March 10, 1931. C. L. CALKINS 1,795,930

SWITCHBOARD

Filed March 6, 1930 4 Sheets-Sheet 1

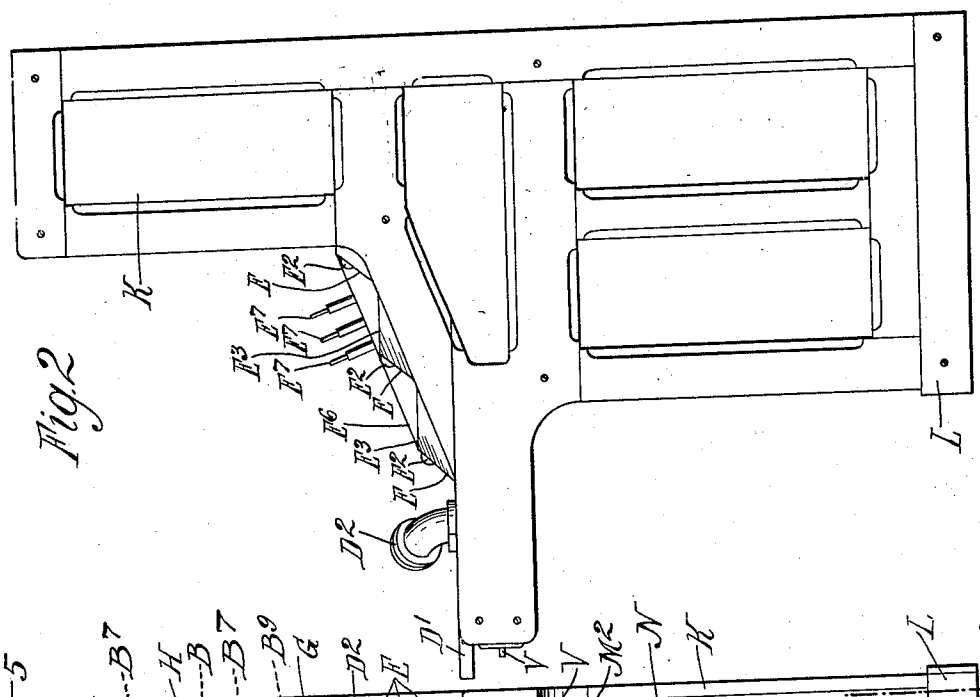


Fig 2

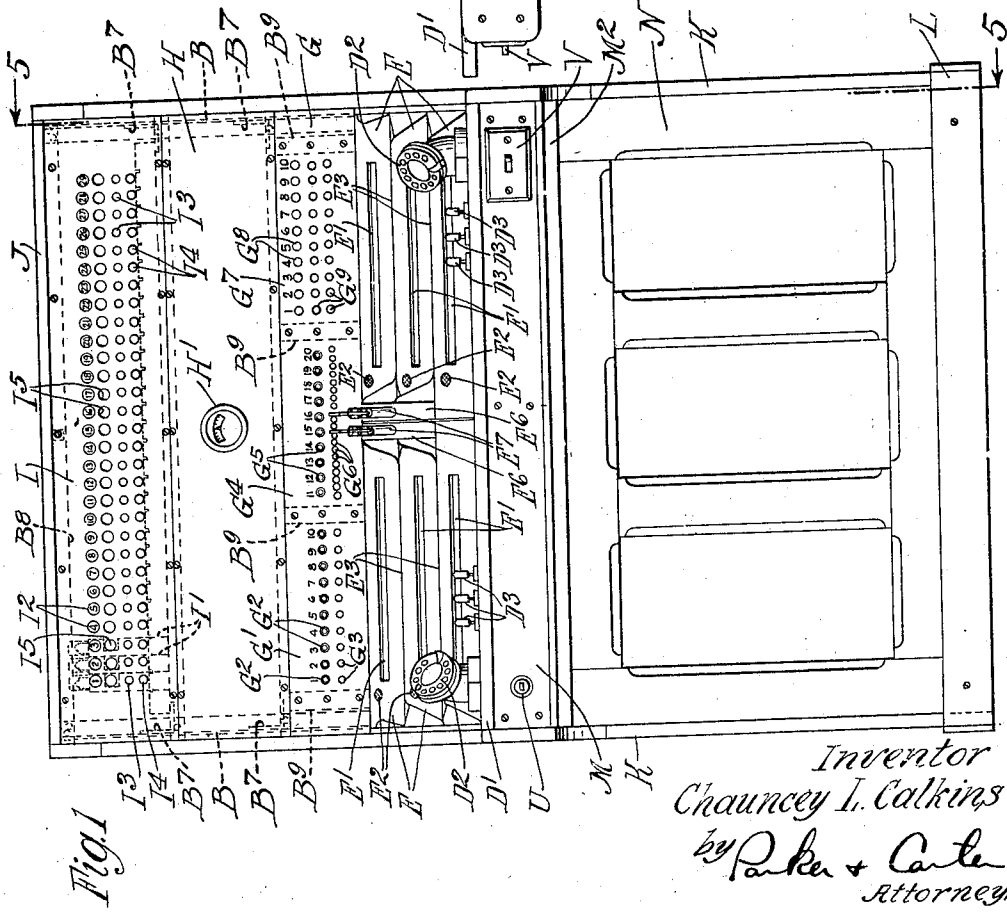


Fig 1

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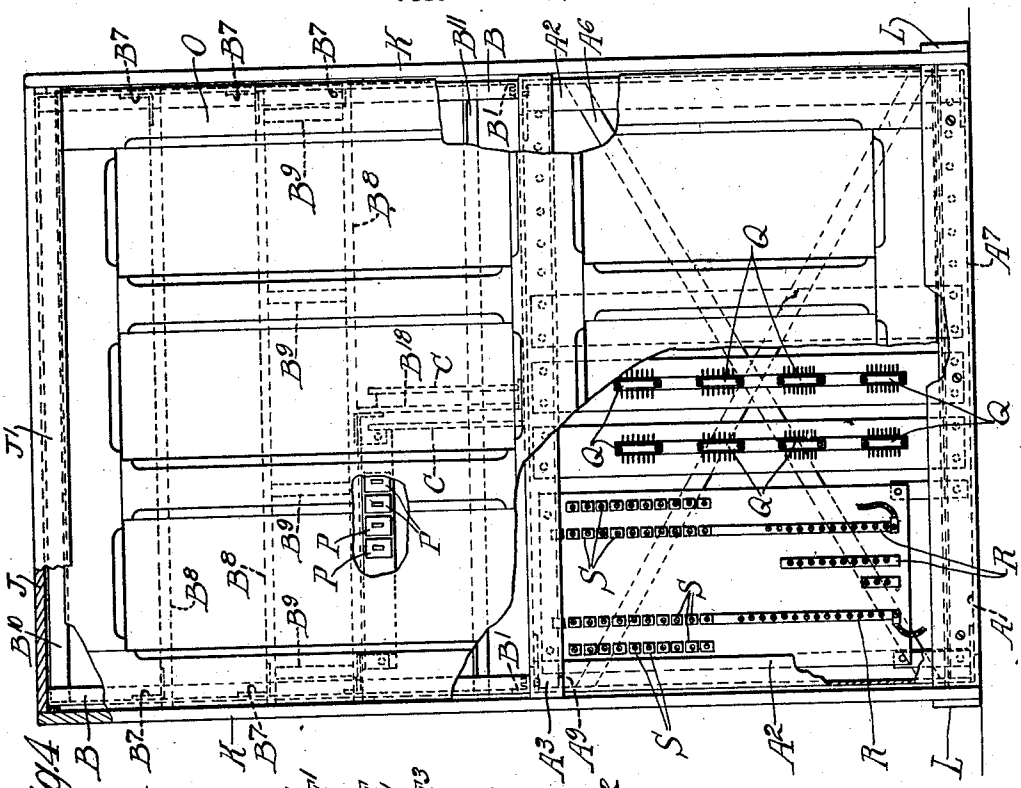


Fig 4

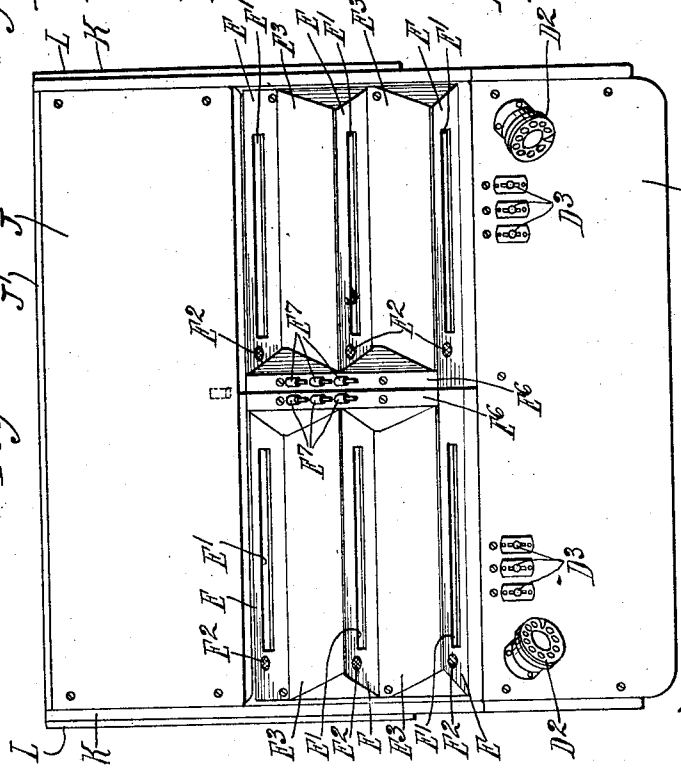


Fig 3

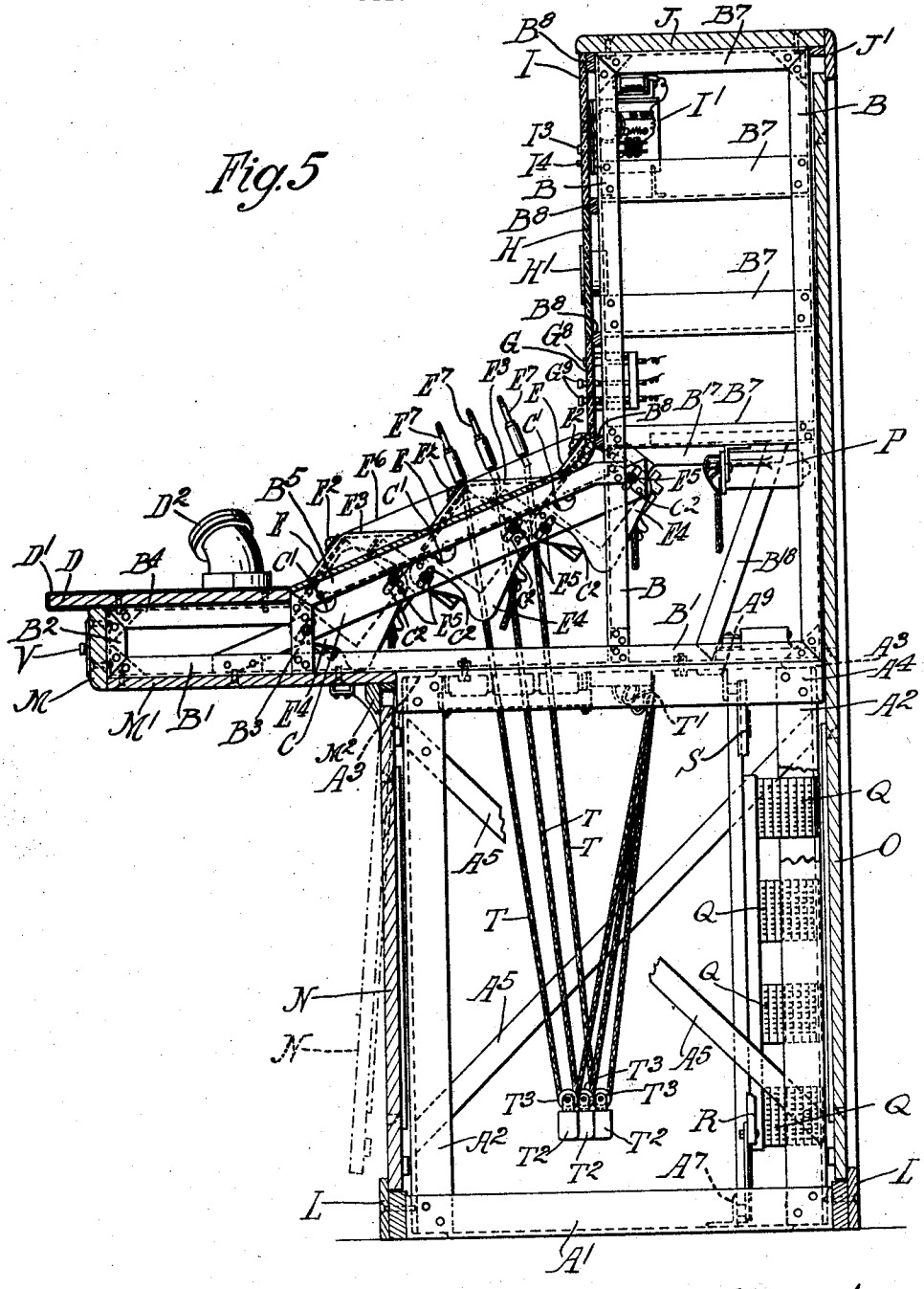
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SWITCHBOARD.

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Fig. 5



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Fig. 6

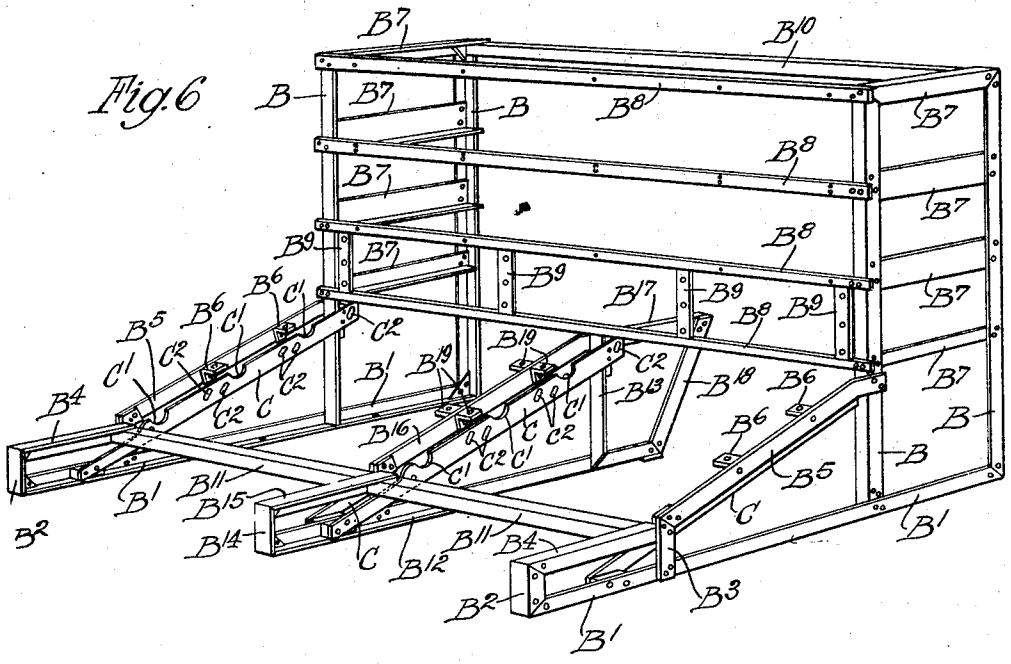
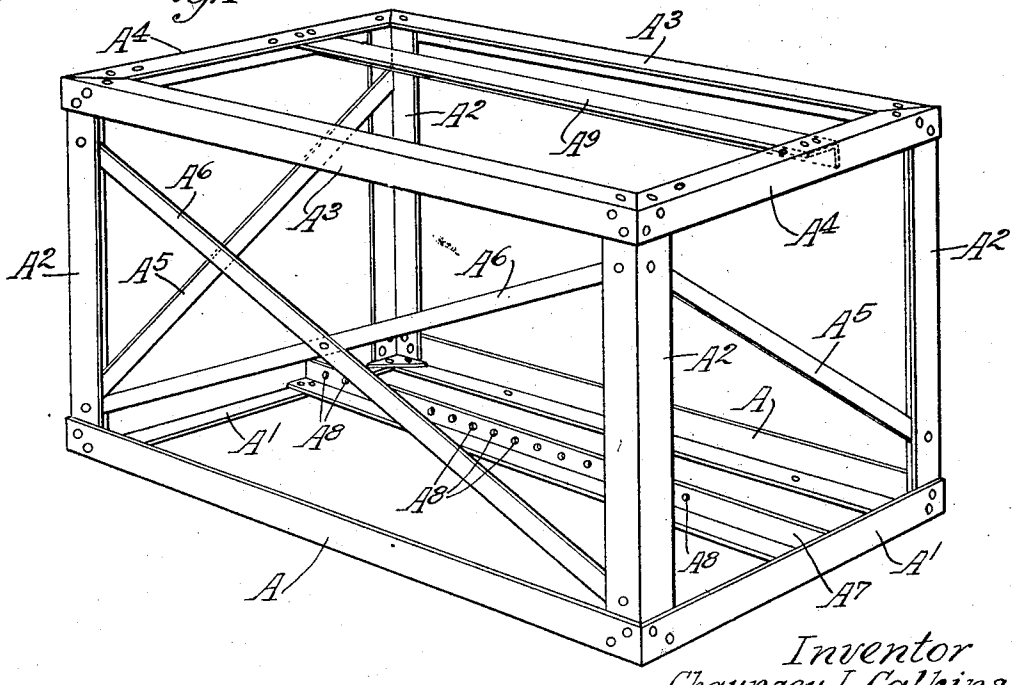


Fig. 7



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Patented Mar. 10, 1931 1,795,930

UNITED STATES PATENT OFFICE

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SWITCHBOARD

Application filed March 6, 1930. Serial No. 433,604.

My invention relates to the design and construction of a switch board. It is illustrated in connection with a switch board which may be used for a system of communication which embodies a number of devices by means of which visual communication is possible from the switch board to one or more stations elsewhere and from that station or stations to the switch board. This equipment, which may be to transmit visual signals, is not illustrated in detail and is only suggested in the accompanying drawings because the switch board is not limited in its use to any particular type of equipment. It might be used for standard manual telephone equipment, automatic telephone equipment, or any equipment involving switching which is preferably assembled in a central switch board station.

One object of the invention is to provide a mechanism in which a structural frame is provided and in or upon which equipment may be removably mounted, which frame will furnish all of the necessary structural elements and structural strength. Another object of the invention is to provide in connection with such a switch board frame sheathing which may be made of any suitable material and which serves merely as an enclosure and has no strengthening or supporting functions. Another object of the invention is to make such a switch board in two main separable assemblies each of which may have removably mounted in it certain parts of the switching mechanism and one of which shall preferably serve as a support for the other.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein:

Fig. 1 is a front elevation of the switch board complete, with certain of the switching and indicating elements shown;

Fig. 2 is a side elevation of the device shown in Fig. 1;

Fig. 3 is a top plan view;

Fig. 4 is a rear elevation, with parts in section and parts broken away;

Fig. 5 is a vertical cross section taken on line 5—5 of Fig. 1, with certain units of the switching mechanisms indicated in position;

Fig. 6 is a perspective view of the frame of the upper or turret part of the switch board;

Fig. 7 is a perspective view of the lower or base portion of the switch board frame.

Like parts are designated by like characters throughout the specification and drawings.

The base portion of the frame is formed of two relatively long bottom members A, A, which are joined by two relatively shorter bottom members A^1, A^1. Extending vertically at each corner of the frame thus formed is a member A^2, A^2. At their tops these are joined by longitudinal members A^3, A^3 corresponding to the members A, and by transverse members A^4, A^4, corresponding to the members A^1. Diagonal bracing members A^5, A^5 may be used at the ends and other diagonal bracing members A^6, A^6 may be used on the sides. They are preferably not used at the rear or back side because that side is preferably kept unobstructed to permit the insertion and removal of pieces of switching, telephone, or other equipment and wiring. A longitudinal equipment receiving member A^7, provided with a series of perforations A^8, is fastened adjacent the bottom of the frame and may be supported on the members A^1, A^1. This member is provided to receive equipment which may be installed in the switch board and the perforations are provided to permit the installation of this equipment. A similar or corresponding member A^9 is provided above the member A^7 and is supported on the frame members A^4, A^4. The various members which make up the base frame shown in Figure 7 are provided with perforations so that the outer casing may be removably attached to the frame.

The turret frame, or upper frame, as shown in Figure 6, embodies four or more upright members B, which may form or define the corners of the frame. Joining the pairs of members B are members B^1, B^1, which project forwardly of the portions B and serve to support some of the equipment which is to be installed in the switch board and also to support a shelf or desk-like portion which

will be described below and at their forward ends the members B^1, B^1 support relatively short, upwardly projecting members B^2. Intermediate their ends the members B^2 support other upwardly projecting members B^3. Supported upon and extending between each of the members B^2, B^3 is a relatively horizontal member B^4. B^5, B^5 are frame members which are joined to the upright members B^3 and extend upwardly at an incline and are joined at their opposite ends to the adjacent vertical members B. The members B^5 are provided with brackets or other suitable parts B^6 to which other parts of the casing or parts of the equipment may be attached. Extending between each pair of vertical members B is a plurality of transverse members B^7. These serve to strengthen the frame and also to form supports for equipment which is to be installed in the switch board. They are provided with suitable holes by means of which the parts which they are to support or which are to be attached to them are secured. They are preferably angular in cross section as shown. Extending longitudinally and joining what may be called the front pair of vertical members B, is a plurality of longitudinal members B^8, B^8. These may be of any suitable cross section and any two of them may be joined by vertical members B^9, B^9. The members B^8 and B^9 are provided with perforations, by means of which parts which they are to support may be secured to them. B^{10} is a rear longitudinal member generally similar to the members B^8. The vertical members B^3 are joined by a horizontal longitudinal member B^{11}. B^{12} is a forwardly projecting member which preferably lies in the same plane as the members B^1 and is supported, intermediate its ends, by a vertical member B^{13} which is itself fastened to the lower longitudinal member B^8. At its forward end the member B^{12} carries a short vertical member B^{14} which is generally similar in size and shape to the vertical members B^2. Supported on the member B^{14} and on the member B^{11} is a generally horizontal member B^{15} which corresponds preferably in size and shape to the members B^4. Extending upwardly and at an incline from the member B^{11} is a member B^{16} which corresponds generally in size and shape to the member B^5. It may be fastened to the lower longitudinal member B^8 and is provided also with a generally horizontal rearwardly extending portion B^{17} which extends rearwardly beyond the end of the horizontal member B^{12}. It is provided at its rear with an inclined member B^{18} which joins the rear of the portion B^{17} with the rear of the member B^{12}. The inclined member B^{16} is provided with brackets B^{19}.

Fastened in an inclined position to the forward part of the turret frame is one or more pairs of equipment supporting members C. These members are mounted in the inclined position shown and each of them is provided in its upper surface with one or more notches C^1 into which engaging parts of equipment may be placed and each of them is provided with a number of slots C^2. These slots permit adjustable engagement with or support for parts of the equipment which are to be positioned in the frame.

In Figure 5 the two frame parts, namely the base and the turret, are shown as fastened together. They may be bolted or otherwise secured together in any suitable manner. In this figure there is shown also in section the casing or housing members which enclose the frame, together with certain diagrammatically indicated parts of communicating apparatus. The particular parts in question form no essential part of the present invention and are shown in place only to indicate that such parts may be mounted in the assembly. The assembled device, with the enclosing parts shown in full lines, appears in the first four figures.

A shelf or desk portion may be provided and when provided it is supported mainly on the members B^4 and the members B^{15}. It may be made of a central wooden core D which is provided with an envelope D^1 of bakelite or other preferably insulating material. Two or more dialing assemblies D^2, D^2 may be mounted on the shelf D^1 and in this shelf member a plurality of keys D^3, D^3 may also be mounted. In the particular installation shown, the dialing equipment is arranged for use in a visual communication system and the keys are arranged for use as calling and resetting mechanisms in connection with the visual communication system. Two cover plate assemblies are provided on the inclined portion of the switch board although one or more might be used. Each of these cover plate assemblies is shaped to provide three inclined surfaces E. These surfaces are so inclined as to be readily visible to the eye of the operator and each is provided with a slot or opening E^1 through which communication parts may show. These parts may be of any suitable form and are sometimes numbers, letters or other symbols, which are moved by mechanism not shown as they form no particular part of the present invention. In each of the surfaces E, preferably adjacent the slot E^1 is a tell-tale light E^2 which flashes when the apparatus is inserted. Each of the cover plates is preferably formed as a unit and between each two inclined surfaces E is a relatively flat or less inclined surface E^3. As in the form of the invention shown herewith, beneath each of the cover plates there are located three visual communication units E^4 which need not be shown or described in detail. Sufficient to say that the visual units are so positioned so that they can be seen through the slots E^1 and they

are supported by bolts E^5 in the slots C^2. They may be wired and arranged to be operated from a distant station so that an operator at such station can send a visual message to the operator of the main switch board, this message being seen through the slot E^1 over the particular device which is being operated. Each of the cover plates may have a raised portion E^6 along one edge and this portion E^6 is provided with one or more openings through which jacks E^7 project.

The front side of the vertical portion of the turret may be closed in any suitable manner. It may merely be closed by a plating or sheathing or, as in the form shown herewith, in which it supports instrument panels. That portion immediately above the inclined cover plates has removably fitted in it a panel G which is divided in effect into three zones, the left hand zone G^1 being provided with a number of perforations G^2 into which one or more of the jacks may be inserted. For each one of the perforations a tell-tale light G^3 is provided. The central zone G^4 of the panel G is provided also with perforations G^5 and tell-tale lights G^6. The right hand zone G^7 is provided with a plurality of lights G^8 and rows of push buttons G^9.

Next above the panel G may be positioned any other panel which may or may not carry instruments or connections. In the form shown herewith a panel H is positioned and it carries a volt meter H^1. The top panel I has mounted in connection with it a plurality of service units I^1. Each of these units connects with a particular station. When the station calls its unit comes into operation. A row of numbers I^2 is provided, a row of lights I^3, a row of buttons or switches I^4, and a row of apertures I^5. Across the top of the turret the cover or casing member J is provided which has in its rear a downwardly projecting flange J^1. Side panels K suitably shaped to conform to the shape of the switch board assembly are provided and they may be made as a unit or in separable parts. About the bottom of the switch board assembly is provided a fixed flange L which extends entirely about the device. It may be made and attached in any suitable manner. The front of the forwardly projecting shelf portion is closed or covered by a member M and a bottom member M^1 is also provided. Depending downwardly from the bottom member M^1 is a flange M^2.

N is a front door or cover plate. When in position, as indicated in full lines in Figure 5, it rests behind the flange L at the bottom and behind the flange M^2 at the top. Sufficient play is provided, however, so that it may be raised above the flange L and swung outward into the dotted line position, indicated in Figure 5. O is a rear closing member which is engaged and held in position by the flanges L and J^1. It may be removed in the same manner as that described in connection with the front member N.

For sake of illustration certain other equipment has been shown in position in the switch board. P are relays. Q are terminal strips. R are bus bars. S, S are fuse panels. The jacks E^7 are provided with cords or cables T which are attached as at T^1 and provided with weights T^2 which are mounted by means of pulleys or rollers T^3. There is shown mounted on the member M a buzzer button or switch U. V is a cut-out switch which may be used to cut out the entire board.

It will be realized that while I have herein shown and described an operative device, nevertheless many changes might be made in the size, shape, numbers and disposition of parts without departing from the spirit of my invention, and I request, therefore that my showing be taken as in a sense diagrammatic. In particular, while the apparatus has been shown with typical parts of an actually installed communication system, obviously these details form no essential part of the present invention because the type of construction illustrated herewith may be used for an almost infinite variety of switch boards, adapted to contain many kinds of apparatus for use in communication and other systems.

I claim:

1. In combination in a switch board, a main supporting frame formed in a plurality of separable assemblies, each assembly formed of frame members and providing positions of attachment, adapted to receive machine parts, the assemblies adapted to be removably fixed together, and casing members removably attachable to said frame assemblies when the latter are joined together; said frame assemblies carrying the entire weight of machine parts and the casing serving only to enclose the frame and the parts which are positioned in or supported therefrom.

2. In combination in a switch board, a main supporting frame formed in two separable assemblies, each assembly formed of frame members and providing positions of attachment, adapted to receive machine parts, the two assemblies adapted to be removably fixed together, and casing members removably attachable to said frame assemblies when the latter are joined together, said casing members adapted to surround and enclose the frame assemblies, said frame assemblies carrying the entire weight of machine parts and the casing serving only to enclose the frame and the parts which are positioned in or supported therefrom.

3. In combination in a switch board a main supporting frame formed in two separable assemblies, each assembly formed of frame members and providing adjustable positions of attachment, adapted to receive ma-

chine parts, the two assemblies adapted to be removably fixed together, and casing members removably attachable to said frame assemblies when the latter are joined together, said frame assemblies carrying the entire weight of machine parts and the casing serving only to enclose the frame and the parts which are positioned in or supported therefrom.

4. In combination in a switch board, a main supporting frame formed in two separable assemblies, each assembly formed of frame members and providing adjustable and separable positions of attachment, adapted to receive machine parts, the two assemblies adapted to be removably fixed together, and casing members removably attachable to said frame assemblies when the latter are joined together, said frame assemblies carrying the entire weight of machine parts and the casing serving only to enclose the frame and the parts which are positioned in or supported therefrom.

5. In combination in a switch board, a main supporting frame formed in two separable assemblies, each assembly formed of metallic frame members and providing positions of attachment, adapted to receive machine parts, the two assemblies adapted to be removably fixed together, and casing members removably attachable to said frame assemblies when the latter are joined together, said frame assemblies carrying the entire weight of machine parts and the casing serving only to enclose the frame and the parts which are positioned in or supported therefrom.

6. In combination in a switch board, a main supporting frame formed in two separable assemblies, each assembly formed of metallic frame members and providing positions of attachment, adapted to receive machine parts, the two assemblies adapted to be removably fixed together, and wooden casing members removably attachable to said frame assemblies when the latter are joined together, said frame assemblies carrying the entire weight of machine parts and the casing serving only to enclose the frame and the parts which are positioned in or supported therefrom.

7. In combination in a switch board, a main supporting frame formed in two separable assemblies, each assembly formed of metallic frame members and providing adjustable and separable positions of attachment, adapted to receive a variety of machine parts, the two assemblies adapted to be removably fixed together, and casing members removably attachable to said frame assemblies when the latter are joined together, said casing members adapted to surround and enclose the frame assemblies, and the machine parts which may be positioned in them, said frame assemblies carrying the entire weight of machine parts and the casing serving only to enclose the frame and the parts which are positioned in or supported therefrom.

8. In combination in a switch board adapted to form part of a system of visual communication, a plurality of visible communication elements positioned in said switch board, and a plurality of assemblies adapted to display simultaneously a plurality of symbols and a covering for said assemblies, said covering provided with a separated, sloping portion for each of said assemblies.

9. In combination in a switch board adapted to form part of a system of visual communication, a plurality of visible communication elements positioned in said switch board, and a plurality of assemblies adapted to display simultaneously a plurality of symbols and a covering for said assemblies, said covering provided with a separated, sloping portion for each of said assemblies, there being a plurality of openings in each of said slopes.

10. In combination in a switch board adapted to form part of a system of visual communication, a plurality of visible communication elements positioned in said switch board, and a plurality of assemblies adapted to display simultaneously a plurality of symbols and a covering for said assemblies, said covering provided with a separated, sloping portion for each of said assemblies, there being a plurality of openings in each of said slopes, one to receive a tell-tale light, another to permit seeing of the symbols.

11. In combination in a switch board adapted to form part of a system of visual communication, a plurality of visible communication elements positioned in said switch board, and a plurality of assemblies adapted to display simultaneously a plurality of symbols and a covering for said assemblies, said covering provided with a separated, sloping portion for each of said assemblies, there being a relatively plain member defining a separating surface between said sloping portions.

12. In combination in a switch board adapted to form part of a system of visual communication, a plurality of visible communication elements positioned in said switch board, and a plurality of assemblies adapted to display simultaneously a plurality of symbols and a covering for said assemblies, said covering provided with a plurality of rows of separated sloping portions.

13. In combination in a switch board adapted to form part of a system of visual communication, a plurality of visible communication elements positioned in said switch board, and a plurality of assemblies adapted to display simultaneously a plurality of symbols and a covering for said assemblies, said

covering provided with a plurality of rows of separated sloping portions, said covering forming relatively plain surfaces separating said sloping portions from each other.

Signed at Chicago, county of Cook and State of Illinois, this 27th day of February 1930.

CHAUNCEY L. CALKINS.