Oct. 25, 1966 G. SCHEIBCHEN 3,280,402

PROTECTIVE HEADGEAR

Filed Oct. 1, 1964

FIG. 1

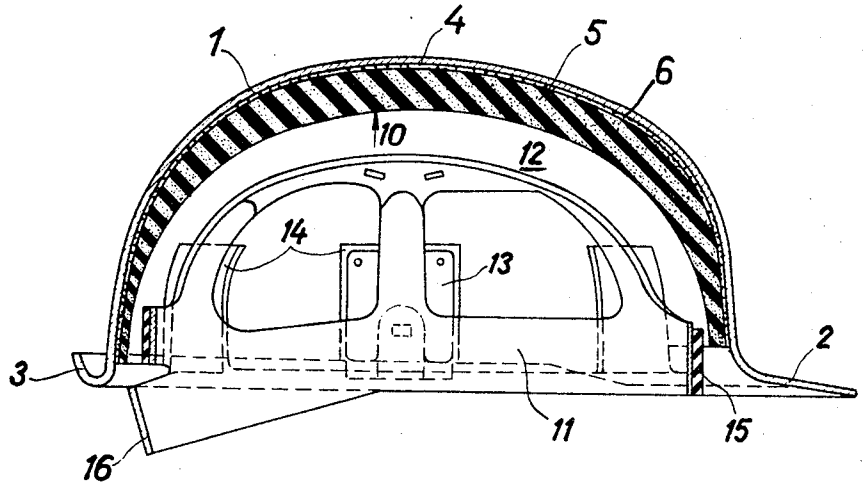


FIG. 2

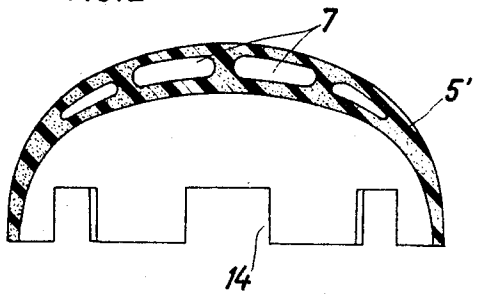
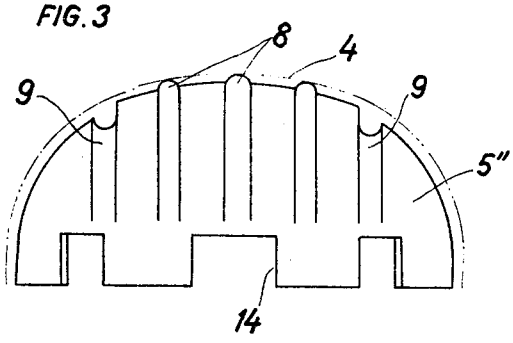


FIG. 3



GERHARD SCHEIBCHEN
INVENTOR.

BY Karl G. Ross

AGENT

United States Patent Office 3,280,402 Patented Oct. 25, 1966

1

3,280,402

PROTECTIVE HEADGEAR

Gerhard Scheibchen, Wiesbaden-Sonnenberg, Germany, assignor to Firma Schuberth-Werk KG., Braunschweig, Germany, a corporation of Germany

Filed Oct. 1, 1964, Ser. No. 400,834
7 Claims. (Cl. 2—3)

My present invention relates to protective headgear, such as a crash or riot helmet, and has for its principal object the provision of a helmet of this type capable of effectively absorbing mechanical shocks or at least minimizing their impact upon the wearer.

A more particular object of this invention is to provide a headgear of this character which is of simple construction and inexpensive to produce in quantities.

It is known to form a helmet with a rigid outer shell, e.g., of metal or strong plastic, and to attach a head-engaging webbing of leather or other flexible material to the rim of the shell in such a manner that the webbing is normally spaced from the inner shell wall in order to prevent direct contact between the shell and the head of the wearer. In the case of heavy blows or other severe stresses, however, the shell may still be sufficiently deformed or displaced to damage the skull under the impact of, say, the fall of a heavy object or ejection from a speeding vehicle.

I have found that the shock resistance of a helmet of this type can be greatly improved if, in accordance with my invention, the shell is inwardly lined with an elastic pad occupying only part of the clearance between the shell and the webbing, thereby maintaining a desirable relative mobility between shell and webbing so that minor impacts will not cause any particular discomfort to the wearer. If, however, the shell is deformed or deflected by the suspension of the webbing or is overstressed by a heavy blow, the pad cushions the impact so as to protect the skull from serious injury.

Because the greatest stresses are generally to be expected at the top of the head, it is advantageous to give the lining a maximum thickness in the central region of the shell and to let this thickness decrease toward the rim where, in fact, the pad may be cut away at spaced locations to provide room for the attachment of the webbing to the shell. In particular, I have found that very good results are obtained if the normal separation of the webbing from the shell is substantially uniform and double the maximum thickness of the pad.

In some instances, as where protection is needed against moderate shocks only and where light weight is a consideration, the pad may be formed with internal voids or may have a fluted and/or corrugated outer surface to increase its resiliency and to reduce its mass.

The pad or lining may be adhesively secured to the inner shell surface though it is, of course, also possible to design the shell and the webbing support in such a way that the pad will be removably held in position along the inner shell wall.

The invention will be described in greater detail with reference to the accompanying drawing in which:

FIG. 1 is a cross-sectional view of a helmet according to the invention;

FIG. 2 illustrates, in section, a modified pad adapted to be used with the helmet of FIG. 1; and

FIG. 3 is an elevational view of a further modified pad for the helmet.

The protective headgear **1** shown in FIG. 1 comprises a helmet-shaped rigid shell **4** integrally formed with a visor **2** and a brim **3** along its rim. Fastened to this shell in the vicinity of its rim is a downwardly concave webbing **11** conforming to the skull of a wearer, this webbing being secured to the shell by resilient bridge pieces **13** so as to be normally spaced from the shell

2

by a substantially uniform clearance **12**. Within this space **12** there is disposed a resilient pad **5**, e.g., of foam rubber or foam plastic, whose maximum thickness in the central region **10** is about half the width of the clearance **12** and which tapers toward a minimum thickness near the rim of the shell. In FIG. 1 the pad **5** is shown adhesively secured to the shell **4** by a layer **6** of cement. This pad, which lines almost the entire inner surface of shell **4**, is formed near its periphery with spaced cutouts **14** to accommodate the bridge pieces **13**. A resilient strap **15**, e.g., of rubber, peripherally surrounds the webbing **11** as a cushion between its mounting and the head of the wearer. A strap **16** integrally with webbing **11** extends below the brim **3**.

In FIG. 2 I show a modified pad **5'** provided with internal voids **7**.

According to FIG. 3, a pad **5''** may also be provided with ribs **8** and flutes **9** adjacent the inner wall surface of shell **4** (shown in dot-dash line in FIG. 3) which is contacted by the pad along the crests **8** of its corrugations.

My invention is, of course, not limited to the specific embodiments described and illustrated but may be realized in various modifications without departing from the spirit and scope of the appended claims.

I claim:

1. A protective headgear comprising a helmet-shaped rigid shell, a head-engaging flexible webbing within said shell, said webbing having a periphery confronting the rim of said shell, a plurality of resilient mounting elements securing said webbing to said shell with all-around clearance while maintaining said periphery spaced from said rim, and an elastic pad in said clearance lining substantially the entire inner wall of said shell, said pad being spaced from said webbing and being recessed at a plurality of peripherally spaced locations for providing room for said mounting elements.

2. A headgear as defined in claim **1** wherein said pad has a maximum thickness substantially at the center of the shell, said thickness decreasing progressively toward said rim.

3. A headgear as defined in claim **1** wherein the spacing of said webbing from said shell is substantially uniform and equal to approximately double said maximum thickness.

4. A headgear as defined in claim **1** wherein said pad is externally corrugated and contacts said shell along the crests of its corrugations.

5. A headgear as defined in claim **1** wherein said pad is fluted along its contact surface with said shell.

6. A headgear as defined in claim **1** wherein said pad is provided with internal voids.

7. A headgear as defined in claim **1**, further comprising a resilient strap interposed between said periphery and said mounting elements for cushioning the head of the wearer against said elements.

References Cited by the Examiner

UNITED STATES PATENTS

1,833,708	11/1931	Ford	2—3
2,140,716	12/1938	Pryale	2—3
2,618,780	11/1952	Cushman	2—3
2,923,941	2/1960	Roth et al.	2—3
3,055,013	9/1962	Aileo	2—3
3,137,859	6/1964	Zbikowski	2—3

FOREIGN PATENTS

717,121	10/1954	Great Britain.
918,178	2/1963	Great Britain.

JORDAN FRANKLIN, *Primary Examiner.*
J. R. BOLER, *Assistant Examiner.*