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(54) Wiper apparatus for a helmet visor

(57) This invention relates to wiper apparatus (6) for use on a helmet (2) or for use with an attachment for a helmet (2). The wiper apparatus (6) includes a wiper blade (30) and drive means for driving the wiper blade (30) from side to side across a visor (4) of the helmet (2). First and second elongate members (12, 14) are provided which are connected together and which are pivotally mounted on the helmet (2) or on the attachment connected to the helmet. The drive means is connected to one of the first and second members (12, 14) and the other of said members has a free end (28) to which the wiper blade (30) is attached. The movement of the first and second members (12, 14) results in movement of the wiper blade (30) across the visor (4).

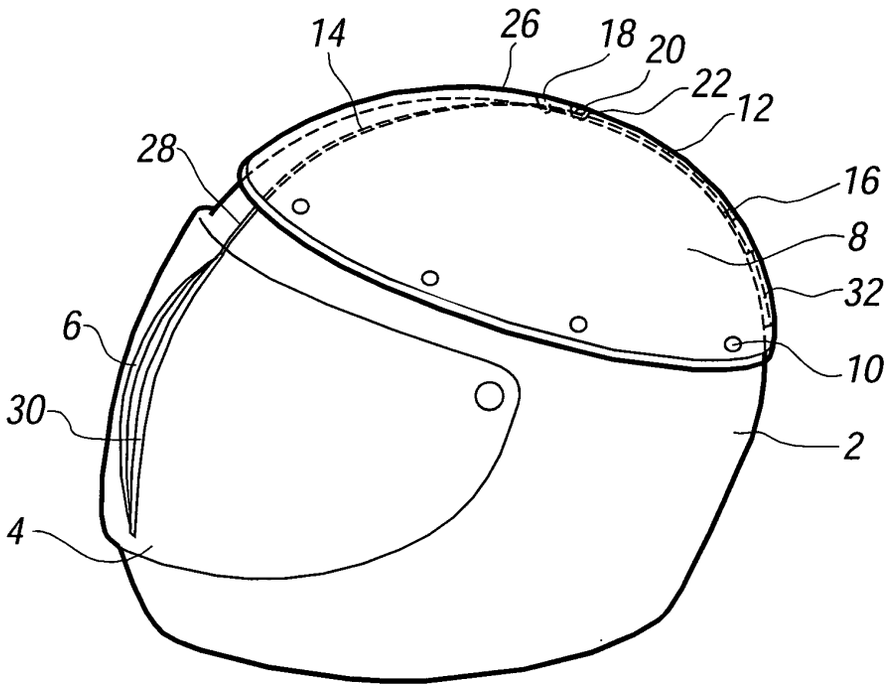

FIG. 1

EP 1 236 409 A2

Description

[0001] This invention relates to a wiper apparatus for use on a helmet, particularly but not exclusively a motorbike style of helmet with a front visor portion to allow a rider to see therethrough.

[0002] It is known to provide motorbike helmets with wiper assemblies for improving the visibility of the helmet visor in bad weather conditions such as in rain, snow and/or the like, thereby removing the requirement for the rider to take a hand off the handle bars of the bike to clean the visor manually.

[0003] One example of a known wiper assembly for a helmet typically comprises a housing with a clip for attaching the housing to the top or bottom edge of the helmet visor. The housing contains a battery powered motor which drives a series of cogs and levers to impart an oscillating movement of a wiper blade across the helmet visor. A problem with this type of wiper assembly is that the housing could easily fly off the helmet when the rider is travelling at high speeds and may damage the visor in doing so and/or cause injury to the rider. A further problem with this type of wiper assembly is that the movement of the wiper across the visor may impair the rider's vision and may be of insufficient speed across the visor and firmness on the visor to keep the visor adequately clean.

[0004] A further example of a known wiper assembly for a helmet typically comprises a wiper assembly connected directly to the helmet at a pivot point and is operated by a battery driven motor mounted in the interior of the helmet. A problem with this type of wiper is that anything attached directly to the helmet and passing into the interior of the helmet is likely to compromise the strength of the helmet and also compromise the safety of the rider. For example, if the rider receives an impact to the head during a motorbike accident, any protruding object in the interior of the helmet is likely to penetrate the rider's head on impact, thereby increasing the severity of the injuries sustained by the rider, possibly fatally.

[0005] It is therefore an aim of the present invention to provide wiper apparatus for a helmet which is safe to use and which does not compromise the safety of the rider wearing the helmet or the strength of the helmet.

[0006] It is a further aim of the present invention to provide wiper apparatus which has improved wiping ability.

[0007] According to a first aspect of the present invention there is provided wiper apparatus for use on a helmet, said wiper apparatus including at least one wiper blade and drive means for driving said at least one wiper blade from side to side across a visor of the helmet and characterised in that said wiper apparatus further includes at least first and second elongate members connected together, said members pivotally mounted on said helmet, said drive means connected to one of said first and second members, the other of said first and second members having a free end with said wiper blade attached thereto and wherein movement of said first and second members results in movement of said wiper blade across said visor.

[0008] In one embodiment the members are pivotally mounted directly on the helmet

[0009] In a preferred embodiment the members are mounted on an attachment connected to the helmet.

[0010] Preferably the drive means includes pneumatic means driven by an air regulator. Piping typically connects the pneumatic means with the air regulator. The air regulator and/or operating means can be provided on a motorbike chassis, attached to a body or clothing of a user, attached to the attachment for said helmet and/or attached to the helmet directly.

[0011] In one embodiment the pneumatic means is a piston mounted on the helmet or attachment connected to the helmet, which causes one of said first and second members to move in a forwards/backwards direction or from side to side.

[0012] Preferably movement of one of said at least first or second member results in movement of the other (s) of said at least first or second member(s) connected thereto.

[0013] Preferably the first and second members are connected at ends thereof.

[0014] Further preferably the connection of the first and second members comprises a slot on one of the members and an arm on the other of the members which is slidable in the slot.

[0015] The movement of the arm in the slot typically results in movement of the member attached to the wiper blade assembly.

[0016] Preferably the movement of the wiper blade, as a result of the assembly of the at least first and second members, is rapid across the middle of the visor and slower at the ends/edges of the visor. This prevents the wiper blade from obstructing the central area of vision of the rider.

[0017] In a preferred embodiment the wiper assembly is provided on an attachment connected to the helmet. In this embodiment, the attachment connected to the helmet is typically a cap which fits over the crown of the helmet.

[0018] Preferably the cap is attached to the helmet by any or any combination of VELCRO, clips, studs, screws and/or the like. Use of easily releasable attachment means, such as VELCRO or clips is preferable as this allows detachment of the cap from the helmet on impact with the ground or another object in the event of a crash/accident, thereby preventing injury to the rider caused by the wiper assembly. However, these forms of attachment also typically remain securely attached to the helmet during travel at high speeds and in windy weather.

[0019] Preferably a whole or substantial part of the wiper apparatus (i.e., excluding the wiper blade) is provided in a cavity between the cap and the helmet. The wiper apparatus is typically mounted on the interior sur-

face of the cap.

[0020] In one embodiment the first and/or second member comprise two or more elements joined together.

[0021] In a further embodiment two wiper blades are provided, both wiper blades attached to the free end of one of the first or second members.

[0022] According to a second aspect of the present invention there is provided a helmet, said helmet having wiper apparatus, said wiper apparatus including at least one wiper blade and drive means for driving said at least one wiper blade from side to side across a visor of said helmet and characterised in that said wiper apparatus further includes at least first and second elongate members connected together, said members pivotally mounted on said helmet, said drive means connected to one of said first and second members, the other of said first and second members having a free end with said wiper blade attached thereto and wherein movement of said first and second members results in movement of said wiper blade across said visor.

[0023] Preferably the members are provided on an attachment connected to the helmet.

[0024] According to a third aspect of the present invention there is provided an attachment for a helmet, said attachment having wiper apparatus provided therewith, said wiper apparatus including at least one wiper blade and drive means for driving said at least one wiper blade from side to side across a visor of a helmet when in use and characterised in that said wiper apparatus further includes at least first and second elongate members connected together, said members pivotally mounted on said attachment, said drive means connected to one of said first and second members, the other of said first and second members having a free end with said wiper blade attached thereto and wherein when said attachment is secured to a helmet in use, movement of said first and second members results in movement of said wiper blade across a visor of said helmet.

[0025] An advantage of the present invention is that there is no requirement for any component of the wiper apparatus to be provided in the interior of the helmet, such that the strength of the helmet and the safety of the rider wearing the helmet are not compromised. A further advantage of the present invention is that the different speeds of the wiper blade across the visor prevents the blade from obstructing the rider's vision.

[0026] An embodiment of the present invention will now be described with reference to the accompanying figures wherein:

Figure 1 is a side view of a helmet with the wiper arrangement under the cap according to an embodiment of the present invention;

Figure 2 is a plan view of a helmet without the cap according to the present invention; and

Figure 3 is a front view of the helmet with the cap according to the present invention.

[0027] Referring to the figures, there is illustrated an example of a helmet 2 according to an embodiment of the present invention, having a visor 4 and wiper apparatus 6.

[0028] Wiper apparatus 6 is fitted to the underside of a cap 8 which is attached to the crown of helmet 2 by clips 10, such that the wiper apparatus 6 is housed between the helmet 2 and cap 8.

[0029] Apparatus 6 comprises first and second elongate members 12 and 14 mounted on the underside of cap 8 at pivot points 16 and 18 respectively.

[0030] First and second members are joined together by connection means comprising an arm 20 provided at end 22 on first member 12, which is slidably located in a slot 24 provided at end 26 of second member 14. The other free end 28 of second member 14 is connected to wiper blade 30.

[0031] Pneumatic drive means in the form of a piston 32 is mounted on the underside of cap 8 and is connected to end 33 of first member 12.

[0032] In use, an arm of the piston 32 is driven forwards and backwards, as shown by arrow 34, which results in movement of first member 12 about pivot point 16, as shown by arrow 36.

[0033] Movement of first member 12 causes arm 20 to move in slot 24 of second member 14, thus resulting in movement of the second end 26 of second member 14 in the direction of arrow 36. As end 26 of second member 14 moves in one direction, second member pivots about pivot point 18 and the wiper blade 36 connected to end 28 moves in the opposite direction from end 26 across the front of the visor, as shown by arrow 37.

[0034] In addition, movement of arm 20 in slot 24 results in rapid movement of the wiper blade across the middle part 38 of the visor and slower movement of the blade at the ends 40 and 42 of the visor. This prevents the blade from obstructing the vision of the rider in the central portion of the visor for any prolonged period of time. In addition, the slot allows the wiper blade to be locked in position.

[0035] The piston is typically driven by an air regulator on the handle bars of the bike. User-operating means in the form of a switch and/or speed control settings can also be provided with the regulator on the handle bars. Piping, typically formed of plastics material, is provided between the piston and the air regulator/operating means and can be located on the body/clothing of the rider and/or the chassis of the bike. For example, the piping can be velcroed to the clothing of a rider.

[0036] The regulator is typically in the form of a precharged compressed air cylinder, operation using a switch resulting in the opening of an air valve, such as a shuttle valve, which provides an air supply to drive the piston. This method of driving the piston is preferable where the helmet is a motorbike helmet, as there is a

fire risk if a spark from a battery powered motor or similar ignites spilt petrol in the event of an accident.

[0037] However, it is noted that the present invention can be driven by a battery powered motor applied to helmets for use in the construction industry, quarrying/mining industry, transport industry and/or the like, where the risk of fire caused by a spark from the motor/battery is significantly reduced.

[0038] It is further noted that the motor or air regulator can be positioned at any suitable location on the bike chassis, on the body or clothing of the rider or user, on the cap or on the helmet itself.

[0039] The wiper apparatus can be adapted to fit any type of helmet such as a cycling helmet, motorbike helmet and/or the like.

[0040] The position of the wiper blade is typically adjustable with respect to the visor and can be locked in a required position. In addition, when the operating means is switched off, the blade completes its direction of travel across the visor to come to rest at an edge of the visor, such that the blade does not obstruct the vision of the rider when not in use.

[0041] In providing the wiper apparatus on the cap to be detachedly attached to the helmet, this allows the cap to detach itself upon impact, thereby preventing damage to the helmet caused by a component of the wiper apparatus penetrating through the helmet and inflicting injury to the rider. The strength of the helmet is not compromised by the wiper apparatus and the cap allows the wiper apparatus to be removed from the helmet when the wiper apparatus is not required, such as in good weather. The cap and wiper apparatus can be stored and fitted quickly and easily when required. This is particularly advantageous for use in sports such as motorbike racing where a quick release/attachment mechanism of the wiper apparatus is essential.

Claims

1. Wiper apparatus for use on a helmet (2), said wiper apparatus (6) including at least one wiper blade (30) and drive means for driving said at least one wiper blade (30) from side to side across a visor (4) of the helmet (2) and **characterised in that** said wiper apparatus (6) further includes at least first and second elongate members (12, 14) connected together, said members pivotally mounted on said helmet (2), said drive means connected to one of said first and second members, the other of said first and second members having a free end with said wiper blade attached thereto and wherein movement of said first and second members (12, 14) results in movement of said wiper blade (30) across said visor (4).

2. Wiper apparatus according to claim 1 **characterised in that** the members (12, 14) are pivotally mounted directly on the helmet (2).

3. Wiper apparatus according to claim 1 **characterised in that** the members (12, 14) are pivotally mounted on an attachment connected to the helmet (2).

4. Wiper apparatus according to claim 1 **characterised in that** said drive means includes pneumatic means driven by an air regulator.

5. Wiper apparatus according to claim 1 **characterised in that** said apparatus is provided with user-operating means.

6. Wiper apparatus according to claims 4 or 5 **characterised in that** said air regulator and/or said user-operating means is provided on any of a motorbike chassis, attached to a user's body or clothing, attached to the helmet or attached to the attachment for connection with said helmet.

7. Wiper apparatus according to claim 4 **characterised in that** the pneumatic means is a piston (32) mounted on said helmet (2) or said attachment connected to said helmet.

8. Wiper apparatus according to claim 7 **characterised in that** said piston (32) causes one of said first and second members (12, 14) to move in a forwards/backwards direction or from side to side.

9. Wiper apparatus according to claim 1 **characterised in that** movement of one of said first or second members (12, 14) results in movement of the other (s) of said at least first and second member(s) (12, 14) connected thereto.

10. Wiper apparatus according to claim 1 **characterised in that** said at least first and second members (12, 14) are connected at ends (22, 26) thereof.

11. Wiper apparatus according to claim 10 **characterised in that** said first and second members (12, 14) are connected together via a slot (24) in one of said members and an arm (20) in the other of said members which is slidable in said slot (24).

12. Wiper apparatus according to claim 1 **characterised in that** the movement of said wiper blade (30) is rapid across the middle of the visor and slower at the ends/edges of said visor.

13. Wiper apparatus according to claim 3 **characterised in that** the apparatus is provided on an attachment connected to the helmet, said attachment being a cap (8) which fits over the crown of said helmet (2).

14. Wiper apparatus according to claim 13 **character-**

ised in that said cap (8) is attached to the helmet by any or any combination of VECLRO, clips (10), studs, screws or straps.

15. Wiper apparatus according to claim 13 **characterised in that** a whole or substantial part of said first and second members and said drive means are provided in a cavity between the cap (8) and said helmet (2) when said cap is fitted to said helmet.

16. Wiper apparatus according to claim 1 **characterised in that** the first and/or second members (12, 14) comprise two or more elements joined together.

17. Wiper apparatus according to claim 1 **characterised in that** two wiper blades are provided.

18. Wiper apparatus according to claim 17 **characterised in that** both wiper blades are attached to the free end of one of said first or second members.

19. Wiper apparatus according to claim 1 **characterised in that** each of said first and second members are pivotally mounted on said helmet via pivot points (18, 16).

20. A helmet, said helmet (2) having wiper apparatus, said wiper apparatus (6) including at least one wiper blade (30) and drive means for driving said at least one wiper blade (30) from side to side across a visor (4) of said helmet and **characterised in that** said wiper apparatus further includes at least first and second elongate members (12, 14) connected together, said members pivotally mounted on said helmet (2) or on an attachment connected to said helmet, said drive means connected to one of said first and second members (12, 14), the other of said first and second members having a free end (28) with said wiper blade (30) attached thereto and wherein movement of said first and second members (12, 14) results in movement of said wiper blade (30) across said visor (4).

21. A helmet according to claim 20 **characterised in that** the same is a motorbike helmet.

22. An attachment for a helmet (2), said attachment having wiper apparatus (6) provided therewith, said wiper apparatus including at least one wiper blade (30) and drive means for driving said at least one wiper blade (30) from side to side across a visor (4) of a helmet (2) when in use and **characterised in that** said wiper apparatus (6) further includes at least first and second elongate members (12, 14) connected together, said members pivotally mounted on said attachment, said drive means connected to one of said first and second members (12, 14), the other of said first and second members having a free end (28) with said wiper blade (30) attached thereto and wherein when said attachment is secured to a helmet in use, movement of said first and second members (12, 14) results in movement of said wiper blade (30) across a visor (4) of said helmet (2).

23. An attachment according to claim 22 **characterised in that** said attachment is detachably mounted to a helmet in use.

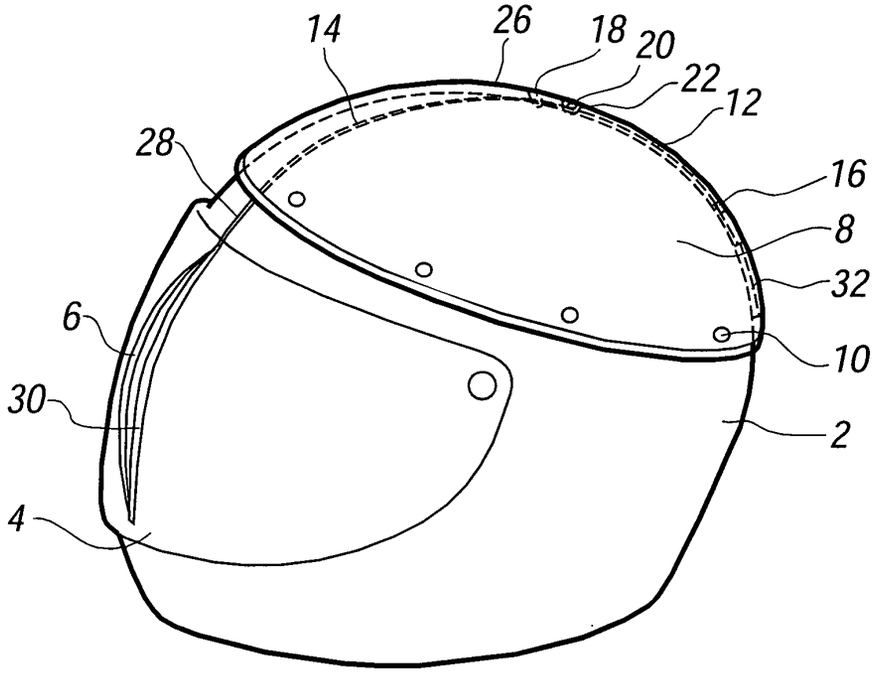
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FIG. 1

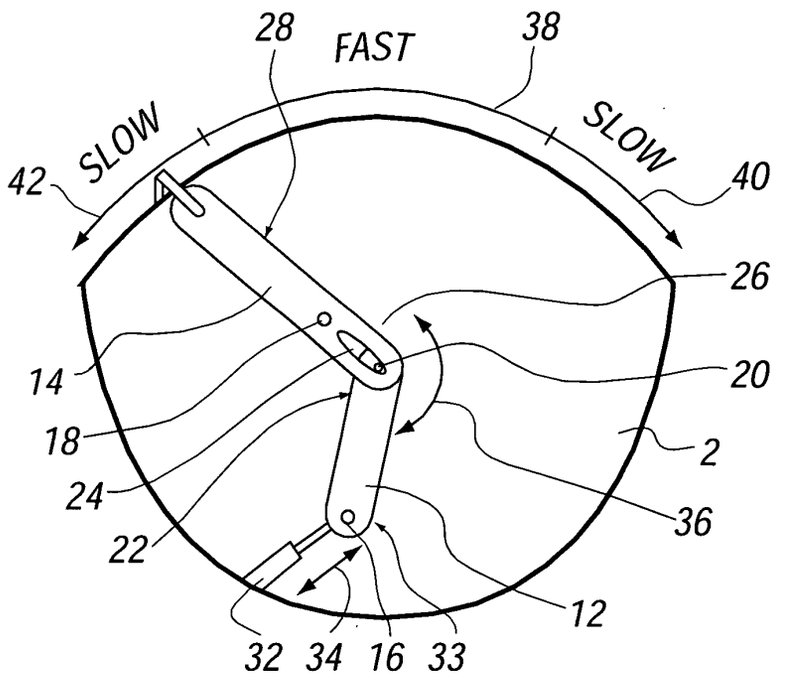
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FIG. 2

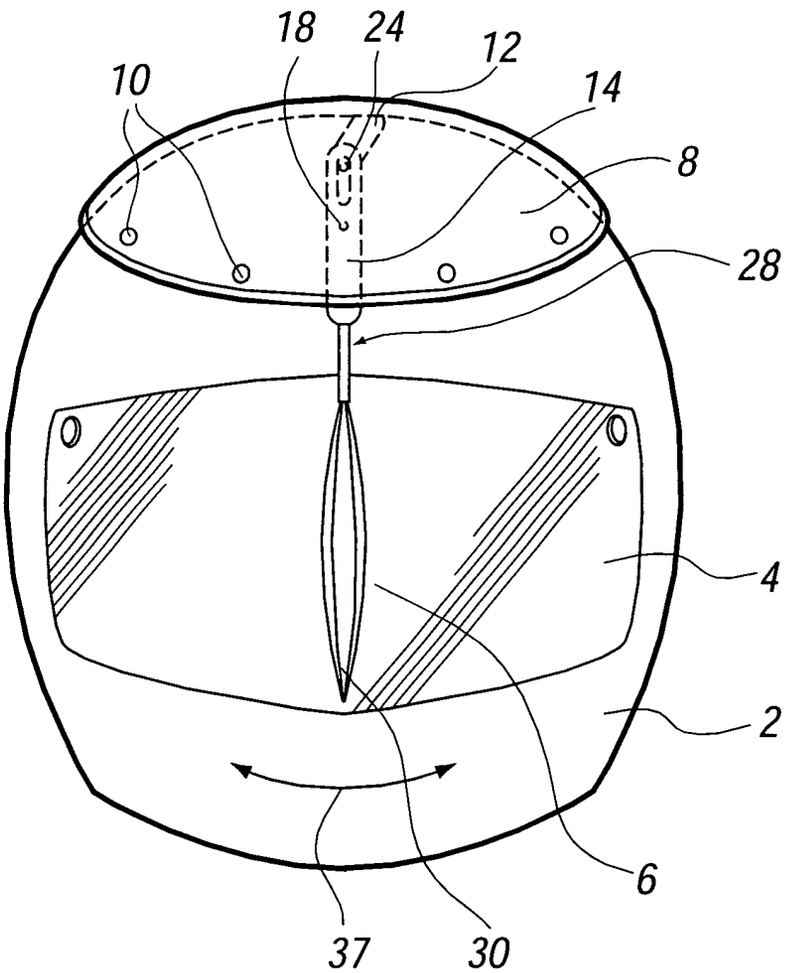

FIG. 3