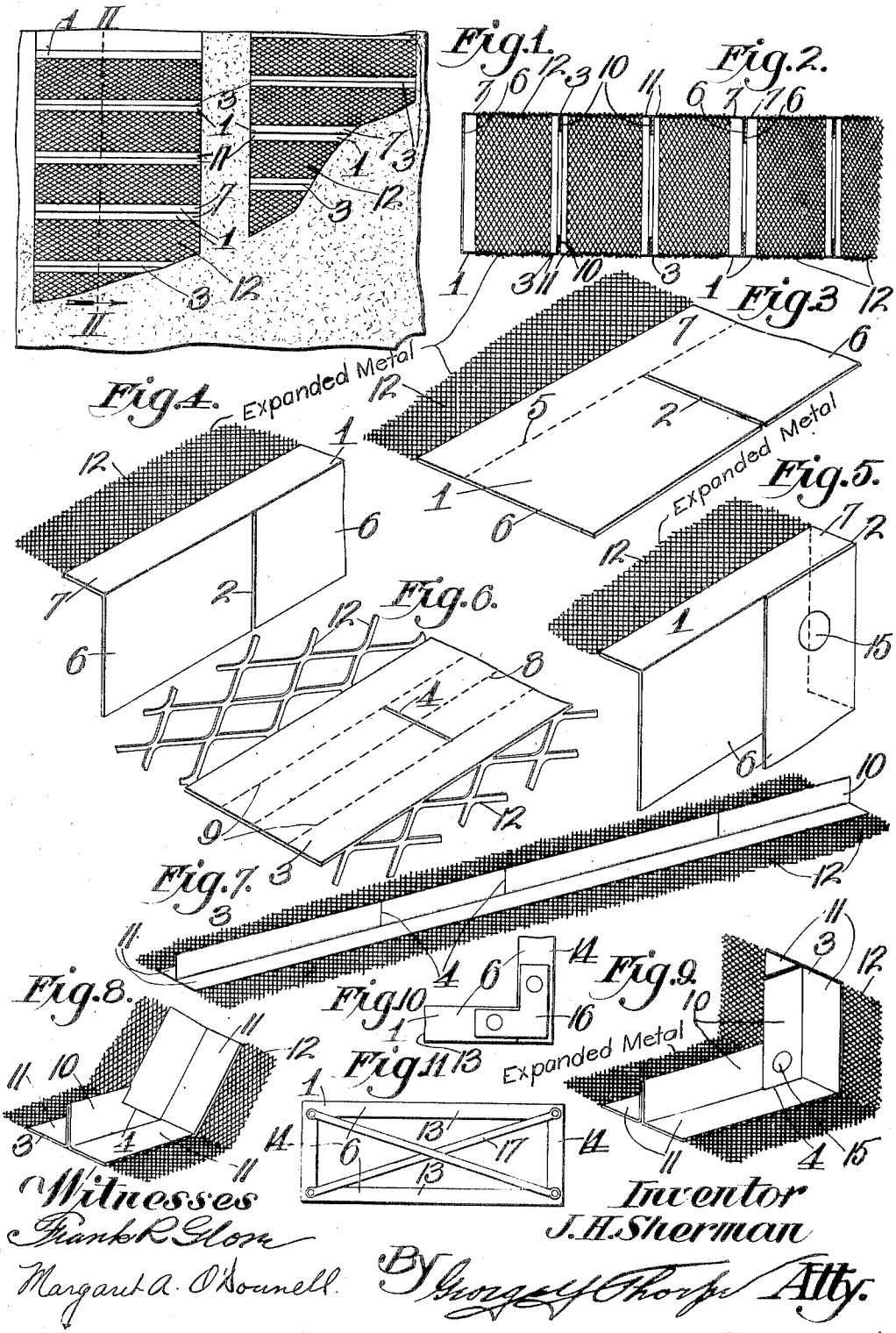
J. H. SHERMAN.

HOLLOW METAL TILE.

APPLICATION FILED DEC. 19, 1910.

1,009,865. Patented Nov. 28, 1911.



UNITED STATES PATENT OFFICE.

JAMES H. SHERMAN, OF KANSAS CITY, MISSOURI.

HOLLOW METAL TILE.

1,009,865. Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed December 19, 1910. Serial No. 598,630.

To all whom it may concern:

Be it known that I, JAMES H. SHERMAN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Hollow Metal Tiles, of which the following is a specification.

This invention relates to cement structure appliances, and has for its primary object to produce as a new article of manufacture, a hollow reticulated or foraminous metal tile for cement floor construction.

The ordinary clay tile employed for supporting cement floorings between the joists or girders provides an effective flooring support and also a surface to which cement or plaster will properly adhere to form the ceiling of an underlying room but such tiles are comparatively heavy and where the span from center to center of the tiles is sixteen inches or more, each tile is strengthened and incidentally increased in weight by the provision of one or more vertical partitions.

I have found that what may be termed an expanded metal tile possesses an advantage over the ordinary tile in being of less weight and of equal or greater strength and incidentally affording as efficient support for the floor and ceiling cement or plaster. The great advantage derived from the employment of expanded metal tiles is the saving effected in the cost of the flooring due to the use of lighter metal girders, struts, etc.

With the object named in view, the invention consists in making a hollow tile from expanded metal and in certain novel and peculiar features of construction and organization of the tile, as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a plan view of a cement floor with parts broken away to disclose hollow metal tiles of foraminous metal Fig. 2, is a section on the line II—II of Fig. 1. Fig. 3, is a detail perspective view of a section of sheet metal from which one of the stiffened ends of the tile is formed. Fig. 4, is a perspective view showing how the section is creased and bent to produce a vertical stiffening flange. Fig. 5, is a perspective view showing one of the completed corners of a tile. Fig. 6, is a view similar to Fig. 3, of a section from which a rib for the tile is produced. Fig. 7, is a perspective view of a full length rib provided with a vertical stiffening flange produced by properly bending the section. Fig. 8, is a perspective view showing how the rib is bent in the formation of the tile. Fig. 9, is a perspective view of a completed corner as produced by the proper bending of the rib. Fig. 10, is a similar view showing one of the completed corners provided with a stiffening reinforce plate. Fig. 11, is an end view of a tile stiffened by means of inclined braces.

In making the tile I employ an oblong sheet of metal, preferably expanded metal, though not so shown in Figs. 1 and 2 because of the difficulty of correctly illustrating expanded metal on such a small scale, said figures conventionally illustrating the foraminous metal as wire fabric, and said sheet of foraminous metal is provided at opposite margins with solid or imperforate portions or strips, and if the tile is twelve inches or more square, the sheet will also be provided with one or more imperforate or solid intermediate portions paralleling the marginal strips or portions. In Fig. 3, one of the marginal or end strips or portions is shown, which portion in practice will not be disconnected from the sheet but will preferably be formed integrally therewith, and the same is true of Fig. 4, which shows one of the solid or imperforate portions hereinafter described. The marginal solid or imperforate portions, 1, are provided at suitable distances apart with three or four transverse slits 2 (only one being shown) extending preferably from one of its edges about three-fourths of the distance toward the opposite edge.

The solid or imperforate portions 3 are each provided with transverse slits 4, spaced apart to correspond with slits 2, but differing from the latter in that they extend from the center about half way to each of the margins of the portion. The marginal portions are bent along the dotted line 5 so that the parts at the opposite sides of the line 5 shall stand at right angles to each other, the wide part constituting a stiffening rib 6, for the narrow part 7. The solid or imperforate portion or portions are then bent along dotted line 8, and then reversely bent along the dotted lines 9, so that the doubled slitted part shall constitute a stiffening rib 10 for the parts 11 outward of the ends of the slits, said parts outward of the said slits stand at right angles to the said flange and occupy

the same plane as the body of the sheet and parts 7. In each solid or imperforate marginal portion or strip the slitted part forms a vertical rib of single thickness of the metal. In the intermediate solid or imperforate portions or strips the slitted parts constitute double-thickness ribs as shown in Fig. 7. At this stage of the process the sheet consists of an expanded portion or portions 12, a pair of marginal portions 1, provided with single thickness ribs 6, of the character shown in Fig. 5, and one or more intermediate solid or imperforate portions 3, with double thickness ribs 10, of the character shown in Fig. 7. In the plane of the slits 2 and 3 the entire sheet is now bent to form a hollow tile, preferably of rectangular form in cross section, 13 indicating the horizontal walls of the tile and 14 the vertical walls. In the bending of the sheet to form the tile, the ends of the ribs overlap as shown most clearly in Figs. 8 and 9, and are secured rigidly together by rivets 15, it being obvious that the slitting of the sheet was necessary to permit the ribs to pass and overlap as explained.

Instead of securing the overlapped ends of the ribs by rivets 15, reinforce angle plates 16, may be riveted or otherwise secured to the adjacent ends of the ribs or the tile may be braced against collapsing movement by inclined cross braces 17, as shown in Fig. 11.

From the foregoing it will be apparent that by the treatment of expanded metal as described, extremely light, strong and rigid tiles are produced, which tiles, like the ordinary clay tiles, are arranged between the girders or joists 18 of a floor with the marginal solid or imperforate portions and the solid or imperforate intermediate portions extending transversely of said girders or joists, the tiles being fitted end to end as shown in Fig. 2.

The tiles are supported in position in any suitable manner so that plastic cement may be poured upon them and leveled with the customary float or other tool.

The bottom of the expanded metal tile provides a surface upon which cement or other plastic material may be placed in the customary manner, to form the ceiling for the room below.

As hereinbefore stated, tiles of the character described will reduce the floor load—about ten per cent.—and thus permit of the use of a proportionate decrease in the amount of metal in the various girders, struts, etc., ordinarily employed in the floor construction, it being obvious that the reduction in the weight of the metal employed diminishes the cost of the building in a proportionate degree.

The expanded metal tile may be shipped with practically no loss by breakage, and because of their extreme lightness many more of them can be loaded in a freight car than of the clay tile.

From the above description it will be apparent that I have produced an expanded metal tile stiffened at its ends and if of relatively large size, at intermediate points, possessing the features of advantage enumerated, and I wish it to be understood that I reserve the right to make such changes in the form, proportion, organization and detail construction as properly fall within the spirit and scope of the appended claims.

I claim:—

1. A hollow metal tile in the form of a substantially rectangular tube open from end to end and consisting of a foraminous body having solid or imperforate margins, each side of each end having an inwardly projecting flange with the ends of the juxtaposed flanges overlapping and secured together.

2. A hollow metal tile of substantially rectangular form in cross section, consisting of a foraminous body portion, having solid or imperforate margins and a solid or imperforate portion dividing the foraminous portion into two separated sections and extending parallel with the said solid or imperforate margins, said partitioning or dividing portion being provided with inwardly projecting ribs with the ends of juxtaposed ribs overlapped.

3. A hollow metal tile of substantially rectangular form in cross section, consisting of a foraminous body portion, having solid or imperforate margins and a solid or imperforate portion dividing the foraminous portion into two separated sections and extending parallel with the said solid or imperforate margins, said partition or dividing portion being provided with inwardly projecting ribs with the ends of juxtaposed ribs overlapped, and means for securing the end of the ribs rigidly together.

In testimony whereof I affix my signature, in the presence of two witnesses.

JAMES H. SHERMAN.

Witnesses:

HELEN C. RODGERS,

G. Y. THORPE.