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⑦① Applicant: **MIKRAT s.r.l.**
Via Tadino 5
I-20124 Milano(IT)

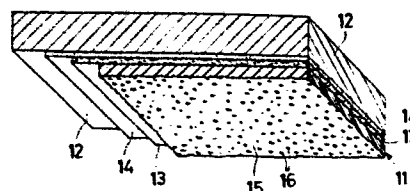
⑦② Inventor: **Pronzati, Attilio**
Via Mazzini 16
I-20010 Vanzago (Milan)(IT)

⑦④ Representative: **Appoloni, Romano et al,**
Ing. Barzanò & Zanardo S.p.A. Via Borgonuovo 10
I-20121 Milano(IT)

⑤④ Molded slab of a compound of acetal and fluorocarbon resin and method of making ski soles and other articles therewith.

⑤⑦ A slab is moulded from a mixture of acetal and fluorocarbon resins and is adapted to form a tread surface (15), in particular for a ski sole (11). A plurality of empty spaces (16) are provided on the surface intended to be used as the tread surface (15). A process for producing such slab is also claimed.

Fig.1



"Molded slab of a compound of acetal and fluorocarbon resin and method of making ski soles and other articles therewith"

In the manufacture of skis there have recently been introduced ski soles composed of mixed compounds of acetal resins and fluorocarbon resins such as polytetrafluoroethylene, which are particularly adapted to manufacture skis for long run contests because they considerably enhance the slipping of the ski on different kinds of snow, so that it becomes possible to dispense with ski waxing while ensuring concurrently a certain hold of the ski when a forward thrust is to be impressed thereto on the snow surface, while generally, due to the effect of the strong pressure exerted, the ski tends to slip backwards as it slips on the snowy surface.

These ski soles are generally formed, after the prior art, by admixing by high-speed centrifuging and at a high temperature (140°C - 160°C) one resin with the other until an intimate and homogeneous blending thereof is achieved, whereafter extrusion or calendering of the homogeneous blend thus obtained are proceeded with, the blend having been previously granulated, to make ski soles in

which the surface intended to contact the snow is absolutely smooth.

5 The ski sole thus formed generally receives, cemented thereto on the surface away of the tread surface, a layer of fabric whereby the ski sole is fixed to the ski body with an adhesive.

10 According to the present invention it has now been found and quite surprisingly, that, as compared with a smooth tread surface of the kind specified above, it becomes possible to obtain characteristics of a well more satisfactory hold of the ski during the forward thrust stage and even improving the slipping and the speed of the ski when the thrusting force is released, using for the ski sole surface a slab made of a blend of acetal resin an fluorocarbonic resin, characterized in that it is
15 so formed that on its tread surface a plurality of empty spaces is scattered which have, preferably, such a depth and such a diameter as to be substantially shallower than the tread sole thickness.

20 According to the invention, the shaping of a slab having such properties is carried out by a method which is characterized by comprising the steps of blending in the solid state said acetal resin with said fluorocarbon resin until obtaining a blend in which the two resins are
25 but partially dispersed the one in the other heat treating said blend to originate granules and subjecting them to molding by extrusion or calendering to provide the finished slab.

Mainly because of the only partial dispersion of one resin into the other in the initial stage of preparation of the blend, it becomes surprisingly possible to achieve the final effect of obtaining, in the molding stage, the formation, without any further expedients, a slab on the surface of which a continuous array of extremely tiny hollow spaces is scattered, so as to obtain a ski tread surface having the expected ideal properties.

In order that the features and the advantages of the invention may be best understood, an example of reduction to practice thereof will be described hereinafter, without limitation, reference being had to the Figures of the accompanying drawing.

In the drawing:

Figure 1 is a perspective view, partly in cross-section of the ski sole according to the invention, as applied to a ski, and

Figure 2 shows a cross-sectional closeup of a ski sole made according to this invention.

EXAMPLE

80% by weight of a natural acetal resin, without any filler, in granular state, and 20% of powdered polytetrafluoroethylene are charged into a centrifugal blender, in the interior of which a certain degree of moisture is maintained, quite preferably.

The blending conditions are as follows: maximum temperature 70°C, rotational speed, selected in the range between 1800 and 3500 RPM approximately.

After a time which can be varied appropriately, a blend is withdrawn in which the granules of the acetal resin and powder are only partially dispersed the ones into the other and, more particularly the powder does not coat the granules evenly, but, rather, in a somewhat irregular and discontinuous way.

This blend so formed is fed to an extruder to give, at the outset, a granulation of the blend: the granules thus obtained are then sent to molding through the extruder die, wherefrom a continuous slab of the blend is withdrawn.

The extrusion temperature is comprised between 180°C and 220°C.

After an appropriate cooling, the slab is in readiness for being applied as a ski tread surface according to what is diagrammatically depicted in Figure 1. With reference to that Figure, a ski sole 11 made according to the invention is conventionally applied to a ski 12 with the intermediary of a supporting member 13, for example a layer of fiberglass fabric on which an adhesive 14 has been spread.

According to the process of this invention, the ski sole 11 exiting the extruder exhibits in correspondence with the surface 15 intended to be the tread surface of the ski, a plurality of empty spaces 16 closely and randomly scattered on the surface 15 in question.

The depth and the diameter of the hollow spaces 16 are at any rate substantially less than the thickness of

the ski sole 11.

The formation of the hollow spaces 16 is principally originated, as outlined above, to the only partial blending of the two resins in the initial stage of the process, which is cause by the low centrifugation speed and the comparatively low temperature, and, in part, also to the presence of moisture in the blender, so that the granule of the acetal resin cannot become intimately admixed with the powder of fluorocarbon resin, so that a blend which is not absolutely homogeneous is produced, when the granules of the blend with such a physical characteristic flows through the extrusion die, a slab having a coarse physical structure is produced due to the presence of the hollow spaces as shown in the drawing.

From field tests of application of the ski sole thus obtained, it has been found that the hold and the adherence of the ski during the thrust stage is considerably improved over that of a known ski sole of the same kind of blend but having a smooth tread surface finish, and this advantage of the ski sole according to the invention is associated also to an improved sliding ability and speed when the ski is caused to step forward.

The plastics material slab produced according to the invention can be used as a tread surface also in applications other than those exemplified above and specific for the application in the ski field.

One can imagine, for example, to uses such as tread surfaces in footwear soles intended to contact wet sur-

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faces, also other than the snowy ones and in which, at any rate, properties are called for such as a swift sliding forward when the thrust is released and a satisfactory adherence and holding ability in the rest stage in order to produce such a thrust.

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CLAIMS:

1. A slab produced by molding a blend of an acetal resin with a fluorocarbon resin adapted to provide a tread surface, more particularly a ski sole, characterized in that it has on the surface intended to act as the tread surface a plurality of hollow spaces.

2. A slab according to claim 1, characterized in that said hollow spaces have a diameter and a depth substantially less than the thickness of the slab and distributed with a high closeness on said surface.

3. A process for the shaping of a slab according to claim 1, characterized in that it comprises the steps of blending said acetal resin with said fluorocarbon resin, to be introduced in a blender in the solid state, until obtaining a blend in which the two resins are only partially dispersed the one into the other, shaping in the hot condition granules of said blend and subjecting said granules to molding by calendering or extrusion to give the finished slab.

4. A process according to claim 3, characterized in that said blending stage of the two resins takes place by centrifuging under controlled speed and at a temperature equal to or lower than 70°C.

5. A process according to claim 3, characterized in that said blending stage is carried out on a granulated acetal resin and a powdered fluorocarbon resin, in the presence of moisture.

6. A finished article such as a ski or an article of footwear comprising a slab according to Claim 1 for use as a tread surface.

Fig.1

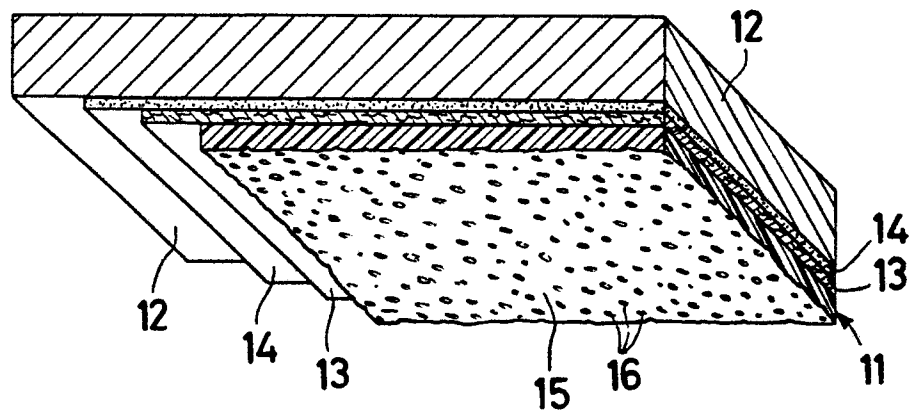
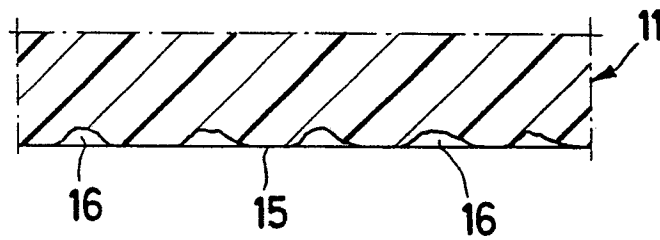


Fig.2





European Patent
Office

EUROPEAN SEARCH REPORT

0083948

Application number

EP 83 20 0007

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A	AT-A- 338 147 (MÜLLER) *The whole document*	1,6	A 63 C 5/12 A 63 C 7/06
A	FR-A-2 259 629 (BUTTNER) *Figure 10; page 7, lines 8-11*	1,6	
A	DE-A-2 949 688 (WODITSCH) *Figure 3; page 8, paragraph 2*	1,6	
A	EP-A-0 033 864 (VÖLKL)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
			A 63 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17-03-1983	Examiner SCHLESIER K.G.W.P.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			