



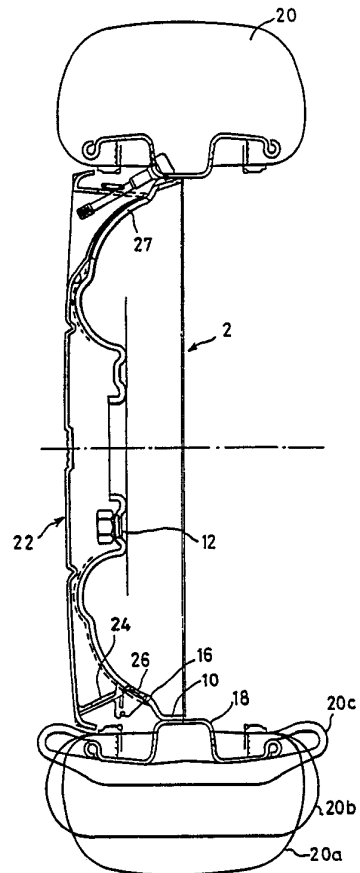
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/GB90/00780 (22) International Filing Date: 18 May 1990 (18.05.90) (30) Priority data: 8911724.6 22 May 1989 (22.05.89) GB (71) Applicant (for DE only): FORD WERKE A.G. [DE/DE]; Werk Koln-Niehl, Henry Ford Strasse, Postfach 60 40 02, D-5000 Koln 60 (DE). (71) Applicant (for ES JP only): FORD MOTOR COMPANY [US/US]; County of Wayne, Dearborn, MI 48120 (US). (71) Applicant (for FR only): FORD FRANCE S.A. [FR/FR]; B.P. 307, F-92506 Rueil-Malmaison Cédex (FR).</p>		<p>(71) Applicant (for all designated States except DE ES FR JP US): FORD MOTOR COMPANY LIMITED [GB/GB]; Eagle Way, Brentwood, Essex CM13 3BW (GB). (72) Inventor; and (75) Inventor/Applicant (for US only) : PETTY, David, John [GB/GB]; 30 Nursery Road, Hock End, Brentwood, Essex CM15 0HE (GB). (74) Agent: MESSULAM, Alec, Moses; A. Messulam & Co., 24 Broadway, Leigh on Sea, Essex SS9 1BN (GB). (81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent)*, DK (European patent), ES (European patent), FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), SE (European patent), US. Published <i>With international search report.</i></p>

(54) Title: A WHEEL COVER FOR A MOTOR VEHICLE WHEEL

(57) Abstract

A wheel cover (22) is mounted on a wheel through fixing legs (24) which engage in fixing holes (16) in the wheel spider (2). The fixing legs are a snug fit in the holes to prevent them moving radially. The legs are supported by a wire ring (28) which surrounds all the legs.



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A WHEEL COVER FOR A MOTOR VEHICLE WHEEL

This invention relates to a wheel cover for a motor
5 vehicle wheel, and to the combination of a motor vehicle
wheel and a wheel cover therefor.

It is known to secure wheel covers to vehicle wheels
using a friction type of grip. When the wheel cover
10 itself is made of plastics, then it has usually been
necessary to combine the plastics wheel cover with a
metal component or components to engage with the metal
wheel and to hold the cover in place.

15 In the case of full wheel covers, i.e. wheel covers
which completely cover the wheel, it is known to provide
axially directed legs extending inwardly from the cover
and which engage in an annular recess around the inner
face of the rim. A wire ring located radially inside the
20 legs can provide the necessary radial support for the
legs.

However with certain types of run-flat tyres which allow
the vehicle to be driven when the tyre is deflated, the
25 rim of the wheel is enclosed within the tyre, and it is
no longer possible to attach the wheel covers to the
rim. One object of the present invention is therefore to
provide a method of attaching a full wheel cover to a
wheel for a run-flat tyre, for example of the type
30 described in EP-B1-0 079 454.

According to the invention, there is provided a
combination of a motor vehicle wheel and a full wheel
cover for the wheel, the wheel comprising a spider and a
35 rim mounted around the spider, and the cover having an
outer face and an inner face with axially directed
resilient fixing legs on the inner face arranged to
locate in corresponding fixing holes in the spider to

hold the cover onto the wheel and supported by a wire ring positioned radially outwardly of the legs so that the cover can be snap-fitted on the wheel, wherein each leg has a foot which is a snug fit in its corresponding
5 fixing hole, and the engagement between each foot and its fixing hole is such that the foot cannot move to any substantial degree in a circumferential direction.

The invention also extends firstly to a wheel cover and
10 secondly to a wheel for use in the wheel/wheel cover combination set forth above.

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

Figure 1 is a rear view, partly cut away, of the spider of a wheel in accordance with the invention, omitting the wheel rim;

20

Figure 2 is a side view through a wheel and wheel cover in accordance with the invention;

Figure 3 is a rear view of a wheel cover in
25 accordance with the invention;

Figure 4 is a detail of one fixing foot; and

Figure 5 is a side view of part of the wheel cover in
30 accordance with the invention showing one fixing leg.

The spider 2 shown in Figure 1 is viewed from the rear side. The spider has an outer flange 10 on which a wheel rim will be welded. The rim however is omitted from
35 Figure 1, for the sake of clarity. Around an inner circumference, there are apertures 12 through which the wheel fixing studs are fitted. Around an outer circumference there are ventilation holes 14 and fixing

- 3 -

holes 16. As can be seen in Figure 1, the fixing holes 16 are generally square in form and extend through the material of the spider.

5 Figure 2 shows the entire wheel in cross section with the wheel rim 18, the spider 2 and a tyre 20 fitted on the rim.

At the bottom of Figure 2, the tyre profiles 20a (fully
10 inflated), 20b (partly deflated) and 20c, (fully deflated) are shown. The tyre profile 20c is the profile taken up when the wheel runs with a fully deflated tyre, and it will be seen that the tread of the tyre is supported against the rim 18.

15

A full wheel cover 22 is shown mounted on the wheel. The cover extends completely over the spider 2.

In order to hold the cover onto the spider, the cover
20 has a number of legs 24. Each leg has a foot 26, and these feet engage in the fixing holes 16 in the spider. The cover also has ventilation holes 27 which register with the ventilation holes 14 in the spider.

25 All the legs 24 are supported by a single wire ring 28 (Figure 3) which surrounds the legs and restrains them from moving in a radially outward direction.

Figure 4 shows the shape of the foot 26 and the shape of
30 the hole 16 in which it engages. The hole 16 is generally square, and the foot 26 has two flat side faces 30 and 32. The spacing between the side faces 30 and 32 is such that the foot can just fit between the sides of the hole 16. Because of the close fitting
35 nature of these parts, there can be no movement between the foot and the hole in a circumferential direction, and because there are fixing legs spaced all around the cover, limiting circumferential movement for each leg

results in the limiting or prevention of any overall radial movement of the entire cover.

Each leg 24 has a lug 34 which bears against the outside
5 of the spider and prevents the feet 26 from being pushed
right through the holes 16 in the spider.

In order to produce a snap-fitting engagement of the
cover onto the spider, the distance between the point 36
10 on one leg, and the corresponding position on a
diametrically opposite leg is slightly less than the
distance between the radially inner edges of a pair of
diametrically opposite fixing holes 16. As a result, in
order to simultaneously locate two diametrically
15 opposite fixing legs in the corresponding fixing holes,
the legs need to flex outwards to snap into the holes.
The legs are provided with reinforcing ribs 38 by which
they are connected to the cover 22, but in addition the
wire ring 28 which surrounds all the legs prevents
20 excessive distortion and supports all the legs against
each other.

The cover 22 has an in-turned radially outer flange 40
which is located, as can be seen in Figure 2, just
25 inboard of the tyre so as to form a neat finish to the
wheel. Even in the run-flat condition represented by
20c, the tyre will not come into contact with the cover,
and the cover will therefore still remain in position
even in the run-flat condition.

CLAIMS

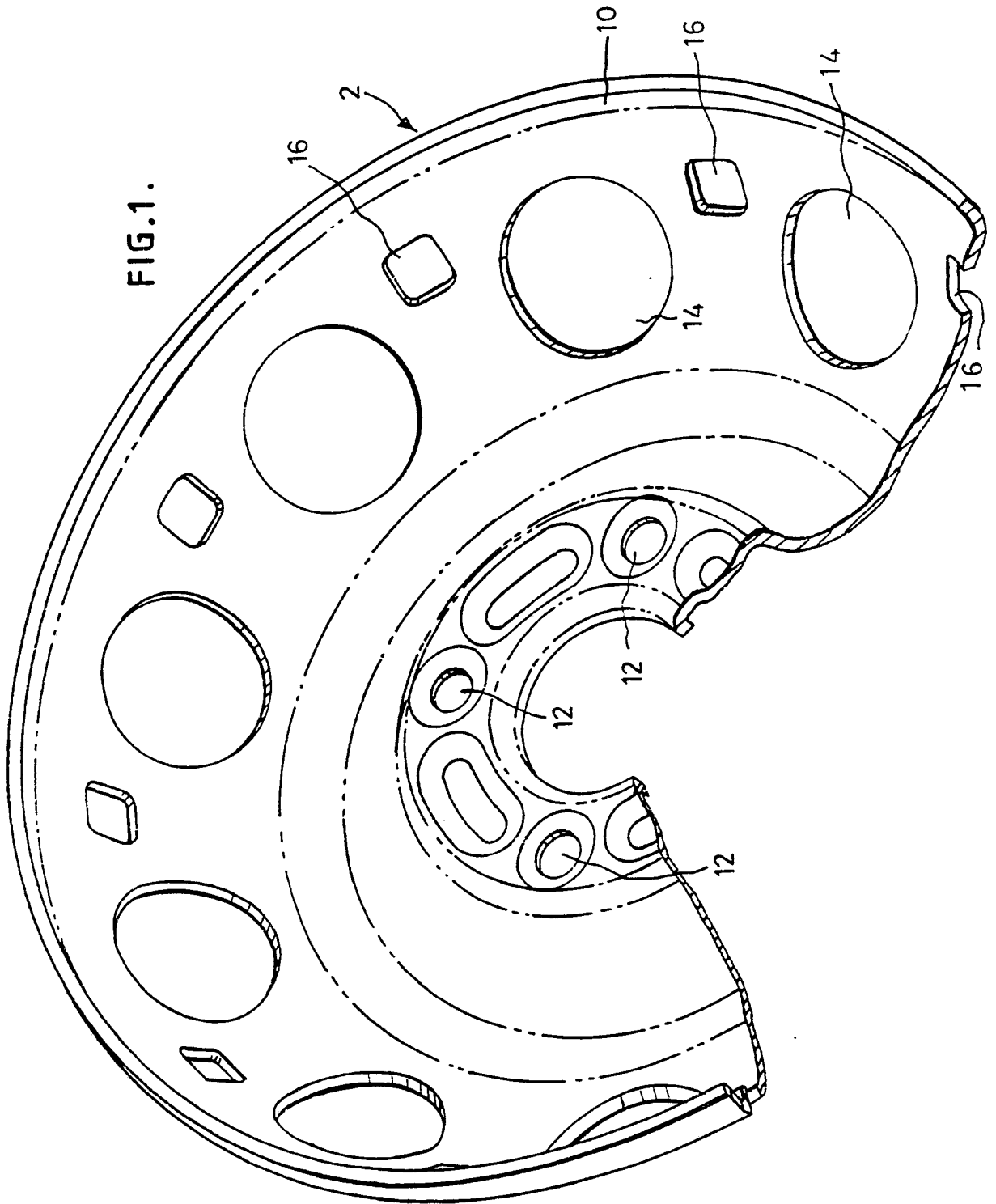
1. The combination of a motor vehicle wheel and a full
5 wheel cover for the wheel, the wheel comprising a spider
and a rim mounted around the spider, and the cover
having an outer face and an inner face with axially
directed resilient fixing legs on the inner face
arranged to locate in corresponding fixing holes in the
10 spider to hold the cover onto the wheel and supported by
a wire ring positioned radially outwardly of the legs so
that the cover can be snap-fitted on the wheel, wherein
each leg has a foot which is a snug fit in its
corresponding fixing hole, and the engagement between
15 each foot and its fixing hole is such that the foot
cannot move to any substantial degree in a
circumferential direction.

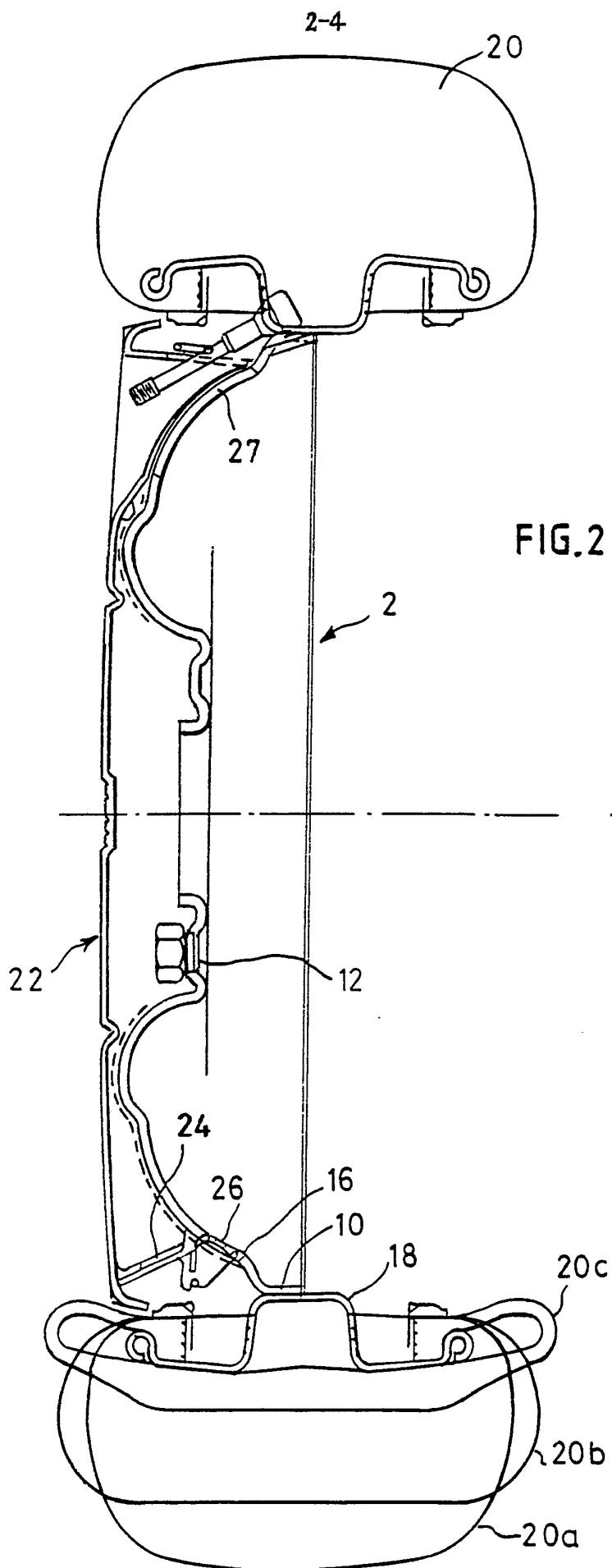
2. A wheel cover for use in the wheel/wheel cover
20 combination as claimed in Claim 1.

3. A wheel for use in the wheel/wheel cover combination
as claimed in Claim 1.

1-4

FIG.1.





3-4

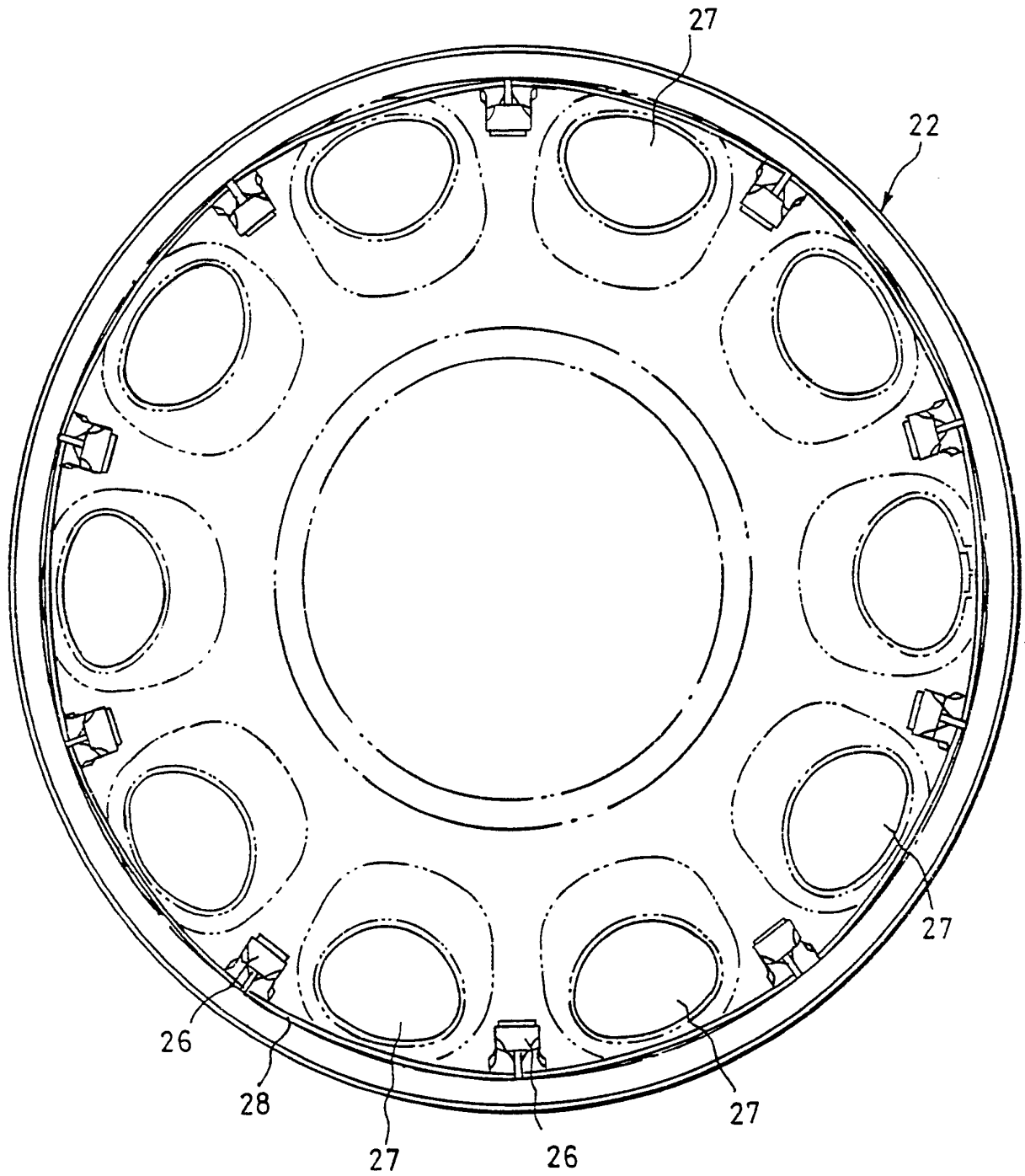


FIG.3.

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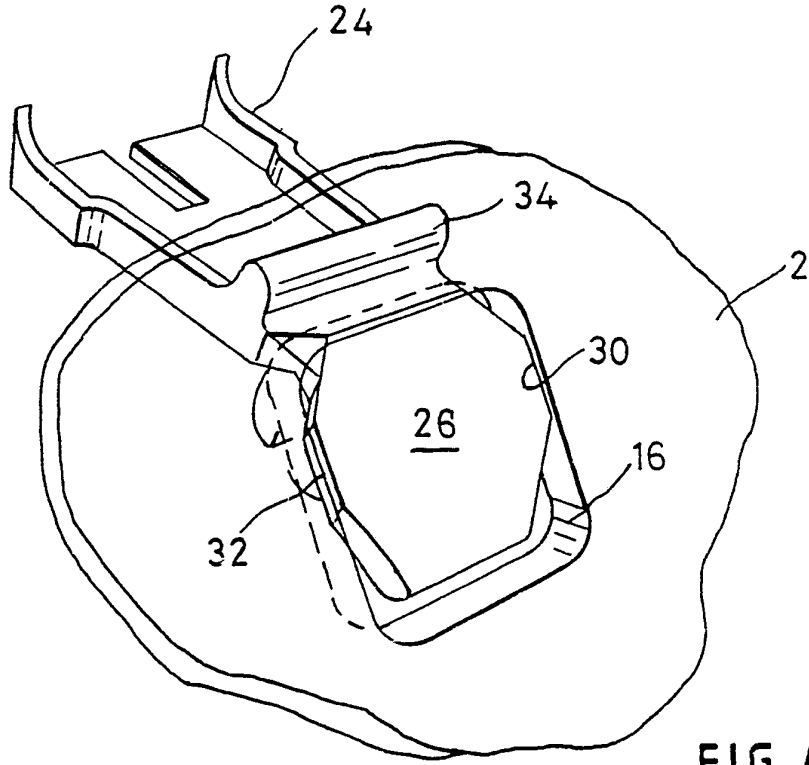


FIG. 4.

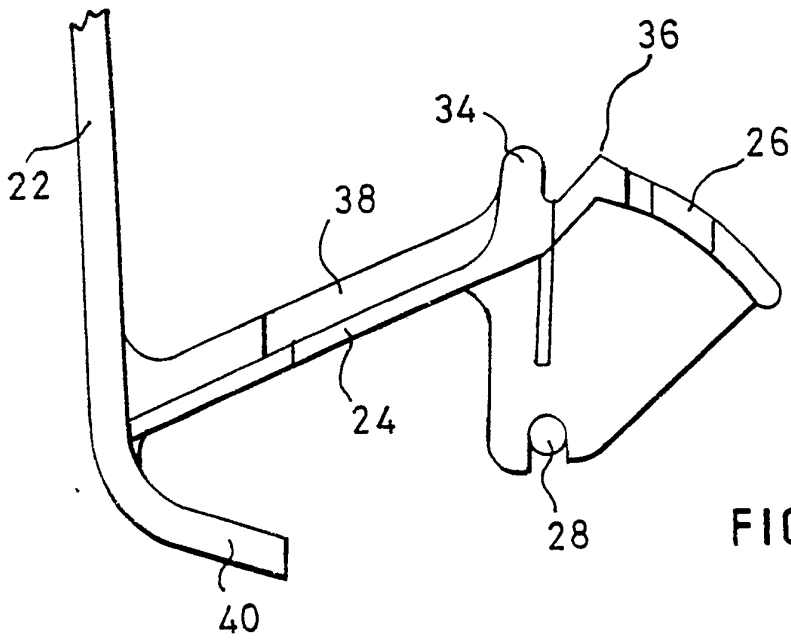


FIG. 5.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 90/00780

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)⁶
 According to International Patent Classification (IPC) or to both National Classification and IPC
 Int.Cl. 5 B60B7/08 ; B60B7/12

II. FIELDS SEARCHED

Minimum Documentation Searched ⁷	
Classification System	Classification Symbols
Int.Cl. 5	B60B

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched⁸

III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹

Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	DE,U,7613382 (KRONPRINZ) 26 August 1976 see page 2, lines 27 - 31; figure 1 ---	1, 2, 3
X	DE,A,3310708 (VOLKSWAGENWERK) 27 September 1984 see page 4, line 23 - page 5, line 13; figure 1 ---	1, 2, 3
Y	US,A,2157960 (LYON) 09 May 1939 see page 2, right-hand column, lines 60 - 72; figure 2 ---	1
Y	EP,A,0109939 (FIAT) 30 May 1984 see page 4, lines 2 - 7; figure 2 ---	1
A	US,A,2973226 (ELLIES) 28 February 1961 see column 4, lines 34 - 73; figures 2-6 ---	1, 2, 3
A	US,A,2306630 (LYON) 29 December 1942 see page 2, right-hand column, line 34 - page 3, left-hand column, line 26; figure 2 ---	1

¹⁰ Special categories of cited documents :

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IV. CERTIFICATION

Date of the Actual Completion of the International Search <p align="center">14 AUGUST 1990</p>	Date of Mailing of this International Search Report <p align="center">- 7. 09. 90</p>
International Searching Authority <p align="center">EUROPEAN PATENT OFFICE</p>	Signature of Authorized Officer <p align="center">AYITER I.</p>

ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.

PCT/GB 90/00780

SA 37377

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-U-7613382		None	
DE-A-3310708	27-09-84	None	
US-A-2157960		None	
EP-A-0109939	30-05-84	US-A- 4547021	15-10-85
US-A-2973226		None	
US-A-2306630		None	

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