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(54) MOTOR–CYCLE FAIRING

(71) We, BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT, a German Body Corporate, of BMW-Haus, Petuelring 130, 8 München 40, German Federal Republic, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns a motor-cycle fairing comprising a plurality of parts and adapted to cover the region of the handlebars and side parts of a motor-cycle, the fairing comprising two side coverings extending at a distance from one another in the region of the handlebars as well as in the region behind the front wheel of a motor-cycle when the fairing is fitted thereon.

Integrally-formed fairings of this construction generally have a recess in the front of the fairing which is matched to the width of the front wheel fork to enable the fairing to be fitted on a motor-cycle without disassembly of the front wheel fork. With a view to their being fabricated cheaply, these integrally-constructed fairings are formed from a substantially spherically-shaped shell which, at the end of the manufacturing process, can be easily removed from a forming mould. Such fairings have the drawback that they neither adapt particularly stylishly to the motor-cycle nor provide a suitable aerodynamic shape.

The present invention aims to provide a fairing which can be freely shaped to provide the maximum weather protection for the driver as well as an aerodynamic shape to increase driving safety, and to provide a cooling air duct to the driving unit and, finally, a stylish shape.

To this end, it is proposed, in accordance with the invention, that said distance in the region behind the front wheel is approximately equal to the width of the front wheel fork and the side coverings are connected to one another above the said fork by a separable intermediate part, while the distance between the side coverings in the region behind the front wheel is adapted to be bridged by a sealing plate after the fairing has been fitted on a motor-cycle.

While the several part construction of the fairing in accordance with the invention requires a corresponding number of forming moulds, it gives the advantage of allowing the fairing to be shaped to serve the above-mentioned interests.

An example of a motor-cycle fairing in accordance with the invention is illustrated in the accompanying drawings, in which:—

Figure 1 shows the fairing viewed at an angle from the front;

Figure 2 shows a section taken along the line II – II in Figure 1;

Figure 3 shows the fairing in front elevation;

Figure 4 shows a folding bellows gasket in section taken on the line IV – IV in Figure 3;

Figure 5 shows a section through a folding bellows gasket taken on the line V – V in Figure 4;

Figure 6 shows a cut-out of the radiator grille taken on the line VI – VI in Figure 3;

Figure 7 shows a section taken on the line VII – VII in Figure 3; and

Figure 8 shows a section taken on the line VIII – VIII in Figure 1.

Figure 1 shows a fairing 1 for a motor-cycle of which only the front wheel 2 with fork legs 3 and the handlebars 4 are indicated. The fairing 1 substantially covers the area of the handlebars 4 and the sides of the motor-cycle. It comprises side coverings 5,5′ which extend from the lower edge of the drive transmission block (not shown) to beyond the handlebars 4. In the region of the handlebars 4, the two side coverings 5,5′ are connected together by an inter-

mediate part 6. The connection between the parts 5,5',6 is a detachable one. This has the advantage with a fairing 1 covering such a large area of the motor-cycle that, if the fairing 1 is damaged, only the respectively damaged fairing part 5,5',6 need be replaced and not the whole fairing 1.

The side coverings 5 and 5' are joined to the intermediate part 6 along the lines 7,7' extending substantially vertically on the fairing 1. As is revealed by Figure 2, the side coverings 5,5' and the intermediate part 6 are flush with one another. As is also shown in Figure 2, the side coverings 5,5' lie against end-faces of lugs 9 which are moulded on to a flange 8 on the intermediate part 6. threaded bushes 10 are arranged in the lugs 9 of the intermediate part 6 (preferably made of synthetic plastics material) and collaborate with screws passing through the flanges 8.

For the purpose of stiffening the fairing 1 in the region of the handlebars 4, the side coverings 5,5' and the intermediate part are connected to a one-part profile-section part 11 along their upper edge, as shown in Figure 1. The profile-section part 11 of V-shaped cross-section serves to suppress "flapping" of the side coverings 5,5' within range of the handlebars 4 caused by slip stream during driving and to help reduce the number of support struts between the fairing 1 and the motor-cycle by virtue of its stiffening effect. The profile-section part 11 can also serve as an instrument carrier. A spherically-domed window shield 12 is secured along the upper edges of the side coverings 5,5' and of the intermediate part 6. The intermediate part 6 has an opening or window 13 which is covered by a sheet 14 of transparent material to permit light from a headlamp fitted on the motor-cycle to pass through the opening 13.

As shown in Figure 1, the side coverings 5,5' extend inwardly behind the front wheel 2 leaving between them a distance that is approximately equal to the width of the front wheel fork formed by the fork legs 3. The central opening 15 obtained along the front by the distance between the side coverings 5,5' in the fairing 1 extends at least to the location where the fork legs 3 pass through the fairing 1. As a result, the fairing 1 can be fitted on the motor-cycle without the need to dismantle the front wheel fork.

Figure 3 shows that the distance between the side coverings 5,5' in the region of the central opening 15 is approximately identical to the distance between the lines 7,7' in the region of the intermediate part 6. Following on the intermediate part 6, a sealing panel 16 bridges the space between the side coverings 5,5' to provide maximum protection for the driver of the motor-cycle against dust, dirt and water. The upper edge portion of the sealing panel 16 has cut outs 17 and 17', while cut outs 18,18' are arranged in the lower edge portion of the intermediate part 6. The cut outs 17, 18 and 17', 18' form respective apertures 19,19' for the passage of one fork leg 3 of the front wheel fork. In order to obtain the maximum weather protection for the driver of the motor-cycle, the apertures 19,19' are covered by a respective folding bellows gasket 20, as shown in Figure 4. Each of the arcuate or kidney-shaped apertures 19,19' has a rim 21 with a bend. The folding bellows gasket 20 cooperates with this rim 21 *via* a groove 22 of L-shaped cross-section in a bead 23 to give positive interlocking. This positive interlocking ensures that the folding bellows gasket 20 is reliably held on the fairing even when the front wheel fork is turned through the maximum steering angle as is the case, for example, during jacking-up of the motor-cycle. By virtue of the rim 21 with its bend and the correspondingly-shaped groove 22, the folding bellows gasket 20 and the fairing 1 cooperate in an elastic, positive, interlocking manner over large areas of contact, so that no water can penetrate from the outside surface 24 to the inside 25 of the fairing 1 through this joint.

Via folds 26,27, the bead 23 is connected to a further bead 28 which tightly envelops the fork leg 3.

It will be seen from Figure 3 that the sealing panel 16 is provided with cooling air slots 29. These cooling air slots 29 are defined substantially by air guiding elements 30 arranged to extend horizontally on the sealing panel 16. The air-guiding elements in accordance with Figure 6 are fashioned from a profiled section of U-shaped cross-section and direct the air arriving in accordance with the arrows towards the drive transmission block. Figure 6 shows that a bend 31 in the sealing panel 16 which defines the cooling air slots 29 laterally is constructed to be continuous at the place of union with the air guiding element 30'. The air guiding element 30' has a predetermined "place of breaking" at its point of union with the bend 31. In this way the air guiding element 30' can, in simple fashion, be "broken out" of the sealing panel 16 to allow a cooler for a liquid operating medium to be arranged in the gap formed in this way.

As shown in Figures 1 and 3, the fairing 1, which is preferably made of a synthetic plastics material, has a moulded-on spoiler 32. The spoiler 32 extends underneath the apertures 19,19' for the passage of the fork legs 3 over the entire front of the fairing 1 formed substantially by the two drawn-in areas of the side coverings 5,5' and the sealing panel 16. As Figures 1 and 7 show, the

spoiler 32 is formed from the walls of the fairing 1 with a first lower section 33 being directed forwardly and downwardly relative to the direction of travel of the motor-cycle in accordance with the arrow "F", and a second lower section 34 which is connected to the first section 33 and which juts back approximately horizontally with respect to the motor-cycle. To increase the load on the wheels and particularly on the front wheel, the spoiler 32, while maintaining its shape, is extended backwards from the front of the fairing 1 into the longitudinal sides of the fairing 1 formed by the side coverings 5,5', with the spoiler side extensions 32', 32" being arranged so that they ascend as they extend to the rear.

The fairing 1 is constructed to be divided into the respective side coverings 5,5' and the sealing panel 16 along the transition of the jutting-back spoiler section 34 (see Figure 7). The upper portions 50,50' of the side coverings 5,5' are joined detachably to the bottom portions 500,500', and the upper part 16' of the sealing panel 16 is joined detachably to the bottom part 16". This allows the bottom parts 500,16" and 500' to be removed from the fairing 1 if required. The upper parts 50,50' and 16' are screwed to their associated bottom parts 500,500' and 16", for which purpose a screwed joint formed by tapping screws 35 and spring-action nuts 47 located on the flange 36 of the said bottom parts is appropriate. In order to enable the upper and lower parts of the fairing 1 to be joined tightly along their parting line, the flange 36 has depressions 38 along its contact area with the spoiler section 34, in which depressions the spring-action nuts 37 have one of their respective legs fitted. For fastening the sealing panel 16 or its upper portion 15' or its bottom portion 16" to the side coverings 5,5', the same screwed joint is appropriate. Here the spring-action nuts are arranged on projections 39, as in Figure 1, which protrude from the side parts 5,5' into the central opening 15. Moreover, the projections 39 are constructed in such a way that the sealing panel 16, when screwed into place, is flush with the side parts 5,5'.

Figure 7 also shows that, in the spoiler section 34, there is arranged an opening 40 for a holder 41 for a hydraulic brake line 42 to the brake on the front wheel 2.

The fairing 1 has an edge bead 43 on the edges facing the driver which is shown in greater detail in Figure 8. The edge bead 43 is rounded and drawn outwards, with its cross-section merging into the inner surface 25 of the fairing 1 approximately tangentially. The edge bead 43 advantageously influences the air flowing over the outside surface 24 of the fairing 1 in so favourable a manner that rainwater entrained in the air stream from the outside surface 24 does not strike the driver.

If desired, the intermediate part and the sealing panel can be formed in one piece, with cut outs being provided in the lateral edge zones for the passage of fork legs through the fairing.

WHAT WE CLAIM IS:—

1. A motor-cycle fairing comprising a plurality of parts and adapted to cover the region of the handlebars and side parts of a motor-cycle, the fairing comprising two side coverings extending at a distance from one another in the region of the handlebars as well as in the region behind the front wheel of a motor-cycle when the fairing is fitted thereon, wherein said distance in the region behind the front wheel is approximately equal to the width of the front wheel fork and the side coverings are connected to one another above the said fork by a separable intermediate part, while the distance between the side coverings in the region behind the front wheel is adapted to be bridged by a sealing plate after the fairing has been fitted on a motor-cycle.

2. A fairing according to claim 1 or claim 2 made of synthetic plastics material, in which the side coverings have flanges which lie against end faces of lugs moulded on to the intermediate part and which are connected to the lugs by means of threaded bushes arranged in the lugs and screws passing through the flanges to engage in the threaded bushes.

3. A fairing according to claim 1 or claim 2, in which the intermediate part and the side coverings are connected along their upper edges to a one-piece profile-section part constructed as an instrument carrier.

4. A fairing according to any preceding claim, in which the intermediate part has a window or other opening for the passage therethrough of light from a headlamp, the opening being fitted with a sheet of transparent material.

5. A fairing according to claim 1, in which edge zones of the sealing panel or of the side coverings or of the intermediate part have apertures for the passage of the fork legs of a front wheel fork of a motor-cycle through the fairing.

6. A fairing according to claim 5, in which apertures for the passage of the fork legs of a front wheel fork of a motor-cycle are formed in the fairing by cut outs in the edge zones of the sealing panel and the said intermediate part.

7. A fairing according to claim 6, in which the apertures are each covered by a folding bellows gasket.

8. A fairing according to claim 7, in which the rim of each aperture is constructed with a bend, and the folding bellows gasket has a groove of L-shaped

cross-section arranged in a bend for positive interlocking with the rim.

9. A fairing according to any preceding claim, in which the sealing panel is constructed with cooling air slots.

10. A fairing according to claim 9, in which the sealing panel has air guiding elements arranged to extend horizontally substantially defining the cooling air slots.

11. A fairing according to claim 10, in which the air guiding elements are formed from a profile-section of U-shaped cross-section, and at least one air guiding element is constructed with locations intended to be broken open in the regions joining it to the sealing panel.

12. A fairing according to any preceding claim having a spoiler moulded on the fairing.

13. A fairing according to claim 12 when appendant to claim 5 or claim 6, in which the spoiler is arranged on the front of the fairing underneath the apertures for the passage of the fork legs and extends from one side covering of the fairing *via* the sealing panel to the other side covering.

14. A fairing according to claim 12 or claim 13, in which the spoiler is formed from the walls of the fairing with a first section that is directed forwardly and downwardly at an angle to the direction of travel at its bottom and a second section, connected to the first, which when the fairing is fitted on a motor-cycle juts back approximately horizontally with respect to the cycle.

15. A fairing according to any one of claims 12 to 14, in which the spoiler is extended from the front of the fairing into the longitudinal sides of the fairing formed by the side coverings with the extensions ascending towards the rear.

16. A fairing according to claim 14, in which the fairing is constructed to be divided into upper and lower portions at the transition between the spoiler second section and the respective side covering of the fairing and also the sealing panel.

17. A fairing according to claim 16, in which the upper and lower portions of the fairing are detachably connected.

18. A fairing according to any one of claims 14, 16 or 17, in which the spoiler second section has recesses or openings for the arrangement of holders for hydraulic lines.

19. A fairing according to any preceding claim, in which at least the edges of the fairing facing the driver have a rounded edge bead.

20. A fairing according to claim 19, in which the edge bead is drawn towards the outside, with the edge beat in cross-section changing into the inside surface of the fairing approximately tangentially.

21. A fairing according to claim 1 or any claim appendant thereon, in which the side coverings of the fairing are constructed to be flush with the intermediate part and the sealing panel.

22. A fairing according to claim 21, in which the intermediate part and the sealing panel are formed in one piece and have cut outs in their lateral edge zones for the passage of fork legs through the fairing.

23. A motor-cycle fairing substantially as described herein with reference to the accompanying drawings.

24. A motor-cycle having a fairing as claimed in any preceding claim.

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1562002 COMPLETE SPECIFICATION
5 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

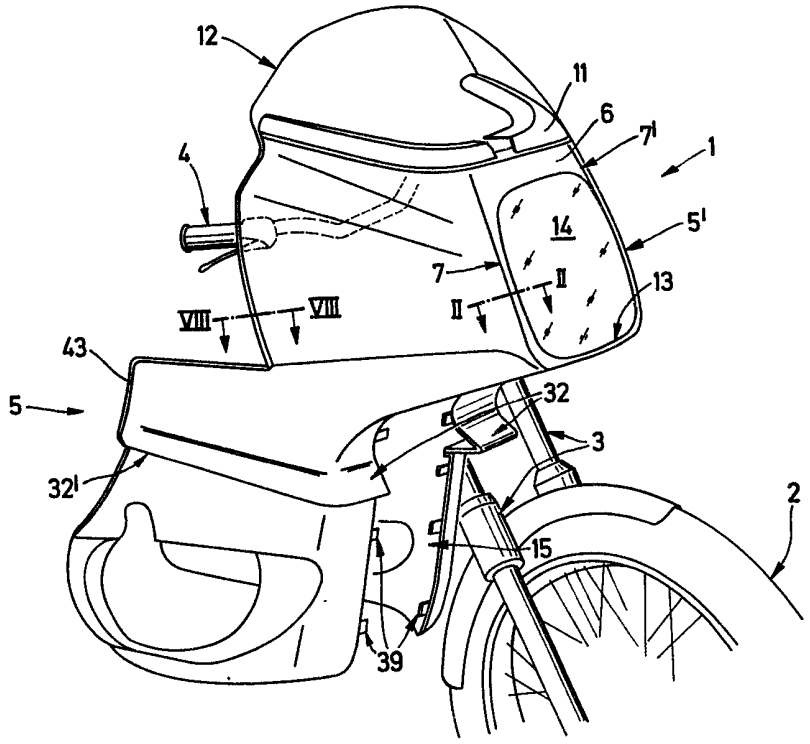


Fig. 1

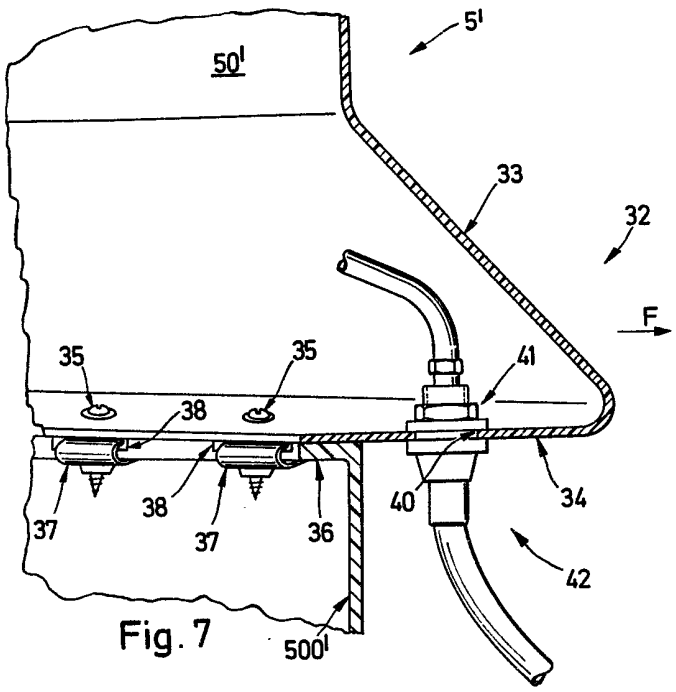


Fig. 7

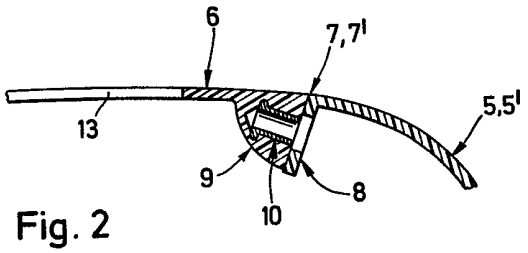
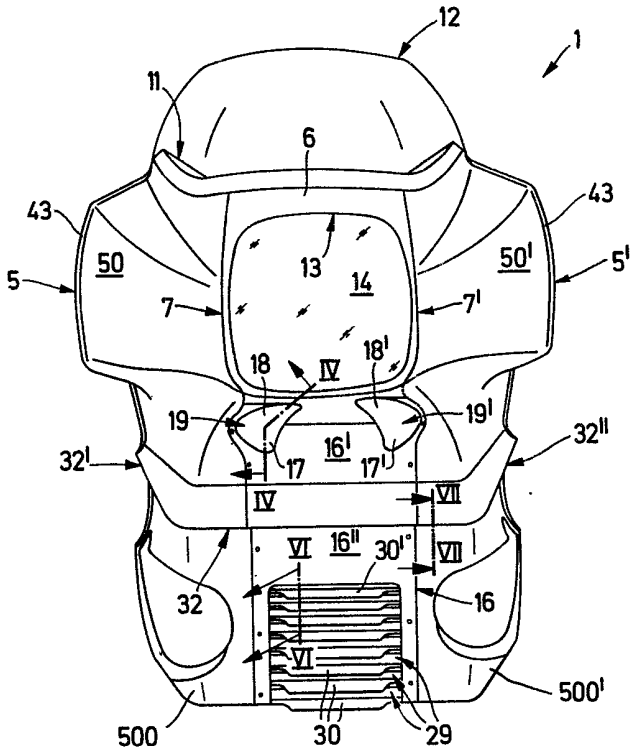


Fig. 2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29

Fig. 3

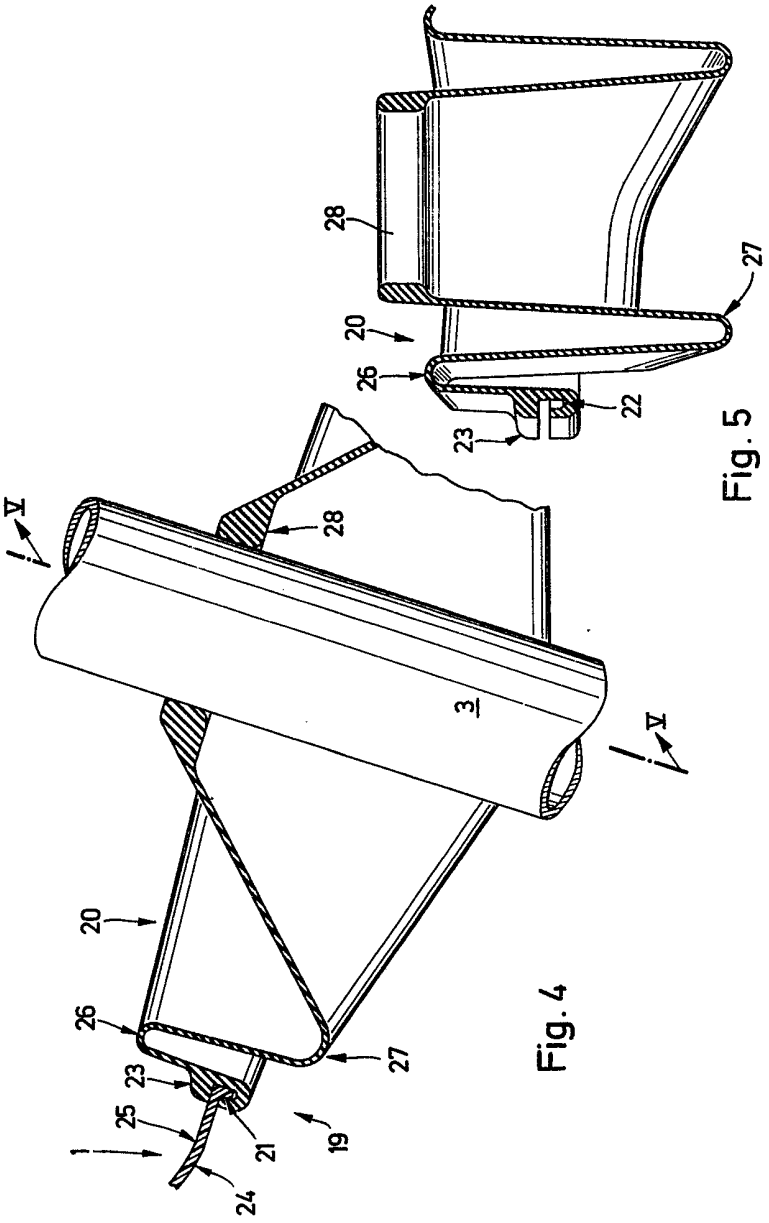

Fig. 5

Fig. 4

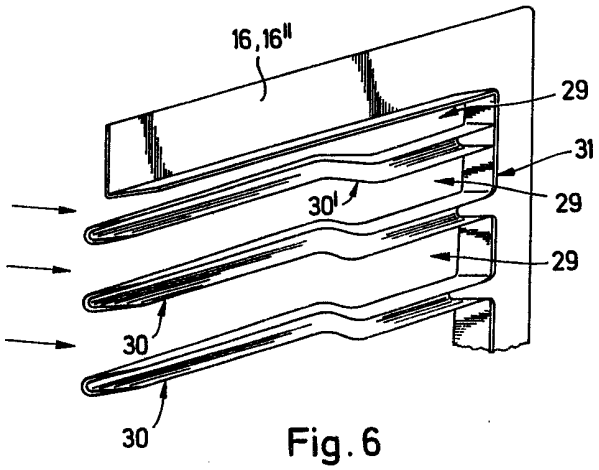

Fig. 6

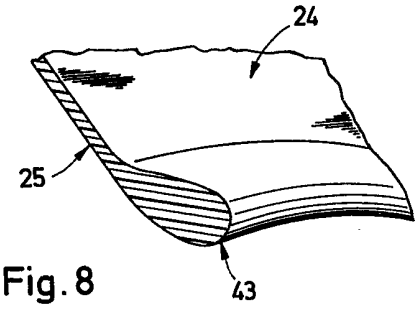

Fig. 8