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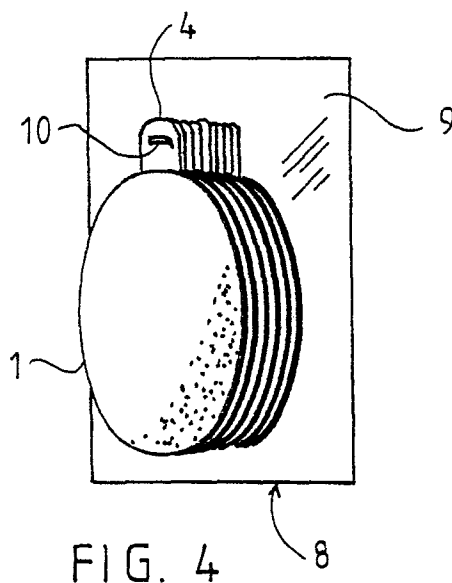
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(54) **Method of dispensing abrasive materials, and an abrasive material.**

(57) The present invention relates to a method of dispensing abrasive materials (1) and to an abrasive material, such as a sheet or disc. An abrasive material (1) means a flexibly bendable abrasive sheet product, one side of which is provided with an abrasive agent with a varying grit size. A plural number of abrasive materials are preferably arranged in a bundle in a dispenser means (8) so that the sides of the abrasive materials provided with an abrasive agent face the same direction.

The object of the present invention is to release the abrasive material from the dispenser means in a simpler way, simultaneously preventing any protective coverings (6) on the abrasive material from being detached and spread about the working space. A tab (4) is arranged on the back side (3) of the abrasive material (1), and the tab is arranged essentially undetachably in the dispenser means (8). When the abrasive materials of the invention are removed from the dispenser means, the tabs remain attached to the dispenser means.



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Description

[0001] The present invention relates to a method of dispensing abrasive materials, such as sheets or discs, the abrasive materials being arranged in a bundle so that those sides of the abrasive materials that are provided with an abrasive agent face the same direction.

[0002] The invention also relates to an abrasive material dispensed by the above method.

[0003] The invention principally concerns a flexibly bendable abrasive sheet product, which hereinafter will be called an abrasive material. The product comprises plates, such as discs or sheets, cut beforehand and coated on one side with an abrasive agent of a varying grit size.

[0004] Prior art abrasive materials include, for example, a line of self-adhesive abrasive materials. The abrasive materials are connected to each other along perforated lines, principally tangentially to the periphery of an individual abrasive material. A solution like this is disclosed, for example, in FI 94 603. That side of the continuous abrasive materials which is coated with glue is usually completely covered with a continuous plastic film of a similar shape. This, however, makes it difficult to detach the plastic film from the abrasive material when the material is to be used. Further, the abrasive material must be cut off from large sheets to make it continuous, wherefore a large amount of raw material for abrasive materials is wasted during the production.

[0005] To eliminate the above problems, it has been suggested that the abrasive material should be cut off entirely, and the materials should then be attached one after the other to a supporting strip made of paper or to some other elongated means. For example, FI 63 880 teaches solutions where the abrasive material is secured to a supporting strip so that every other abrasive material overlaps every other, and the resultant continuous entity is then rolled up.

[0006] From DE 26 26 129 it is also known to arrange the abrasive material on a supporting strip by securing it to the supporting strip along the entire back side.

[0007] DE 29 26 340 teaches solutions in which the abrasive materials are fixed to a supporting strip one after the other in a line. The continuous entity is then folded up in a bundle so that every other abrasive material has the side with the abrasive agent facing upward, and every other has the side with the abrasive agent facing downward. A surface provided with an abrasive agent is therefore always facing another surface provided with an abrasive agent in the bundle. To prevent the back sides that are provided with glue and face each other from attaching to each other, the supporting strip must cover the entire back side of the abrasive material provided with glue. Further, each surface provided with glue can be provided with a separate protective covering. If two surfaces provided with glue are allowed to attach to each other, it is extremely difficult to separate them.

[0008] The DE publication also discloses an embodi-

ment in which each abrasive material is provided with a protective covering on the back side provided with glue and is connected to a continuous entity by means of separate supporting strips provided with glue. The supporting strip is fixed to the protective coverings of two abrasive materials close to each other. In this embodiment, the abrasive materials are arranged in a bundle so that the front sides provided with an abrasive agent face upward, and each supporting strip is folded in Z form, whereby the free part of the supporting strip principally corresponds to the diameter of the abrasive material in length. This requires a large amount of supporting strip material and a technically advanced feeding line, where the abrasive materials are secured to the supporting strips with acceptable results.

[0009] Finally, FI 76 762 teaches solutions in which the abrasive material is fixed to a continuous supporting strip to provide a continuous entity. The entity is then formed into a bundle than can be placed, for example, in a dispenser box. In a solution according to the publication, the abrasive materials in the bundle have the front sides provided with an abrasive agent facing upward, and the supporting strip is passed in loops between the abrasive materials along one side of the bundle. The upper part of each loop of the supporting strip is fixed to the back side of the abrasive material, which is not coated with an abrasive agent, whereas the lower part of each loop of the supporting strip is free between the upper part of the loop and the front side of the abrasive material, provided with an abrasive agent. The supporting strip is thus rendered as short as possible, and yet the supporting materials are efficiently prevented from attaching to each other.

[0010] A problem common to all the above solutions is that as the abrasive materials, both sheets and discs, are released from the supporting strip, the supporting strip and the protective coverings are detached and, depending on the implementation, are either left hanging from the dispenser box or are collected on a horizontal surface nearby. Gradually, the supporting strip and the protective coverings form big, disturbing piles or loops in the vicinity of the dispenser box. Such films hanging or lying about are dangerous to health: their surface is slippery, which increases accident risk in the workplace.

[0011] The previously known solutions often also require that when the abrasive material is detached from the protective covering, both hands must be used: with one hand one grips the abrasive material and with the other one releases the protective covering.

[0012] The problems of the prior art are avoided with the present invention. The abrasive material is much simpler to remove from the dispenser means or detach from the protective covering, and the protective coverings do here not accumulate in undesired amounts on different surfaces, such as workbenches or the floor.

[0013] The above problems are solved by the present invention, which has the characteristics disclosed in the claims. A method of the present invention is thus char-

acterized by what is stated in the characterizing part of claim 1.

[0014] Further, an apparatus of the present invention is characterized by what is stated in the characterizing part of claim 2.

[0015] Many significant advantages are achieved with the method and apparatus of the present invention as compared with the prior art. For example, it is very simple to fasten a tab of the invention to an abrasive material. No complicated feeding lines are thus needed for exact positioning of the tab in respect of the abrasive material. With a solution of the invention, considerably less material is needed for the supporting strip, and so the packaging costs can be minimized.

[0016] A tab according to the present invention makes it very easy to detach the abrasive material by gripping it simply with only one hand. This is very important, since the user usually needs the other hand to operate a grinding machine. Although the method is simple, the working space will not be littered at all.

[0017] An embodiment of the abrasive material of the invention comprises a tab with at least one hole, and it can preferably be arranged in a hook-shaped dispenser means, whereby the dispensing process of the invention could even be utilized in selling individual abrasive materials in a common hardware shop. These abrasive materials do preferably not comprise any attachment means on the back side. Further, the abrasive materials arranged in bundles of several abrasive materials can be arranged on such a hook-shaped dispenser means for selling. At the working place the dispensation is implemented by again arranging the abrasive materials on a hook-shaped dispenser means, from which the abrasive materials are removed one by one by a simple movement of the hand.

[0018] By arranging the abrasive materials of the present invention in suitable bundles, it is also easy to pack the abrasive materials in small packages that are easy to handle, for example in skin-packages, whereby the space needed for transport can be minimized. The package size can be easily varied without affecting the dispensation of the abrasive materials in any way.

[0019] The dispensation of abrasive materials is further facilitated in a preferred embodiment by securing the materials on a stiff support, such as a case or a board sheet, with mechanical fasteners. The user is then free to decide whether he wants the abrasive material to be in a vertical position on a wall or placed horizontally, for example, on a workbench. Placed on a vertical surface, the support preferably comprises suspension means known per se.

[0020] The abrasive material often comprises some kind of attachment means, such as glue or a Velcro fastener, on the back side. It is thus very simple to attach the tab to and detach it from the abrasive material. To prevent the abrasive materials close to each other from attaching to each other, the attachment means preferably comprise a protective covering. When the protective

covering is attached to the tab, the tab is easy to detach together with the protective covering, the protective covering remaining in the dispenser means.

[0021] In the following the invention will be described in greater detail with reference to the drawing, in which

Fig. 1 shows an abrasive material with a tab before the tab is attached to the back side of the abrasive material,

Fig. 2 shows a similar solution as Fig. 1, the abrasive material and the tab being here attached with a Velcro fastener,

Fig. 3 shows a tab comprising a protective covering, the tab being arranged to cover essentially the entire back side of the abrasive material,

Fig. 4 shows abrasive materials provided with tabs, the tabs being punched to a dispenser means which is in form of a board sheet,

Fig. 5 shows abrasive materials provided with tabs and arranged in a dispenser means which is in form of a hook, and

Fig. 6 shows abrasive materials provided with tabs, the tabs being attached to a dispenser means which is in form of a case.

[0022] Fig. 1 shows a preferred embodiment of the present invention. The invention comprises an abrasive material 1 with a front side 2 and a back side 3. The front side is provided with an abrasive agent whose grit size may vary. The back side of the abrasive material is preferably provided with an attachment means, such as glue or a velour coating, which is arranged to work in co-operation with Velcro fasteners. However, the back side need not comprise any attachment means at all.

[0023] In the figure, a tab 4 is arranged on the back side of the abrasive material. The tab can be provided with an hole 5 as in Fig. 1 and/or a protective covering 6 as in Fig. 3. The tab is arranged on the back side 3 so that at least a part of the tab projects from the abrasive material. If there is glue on the back side, the tab is secured to the abrasive material with the glue. If there is, for example, a velour coating on the back side as described above, the tab 4 is secured to the back side 3 of the abrasive material 1 with a Velcro fastener 7 known per se, as shown in Fig. 2. If there are no attachment means on the back side, the tab is arranged to be self-adhesive, whereby it is easy to attach to the abrasive material.

[0024] If the abrasive material 1 has attachment means, such as glue, on the back side 3, a protective covering 6 is preferably arranged on the back side. The protective covering is preferably arranged on the tab 4 so that the covering and the tab can be peeled off from the abrasive material simultaneously by a single movement of the hand. Both the tab and the protective covering are preferably made of paper or a plastic film coated with silicon, which makes it easier to detach the tab from the abrasive material provided with attachment

means.

[0025] Fig. 4 shows how the abrasive material 1 provided with a tab 4 is arranged on a dispenser means 8. This embodiment of the dispenser means preferably comprises a board sheet 9 to which the abrasive material 1 is secured. The abrasive material is thus arranged on the board sheet by securing several tabs 4 and thereby abrasive materials to the board sheet with a fastening means 10 known per se, for example with glue or by punching. A dispenser means of this kind can be arranged in a horizontal position on a workbench or a worktable, so that the abrasive material can be detached from the tab with a simple movement of the hand. The board sheet 9 can also be provided with a hole or some other means with which it can hang on an essentially vertical surface.

[0026] The number of abrasive materials packed according to Fig. 4 can vary. The number of abrasive materials to be secured to a board sheet as shown in the figure can vary from a few to even dozens of materials according to the users' needs.

[0027] Fig. 5 shows another embodiment of the dispenser means 8. The dispenser means comprises a hook 11, which is arranged on an essentially vertical surface. The abrasive materials are arranged on the hook by slipping the tab holes 5 onto the hook. To remove the abrasive materials, one simply grips the abrasive material and pulls it so that it detaches from the tab, whereby the tab (and the protective covering, if there is any), which is not detachable from the dispenser means, remains on the hook. The abrasive materials can be arranged to hang freely on the dispenser means, whereby each abrasive material is slipped onto the hook individually. However, it is preferable to combine a plural number of abrasive materials into a bundle, for example to punch a plural number of tabs together, whereby such a bundle of abrasive materials can be arranged on the dispenser means at one go.

[0028] In a special embodiment the board sheet 9 shown in Fig. 4 forms a transport case 12 shown in Fig. 6. The abrasive materials are thus packed in a case, and the tabs are fixed, for example, to a side wall of the case. When the abrasive materials are removed, the tabs and the protective coverings, if any, remain attached to the case.

[0029] The tabs 4 of the abrasive materials 1 close to each other can also be attached, for example, by gluing. It is sufficient that only the lowermost tab, i.e. the one in contact with the dispenser means 8, is secured onto the surface of the dispenser means also, for example, by gluing.

[0030] An abrasive material 1 according to the present invention can be packed for transport in various ways. The simplest way is to pack, for example, ten or twenty abrasive materials together in a skin-package. These abrasive materials can be either completely separate from each other or attached to each other at the tabs 4 or attached through the tabs to a dispenser

means 8 as shown in Fig. 4 or Fig. 6. This type of transport package requires a minimum amount of space during the transport and a minimum amount of packaging material, and is therefore very advantageous.

[0031] It is also possible to place the abrasive materials 1 in a box-like transport package, from which they are taken after the transport and preferably arranged on a hook-shaped dispenser means shown in Fig. 5.

[0032] The tab 4 can also be provided with a protective covering 6 as in Fig. 3, if so desired, for example when abrasive materials with a small grit size are packed in skin-packages, to ensure that the discs and sheets of abrasive material cannot attach to each other.

[0033] The above description and the accompanying figures are to be understood only as illustrating the invention. The invention is thus not restricted to the embodiments described above or in the attached claims, but it can be varied or modified in many ways without deviating from the idea of the invention disclosed in the attached claims.

Claims

1. A method of dispensing abrasive materials (1), such as sheets or discs, with a front side (2) provided with an abrasive agent and a back side (3), a plural number of abrasive materials being arranged in a bundle so that the front sides of the abrasive materials face the same direction, **characterized** in that a detachable tab (4) is arranged on the back side (3) of the abrasive material (1) so that the tab at least partly overlaps the back side and partly projects from the back side, the part of the tab (4) projecting from the back side being arranged on a dispenser means (8) essentially undetachably, so that when the abrasive material is dispensed, the tab remains attached to the dispenser means.
2. An abrasive material (1), such as a sheet or a disc, with a front side (2) provided with an abrasive agent and a back side (3), the abrasive material being arranged in a bundle with a plural number of similar abrasive materials so that the front sides of the abrasive materials face the same direction, **characterized** in that the abrasive material (1) comprises a tab (4) on the back side (3), the tab being arranged to at least partly overlap the back side and partly project from the back side, the tabs of the abrasive materials close to each other during the dispensation being arranged essentially undetachably in a dispenser means (8) with fastening means (5, 10).
3. An abrasive material (1) according to claim 2, **characterized** in that the part of the tab (4) projecting from the back side comprises a hole (5) which can be utilized in arranging the abrasive material (1) on

the dispenser means (8).

4. An abrasive material (1) according to claim 2 or 3, **characterized** in that the abrasive materials (1) close to each other in a bundle comprise tabs (4) which are attached to each other mechanically at the part that projects from the back side. 5
5. An abrasive material (1) according to claim 4, **characterized** in that a bundle comprising a plural number of abrasive materials (1) is arranged in a dispenser means, such as a sheet (9) or a case (12), with at least one mechanical fastening means (10) provided on the tab. 10
6. An abrasive material (1) according to claim 4, **characterized** in that a bundle of a plural number of abrasive materials (1) is arranged in a dispenser means, such as a sheet (9) or a case (12), by securing the tab in contact with the dispenser means onto the surface of the dispenser means with an adhesive material, such as glue. 15 20
7. An abrasive material (1) according to any one of claims 2 to 6, **characterized** in that the abrasive material (1) comprises attachment means on the back side (3), the attachment means being arranged to receive the tab (4). 25
8. An abrasive material (1) according to claim 7, **characterized** in that the tab (4) comprises a protective covering (6), which is arranged to cover essentially the entire back side (3) of the abrasive material (1) provided with attachment means. 30

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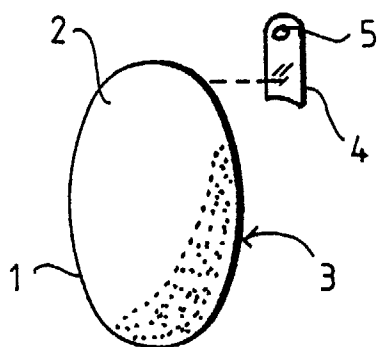


FIG. 1

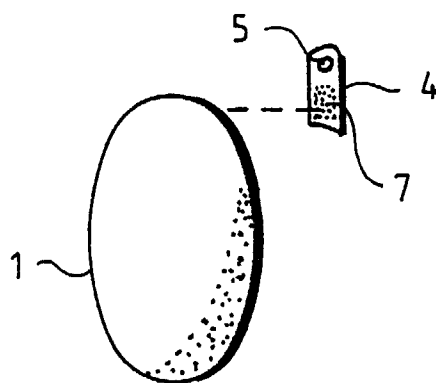


FIG. 2

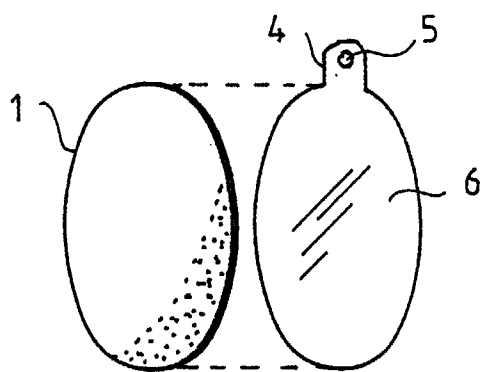


FIG. 3

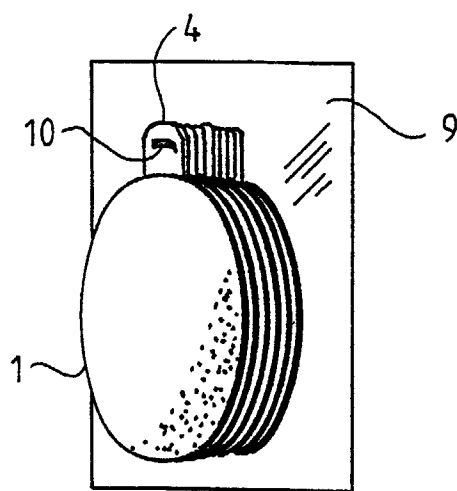


FIG. 4

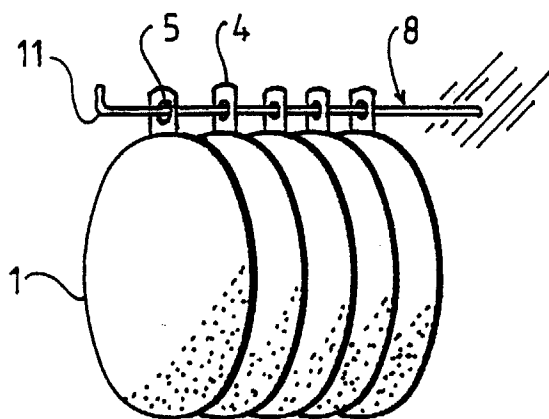


FIG. 5

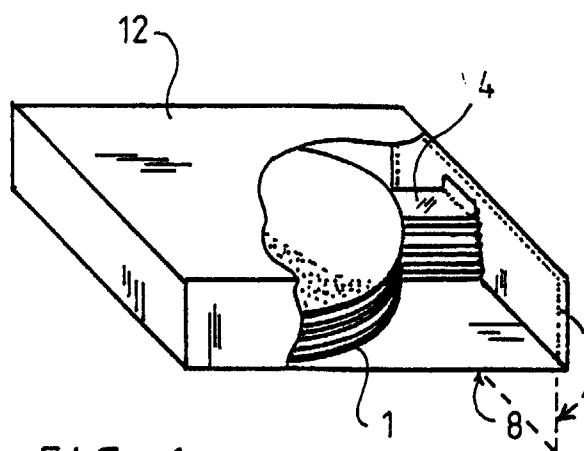


FIG. 6