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(54) Curtain rail and method of its manufacture.

(57) The invention relates to a curtain rail (1,2), for instance made of metal with a muffled layer, which rail is provided with a slit (8) through which rolling or sliding devices can be introduced, and optionally across the slit (8) and adjacent to it with reinforcing ribs (6), while the rail in accordance with the invention is provided with a friction reducing layer (12), made of unpigmented polyvinyl chloride, a silicone or polytetrafluoroethylene.

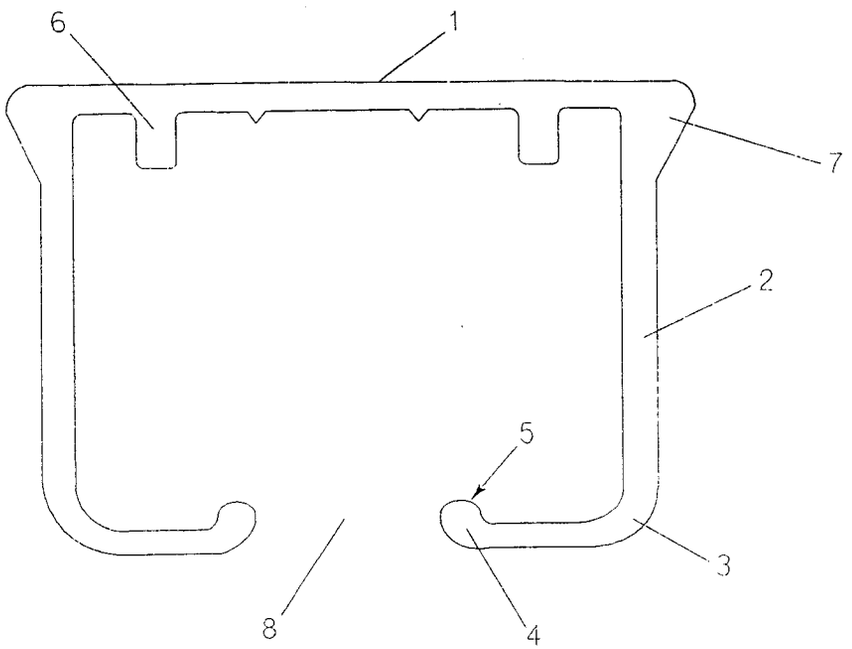

FIG. 1

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The invention relates to a curtain rail consisting of a profile provided with a slit for allowing passage to curtain hanging devices, and next to said slit a space for receiving sliding or rolling parts of the curtain hanging devices.

Such curtain rails are known in many embodiments.

The shape of the profile is dependent on the curtain hanging devices used. Said devices may be provided with rolling parts in the shape of running wheels, often referred to as runners, or with sliding devices, often made of synthetic material.

Furthermore, there are curtain hanging devices that are to be inserted at the end side of the rail, in no way being allowed passage through the slit, and curtain hanging devices that can be inserted through the slit. Of the latter kind there exist two main variants, i.e. those that are resilient when passed through the slit, and the embodiment which provides that the curtain hanging devices can be inserted into the slit in one position only and, after having been turned, usually at a right angle, obtain the operating position which prevents passage through the slit.

It is not unusual that at the part which extrudes the slit, curtain hanging devices are fitted with a restraining or stopping part that prevents the hanging device from entering the slit too deeply, as a result of which it may take an uncontrolled position, which may lead to irregularities.

The way a curtain is drawn along a curtain rail often consists of grabbing the curtain itself or else the curtain cord. In that case the force exerted on the curtain is often not parallel to the curtain surface, transverse forces being exerted instead.

Sometimes a curtain hanging device becomes out of alignment, as a result of which it gets more or less stuck.

The aforementioned effects may give cause for friction when the various types of curtain hanging devices are used. Once friction has occurred, it may lead to the first hanging device taking a wrong position, resulting in an increase of the resisting force already experienced. Due to the resisting force and the normal reaction thereto, being tugging, not only the curtain can be damaged, like a hanging device becoming disengaged, but abrasion of the rail may also occur, in particular abrasion of a possible coat of varnish. In practice this shortens the life of the rail, because repainting with a mechanically sufficiently strong paint is very difficult, in which case it should be kept in mind that the original coat of varnish often is obtained by applying powder, for instance by means of electrostatic spraying, followed by heating the rail carrying the coat of powder until the latter is burned in, creating a tightly sealed layer.

The invention aims at eliminating the aforementioned disadvantages of friction, including the abrasion mentioned above, or at any rate
at reducing them.

A friction reducing layer for a curtain rail as mentioned above, is per se known from the Netherlands's patent application NL-A-7603170 or the corresponding Austrian patent specification AT-B 350211, in which on an extruded profile of synthetic material, such as, amongst other, things polyvinyl chloride, simultaneously with the extrusion of the profile a coat with high sliding properties of polyester, polyamide - 11, polyamide - 12, chlorinated poly-ethylene or chlorinated polypropylene is extruded as well.

From Week 8622, april 19, 1986, Derwent Publications Ltd., London, Great Britain; AN 86 140 892 & JP, A, G 1076 594 (KITAMURA) is furthermore known the friction reduction of the surface of a moulded plastic product, which can be made, amongst other things, of polyvinyl chloride, by applying an aq. dispersion of an F- containing resin, optionally in the presence of silicone, and by removing said layer by washing or wiping.

The invention aims at providing a friction reducing layer, which can be easily applied, also on metal or a muffled layer, withstands abrasion and does not affect the exterior or colour of the rail.

To this end the invention provides that the antifriction layer consists of one of the materials belonging to the group polyvinyl chloride, a silicone and polytetrafluoroethylene.

A surface layer is defined as a layer that is located on the outside of the profile, but also around and in the space to which the slit gives access. The layer is preferably made of polyvinyl chloride, which, when warm, can be easily applied in a sufficiently thin layer. Thus very good results have been achieved with polyvinyl chloride, namely such a thin layer that it is virtually invisible, and, moreover, a clearly noticeable reduction of friction. Curtain rails are usually located direct over heating radiators, thus in the warmest places of a room or space. It has been found, however, that even under those circumstances the layer remains smooth and does not become sticky. An other group of synthetic materials with friction reducing properties is constituted by silicones. These, however, may become somewhat sticky in a warm place.

A very strong and highly friction reducing synthetic material is polytetrafluoroethylene. It is more expensive and more difficult to apply than polyvinyl chloride and is, therefore, in the first place to be considered for 'heavy duty' cases, such as a heavy curtain that frequently has to be drawn.

The invention is particularly of use when, in a way known per se, the profile wall adjacent to the slit has been rounded off and has been slightly

bent inward. In that case the weight of the curtain will be entirely on the rounded edges adjacent to the slit, thus on a small surface. It has been observed that also in that case a polyvinyl layer is highly abrasion-resistant and friction reducing.

A curtain rail is preferably provided with reinforcing ribs. When, however, such ribs come into contact with the curtain hanging devices, this may easily lead to abrasion and thereafter to increasing friction. In applying the invention this disadvantage is reduced to a high degree. A further embodiment of the invention accordingly provides that the profile has inward sticking ribs across the slit that are positioned in the width direction beside the slit.

An effective method of manufacturing a curtain rail in accordance with the invention is constituted in that the rail is vertically immersed into thin liquid thermoplastic synthetic material, lifted out of the liquid, made to drip dry at or approximately at the temperature of the liquid and is cooled down afterwards.

In practice this can be effected by hanging the rail lengthwise in a deep container filled with liquid thermoplastic synthetic material and subsequently by withdrawing it relatively slowly. The part that has just left the liquid is still warm and is therefore capable of dripping dry satisfactorily. When the entire rail has been lifted out of the liquid, only the bottom part is left to drip dry, whereas the upper part has already cooled down.

A rail thus coated with polyvinyl chloride has a layer of said synthetic material that is so thin (in quantities of tenths of millimetres) that little material is used, which limits the cost as well. These cost are certainly low compared to the cost of the finishing process, which is usually carried out prior to applying the coat in accordance with the invention. For a rail made of aluminum the finishing consists of hardening the strangpressed rail, degreasing it, chromatizing it as a protection against oxidation and to prevent deposit in moist surroundings, applying a powder coating at the inside and outside of the rail by means of electrostatic spraying and muffling it. Such a muffled layer may be smooth, but considerably less so than, for instance, a layer of polyvinyl chloride.

The invention will hereinafter be further explained, reference being made tot the drawing where:

fig. 1 shows a cross section of a curtain rail according to the invention; and

fig. 2 schematically shows the layering structure thereof.

In fig. 1 a cross section of a curtain rail is shown with a body 1 and upright legs 2. The legs are bent inward at their ends and thus form flanges 3 which have a bending and thickening 4 at their ends adjacent to the slit 8, which form supporting ridges 5 at the inside of the profile. Reinforcing ribs 6 reinforce the body 1, in which case it is irrelevant whether they come into contact with runners or sliding devices that are not drawn, because said ribs are coated with a protecting, friction reducing layer. The thickenings 7 between the body 1 and the legs 2 likewise serve as reinforcement.

In fig. 2 the aluminum of the rail is indicated by 9, the chromatized film by 10, the muffled layer by 11 and the layer according to the invention by 12. For the sake of clarity 10 and 12 are proportionally drawn too wide.

Claims

1. Curtain rail consisting of a profile provided with a slit for allowing passage to curtain hanging devices, and next to said slit a space for receiving sliding or rolling parts of the curtain hanging devices, which curtain rail is coated with an antifriction layer **characterized in that** the antifriction layer consists of one of the materials belonging to the group polyvinyl chloride, a silicone and polytetrafluoroethylene.

2. Curtain rail as claimed in claim 1 **characterized in that** the antifriction layer is unpigmented.

3. Curtain rail as claimed in claims 1 or 2, **characterized in that** the profile is made of aluminum.

4. Curtain rail as claimed in claims 1,2 or 3, **characterized in that** the profile is coated with a muffled coat of varnish.

5. Curtain rail as claimed in any of the preceding claims, **characterized in that** the profile wall adjacent to the slit has been rounded of (5) and has been slightly bent inward.

6. Curtain rail as claimed in any of the preceding claims, **characterized in that** the profile has inward sticking ribs across the slit that are positioned in the width direction beside the slit.

7. Method of manufacturing a curtain rail as claimed in claim 1, **characterized in that** the rail is vertically immersed into thin liquid poly vinyl chloride, lifted out of the liquid, made to drip dry at or approximately at the temperature of the liquid and is cooled down afterwards.

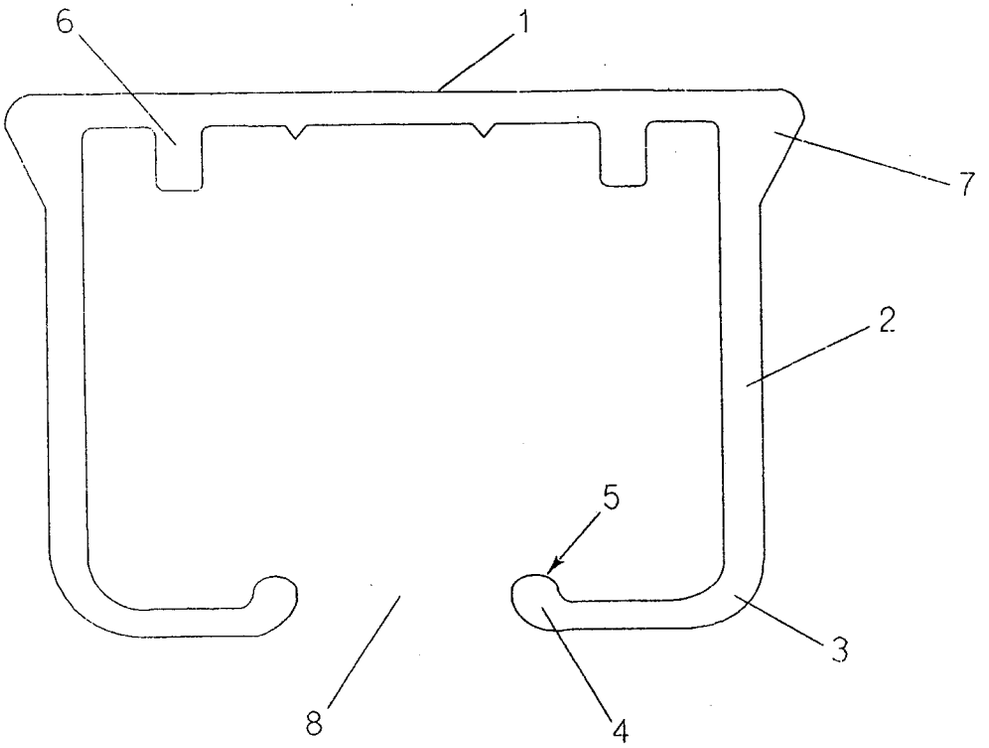

FIG. 1

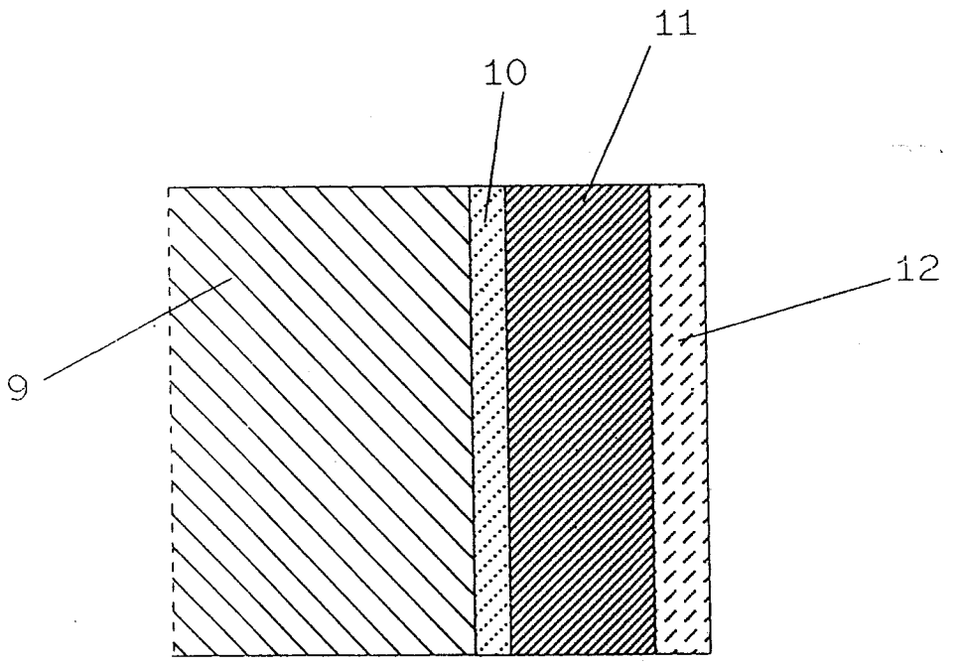

FIG. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 93 20 3043

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.5)
D,Y	AT-A-350 211 (SCHOCK & CO GMBH) * page 3, line 4 - line 25 * ---	1,2	A47H1/04
Y	DE-A-20 55 461 (SCHADE) * page 1, line 1 - line 3 * * page 3, line 4 - page 4, line 1 * * page 6, line 9 - line 22 * * claims 1-3,7; figures 1,4 * ---	1,2	
Y	DE-B-12 29 255 (STÖRZBACH) * column 1, line 1 - line 22 * * column 2, line 16 - line 27 * * column 3, line 5 - line 19; figures 15,16 * ---	1,3	
Y A	DE-A-30 42 603 (WALTER HEBEL GMBH & CO) * page 3, line 1 - page 4, line 11 * ---	1,3 7	
A	DE-A-14 04 030 (FRÖHLER) * the whole document * ---	1,3,7	
A	GB-A-2 028 637 (BURNS) * page 1, line 70 - line 92 * * page 1, line 115 - line 124; figure 2 * ---	1,3,5	TECHNICAL FIELDS SEARCHED (Int.Cl.5) A47H
A	FR-A-1 476 717 (GAILLEDRAT) * page 2, left column, line 10 - line 26; figure 1 * ---	5,6	
A	FR-A-1 321 572 (ATELIERS SAVIGNY) * page 1, left column, line 38 - right column, line 7; figure 1 * --- -/--	6	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	3 February 1994	Porwoll, H

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EUROPEAN SEARCH REPORT

Application Number
EP 93 20 3043

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.5)
D,A	DATABASE WPI Week 8622, 19 April 1986 Derwent Publications Ltd., London, GB; AN 86140892 & JP-A-61 076 594 (KITAMURA) * the whole document * -----		

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

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THE HAGUE	3 February 1994	Porwoll, H

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