Feb. 8, 1949. L. T. HOLDEN 2,461,157

SHELF FOR ELECTRICAL APPARATUS

Filed March 26, 1946

FIG. 1

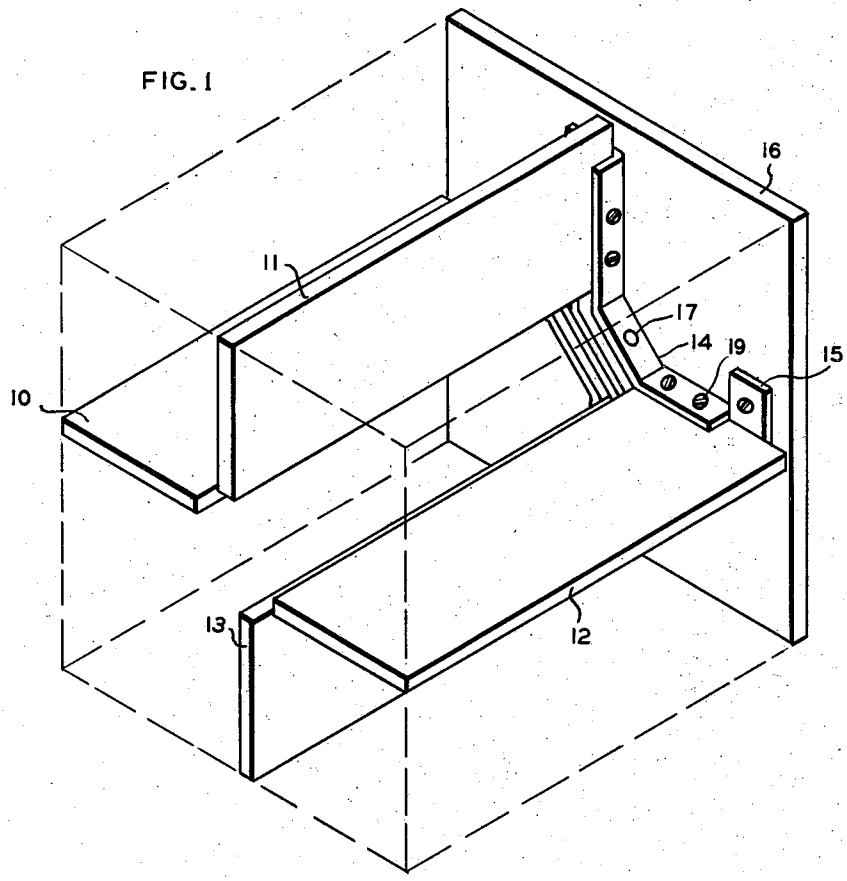


FIG. 2

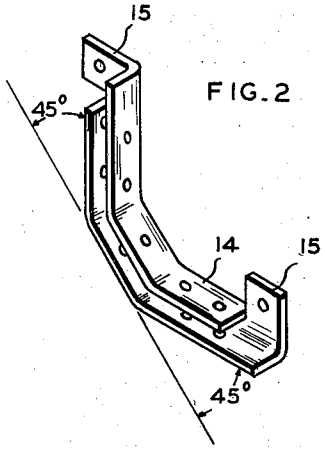
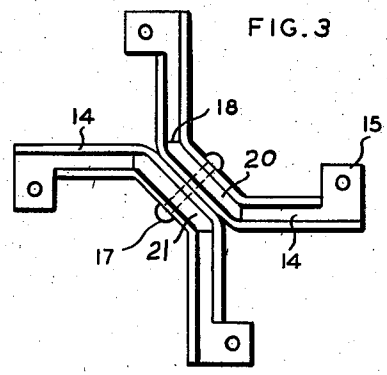


FIG. 3



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SHELF FOR ELECTRICAL APPARATUS

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6 Claims. (Cl. 211—90)

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This invention relates to electrical apparatus and particularly to chassis for electronic apparatus.

It has become general practice to build electronic apparatus in the form of sub-assembly units upon "cards" which are assembled as shelves in a rack or cabinet and electrically interconnected. It is in many instances desirable that such electronic apparatus shall be compact, but attempts to obtain compactness merely by utilization of smaller electronic components in such a card chassis have not been entirely satisfactory.

It is an object of this invention to provide a card chassis having a minimum of voids but adequate space for air to circulate.

A further object is to provide a card chassis in which electrical connections are easily circuited between sub-assembly units.

Other objects, features and advantages of this invention will suggest themselves to those skilled in the art and will be apparent from the following description of the invention taken in connection with the accompanying drawing in which:

Fig. 1 is a perspective view of chassis cards and supporting end structure;

Fig. 2 is a perspective view of an elbow member utilized in the card chassis structure; and

Fig. 3 is an elevational view of a joined pair of elbow-members forming an end support.

Referring now more particularly to Fig. 1, the chassis is made up of cards 10, 11, 12 and 13 supported in such positions that the planes in which 10 and 12 lie are perpendicular to the planes containing 11 and 13. The cards are spaced apart at their inner edges to form a central duct for ventilation and wiring purposes. This arrangement provides four rectangular compartments in the chassis.

The end structures for holding the cards in place are made up of elbow members 14, illustrated in greater detail in Fig. 2. Each elbow member 14 is formed from a U-channeled length of light weight metal, such as aluminum, and has a small rectangular flange 15 at each end. The flanges 15 afford means for securing the elbow members 14 to end walls or supports 16 of the chassis structure, as seen in Fig. 1. The elbow members provide mechanical support for the cards, and are shaped to support the cards in spaced relation. The spacing is accomplished by the nature of the bends in the elbow members. Each elbow member takes the form of a central portion 20 from which extend two arms 21 making angles of 45 degrees with the central portion. The two arms 21 thus extend at right angles to

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each other. The central portion 20 furnishes an abutting surface so that two elbow members may be fastened back to back to form four arms 21, as shown in Figs. 1 and 3. A pair of elbow members may be joined by rivet means 17. To prevent distortion of the elbow members in the region of rivet 17, metal inserts 18 of suitable thickness are provided in the channels as shown in Fig. 3.

The chassis cards 10, 11, 12 and 13 may be of any suitable width and length. They may be removably secured in the channeled elbow members by screws 19 as shown, and interconnecting wiring between the sub-assemblies of the several chassis cards may, if desired, be made through the center duct.

It will be seen that the invention herein set forth provides a simple chassis whose shape is such as to offer a maximum mounting space and minimum void area, together with a central duct for ventilation and interconnecting wiring purposes.

While there has been described what is at present considered to be the preferred embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the scope of the invention as set forth in the appended claims.

What is claimed is:

1. A chassis for electrical assemblies, including two end supports and four chassis cards mounted therebetween, each said end support comprising a joined pair of elbow members having four channeled arms, each arm extending at right angles to its adjacent arm, and receiving said chassis cards.

2. A chassis for electrical assemblies, including two end supports and four chassis cards mounted therebetween, each said end support having four channeled arms, each arm extending at right angles to its adjacent arms and receiving said chassis cards.

3. An elbow member for supporting chassis cards relative to a wall, including a length of material which is U-shaped in transverse cross section and which has two substantially 45° bends along its length so as to form a central portion between said bends and two arms beyond said bends respectively, said arms being substantially normal to each other, means to secure said member to said wall and means to secure two chassis cards to said arms respectively so as to support said cards substantially at right angles to each other and to said wall, and means to secure said

central portion to the central portion of a second similar elbow member.

4. An elbow member to sustain chassis cards, comprising an elongated central portion and two elongated arms extending respectively from opposite ends of said central portion, substantially at right angles to each other and substantially at 45° angles to said central portion, said central portion and said arms being a continuous unitary member of channeled material, means to secure two chassis cards to said arms respectively, so as to sustain said cards substantially at right angles to each other and with their adjacent edges spaced from each other.

5. An end structure for holding chassis cards relative to a wall, including four arms, each of which incorporates means to sustain a chassis card, said arms being so positioned that two of said chassis cards are sustained substantially in planes parallel to each other and the other two of said cards are sustained in planes substantially parallel to each other and substantially perpendicular to the planes of the first two, the adjacent edges of the four cards being spaced from each other and means to secure said structure to said wall.

6. An end structure for sustaining four chassis cards relative to a wall, comprising a central portion and four arms secured to said central portion, the axes of said arms being substantially in a single plane and the axes of two of said arms being substantially parallel to each other and the axes of the other two of said arms being substantially parallel to each other and substantially perpendicular to the axes of the first two arms, means on said four arms respectively to sustain four chassis cards substantially normal to the plane which includes said four axes and the adjacent edges of said cards are spaced from each other.

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