(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 014 571**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **80300293.0**

(22) Date of filing: **31.01.80**

(51) Int. Cl.³: **A 47 G 27/02**
E 04 F 11/16

(30) Priority: **31.01.79 JP 10142/79**
23.02.79 JP 21762/79
30.06.79 JP 90614/79

(43) Date of publication of application:
20.08.80 Bulletin 80/17

(84) Designated Contracting States:
DE FR GB

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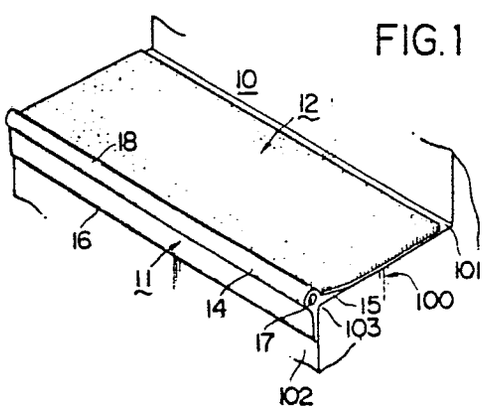
(54) Stair mat.

(57) A stair mat 10 is disclosed comprising an edge cover 11 of flexible synthetic resin or rubber, having an edge bead cushion 14 adapted to be secured onto the forward edge of the tread 101 of the step 100, and a tread side fixing tongue 15 integrally and horizontally extended from the rear portion of the edge bead cushion 14, adapted to be secured onto the tread 101 of the step 100; a tread mat 12 adapted to be secured onto the tread 101 of the step 100, being set on the tread side fixing tongue 15 at the front edge thereof; and a connecting means 13 connecting the front edge of the tread mat 12 removably with the tread side fixing tongue 15 of the edge cover 11.

FIG.1



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"STAIR MAT"

This invention relates to a stair mat adapted to be installed on stairs, especially stairs arranged to the inside of the building

In general, stair nosings are installed on the edge of steps for the purpose of preventing a person from missing his footing on the stairs and of obviating the danger of the missed footing, and carpeting is applied to the stairs for the purpose of giving an ornamentality, further of giving a sound absorption, a buffer action, a thermal insulation and a flexibility, conventionally the carpeting is fixed by stair rods.

However, with stair nosings, the sound absorption, the thermal insulation and the flexibility are lacking on the steps and the buffer action is insufficient, and with continuous stair carpets, the carpets are worn away at the edge of the steps. Such carpets should be changed when dirty, which is uneconomical. There is a tendency to connect the stair nosing and the narrow carpet in one united body, or to combine stair nosing and the narrow carpet separately installed on the steps. However, the former must be uneconomically changed when the stair nosing or the carpet is worn away or damaged and changing work is difficult, the latter is not fixed firmly and its installing work is difficult; furthermore it brings into existence undesirable dispersion, for it may be installed in a manner that the stair nosing and the carpet are put side by side or one above the other by driving in of nails or screwing.

One object of the present invention is to provide a stair mat which can alleviate the problem of

missed footing on the stairs and to obviate the danger of missed footing, by covering the edge of the stair, and which gives effects of nonskid and cushioning, and further gives sound absorption, thermal insulation, flexibility and ornamentality.

Another object of the present invention is to provide a stair mat in which, whilst comprising an edge cover and a tread mat, the tread mat can be easily assembled to and removed from the edge cover, and either of the edge cover or the tread mat can be easily changed for another according to an extent of the abrasion, the damage and the corruption.

According to the invention there is provided a stair mat comprising: an edge cover of flexible synthetic resin or rubber, having an edge bead cushion adapted to be secured onto the forward edge of the tread of a step and a tread-side tongue integrally and horizontally extending from the rear portion of the edge bead cushion and adapted to be secured onto the tread of the step; a tread mat adapted to be secured onto the tread of the step, being placed on the tread-side tongue at the front edge thereof, and a connecting means connecting the front edge of the tread mat removably with the tread-side tongue of the edge cover.

As mentioned above, the stair mat is adapted on the tread of the step to connect the front edge of the tread mat removably with the tread-side tongue of the edge cover. The edge cover can be easily assembled with and removed from the tread mat, and either of the edge cover or the tread mat can be easily changed for another according to an extent of the abrasion, the damage and the corruption. The stair mat covers the forward edge of the step, giving the effects of nonskid and cushioning, and further giving the sound ab-

sorption, the thermal insulation, the flexibility and the ornamentality. Less carpeting can be used.

Further, a stair mat of the present invention may include a riser-side tongue integrally and vertically extended from the edge bead cushion of the edge cover. Since the edge cover is provided with the riser-side tongue, the edge cover may be fixed onto the forward edge of the step. First, an adhesive agent, an adhesive tape or the like is applied on the under surfaces of the edge bead cushion and the tread-side tongue and on the rear surface of the riser-side tongue. Then the edge cover is set on the forward edge of the step so as to put the riser-side tongue on the riser of the step; further the edge bead cushion and the tread-side tongue are pressed on the tread of the step and the riser-side tongue is pressed on the riser of the step, respectively.

After the edge cover is fixed on the forward edge of the step as mentioned above, by setting the connecting means between the tread-side tongue and the front edge of the tread mat being adjacent to the edge bead cushion of the edge cover and being laid on the tread-side tongue, the front edge of the tread mat is removably connected onto the tread-side tongue.

By above-mentioned construction, the stair mat can be easily set and fixed in the position of the installation in comparison with the above-mentioned prior stair mat, being clear of the undesirable dispersion. The edge cover can be fixed more firmly on the forward edge of the step.

Further the connecting means connecting removably the tread mat with the edge cover of the stair mat of the present invention, may be made up of the fastener comprising of an adhesive sheet or two

strips, one with thousands of tiny hooks and the other with tiny loops, the combination of a trim stud and a snap cap, the combination of a snap-insert and a socket, or the like.

As mentioned above, the stair mat of the present invention is such that the tread mat can be easily assembled to and removed from the edge cover, and either of the edge cover or the tread mat can be easily changed for another according to an extent of the abrasion, the damage and the corruption.

To help understanding of the invention, various specific embodiments thereof will now be described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a stair mat of the invention installed on the stairs of a building;

Figure 2 is a cross-sectional view of the stair mat shown in Figure 1;

Figure 3 is a perspective view of a modified stair mat installed on the stairs of a building;

Figure 4 is a cross-sectional view of the stair mat shown in Figure 3;

Figure 5 is a fragmentary perspective view of the stair mat shown in Figure 3;

Figure 6 is a cross-sectional view similar to Figure 4 showing a stair mat having a modified edge cover and connecting means;

Figure 7 is a fragmentary perspective view of a further modified stair mat of the invention;

Figure 8 is a perspective view of a further modified embodiment of the stair mat of the invention;

Figure 9 is a cross-sectional view of the stair mat as shown in Figure 8;

Figure 10 is a perspective view of the edge cover of the stair mat shown in Figure 8;

Figure 11 is a fragmentary perspective view of the tread mat of the stair mat as shown in Figure 8 from below;

Figure 12 is a fragmentary cross-sectional view of the stair mat as shown in Figure 8; and

Figure 13 is a fragmentary cross-sectional view of a further modified stair mat of the invention.

Figures 1 and 2 show a first stair mat 10 according to the invention, which is installed on the stairs 100 of a building.

The stair mat 10 comprises an edge cover 11, a tread mat 12 and a connecting means 13 removably connecting the front edge of the tread mat 12 onto a tread side tongue 15 of the edge cover 11, the tongue 15 being fixed on the tread 101 of the step 100.

The edge cover 11 is produced from flexible synthetic resin, rubber or the like, and comprises of an edge bead cushion 14, the thin tread-side tongue 15 and a thin riser-side tongue 16. The edge bead cushion 14 is provided with a hollow cavity 17 extending along the length of the edge cover 11 as a flexible tube, giving a similar elasticity to that of the tread mat 12. A non-skid top surface 18 is provided on the upper surface of the edge bead cushion 14 in the form of serrations which heighten its non-skid effect.

The tread-side tongue 15 is integrally and horizontally extended from the bottom rear portion of the edge bead cushion 14 as a thin extension. By means of the tread-side tongue 15, the edge bead cushion 14 can be fixed firmly on the tread 101 of the step 100. The tread-side tongue 15 serves to disguise any difference in height between the upper surface of the tread 101 and the treat mat 12 with the front edge of the tread mat 12 removably connected onto the upper surface of the tread-side tongue

15 by the use of the connecting means 13.

The riser-side tongue 16 is integrally and vertically extended from the front bottom portion of the edge bead cushion 14 as a thin extension. The riser-side tongue 16 prevents warping of the edge cover 11 against the riser 102 when the riser-side tongue 16 is adhered onto the riser 102 of the step 100.

The tread mat 12 is made of a carpet, which is treated at its fringes to prevent fraying.

The tread mat 12 is made by cutting a carpet or preferably a rolled carpet strip so as to form the required shape, for example, a rectangle, a half ellipse a trapezoid, etc.. Further the tread mat 12 may be made of a felt, a mat or the like.

The connecting means 13 is made by cutting a double-faced adhesive tape to the required length.

During installation of the stair mat 10 on the stairs 100 of a building, first of all the edge cover 11 is fixed on the forward edge 103 of the step 100 by the use of an adhesive sheet 19 cut to length from double-faced adhesive tape. The adhesive sheet 19 is previously attached on the under-surface of the tread-side tongue 15, and the edge cover 11 is set on the forward edge 103 of the step 100 with the riser-side tongue 16 against the riser 102 of the step 100, then the edge bead cushion 14 and the tread-side tongue 15 are pressed on the tread 101 of the step 100. Then an adhesive sheet 13 is attached on the tread-side tongue 15 of the edge cover 11. Adhesive sheets 20, 21 cut to length of the double-faced adhesive tape are attached on the under surface of the tread mat 12, as shown in Figure 2. After this, the tread mat 12 is set on the tread-side tongue 15 and the tread 101 of the step 100, adjacent to

the rear surface of the edge bead cushion 14, and the tread mat 12 is pressed on the tread-side tongue 15 and the tread 101 of the step 100.

As described above, the edge cover 11 is produced from flexible synthetic resin, and the front edge of the tread mat 12 is removably set on the tread-side tongue 15 of the edge cover 11. However if the tread-side tongue 15 is produced from semi-rigid or rigid synthetic resin, the tread mat 12 can be easily assembled to and removed from the edge cover 11. The tread mat 12 is to be changed, it is preferred that the tread-side tongue 15 is produced from rigid synthetic resin. If the edge cover 11 and the tread mat 12 are given various colours and shapes, the edge cover 11 and the tread mat 12 can be variously combined.

Figures 3 to 5 show a modified stair mat 30 of the invention, which is installed on the stairs 100 of a building. The stair mat 30 comprises an edge cover 31, a tread mat 32 and a connecting means 33 removably connecting the tread mat 32 to the edge cover 31.

The edge cover 31 is produced from flexible synthetic resin, rubber or the like, and is comprised of an edge bead cushion 34, a thin tread-side tongue 35 and a thick riser-side tongue 36.

The edge bead cushion 34 is provided with hollow cavities 37, 38 extending along the length of the edge cover as a flexible tube, giving a similar elasticity to that of the tread mat 32. Further, the edge bead cushion 34 is provided with a non-skid top surface portion 39 on the upper surface thereof, in the form of serrations, which heighten the non-skid effect.

The thin tread-side tongue 35 is integrally and horizontally extended from the bottom rear of the edge bead cushion 34. By means of the tread-side tongue 35, the edge bead cushion 34 can be fixed firmly on the tread 101 of the step 100. The tread-side tongue serves to disguise any difference in height between the upper surface of the tread 101 and the tread mat 32 with the front edge of the tread mat 32 removably connected onto the upper surface of the tread-side tongue 35 by the use of the connecting means 33.

The thick riser-side tongue 36 is integrally and vertically extended from the bottom front portion of the edge bead cushion 34. The riser side fixing tongue 36 may absorb the impact of stumbling.

The tread mat 32 is made of a carpet, which is treated at its fringes to prevent it fraying. A base sheet 40 made of cloth, latex or the like is attached on the under surface of the carpet. Further, the tread mat 32 is provided with a plurality of punched holes 42 at fixed spaces along the front edge thereof, for the connecting means 33.

The connecting means 33 comprises trim studs 43 of synthetic resin and snap caps 44 of synthetic resin. The trim studs 43 are fixed integrally on the tread-side tongue 35 of the edge cover 31 by fusion, and project upwardly from the tread-side tongue 35, at the same fixed spaces as the punched holes 42. Each snap cap 44 is provided with a brim 46, and pile 47 which is similar to the pile 41 of the tread mat 32, is attached onto the main body 45 of the cap. Therefore, after the tread mat 32 is placed on the tread-side tongue 35 of the edge cover 31, and snap caps 44 are snapped onto the trim studs, the punched holes 42 formed at the front edge of the tread mat 32

are filled up with the pile 47 of the snap caps 44.

During installation of the stair mat 30, the edge cover 31 is fixed on the forward edge 103 of the step 100, as shown in Figure 3, by use of the adhesive sheet (not shown) cut to length from the double-faced adhesive tape. The front edge of the tread mat 32 is placed on the tread-side tongue 35 with the trim studs 43 projecting into the punched holes 42 of the tread mat 32. Then snap caps 44 are snapped onto the trim studs 43, so as to fill up the punching holes 42 of the tread mat 32, and connect the tread mat 32 and the edge cover 31 together. And after connecting of the tread mat 32 and the edge cover 31 together as shown in Figures 3 and 4, the punched holes 42 are filled up with the pile of the snap caps 44, and the front edge of the tread mat 32 is adjacent to the edge bead cushion 34 of the edge cover 31. Then an adhesive sheet (not shown) is attached on the under surface at the centre and rear of the tread, and the tread mat 30 is fixed onto the tread 101 of the step 100.

The stair mat 30 may be fixed on the step 100, after the tread mat 32 is previously connected with the edge cover.

Figure 6 shows a modification including the edge cover 50 and the connecting means 51.

The edge cover 50 is provided with a plurality of stud holes 52 which are formed by punching at fixed spaces on the tread-side tongue 35, for a plurality of connecting means 51, that is to say, for the trim studs 53 of the connecting means 51. The connecting means 51 comprises the trim studs 53 and snap caps 44 produced from synthetic resin. A trim stud 53

is put into each stud hole 52, projecting upwardly from the under surface to the upper surface of the tread-side tongue 53.

The remaining parts of the edge cover 50 and the connecting means 51 are designated by the same numerals as those used for the corresponding parts of the edge cover 31 and the connecting means 33 of the above-mentioned stair mat 30.

Figure 7 shows a further modified stair mat 60. The stair mat 60 comprises an edge cover 61, a tread mat 62 and a plurality of connecting means 62 removably connecting the edge cover 61 and the tread mat 62.

The edge cover 61 is provided with a hollow cavity 63 extending along the length of the edge bead cushion 34. which cavity is modified of the cavities 37, 38 of the edge cover 31 of the above-mentioned stair mat 50.

The connecting means 62 comprises sockets 64 being of synthetic resin and snap-inserts 65. Each socket 64 is fixed integrally on the tread-side tongue 35 of the edge cover 61 by fusion, projecting upwardly from the tread-side tongue 35, at the same spacing as the punched holes 42. The snap-inserts 65 which fit into bores 66 of the sockets 64, have pile 68 similar to the pile 41 of the tread mat 32 on the upper surfaces of their heads 67.

The stair mat 60 is fixed on the step 100 in the same way as the above-mentioned stair mat 30, and the parts of the construction of the stair mat 60 are designated by the same numerals as those used for the corresponding parts of the stair mat 30.

Figures 8 to 12 show a further modified stair mat 70, which is installed on the stairs 100 of a building.

The stair mat 70 comprises an edge cover 71 produced from synthetic resin, which is set on the forward edge 103 of the step, a tread mat 72 removably connected to the edge cover 71, which is set on the tread 101 of the step 100, and the connecting means 73.

In the edge cover 71, the edge bead cushion 74 set on the forward edge 103 of the step 100, the tread-side tongue 75 integrally extended from the bottom rear portion of the edge bead cushion 74 and the riser-side tongue 76 integrally extended from the bottom front portion of the edge bead cushion 74, are formed in one united body in an extruder from synthetic resin.

The edge bead cushion 74 is formed as a flexible tube as shown in Figures 9 and 10, and is provided with a non-skid top surface portion 78 on the upper surface thereof.

The edge bead cushion 74 can be changed to have various cross-sectional shapes. The hollow portion 77 may be comprised of a plurality of apertures. If the tread-side tongue 75 and the riser-side tongue 76 are formed in L-shape in cross-section, the edge bead cushion 74 may be arcuate in shape, being extruded on the upper surface of the tread side fixing tongue 75 in the extruder.

It is to be desired that the tread-side tongue 75 and the riser-side tongue 76 are made thin. Owing to the construction like this, the installation may be firm, and after installation the exfoliation by warping can be prevented.

The tread mat 72 is made by cutting a carpet in a semi-cylindrical shape, which is set on the tread 101 of the step 100.

The connecting means 73 comprises a fastener, that is to say, a strip 79 with thousands of tiny loops 81 and a strip 80 with thousands of tiny hooks 82. The strip 79 with the tiny loops 81 is fixed on the tread-side tongue 75 of the edge cover 71, and the strip 80 with the tiny hooks 82 is fixed on the under surface of the front edge of the tread mat 72. When the front edge of the tread mat 72 is set on the tread-side tongue 75 of the edge cover 71, the hooks 82 of the strip 80 engage with the loops 81 of the strip 79.

Then, during the installation of the stair mat 70 on the stairs 100, adhesive agent is applied on the under surfaces of the edge bead cushion 74 and the tread-side tongue 75, and on the rear-surface of the riser-side tongue 76. The edge cover 71 is placed on the forward edge 103 of the step 100 so as to put the riser-side tongue 76 against the riser 102 of the step 100. Then the tread-side tongue 75 is pressed on the tread 101 of the step 100, and the riser-side tongue 76 is pressed on the riser 102 of the step 100.

After the edge cover 71 is fixed on the forward edge 103 of the step 100, the front edge of the tread mat 72 is placed on the tread-side tongue 75 of the edge cover 71 adjacent to the edge bead cushion 74 of the edge cover 71. The tread mat 72 is connected with the edge cover so as to engage the tiny hooks 82 of the strip 80 with the tiny loops 81 of the strip 79 which is already fixed on the tread side fixing tongue 75.

The rear edge of the tread mat 72 is fixed on the tread 101 of the step 100 by the use of the fastener 83.

The fastener 83 comprises a strip 84 with thousands of tiny loops which is fixed on the tread 101 of the step 100 and a strip 85 with thousands of tiny hooks 86 which is fixed on the under surface of the tread mat 72.

By the above-mentioned working process, the stair mat 70 is fixed on the step 100. Since the edge cover 71 and the tread mat 72, making up the stair mat 70, are assemblable and removable by means of the fastener 73, the edge cover 71 or the tread mat 72 can be easily changed for another.

Figure 13 shows a modified stair mat 90.

The stair mat 90 has the means of fixing modified from the above-mentioned stair mat 70. As shown in Figure 13, the edge cover 91 is provided with a groove 92 extending along the length of the tread-side tongue 75 of the edge cover 91. The strip 79 is adhered on the groove 92, being put into the groove 92. Thus the thickness of the fastener 74 may be apparently thin, which fixes the tread mat 72 on the tread-side tongue 75.

The stair mat 90 is fixed on the step 100 in the same way as the above-mentioned stair mat 70. The parts of the stair mat 90 are designated by the same numerals as those used for the corresponding parts of the stair mat 70, and a description of these parts is omitted.

In the edge cover 90, if a pressure sensitive adhesive tape with a release paper or an adhesive layer with a release paper is applied on the under surface of the tread-side tongue 75 and on the rear surface of the riser-side tongue, the installation of the edge cover 91 on the forward edge 103 of the step 100 is facilitated.

Since in the above-mentioned stair mat 90 the edge cover 91 and the tread mat 72 are assemblable and removable by means of the fastener 73, that is to say, the strip 79 with thousands of tiny loops and the strip 80 with thousands of tiny hooks, either of the edge cover 91 or the tread mat 72 can be easily and economically changed for another according to an extent of the abrasion, the damage and the corruption. Owing to the stair mat 90, the forward edge 103 of the step 100 is covered, giving the effects of non-skid and cushioning to the step 100. Being attended with it, a serious injury by the missed footing can be prevented.

As mentioned above, the described stair mats of the present invention are suitable as mats installed on the stairs of a building, especially where deadening of the sound of footsteps is required.

CLAIMS

1. A stair mat comprising: an edge cover of flexible synthetic resin or rubber, having an edge bead cushion adapted to be secured onto the forward edge of the tread of a step and a tread-side tongue integrally and horizontally extending from the rear portion of the edge bead cushion and adapted to be secured onto the tread of the step, a tread mat adapted to be secured onto the tread of the step, being placed on the tread-side tongue at the front edge thereof, and a connecting means connecting the front edge of the tread mat removably with the tread-side tongue of the edge cover.

2. A stair mat as claimed in claim 1, in which the connecting means is of an adhesive sheet.

3. A stair mat as claimed in claim 1, in which the connecting means is comprised of a plurality of trim studs integrally projecting on the tread-side tongue of the edge cover, a plurality of punching holes formed at the front edge of the tread mat for receiving the trim studs, and a plurality of snap caps engageable with the trim studs.

4. A stair mat as claimed in claim 1, in which the connecting means is comprised of a plurality of trim studs in a plurality of stud holes formed in the tread-side tongue of the edge cover, a plurality of punched holes formed at the front edge of the tread mat for receiving the trim studs, and a plurality of snap caps engageable with the trim studs.

5. A stair mat as claimed in claim 3 or claim 4 wherein the trim studs are topped with pile similar to pile of the tread mat.

6. A stair mat as claimed in claim 1, in which the connecting means is comprised of a plurality of sockets integrally projecting on the tread-side tongue of the edge cover, a plurality of punching holes formed at the front edge of the tread mat for receiving the sockets, and a plurality of snap-inserts engageable with the sockets.

7. A stair mat as claimed in claim 6 wherein the snap-inserts are topped with pile similar to pile of the tread mat.

8. A stair mat as claimed in claim 1, in which the connecting means is comprised of a strip with thousands of tiny loops and a strip with thousands of tiny hooks.

9. A stair mat as claimed in any preceding claim in which the edge cover is provided with a riser-side tongue integrally and downwardly extended from the front portion of the edge bead cushion.

10. A stair mat substantially as hereinbefore described with reference to Figures 1 and 2 or Figures 9 to 12 or Figure 13.

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FIG.1

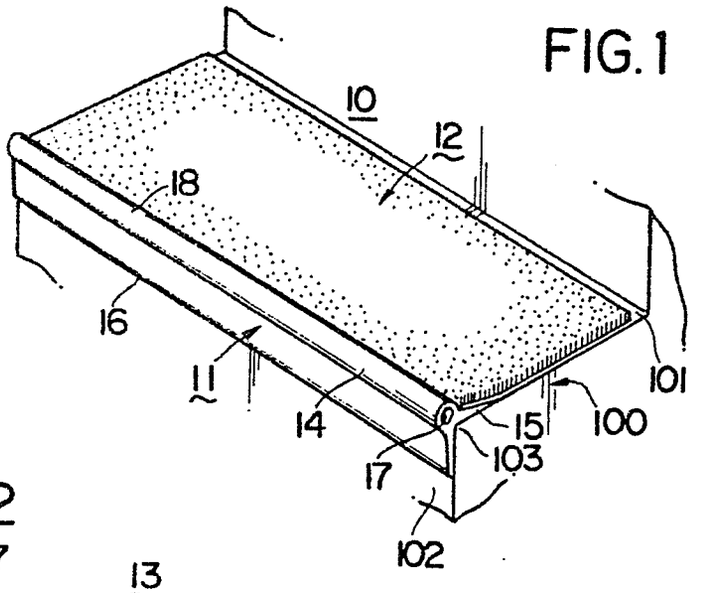

FIG.2

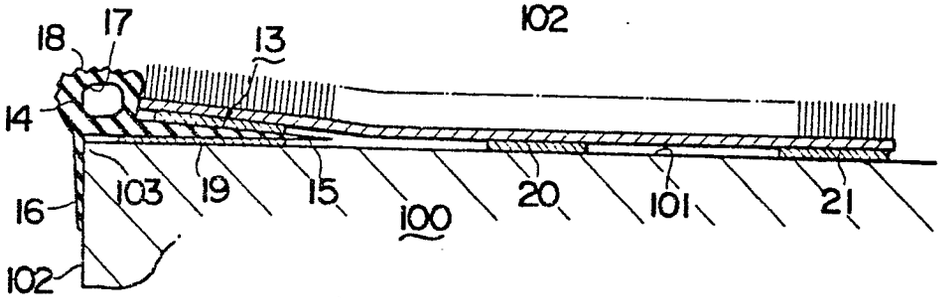

FIG.3

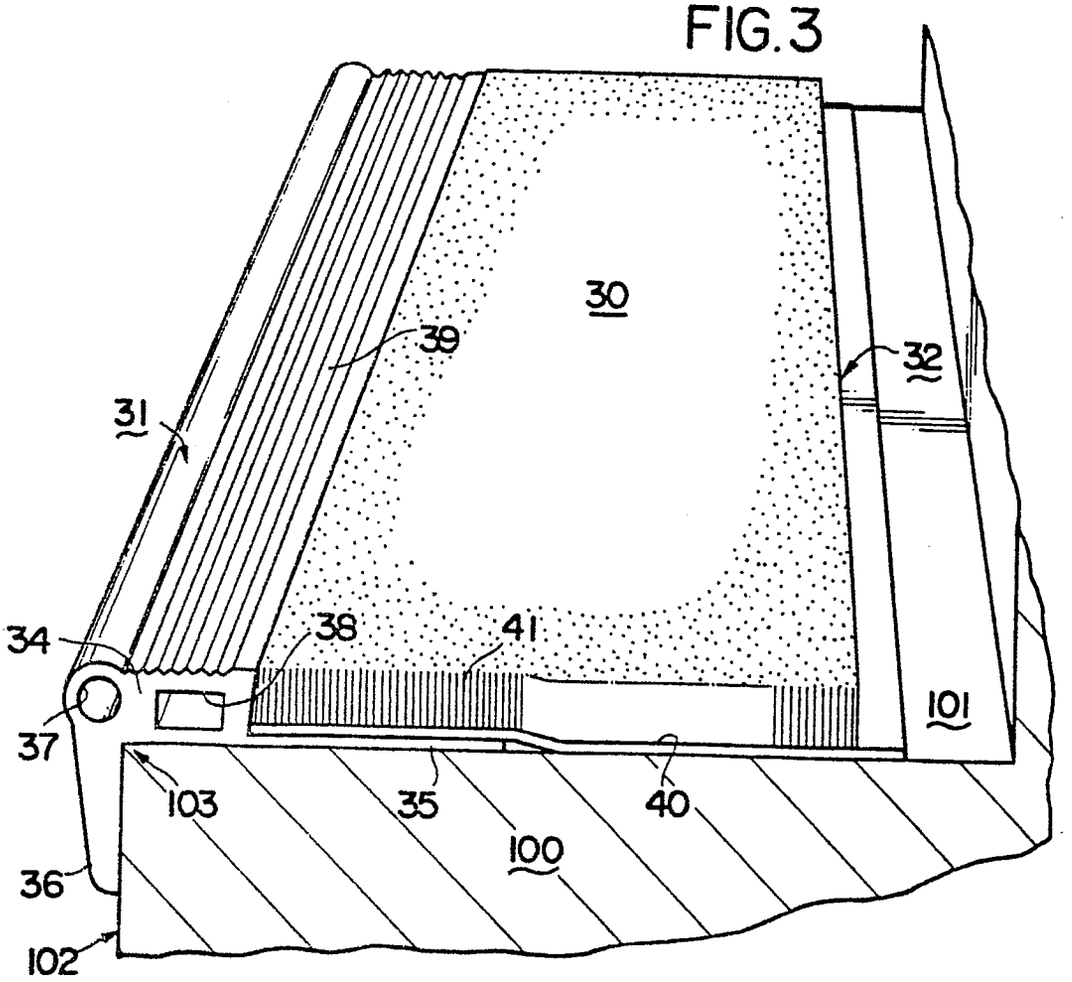

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FIG.4

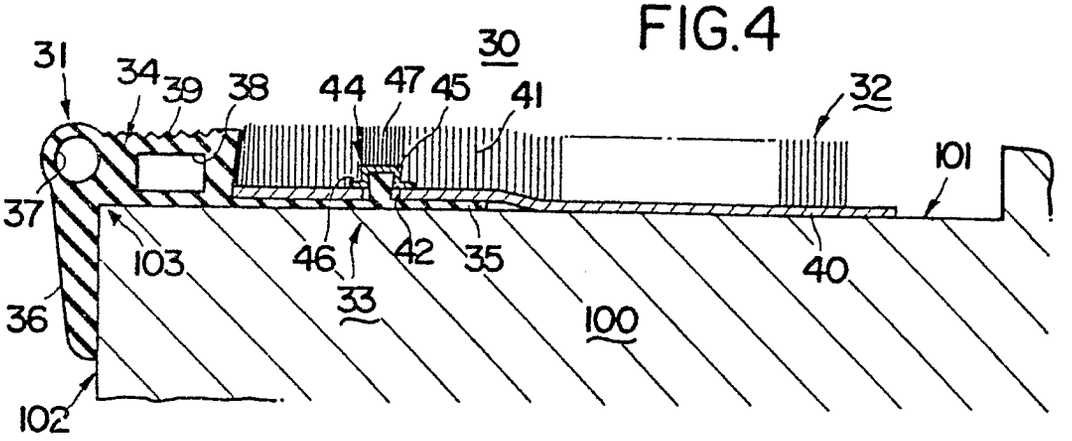

FIG.5

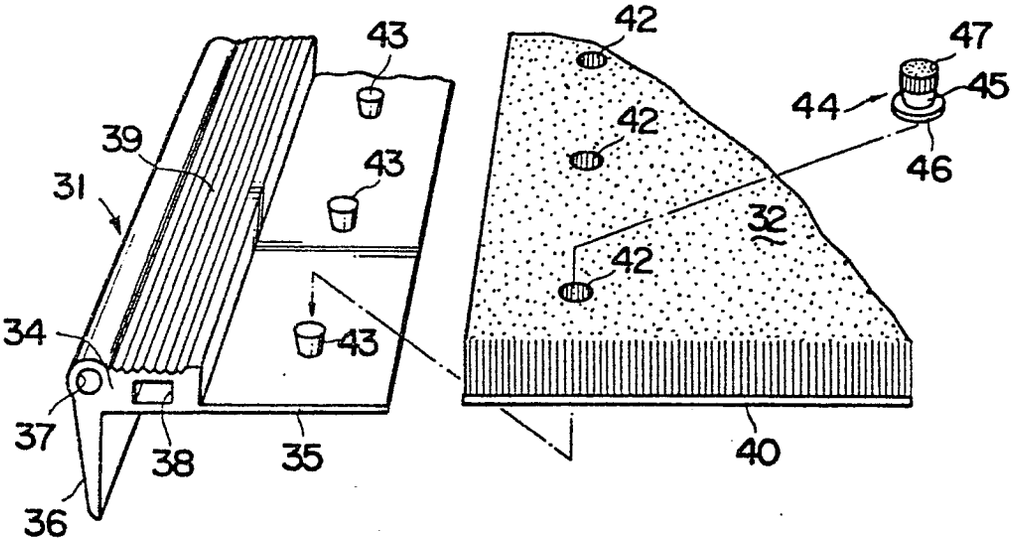

FIG.6

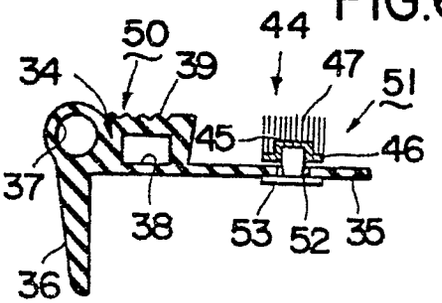

FIG.7

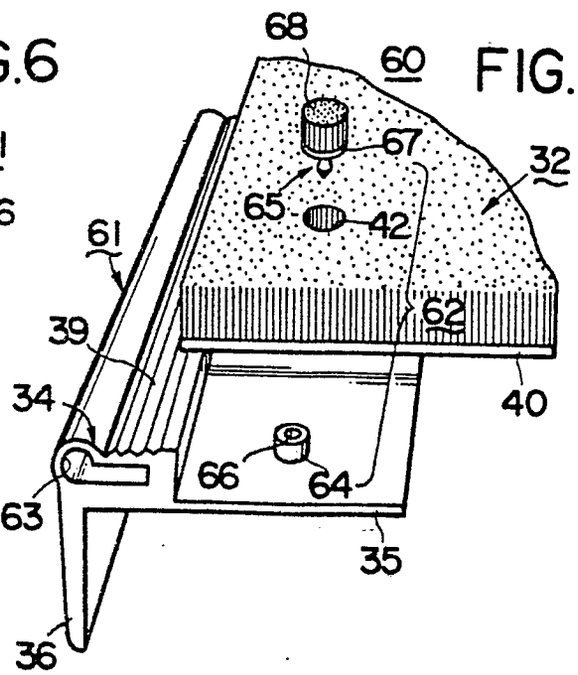

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FIG.8

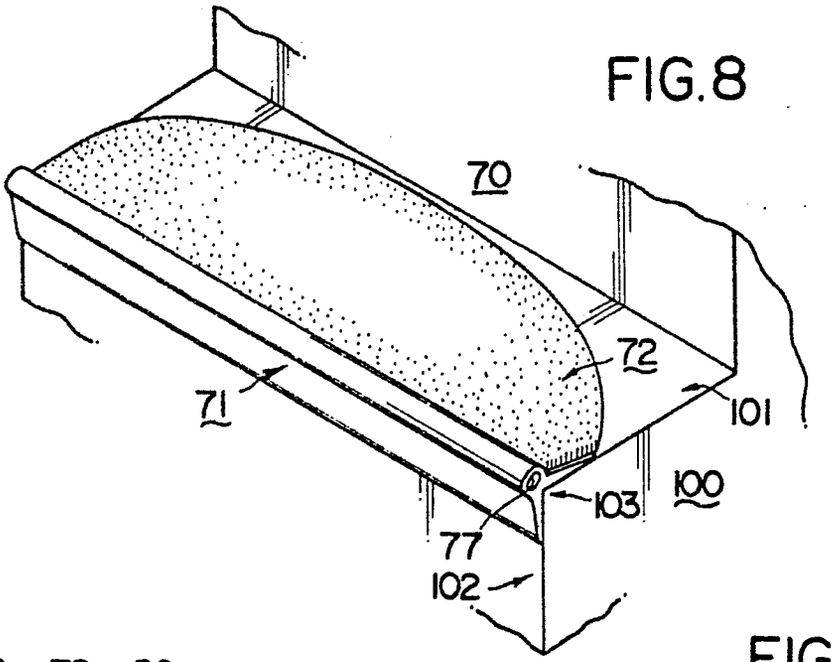

FIG.9

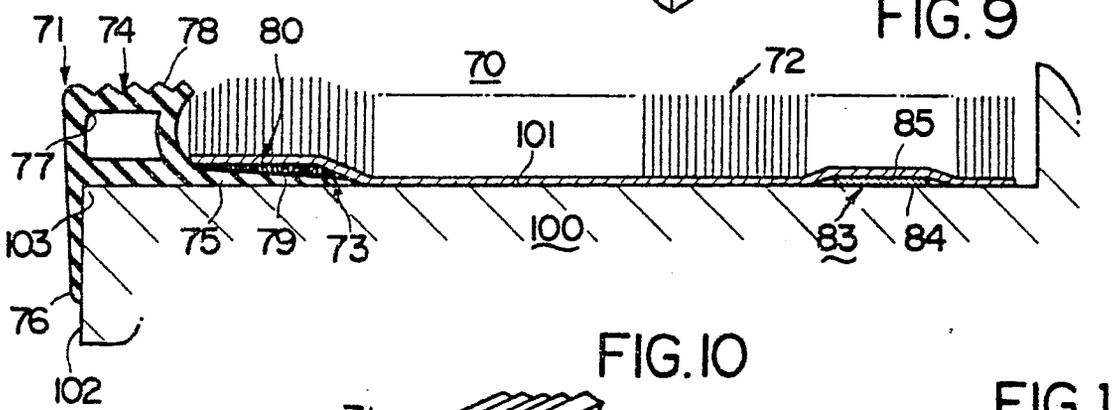

FIG.10

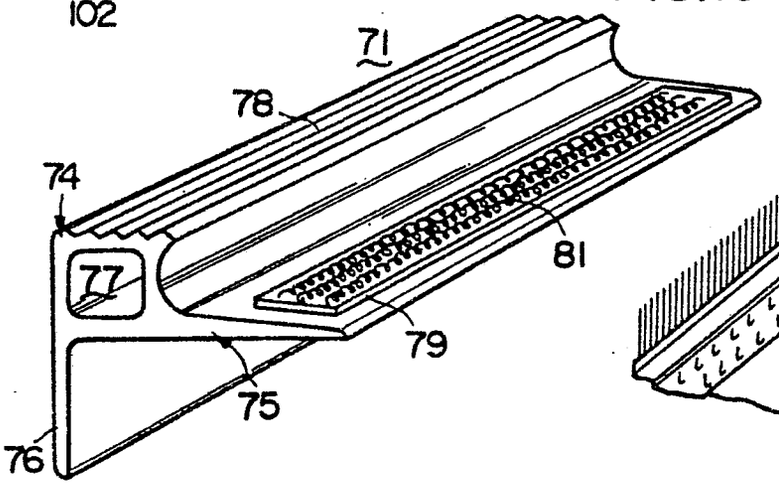

FIG.11

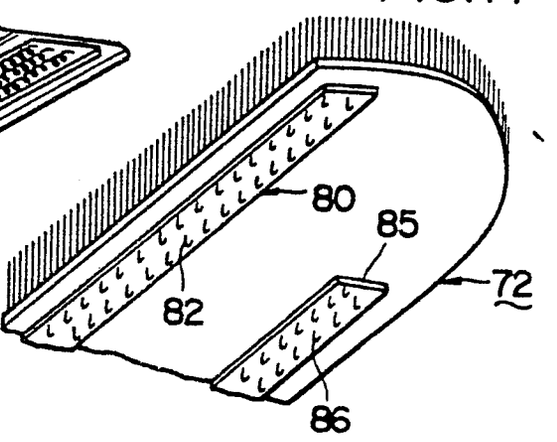

FIG.12

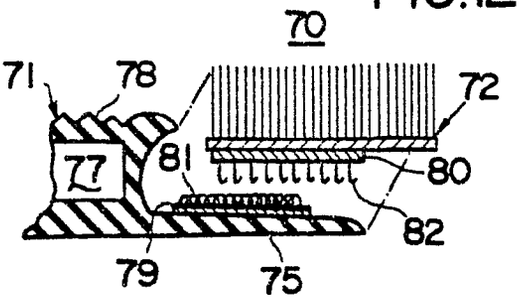

FIG.13