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M. FLAHERTY

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CHASSIS FOR ELECTRICAL APPARATUS

Filed May 30, 1930

Fig. 1.

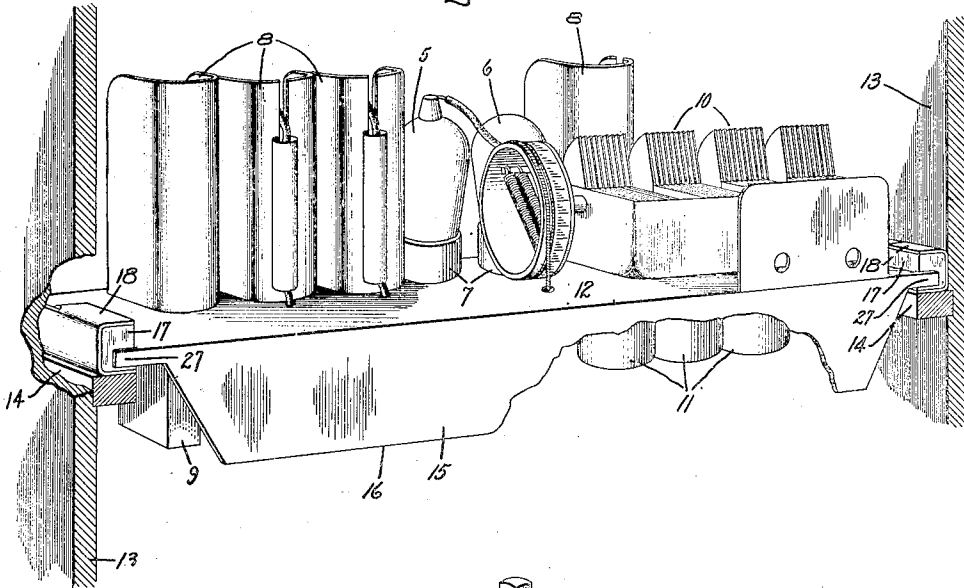
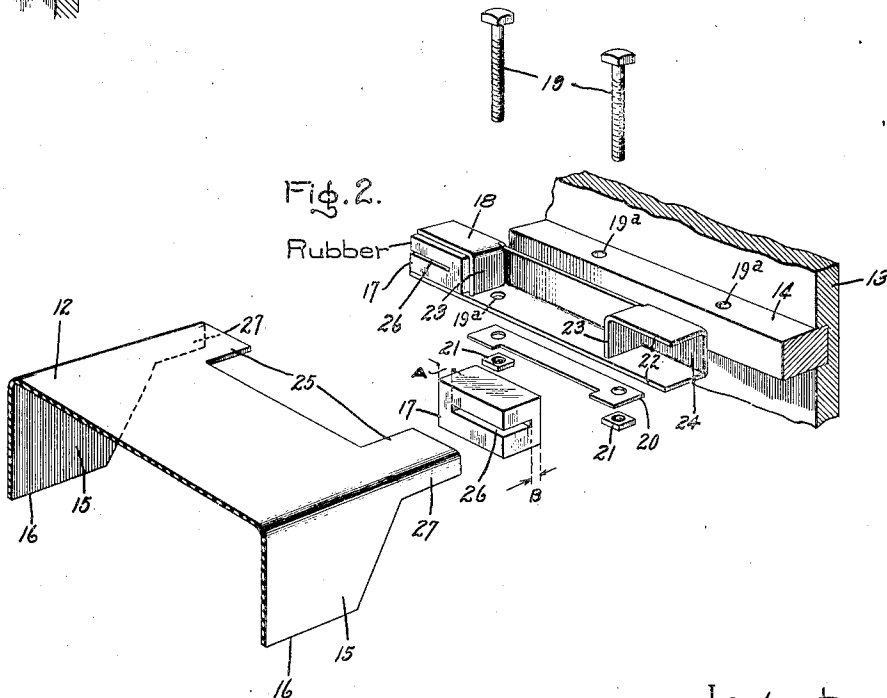


Fig. 2.



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UNITED STATES PATENT OFFICE

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CHASSIS FOR ELECTRICAL APPARATUS

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The present invention relates to a chassis or carrying means for groups of associated electrical apparatus, and has for its object to provide an improved chassis which is particularly adapted for use with radio receivers and the like to provide a flexible, vibration-absorbing mounting for the associated apparatus and electric discharge devices or tubes thereof, which is particularly adapted for mounting between two of the walls of a cabinet or enclosure without the use of a supporting shelf, and which is simple and relatively inexpensive in construction and easily mounted.

The invention will be better understood from the following description when taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

In the drawing, Fig. 1 is a rear view, in perspective, of an apparatus cabinet provided with radio receiving apparatus mounted between the walls thereof, on a chassis or mounting means embodying the invention; and Fig. 2 is an exploded view in perspective and partly in section on the same scale, showing a detail of one end of the chassis structure of Fig. 1.

Referring to the drawing, 5 and 6 are electric discharge devices mounted in sockets 7 and representing a plurality of receiving tubes certain of which are provided with shields 8 and associated tuning and connecting apparatus represented at 9, 10 and 11, respectively. Tubes 5 and 6 and apparatus 7, 8, 9, 10 and 11, while typical of radio receiving apparatus, with which by way of example it is intended to illustrate and describe the invention, may be taken to represent any group of associated apparatus requiring or best suited for mounting upon a common base or chassis.

Heretofore, it has been a common practice to mount such apparatus on a chassis adapted in turn to be mounted on a suitable shelf in a cabinet. In accordance with the invention, the apparatus, such as that above described, is mounted upon a chassis 12 which in itself provides the shelf and sole mounting means for the apparatus and is adapted to

extend between spaced walls 13 of a suitable cabinet or other enclosure and to be supported by two simple cleats or ledges 14 which may be secured to or be integral with the walls. As further details of the cabinet do not concern the invention, for the sake of clearness, the same are not shown.

The chassis provides a flat mounting plate arranged to lie in a horizontal position, as indicated, to carry apparatus above and below it and is rendered rigid and self-supporting by deep side flanges 15, which are preferably integral with it and extend substantially throughout its length on either side. In the present example the side flanges extend along the front and rear edges of the chassis as indicated and are preferably of such width or depth that they extend below the apparatus beneath the chassis and have flat bottom edges 16 to provide suitable means for supporting the chassis in a raised position to protect said apparatus when the chassis is dismounted from the cabinet.

The length of the chassis is substantially equal to the space or distance between the walls by which it is to be supported whereby its end may overlap and rest upon narrow cleats or supports 14. In standard receiver construction involving a cabinet the distance between the cabinet walls is made to conform with the desired length of the chassis to provide the above arrangement.

The chassis does not rest directly upon the cleats or supports 14, but is separated from them and the cabinet walls and is insulated against vibration which may be present in the cabinet and the walls, by a resilient cushioned mounting means including blocks or cushions 17 of rubber or other suitable vibration absorbing material, mounted on the end of the chassis and carried in spaced relation to each other by suitable supporting or end frames 18.

The frames 18 rest directly upon the supports 14 and are secured thereto by suitable means such as 19, two for each frame, which pass through holes 19^a in the frame and the supports and which are provided with suitable locking plates 20 and clamping nuts 21 below the supports.

The frames are preferably simple metal

channel members, U-shaped in cross section, with the flanges or webs arranged to provide upper and lower confining walls 22 for the mounting blocks which are forced between them and frictionally held. One of the flanges or webs is cut to provide stops 23 which are bent toward the other flange or web as indicated in Fig. 2. The web ends or stops 23 form walls for open pockets, such as that indicated at 24, at the ends of the frame and stops or spacing means for the mounting blocks to hold them from lateral or transverse movement in the frame.

Bolt holes 19^a in the frames are located adjacent to the web ends or walls 23, as indicated in Fig. 2, so that the bolt heads may engage them along a flat side of the bolt head of prevent them from turning when tightening nuts 21.

In the present example, the blocks are held flush with the ends of the frames and are four in number, two for each end of the chassis as a preferred arrangement, although it should be understood that a greater or lesser number may be employed.

The ends of the chassis are forked as indicated in Fig. 2 to provide spaced projecting flat tongues 25 which are gripped by the mounting blocks 17 in suitable slots 26 provided in the exposed faces of the latter. The tongues in the present example are integral with and extend longitudinally from the flat mounting plate of the chassis. They are reinforced against bending under load, by suitable narrow side webs or flanges 27 which are in continuation of and integral with the main side flanges 15 of the chassis.

The resilient mounting blocks are soft and very flexible but when placed in the metal frames they are preloaded or compressed to smaller dimensions since they are larger than the channels or pockets in the frames into which they are forced. The preloading takes place principally in a vertical direction between the upper and the lower flanges or walls of the channel frames and is sufficient to prevent the slots 26 from opening above the supporting tongues 25 when the weight of the chassis is applied. It tends to steady and to hold the chassis in place against extreme movement in a vertical direction if the cabinet is upset.

The blocks are further prevented from movement, endwise and laterally in the frames, by the webs of the frames and by the stops 23, respectively, which support the unexposed faces of the blocks in these directions.

The slots 26 in the mounting blocks cover only a portion of the plan area of the blocks, that is, they extend only through one or at the most two of the exposed faces of each block and do not entirely divide each block so that two walls having a substantial thickness as indicated at A and B in Fig. 2, remain

in the supported faces of the mounting blocks, for taking the side or transverse and endwise or longitudinal thrust of the chassis, backed up by the stop walls 23 and the web of the channel frames 18.

Thus the upper and lower faces, and the edges on one side and one end of each tongue of the frame are surrounded by and are in contact with a mounting block of resilient material which is preloaded or held in compression by the walls of a rigid frame. The walls at "A" on each block take the front to rear, lateral or side thrust of the chassis, while the walls at "B" in each block take the longitudinal or end thrust of the chassis, being backed up in each direction by a supporting wall or walls of the frame.

It will be seen that the above-described arrangement provides a relatively simple cabinet mounting for apparatus such as that shown and includes a simple chassis adapted to be mounted between two spaced walls of a cabinet without employing an additional shelf or base for the apparatus. The chassis structure includes a mounting plate provided with depending, stiffening side flanges having a depth whereby the flanges may act as feet for supporting the chassis and apparatus when dismantled from the cabinet. The chassis is suspended in resilient mounting blocks compressed or preloaded between the walls of channel frames which are mounted on the ends of the chassis and adapted in turn to be mounted rigidly on supports such as cleats, between the walls of a cabinet.

The chassis proper is easily constructed of flat metal plate material which may be cut in one operation and then bent to the shape shown, in another operation, while the supporting frames are easily formed of simple channel material.

To assemble the structure in a cabinet provided with suitable mounting cleats or supports, the resilient mounting blocks are pressed into the channels of the supporting frames and are then mounted together with the frames on the end of the chassis. The chassis and frames, assembled with the mounting blocks, are then placed on the cleats or supports and secured thereto by the bolts 19. This arrangement permits the chassis to be readily removed from the cabinet at any time.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A chassis structure for radio apparatus and the like including a flat mounting plate adapted to be mounted in a horizontal position and provided with depending supporting flanges which are adapted to act as supporting feet therefor, supporting frames for the plate mounted on the ends of the same, spaced resilient mounting blocks secured in the frames and provided with slots for receiving the ends of the plate whereby said

blocks provide a resilient connection between said frames and the ends of said plate, said frames having confining walls for holding the mounting blocks in a compressed preloaded condition tending to firmly close the slots and to stiffen the resilient connection provided by the blocks.

2. A chassis structure for radio apparatus and the like adapted for mounting between two spaced cabinet walls, including a pair of spaced frames rigidly mounted on said walls, an apparatus chassis suspended from and between said frames, a plurality of resilient mounting blocks carried by the frames and surrounding the ends of the chassis to provide a resilient connection between said frames and said chassis, said frames having walls between which said mounting blocks are held in a compressed preloaded condition to increase the firmness of the resilient connection.

3. In a system for mounting radio apparatus or the like within a cabinet including two spaced walls, a pair of supporting frames attached to said walls, a plate providing an apparatus base mounted at its ends in the frames, and a plurality of resilient mounting blocks mounted in said frames and connected with the ends of the plate for separating the ends of said plate and said frames and providing a resilient connection between them.

4. In a system for mounting radio apparatus or the like within a cabinet including two spaced walls, a plate providing an apparatus base adapted at its ends to be supported by said walls, a pair of supporting frames attached to said walls, said frames being channel members, substantially U-shaped in section, arranged to present the open side of each channel to the plate to receive the ends thereof, and a plurality of resilient mounting blocks carried by the frames and provided with slots for the reception of the ends of the plate, said blocks being compressed or preloaded by the walls of the frames to provide a resilient connection between the ends of the flanged plate and the frames.

5. In a system for mounting radio apparatus or the like within a cabinet including two spaced walls, a pair of supporting frames attached to said walls, a plate providing an apparatus base mounted at its ends in the frames, and a plurality of resilient mounting blocks carried by said frames to provide a resilient connection between said frames and the ends of the plate, said frames being U-shaped in cross section and having walls adapted to receive and to hold said blocks under a preloaded or compressed condition to hold said chassis resiliently against movement in all directions, and said blocks having slots for receiving the ends of said chassis and side and end walls for said slots for re-

ceiving the endwise and lateral thrust of the chassis.

6. In a system for mounting radio apparatus or the like within a cabinet including two spaced walls, a pair of supporting frames attached to said walls, an apparatus chassis adapted to be suspended between said frames, and including a base plate having forked ends adapted to enter said frames, and blocks of resilient material mounted on said forked ends of the chassis and held in a preloaded condition between the walls of the frames to provide a resilient connection between the chassis and said frames.

7. In a system for mounting radio apparatus or the like within a cabinet including two spaced walls, a pair of supporting frames supported by said walls, a plate providing an apparatus base mounted at its ends in the frames, and a plurality of resilient mounting blocks mounted in said frames and connected with the ends of the plate for separating the ends of said plate and said frames and providing a resilient connection between them.

In witness whereof, I have hereunto set my hand this 28th day of May, 1930.

MARK FLAHERTY.