from the vertical position to a position where one edge of its connecting portion 57 engages the downturned lug 60 of the bracket 55. In order to remove the legs from the switchboard, the switchboard is elevated until the shafts 55 of the legs can be swung to or beyond the vertical position after which they are disconnected from the pins 59. Since it is desirable to keep all of the related parts of the switchboard together when it is packed away from use, a compartment 65 (Fig. 7) is provided within which the legs may be inserted after they have been wrapped with suitable packing material. This compartment is formed on two sides by a sheet metal strip 66 bent to form two sides of a rectangle and having its long edges fastened to the free edges of the strip 52 and the side 8.

When it is desired to remove the switchboard from service and to store it away, the back panel 11 is opened so that the several telephone lines such as 54 can be disconnected from the contacts 53 on the terminal board. The set screws 25 are disengaged from the cap nuts 27 after which the key shelf support 6 is swung to the position shown in Fig. 3. The four legs are then removed from the brackets 58 and after being packed in suitable packing material, are placed in the compartment 65. The door 10a may now be closed as shown in Fig. 3 where it is held by the binding strip 13 on the back panel 11. When this panel is closed as shown in the mentioned Fig. 3 suitable box fasteners 72 securely fasten the back panel to the vertical portion of the switchboard. The front of the switchboard is closed by a front panel 73 which is re-inforced by a metal binding strip 74. Box fasteners 75 securely hold the front panel so that it closes the front of the vertical portion of the switchboard. When it is desired to restore the switchboard to service, the reverse of these operations may be quickly accomplished

so that the switchboard can be placed into operation in a minimum amount of time.

From the foregoing it will be seen that a switchboard is provided which can be folded into a small size so that it is readily portable and so that it can be stored in a small space.

What I claim is:

1. In a telephone switchboard, a vertical portion having telephone jacks thereon, a key shelf support and a key shelf both mounted to swing independently of each other with respect to said vertical portion from a position at right angles to said vertical portion to a position parallel to the principal axis of said vertical portion, connecting plugs mounted on said key shelf support, conductors terminating in said plugs, and means for supporting said key shelf support at right angles to said vertical portion.

2. In a telephone switchboard, a vertical portion having telephone jacks thereon, a key shelf support and a key shelf mounted to swing independently of each other with respect to said vertical portion, connecting plugs mounted on said key shelf, cords terminating in said plugs and connected to said vertical portion, a takeup device for each cord, and means for supporting the said key shelf support at right angles to said vertical portion.

3. In a telephone switchboard, a vertical portion, telephone jacks mounted on the front face of said vertical portion and serving as terminals for telephone lines, a key shelf support extending from the front surface of said vertical portion and at right angles thereto when in use, said key shelf support being pivotally mounted on said vertical portion so that it may swing from a position in which its top surface is in a plane substantially parallel with the plane of the front face of the vertical portion to a position at right angles to the front of said vertical portion, cords each terminating at one end in a plug normally supported on the upper surface of said key shelf support, a resilient takeup device for each cord whereby its plug normally rests on the key shelf support, and means for holding the key shelf support in a position at right angles to the vertical portion of the switchboard.

4. In a telephone switchboard, a vertical portion, jacks mounted on the vertical portion at the front thereof, a key shelf support extending from the front face of said vertical portion and mounted on said vertical portion to swing into a plane parallel to the principal plane of the vertical portion, a terminal rack normally extending parallel to the front face of the vertical portion, said rack being swingingly mounted at one edge within the vertical portion, contacts on said terminal board to which telephone lines may be connected and conductors connecting said contacts to said jacks.

5. In a telephone switchboard, jacks mounted on the vertical portion at the front thereof, a key shelf support extending from the front face of said vertical portion and mounted on said vertical portion to swing into a plane parallel to the principal plane of the vertical portion, a terminal rack within the vertical portion and normally extending parallel to the front face of the vertical portion, said rack being swingingly mounted at one edge, contacts on said terminal rack to which telephone lines may be connected and conductors connecting said contacts to said jacks, one of the enclosing faces of said vertical portion being provided with a door through which telephone lines may be connected to contacts on said terminal rack.

6. In a telephone switchboard, a vertical portion, jacks mounted on the front face thereof, a key shelf support mounted on the vertical portion to fold from a position in which the top of the key shelf support extends at right angles to the vertical portion, to a position in which the top surface of the key shelf support is in a plane substantially parallel with the front surface of said vertical portion, demountable legs on which said vertical portion is supported, and a compartment within said vertical portion in which said legs may be stored when the switchboard is not in use.

7. In combination with a telephone switchboard having a vertical portion, supporting means mounted on each end of said vertical portion, a pair of demountable legs mounted on each supporting means to diverge therefrom.

8. In a telephone switchboard including a vertical portion, a bracket mounted on each end of said vertical portion, each bracket being provided with a pair of pins and a pair of downturned lugs adjacent said pins, and a leg mounted on each pin in engagement with an adjacent lug.

9. In a telephone switchboard, a vertical portion having a telephone jack field thereon at its upper part, a key shelf support swingingly mounted on said vertical portion for movement from a horizontal position adjacent said jack field to a vertical position below said jack field, a key shelf swingingly mounted on said support, and means for holding said key shelf support in its horizontal position.

10. In a telephone switchboard, a vertical portion having a telephone jack field thereon at its upper part, a key shelf support swingingly mounted on said vertical portion for movement from a position adjacent to and at right angles to said jack field, and a key shelf swingingly mounted on said support to a position below said jack field.

11. In a telephone switchboard, a vertical portion having a jack field thereon on its upper part, a key shelf support swingingly mounted on said vertical portion for movement from a horizontal position adjacent said jack field to a position inside of said vertical portion.

12. In a telephone switchboard, a vertical portion having a jack field thereon on its upper part, a key shelf support swingingly mounted on said vertical portion for movement from a position wherein it projects from said horizontal portion adjacent said jack field to a position inside of said vertical portion.

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