



AU9066841

(12) PATENT ABRIDGMENT (11) Document No. AU-B-66841/90
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 638293

- (54) Title
DIVING HELMET
- International Patent Classification(s)
(51)⁵ **B63C 011/06 B63C 011/14**
- (21) Application No. : **66841/90** (22) Application Date : **21.11.90**
- (30) Priority Data
- (31) Number (32) Date (33) Country
2-10580 U 07.02.90 JP JAPAN
- (43) Publication Date : **08.08.91**
- (44) Publication Date of Accepted Application : **24.06.93**
- (71) Applicant(s)
TOHGUN KIGYO CO., LTD
- (72) Inventor(s)
MASAHIKO KABURAKI
- (74) Attorney or Agent
CARTER SMITH & BEADLE , Qantas House, 2 Railway Parade, CAMBERWELL VIC 3124
- (56) Prior Art Documents
US 3960171
US 2693180
GB 1505803
- (57) Claim

1. A diving helmet which comprises:

a head having a face and a back and in which the face includes a transparent window;

a body-contacting portion which is provided under said head, said head and said body-contacting portion being made of rigid material.

an air-supply tube which is connected to said head to supply air to the head; and

an elongate chamber having an inner wall and an outer wall which is formed in said body-contacting portion;

the inner wall of said elongate chamber having a plurality of exhaust guide holes, the outer wall having a plurality of exhaust air outlet holes each of which is smaller than said exhaust guide holes and through which

(11) AU-B-66841/90

-2-

(10) 638293

exhaust air bubbles may be discharged into the water in
a stable manner.

COMPLETE SPECIFICATION

FOR OFFICE USE

Application Number:

Lodged:

Class:

Int. Class:

638293

Complete Specification – Lodged:

Accepted:

Published:

Priority:

Related Art:

TO BE COMPLETED BY APPLICANT

Name of Applicant: **TOHGUN KIGYO CO., LTD.**

Address of Applicant: **20-3, Takanawa 4-chome, Minato-ku, Tokyo, Japan**

Actual Inventor: **Masahiko KABURAKI**

Address for Service: **SMITH SHELSTON BEADLE**
207 Riversdale Road (P O Box 410)
Hawthorn Victoria 3122 Australia
(Attorney Code SA)

Complete Specification for the invention entitled:

DIVING HELMET

The following statement is a full description of this invention, including the best method of performing it known to us:

This invention relates to an easily usable diving helmet.

In a known diving helmet, a head and a body contacting portion are made of a heavy metal or synthetic resin with a relatively large thickness, thereby functioning as a weight. The face of the head comprises a transparent window and an exhaust tube is connected to the back of the head. Excess air which is fed into the helmet and discharged with breathing is discharged into the sea along the highest portion of the lower edge of the helmet. When the excess air is discharged from the diving helmet, it is discharged as large bubbles at a stroke, which results in generating a large sound and swinging the helmet. If the user is a beginner, it will allow him or her to feel uneasy. When he is bent forward to watch his feet at the bottom of the sea, the helmet which functions as a weight is pressed forward, thereby allowing him to fall down.

SUMMARY OF THE INVENTION

According to the present invention, there is provided a diving helmet which comprises:

a head having a face and a back and in which the face includes a transparent window;

a body-contacting portion which is provided under said head, said head and said body-contacting portion being made of rigid material.

an air-supply tube which is connected to said head to supply air to the head; and

an elongate chamber having an inner wall and an



outer wall which is formed in said body-contacting portion;

the inner wall of said elongate chamber having a plurality of exhaust guide holes, the outer wall having a plurality of exhaust air outlet holes each of which is smaller than said exhaust guide holes and through which exhaust air bubbles may be discharged into the water in a stable manner.

The air in the helmet is collected through the plurality of exhaust guide holes which are provided in the inner wall of the chamber positioned along the lower edge of the head, and guided through the chamber to a plurality of relatively smaller exhaust and outlet holes, which are preferably in the back of the helmet. The air is transformed into small bubbles through each of the exhaust outlet holes, thereby providing stable exhaustion and preventing unexpected sound or vibration.

BRIEF DESCRIPTION OF THE DRAWINGS

These and the other features and advantages of this invention will be apparent from the following description with respect to the appended drawings wherein:

Fig. 1 is a central vertical sectioned side view of one embodiment according to the present invention;

Fig. 2 is a back view thereof; and

10
15
20
25



Fig. 3 is a central vertical sectioned side view of another embodiment.

PREFERRED EMBODIMENTS OF THE INVENTION

Figs. 1 and 2 illustrate an embodiment of this invention. Numeral 1 denotes a diving helmet made of heavy metal or synthetic resin and comprises a head 2 and a body-contacting portion 6 which comprises a shoulder-contacting portion 3, a breast-contacting portion 4 and a neck-contacting portion 5 being relatively thick and heavy. The helmet 1 itself plays a role for the weight in diving.

The face of the helmet 1 comprises a transparent window 7. An air supply tube 8 is connected to the back of the head 2 in the helmet 1 above the neck-contacting portion 5. Air is fed from a ship on the water through the air supply tube 8, so that the head 2 is always filled with fresh air.

The helmet 1 is in use for an underwater walk or sightseeing at relatively small depth of up to ten meters.

In the back of the head 2, there is provided an elongate chamber 9 between the shoulder-contacting portion 3 and the neck-contacting portion 5. A plurality of exhaust guide holes 10 are horizontally formed along the lower edge 9b of the chamber 9. A plurality of exhaust holes 11 are formed in the outer wall above the neck-contacting portion 5 of the

chamber 9. The exhaust hole 11 has a relatively small diameter, thereby making bubbles smaller and to keep bubble discharge at a certain velocity. The exhaust hole 11 may preferably be positioned closer to the upper edge 9a of the chamber 9. The exhaust holes 11 are horizontally aligned, but part or all of them may be out of the alignment. The exhaust guide holes 10 define the water surface within the helmet 1 and may therefore be positioned under the exhaust holes 11 preferably.

Fig. 3 illustrates another embodiment of this invention. In Figs. 1 and 2, the chamber 9 is formed in the shoulder-contacting portion 3 and the neck-contacting portion 5 which are integrally moulded with the head 2, but it is troublesome to form the chamber 9. In Fig. 3, the contact member 12 is separately moulded and, then, is connected to a head 2a.

Numeral 13 denotes a protrusion which is provided at the lower end of the back of the head 2a, while numeral 14 denotes a groove which is formed at the upper edge of the contact member 11. The lower end of the head 2a is inserted into the groove 14 and is supported with the protrusion 13.

In this embodiment, the contact member 12 is made of a soft rubber or vinyl, thereby providing comfortable touch in use and easy manufacturing.

This invention provides stable exhaustion of air and prevents noise or vibration. Bubbles are always discharged through a certain position. Exhausted bubbles never prevent visibility of the

5 user.

The foregoing merely relates to preferred embodiments of the invention, but various changes and modifications may be made by person skilled in the art without departing from the following claims:

10 The claims form part of the disclosure of this specification.

The claims defining the invention are as follows:

1. A diving helmet which comprises:

a head having a face and a back and in which the face includes a transparent window;

5 a body-contacting portion which is provided under said head, said head and said body-contacting portion being made of rigid material.

an air-supply tube which is connected to said head to supply air to the head; and

10 an elongate chamber having an inner wall and an outer wall which is formed in said body-contacting portion;

the inner wall of said elongate chamber having a plurality of exhaust guide holes, the outer wall having a plurality of exhaust air outlet holes each of which is 15 smaller than said exhaust guide holes and through which exhaust air bubbles may be discharged into the water in a stable manner.

2. A diving helmet as defined in claim 1 wherein the body-contacting portion is formed integrally with the head. 20

3. A diving helmet as defined in claim 1 wherein the head and the body-contacting portion are separately moulded.

25 4. A diving helmet as defined in claims 1, 2 or 3, wherein said head and said body contacting portion are made of heavy metal or synthetic resin.

5. A diving helmet as defined in any preceding claim wherein said air supply tube is connected to the back of



said head.

6. A diving helmet as defined in any preceding claim wherein said outlet holes are formed in that portion of said body contacting portion which is adjacent the back of said head.

5

7. A diving helmet substantially as hereinbefore described with reference to the accompanying drawings.

DATED this 13 April, 1993

CARTER SMITH & BEADLE

10

Fellows Institute of Patent Attorneys of Australia

Patent Attorneys for the Applicant:

TOHGUN KIGYO CO., LTD.

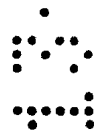
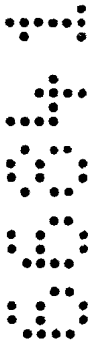


FIG.1

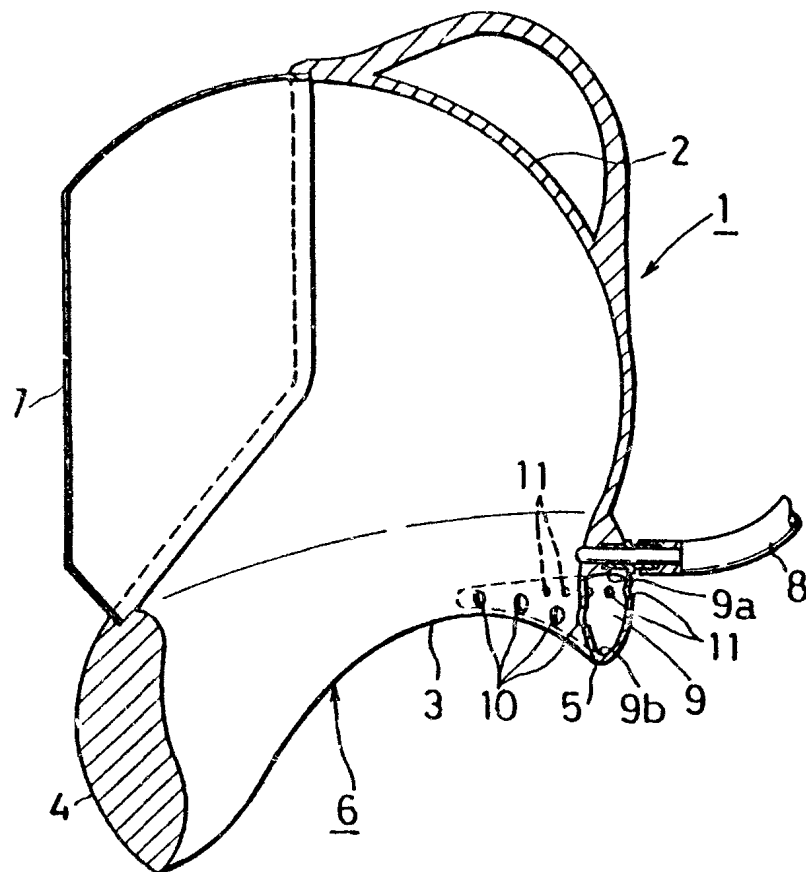


FIG.2

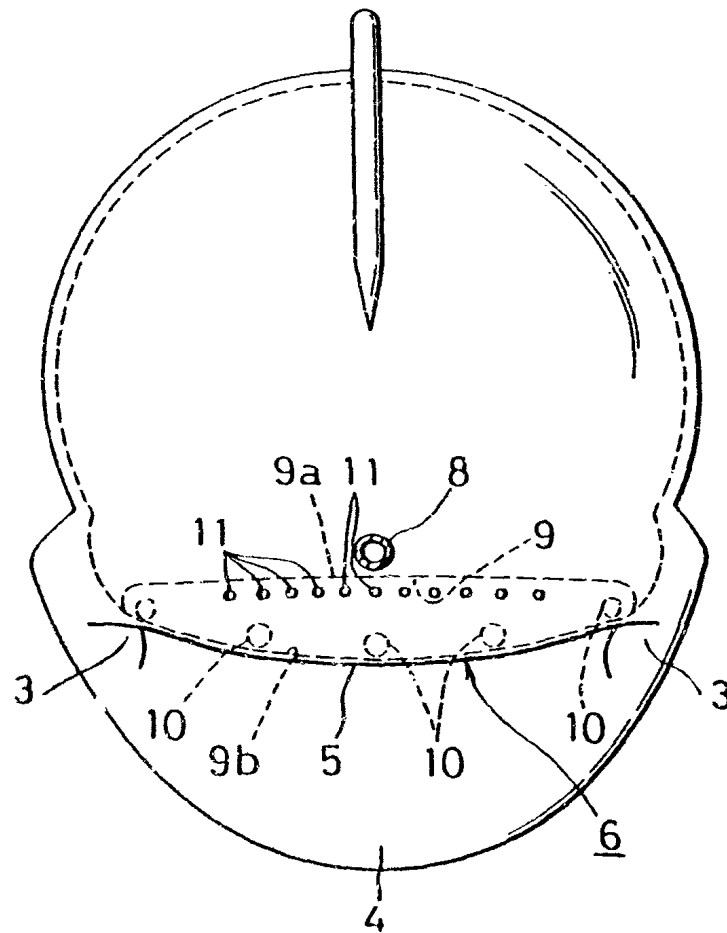


FIG. 3

