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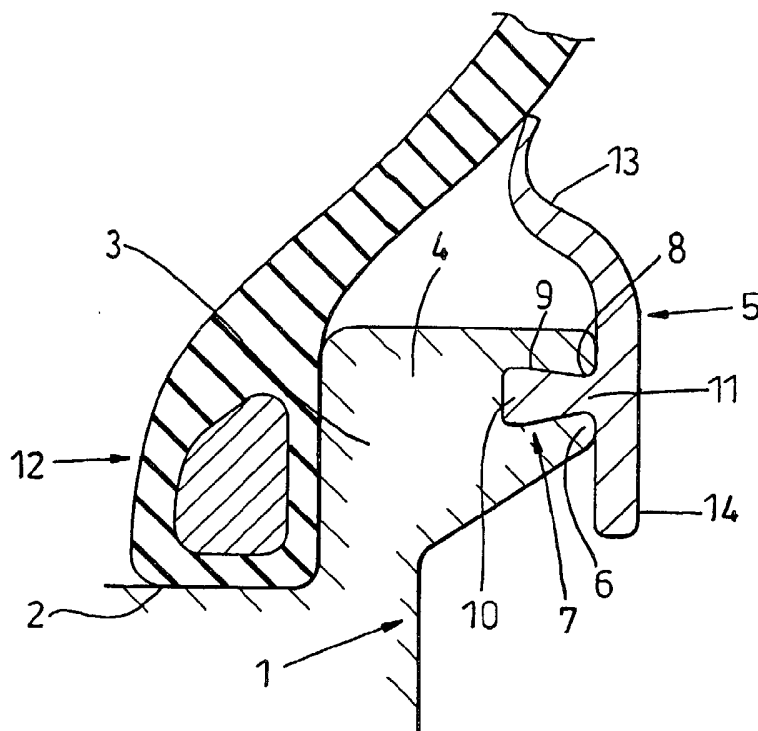
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(54) Title: A WHEEL RIM ASSEMBLY



(57) Abstract: A wheel rim assembly comprises a wheel rim (1) to which is fitted a decorative or protective trim (5). The wheel rim (1) defines a tyre supporting rim (2) and a radially extending side flange (3) that terminates in an outwardly extending annular lip (4). The trim (5) substantially covers the outward facing surface (6) of the lip (4). Either the outward facing surface (6) of the lip (4) or the apposed surface of the trim (5) is provided with a projecting portion (10) that is fitted in a complementarily-shaped groove (7) defined by the other.



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A WHEEL RIM ASSEMBLY

The present invention relates to a wheel rim assembly incorporating a protective trim for the wheel rim and also to
5 the trim for use in such an assembly.

Alloy wheel rims for automobiles are expensive accessories which can be easily damaged if the wheel of the vehicle strikes or grazes a kerbstone or other similar
10 obstruction. Protective wheel trims are known which can be fitted to a wheel assembly to cover the annular edge of a wheel rim. These trims may be provided solely for aesthetic reasons but some also provide some degree of protection to the edge of the wheel rim. However, many of them suffer from
15 the disadvantage that they interfere with the fitting of the tyre to the rim and some affect the sealing fit between the tyre and the wheel rim. Such interference may be dangerous if the seal is in danger of being breached and as a consequence may contravene national and international standards which
20 control the interface between automobile tyres and their rims for safety reasons.

The object of the present invention is to provide a wheel rim assembly which incorporates a protective trim that
25 does not interfere with the aforesaid interface and which will provide some degree of protection for the wheel rim against impact damage.

According to a first aspect of the present invention
30 there is provided a wheel rim assembly comprising a wheel rim defining a tyre supporting rim and a radially extending side flange that terminates in an outwardly extending annular lip, the lip defining an annular groove, and a trim which substantially covers the outward facing surfaces of the lip,
35 one of the outward facing surface of the lip and the apposed surface of the trim being provided with a projecting portion

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that is fitted in a complementarily-shaped groove defined by the other.

Preferably, the groove is defined by the outward-facing
5 surface of the lip and the trim comprises the projecting portion.

Preferably also, the trim comprises an annular strip, one face of which defines the projecting portion.

10

Preferably also, the trim is comprised of a resilient, elastomeric material.

Preferably also, the trim is comprised of a resilient
15 polymer reinforced with a short-strand fibre material.

Preferably also, the projecting portion of the trim comprises a bulbous or wedge-shaped projection with a narrower neck, the trim being push-fitted into the groove.

20

Preferably also, the trim comprises an outer radial portion in the form of a flexible flap that in use presses against an adjacent portion of a tyre wall.

25 Preferably also, the trim comprises an inner radial portion that overlaps an inner edge of the lip.

Preferably also, the apposed surfaces of the trim and the lip of the wheel rim adjacent the groove are secured
30 together by means of an adhesive.

Alternatively in a second embodiment, the trim comprises a hardened inserted edge for the lip of the wheel rim.

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Preferably, the groove is defined in an radially outward facing surface of the lip to provide a positive geometrical retention of the trim.

5 Preferably also, the trim comprises a stainless steel annulus which is cast or swaged *in situ*. Alternatively, the trim comprises a stretch-on resilient, reinforced polymer trim.

10 According to a second aspect of the present invention there is provided a trim for use in the assembly according to the first aspect of the invention.

15 The present invention will now be described by way of example with reference to the accompanying drawing, in which:-

20 Fig. 1 is a sectional view of a first embodiment of wheel assembly according to the invention; and

 Fig. 2 is view similar to Fig. 1 but of a second embodiment of assembly.

25 A wheel assembly of a vehicle, as shown in the drawing, comprises a wheel rim 1 defining a tyre supporting rim 2 and a radially extending side flange 3 that terminates in an outwardly extending annular lip 4. A trim 5 is secured to the wheel rim 1 to cover and thereby provide a degree of protection for the lip 4 as will now be described.

30 In a first embodiment as shown in Fig. 1, the lip 4 comprises an outwardly extending annular ridge defining an outward annular face 6 that is covered by the trim 5. The face 6 defines a re-entrant annular groove 7 with a narrow neck 8 and wider main cavity 9. The trim 5 comprises an
35 annular strip, one face of which defines a projecting portion

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10 of complementary shape to that of the groove 7. The trim 5 is made of a resilient material so that it can be secured to the lip 4 by push-fitment of the projecting portion 10 into the groove 7. In order to ensure a tight fit, preferably the
5 projecting portion 10 comprises a bulbous or wedge-shaped projection with a narrower neck 11, the groove 7 being an exact complementary shape.

As an additional means of securement, the touching
10 surfaces of the trim 5 and the annular face 6 of the lip 4 adjacent the groove 7 are secured together by means of an adhesive.

In order to prevent the ingress of dirt between the
15 wheel rim 1 and a tyre 12 fitted thereon, the trim 5 comprises an outer radial portion in the form of a flexible flap 13 that presses against an adjacent portion of the tyre wall.

20 In order to completely protect the outward annular face 6 of the rim, an inner radial portion 14 of the trim overlaps the inner edge of the face 6.

Preferably, the trim 5 is comprised of a resilient,
25 elastomeric polymer, that for aesthetic purposes may be coloured or filled with a bright metal powder. It may also be reinforced with a short-strand fibre material such as fibre glass.

30 It will be appreciated that the trim 5 will protect the underlying wheel rim from damage caused by minor impacts. Should the trim 5 itself become damaged, then it can be pulled off the rim and a replacement fitted without affecting the fitting of the tyre 12.

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Turning now to Fig. 2, in a second embodiment the wheel rim 1 again defines a tyre supporting rim 2 and a radially extending side flange 3 that terminates in an outwardly extending annular lip 4 covered by trim 5. However, in this
5 embodiment the trim 5 effectively forms an inserted edge for the lip 4.

The lip 4 defines an annular groove 7 that is formed in a radially outward facing surface 15 of the lip 4 in order to
10 provide a positive geometrical retention of the trim 5. However, it will be appreciated that the annular groove could be defined in the insert and the lip 4 would then comprise a projecting portion of complementary shape.

15 As in the first embodiment, the trim 5 may comprise a resilient, reinforced polymer. Such a trim 5 is fashioned into an annulus that is stretched-on over the projecting lip 4. An adhesive may be used as an additional form of securement.

20

As in the first embodiment, if the trim 5 is made from a polymeric material, it will protect the underlying wheel rim 1 from damage caused by minor impacts and can be readily replaced should it be damaged without affecting the fitting of
25 the tyre 12.

Alternatively, however, the trim 5 may comprise a stainless steel annular ring which is cast or swaged *in situ* on the lip 4. In this case, the trim 5 becomes an integral
30 protective part of the wheel rim 1 and is not intended for separate replacement.

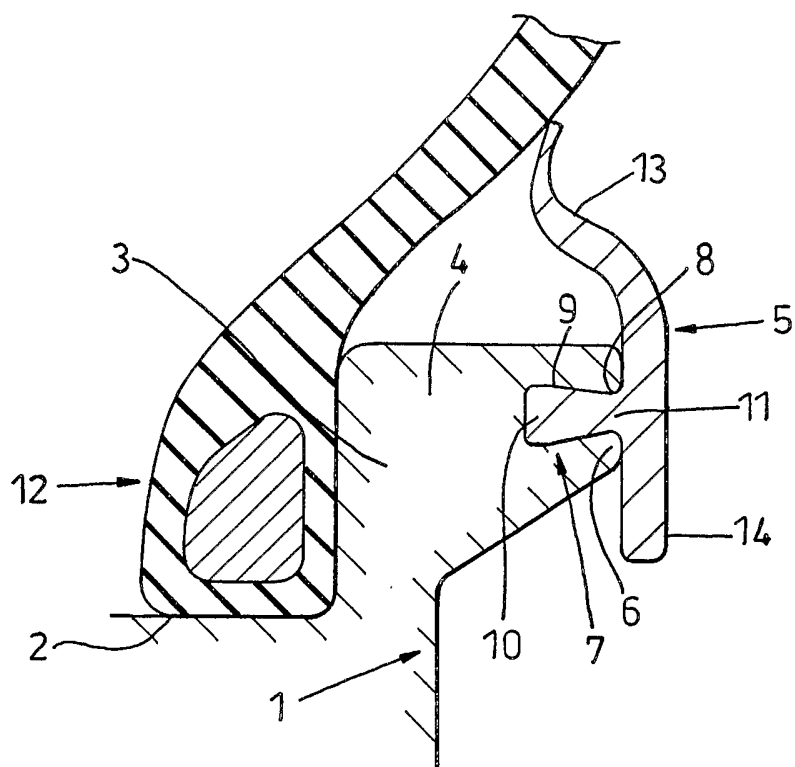
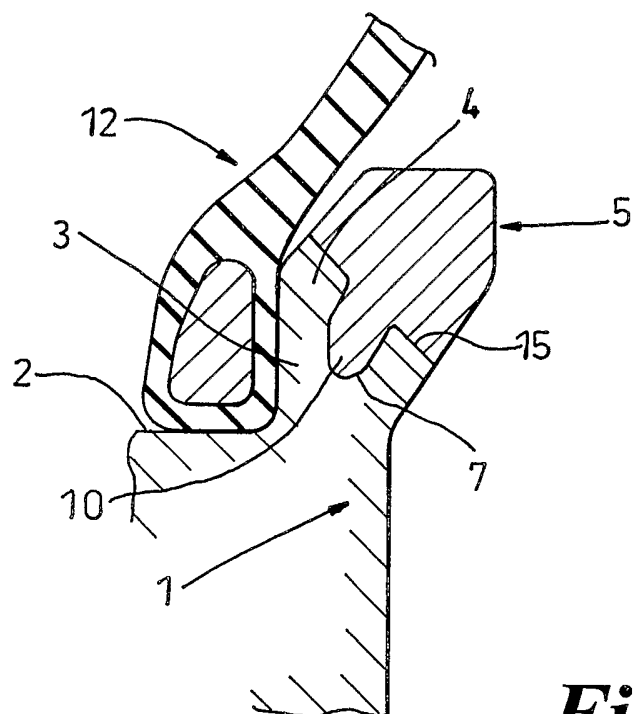
CLAIMS

1. A wheel rim assembly comprising a wheel rim defining a tyre supporting rim and a radially extending side flange
5 that terminates in an outwardly extending annular lip, the lip defining an annular groove, and a trim which substantially covers the outward facing surfaces of the lip, one of the outward facing surface of the lip and the apposed surface of the trim being provided with a
10 projecting portion that is fitted in a complementarily-shaped groove defined by the other.
2. An assembly as claimed in Claim 1, wherein the groove is defined by the outward-facing surface of the lip and the
15 trim comprises the projecting portion.
3. An assembly as claimed in Claim 2, wherein the trim comprises an annular strip, one face of which defines the projecting portion.
20
4. An assembly as claimed in Claim 2 or Claim 3, wherein the projecting portion of the trim comprises a bulbous or wedge-shaped projection with a narrower neck, the trim being push-fitted into the groove.
25
5. An assembly as claimed in any of Claims 1 to 4, wherein the trim comprises an outer radial portion in the form of a flexible flap that in use presses against an adjacent portion of a tyre wall.
30
6. An assembly as claimed in any of Claims 1 to 5, wherein the trim comprises an inner radial portion that overlaps an inner edge of the lip.
- 35 7. An assembly as claimed in any of Claims 1 to 6, wherein the apposed surfaces of the trim and the lip of the

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wheel rim adjacent the groove are secured together by means of an adhesive.

8. An assembly as claimed in any of Claims 1 to 3, wherein
5 the trim comprises a hardened inserted edge for the lip of the wheel rim.
9. An assembly as claimed in Claim 8, wherein the groove is defined in an radially outward facing surface of the lip
10 to provide a positive geometrical retention of the trim
10. An assembly as claimed in Claim 8 or Claim 9, wherein the trim comprises a stainless steel annulus which is cast or swaged *in situ*.
15
11. An assembly as claimed in any of Claims 1 to 9, wherein the trim is comprised of a resilient, elastomeric material.
- 20 12. An assembly as claimed in any of Claims 1 to 9, wherein the trim is comprised of a resilient polymer reinforced with a short-strand fibre material.
13. An assembly as claimed in Claim 11 or Claim 12, wherein
25 the trim comprises a stretch-on resilient, reinforced polymer trim.
14. A trim for use in the assembly as claimed in any of Claims 1 to 13.
30

***Fig. 1******Fig. 2***

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B60B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 93 07012 A (HEYKING GMBH) 15 April 1993 (1993-04-15) page 7, line 22 - page 10, line 14; figures	1-4,8,11
X	US 3 891 276 A (SPISAK EDWARD G) 24 June 1975 (1975-06-24) column 1, line 31 - column 2, line 19; figures	1,2,4
X	US 5 967 212 A (HAMEED HAFEEZ) 19 October 1999 (1999-10-19) column 3, line 29 - column 4, line 22; figures	1,9
X	DE 44 32 132 A (BBS KRAFTFAHRZEUGTECHNIK) 14 March 1996 (1996-03-14) figures	1
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☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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