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FLOOR AND CEILING CONSTRUCTION

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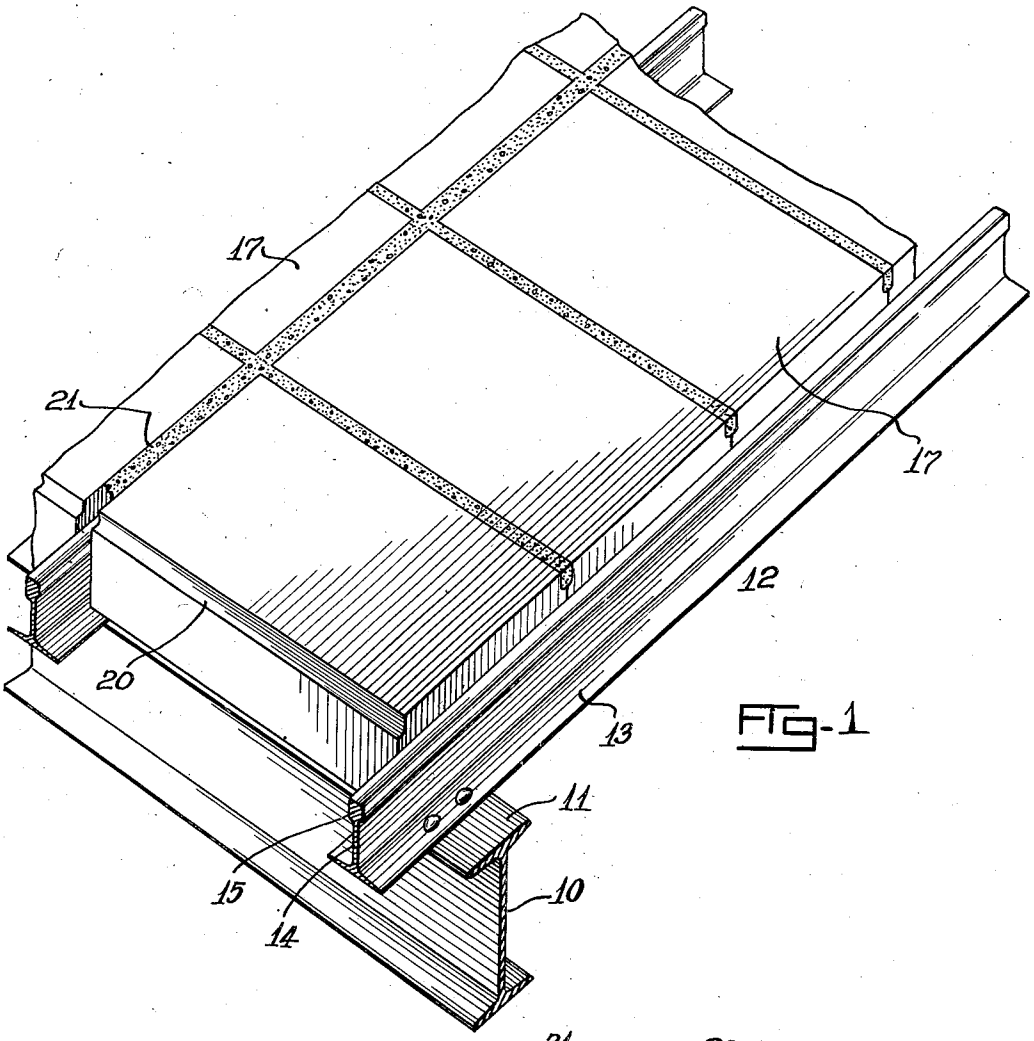


Fig-1

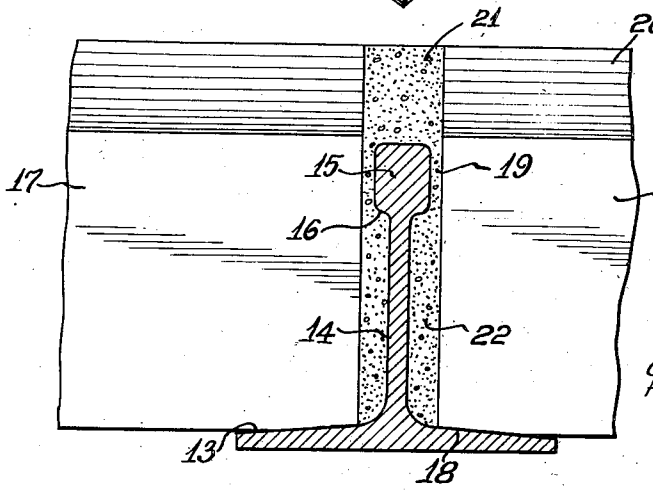


Fig-2

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FLOOR AND CEILING CONSTRUCTION

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6 Claims. (Cl. 72—68)

In floor constructions heretofore used for gypsum materials, steel support members have been provided which have insufficient bearing surface for precast gypsum tile with the result that the crushing strength on the supported areas of the gypsum tile is exceeded, with the resultant failure of the tile. Also, it is common for steel shapes to be twisted and crooked, with the result that the supporting steel members are farther apart at some points than at others so that precast gypsum tile are liable to slip out of place and fall downwardly between the support members. In some roof constructions employing gypsum tile, the tile are insufficiently anchored to the steel members so that said tile are lifted out of place by tornadoes or the like, thus causing a great deal of damage to buildings where improperly designed steel anchorage is used. In other roof constructions, the steel shapes for supporting the tile are not efficiently designed so as to give maximum strength per ton of steel used, so that the cost of steel is excessive.

An object of this invention, therefore is to provide a steel shape for roof construction which will insure a maximum bearing surface for the supported ends of the gypsum or other tile.

Another object of the invention is to provide a roof construction in which the gypsum tile are properly anchored to the steel support beams so that the roof is resistant to tornadoes.

A further object of the invention is to provide a roof construction in which the steel in the supporting members is so distributed that a maximum efficiency in strength per ton of steel is obtained; also to improve roof constructions in other respects hereinafter specified and claimed.

Reference is to be had to the accompanying drawing forming a part of this specification, in which

Fig. 1 is a fragmentary perspective view of our improved roof construction, and

Fig. 2 is a sectional elevation, on a large scale, thru our improved roof construction.

A roof is usually supported on main purlins 10 which may be in the form of I beams having upper and lower flanges 11. In our improved roof construction, special steel strips 12 are provided which we shall designate as "bulb T's". These bulb T's have a base flange 13 of relative great width, a web 14 which is comparatively thin and of considerable depth, and a bulb 15 parallel to the base flange 13. In order to secure a maximum economy of strength per ton of steel the steel in the cross section of our improved bulb T is preferably so proportioned that the total height of the bulb T is approximately equal to the total width of the base flange 13 and the thickness of the web 14 is approximately one third the thickness of the bulb 15. The bulb 15 while only about one third as tall as the depth of the web 14, is preferably of slightly greater dimension vertically than transversely; and has flattened sides so as to further increase the available bearing surface of the base 13. The preferred shape of the bulb T is shown in Fig. 2. By reference to Fig. 2, it will be seen that the base 13 is approximately six times as wide as the bulb 15, and it should be noted that the bulb 15 forms a shoulder 16 on each side of the web 14, this pair of shoulders being provided for purpose to be hereinafter described.

The main purlins 10 are preferably spaced apart a distance of 6½ feet in order to best utilize the strength of our bulb T's. Precast gypsum tile 17, or tile of other desired material, are placed across from one base flange 13 to the next, the lower corners 18 of said tile being supported on said base flange 13.

The distance between the bulb T's is preferably so adjusted that a space 19 is provided between the end of each tile and the bulb 15. Owing to the weight of the tile and to the weight of workmen who walk on the roof, the corner 18 of the tiles will crush down to a certain extent to give a broad bearing surface on the base flange 13 which has a very slightly sloping surface of about 4°. Suitable grooves 20 are provided along the top longitudinal edges of each tile so that when the tiles are in abutting position, edge to edge as shown in Fig. 1, said grooves co-operate to form a channel or trough for the reception of grout 21. This grout is preferably composed of some cementitious material such as stucco mixed with water. The grout is poured into the cracks between the tile, and runs down through the spaces 19 to fill up a space 22 between the ends of the tile and the web 14 of the bulb T. It will be seen from Fig. 2, that after the grout 21 sets, the shoulders 16 provide an excellent anchorage to hold the tile in place on the bulb T's 12 in case of tornadoes or other atmospheric disturbances. Instead of using precast tile, the cementitious material may be poured in place about the bulb T using suitable forms.

We would state in conclusion that, while the illustrated example constitutes a practical embodiment of our invention, we do not wish to limit ourselves precisely to these details since manifestly the same can be considerably varied

without departing from the spirit of the invention as defined in the appended claims.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. In a roof construction, a plurality of substantially parallel bulb T's comprising base, web and elongated bulb portions, the total height of the bulb T being substantially equal to the total width of the base, said web being solid, comparatively thin and of considerable depth and said bulb being flat sided and having a vertical dimension equal to about one-third the depth of said web, means for supporting said bulb T's, said bulbs forming shoulders along the lower edge of each bulb adjacent the web, precast gypsum tiles having substantially square ends supported by the bases of said bulb T's, said tiles having a thickness greater than the height of said T's and having their ends adjacent to and spaced from said bulbs, and grout poured about said bulb T's between said tiles so as to anchor said tiles to said shoulders.

2. In a roof or floor construction, spaced purlins, bulb T's supported on said purlins, and precast tiles having a thickness greater than the height of said bulb T's supported by said bulb T's, said bulb T's each having a base, a thin, solid, vertical web midway of the base and a vertically elongated, flat sided bulb on said web, the total height of each bulb T being approximately equal to the total width of the base, said bulb being approximately three times the thickness of the web and providing shoulders adjacent the web, the lower corners of the precast tiles being supported upon said base, without contacting said bulb, and a space being left between the ends of said tiles and said bulb to permit grout to be poured about said bulb T's between said tiles whereby said shoulders will interlock said tiles with said bulb T's.

3. In a roof or floor construction, precast tiles and long span steel bulb T's for supporting said tiles, said bulb T's each comprising a base flange of relatively great width, a web which is solid, comparatively thin and of considerable depth, and a bulb having flattened sides on said web parallel to the base; the total height of the bulb T being approximately equal to the total width of the base flange and the thickness of the web being approximately one third the thickness of the bulb, the outstanding base flanges of said bulb T providing a bearing surface for the ends of said tiles.

4. A bulb T adapted for supporting floor or roof slab, comprising a base, an upright, solid web and a flattened bulb on said web, said base being about six times as wide as said bulb, said bulb being three times the thickness of said web, and the total height of the bulb T being substantially equal to the total width of the base.

5. A bulb T adapted for supporting tiles in floor or roof construction comprising a base, an upright, solid web and an elongated flattened bulb on said web, said base having a very slightly sloping surface of about 4° and being about six times as wide as said bulb, said bulb being three times the thickness of said web, the total height of the bulb T being substantially equal to the total width of the base, said bulb forming shoulders adjacent the web adapted for engaging with grout material between said tiles and anchoring said tiles in place.

6. A long span bulb T adapted for supporting square end tiles in floor or roof construction, comprising a base, an upright, solid web and an elongated flattened bulb on said web, said base having a very slightly sloping surface and being about six times as wide as said bulb, said bulb being three times the thickness of said web, the total height of the bulb T being substantially equal to the total width of the base, said base providing bearing surface for said square end tile without contacting said bulb.

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