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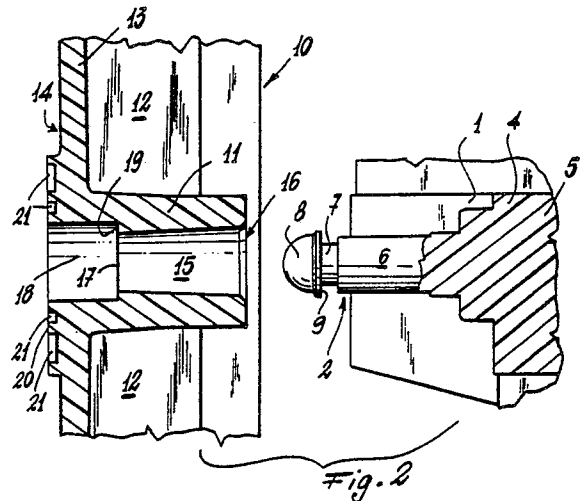
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Pivot-wheel coupling device for wheeled toys, particularly model automobiles.

A pivot-wheel coupling device for wheeled toys, particularly for model automobiles, comprising a pivot rigid with the automobile floor and having a preferably hemispherical head, and a wheel having a hub with a frusto-conical bore arranged to receive said pivot, and wherein the pivot comprises at the base of the head a collar of trapezoidal cross-section, the wheel comprising a cylindrical cavity into which the frusto-conical bore of the hub opens, said cavity having a diameter greater than the forward end of the frusto-conical bore to thus form a step against which the collar of trapezoidal cross-section abuts when the wheel has been coupled to the pivot.



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This invention relates to a device for coupling a pivot to a wheel in wheeled toys, particularly model automobiles. With particular but not exclusive reference to the field of model automobiles, such toy automobiles generally have their wheels snap-mounted onto pivots rigid with the floor of the toy.

Such a pivot-wheel coupling device is cheap to manufacture and assemble, but it is also relatively easy to separate the parts. This can be a problem if the child playing with the model automobile is particularly young because of his known tendency to place every toy in his mouth. If he places a wheel of the model automobile in his mouth he needs to exert only minimum force to separate it from its pivot and then swallow it with the risk of suffocation.

It is desirable - and in some countries a legal requirement - that the force which has to be applied to the wheel to remove it from its pivot is so high as to make it impossible for a young child to separate the parts.

For this reason there exist on the market devices for coupling a wheel to a pivot which make this separation difficult, but which are not totally successful in overcoming the aforesaid problems.

The object of the present utility model is therefore to provide a pivot-wheel coupling device particularly for model automobiles, which offers high resistance to separation while enabling the wheels to be mounted on their pivots with the same ease as applies to the coupling devices which are already available commercially.

These and further objects which will be apparent to the expert of the art are attained by a coupling device particularly for model automobiles, comprising a pivot rigid with the automobile floor and having a hemispherical head, and a wheel having a hub with a frusto-conical bore arranged to receive said pivot, characterised essentially in that the pivot comprises at the base of a preferably hemispherical head a collar of trapezoidal cross-section, the wheel comprising a cylindrical cavity into which the frusto-conical bore of the hub opens, said cavity having a diameter greater than the forward end of the frusto-conical bore to thus form a step against which the collar of trapezoidal cross-section abuts when the wheel has been coupled to the pivot.

The present invention will be more apparent from the accompanying drawing, which is provided by way of non-limiting example and in which:

Figure 1 is an exploded view from above of a pivot-wheel coupling device for a model automobile constructed in accordance with the present utility model;

Figure 2 is a section to a considerably enlarged scale on the line II-II of Figure 1.

With reference to the figures, the model automobile comprises a floor 1 (only partly shown in Figure 1) carrying pivots 2 for coupling to the wheels of the model automobile. Figure 1 shows only a portion of the rear end of said floor, from which there extends a pivot 2 supported by an L-shaped bracket 3. Said pivot extends from that side 4 of said bracket which is orthogonal to the plane in which the floor 1 lies, a stiffening rib 5 being provided on the rear face of the side 4, which is the opposite face to that carrying the pivot. The floor 1, pivot 2, bracket 3 and rib 4 are constructed in a single piece by moulding.

Starting from the side 4 of the bracket 3, the pivot 2 comprises a shank 6 followed by a groove and supporting a hemispherical head. At the base of hemispherical head 8 and beyond the groove 7 there is a collar 9 of trapezoidal cross-section.

Said pivot 2 is arranged to cooperate with a wheel 10 having a hub 11 from which ribs 12 extend for stiffening a structure 13 which represents the wheel tyre on the outside 14 of the wheel.

The hub 11 comprises a frusto-conical bore 15 with its vertex opposite a flared mouth 16 into which the hemispherical head of the pivot 2 penetrates. The forward end 17 of said frusto-conical bore 15 opens into a cylindrical cavity 18 coaxial to said bore and having a greater diameter than said forward end 17 of the bore 15. In this manner a step 19 is formed, against which the collar 9 of trapezoidal cross-section rests when the wheel 10 has been assembled on the pivot 2.

Finally, on the outside 14 of the wheel 10 in proximity to the cavity 18 there is provided a projecting part 20 with recesses 21, to represent the rim of the wheel 10.

It will now be assumed that the wheel 10 is to be mounted on the pivot 2. During this mounting operation, the hemispherical head 8 of the pivot 2 penetrates into the frusto-conical bore 15 of the hub 11 and compels the collar 9, constructed of resilient material as are all the other parts described herein, to bend towards the groove of the pivot 2. When the hemispherical head 8 reaches the cavity 18 and the collar 9 emerges from the forward end 17 of the frusto-conical bore 15, said collar returns to its initial rest position as it is no

longer urged into a bent state, and thus abuts against the step 19 formed between the cavity 18 and the frusto-conical bore 15. The wheel 10 thus becomes locked on the pivot 2.

In carrying out the opposite procedure, is to remove the wheel 10 from the pivot 2, the collar 9 encounters the step 19 and provides resistance to removal. As the pulling force applied to the wheel 10 is increased, said collar 9 bends towards the hemispherical head in proportion to the applied force until completely reversed, and only then can the wheel 10 be removed from the pivot 2.

The described coupling device has high resistance to separation of the parts (more than 10 kg) while allowing simple assembly of the wheel 10 on the pivot 2 because of the shape of the collar 9 and the frusto-conical bore 15 through the hub 11.

The device can be applied, with functional results, in particular to injection moulded plastics parts of very small diameter and size.

Claims

1. A pivot-wheel coupling device for wheeled toys, particularly for model automobiles, comprising a pivot (2) rigid with the automobile floor (1) and having a preferably hemispherical head (1), and a wheel having a hub (11) with a frusto-conical bore (15) arranged to receive said pivot (2), and wherein the pivot (2) comprises at the base of the head (8) a collar (9) of trapezoidal cross-section, the wheel (10) comprising a cylindrical cavity (18) into which the frusto-conical bore (15) of the hub (11) opens, said cavity (18) having a diameter greater than the forward end (15) of the frusto-conical bore to thus form a step (19) against which the collar (9) of trapezoidal cross section abuts when the wheel (10) has been coupled to the pivot (2).

2. A device as claimed in claim 1, characterised in that said cylindrical cavity (18) is coaxial to the frusto-conical bore (15) of the hub (11).

3. A device as claimed in claim 1, characterised in that the pivot (2) extends from a side (4) of an L-shaped bracket (3) fixed to the floor (1) of the model automobile.

4. A device as claimed in claim 3, characterised in that said side (4) of said bracket (3) has a rib (5) on the opposite face to that from which the pivot (2) extends.

5. A device as claimed in claim 1, characterised in that the wheel (10) comprises ribs (12) which extend from the hub (11) to give rigidity to a structure (13) representing the wheel tyre.

