Nov. 17, 1925. 1,562,191

C. S. RENO

EXPANDED METAL FABRIC

Filed Dec. 12, 1921

Fig. 1

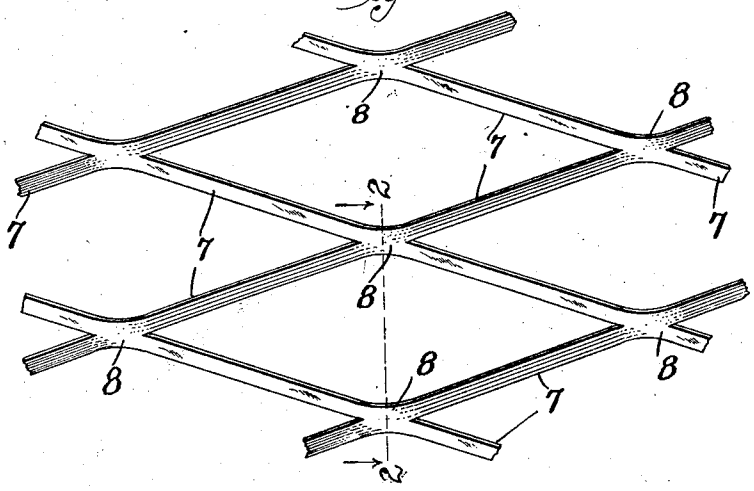
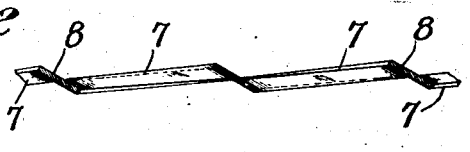


Fig. 2



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EXPANDED-METAL FABRIC.

Application filed December 12, 1921. Serial No. 521,613.

To all whom it may concern:

Be it known that I, CHARLES STOWE RENO, a citizen of the United States, and a resident of New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Expanded-Metal Fabrics, of which the following is a specification.

This invention relates to expanded metal fabric of the character commonly used as a reinforcement for cementitious structures.

More particularly, my present improvement comprehends the provision of an expanded metal fabric such for instance as is described in the Golding Patent No. 527,242 of October 9, 1894, whereby a fabric having superior physical properties and capable of application to certain uses for which the Golding fabric is not well adapted, is produced. As is well known to those familiar with this art, Golding fabric is made of relatively heavy stock produced by a shearing operation in contradistinction to deployed fabric, which can be formed by slitting a blank and then stretching it laterally.

It has recently been proposed to provide an expanded metal fabric wherein the strands and the bridges connecting the same are all disposed in a single horizontal plane, thereby reducing the overall thickness of the fabric sheet to the thickness of the individual strands so as to enable the fabric sheet when embodied in a relatively thin cement tile to obtain a secure bonded union therewith, and to increase resistance to tensile strains. However, this proposed construction has certain material disadvantages. The gain in tensile strength is secured at a sacrifice of resistance to compression stresses which is an inherent attribute of the original Golding fabric. Also in the flattening of the original Golding fabric so that all of its strands are disposed in the same horizontal plane a material elongation of the fabric sheet is unavoidable, and the bridges are subjected to tearing strains tending to separate the fabric strands.

In my proposed new metal fabric, I aim to retain to a large extent the resistance to compression stresses of the original Golding fabric with the greater resistance to tensile strains and to also materially reduce the overall thickness of the fabric sheet in comparison with that of the Golding fabric so as to enable the new fabric to be embodied in relatively thin concrete or in other cementitious structures.

With the above and other objects in view, my invention consists in the improved expanded metal fabric which I have illustrated in one of its embodiments in the accompanying drawing wherein similar reference characters designate corresponding parts throughout the several views and in which

Figure 1 is a plan view of a piece of my improved expanded metal fabric; and

Figure 2 is a section taken on the line 2—2 of Fig. 1.

In accordance with this invention I propose to provide a fabric which may be embedded in thin cement tiles and which will offer a maximum resistance to compression as well as tensile stresses and thus more effectively obviate possible cracking of the tile by reason of strains tending to distort the reinforcing fabric.

To this end I subject the original Golding expanded metal fabric to properly applied pressures so as to convert the fabric sheet into the condition seen in the drawings. In the Golding expanded metal fabric the strands and bridges of the fabric which were disposed in approximately vertical planes and in Figure 2 it will be observed that those parts are positioned at an angle intermediate the horizontal and vertical planes of the sheet. It will also be observed that in Fig. 2 the upper edge of one strand and the lower edge of an adjacent strand extend in a straight line obliquely to the plane of the intermediate bridge, while in the Golding construction those lines bisect the plane of the corresponding bridge at a right angle.

It will be further observed that the overall thickness of the sheet in the Golding construction is equal to the width of the bridge and to twice the width of the strand, while in Fig. 2 the overall thickness of the sheet is less than the width of the bridge and less than twice the width of the strand. The metal strands 7 in applicant's construction are positioned at an angle of approximately 30° from the horizontal plane of the sheet. Likewise the connecting bridges 8 between the strands are disposed at substantially the same angle. While I have referred to the strands and bridges as being positioned at an angle of approximately 30°, I do not desire to be thus limited as various angles less than 60° would to a greater or

less degree accomplish my present purpose. In practice however, I preferably construct the fabric sheet with its strands and bridges displaced from the horizontal to an angle of less than 45°.

In the application of pressure to the original sheet of Golding fabric so as to change the angle of the strands and bridges with respect to the general plane of the sheet as just referred to, the sheet is not distorted and the dimensions of the sheet as a whole remain practically the same. In other words, there is no material elongation or decrease in width of the original fabric sheet.

My new expanded metal fabric above described is admirably adapted for use in the reinforcement of roof tiles, building slabs, and other thin structural parts formed of concrete or other cementitious material. Owing to the angular disposition of the metal strands and the bridges the resistance of the fabric to tensile strains during use thereof, is very materially increased, and as such angular disposition of the strands and bridges decreases the over-all height of the fabric with respect to that of the original Golding fabric, the new fabric may be used in thin concrete tiles in which it is usual to imbed the fabric in the tile or slab on one side of its neutral axis in order to secure the most effective results. Further, the angular disposition of the strands and the bridges obviates tearing of the fabric at the bridges when the tile is subjected to tensile strains. Again, compression stresses in directions at an angle with respect to the general plane of the fabric are more effectively resisted in the use thereof, owing to the obliquity of the metal strands and bridges, than would be the case if these strands and bridges all occupied the same horizontal plane parallel with the faces of the tile.

I have herein referred to one desirable and satisfactory embodiment of the invention, but as above noted, slight variations from the described construction might possibly be resorted to without materially effecting the results obtained. Accordingly the privilege is reserved of resorting to all such legitimate changes as may be fairly embodied within the spirit and scope of the appended claims.

I claim:

1. A sheet of metal fabric consisting of integrally connected, laterally stretched metal strands terminating in bridges having a width substantially equal to double the width of the strands, the strands and bridges being disposed in inclined planes relative to each other and the general plane of the fabric and the thickness of the sheet between its outer faces being considerably less than the width of the bridges.

2. A sheet of metal fabric consisting of laterally stretched metal strands terminating in bridges disposed in inclined relation with respect to the strands and having a width substantially equal to double the width of the strands, the bridges being all disposed at substantially the same inclination relative to the general plane of the fabric, and the thickness of the sheet between its outer faces being considerably less than the width of the bridges.

3. A sheet of metal fabric consisting of integrally connected, laterally stretched metal strands terminating in bridges of a width substantially equal to double the width disposed in inclined relation with respect to the shank and having the strands, the bridges being all disposed at substantially the same inclination relative to the general plane of the fabric, and the thickness of the sheet between its outer faces being considerably less than the width of the bridges.

In testimony that I claim the foregoing as my invention, I have signed my name hereunder.

CHARLES STOWE RENO.