F. C. AREY.

TRUSSED EXPANDED METAL.

APPLICATION FILED AUG. 24, 1912.

1,092,325.

Patented Apr. 7, 1914.

2 SHEETS—SHEET 1.

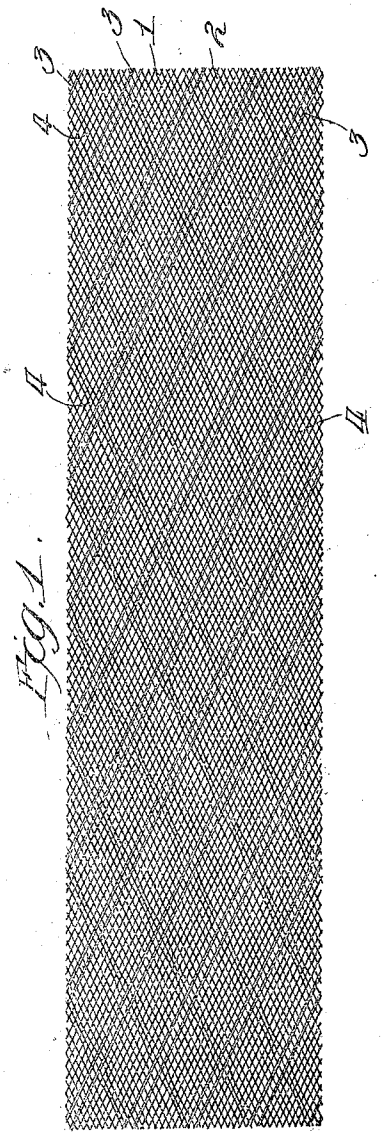


Fig. 1.

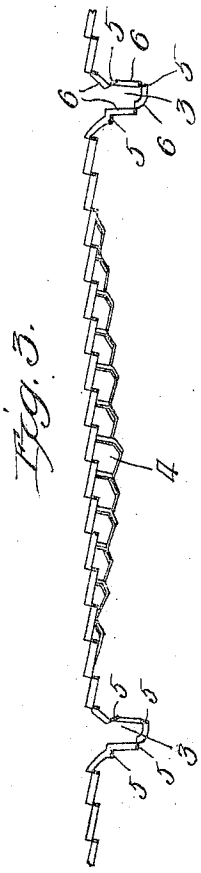


Fig. 3.

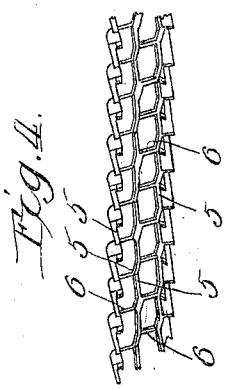


Fig. 4.

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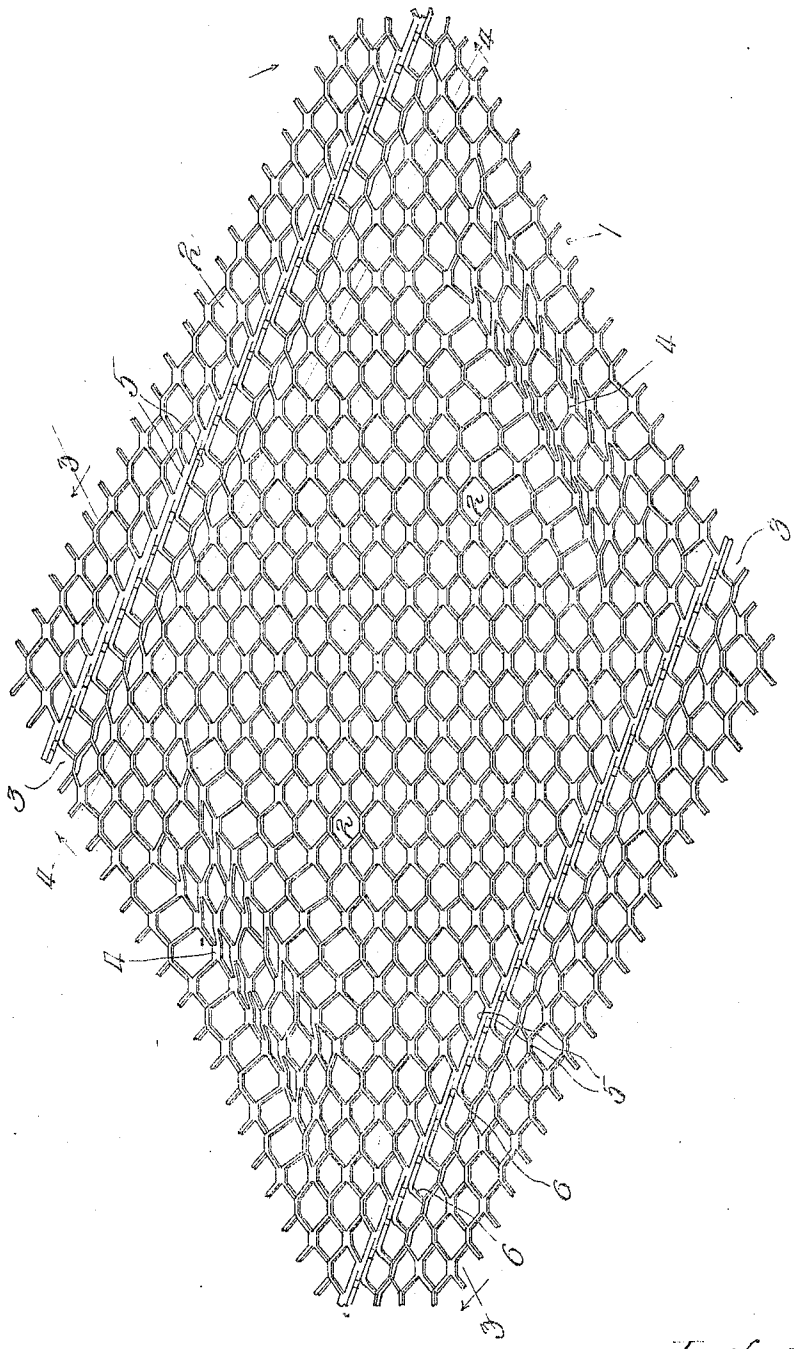
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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TRUSSED EXPANDED METAL.

1,092,325. Specification of Letters Patent. Patented Apr. 7, 1914.

Application filed August 24, 1912. Serial No. 716,811.

To all whom it may concern:

Be it known that I, FRED C. AREY, a citizen of the United States, residing at Oak Park, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Trussed Expanded Metal, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In recent years it has become a common practice to employ what is known as expanded sheet metal in place of wooden laths to serve as a foundation or support for concrete or plaster in or upon walls of various kinds and intended for various purposes. Except where the sheet is intended simply to be embedded in a plastic mass to reinforce the same, it should be secured to the supporting means in such a manner as to leave behind it a space into which concrete or plaster may flow. It has therefore been customary either to secure the sheet to spacing strips, in the case of a flat sheet, or to provide the sheet with solid unexpanded portions which are pressed laterally to form projecting ribs; such ribs serving to space the main portion of the sheet away from the wall or whatever there may be behind it.

It is of importance, where expanded metal sheets are used, that the plastic material thoroughly surround all the metal elements in order to provide the latter with a complete protective coating. In case of metal sheets having the spacing ribs to which I have heretofore referred, it is impossible to make the plastic material cover the back of the ribs completely and therefore, at the points where the ribs occur, the sheets are more or less unprotected.

One of the most widely used metallic foundations for concrete or plastering is that type of expanded sheet metal which is formed by slashing or slitting a sheet and then expanding it so as to produce a structure made up of numerous similar and similarly disposed cellular members approximately diamond-shaped. When a plastic material is applied to a sheet of expanded metal of this kind, it fills the interstices flows behind the sheet and there closes over the metal portions so as completely to inclose them. This result is insured by so carrying out the expanding process that the metal edges which are visible from either face of the sheet have a width equal only to the thickness of the metal from which the sheet is made.

The object of the present invention is to produce an expanded metal sheet, preferably though not necessarily of the type last described, in which there shall be present ribs for spacing or for spacing and reinforcing purposes without having any part behind which the plastic material is unable to flow; thus leaving no portion of the sheet which will be unprotected in any service to which the sheet may be put.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but for a full understanding of my invention and of its object and advantages reference may be had to the following detailed description taken in connection with the accompanying drawings wherein:

Figure 1 is a front view of a sheet of expanded metal arranged in accordance with a preferred form of my invention; Fig. 2 is a view on an enlarged scale of a fragment of the sheet shown in Fig. 1; Fig. 3 is a section on line 3—3 of Fig. 2; and Fig. 4 is a section on line 4—4 of Fig. 2.

Reference being had to Fig. 1 of the drawings, 1 represents a sheet of expanded metal, preferably of the type formed by slitting a sheet at intervals along a series of parallel longitudinal rows and then expanding the sheet in such a way that it is divided throughout its entire area into a large number of similar, similarly disposed diamond-shaped cellular member 2; the two axes of the diamond-shaped members being at right angles to each other and running longitudinally and transversely of the sheet. The sheet in this condition is perfectly adapted as a foundation for plastic material, this material, when applied on one side of the sheet, flowing through the interstices and massing together on the rear side so as to form a perfect covering for metal.

It is my purpose to modify the sheet heretofore described in such a way that by means of ribs, trusses, or both, it will be reinforced so as to give it greater rigidity than can be had by a simple flat sheet and make it self-spacing with respect to a wall or other support to which it may be secured; without detracting from its characteristic of

causing its rear face to be effectively coated and protected when a plastic material is applied upon its front face. To this end I press the metal of the sheet after it has been fully expanded, into a series of ribs or trusses projecting from one side; each rib or truss being made up of cellular members which permits the plastic material to pass through just as in the case of the original sheet.

In the arrangement shown, I have provided a series of parallel continuous ribs 3 and a series of parallel sectional trusses 4 extending transversely to the ribs 3.

As will best be seen from Figs. 2, 3 and 4, the ribs and trusses, in order to obtain the best results under all conditions of service, should follow generally lines parallel with the sides of the small cellular members of which the sheet is composed, this being the arrangement illustrated. By positioning the ribs 3 in the manner described, a comparatively rigid truss-like effect is produced because corresponding sides of the cellular members in each row which is required to make one of the ribs are arranged substantially end to end into the form of a continuous beam 5, the several beams being connected together by short cross-pieces 6, which tie them together in the shape of a trussed girder. If the ribs are located at some other angle than that which brings them parallel to two of the sides of each of the cellular members, it will be impossible to obtain the continuous beam effect and therefore the sheet will not have a maximum degree of stiffness.

A single series of ribs, such as the ribs 3, will serve to provide the necessary spacing and holding means, but where a greater stiffness is desired, this may be obtained by means of trusses 4 which need not take the form of continuous ribs but may be produced as best shown in Figs. 2 and 3, by simply depressing the metal of the sheet along parallel lines extending parallel with two of the sides of the diamond-shaped cellular members and arranged transverse to the ribs 3; each of rows being made up of a series of sections, each shorter than the distance between two of the ribs 3 and lying between two of such ribs. By this arrangement a stiffening effect is obtained without weakening the girder-like ribs 3 by having them intersected by the transverse trusses. The truss sections may of course be made as long as desired although the greatest benefit is obtained by those portions lying near the middle of the space between two of the main ribs. Furthermore, the trusses 4 need not be made as deep as the ribs 3 because the latter will give the desired spacing, the trusses being simply for the purpose of securing stiffness. In the arrangement shown, the short truss sections are only about half as deep as the main ribs and they decrease gradually in depth from the middle toward the ends.

It is customary to overlap expanded metal sheets about half an inch when they are placed in position on a wall and, in order to permit such overlapping without making it necessary to bring the ends of consecutive sheets out of alinement, I begin one of the main diagonal ribs at one of the corners,—this being the lower right hand corner in Fig. 1—, and so space the ribs apart that the last one at the same end of the sheet will come just within the corner,—as indicated at the upper right hand corner in Fig. 1. The same disposition is made at the opposite end of the sheet, only that the order is reversed. By this arrangement two sheets, lying with their ends in alinement and overlapping slightly, have all of their ribs along the overlapping edges in registration with each other.

While I have illustrated and described with particularity only a single preferred form of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which fall within the terms employed in the definitions of my invention constituting the appended claims.

I claim:

1. A reticulated metal sheet made up of strands or strips forming connected similarly-disposed polygonal members arranged in rows extending diagonally across the sheet, certain of the sides of the members in each row forming a continuous piece extending lengthwise of the row, and a portion of the reticulated metal being pressed laterally into the form of a rib containing at least one of said continuous pieces whereby the sheet is stiffened both transversely and longitudinally.

2. A reticulated metal sheet made up of strands or strips forming connected similarly-disposed polygonal members arranged in rows extending diagonally of the sheet, each row containing a continuous stiffening piece extending lengthwise thereof and composed of corresponding sides of the members in said row, a portion of the reticulated metal being pressed laterally into the form of a rib containing at least one entire row and portions of adjacent rows, said rib extending parallel with and containing a plurality of said stiffening pieces whereby the sheet is stiffened both transversely and longitudinally.

3. A reticulated metal sheet made up of strands or strips forming connected similarly-disposed polygonal members arranged in rows, each of said members lying in two rows crossing each other and extending diagonally of the sheet and corresponding

sides of the members in each row forming a continuous stiffening piece extending diagonally across the sheet, portions of the reticulated metal being pressed laterally into the form of a series of continuous parallel ribs each containing at least one of said stiffening pieces, and other portions of the reticulated metal being pressed laterally into the form of short ribs lying between the ribs of the other set and each containing a portion of one of said stiffening pieces.

4. A reticulated metal sheet made up wholly of strands or strips arranged on edge and forming connected open frame-like members arranged in parallel rows, certain of the sides of the members in each row forming a continuous stiffening piece extending in the direction of the length of the row, portions of the reticulated metal being pressed laterally parallel with and each containing a plurality of said stiffening pieces so as to shape said portions into a series of parallel continuous trussed ribs.

5. A reticulated metal sheet made up wholly of strands or strips arranged on edge and forming connected similarly-disposed approximately diamond-shaped polygonal members arranged in rows, certain of the sides of the members in each row forming a continuous stiffening piece extending diagonally across the sheet, and portions of the reticulated metal being pressed laterally with and each containing at least one of said stiffening pieces so as to produce a series of trussed ribs extending diagonally across the sheet and serving to stiffen the sheet both transversely and longitudinally.

6. A reticulated metal sheet made up wholly of strands or strips arranged on edge and forming connected similarly-disposed approximately diamond-shaped members having their sides extending diagonally of the sheet, each of said members lying in two intersecting diagonal rows lying parallel with two adjacent sides of said member, said sides forming with the corresponding sides of the other members in the said two rows two intersecting continuous stiffening pieces extending diagonally across the sheet, portions of the reticulated metal being pressed laterally to form a series of parallel ribs each containing at least one of said continuous stiffening pieces extending longitudinally thereof, and other portions of the reticulated metal being pressed laterally into the form of series of short ribs each containing portions of certain of the stiffening pieces which intersect the first set of ribs.

7. A reticulated metal sheet made up wholly of strands or strips arranged on edge and forming connected diamond-shaped members arranged in rows extending diagonally across the sheet parallel with the sides of said members, certain of the sides of the members in each row being arranged end to end in the form of a continuous stiffening piece extending diagonally across the sheet, and portions of the reticulated metal being pressed laterally into the form of ribs each containing at least one entire row and portions of adjacent rows, each of said ribs extending parallel with and containing a plurality of the stiffening pieces in the rows contained in the rib whereby the sheet is provided with a series of trussed ribs extending diagonally across the same so as to stiffen it both in the transverse and in the longitudinal direction.

In testimony whereof, I sign this specification in the presence of two witnesses.

FRED C. AREY

Witnesses:
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WM. F. FREUDENREICH.