Nov. 17, 1964 R. C. MOECKEL 3,156,957

FLOOR MAT AND METHOD OF MAKING THE SAME

Filed Dec. 1, 1961

FIG. 1

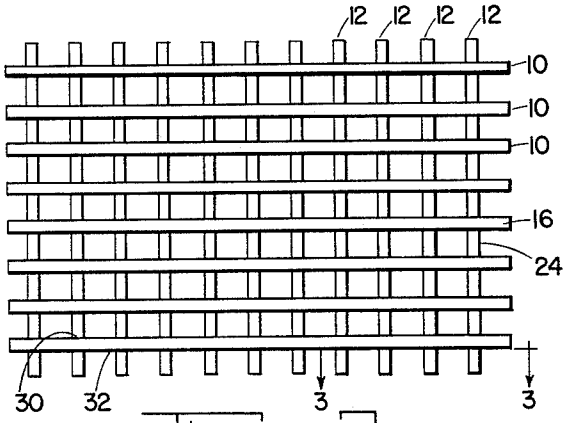


FIG. 2

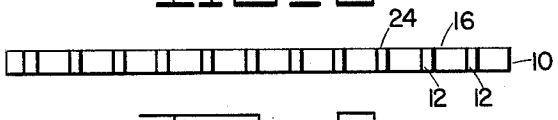


FIG. 3

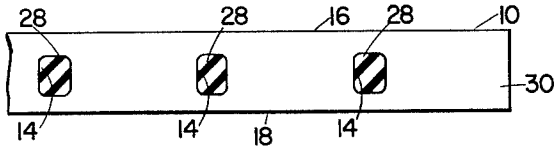


FIG. 5

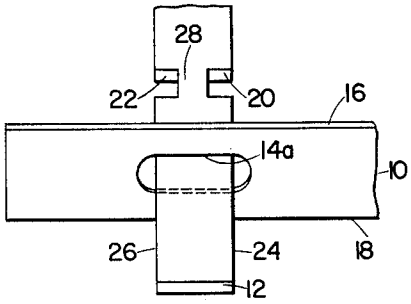


FIG. 6

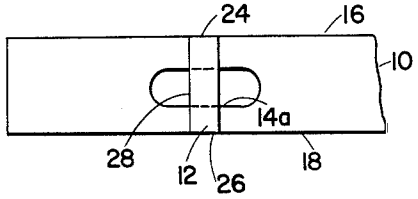
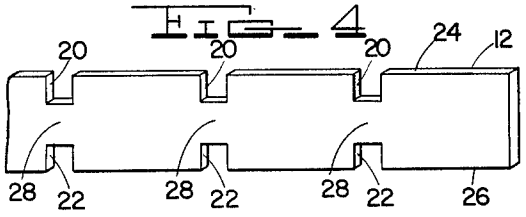


FIG. 4



INVENTOR.
ROBERT C. MOECKEL
BY Wood, Dalton, Gask & Irish
ATTORNEYS

United States Patent Office 3,156,957 Patented Nov. 17, 1964

3,156,957

FLOOR MAT AND METHOD OF MAKING THE SAME

Robert C. Moeckel, Fort Wayne, Ind., assignor to Life Management, Incorporated, Fort Wayne, Ind., a corporation of Indiana

Filed Dec. 1, 1961, Ser. No. 156,383
9 Claims. (Cl. 20—78.3)

The present invention relates to a floor mat and method of making the same, and more particularly to a floor mat constructed almost entirely of rubber strips uniquely shaped to be inseparably interlocked together.

Conventional floor mats fabricated of rubber-like strips of material are bound or held together in a variety of different ways. In one structure, binding wire is used to lock the transverse mat strips together and also to bind the edges of the mat. In another construction, the individual rubber-like strips are provided with half-notches shaped complementary so as to be engageable with each other to thereby form a co-planar structure in which the crossing strips lie substantially in the same plane.

These prior art structures have been found to be deficient in a number of respects. In the mats which utilize wire bindings and reinforcements, such wires are subject to rusting and corrosion which make them unsuitable for a variety of uses, one such use being in a chemical plating factory where acids and chemicals which attack the wire are used. Thus, such mats have a very short wear-life when used in a plating or the like plant.

In other instances, it is desired to have a mat fit a particular sized floor or surface, and for this purpose it is necessary to prefabricate the mat to the exact size needed. The reason for this requirement is that such mats are normally provided with edge bindings such that after the mat has been cut to size it must be provided with such a binding.

In the mats utilizing notches which interfit with each other to provide a coplanar structure, it has been found that the crossing strips which form the mat quite easily become separated either through usage or from being laid over irregular surfaces. This, of course, is not desirable inasmuch as it provides a rough surface over which persons may trip and fall or which will become damaged quite early in the wear-life thereof due to the fact that certain strips are raised higher than others.

In any event, the present invention is intended to overcome certain of the prior art difficulties and to provide a mat structure composed of rubber-like strips wherein the latter are inseparably interlocked together and in being so interlocked do not require the use of any fasteners, bindings or wire reinforcement.

It is therefore an object of this invention to provide a mat formed of rubber-like strips which extend transversely to each other, these strips being self-interlocking so as not to require the use of any metallic fasteners, bindings, or wire reinforcement.

It is another object of this invention to provide a method for fabricating the mat of the preceding object in a manner that is facile, economical and efficient.

Other objects will become apparent as the description proceeds.

The above-mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a top plan view of one mat embodiment of this invention;

FIG. 2 is a side view thereof;

FIG. 3 is an enlarged fragmentary illustration taken substantially along section line 3—3 of FIG. 1;

FIG. 4 is a perspective illustration of the notched strip used in the embodiment of FIGS. 1 and 2;

FIG. 5 is a perspective illustration showing one step in the method of fabricating the invention; and

FIG. 6 is another enlarged fragmentary illustration showing another step in the method of fabricating this invention.

Referring to the drawings, and more particularly to FIGS. 1 and 2, the floor mat there illustrated includes a plurality of first elongated strips **10** and a second plurality of elongated strips **12** which extend transversely to the strips **10**. These strips preferably are formed of rubber; however, any material of rubber-like constituency having similar elastic properties which permit the material to be stretched will suffice for the purposes of this invention.

The strips **10** and **12** are formed differently, as will now be explained. However, both strips **10** and **12** are identical (in the illustrated embodiment) in the respect of being of rectangular cross-section and of substantially the same size.

All of the strips **10**, one such strip being shown in FIG. 3, are provided with a plurality of longitudinally spaced apertures **14** which preferably are formed midway between the strip edges **16** and **18** as shown. These apertures **14** are preferably square or rectangular in shape with the corners thereof being rounded or provided with radii for a purpose which will become apparent from the following description.

The strips **12**, one such strip being shown in FIG. 4, are provided with a plurality of longitudinally spaced pairs of notches **20** and **22**, respectively, which are essentially square or rectangular in shape and which extend inwardly toward each other from the opposite edges **24** and **26**, respectively. The notches **20** and **22** are in transverse alignment, and they terminate short of each other to define web portions **28**, these web portions being an integral part of each strip **12**.

As shown more clearly in FIG. 3, when these strips **12** are assembled to the strips **10**, the web portions **28** intimately fit into the respective apertures **14** with the sides of the notches **20** and **22** engaging the opposite sides of the strip **10**. In forming the notches **20** and **22**, the width dimension thereof is preferably made equal to the thickness dimension of the strip **10** such that when the strips **10** and **12** are fastened together, the sides of the notches **20** and **22** will intimately engage the opposite sides **30** and **32** of the strip **10**.

As shown more clearly in FIG. 1, the finished mat has all of the strips **10** arranged in spaced-apart parallel relation with all of the apertures **14** being transversely aligned. Thus, all of the strips **12** which are fitted into the apertures **14** extend in directions which are at right angles to the strips **10**.

In fabricating the mat of FIGS. 1 and 2, the following described procedure is followed. It will have been recognized up to this point that the cross-sectional size of each aperture **14** is substantially smaller than the cross-sectional area of each strip **12**. This being true, it is not possible to insert the strips **12** into the apertures **14** unless the latter can be enlarged or the strips **12** made smaller. In FIGS. 5 and 6 is illustrated one method by which the strip **12** may be inserted through the aperture **14**. As the first step in the procedure, the strip **10** is stretched in a longitudinal direction so as to elongate the aperture **14** to a form as indicated by the reference numeral **14***a*. When this is done, the strip **12** is inserted through the elongated aperture **14***a* until the notches **20** and **22** as well as the web portion **28** become registered therewith. With the strip **12** in this position, it is rotated 90° to the posi-

tion shown in FIG. 6. While the strip 12 is in this position, the stretching force exerted on the strip 10 is released, thereby permitting the aperture 14*a* to reduce to the size of the aperture 14 in which the web portion 28 is intimately gripped or surrounded. The aperture 14 preferably is of the same size as the cross-section of web portion 28. Thus assembled, the strips 10 and 12 become firmly interlocked together and cannot be separated without destroying the mat unless the procedure of assembling is followed in reverse.

While the invention has been shown in connection with the strips 10 and 12 being orthogonally related, it will at once be apparent to the person skilled in the art that almost any geometric pattern for the strips may be used. For example, the strips 10 may be arranged as concentric circles and the strips 12 as radii of the circles. Also, triangular patterns may be used wherein the strips 10 and 12 cross at angles other than 90°.

It will at once become apparent that mats may be fabricated to almost any size and then cut to fit the outline of a floor surface on which it is to be laid. This mat requires no fasteners, bindings or wire reinforcement of any type; hence, the mat may be used in any environment in which rubber or rubber-like material is not attached but wire or metallic parts are attached. Mats made according to this invention are quite versatile as to the end usages thereof, and these will appear as obvious to a person skilled in the art.

In a preferred mat design, the edges 16 and 24 of the strips 10 and 12, respectively, lie in a common plane as do the edges 18 and 26. While the notches 20 and 22 have been specified as being square or rectangular in shape, they may be of some different shape which may either intimately engage or not engage at all the sides 30 and 32 as may be desired in the final design.

An alternative method in the assembly of the mat is to stretch into elongated form the notched strips 12 instead of the apertured strips 10. In doing so, the strips 12 are stretched sufficiently to reduce the cross-sectional size thread thereof to a size smaller than the apertures 14 in which condition the stretched strip 12 is merely threaded through the respective apertures 14 until the notch pairs 20, 22 come into registry therewith. The stretching is thereupon released permitting the notches 20 and 22 to straddle the respective strips 10. Of course, the strip 12 will have to be rotated ninety degrees to the position shown in FIG. 6 either before or after the stretching has been released.

While I have described above the principles of my invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of my invention.

What is claimed is:

1. The method of fabricating a mat of first and second rubber-like strips of the same cross-sectional size and shape, said strips being rectangular in cross-section and having opposite sides and edges, comprising the steps of forming a plurality of longitudinally spaced apertures through the sides of said first strips, arranging said strips such that said apertures, respectively, are transversely aligned, stretching said first strips longitudinally to elongate said apertures to a size that will pass said second strips respectively therethrough, forming a plurality of longitudinally spaced pairs of notches in said second strips, said notches extending inwardly toward each other from opposite edges of said second strips and terminating short of each other thereby defining web portions therebetween, said web portions having a cross-sectional size substantially equal to said apertures in unstretched form, inserting said second strips through the aligned elongated apertures respectively to a point at which said web portions become registered with said apertures, rotating said second strips in said apertures until the sides thereof intersect said edges in lines normal to the latter, and then releasing the stretching of said first strips whereby said apertures collapse onto said web portions and said notches straddle said first strips.

2. The method of fabricating a mat comprising the steps of forming a plurality of longitudinally spaced apertures in a first plurality of elongated rubber-like strips, forming a plurality of longitudinally spaced notches in a second plurality of elongated strips, said notches extending transversely of said second strips from one side thereof and terminating short of the opposite side to thereby define web portions, said web portions having a cross-sectional size substantially equal to said apertures, stretching the strips of one of said first and second pluralities until said second strips will pass through said apertures in said first strips, respectively, inserting said second strips through the apertures of said first strips to a point at which said web portions become registered with said apertures, and releasing said stretching until said notches straddle said first strips and said web portions substantially fill said apertures, respectively.

3. A mat comprising a first plurality of elongated rubber strips, said strips being rectangular in cross-section and having opposite parallel sides, said strips being spaced apart and parallel with all of the sides thereof also being parallel, each strip having a plurality of spaced apart rectangular apertures therein, material of each strip which immediately surrounds said apertures being solid and uninterrupted, the apertures of all said strips being transversely aligned, respectively, a second plurality of elongated rubber strips which are rectangular in cross-section to thereby be provided with opposite sides and edges respectively, said second strips having a plurality of longitudinally spaced notch pairs therein, each notch pair comprising two transversely aligned rectangular notches which extend inwardly toward each other from the opposite edges of the respective second strip but which terminate short of each other to provide a web portion of said second strip therebetween, said first and second strips being interlocked together in transverse relationship with said web portions intimately fitting into respective apertures of said first strips and tightly engaging all sides thereof and with said notches straddling and intimately engaging the opposite sides of said first strips respectively, said first and second strips having the same cross-sectional dimensions between said apertures and notches, respectively.

4. A mat comprising a first plurality of elongated rubber strips which are rectangular in cross-section and which have opposite sides and edges respectively, said strips being spaced apart and parallel with all of the sides thereof also being parallel, each strip having through the sides thereof and intermediate the edges a plurality of spaced apart, rectangular apertures, the apertures of all of said strips being transversely aligned, respectively, the material of each strip which immediately surrounds said apertures being solid and uninterrupted, a second plurality of elongated rubber strips which are rectangular in cross-section and which have opposite sides and edges respectively, said second strips each having a plurality of longitudinally spaced pairs of notches therein, each pair of notches being in transverse alignment and extending inwardly toward each other from the respective edges of said second strip, each pair of notches terminating short of each other to define a web portion therebetween, said first and second strips being interlocked together, said first strips being transverse to said second strips, said second strips being spaced apart and parallel with the sides thereof also being parallel, the sides of said first and second strips lying in planes respectively which intersect each other in straight lines which are normal to said edges, said web portions fitting into and tightly engaging all sides of said apertures, respectively, and said notches straddling the sides respectively of said first strips.

5. A mat comprising a first plurality of elongated

rubber strips which are rectangular in cross-section and which have opposite sides and edges respectively, said strips being spaced apart and parallel with all of the sides thereof also being parallel, each strip having through the sides thereof and intermediate the edges a plurality of spaced apart apertures having sides at right angles to each other, the apertures of all said strips being transversely aligned, respectively, the material of said strips immediately surrounding said apertures being solid and uninterrupted, a second plurality of elongated rubber strips which are rectangular in cross-section and which have opposite sides and edges respectively, said second strips each having a plurality of longitudinally spaced pairs of notches therein, each pair of notches being in transverse alignment and extending inwardly toward each other from the respective edges of said second strip, each pair of notches terminating short of each other to define a web portion therebetween, said first and second strips being interlocked together, said first strips being transverse to said second strips, said second strips being spaced apart and parallel with the sides thereof also being parallel, said web portions fitting into said apertures and tightly engaging all sides thereof, respectively, said notches straddling the sides respectively of said first strips, and each of said web portions having a cross-sectional size and shape which is substantially identical to the sizes and shape of the respective aperture.

6. A mat comprising a first plurality of elongated rubber strips which are rectangular in cross-section and which have opposite sides and edges respectively, said strips being spaced apart and parallel with all of the sides thereof also being parallel, each strip having through the sides thereof and intermediate the edges a plurality of spaced apart, rectangular apertures, the apertures of all said strips being transversely aligned respectively, the material of said strips immediately surrounding said apertures being solid and uninterrupted, a second plurality of elongated rubber strips which are rectangular in cross-section and which have opposite sides and edges respectively, said second strips each having a plurality of longitudinally spaced notches therein, each notch extending inwardly from the respective edge of said second strip but terminating short of the opposite edge to define a web portion, said first and second strips being interlocked together, said first strips being transverse to said second strips, said second strips being spaced apart and parallel with the sides thereof and also being parallel, the sides of said first and second strips lying in planes respectively which intersect each other in straight lines which are normal to said edges, said web portions intimately fitting into said apertures and tightly engaging all sides thereof, respectively, and said notches straddling the sides respectively of said first strips.

7. A mat comprising a first plurality of elongated rubber-like strips, said strips being spaced apart and having a plurality of longitudinally spaced apertures therethrough, the apertures of said strips being aligned in a direction transverse thereto, the material of said strips which immediately surrounds said apertures being solid and uninterrupted, a second plurality of elongated rubber-like strips each having a plurality of longitudinally spaced pairs of notches therein, each pair of notches

being in transverse alignment and extending inwardly toward each other from the respective opposite sides of said second strip, each pair of notches terminating short of each other to define a web portion therebetween, said first and second strips being interlocked together, said first strips extending transversely to said second strips, said web portions fitting into and tightly engaging all sides of said apertures, respectively, and said notches straddling said first strips thereby locking said first and second strips together.

8. The method of fabricating a mat of first and second rubber-like strips of the same cross-sectional size and shape, said strips being rectangular in cross-section and having opposite sides and edges, comprising the steps of forming a plurality of longitudinally spaced apertures through the sides of said first strips leaving the material which immediately surrounds said apertures solid and uninterrupted, arranging said first strips such that said apertures, respectively, are transversely aligned, stretching said first strips longitudinally to elongate said apertures to a size that will pass said second strips respectively therethrough, forming a plurality of longitudinally spaced pairs of notches in said second strips, said notches extending inwardly toward each other from opposite edges of said second strips and terminating short of each other thereby defining web portions therebetween, said web portions having a cross-sectional size substantially equal to the size of said apertures in unstretched form, inserting said second strips through the aligned elongated apertures respectively to a point at which such web portions become registered with said apertures, rotating said second strips in said apertures until the sides thereof intersect said edges in lines normal to the latter, and then releasing the stretching of said first strips whereby said apertures collapse onto said web portions and tightly engage all sides thereof and said notches straddle said first strips.

9. The method of fabricating a mat comprising the steps of forming a plurality of longitudinally spaced apertures in a first plurality of elongated rubber-like strips leaving the material which immediately surrounds said apertures solid and uninterrupted, forming a plurality of longitudinally spaced notches in a second plurality of elongated strips, said notches extending transversely of said second strips from one side thereof and terminating short of the opposite side to thereby define web portions, said web portions having a cross-sectional size substantially equal to the size of said apertures, stretching the strips of one of said first and second pluralities until said second strips will pass through said apertures in said first strips, respectively, inserting said second strips through the apertures of said first strips to a point at which said web portions become registered with said apertures, and releasing said stretching until said notches straddle said first strips and said web portions substantially fill said apertures and tightly engage all sides thereof, respectively.

References Cited in the file of this patent

FOREIGN PATENTS

458,804 Great Britain 1936