Aug. 24, 1943. J. R. DENMAN 2,327,624

ANTI-SLIP MAT

Filed May 7, 1940

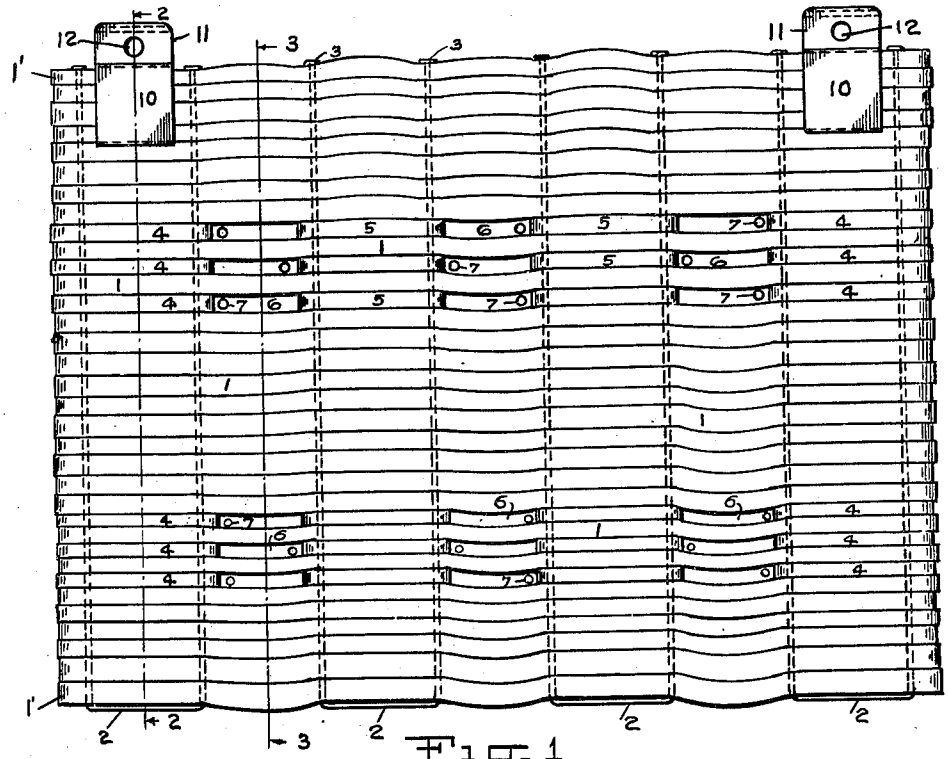


Fig-1

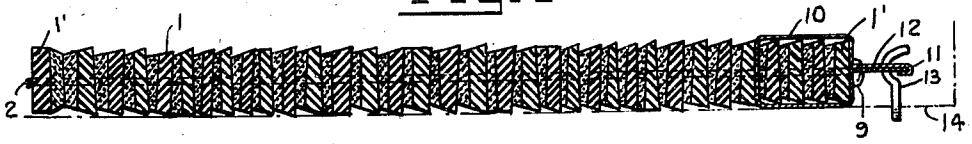


Fig-2



Fig-3

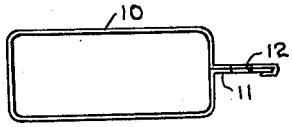


Fig-4

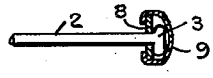


Fig-5

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ANTISLIP MAT

John R. Denman, South Plainfield, N. J.

Application May 7, 1940, Serial No. 333,715

15 Claims. (Cl. 20—78)

The improvements relate to mats used primarily to prevent the slipping of the feet and as a cushion on relatively hard, smooth surfaces and which have incorporated therein means to prevent the slipping of the mat. Their objects are, among others, to produce a mat of this kind of more durable, efficient and serviceable character.

The primary intended use of the improvements is in a mat for cattle in stalls which have a level floor of hard wood, concrete or the like which is flushed from time to time with water for cleansing purposes and is slippery when wet, and does not give a safe foothold for the animals at any time. It is designed to be used at the head or feeding end of a stall and to be disposed beneath the forefeet of the animal to prevent slipping, cushion the feet and eliminate danger of tripping and falling and injury through contact with the hard floor. The improvements may be applied, however, to door mats and other mats used by humans and in that connection are further designed to provide a serviceable mat which in addition to its cushioning and non-slipping qualities will facilitate the removal of dirt from the soles of the shoes and permit cleansing of the mat. The mat produced by the improvements is also reversible so that both sides may be used as a support for the feet and in contact with the surface upon which it is superposed.

The improvements are illustrated in the accompanying drawing, which shows an exemplary embodiment, and in which—

Fig. 1 is a plan view;

Fig. 2 is a vertical cross section on the line 2—2 of Fig. 1;

Fig. 3 is a similar section on the line 3—3 of Fig. 1; and

Figs. 4 and 5 are enlarged details of parts.

In the drawing, the mat consists of narrow strips 1 of combined rubber and fabric, such as may be cut from the shoes of pneumatic tires, the rubber layer 1' being outermost at front and back of the mat and the strips being disposed edgewise and secured together by heavy wire binders 2 bent into U shape passed therethrough and secured by their upset ends 3 while the strips are under compression, this operation and the form and character of the binders giving the strips an undulating form from side to side.

The strips 1 are of approximately uniform width but not aligned, but are slightly staggered, and some of their longitudinal edges also have a bevel, and this form and arrangement, in connection with the undulating lengthwise contour of the strips not only produces relatively sharp surfaces but gives to the mat a certain squeegee action when pressure is exerted on the mat and a lateral movement is likely to occur. It will be noticed also that the widest part of each strip is the part composed of rubber, so that the contact of the mat with the surface on which it is resting and with the feet is substantially a rubber contact. The wave-like form of the strips also acts to prevent lateral slipping of the feet thereon.

At intervals in the interior of the mat short strips 4 and 5 are substituted for the strips 1, and these strips being spaced apart at regular intervals provide apertures 6 in the mat. These apertures are for the purpose of giving drainage and ventilation and may also be used to receive short studs or dowels, indicated at 7, secured to the floor and extending upwardly part way through the mat. Other fastening means engaging the apertures may be employed. The number and arrangement of these apertures may be varied to suit various conditions and needs.

As the exposed upset ends 3 of the binders 2 may not be sufficient to prevent the said ends pulling through and loosening the strips a washer 8 is provided between such ends and the outside strip of the mat, and a cap 9 of sheet metal is turned over said end and the edges of the washer. This cap prevents the turned over end 3 from causing injury.

As it is advisable in some cases, and particularly in cattle stalls to positively secure the mat in a fixed position, a flat clamp 10 of sheet metal is provided. This is passed through between strips some distance from the end of the mat and the free ends of the sheet metal brought together with one turned around the other to form a short shank 11 with an eye 12 therein. Through this eye may be passed a hook 13 set in the floor 14, or some other fastening means suitably secured.

It will be seen from the foregoing, that the present improvements provide a mat which will not slip on its base and will prevent slipping of the feet thereon in all directions and one which may be cleaned and will permit the cleaning of the surface beneath it and one which is strong, compact and durable. The mat can also be made of inexpensive materials, such as discarded pneumatic tire shoes and fabricated at a minimum cost for labor and machine operation.

I claim:

1. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, attenuated securing members extending through said strips and holding them under compression at intervals on lines substantially normal to their length, said strips due to said interval compression having an irregular form longitudinally.

2. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material composed of combined fabric and rubber disposed edgewise and face to face, at-

tenuated securing members extending through said strips and holding them under compression at intervals on lines substantially normal to their length, said strips due to said interval compression having an irregular form longitudinally.

3. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, attenuated securing members of substantially U-form extending through said strips and holding them under compression at intervals on lines substantially normal to their length, said strips due to said interval compression having an irregular form longitudinally.

4. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, attenuated securing members extending through said strips and holding them under compression at intervals on lines substantially normal to their length, said strips due to said interval compression having an irregular undulant form longitudinally.

5. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material composed of combined fabric and rubber disposed edgewise and face to face, attenuated securing members of substantially U-form extending through said strips and holding them under compression at intervals on lines substantially normal to their length, said strips due to said interval compression having an irregular undulant form longitudinally.

6. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material and of approximately uniform width disposed edgewise and face to face, means for securing them together to form a mat, said strips composed of parallel rubber and fabric layers and the edges of the rubber layers projecting beyond the edges of the fabric layers, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat on one side only.

7. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material of approximately uniform width disposed edgewise and face to face and each composed of layers of unequal width, means for securing them together to form a mat, certain of the said strips having beveled longitudinal edges providing portions which project beyond the mean horizontal surface of the mat and beyond other strips, said projecting portions being of rubber.

8. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, means for securing them together to form a mat, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat, said projecting portions being beveled longitudinally, and means passing through between strips and extending beyond the mat for securing the same to a fixed part.

9. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, means for securing them together to form a mat, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat, said strips having an irregular longitudinal form.

10. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, means for securing them together to form a mat, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat, said strips being substantially parallel with one another throughout their length but having irregular longitudinal form.

11. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, means for securing them together to form a mat, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat, and means passing through between strips and extending beyond the mat for securing the same to a fixed part.

12. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and in close contact face to face throughout their length, means for securing them together to form a mat, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat, and means passing through between strips and extending beyond the mat for securing the same to a fixed part.

13. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material and of approximately uniform width disposed edgewise and in close contact face to face throughout their length and each composed of layers of unequal width, means for securing them together to form a mat, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat on one side only and certain other strips having longitudinal edges below said surface and projecting beyond the mean horizontal surface on the other side, the construction and arrangement being such that grooves are formed across the faces of the mat.

14. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and in close contact face to face throughout their length, means for securing them together to form a mat, certain of the said strips being vertically out of alignment with others and projecting beyond the mean horizontal surface of the mat and certain other strips having longitudinal edges below said surface, the construction and arrangement being such that grooves are formed across the faces of the mat, said mat having relatively small apertures therethrough in communication with said grooves, whereby drainage and ventilation channels are provided, said apertures also adapted to receive rigid mat holding projections.

15. In a device of the character indicated, a series of relatively thin, narrow strips of yielding material disposed edgewise and face to face, a plurality of means for securing them together to form a mat, certain of the said strips being shorter than the others but extending from one securing means to another and disposed so as to form apertures through the mat in its interior and between securing means said apertures being of relative small length and width and adapted to receive rigidly secured projections to position and secure the mat and provide drainage.

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