

[54] **EXTENSIBLE PERFORATE FLOOR
MAT AND FRICTION DEVICE**
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[51] Int. Cl. **E04f 15/00**
[58] Field of Search ..52/177, 581, 180; 15/215, 216,
15/238, 239

[56] **References Cited**
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[57] **ABSTRACT**
A perforate plastic floor mat and friction device hav-
ing an upper surface of parallel narrow strips spaced
apart approximately their own width, and a lower sur-
face of more widely spaced strips underlying and
crossing the upper strips to provide rectangular aper-
tures, and plastic connectors having locking portions
fitting into said apertures and engaging the upper and
lower strips to lock together smaller such mats into
larger ones.
7 Claims, 14 Drawing Figures

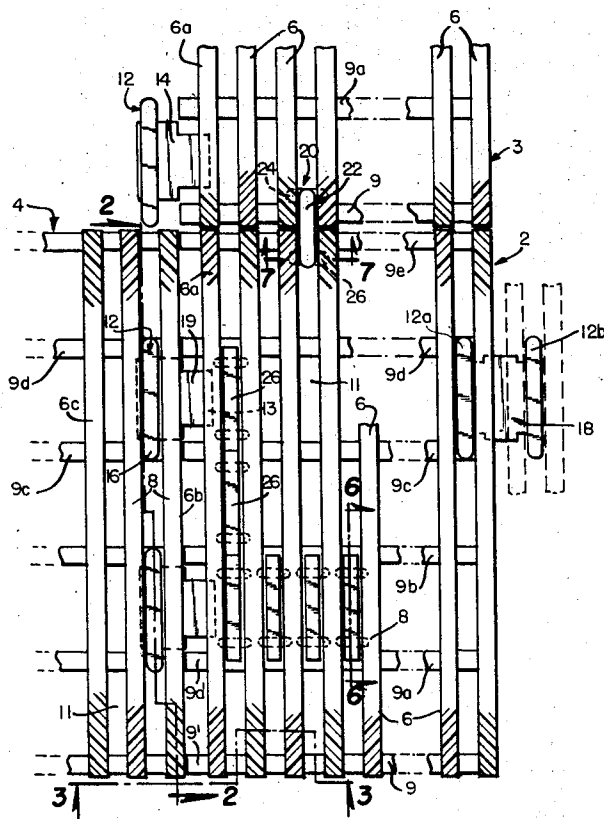


FIG. 1.

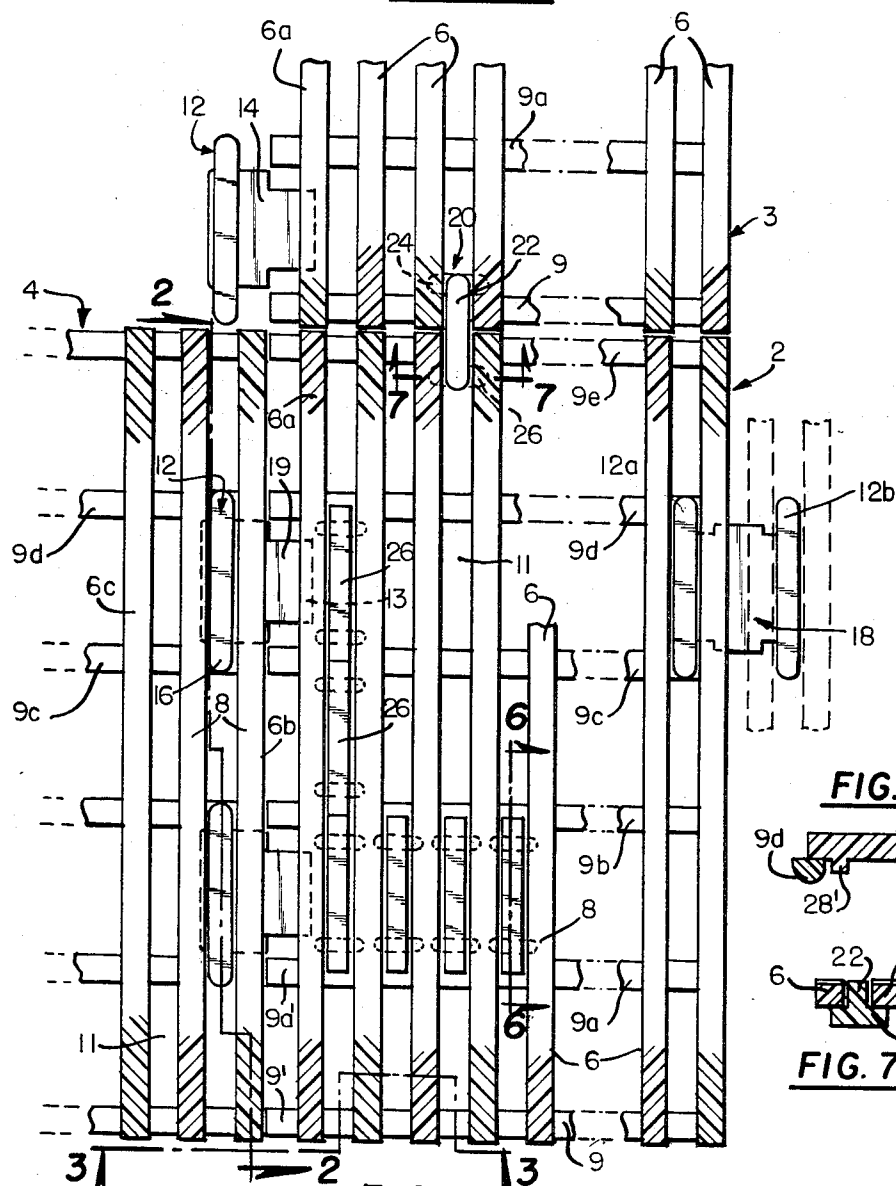


FIG. 6.

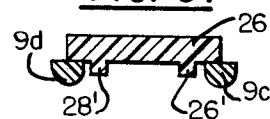


FIG. 7.

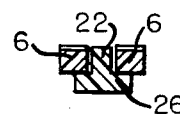


FIG. 2.

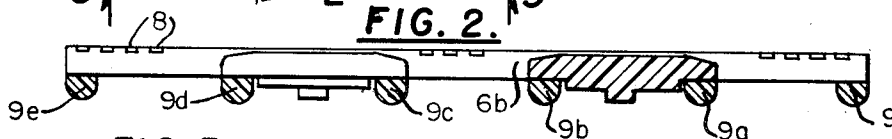


FIG. 3.

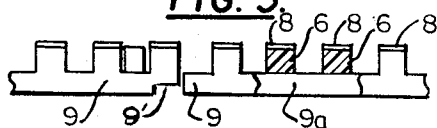


FIG. 4.

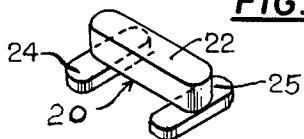
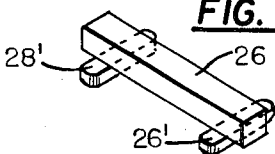


FIG. 5.



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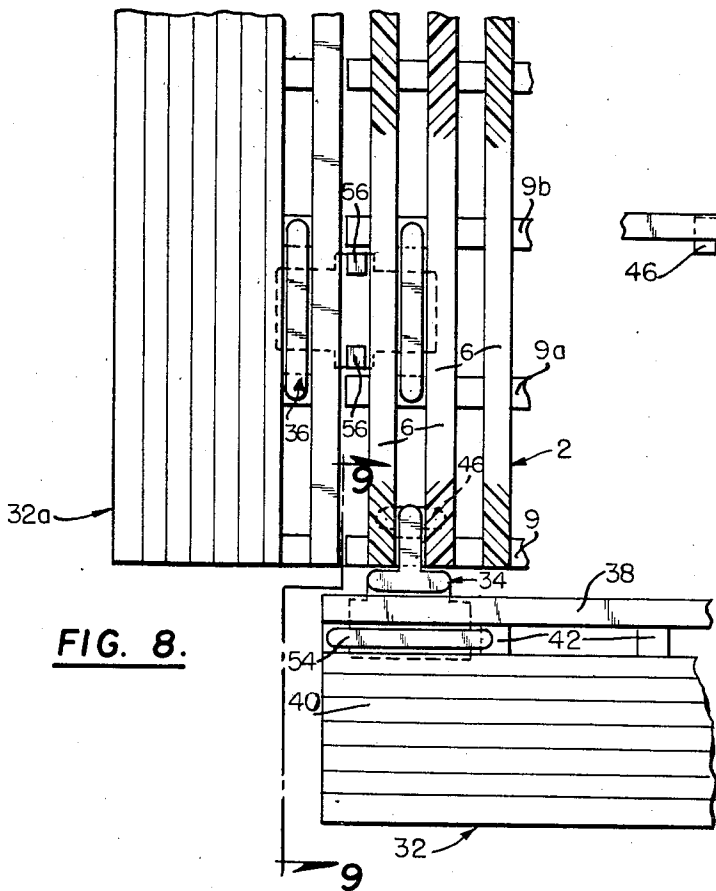


FIG. 8.

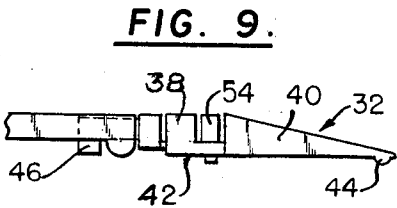


FIG. 9.

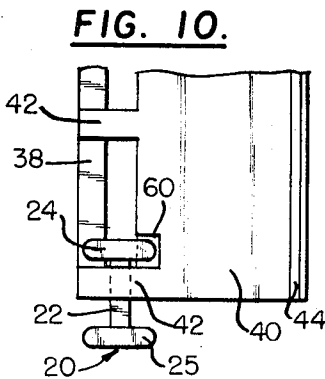


FIG. 10.

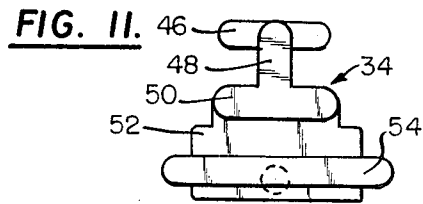


FIG. 11.

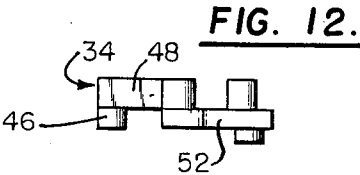


FIG. 12.

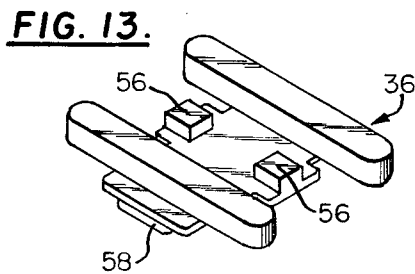


FIG. 13.

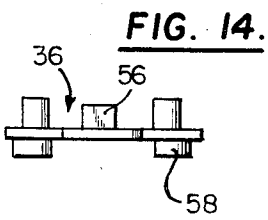


FIG. 14.

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EXTENSIBLE PERFORATE FLOOR MAT AND FRICTION DEVICE

This invention relates to a plastic mat providing a perforate upper friction surface suitable for use in lobbies, damp locations, etc., to both provide a good friction surface for people walking on the mat, and also to keep their feet raised above a damp or cold floor. The device is also useful as a friction device for automobiles stuck in the snow or mud, since it is very effective when placed under the spinning wheel of such a vehicle to provide sufficient friction to enable the vehicle to move forward. The upper surface of the mat is comprised of a number of narrow parallel plastic strips separated by a distance of the same order of magnitude as their own width, and preferably provided with anti-skid corrugations on the top surface of the strips to provide a high friction walking surface, while the lower surface of the mat consists of a series of more widely spaced parallel strips crossing the first strips to thereby provide rectangular perforations through the mat, so that the floor upon which the mat is laid can dry itself out, and also permitting dirt or mud to be cleaned from the feet of the users and to fall into the interstices to the floor upon which the mat is laid. Such mats are often used in the lobbies of public buildings, and also in damp work situations to keep the feet of workers raised above a damp floor, usually of concrete, and also to provide a good friction surface which enhances the safety of the user.

In the case where it is desirable to cover the entire surface of a fairly large area, since the above type of mat is fairly heavy, it is difficult to remove or roll it up in order to clean the floor if the mat is a single piece; on the other hand, if the mat is made up of a number of smaller pieces loosely laid on the floor, it is difficult to keep them properly lined up, especially if the floor tends to become slippery when wet, and to prevent movement of the mats relative to each other, which both provides an unsightly appearance, and also an uneven surface as gaps open between sections of mat. In accordance with the present invention, this difficulty is obviated by providing means for interlocking smaller mats at their edges to provide a single large mat which can be treated as a unit if desired, but from which area smaller mat sections can readily be removed for cleaning, to replace one section, etc.

The specific nature of the invention, as well as other objects and advantages thereof, will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings, in which:

FIG. 1 is a top view of the mat, showing three interconnected sections;

FIG. 2 is a view taken on line 2—2 of FIG. 1;

FIG. 3 is a view taken on line 3—3 of FIG. 1;

FIG. 4 is a perspective view of one form of connecting link for joining two mats;

FIG. 5 is a perspective view of a filler piece used in making up designs or lettering on the mat;

FIG. 6 is a sectional view of the filler strip taken on line 6—6 of FIG. 1;

FIG. 7 is a sectional view taken on line 7—7 of FIG. 1;

FIG. 8 is a top view of the mat showing the manner in which a feathered edge ramp may be applied to any edge of the mat;

FIG. 9 is a side view of the mat shown in FIG. 8;

FIG. 10 is a bottom view of the section of the feathered ramp edging;

FIGS. 11 and 12 are top and side views respectively of a connecting link for joining the edge ramp to the side of the mat; and

FIGS. 13 and 14 are respectively perspective and side views of a connecting link for joining the edge ramp to the end of a mat section.

FIG. 1 shows a portion of a mat made up of three separate mat sections 2, 3, and 4, which are shown as identical, although not necessarily so, since they may be made of different overall sizes. Mat section 2 is shown in the form of a long strip, of which only the ends are shown in detail, since the center section is a repetition of the same structure extended to whatever length is desired. Similarly, the width of the mat may also be increased as desired, a relatively small mat section being shown for convenience of disclosure only.

Each mat section has an upper surface which is composed of a series of parallel strips 6 shown as being generally square in cross section, although the precise shape is not important, it being preferable however that the top surface be relatively flat in order to provide a good walking surface. The strips 6 are closely spaced together, preferably by the same distance as their own width, which is typically approximately a quarter of an inch, so that a comfortable walking surface is provided by the parallel strips. Where the upper surface is flat as shown, it is preferred also to provide still further corrugations therein to increase the non-skid effect of the surface, being shown at 8 in the form of square-diagonal slits in the upper surface, although this could be accomplished by means of small dimples or other forms of corrugation.

Lying beneath the upper strips 6 is a series of transverse strips 9, 9a, 9b, etc., which are more widely spaced than the strips 6, so as to provide a series of rectangular apertures or perforations 11 extending through the mat from top to bottom. The upper and lower sets of strips are molded integrally in a separable mold wherein the strips 6 are cut into one face of the mold while the transverse strips 9 are cut into the other face of the mold, so that when the plastic material is injected into the mold, the two sets of strips are integrally molded together, while separation of the two mold faces enables release of the mat.

In order to enable mat sections 2 and 4 to be joined together, one edge of each mat, as shown at 12, is provided with a plastic link which is integrally formed at one end 13 with the bottom portion of narrow strip 6a and has a thin, wide neck portion 14 long enough to extend under the narrow strip 6b of an adjacent mat and supporting a latching member 16 which extends upward between narrow strips 6b and 6c of the adjacent mat section and overlies at its ends transverse strips 9c and 9d to thus link together the two mat sections 4 and 3. It will be understood that the link and the mat material both are sufficiently flexible so that the pieces can be forced together by slightly bending or distorting them, being of a generally rubber-like consistency. It is therefore easy to force the latching member 16 through the space between transverse strips 9c and 9d.

If two mat sections are to be joined together which do not have integrally connecting links 12, as for example where it is necessary to cut a mat section down in

order to make it fit into a given space, then a separable, non-integral connecting link 18 may be used, which has latching bars 12a and 12b at each end thereof separated by a strip sufficiently long so that the latching bars fit into the proper spaces between the last two narrow strips 6 of adjacent mat sections.

For joining two adjacent mat sections such as 2 and 3 along their sides, a number of short length pieces 20 are used which have a short link bar 22 which lies between two adjacent strips 6 and is long enough to span across the respective transverse end strips 9d and 9, and has two end tabs 24 and 25 attached to its underside so that they can underlie the adjacent narrow strips 6 to thus lock the two mat sections together.

It will be noted that the transverse widely spaced strips 9, 9a, etc., are extended at the end where the two sections are to be joined as shown at 9' and 9a' for a distance sufficiently great to maintain the proper spacing between the respective ends strips 6a and 6b of the adjacent mat sections.

Means are provided for optionally adding a design or lettering to the mat, which is often desirable, especially where the mat is used in the lobby of a public or semi-public building. In order to accomplish this, filler strips 26 are provided, which are sufficiently long to overlap two adjacent cross strips such as 9c and 9d, and are provided with small cross tabs as shown at 28 and 30, which fit under adjacent narrow strips 6 to lock the filler strip in place. A number of these will be used as shown in FIG. 1 to make up the letter L, preferably in contrasting color to the mat itself. Although the filler strips are shown only for a rectangular configuration, it will be apparent that other strips can be made to provide for slanting or curved lines.

FIG. 8 shows a corner of a typical mat section such as 2, together with a feathered edge ramp 32 which can be connected to the side of the mat by means of a connecting link 34 shown in more detail in FIGS. 11 and 12, or alternatively, may be connected to the end of the mat section by means of a larger connecting link 36 better shown in FIGS. 13 and 14.

The purpose of the edge ramp 32 is to prevent people from stumbling against the abrupt edge of the mat, which is typically about one-half inch high above the floor on which it is laid. The edging may be applied if desired to all four sides of the mat, or may be applied only to those edges facing the direction in which people typically walk on the mat, as in the case of runner mats placed in corridors, or in public lobbies between the door and elevator, etc. The ramp, accordingly, is provided with a base section 38 of the same thickness as the total mat, typically about one-half inch. The width of this base is made the same as that of one of the narrow strips 6 of the mat, so that when it is laid parallel with the narrow top strips, it conforms to the general appearance of the mat as will be shown below. Base strip 38 of the ramp is connected to the main body 40 of the ramp by means of transverse strips 42 which are spaced apart the same distance as the transverse underside strips 9, 9a, etc., both for the sake of appearance and also to enable connecting links to be used which are interchangeable end-for-end. The main body of the ramp then tapers from the thickest portion 40 down to a thinner edge as best shown in FIG. 9. However, since a sharp feathered edge tends to assume a somewhat

wavy configuration which would tend to defeat the purpose of the ramp, a small thickened bead 44 is provided on the under side near the edge, and is sufficiently heavy and rigid so that the edge lies flat, thus enabling the ramp portion to function as a gradual slope and making it impossible for a person to catch the toe of his shoe on the edge of the mat.

FIGS. 11 and 12 show in more detail the configuration of the connecting link 34. A smaller cross-piece 46 extends under two adjacent vertical strips 6 as can be seen in FIGS. 8 and 9 and are carried by the neck portion 48 which is the same width as the space between two adjacent vertical strips and which also carries spacer strip 50 which serves to space ramp strip 38 from the mat by the same distance as that between adjacent vertical strips 6. Wide neck portion 52 corresponds to portion 14 of connecting link 12 shown in FIG. 1 and holds the larger cross-tab 54 which extends across the connecting strips 42 to hold the ramp in place.

In the case of connecting link 36 which is used when the ramp is located at the end of the mat as shown at 32a in FIG. 8, the structure is generally similar to the other connecting links, except that there are now two large cross-tabs, since they must overlie the widely spaced lower strips 9, 9a, etc., and in addition two spacer bosses 56 are provided so that the ramp is spaced from the last end strip by the same distance as the other top strips, thus maintaining the uniform appearance of the mat. In addition, a small extra tab 58 is preferably provided on the underside of the link so as to be flush with the underside of the mat, and also helps to provide better traction.

It will be apparent that the connecting link of FIGS. 11 and 12 can also be used to connect two mat sections so that the top narrow strips 6 lie at right angles to each other. The arrangement would be similar to that shown in FIG. 8, where a second mat would be substituted for the ramp strip 32.

FIG. 10 shows also the manner in which a ramp strip could be connected at its end either to another ramp strip, for the purpose of making a mitered corner if this is desired, or else to the side of an adjacent mat strip, by means of one of the short links 20 shown in FIG. 4, which at one end can be connected to a mat as shown in FIG. 1, while at the other it is connected to the end of the ramp strip by passing its main body section 22 under the connecting piece 42 with its tab 24 overlying the end strip 38 of the ramp strip, and fitting also into a recess 60 provided for the purpose in the main body of the ramp strip near its end.

In some instances, when the mat is laid with the bottom strips 9, 9a, etc., end-to-end as shown, for example in FIG. 3, and a number of mats are assembled in this fashion, the strips 9, lying in close contact with a cement or tile floor, will tend to accumulate water, especially if the natural drainage slope at that point is downhill across the direction of the strips. In order to prevent such accumulation of water, the strips 9 are cut away slightly at one end as shown at 9' in FIG. 3, thus providing drainage passages between any two mats. Alternatively, transverse grooves or nicks could be provided at spaced points on the underside of each bottom strip in order to prevent the accumulation of standing water between the strips.

I claim:

- 1.
- a. A plastic floor mat comprising
- b. a first series of parallel plastic top strips spaced apart a distance substantially equal to their own width,
- c. a second series of parallel plastic bottom strips underlying and crossing said top strips and spaced apart at least twice the distance separating the top strips, the strips of the two series being integrally molded together at all points where they cross,
- d. a series of locking links fastened to a first such mat near one edge thereof for joining said first mat to a second such mat at a common edge to make a larger mat, said links having a connecting strip extending between said two mats and having a narrow latching member at one end lying in the space between two adjacent ones of said top strips and overlying two adjacent bottom strips with the connecting strip of said link lying under at least one of said first top strips.
2. The invention according to claim 1,
- e. said link being integrally molded at the other end of said connecting strip to said first mat.
3. The invention according to claim 1,
- e. there being a series of such links, each having two such narrow latching members joined by its connecting strip, said strip being narrower in width than the space between two adjacent ones of said second series of strips, and of no greater thickness than a strip of said second series.
4. The invention according to claim 1,
- e. and a second series of locking links joining two such mats side-by-side with the top strips of the

- two mats aligned with each other,
- f. each of said second series of links having a connecting strip lying between two adjacent top strips and over the adjacent parallel end bottom strips of the two mats, and locking tabs at the ends of said connecting strip each extending beneath two adjacent top strips.
5. The invention according to claim 1,
- e. and an attachable edge ramp strip having a tapered cross section joined to said mat along an edge thereof to provide a feathered ramp edge for the mat,
- f. said ramp strip, on the side adjoining the mat, being of the same thickness as the mat and including a narrow strip of the same width as the top strips of the mat and spaced from the body of the ramp strip by a space equal to that between adjacent top strips of the mat, and connected to the body of the ramp strip by a series of short bottom strips similar to, and spaced apart like, the bottom strips of the mat.
6. The invention according to claim 5,
- g. said ramp strip tapering in cross section from the thick base portion to a feather edge, and a longitudinally extending bead on the under side of said ramp strip near said feather edge.
7. The invention according to claim 1,
- e. said bottom strips having drainage nicks cut into them at the bottom where they lie in contact with the floor, to prevent the accumulation of water at the bottom of the mat.

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