(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 052 068**
A1

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **81810407.7**

(22) Date of filing: **12.10.81**

(51) Int. Cl.³: **A 42 B 3/00**

(30) Priority: **11.11.80 CH 8344/80**

(43) Date of publication of application: **19.05.82**
Bulletin 82/20

(84) Designated Contracting States: **BE DE FR GB IT LU NL**

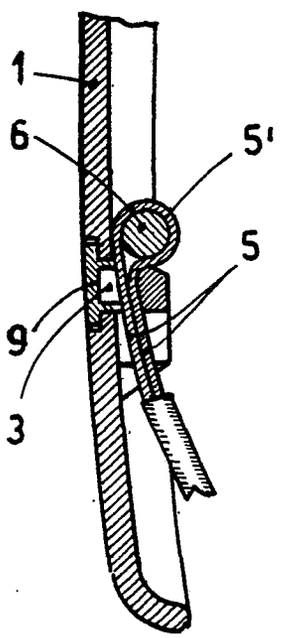
(71) Applicant: **Kiwi S.A., CH-6537 Grono (CH)**

(72) Inventor: **Bonalume, Enrico, Casa Torresama, CH-6535 Roveredo (GR) (CH)**

(74) Representative: **Baggiolini, Raimondo et al, Rachell & Fiammenghi Via San Gottardo 15, CH-6900 Lugano (CH)**

(54) **Improvements relating to protective helmets.**

(57) A protective helmet for cyclists, such as motor cyclists or pedal cyclists, or scooter riders or moped riders, and comprising a shell (1) which is in non-metallic material, the shell (1) having mountings at the respective sides for a chin strap (5). The said mountings comprise bridge pieces (2) formed integrally with the shell, the said bridge pieces being spaced from the inner surface of the shell to define a slot (3, 4) in which is received the chin strap end (5). A loop (5') in the chin strap end receives a locking pin (6) which co-operates with the bridge (2) to lock the chin strap (5) to the helmet. The locking pin (6) is in non-metallic material and therefore the entire mounting is in non-metallic material and therefore is not liable to corrosion or oxidation. Preferably, synthetic resin material is used, and polyester glass fibre reinforced material may be used. A cover plate (9) closes an aperture (3') formed in the outside of the shell, by virtue of the stamping or moulding of the bridge in the manufacture of the shell.



EP 0 052 068 A1

Improvements relating to Protective Helmets

This invention relates to protective helmets, which are used by, for example, motor cyclists and pedal cyclists, scooter riders and moped riders, and which are of a type provided with chin straps in order that the helmet may be held securely to the user's head. The most commonly known protective helmet for motor cyclists have chin straps which are secured by means of metallic pins or iron plates which plates in turn are rivotted to the inside of the helmet shell.

There are known other fixing arrangements in protective helmets, but invariably these arrangements include metallic connecting parts.

When metallic parts are used, it frequently happens that due to the action of inclement weather or because of perspiration of the user, the metallic parts become oxidised, and if made or iron or steel rusting, which on the one hand makes them unsightly, and on the other hand and more seriously weakens them to such an extent that they may fail in use when subject to stress which could be extremely dangerous in the case of impacts and accidents.

The present invention seeks to provide a helmet, the helmet shell, and a method of making a helmet shell whereby the utilisation of metallic parts for the fixing of the chin strap of the helmet is obviated thereby

avoiding the abovementioned drawbacks.

In accordance with the present invention, in a first aspect, a protective helmet comprising a head protecting shell of non-metallic material having chin strap mountings at respective sides thereof, and a chin strap, is characterised in that at least one of said mountings includes a support of non-metallic material which is integral with the shell and a non-metallic complimentary locking member which co-operates with the support thereby to lock the chin strap to the shell, whereby the use of rivets, screws, studs or other metallic parts is not necessary.

Also in accordance with the invention, there is provided a head protecting shell of a protective helmet as aforesaid, wherein the shell is of non-metallic material and has chin strap mountings at the respective sides thereof, said shell being characterised in that at least one of said mountings comprises a support stamped out from or moulded with the shell.

In yet another aspect of the invention there is provided a method of making a protective shell of a protective helmet provided with supports for a chin strap at respective sides of the shell, wherein the shell is formed in non-metallic material and at least one of said supports is stamped from or moulded with the said shell.

The shell of the helmet may be made of stampable themoplastic synthetic resin or of polyester resin reinforced with glass fibres, and the said support may be formed by stamping or mechanical moulding, and may comprise a bridge which is supported spaced inwardly of the inner surface of the shell by bridge legs at the end of the bridge, so as to define a bridge slot through which an end loop of the chin strap passes, said

complimentary part in such case comprising a locking pin which is of greater diameter than the width of the said slot and which passes through said loop of the chin strap, said locking pin being of synthetic plastics material.

The said locking pin may be provided with two resilient locking legs provided with projections which are adapted to spring into locking engagement with recesses or ledges in the bridge legs, thereby to prevent the movement of the locking pin upwards relative to the bridge.

With the formation of each bridge there may be formed an aperture in the outside of the shell, and such aperture is preferably covered by means of a cover plate which is provided with resilient projections which serve resiliently to lock the cover plate in position covering said aperture.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, whererein:-

Fig. 1 is a view of one side of the inside of the helmet shell, showing the integral support at that side, a similar support being provided at the other side;

Fig. 2 shows the support shown in Fig. 1 when viewed from the outside of the helmet;

Fig. 3 is a cross-section taken through the support shown in Figs. 1 and 2;

Fig. 4 is a view similar to Fig. 1, but showing the locking pin in operative position;

Fig. 5 is a side view of the locking pin shown in Fig. 4;

Fig. 6 is a plan view of an outer cover plate;

Fig. 7 is a cross-sectional view of a cover plate shown in Fig. 6 ; and

Fig. 8 is a cross-section similar to Fig. 3, but showing the complete assembly, and the loop end of the chin strap held by the assembly, and the cover plate applied.

Referring to the various figures, it is to be mentioned that the helmet shell 1 is provided with two chin strap mountings, one at each side and one only of which is described, and the said shell is made in this example of stampable elastic synthetic resin (it may be of polyester resin reinforced with glass fibres), and has formed by stamping or mechanical moulding on each side a locking bridge 2 which is spaced from the inside of the helmet by means of bridge legs at the ends of bridge 2, so as to define a slot or loop hole 3,4 to receive the looped end of the chin strap 5. The looped end may be formed by folding the end of the strap and sewing the folded end to the remainder. The looped end is indicated by numeral 5' in Fig. 8. Received in the looped end 5' is a locking pin 6, which is also made of synthetic resinous material and terminates in two resilient legs 7 and 8 as shown in Figs. 4 and 5, which are provided with projections 7' and 8' which are resiliently received in the recesses 2 and 2'' of the bridge 2, to prevent the movement of the pin 6, and therefore the loop 5', upwards in use.

The diameter of the pin 6 is greater than the width of the slot 3 of the bridge, to prevent the loop 5' from slipping through the slot 3,4.

Each mounting is provided with a cover plate 9 which is also of synthetic plastics material, and is provided with resilient projections 9 and 9'', which serve to

hold the cover in the opening 3', as shown in Fig. 2, to cover said opening. The opening 3' occurs with the stamping out of the bridge 2.

It will be clear that in the arrangement described there are no metallic parts, and therefore oxidation, corrosion and wear of parts due to oxidation and corrosion are excluded absolutely, ensuring the long term efficiency of the strap attachments.

The shape of the various parts making up each of the mountings or attachments for the strap may vary without departing from the scope of protection as defined in the appended claims.

CLAIMS

1. A protective helmet comprising a head protecting shell of non-metallic material having chin strap mountings at respective sides thereof and a chin strap, characterised in that at least one of said mountings includes a support (2) integral with the shell (1), and a locking member (6) which is also of non-metallic material and which co-operates with the support (2), thereby to lock the chin strap (5), to the shell (10), whereby the use of rivots, screws, studs, or other metallic parts is not necessary.

2. A helmet according to claim 1, characterised in that the the support (2) comprises a bridge (2) supported spaced inwardly of the inner surface of the shell by bridge legs at the end of the bridge (2) so as to define a bridge slot (3) through which an end loop (5') of the chin strap (5) passes, said complimentary part (6) comprising a locking pin (6) which is greater in diameter than the width of said slot (3,4) and which passes through the said loop (5') of the chin strap.

3. A helmet according to claim 2, characterised in that the locking pin (6) has resilient locking legs (7,8), which respectively resiliently lock to the bridge legs to prevent the locking pin (6) in use from moving upwardly relative to the bridge (2).

4. A helmet according to claim 1, 2 or 3, characterised in that the said support (2) is stamped out from or moulded with the protective shell (1).

5. A helmet according to claim 4, characterised in that an aperture (3') is formed in the shell (1) by the formation of the bridge (2), and a cover (9) of synthetic plastics material has resilient projections (9',9''),

by which the cover plate is sprung into position from the outside of the shell, so as to cover said aperture (3').

6. A helmet according to any preceding claim, characterised in that the chin strap mountings (2,6) at the respective sides of the shell (1) are identical.

7. A helmet according to any one of the preceding claims, characterised in that the shell (1) and integral support (2) or supports (2) are of stampable synthetic resin.

8. A helmet according to any of claims 1 to 6, characterised in that the shell (1) and integral support (2) or supports (2) are of polyester resin reinforced with glass fibre.

9. A head protecting shell for a protective helmet as claimed in claim 1, wherein the shell is of synthetic plastics material, and has chin strap mountings at respective sides thereof, characterised in that at least one of said mountings comprises a support (2) stamped from or moulded with the shell (1).

10. A protective shell according to claim 9, characterised in that the shell (1) and integral support (2) or supports (2) are of stampable synthetic resin.

11. A shell according to claim 9, characterised in that the shell (1) and integral support (2) or supports (2) are of polyester resin reinforced with glass fibre.

12. A method of making a protective shell for a protective helmet provided with a support for a chin strap at respective sides of the shell, characterised in that the shell is formed in non-metallic material and at least one of said supports is formed integrally

with said shell.

13. A method according to claim 12, wherein the shell and integral support or supports are of stampable synthetic resin.

14. A helmet acccording to claim 12, characterised in that the shell and integral support or supports are of polyester resin reinforced with glass fibre.

0052068

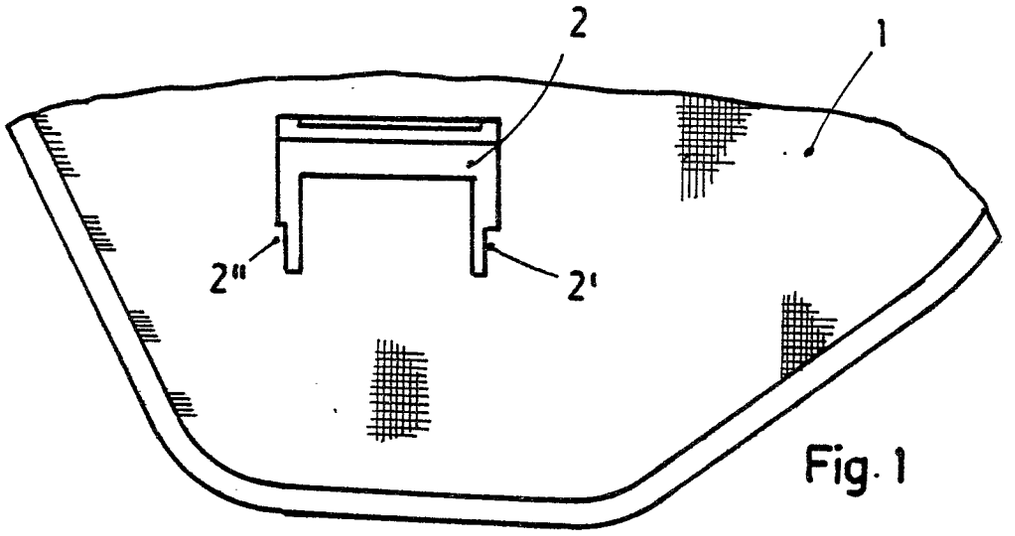


Fig. 1

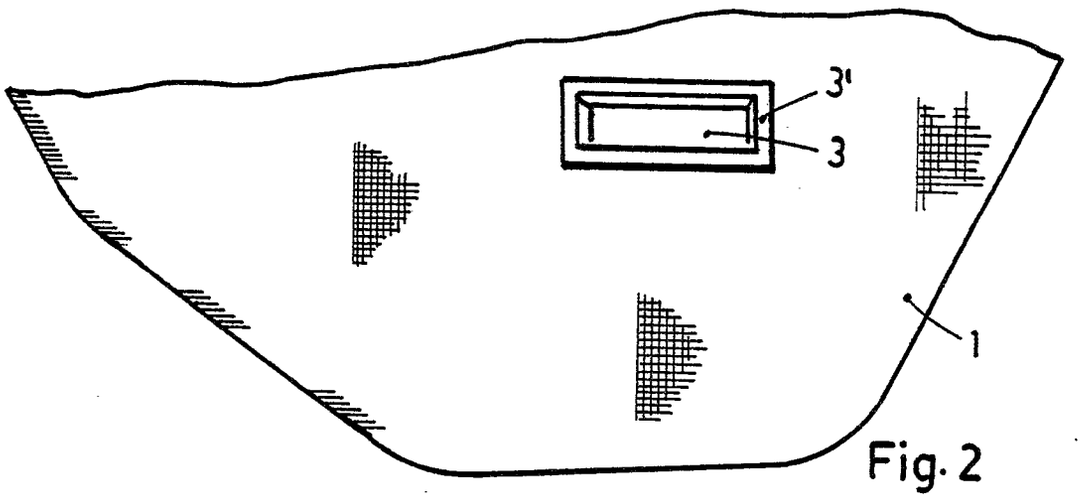


Fig. 2

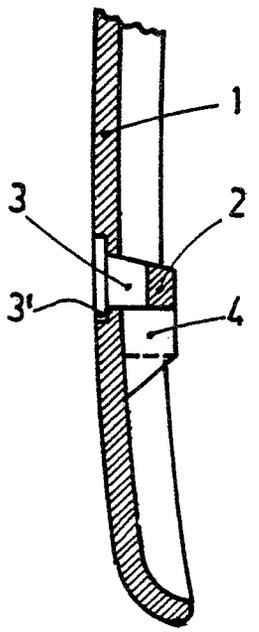


Fig. 3

0052068

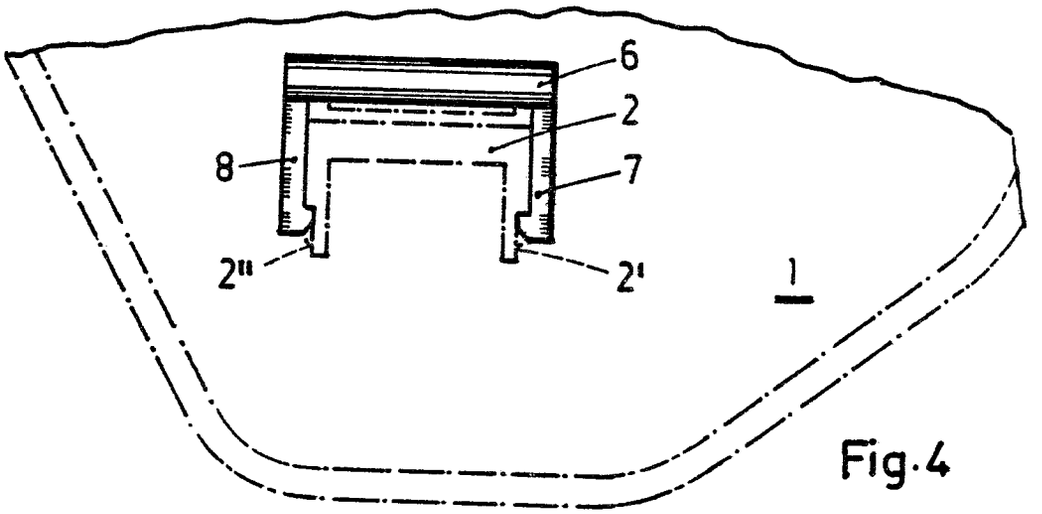


Fig.4

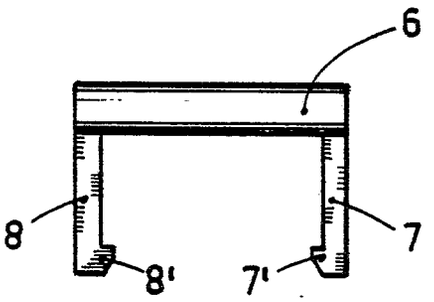


Fig.5

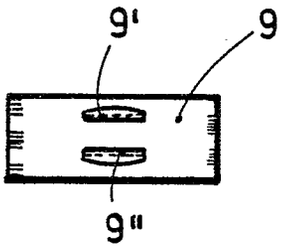


Fig.6

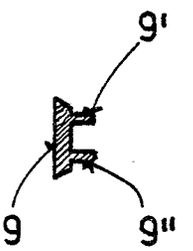


Fig.7

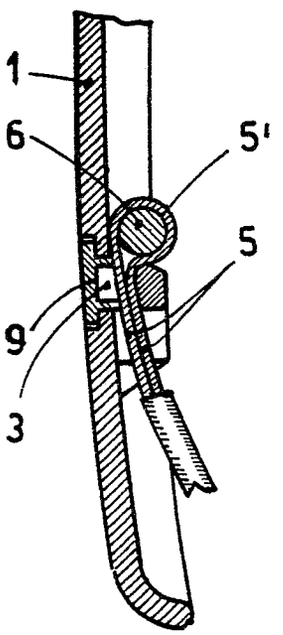


Fig.8

European Patent Office

0052068

Application number

EP 81 81 0407

EUROPEAN SEARCH REPORT

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	US - A - 3 273 163 (ANDREWS III) * the whole document *	1-14
A	US - A - 2 177 145 (LEWIS) * page 2, right-hand column, lines 39-47; page 3, left-hand column, lines 39-53; claims; figures 3 and 5 *	1,2,5, 6
A	CH - A - 467 591 (TEMPELHOF) * column 2, lines 29-35; column 3, lines 1-8; claim; sub-claims; figures 1,2 and 5 *	1,4, 6-14
A	FR - A - 1 046 423 (BRITISH MOULDED PLASTICS) * page 2, left-hand column, lines 28-33; right-hand column, lines 3-8; figures *	1,4,6-14
A	FR - A - 1 215 217 (FRANCK) * page 2, left-hand column, paragraphs 9,10; right-hand column, paragraph 1; figure 4 *	1,4,6-14
A	US - A - 2 665 422 (GREEN et al.) * column 1, lines 22-53; column 3, lines 42-53; claims; figures *	1
A	DE - C - 630 473 (ISLER) * claims; figures *	1

./.

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

A 42 B 3/00

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

A 42 B

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

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	08.02.1982	BOURSEAU

European Patent Office

EUROPEAN SEARCH REPORT

Application number

EP 81 81 0407

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	FR - A - 2 229 363 (PARMELEE) * claims; figures *	1
A	US - A - 4 044 400 (LEWICKI et al.) * claims; figures *	1
A	GB - A - 1 578 351 (DU PONT CANADA) * claims 1 and 9 *	7,8, 10,11, 13,14

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

TECHNICAL FIELDS SEARCHED (Int. Cl.³)