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(54) **Visor assembly.**

(57) A visor assembly is disclosed primarily for protecting a wearer against dust or vapour. The assembly includes a helmet (10) to which a visor (12) is connected for both pivoting and sliding movement by way of a generally L-shaped cam track (30) formed on each side of the visor engaging with respective fixed cams disposed on either side of the helmet.

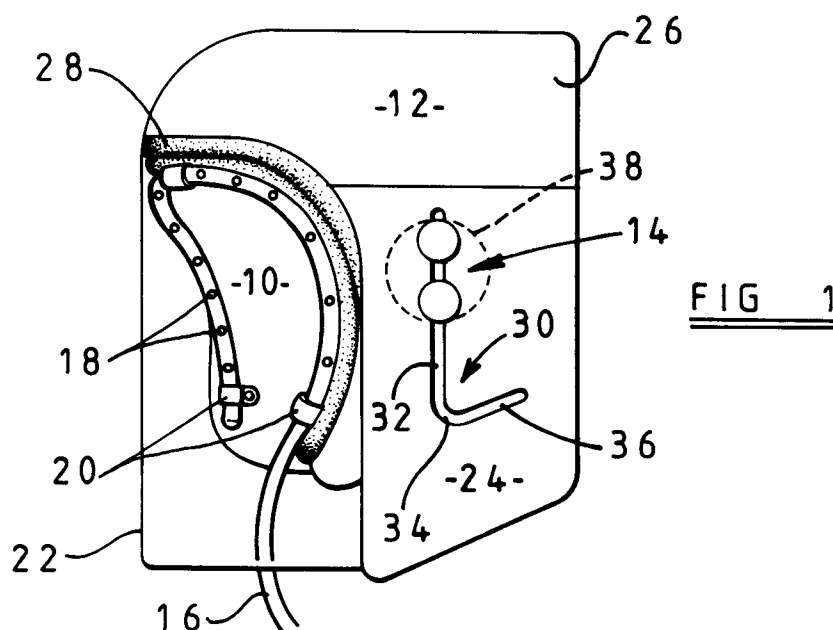


FIG 1

The present invention relates to a visor assembly embodying a visor and a helmet or other form of head-engaging means.

The use of a visor assembly to protect the eyes of an arc-welder for example, is well known. This type of visor assembly consists of an adjustable head band for placing over the welders head to which the visor is pivotally mounted for movement between an operative position in which the welder can view his work through the visor and a raised or inoperative position in which the visor is pivoted out of the welders line of sight.

One difficulty with this type of visor, particularly after extended use, is that the visor tends not to stay in its inoperative position when not in use but pivot downwardly to obscure the wearers vision.

Visors are used also to protect a wearer against dust and vapour such as styrene particles and isocyanate or alcohol-based paints. This type of visor however is normally incorporated into a head shield or face mask and separate protective clothing is worn which includes a hood.

In accordance with one aspect of the present invention there is provided a visor assembly comprising head-engaging means to which a visor is removably secured, generally L-shaped cam track means on said visor in which cam follower means on the head-engaging means is received, the visor being movable by a wearer between an operative position in which the visor lies in the wearers line of sight and covers his face and an inoperative position in which the visor is displaced from the wearer's line of sight and uncovers his face, movement of the visor from the operative position being achieved by the wearer first lifting and then tilting the visor relative to the head-engaging means enabling the cam follower means to follow the cam track means.

In the preferred embodiment of the invention, the cam track and cam follower means consist of a pair of cam tracks formed in respective side panels of the visor and a pair of fixed cam followers carried by the head-engaging means with one follower received in each cam track. Each cam follower may be in two parts which are spaced apart. In this embodiment, each cam track includes three sections, the first of which is rectilinear to enable the visor to be lifted vertically by a wearer, the second of which is curved to enable the visor to be tilted relative to the head-engaging means and the third of which is also rectilinear to enable the visor to be retained in its lifted and tilted condition.

Preferably the head-engaging means is a plastics helmet having a chin strap for removable connection below a wearers chin, with two fixed cams secured to the helmet one at each position corresponding approximately to the wearers ears. The visor includes a transparent viewing panel which covers the wearers face, this being secured between two side panels and a top, with a cam track formed or cut in each side panel. Preferably, the visor is of plastics construction but could be of metal or glass fibre for example. Alternatively again, the visor may be moulded integrally.

Conveniently, a seal is provided between the helmet and visor when the visor is in its operative position to prevent dust, vapour or contaminated air from entering the visor assembly from behind, more particularly between the top of the helmet and the inner top of the visor.

Preferably an air stream is downwardly directed across the inner surface of the visor when the visor is in its operative position so that the air stream passes between the wearers face and the visor.

Conveniently air is delivered to the visor in a flexible plastics pipe which is continuous into the visor assembly with the pipe being secured around the front edge of the helmet. Normally the part of the pipe secured to the helmet includes a plurality of spaced apertures through which air is directed on to the visor. Alternatively, one or more slits or other form of elongate opening may be provided in the flexible pipe at a position within the helmet.

Compressed air may be provided from a compressor via a filter and regulator. Thus, air supplied to the helmet assembly may be regulated within a given range, 20-30 psi, the preferred pressure being 25 psi.

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

Figure 1 is a side elevation of a visor assembly in accordance with the preferred embodiment of the invention with the visor in an operative position,

Figure 2 is a front elevation of the visor shown in Figure 1, and

Figures 3 to 5 show the sequence of steps involved in the visor being lifted and tilted from an operative position (Figure 1) to an inoperative position (Figure 5).

The visor assembly illustrated in the drawings consists of a helmet 10 to which a visor 12 is removably connected. The helmet is of moulded plastics and has fixed cam followers 14 mounted one on either side thereof at a position corresponding approximately to that of a wearers ear. The cam followers illustrated are each in two spaced apart pairs. A flexible plastics pipe 16 supplies air to the visor assembly the pipe terminating in a region having a plurality of apertures 18, the apertured part of the pipe being secured by fasteners 20 to the open margin of the helmet 10.

The visor 12 is in four parts which are secured together, the front panel 22 being of transparent plastics and forming a viewing panel which covers the wearers face and perhaps the upper part of his neck. Two side panels 24 are provided each of which is sealingly connected to one side of the front panel 22. A cover 26 bridges

the visor and sealingly connects all four component parts together.

When in an operative position, see Figure 1, a foam seal 28 seals the visor viewing panel 22 to the front of the helmet so that dust or vapour cannot enter the rear of the visor assembly between the top of the helmet and the inner side of the visor.

The side panels 24 on either side of the visor each include a generally L-shaped cam track which is generally designated 30. The cam track 30 is in three sections, a first straight section 32, a curved section 34 at the bend in the L and a further straight section 36. As can be seen from the drawings the angle between the sections 32 and 36 is slightly less than 90°. The respective cam followers 14 are received within the cam tracks and a snap-on cover 38 covers each fixed cam follower.

In use, air from a compressor is introduced in to the plastics pipe 16, conveniently from a fixed position in a workshop for example. The air is filtered and regulated to a pressure of approximately 25 psi. Air issues through each of the orifices 18 to form a downwardly-directed curtain of air between the wearers face and the inner surface of the visor viewing panel 22. In this way, dust or vapour is prevented from coming into contact with the wearers face from the bottom of the visor assembly.

Referring now to Figures 3 to 5, in Figure 3 a wearer has commenced lifting the visor in order to move it from the operative position shown in Figure 1 to the inoperative position shown in Figure 5. Thus, whereas in Figure 1 the end of the first cam track section 32 rests against the cam follower 14, in Figure 3 it will be observed that this is no longer the case as can be seen more clearly from the fact that the seal between the helmet and visor has been opened. When the visor has been raised to a level such that the cam follower lies at or adjacent the curved section cam track 34, the wearer can begin to tilt the visor backwards as is illustrated in Figure 4 to progressively remove front panel 22 from his face. When this tilting action has been completed the visor is retained in a horizontal position one part of the two part cam follower occupying the third section 36 of the cam track whereas a trailing part of the two part cam follower remains in the first section 32. This ensures the effective locking of the visor in the inoperative position shown in Figure 5.

Claims

1. A visor assembly comprising head-engaging means to which a visor is removably secured, generally L-shaped cam track means on said visor in which cam follower means on the head-engaging means is received, the visor being movable by a wearer between an operative position in which the visor lies in the wearers line of sight and covers his face and an inoperative position in which the visor is displaced from the wearer's line of sight and uncovers his face, movement of the visor from the operative position being achieved by the wearer first lifting and then tilting the visor relative to the head-engaging means enabling the cam follower means to follow the cam track means.
2. A visor assembly as claimed in claim 1 in which the angle between the lines of the generally L-shaped cam track is less than 90° to enable the visor to be secured in the inoperative position.
3. A visor assembly as claimed in claim 1 or 2 in which the cam track means comprises a pair of cam tracks formed in respective side panels of the visor and the cam follower means comprises a pair of fixed cam followers carried by the head-engaging means, a cam follower being received in a respective cam track.
4. A visor assembly as claimed in claim 3 in which each cam follower comprises two spaced apart cams.
5. A visor assembly as claimed in claim 4 in which when the visor is tilting, one of the cams is located in one limb of the L-shaped cam track whilst the other cam is located in the second limb.
6. A visor assembly as claimed in any one of the preceding claims in which a seal is provided between the head-engaging means and the visor, when the visor is in its operative position, to prevent the entry of dust, vapour or contaminated air.
7. A visor assembly as claimed in any one of the preceding claims in which means are provided for directing an air stream downwardly across the inner face of the visor when in its operative position so that the air stream passes in the manner of a curtain between the wearer's face and the visor.
8. A visor assembly as claimed in claim 7 in which the means for providing the air stream comprises a flexible plastics pipe secured to the assembly, the pipe including one or more apertures through which air can be directed to pass downwardly in the air curtain between the visor and wearer's face.

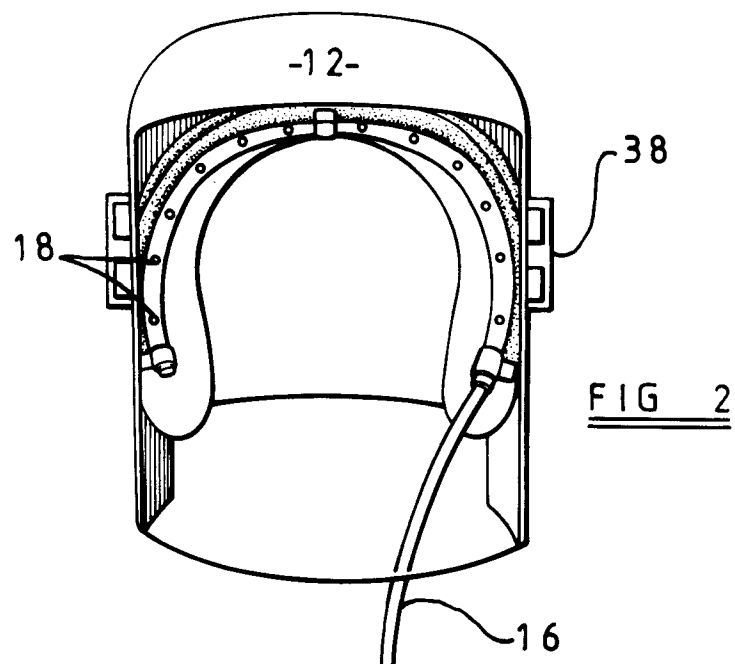
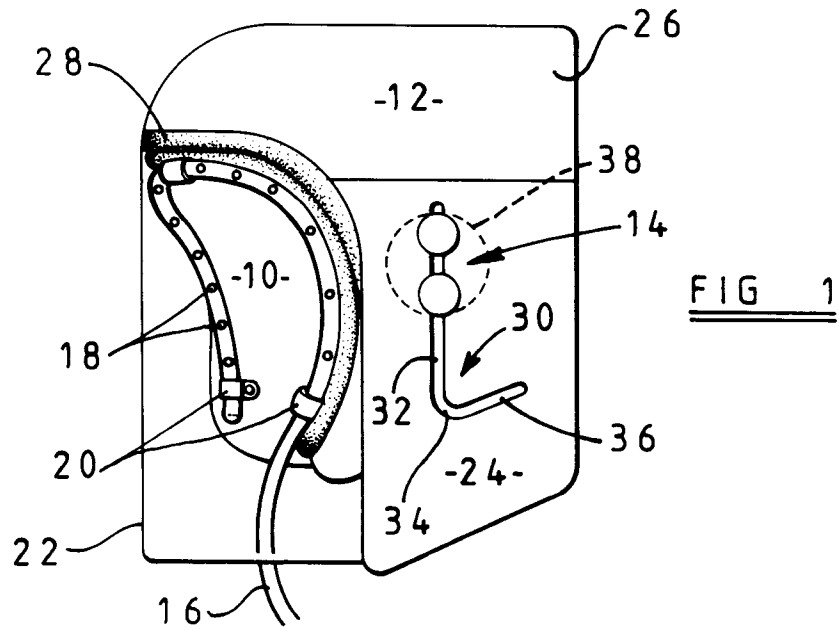


FIG 3

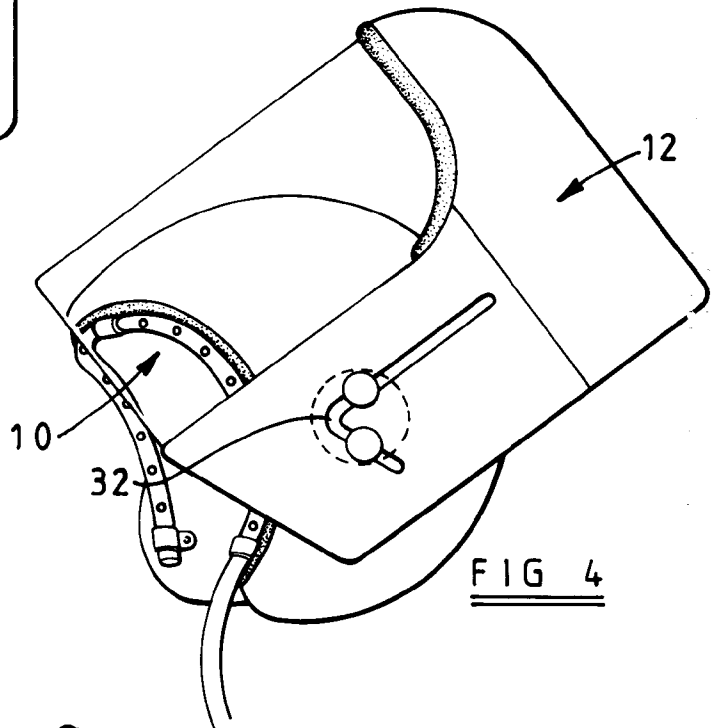
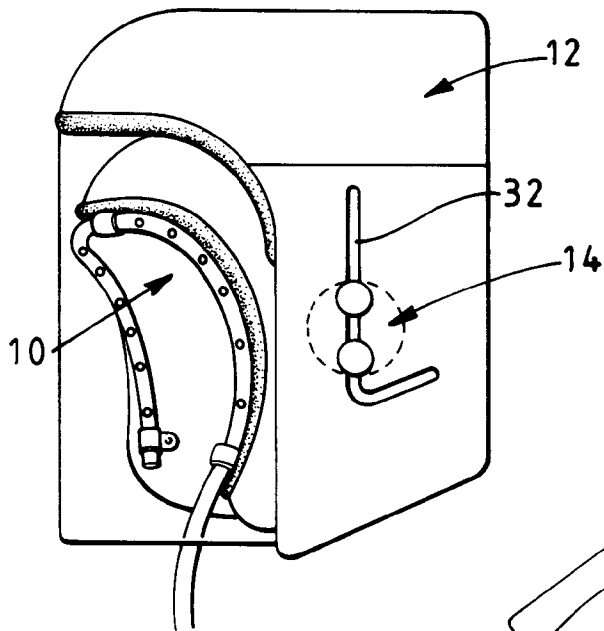


FIG 4

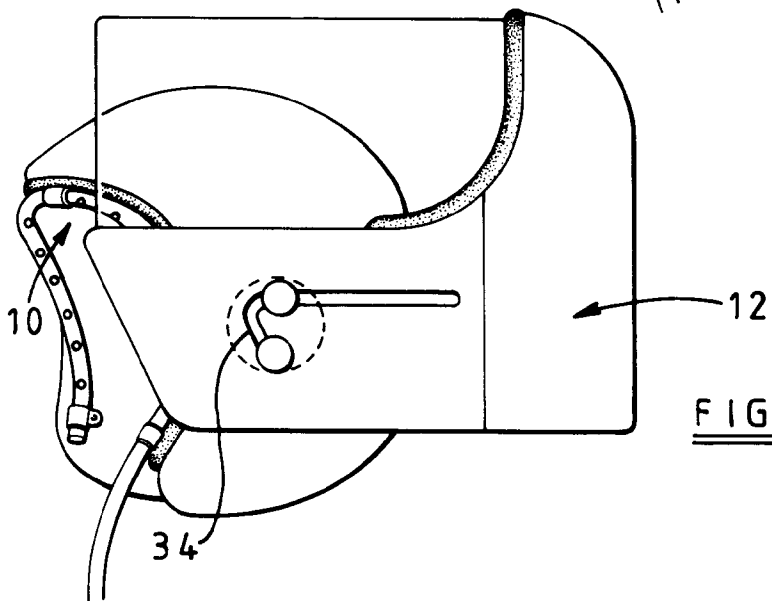


FIG 5



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 93 30 0184

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-2 541 874 (ETABLISSEMENTS JEAN GALLET & FILS) * page 5, line 5 - page 6, line 16 * * figures 7-10 *	1-5	A42B3/22 A42B3/28
A	FR-A-2 449 418 (KANGOL HELMETS LIMITED) * page 3, line 21 - page 7, line 36 * * figures *	1-5	
A	WO-A-8 704 323 (F. CHAISE)		
A	US-A-3 727 235 (J. FISHER)		
A	NL-C-49 498 (CODRA LASCH-INDUSTRIE)		
A	EP-A-0 147 313 (COMMISSARIAT A L'ENERGIE ATOMIQUE) * page 4, line 17 - page 6, line 20 * * page 7, line 10 - page 8, line 14 * * figures 1,2 *	7,8	
A	US-A-3 137 295 (R. STANSFIELD) * column 2, line 40 - column 3, line 17 * * claim; figure *	6-8	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	FR-A-2 109 042 (SOCIETE INDUSTRIELLE DE LUNETTERIE ET D'OPTIQUE RATIONNELLE S.I.L.O.R.) * page 3, line 26 - page 4, line 10 * * page 4, line 30 - line 36 * * figures 1,2 *	6-8	A42B A61F
A	GB-A-2 002 626 (BRITISH STEEL CORPORATION)		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 APRIL 1993	Examiner BOURSEAU A.M.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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