

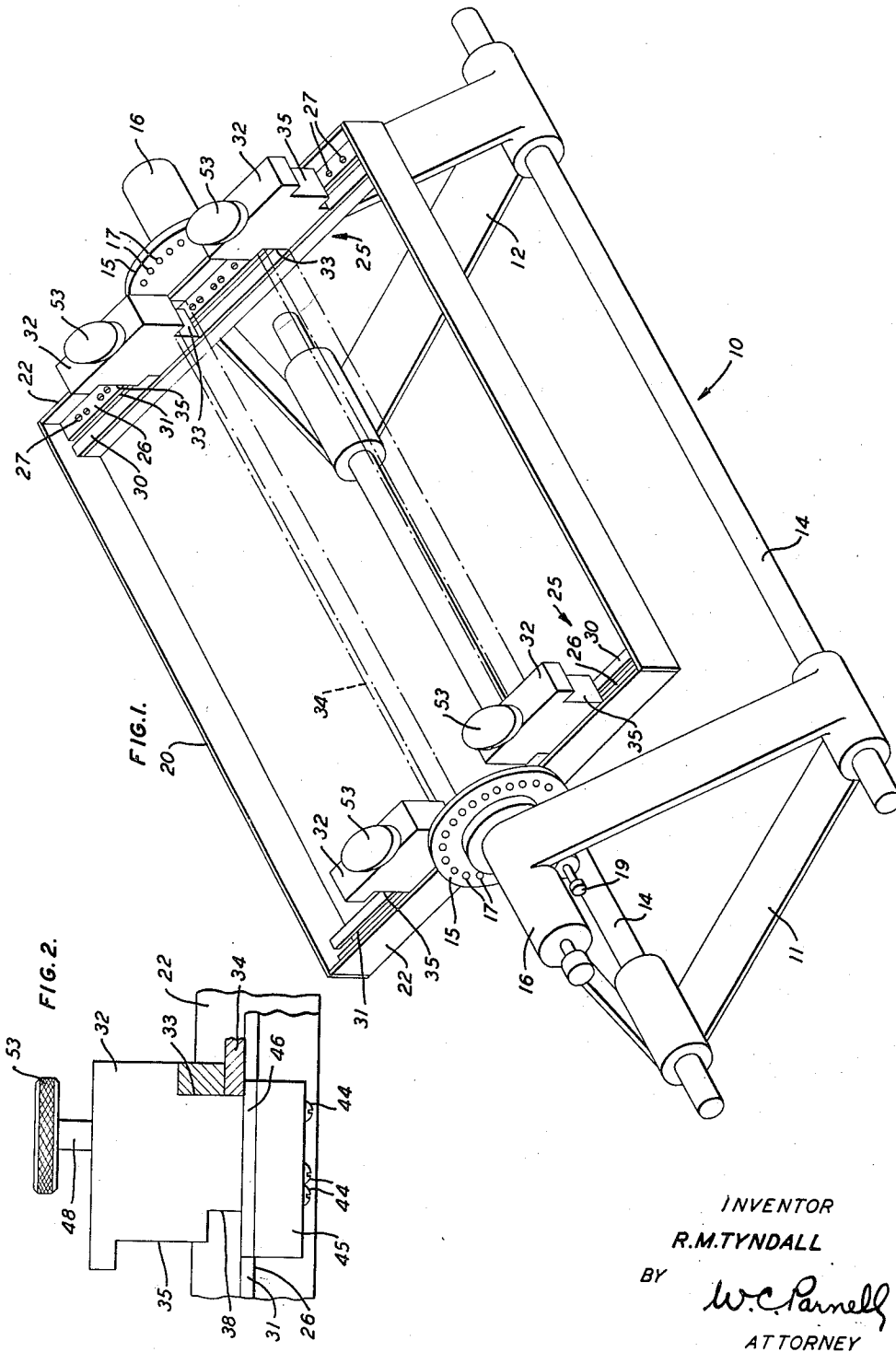
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R. M. TYNDALL
PANEL HOLDING APPARATUS

2,536,239

Filed Nov. 27, 1946

2 Sheets-Sheet 1



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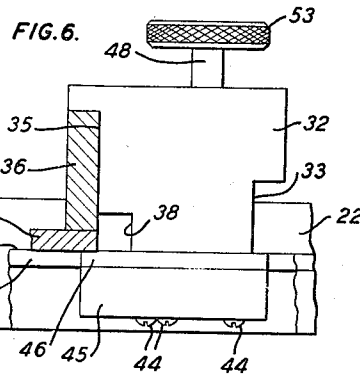
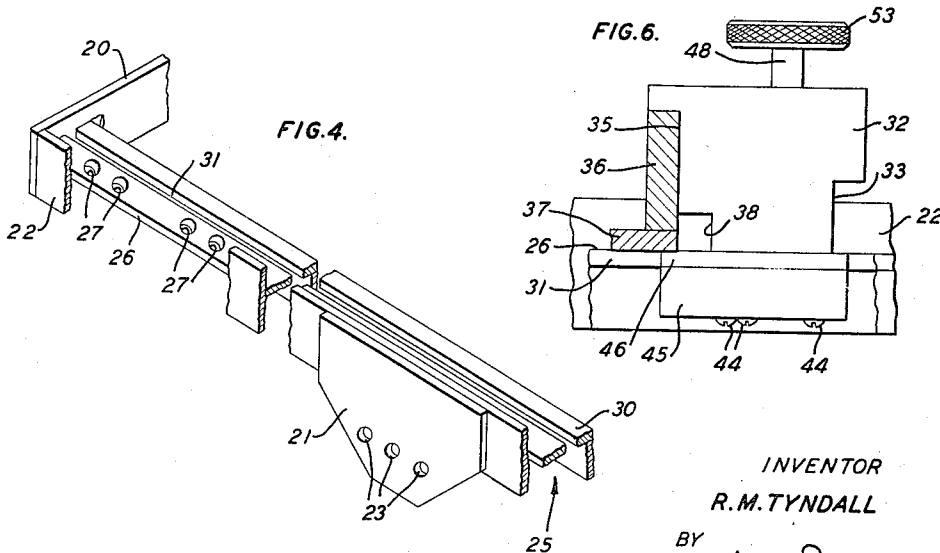
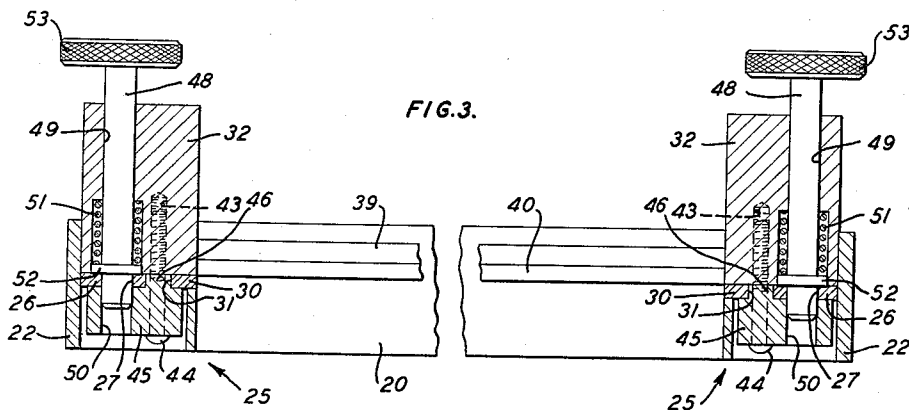
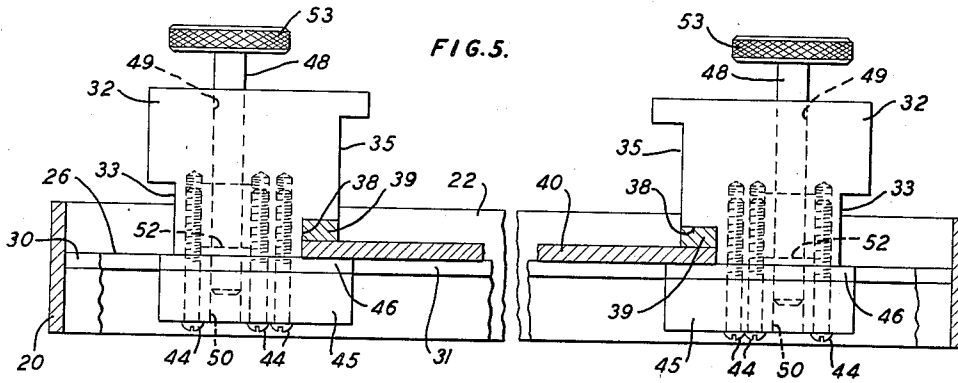
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UNITED STATES PATENT OFFICE

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PANEL HOLDING APPARATUS

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2 Claims. (Cl. 29—288)

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This invention relates to panel holding apparatus, and more particularly to apparatus for holding switchboard panels, which are of like lengths but of varied widths, for the mounting and/or wiring of electrical units thereon.

In the manufacture of telephone equipment, particularly the switchboards for telephone exchanges, metal frames are provided with vertical members apertured for the mounting of various types of panels of like lengths but of varied widths, these panels supporting the various electrical units necessary for the switchboard equipment. The electrical units are mounted upon their respective panels and the various electrical connections for the units are made prior to the mounting of the panels on the switchboard frames. In assembling the units and performing the various wiring and soldering operations, it is necessary to move the panel about its longitudinal centerline and without a suitable support for the panel, certain of the terminals or electrical connections between the units may be damaged.

An object of the invention is to provide an apparatus which is simple in structure and highly efficient in readily receiving and supporting panels of varied widths in selected positions about a pivotal support.

Broadly the apparatus comprises a supporting base with a frame pivotally supported thereby and having sides with standard spaced apertures therein. Panel holding blocks notched to receive panels of various widths are slidably mounted on the side members and through the aid of spring actuable pins, receivable in any of their respective apertures, the blocks are secured in the frame to hold any selected one of the panels in place.

More specifically the apparatus includes a frame of a given length to receive any of the standard panels, the frame being secured to pivotally supported members of a base whereby the frame may be locked in any desired position about its pivotal support. The panel holding blocks, for example, may have a single deep notch at one side thereof to receive a channel type panel and two notches at the other side of each block to receive other types of panels. The spring pressed pins carried by the holding blocks are receivable in any of the apertures in the side members of the frame to cause the blocks to hold any selected panel as near as possible to the pivotal centerline of the frame.

Other objects and advantages will be apparent from the following detailed description

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when considered in conjunction with the accompanying drawings, wherein

Fig. 1 is a perspective view of the apparatus supporting one type of panel;

Fig. 2 is a fragmentary side elevational view of one of the holding blocks supporting the panel shown in Fig. 1;

Fig. 3 is a longitudinal sectional view through the frame and one pair of holding blocks;

Fig. 4 is a fragmentary perspective view of a portion of one of the sides of the frame;

Fig. 5 is a lateral sectional view of the frame showing the holding blocks positioned to hold another type of panel; and

Fig. 6 is a fragmentary detailed view of one of the holding blocks positioned to hold still another type of panel.

Referring now to the drawings, attention is first directed to Fig. 1 which illustrates a base 10 with triangular end members 11 and 12 connected to each other by rods 14. Mounting plates 15 are fixedly mounted upon shafts (not shown) journaled in bearings 16 in the upper portions of the end members 11 and 12. The mounting plates 15 are cylindrical and have a plurality of apertures 17 disposed in circular arrangement concentric with the pivotal support or the shafts for the mounting plates. A spring pressed pin 19 may be provided for either one or both of the mounting plates, supported by its respective end member 11 or 12 and receivable in any of the apertures 17 of its respective mounting plate 15.

A frame 20 has plates 21 fixedly mounted at each side 22 thereof with apertures 23 to receive mounting bolts or rivets (not shown) by the aid of which the frame is secured to the mounting plates 15, with its longitudinal centerline adjacent and parallel with the axes of the shafts supporting the mounting plates. The frame 20 is provided with side structures, indicated generally at 25, which include strips 26 with apertures 27 disposed at like spaced positions throughout their lengths. The strips 26 are disposed beneath the upper surface of the main sides 22 of the frame 20 and extend the full lengths thereof as shown in Fig. 1. A supporting element 30 which is angular in cross-section or formed of two parts to complete this structure is mounted at a spaced position from each of the strips 26 to provide longitudinal grooves 31.

The holding blocks are substantially identical in structure and a description of one will apply to all four of the blocks shown. Attention is now directed to Figs. 2 and 3. The block 32 shown in

Fig. 3 has a recess 33 to receive one side of a panel 34. A recess 35 is formed in the opposite surface of the block 32 to receive an edge 36 of a panel 37 shown in Fig. 6. Another recess 38 is formed in the side of the block, with the recess 35, to receive an edge 39 of a panel 40 (Fig. 5). The block 32 has threaded apertures 43 to receive mounting screws 44 extending through a companion element 45 which serves to complete the mounting block and connect it for sliding movement on its respective side of the frame. The element 45 has an integral rib 46 receivable in the groove 31 so that, when the mounting screws 44 are disposed in place to firmly connect the element 45 with the mounting block, this assembly will be free to move longitudinally on its side 25 guided by the groove 31. A pin 48 vertically movable in an aperture 49 of the block 32 and an aligned aperture 50 in the element 45, urged downwardly by a spring 51 pressing against a collar 52 concentric with and also integral with the pin 48. The pin 48 is receivable in any of the apertures 27 to lock the holding block in any selected position depending upon the width of the panel. A knurled handle 53 integral with the upper end of the pin may be employed in removing the pin from one of the apertures 27 for releasing a panel from the frame. The holding blocks 32 have been described as being substantially identical in structure, the distinguishing feature which divides them into pairs being the locations of the pins 48 required for registration with the apertures 27 in the side strips 26.

In the present embodiment of the invention, three types of panels have been illustrated, they differing mainly by their side structures. These panels are of like lengths but vary in width in multiples of $1\frac{3}{4}$ " which is the width of the smallest panel. For this reason the apertures 27 are disposed in pairs known distances apart, the farthest apertures of two adjacent pairs having their centers $1\frac{3}{4}$ " apart, the other apertures of these pairs each being positioned with its center $\frac{1}{4}$ " from its respective aperture. The spacing of the last mentioned or innermost apertures of adjacent pairs compensates for the overlapping required for holding the panel 37 (Fig. 5) in the recesses 35 of the holding blocks.

Upon considering the function or operation of the apparatus, the relative positions of the holding blocks depend first upon the type of panel to be supported by the apparatus and second upon the width of that particular panel. If the operator has a number of panels of one particular type to complete, the holding blocks may be assembled in the side structures 25 of the frame to receive this particular type of panel. As a rule the frame is positioned at a desired angle where it will be most convenient for the operator to mount the various units on the panel and to perform the initial wiring and soldering operations. The lowermost holding blocks 32 are positioned in general alignment with each other with the upper holding blocks positioned away from the lower blocks so that the panel may be located in proper position centrally of the frame or at any desired location therein. The upper holding blocks are then moved singly into place, the operator holding the pin 48 free of the apertures 27 until the block has been moved into engagement with the panel after which the pin is released to enter the aperture 27 at that position. After this has been accomplished the remaining holding block is moved into its holding position and its pin 48 released to complete the mounting of the panel on

the frame. The necessary operations may then be performed upon the panel including, if desired, the mounting of various electrical units thereon, the attachment of insulated wires to their terminals and/or the soldering of the wires to their terminals. During these operations, it may be necessary to turn the panel about its longitudinal centerline which in this instance would be the axis of the frame. This may be readily accomplished by removing the pin 19 from its aperture 17 and turning the frame about its pivotal support until the panel is in the desired location. The pin 19 may be released, locking the frame with the panel in the selected position. When all of the operations have been completed on the panel, the frame may be returned to its initial loading position, the completed panel removed and another panel mounted in place.

It is apparent that the mounting of panels of different widths will require only the adjustment of the holding blocks for the positioning of these panels singly in selected positions in the frame. The blocks positively hold the panels against lateral displacement, while the end members 22 of the frame hold the panels against longitudinal displacement.

If the holding blocks 32 are to be reversed from the position shown in Fig. 1 so that the recesses 35 or 38 upon the opposite sides thereof may be employed, the lowermost holding blocks are removed from the frame by removing their screws 44, the upper holding blocks are moved downwardly on the frame and the other holding blocks again mounted upon the upper portion of the frame. The blocks may then be employed for holding the panels 37 and 40 in the same manner as described in connection with the panel 34.

Although specific improvements of the invention have been shown and described, it will be understood that they are but illustrative and that various modifications may be made therein without departing from the scope and spirit of this invention as defined by the appended claims.

What is claimed is:

1. An apparatus for holding panels of various standard widths comprising a frame substantially rectangular in general contour, supporting elements mounted in the frame adjacent opposing sides thereof and having longitudinally extending apertures therein and standard spaced pin receiving apertures disposed in lines parallel with the first apertures, panel holding blocks notched to receive panels of various widths and thicknesses, slidably mounted on the elements over the apertures, retaining members disposed beneath the supporting elements, with apertures therein to register with the pin receiving apertures of their elements, secured to their respective blocks through their longitudinally extending apertures to hold the blocks on the elements for free movements in paths guided by the longitudinally extending apertures, and spring actuable pins carried by the blocks and receivable in any of the pin receiving apertures of their respective elements and the aligned apertures of their retaining members to securely lock the blocks in selected positions on the elements to hold a selected panel firmly on the elements in the frame.

2. An apparatus for holding panels of various standard widths comprising a substantially rectangular hollow frame with side and end members, parallel supporting elements mounted in the frame adjacent the end members short of the edges thereof and having standard spaced pin

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receiving apertures in parallel rows therein, companion supporting elements angular in cross-sections mounted in the frame at equally spaced positions from their respective supporting elements to provide elongate apertures the full lengths of the supporting elements, panel holding blocks notched to receive panels of various widths and thicknesses, slidably mounted on the supporting elements over the elongate apertures, retaining members disposed beneath the supporting elements, with apertures therein to register with the pin receiving apertures of their supporting elements and reduced longitudinal portions extending through the elongate apertures and secured to their respective blocks to hold the blocks on the elements for free movements in paths guided by the longitudinally extending apertures, and spring actuable locking pins carried by the blocks and receivable in any of the pin receiving apertures of their respective elements and the aligned apertures of their retaining members to securely lock the blocks in selected positions on

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the elements to hold a selected panel firmly on the elements within the frame.

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