S. C. CARY.

METAL FABRIC.

APPLICATION FILED FEB. 6, 1911.

1,209,260.

Patented Dec. 19, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

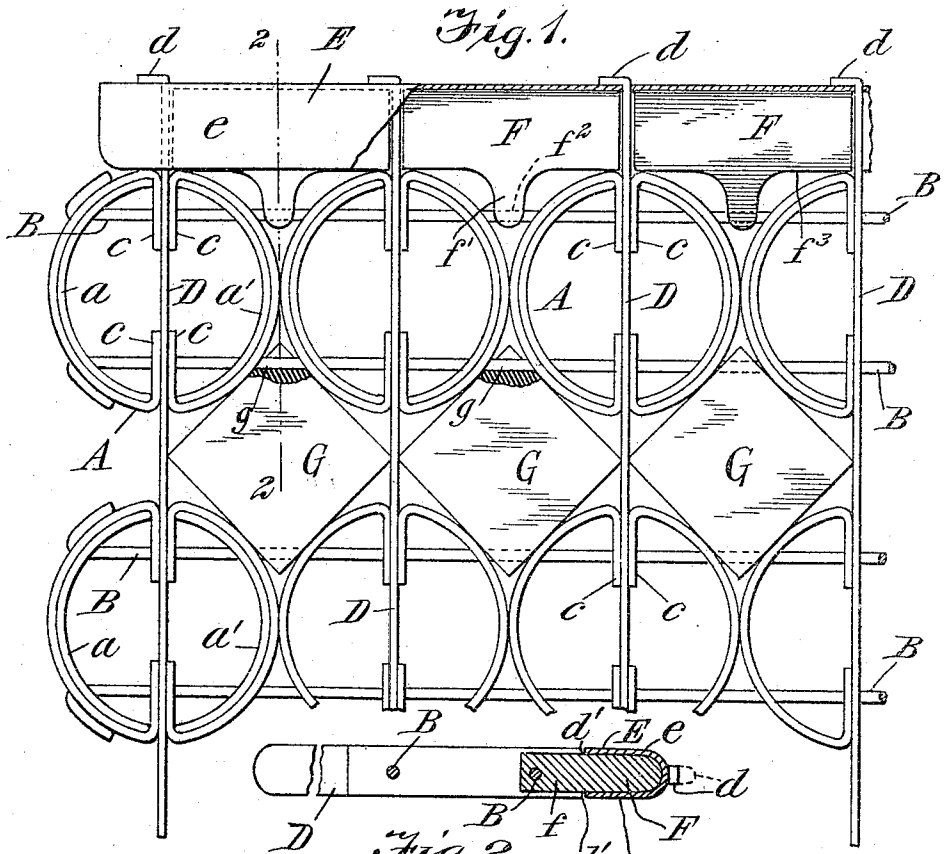


Fig. 2.

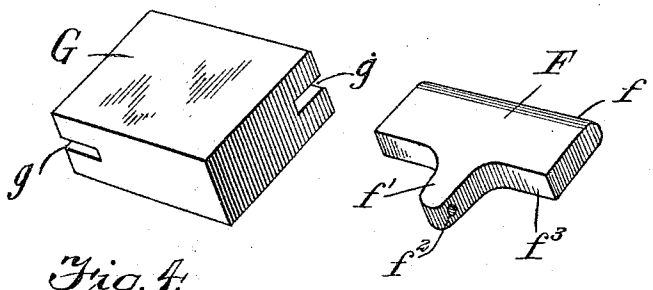


Fig. 4.

Fig. 3.

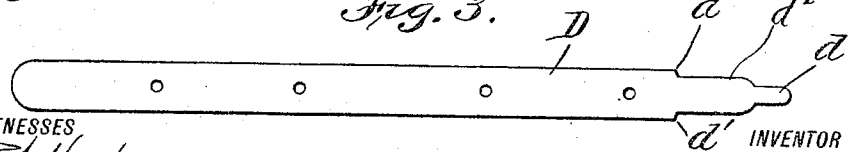


Fig. 5.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 6.

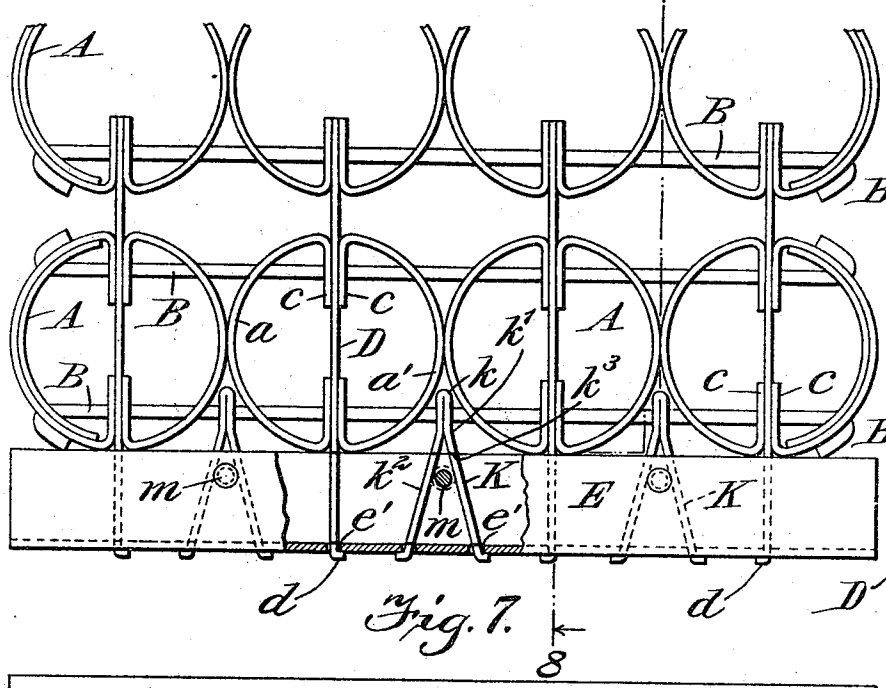


Fig. 8.



Fig. 7.

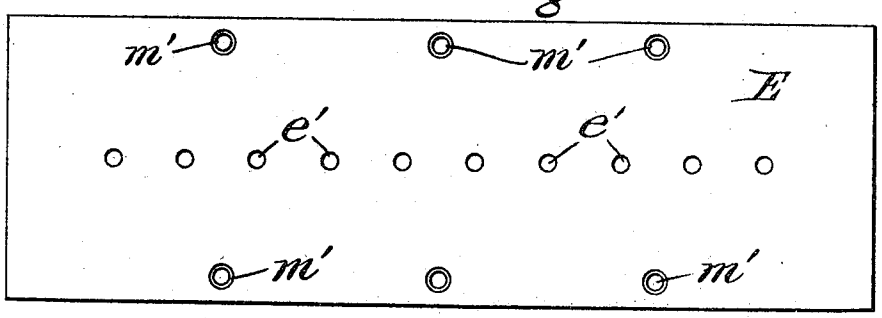
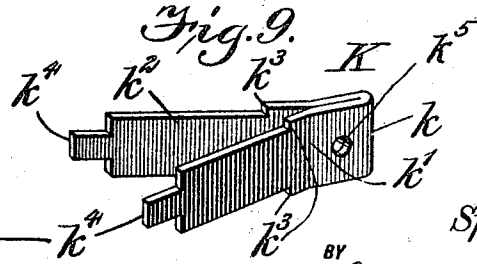


Fig. 9.



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METAL FABRIC.

1,209,260. Specification of Letters Patent. Patented Dec. 19, 1916.

Application filed February 6, 1911. Serial No. 606,746.

To all whom it may concern:

Be it known that I, SPENCER C. CARY, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented a certain new and useful Metal Fabric, of which the following is a specification.

The invention is a metal fabric, one of the improvements being the provision of means for precluding an edge portion, or edge portions, of the fabric from breaking down under the weight of persons walking thereon when said fabric is used as a door or floor mat.

A further improvement consists of tread pieces or blocks composed of yieldable material and positioned in coöperative relation to the metal pieces composing the fabric for the purpose of imparting a soft or yielding tread to said fabric when it is walked upon, said tread pieces or blocks being so constructed that each block may be secured or retained in position relative to the metal parts of the fabric, and without resorting to separate or independent means for securing the blocks in position.

In a prior application for Letters Patent of the United States for an invention appertaining to metal fabrics, filed February 11, 1910, Serial No. 543,306, I have shown a marginal strip attached to one or more edges of the metal fabric, said strip being, preferably, doubled or folded into channeled form and attached to the fabric by extended end portions of certain links, the latter being employed for uniting the rows of units composing the fabric.

When the fabric is used as a floor covering, it is frequently subjected to hard usage, by persons walking or standing thereon and by imposing considerable weight upon it, so that the margin or edge becomes bent and crushed out of shape. The edge of the reinforcing member or strip employed in the fabric of said prior application is liable to become so bent and distorted that said strip does not retain its operative relation to the top and bottom faces of the metal fabric, thereby resulting in an unsightly floor covering.

To overcome the foregoing, and other objections, the metal fabric is provided with a marginal member, preferably in the form of a strip channeled or substantially U-shaped in cross section, and substantially incased within this strip is a plurality of stay members, preferably of strips of metal, said stay members operating to preclude said marginal strip from bending or breaking under the weight adapted to be imposed upon the fabric.

In the accompanying drawings, I have illustrated different practical embodiments of the invention, but the constructions shown therein are to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a plan view of a portion of a metal fabric adapted for use as a floor covering, a portion of the marginal strip being broken away to show one form of stay member employed in connection therewith. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is a perspective view of one form of stay member detached from the fabric and the marginal strip. Fig. 4 is a detail view of an elastic tread member or block constructed for self attachment to a plurality of units and adapted to afford a soft tread or cushion for the fabric when used as a floor covering. Fig. 5 is a side elevation of one of the links employed for connecting the rows of units and for attaching the channeled marginal strip to an edge portion of the fabric. Fig. 6 is a plan view of a portion of metal fabric, similar to Fig. 1, showing a preferred form of stay member. Fig. 7 is a plan view of the marginal member before it is bent into channeled form. Fig. 8 is a vertical section taken on line 8—8 of Fig. 6. Fig. 9 is a perspective view of one of the stay members shown in Fig. 6.

The metal fabric is composed of units, A, which are arranged in rows, the units of each row being held in position by rods, B, or similar connecting means. Each unit, A, consists of two members, a, a', constructed preferably of metal pieces, each bent to a substantially semi-circular form and provided with reëntrant lugs, c. The members, a, a', are assembled so that the lugs, c, are oppositely disposed, thereby producing a unit, A, of substantially circular form, al-

though the particular shape of the unit and its members is immaterial. Connecting the rows of units, A, are links, D, which pass between the reëntrant lugs of members, a, a', said links being attached to said units by rods, B, the latter passing through members, a, a', lugs, c, and links, D.

Along one or more edges of the fabric there is positioned a marginal reinforcing member, E, herein shown as consisting of a single piece of metal, said marginal member being attached to the fabric, preferably, by means of said links, D. The marginal member, E, is preferably composed of a strip of sheet metal which is doubled upon itself to form a channel, said channel being substantially U-shaped in cross section, as clearly appears from an inspection of Figs. 2 and 8. The edges of said channeled member, E, are shown as fitting substantially flush with certain shoulders, d', of links, D, so that the member, E, is substantially flush with the top and bottom faces of the fabric.

The links, D, are shown as being extended beyond the units of the fabric, and the extended ends of said links are reduced in width so as to fit within the channeled marginal strip, E. It is preferred to shape the extended ends of the links, D, so that they conform to the cross sectional shape of the channeled marginal strip, E, or of certain stay members, F, and, also to produce on the ends of the links certain tongues, d, each tongue being adapted to be passed through apertures, e', in member, E, and to be turned or bent against the outer face of said member, E, in order to attach said member, E, firmly to the fabric.

To prevent the marginal sheet metal member, E, from bending, and, also, to prevent distortion thereof relative to the units of the fabric, it is preferred to employ a plurality of stay members positioned in coöperative relation to said marginal member. The stay members are positioned between the extended ends of the link, D, and they are attached individually to the fabric.

In the drawings there is illustrated two forms of stay members, one form being indicated at F in Figs. 1, 2 and 3, and another form at K in Figs. 6, 8 and 9, the latter form being preferred.

Each stay member K is constructed, preferably, of bar or rod metal, the metal employed being similar to that used in the units A and links D comprising the fabric. The stay member, K, consists of a single piece of metal which is folded upon itself at k, and the folded parts are thereafter bent outwardly at k' to produce diverging legs, k^2. These diverging legs are reduced in width for the major part of their length so as to fit within channeled strip, E, said reduced legs producing the shoulders, k^3. Said narrowed legs are, or may be, again reduced in width, to produce tongue, k^4, at the ends of the legs, each tongue being adapted to pass through apertures, C', in the channeled strip, E, and to be turned or bent against the outer face of said strip, as shown in Fig. 6. An aperture, k^5, is provided in the ear, k, which is produced at the inner end of the stay member, through which ear is adapted to pass the rod, B, for the purpose of retaining the stay member in operative position relative to the fabric.

When the parts of the fabric are assembled stay members, K, are positioned between two adjacent units, A, and rod, B, passes through apertures, k^5, of said stay members. The strip, E, is positioned over the reduced ends of links, D, and the legs of members, K, so that tongues, d, pass through openings, e', said tongues being then bent against the outer face of said strip, E, to secure it in position. For additionally strengthening the fabric, I may, and preferably do, apply rivets, m, positioned in apertures, m', of strip, E, and between the ends, k^2, of member, K, the heads of said rivets being countersunk into member, E.

In Figs. 1 and 3 of the drawings, I have shown another embodiment of the stay member, composed of a solid piece of cast metal. Said member, F, is shaped at its outer edge, f, to conform to the edge of the folded strip, e, whereby each stay member, F, is positioned compactly within, and in contact with, the marginal strip, E. Each stay member, F, is provided with an ear, f', preferably integral therewith, said ear having an aperture, f^2, for the reception of rod, B, said ears thus providing one means whereby the stay member is adapted to be secured or attached to the metal fabric. The ends of the member, F, are preferably straight to engage with the flat faces of adjacent links, D. The front edge, f^3, of each stay member is substantially straight so as to engage with the edges of the units, said stay members partially filling the spaces between the outer edge of the marginal strip, E, and the members, a, a', of an adjacent row of units, A.

In assembling the parts, the stay members, F, are positioned between the extended ends of links, D, the edges, f^3, of said members, F, being against the faces of units, A. The stay members are held firmly in position by one of the rods, B, passing through apertures, f^2, in the ears, f', whereby several members, F, are securely retained in proper position. The marginal reinforcing member, E, is now positioned to substantially incase all the stay members, F, and the tongues, d, of links, D, are passed through apertures in said marginal strip, E, said tongues being thereafter bent at an angle to hold members, E, in position.

From the foregoing it will be observed that the fabric embodies means coöperating

with the units and the marginal strip for precluding said marginal strip from crushing or breaking down under the weight imposed upon it. The means referred to are either in the form of bent metal stay members, K, or cast metal stay members, F, but whichever form of stay member is employed, said stay members are positioned, preferably, within a part of a doubled metal strip, at intervals along the length of said strip. The stay members, K, are attached individually to the marginal strip and to the row of units. I prefer to employ the links, D, and the stay members, K, between the row of units and the doubled marginal strip, and, furthermore, to position the stay members between the links, so that stay members, K, and links, D, are in alternate relation. The employment of the links and the stay members so strengthen the strip, E, that it is not possible to crush or break it under ordinary condition of use. This is quite important, for the reason that many kinds of prior metal fabrics when used as floor coverings will become so bent and distorted at one or more edges as to render the same practically worthless.

The metal strip is shown in a flat sheet condition in Fig. 7. Said sheet is punched, or otherwise formed, with holes, m', near the edges, and with a row of holes, e', at or near the middle, said holes being punched in accurate positions in the strip while it is in a flat condition. When the strip is to be used, the required length is cut from a roll or coil of the prepared material, and the strip is doubled or folded along its middle, substantially at the central row of holes e'. The holes, m', near one side edge register with the holes, m', near the side edge, thus making provision for the easy insertion of the rivets, m.

To adjust the folded strip into position, it is slipped over the extended ends of links, D, and the legs, k^2, of stay members, K, whereupon the tongues of links, D, and the tongues, k^4, of the stay members, K, pass through holes, e', after which the tongues are bent, folded, or otherwise upset against the outer face of strip E.

The stay members, K, are somewhat larger than the width of the doubled marginal strip, and when the parts are in proper operative positions, the edges of strip, E, abut against shoulders, k^3, of the stay members, thus bringing certain parts of members, K, flush with strip, E, while the legs of said members, K, are incased by and between the folded strip.

While the cast metal stay members, F, operate efficiently as one means for precluding bending of strip, E, it is preferred to employ the bent metal members, K, for several reasons, to wit:—They are manufactured economically and rapidly by appropriate machinery; they are lighter in weight; they assist in attaching the sheet metal strip to the units of the fabric; and they engage at a number of points with the interior of the folded metal strip.

It is to be noted, further, that rivets, m, are employed for retaining the folded strip in compact relation to the stay members. These rivets serve to clamp the walls of the strip firmly against the edges of the stay members and the links, and they assist, additionally, in strengthening the folded strip. The metal around holes, m', is depressed so that the heads of rivets, m, will be countersunk into the strip.

Another characteristic of the fabric, when used as a floor covering, consists of tread members or blocks, G, composed, preferably, although not essentially, of yieldable material, and positioned for coöperative engagement with the units of the fabric. Each block, G, consists of a single piece of vitreous material, such as clay tiling, but it is preferred to make the block of rubber or other molded composition. Each block is constructed for self attachment to the fabric, and for this purpose, the block is provided with notches or recesses, g, whereby said block may be attached to the units without resorting to the use of separate or independent fastenings. The block may be of any desired shape, although it is shown as being substantially square, and it is positioned between four adjacent units, A, in such manner that the notched or recessed corners may be sprung into engagement with, or it may slip over, the rods, B, connecting a plurality of units, preferably two of them. The notches or recesses in the block provide means whereby said block may be fitted or attached to the rods independently of separate fastening means. This construction enables a crushed or broken tread block to be removed expeditiously from the fabric, and to be replaced at trifling expense with a fresh tread block.

Any desired number of tread blocks may be employed, and they are positioned between the units, although in some instances, they may be placed within the units. The thickness of the blocks exceeds the depth of the fabric, and the latter is thus adapted to rest upon the yielding blocks, for the purpose of securing a desired soft tread or cushion effect which some users prefer in floor coverings.

Having thus fully described the invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a metal fabric, a row of units, a rod connecting the units of the row, a reinforcing member positioned at an edge of the fabric and exterior to the units, links attached to the reinforcing member and to the units, and metallic stay members co-

operating with the reinforcing member, said stay members being connected to the rod and positioned intermediate the links.

2. In a metal fabric, a row of units, rods extending through the units of said row, a reinforcing member positioned at an edge of said fabric, means for attaching the reinforcing member to the units, metallic stay members separate from the attaching means, said stay members coöperating with the reinforcing member and positioned intermediate the points at which the units are attached to said reinforcing member, said stay members being connected to the rods.

3. In a metal fabric, a row of units, a reinforcing member positioned at one edge of the fabric, said member being channeled in cross section, retaining means for said reinforcing member, stay members separate from said retaining means, said metallic stay members being substantially incased within the channel of said reinforcing member, and means independent of the retaining means for connecting said stay members to the row of units.

4. A metal fabric embodying units arranged in rows, links for connecting rows of said units, a reinforcing member positioned at one edge of said fabric, said links being attached to the reinforcing member for connecting said member to one row of units, stay members separate from said links, said stay members being positioned intermediate the links, and means independent of said links for attaching the stay members to one row of units.

5. A metal fabric embodying rows of units, links connecting rows of said units, a reinforcing member positioned at one edge of the fabric, said reinforcing member being channeled in cross section and being attached to end portions of said links, metallic stay members separate from the links, said stay members being substantially incased within the channel of the reinforcing member, and means independent of the links for attaching the stay members to a row of units.

6. In a metal fabric, rows of units, links connecting said rows of units, a marginal strip positioned at the edge of the fabric and attached to said links, a plurality of stay members each positioned between two adjacent links, and rods passing through said units, the links and stay members, whereby said stay members are precluded from displacement with relation to the fabric.

7. In a metal fabric, a plurality of rows of units, links connecting said rows of units, said links being extended beyond the units of one row at the edge of the fabric, said extended ends of the links being provided with tongues, stay members positioned between said extended portions of the links, and a channeled strip provided with apertures for the reception of said tongues on the links, said channeled strip substantially incasing said stay members.

8. In a metal fabric, a plurality of rows of units, links attached to said rows of units, said links being extended beyond the units of one row at the edge of the fabric, and said extended ends being provided with tongues, a channeled strip secured to the fabric by said tongues of the links, stay members fitting within the channel of the strip, said stay members coöperating with said strip and being positioned between the links, and a rod passing through the links and the stay members, whereby said stay members and the strip are secured to the units composing the fabric.

9. In a metal fabric, a row of units, a channeled marginal strip positioned at the edge of the fabric, links projecting from the units and attached to the marginal strip, and stay members positioned within, and attached to, the marginal strip, said stay members being separate from the links.

10. In a metal fabric, a row of units, a channeled marginal strip, means for attaching the marginal strip to the row of units, bent or folded stay members positioned within the marginal strip, said stay members being intermediate the points at which the marginal strip is attached to the row of units, and means for connecting the stay members with the row of units.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SPENCER C. CARY.

Witnesses:
J. F. MOTHERSHEAD,
M. E. FREEMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."