March 23, 1954 A. J. FITZGERALD 2,673,105

JOINTURE FOR PREFABRICATED STRUCTURES

Filed Nov. 16, 1951

Fig. 1.

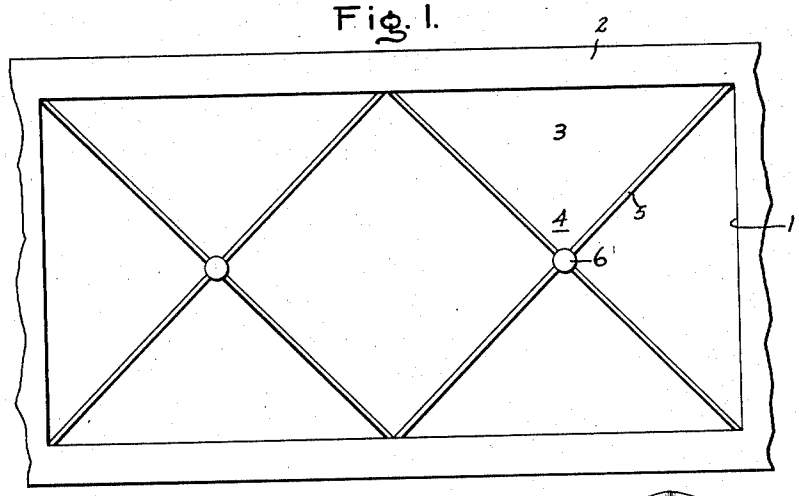


Fig. 2.

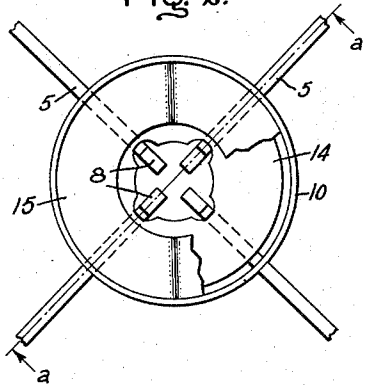


Fig. 5.

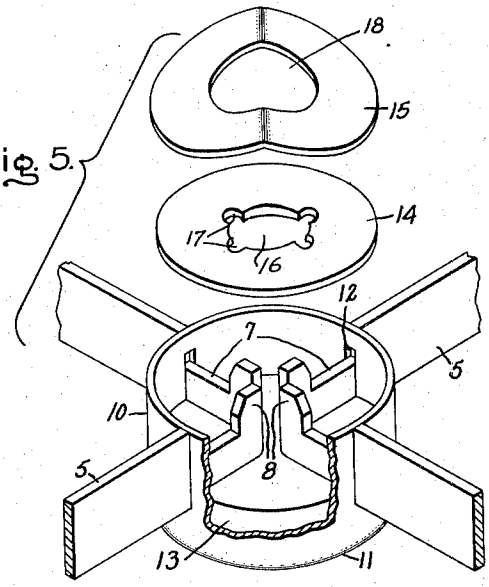


Fig. 3.

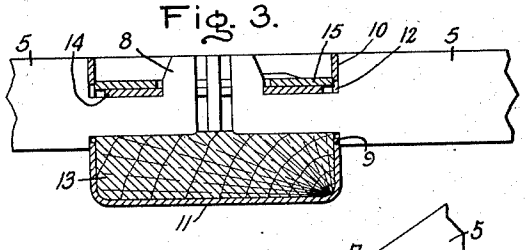


Fig. 4.

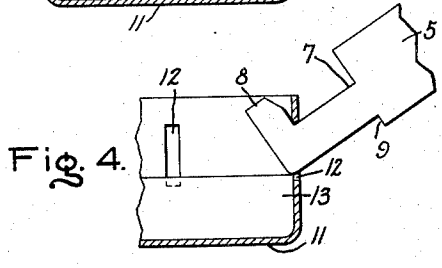
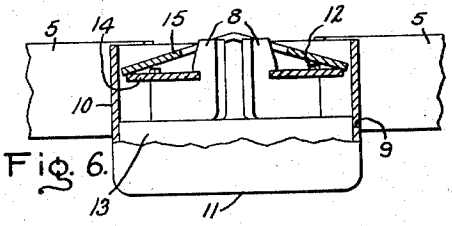


Fig. 6.



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JOINTURE FOR PREFABRICATED STRUCTURES

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Application November 16, 1951, Serial No. 256,682

6 Claims. (Cl. 287—20.1)

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This invention relates to a jointure between members of a prefabricated structure. More particularly, it has to do with such jointures in decorative grillwork structures of the type commonly used in radio and television sets.

This invention is a continuation-in-part of copending application bearing Serial No. 167,817, filed June 13, 1950, now Patent No. 2,577,119 dated December 4, 1951, and assigned to the same assignee as the present invention.

If the manufacturing cost of making a decorative grillwork is to be maintained at a minimum, the component parts should be finished and polished before assembly. The polished members, however, usually are of such a material that any application of heat would tarnish them to the extent that they would lose their decorative value; consequently soldering and welding techniques are not available for assembly.

In making such jointures, it is also necessary to consider the vibrational problems caused by a loud-speaker in a radio or television set. That is, if the decorative grillwork were loosely assembled, it would be quite possible for vibrations emanating from a loud-speaker to set up a sympathetic vibration in the grillwork which would produce a rattling noise that would detract from the sound qualities of the radio or television set.

It is an object of my invention to provide an improved jointure which may form a decorative component of an ornamental grill design.

It is a further object of my invention to provide a decorative grillwork having a jointure which is economical to construct and to assemble.

It is a still further object of my invention to provide a decorative grill jointure which is capable of securely holding together several component members in a manner which prevents rattling vibrations.

Further objects and advantages of this invention will become apparent and the invention will be more clearly understood from the following description referring to the accompanying drawing, and the features of novelty will be pointed out with particularity in the claims annexed to and forming a part of this specification.

Briefly, this invention comprises an interlocking assembly of radially extending members and an open cup-like cylinder wherein the members and the cup are combined with a pair of washers to prevent movement of the members relative to the cylinder.

Referring to the drawing, Fig. 1 is a front elevation of the decorative grill illustrating this improved invention; Fig. 2 is a top view, partly cut away, of an assembled jointure in the decorative grill; Fig. 3 is an end view, partly in section, taken along plane *a*—*a* of Fig. 2 in the direction of the arrows; Fig. 4 illustrates some of the components of the jointure during assembly; Fig. 5 is an exploded view showing all the component parts of the jointure; while Fig. 6 is an assembled view of the jointure just before the top washer has been wedged into position.

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Referring to the drawing, a radio or television grill 1 is shown comprising a frame 2 defining an opening 3 closed primarily by a suitable woven material (not shown) and including a decorative grillwork 4 which comprises a plurality of members 5 interconnected by jointures 6.

While the jointure 6 need not be limited to any particular angle or number of members 5, an illustrative embodiment, which has been chosen to point out more clearly the features of this invention, has four members extending radially from a jointure in such a manner that the members are spaced substantially 90° apart.

The component parts of this jointure preferably are made from some of the less expensive metals which may be bent and formed into a desired shape. One of these metals, for example, is C. R. steel, brass plated. Metals of this caliber, while being inexpensive and while being compatible with a highly decorative finish, cannot be subjected to heat, or else they will rapidly lose their finish through oxidation.

In the embodiment shown, each of the members 5 comprises a bar having any suitable cross section and a length commensurate with its intended use; for example, it might have a width of $\frac{1}{16}$'' and a depth of $\frac{1}{2}$'' and a length of about 10''. At the radially inner end of member 5, a notch 7 is cut to provide an upstanding finger or protrusion 8 which serves the purpose of acting as a stop to limit the radially outward movement of the members 5. Notch 7 defines a second stop or shoulder 9 which functions to limit the radially inward motion of the members 5.

A cylinder 10 having a closed decorative end 11 is employed to serve as a housing for the radially inward ends of members 5. To perform this function, a plurality of slots 12 are peripherally spaced about the cylinder 10 (90° apart in the example). The slots 12 are positioned to lie in one plane transverse to the axis of the cylinder and to have dimensions that permit protrusion 8 of the member 5 to be passed through the slot, while shoulder 9 cannot be passed through it.

Ideally, a plug 13 made of a resilient material, such as wood, cork or rubber, is inserted in juxta-

position with the closed end of the cylinder to lie beneath the radially inner ends of the members 5 and in contact therewith. Fig. 4 shows this structure with members 5 having been inserted into cylinder 10. Conceivably, plug 13 could be slotted to receive the inner ends of members 5 to aid in limiting their transverse motion.

To lock members 5 securely into engagement with cylinder 10 and plug 13, a pair of cooperating washers 14 and 15 are employed. Washer 14 has an outer diameter less than the inner diameter of cylinder 10, and it has a central bore 16 which may or may not include notches 17 that register with upstanding fingers 8 on the inner ends of members 5. That is, notches 17 or central bore 16 fit over the protrusions and restrain them against radially outward motion.

While shoulder 9 on member 5 does cooperate with cylinder 10 to limit radially inward movement of the members 5, it must be realized that manufacturing tolerances could not be held close enough to insure a tight fit under all circumstances. Consequently, washer 15 is employed to serve the dual function of compensating for manufacturing tolerances in the members 5 and cylinder 10, and also of acting as a wedge to axially press the members into a locking engagement. Washer 15 has an internal bore 18 of a diameter slightly larger than that of the notches 17 or bore 16, and it has an outer diameter which is slightly larger than the inner diameter of cylinder 10. To facilitate insertion of washer 15 into cylinder 10, it is deflected downwardly about one diameter to provide extending halves which can fit into cylinder 10, as shown in Fig. 6.

After the component parts have been thus assembled, a press or punch (not shown) is used to wedge washer 15 into cylinder 10, as shown in Fig. 3. In being wedged into place, the washer 15 punches against the outer walls of cylinder 10 to force them into contact with shoulders 9, thereby tending to push members 5 radially outward. This radially outward movement, on the other hand, is opposed by notches 17 or bore 16 engaging fingers 8. This structure provides a secure interrelation of the cooperating parts to lock the elements of jointure 6 relative to one another. Furthermore, when washer 15 is wedged axially down into cylinder 10, the washer 15 forces the inner ends of members 5 into engagement with plug 13 to aid in providing a rigid jointure which will not permit noisy relative movement of the parts.

Modifications of this invention will occur to those skilled in the art, and it is desired to be understood that this invention is not to be limited to the particular embodiment disclosed but that it is intended to cover all modifications which are within the true spirit and scope of this invention.

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

1. The combination, in a jointure of members in a prefabricated structure, of a cylinder having a closed end, said members projecting through slots in the wall of said cylinder and parallel with the axis of said cylinder, each member having a shoulder bearing against the outer surface of said cylinder to limit the radially inward movement of said members, each member also having a finger within said cylinder, said fingers being disposed opposite from said closed end, a washer having a central bore against which said fingers bear to limit the radially outward movement of said members thereof, a stressed member bearing against the inner surface of said cylinder for applying force to the inner surface of said cylinder along the periphery thereof, whereby the outer surface of said cylinder is caused to bear tightly against each of said shoulders and said fingers are caused to bear tightly against the edge of said central bore, thereby to provide a jointure in which the elements thereof are in tight fitting relationship.

2. The combination, in a prefabricated structure, of a cylinder having a closed end with a plurality of slots in the cylindrical wall thereof, a plurality of radially extending members each projecting through respective ones of said slots and parallelwise disposed with respect to the axis of said cylinder, a resilient plug positioned in the bottom of said cylinder to engage the bottom surface of said members, each member having a shoulder bearing against the outer surface of said cylinder to limit the radially inward movement of said members, each member also having a finger within said cylinder, said fingers being disposed opposite from said closed end, a washer having a central bore against which said fingers bear to limit the radially outward movement of said members, a stressed member bearing against the inner surface of said cylinder and axially of said cylinder against said washer for applying force to the inner surface of said cylinder along the periphery thereof and also for applying force downward on said washer whereby the outer surface of said cylinder is caused to bear tightly against each of said shoulders and said fingers are caused to bear tightly against the edge of said central bore and said washer is caused to press said members against said resilient member, thereby to provide a jointure in which the elements thereof are in tight fitting relationship.

3. The combination, in a prefabricated structure, of a cylinder having a closed end with a plurality of slots in the cylindrical wall thereof, a plurality of radially extending members each projecting through respective ones of said slots and substantially parallel with the axis of said cylinder, each member having a shoulder bearing against the outer surface of said cylinder to limit the radially inward movement of said members, each member also having a finger within said cylinder, said fingers being disposed opposite from said closed end, a washer having an internal bore including notches engaging with said upwardly extending fingers to prevent radially outward motion thereof, a stressed member bearing against the inner surface of said cylinder for applying force to the inner surface of said cylinder along the periphery thereof, whereby the outer surface of said cylinder is caused to bear tightly against each of said shoulders and said fingers are caused to bear tightly against the edge of said central bore, thereby to provide a jointure in which the elements thereof are in tight fitting relationship.

4. The combination, in a jointure of members in a prefabricated structure, of a cylinder having a closed end, said members projecting through slots in a wall of said cylinder and parallel with the axis of said cylinder, each of said members having a cut-away portion at its jointure end to permit insertion through said slots and to provide upstanding fingers at said jointure end, each of said cut-away portions further defining a shoulder engaging with the outer wall of said cylinder to prevent radially inward movement of said member, a washer having a central bore within which said fingers are contained and against which said fingers bear to limit the ra-

dially outward movement of said members, a stressed member bearing against the inner surface of said cylinder for applying force to the inner surface of said cylinder along the periphery thereof, whereby the outer surface of said cylinder is caused to bear tightly against each of said shoulders and said fingers are caused to bear tightly against the edge of said central bore, thereby to provide a jointure in which the elements thereof are in tightly fitting relationship.

5. The combination, in a prefabricated structure, of a cylinder having a closed end with a plurality of slots in the cylindrical wall thereof, a plurality of radially extending members each projecting through respective ones of said slots and substantially parallel with the axis of said cylinder, each of said members having a cut-away portion at its jointure end to permit insertion through said slots and to provide upstanding fingers at said jointure end, each of said cut-away portions further defining a shoulder engaging with the outer wall of said cylinder to prevent radially inward motion of said members, a washer having a central bore within which said fingers are contained and against which said fingers bear to limit the radially outward movement thereof, another washer having an internal bore such that said second washer fits freely over said upwardly extending fingers and having an outer diameter slightly larger than the internal diameter of said cylinder, said other washer being stressed into fitting relationship with the inner surface of said cylinder, whereby said cylindrical wall is pushed against said shoulders and said fingers are in engagement with the central bore thereby providing a jointure in which the elements thereof are in tight fitting relationship.

6. The combination, in a prefabricated structure, of a cylinder having a closed end with a plurality of slots in the cylindrical wall thereof, a plurality of radially extending members each projecting through respective ones of said slots and substantially parallel with the axis of said cylinder, each of said members having a cut-away portion at its jointure end to permit insertion through said slots and to provide upstanding fingers at said jointure end, each of said cut-away portions further defining a shoulder engaging with the outer wall of said cylinder to prevent radially inward motion of respective ones of said members, a washer having a central bore within which said fingers are contained and against which said fingers bear to limit the radially outward movement of said members, another washer having an internal bore such that said second washer fits freely over said upwardly extending fingers and having an outer diameter slightly larger than the internal diameter of said cylinder, said other washer further having a bend about one diameter to facilitate its ready insertion into said cylinder, said other washer being unbended within said cylinder whereby the outer periphery thereof pushes said cylinder wall against said shoulders and said fingers in engagement with the central bore thereby providing a jointure in which the elements thereof are in tight fitting relationship.

ALBERT J. FITZGERALD.

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Number	Name	Date
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2,577,119	Fitzgerald	Dec. 4, 1951