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

(11) Publication number: **0 304 255**
A2

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **88307542.6**

(22) Date of filing: **15.08.88**

(51) Int. Cl.[4]: **B 65 D 65/42**

(30) Priority: **18.08.87 FI 873577**

(43) Date of publication of application:
22.02.89 Bulletin 89/08

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI LU NL SE

(71) Applicant: **A. Ahlström Corporation**
SF-29600 Noormarkku (FI)

(72) Inventor: **Katila, Matti**
Aimonkuja 1
SF-27500 Kauttua (FI)

(74) Representative: **Gilmour, David Cedric Franklyn et al**
POTTS, KERR & CO. 15 Hamilton Square
Birkenhead Merseyside L41 6BR (GB)

(54) **Friction surface for packing foil or like with friction surface.**

(57) The invention relates to a friction surface comprising a conventional foil (1), such as paper or plastic foil, and hot melt bulges (2) and pattern formed by them made on the foil surface by a screening technique. The foil (1) chosen to be used should be such that it is most suitable for the specific package, but the thickness of it should preferably be more than 35 mm and it should at least temporarily endure the heat of about 140 - 180° C. which the hot melt has. The bulges made of hot melt are most advantageously made 50-150 µm high, whereby their ability to adhere to other surfaces is excellent. By using filling materials of the hot melts the friction can be increased even more, but in such cases normally thicker basic foil has to be used so as to prevent the foil from tearing. By using a friction surface, considerably high piles of packages can be made. Because the hot melt can be remelted, the top packages can be bound together by spreading any kind of foil on them, which can be attached on the friction surface by heating.

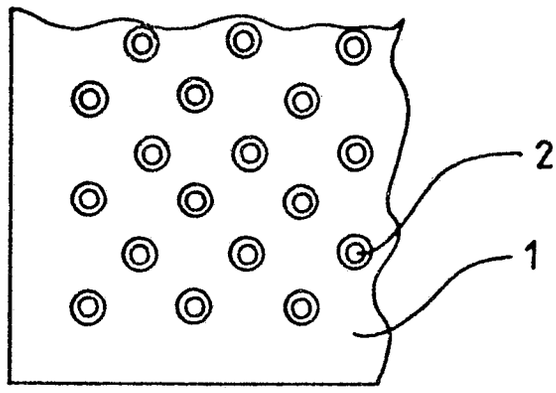

FIG. 2

EP 0 304 255 A2

Description

FRICTION SURFACE FOR PACKING FOIL OR LIKE WITH FRICTION SURFACE

The present invention relates to a friction foil of plastics, paper or like material, which is provided with a friction surface on the foil.

Difficulty can be experienced in stacking sheet-wrapped packages which poorly remain on each other and such is often overcome by providing an angular outer package of carton or like strong material, which naturally raises the costs considerably.

There have been proposed friction foils which include an adhesive surface but such are expensive, because a substantial area of adhesive is needed. Also, in dusty environments the adhesive surface becomes covered with impurities and dust and loses its good frictional qualities. A packaging foil with an adhesive surface is also difficult to pack and use.

There has also been proposed the spreading of the plastics foil chopped pieces of the same plastics in the production stage which produces, without glue, a friction surface, which has both high friction value and high mechanical strength in different conditions. This type of manufacture is, however, expensive and can be applied only with a very restricted variety of foils. If all the piled packages have this type of foil, it is difficult to bind the packages together even by glueing foil on top of them, because the plastic pieces of the friction foil disturb the attachment of the binding foil.

The main purpose of the invention is to avoid or minimize said disadvantages. The friction surface according to the invention is formed on a foil by a coating having thermoplastic hot melt spot-like or some other figures made by means of a screening method.

The coating is preferably transparent or colourless, but it can also be coloured. Hot melt is used 2-15 g/m^2, most preferably only about 3 g/m^2. The friction foil is usable as a finished product after a short cooling time, and it does not require an evaporation line for any solvents or an expensive method of packing, as do the friction surfaces coated with adhesive material. The product does not have volatile substances, such as solvents of dispersion glue.

The friction foil according to the invention is very economic to produce and therefore it can also be used as the packaging for inexpensive materials, such as large food product packages, fertilizer sacks, timber covers, raw material sacks and bulk material packages. The piling of food product packages is very difficult without a friction surface, and the products packaged therein may break if they fall. The foil can also be used as an anti-skid device in the transport.

By using the product according to the invention it is possible to prevent, when filling a double-sack, the inner sack from sliding during the filling, and the mouths of both sacks can be glued by reheating the same coating only for a short distance and no pressing is necessary, because the contacting surface is large.

By using the screening method, very small amounts of hot melt can be spread on the foil surface in a controlled manner, whereby the production of a friction surface does not incur great costs.

Because the coating in accordance with the invention is carried out by means of a screening method or like method, it is possible to coat the foil only on required parts, whereby the costs can be further diminished and thus it is also possible to print a text on the same foil after coating the foil with the friction surface. Such is not possible, for example, for such friction surface, which is made by blowing chopped pieces of plastics foil during the production stage on the plastics foil. The spreading unit for the hot melt can operate as a part of a press or as an extension of it, whereby the increase in the production costs to produce the friction surface is considerably small.

The application of a thermoplastic melt on a packaging foil is known as such and disclosed, for example, in Finnish patent publication 71263.

The coefficient of friction of totally smooth plastics foils of some plastics types is generally high, but even slight impurities, such as concrete dust, aggregate dust or pollen dust may reduce the friction coefficient considerably. With the sack packages it is not even possible to produce smooth surface which would be against each other. The friction at least doubles when a coated foil according to the invention is against an uncoated foil, and when two friction foils are against each other, the total friction is even higher, and approaching, in the most preferable conditions, the value of 1

It is possible to use, for example, corundum as filling material of the thermoplastic melt, when the packing foil is thick, or, for example, calcium phosphate, magnesium silicate, silicon dioxide or combination thereof; the filling material is known as such from US patent publication 3,691,120.

The screening surface can be varied by a known method on the top and bottom surfaces, the total effect of which gives an advantageous binding as a result.

If the packing foil is sensitive, a form of screening dot is chosen which does not break the surface of the foil, for example, hemispherical dots in a uniformly distributed pattern. The invention will be described further, by way of example, with reference to the accompanying drawing, in which:-

Fig. 1 is a sectional view of a friction foil in accordance with the invention;

Fig. 2 is a fragmentary plan view of the friction foil of Fig. 1, and

Fig. 3 is a schematic illustration of the manufacture of the foil according to the invention.

In the drawings, a foil 1 is coated with coating 2 comprising a plurality of conical projections of dots each having a flat top. The dots are provided by means of a screening technique, as illustrated in Fig. 3. A screening roll 3 is provided with cup-like

recesses 4 and is partly immerged in a hot melt 6 contained in a vat 5. When the screening roll 3 rotates it raises hot melt from the vat, whereby the melt in the cups 4 is brought into communication with the foil 1 running between a press roll 7 and the screening roll 3, and the melt adheres on the surface of the foil forming a dot-like coating of projections. By means of a scraper 8, any excess hot melt is removed from the surface of the screening roll. The screening cups are dimensioned in such a way that the hot melt forms projections on the foil surface, the height of which projections is about 50-150 µm and which form the desired pattern.

Example

A low density polythene foil, the thickness of which was 0,2 mm, was coated using an apparatus according to Fig. 3 with hot melt mainly consisting of ethyl-vinyl acetate, the viscosity of which was 1000 cP in the temperature of 140° C. The depth of the screening cups 4 was 0,12 mm and their diameter 1 mm. The distance of the dot-like projections from each other was 4 mm. The finished product may be used in the manufacture of sacks.

Claims

1. A friction surface such as a foil (1) made of plastics, paper or other sheet or other material, having a friction surface on the foil (1), **characterized** in that a coating (2) of dot-like projections, or projections of other shape, is provided formed from a thermoplastic hot melt on that part or those parts of the foil (1) requiring improved friction.

2. A friction surface according to claim 1, **characterized** in that the coating is either transparent or colourless.

3. A friction surface according to claim 1, **characterized** in that the coating is coloured.

4. A friction surface according to claim l, 2 or 3, **characterized** in that the coating (2) is in the form of a plurality of dot-like projections, the height of which is 50-150 m.

5. A friction surface according to claim 4, **characterized** in that the coating (2) is formed of a plurality of dot-like projections with a form of truncated pyramids.

6. A friction surface according to any of the claims 1-5, **characterized** in that the square weight of the coating is 2-15 g/m2.

7. A friction surface as claimed in any of claims 1 to 6, **characterized** in that the coating (2) of projections is provided by using a screening technique.

8. A method of increasing the frictional characteristics of a surface, such as a foil, comprises applying a coating of thermoplastic material from a hot melt, using a screen or other technique, to that part or those parts of the surface requiring increased frictional characteristics.

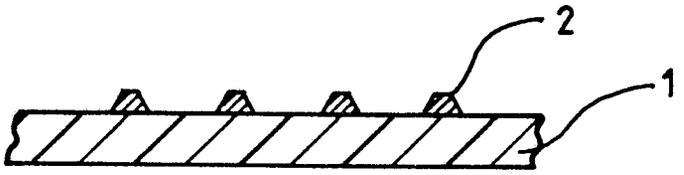

FIG. 1

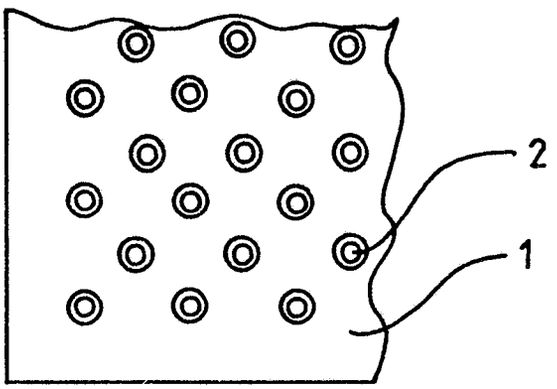

FIG. 2

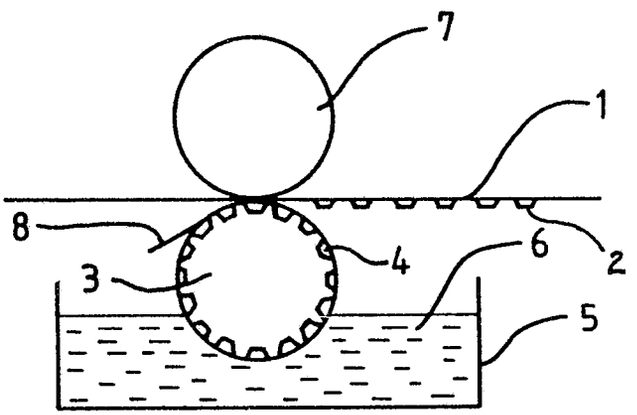

FIG. 3