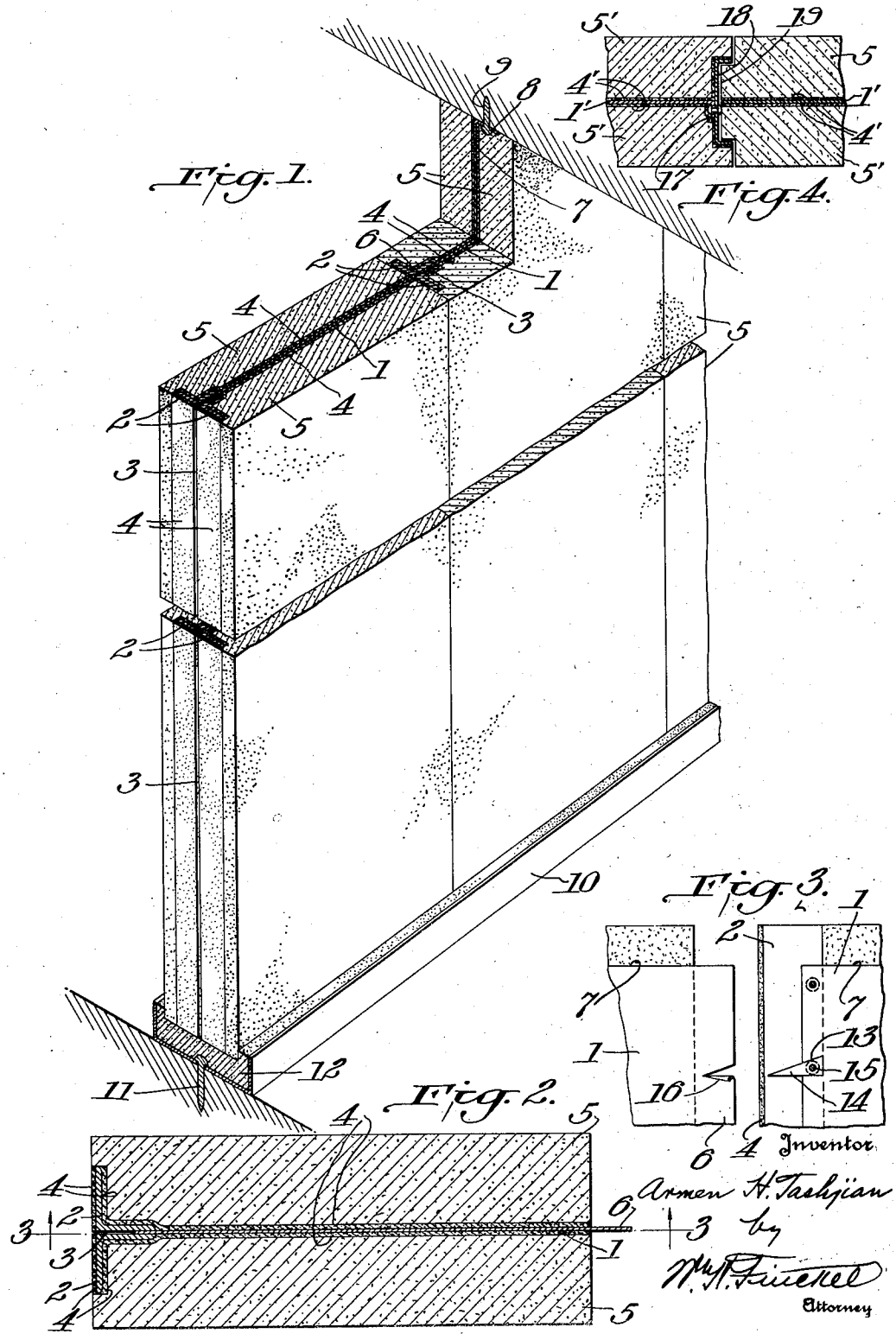
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PARTITION

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PARTITION

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9 Claims. (Cl. 20—4)

This invention relates to building elements, and particularly to structural units for forming partitions.

One object of the invention is to provide a structural unit of the type referred to which is of light weight, easy to handle, and capable of being fabricated at a reasonable cost.

Another object of the invention is to provide a structural unit of the type referred to which is so constructed as to materially reduce reflection of sound from a partition and transmission of sound from one side of a partition to its other side.

A further object of the invention is to provide a structural unit of the type referred to which may be readily erected upon the job, and which, moreover, may be taken down intact and re-erected, thus providing a material reduction in cost of material.

A still further object of the invention is to provide a structural unit of the type specified, of such a nature that when a plurality of these units are assembled to form a partition, they will present a structure having a substantially protected continuous rigid metallic core to prevent transmission of fire from one side to the other.

With these objects in view, the invention consists in an article of manufacture comprising a structural unit and in a partition or the like constructed of such units, each unit comprising a relatively rigid metallic core and sound deadening and absorbing materials applied thereto, and each unit provided with means for interengagement with the units next adjacent thereto in a structure composed of same, all as will be explained more particularly and finally claimed.

In the accompanying drawing illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a fragmentary sectional perspective view of a partition constructed in accordance with the invention and formed of the units contemplated by the invention. Fig. 2 is a horizontal section through a unit of preferred form. Fig. 3 is a section taken substantially upon the line 3—3 of Fig. 2 and illustrating parts of two units and structural details preferably embodied therein. Fig. 4 is a fragmentary horizontal section showing the abutting interlocking edges of two units of a modified form of which the invention is susceptible.

Referring particularly to Figs. 1, 2 and 3, each unit includes a continuous imperforate, sheet-metal core member 1 having appropriately applied to it at one of its longitudinal edges, by welding, riveting or other means, two rigid angle members 2 providing supporting struts, these members being so arranged relatively to the edge of the core member 1 as to provide a slot or groove 3 equal to the thickness of member 1. Applied to the core thus formed of the core member 1 and angle members 2 is a coating of insulating sound absorbent or deadening material 4 such as a soft-porous mastic-impregnated felt, or felt fiber combined with a suitable binder, to which are applied cork boards 5, or other appropriate material having sound absorbent or deadening properties preferably differing from those of the mastic coating 4.

As will be seen, particularly by an inspection of Figs. 2 and 3, the sound absorbent or deadening materials 4 and 5 terminate sufficiently short of one longitudinal edge of the core member 1 to provide an offstanding tongue 6, for a purpose later explained. It will be noted also that the core member 1 terminates short of one lateral edge of the unit, as indicated at 7, (Fig. 3) to provide in the upper edge of the unit a groove similar to the groove 3.

These units are preferably made in such lengths and widths as to facilitate their handling and assembly. For example, they may be in lengths of approximately eight and ten feet to accommodate ordinary ceiling heights, and they may be from nine to twelve inches wide, and they may be of such cross section as to permit the use of sound deadening materials of appropriate thickness.

In forming partitions of the units described, an angle member or the like 8 is attached by spikes, bolts or screws 9 to the ceiling and a plastic receiving member or trough 10 is attached to the floor by spikes, bolts or screws 11. The units are so assembled that the complemental tongues 6 and grooves 3 of adjacent units are interengaged, as illustrated in Fig. 1 and the grooves provided in the upper lateral edges of the units are engaged and supported in proper position by the ceiling attached angle member 8. As each unit is properly positioned, its floor adjacent edge is blocked up or shimmed up into close contact with the ceiling, and after the units are in place, the plastic receiving member or trough 10 is filled with plaster of Paris, cement mortar or other appropriate plastic which, when it sets, rigidly maintains all of the units in adjusted position.

Referring now particularly to Fig. 3, it will be seen that one longitudinal edge of the core 1 of the unit is notched out at suitable intervals throughout its length, as indicated at 13, to receive a plurality of wedge-shaped cutting members 14 which, when the angles 2 are riveted to the core member 1, may be so spaced as to be held

by the rivets 15 which may be passed through them. When welding is resorted to, the members 14 will be welded to the core 1 in advance. These wedge-shaped members will, when the mating tongue and groove edges of the units are forced together, shear portions of the tongues 6 of complemental shape, and the material thus sheared will naturally roll over somewhat as indicated at 16, and will jam in the groove 3 to thus hold the parts in frictional wedged engagement. Obviously, as the wedge-shaped members 14 cut their way into the tongues 6, the tendency will be for relative longitudinal movement to take place between the adjacent units, and this will, as the units are successively assembled in place, force them successively into close contact with the ceiling.

It will be apparent from the foregoing, and from an inspection of Fig. 1, that when the units described are assembled as indicated, to form a partition, the interengagement between the tongue and groove elements of the longitudinal edges of the core members will form in effect a continuous, unbroken, imperforate, metallic diaphragm throughout the partition. It will be noted also, that the angle members 2 provide struts which impart vertical strength to the partition and to the diaphragm formed by the engaging core members 1. Moreover, due to the arrangement of the sound deadening materials on the cores, these sound deadening materials will completely enclose the cores and struts and will be in close contact throughout the partition and present a substantially unbroken sound deadening surface on each side of the partition.

By employing the mastic coatings 4 and the cork or other layers 5, the two having different sound absorbing properties or coefficients, it will be seen that the sound deadening and absorbing properties of the units and of the partitions formed thereof will be enhanced. For example:—Sound waves striking the partition will first be absorbed by the layer 5, and waves not so absorbed and passing through this layer will be partially, at least, absorbed in the underlying adjacent coating 4. Any portions of the wave energy which penetrate the coating 4 will strike against the solid metal diaphragm formed by the cores 1 and will be to some extent reflected back through the coating 4 and layer 5 referred to, but will be substantially absorbed therein. Obviously, sound waves penetrating the layer 5 and coating 4 and striking the diaphragm formed by the cores 1 will to some extent pass through the diaphragm due to the vibration set up therein, but because of the deadening effect produced by their passage through the layer 5 and coating 4 referred to they will not, to any appreciable extent, penetrate the coating 4 and layer 5 upon the opposite side of the diaphragm.

Furthermore, transmission of sound through the partition from floor to ceiling, and vice versa, will be materially reduced, due to the formation of the units and the intimate contact of the sound deadening layers and coatings thereof with the ceiling and the bedding of the lower edges of the units in the plastic mass contained in the member 10.

Although the preferred embodiment of the invention is illustrated in Figs. 1 to 3 inclusive, it is obvious that it is susceptible of modification, and one modification is illustrated in Fig. 4. In this modification, the core members 1′ are shown as having one longitudinal edge 17, bent over to angle form and to this part 17 is fixed, by riveting or welding or other suitable means, a channel member 18 which forms a groove to receive the complementally shaped edge 19 of the adjacent unit. In this form of the invention the mastic coating 4′ and cork or the like layers 5′ are preferably used in the same manner as the corresponding parts 4 and 5 already described.

Due to the construction of the units, the materials of which the layers 5 and 5′ are preferably formed, and the intimate flush contact of the exposed surfaces of the units when assembled, it is possible to so treat these exposed surfaces, preferably during their manufacture, as to provide any desirable ornamental effect to produce an attractive wall surface, without any additional finish.

It will be understood from the foregoing, that it is the intention to produce these structural units in appropriate lengths, widths and thicknesses and of such desired surface finishes as to provide an article of manufacture which may be set up upon the job, in the manner described, to produce a finished, attractive partition which needs no further treatment, surface or otherwise, to make it a presentable, sightly structure.

Moreover, due to the structural characteristics and method of assembly of the units, it will be apparent that a partition formed thereof, may, when desired, be taken down without injury to the units, and another partition erected from the same units.

Various changes are contemplated as within the spirit of the invention and the scope of the following claims.

What I claim is:—

1. An article of manufacture, comprising a structural unit in the form of a slab the faces of which are adapted to be assembled in unbroken partition-forming arrangement, said unit including a continuous imperforate metallic core, one edge of said core provided with means for engagement with an adjacent unit, and insulating material applied to said core and supported thereby and covering same and said engagement-means in such manner that said core and means are completely confined within a partition formed of said units.

2. An article of manufacture, comprising a structural unit in the form of a slab the faces of which are adapted to be assembled in unbroken partition-forming arrangement, said unit including a metallic core, supporting struts applied thereto, and sound deadening material carried by said core and covering same and said struts in such manner that said core and struts are completely confined within a partition formed of said units.

3. An article of manufacture, comprising a structural unit in the form of a slab the faces of which are adapted to be assembled in unbroken partition-forming arrangement, said unit including an imperforate metallic core, one edge of said core provided with means for engagement with the core of an adjacent unit, and insulating material applied to the faces of said core and covering same and said engagement-means and forming the exposed surfaces of said unit, whereby in a partition formed of said units the cores and engagement-means of said units are completely confined within said insulating material.

4. An article of manufacture, comprising a structural unit, including a metallic core, struts applied to one longitudinal edge of said core and extending beyond said edge and forming be-

tween them a groove, sound deadening material applied to said core and struts and serving to limit passage of sound through said unit, said material terminating short of the opposite longitudinal edge of said core to leave a tongue-forming portion of the core exposed.

5. An article of manufacture, comprising a structural unit, including a metallic core, struts applied to one longitudinal edge of said core and extending beyond said edge and forming between them a groove, sound deadening material applied to said core and struts and serving to limit passage of sound through said unit, said material terminating short of the opposite longitudinal edge of said core to leave a tongue-forming portion of the core exposed, said material extending beyond one transverse edge of said core at both lateral faces thereof to provide a groove at such transverse edge.

6. An article of manufacture, comprising a structural unit, including a metallic core, struts applied to one longitudinal edge of said core and extending beyond said edge and forming between them a groove, sound deadening material applied to said core and struts and serving to limit passage of sound through said unit, said material terminating short of the opposite longitudinal edge of said core to leave a tongue-forming portion of the core exposed, and means arranged in said groove and adapted for cooperation with the tongue of an adjacent unit in a structure composed of said units for displacing said units longitudinally relatively to each other and for frictionally engaging them.

7. An article of manufacture, comprising a structural unit, including a metallic core, struts applied to one longitudinal edge of said core and extending beyond said edge and forming between them a groove, sound deadening material applied to said core and struts and serving to limit passage of sound through said unit, said material terminating short of the opposite longitudinal edge of said core to leave a tongue-forming portion of the core exposed, and means comprising cutting members arranged in said groove and adapted for shearing engagement with the tongue of an adjacent unit in a structure composed of said units for displacing said units longitudinally relatively to each other and for frictionally engaging them.

8. An article of manufacture, comprising a structural unit, including a metallic core, struts applied to one longitudinal edge of said core and extending beyond said edge and forming between them a groove, sound deadening material applied to said core and struts and serving to limit passage of sound through said unit, said material terminating short of the opposite longitudinal edge of said core to leave a tongue-forming portion of the core exposed, and means comprising wedge-shaped cutting members arranged in said groove and adapted for shearing engagement with the tongue of an adjacent unit in a structure composed of said units for displacing said units longitudinally relatively to each other and for frictionally engaging them.

9. A partition structure, composed of a plurality of similar units, each of said units including a metallic core and sound deadening material applied to the faces of said core and forming the exposed surfaces of said partition, means providing a groove on one longitudinal edge of each unit and a tongue on the other longitudinal edge, whereby the units may be arranged in interlocking engagement throughout the partition to provide a substantially unbroken metallic diaphragm, means providing a groove in one lateral edge of each unit, and means for anchoring said partition to a floor and ceiling, including a plastic receiving member for bedding the floor-adjacent edges of the partition units and a tongue member for engagement with the grooves of the ceiling-adjacent lateral edges of the partition units.

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