

19076 88

COMMONWEALTH of AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

I
~~We~~

IRVING FEDER

of

305 Poinciana Island Drive,
Miami Beach, Florida 33160
United States of America

609 152

hereby apply for the grant of a Standard Patent for an invention entitled:

"SELF-CONTAINED UNDERWATER DRINKING APPARATUS FOR
SCUBA DIVERS"

which is described in the accompanying ~~provisional~~
complete specification.

Details of basic application(s):—

Number

Convention Country

Date

074,677

United States of America

17th July, 1987

APPLICATION ACCEPTED AND AMENDMENTS

ALLOWED 29.1.91

The address for service is care of DAVIES & COLLISON, Patent Attorneys, of 1 Little
Collins Street Melbourne, in the State of Victoria, Commonwealth of Australia.

Dated this 15th

day of

July

19 88

To: THE COMMISSIONER OF PATENTS

Keith Collison

(a member of the firm of DAVIES &
COLLISON for and on behalf of the Applicant).

Davies & Collison, Melbourne and Canberra.

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

DECLARATION IN SUPPORT OF CONVENTION OR NON-CONVENTION APPLICATION FOR A PATENT

Insert title of invention.

In support of the Application made for a patent for an invention
entitled: "SELF-CONTAINED UNDERWATER DRINKING APPARATUS
FOR SCUBA DIVERS"

Insert full name(s) and address(es)
of declarant(s) being the appli-
cant(s) or person(s) authorized to
sign on behalf of an applicant
company.

I ~~We~~ Irving Feder
of 305 Poinciana Island Drive,
Miami Beach, Florida 33160
United States of America

Cross out whichever of paragraphs
1(a) or 1(b) does not apply

1(a) relates to application made
by individual(s)

1(b) relates to application made
by company; insert name of
applicant company.

do solemnly and sincerely declare as follows :-

1. (a) I am the applicant..... for the patent
~~We are~~

or (b) ~~I am authorized by~~

~~the applicant..... for the patent to make this declaration on~~ ~~its~~ ~~behalf~~
~~their~~

2. (a) I am the actual inventor..... of the invention
~~We are~~

or (b)

Cross out whichever of paragraphs
2(a) or 2(b) does not apply

2(a) relates to application made
by inventor(s)

2(b) relates to application made
by company(s) or person(s) who
are not inventor(s); insert full
name(s) and address(es) of inven-
tors.

~~is~~ ~~the actual inventor..... of the invention and the facts upon which the applicant.....~~
~~are~~

~~is~~ ~~entitled to make the application are as follows :-~~
~~are~~

State manner in which applicant(s)
derive title from inventor(s)

Cross out paragraphs 3 and 4
for non-convention applications.
For convention applications,
insert basic country(s) followed
by date(s) and basic applicant(s).

3. The basic application..... as defined by Section 141 of the Act ~~was~~ made
in United States of America on the 17th July, 1987
by Irving Feder

in on the
by
in on the
by

4. The basic application..... referred to in paragraph 3 of this Declaration ~~was~~
the first application..... made in a Convention country in respect of the invention the subject
of the application.

Insert place and date of signature.

Declared at Hollywood, Fl, this 19th day of August, 1988

Signature of declarant(s) (no
attestation required)

Irving Feder

Note Initial all alterations.

(12) PATENT ABRIDGMENT (11) Document No. AU-B-19076/88
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 609152

(54) Title
SELF-CONTAINED UNDERWATER DRINKING APPARATUS FOR SCUBA DIVERS

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(56) Prior Art Documents
US 4398533
US 4090650
US 4139130

(57) Claim

1. Self-contained underwater drinking apparatus for scuba divers, comprising a container for liquid, a tube connected to said container for receiving the liquid from said container, a mouthpiece integral with said tube to be placed in the mouth of the diver for receiving the liquid from said tube, and means for forcing liquid from said container through said tube and into said mouthpiece, said mouthpiece having means for attaching said mouthpiece to a regulator supplying air to the diver, whereby a diver may receive both liquid and air through said mouthpiece without removing said mouthpiece from the mouth of the diver.

14. Method for supplying liquid to the mouth of a scuba diver under water, which comprises connecting a mouthpiece to a

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regulator supplying air to the mouthpiece, connecting a tube to the mouthpiece, connecting a container for liquid to the tube, and squeezing the container forcing liquid from the container through the tube into the mouthpiece, whereby a diver may receive both liquid and air through the mouthpiece without removing the mouthpiece from the mouth of the diver.

COMMONWEALTH OF AUSTRALIA

PATENT ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

60 9 15 2

CLASS

INT. CLASS

**Application Number:
Lodged:**

**Complete Specification Lodged:
Accepted:
Published:**

Priority:

Related Art:

This document contains the
amendments made under
Section 49 and is correct for
printing.

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1 Little Collins Street, Melbourne, 3000.

COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

"SELF-CONTAINED UNDERWATER DRINKING APPARATUS FOR SCUBA DIVERS"

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

The invention relates to a drinking apparatus to be used by scuba divers when above and under water. Such a device is unknown in the prior art.

Scuba divers carry with them enough air in tanks to enable them to remain under water for extended periods of time. However, a diver's mouth or throat will often become dry because the air in the tanks lacks humidity, or salt water which has entered the diver's mouth may irritate the throat, cause nausea and/or indigestion. Furthermore, a diver may be surrounded by dangerous and perhaps toxic chemicals in the water which require the diver to ingest a medicinal liquid or to use a mouthwash if such substances are swallowed. When this occurs, the diver may have to return to the surface merely for the purpose of ingesting liquid.

U.S. Patent Nos. 4,090,650; 4,139,130; and 4,176,772 relate to canteens or containers which are worn around the waist and have outlets for dispensing liquid for drinking. Similarly, U.S. Patent No. 4,629,098 provides an insulated

container which has a dispensing tube and a bulb connected to the tube for pressurizing the liquid in the container. Such devices are used while hiking or while engaged in other sports above water.

U.S. Patent No. 4,627,554 discloses a collapsible container for dispensing infusion liquids at a constant pressure for medical purposes. The device uses an outlet tube to feed the liquid to a patient who will also be above water. Finally, U.S. Patent No. 4,526,298 discloses a container to be used by a hiker and therefore above water, which includes a trigger-operated nozzle attached to the container through a tube for spraying liquid.

All of the above-described devices used for drinking provide tubes or other outlet means which are placed in the mouth for drinking and are removed from the mouth for breathing. Naturally, this presents no problem when above water, but it would make the devices difficult or impossible to use underwater.

It is accordingly an object of the invention to provide a drinking apparatus for scuba divers, which overcomes the hereinafore-mentioned disadvantages of the heretofore-known devices of this general type and which can be used without

disturbing or interfering with the underwater breathing apparatus used by the diver.

According to a first aspect of the present invention
5 there is provided a self-contained underwater drinking apparatus for scuba divers, comprising a container for liquid, a tube connected to said container for receiving the liquid from said container, a mouthpiece integral with said tube to be placed in the mouth of the diver for
10 receiving the liquid from said tube, and means for forcing liquid from said container through said tube and into said mouthpiece, said mouthpiece having means for attaching said mouthpiece to a regulator supplying air to the diver, whereby a diver may receive both liquid and
15 air through said mouthpiece without removing said mouthpiece from the mouth of the diver.

According to a second aspect of the present invention
there is provided a method for supplying liquid to the
20 mouth of a scuba diver under water, which comprises connecting a mouthpiece to a regulator supplying air to the mouthpiece, connecting a tube to the mouthpiece, connecting a container for liquid to the tube, and squeezing the container forcing liquid from the container
25 through the tube into the mouthpiece, whereby a diver may receive both liquid and air through the mouthpiece without removing the mouthpiece from the mouth of the diver.

30 Through the use of the invention, the diver will be able to drink a liquid when desired, without removing the mouthpiece and the regulator attached thereto for supplying air.

35 In accordance with another feature of the invention, the container is flexible, and there are provided means



-3a-

connected to the tube for permitting the liquid to flow
through the tube when the container is squeezed and
preventing the liquid from flowing through the container
5 when the container is not squeezed. In accordance with a
further feature of the invention, the means for
permitting and preventing liquid flow is a check valve.
In this way there is very little chance that liquid will
flow to the mouthpiece



when not desired and liquid will be prevented from returning to the container.

In accordance with an added feature of the invention, there is provided a a quick disconnect check valve connected to the tube between the first-mentioned check valve and the mouthpiece. This feature permits the container to be easily disconnected from the mouthpiece, while preventing water from entering the mouthpiece from the surroundings.

In accordance with an additional feature of the invention, there is provided an on-off valve connected to the tube between the check valves. The on-off valve provides a positive means for shutting off flow from the container even when it is squeezed.

In accordance with yet another feature of the invention, there is provided a flange connecting the container to the tube, the first-mentioned check valve being disposed in the flange and the on-off valve being connected to the flange. This construction makes use of readily available parts for assembling the device.

In accordance with yet a further feature of the invention, the container includes means for fixing the container in place. In accordance with yet an added feature of the

invention, the container includes means for connecting the container to an air hose connected to the regulator. In accordance with yet an additional feature of the invention, the container has flaps and the fixing means are in the form of hook and loop fasteners disposed on the flaps. Such a structure makes the device easy to attached to and remove from an accessible location on the diver's equipment.

In accordance with still another feature of the invention, the container includes an outer pouch having means for fixing the container in place, an inner pouch being disposed in the outer pouch and having a filling opening formed therein for the liquid, and means for retaining the inner pouch in the outer pouch. In accordance with still a further feature of the invention, the outer pouch has a flap and the retaining means are in the form of hook and loop fasteners disposed on the flap. This construction of the container makes it easy to fill and attach.

In accordance with a concomitant feature of the invention, the mouthpiece includes a bitepiece, a portion of the tube being integral with the bitepiece. The placement of the tube in this way ensures that it will not annoy the diver.

Other features which are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in a self-contained underwater drinking apparatus for scuba divers, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and advantages thereof will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

Fig. 1 is a diagrammatic, perspective view of the drinking apparatus for scuba divers according to the invention, being worn by a diver;

Fig. 2 is a fragmentary, side-elevational, exploded view of the different parts of the apparatus except for the container;

Fig. 3 is a partly broken away, top-plan view of the entire apparatus with a portion of a tube removed;

Figs. 3A, 3B and 3C are fragmentary, cross-sectional views of portions of the container taken along the lines IIIA-IIIA, IIIB-IIIB and IIIC-IIIC in Fig. 3, respectively, in the direction of the arrows;

Fig. 4 is a fragmentary, left-side elevational view of the mouthpiece of the invention; and

Fig. 5 is a fragmentary, right-side elevational view of the mouthpiece of the invention.

Referring now to the figures of the drawings in detail and first, particularly, to Fig. 1 thereof, there is seen a diver 1 with a mouthpiece 2 in the diver's mouth. A conventional regulator 3 is attached to the mouthpiece 2 and an air hose leads from the regulator to non-illustrated tanks worn on the diver's back. The drinking apparatus includes a container 5 connected to the mouthpiece 2 through valves and hoses to be described below. The container may also be attached to the air hose 4 as shown and described below.

Fig. 2 shows a right angle flange 6 which may be model No. 727 AC sold by the firm Halkey-Roberts of St. Petersburg, Florida, which has an end 6a that is connected to the container 5 in a manner that will be described in more detail below. A check valve 7 which may be model No. C 730

of Halkey-Roberts is placed completely inside an end 6b of the flange 6 in a direction preventing flow into the container 5. The valve 7 fits snugly into the flange so as to prevent leakage around the valve. The valve has a given cracking pressure in the unchecked direction adjusted by the manufacturer, which prevents liquid from pouring out of the container due to gravity. An on-off valve which may be model No. 320 TE of Halkey-Roberts is connected to the end 6b of the flange 6. The knurled portion of the valve 8 is pushed and pulled in order to close and open the valve. A tube 9 which is a conventional plastic tube or a rubbery tube which may be made of rubber or its generic equivalent is attached to the valve 8. A quick disconnect fitting 10 which is connected to the tube 9 may be model No. 55-02-02 of the firm ADI. The fitting 10 has a barb connector 11 which is forced into the tube 9. A knurled nut 12 which is unchecked male side of the fitting 10, is attached to the connector 11. A valve body 13 which is the checked female side of the fitting 10 is screwed to the nut 12 and carries another knurled portion 14 and another barbed connector 15. Another tube 16 is forced on the connector 15. The tube 16 is integral with or adhesively or mechanically connected to the mouthpiece 2. The tube 16 has an outlet portion 17 which may or may not protrude from a bitepiece 18 of the mouthpiece. The tubes 9 and 16 may be of any length desired

so that the distance between the mouthpiece and the container can be selected accordingly.

Fig. 4 shows the end of the mouthpiece 2 at which the regulator 3 is attached. The regulator has a non-illustrated portion which protrudes into a hole 19 in the mouthpiece. Fig. 5 shows the side of the mouthpiece which is inserted into the mouth of the diver. Both figures show the tube 16 and Fig. 5 clearly illustrates the bitepiece 18 and the outlet portion 17. The outlet portion 17 may face in other directions relative to the bitepiece 18, as desired for the comfort and convenience of the diver.

The container 5 is shown in greater detail in Fig. 3. The container includes an outer pouch 20 having a body and three flaps 21, 22 and 27. As shown in Figs. 3, 3A and 3B, the flap 21 has hook fasteners 23 and 24 disposed on both sides thereof and the flap 22 has loop fasteners 25 and 26 formed on both sides thereof. In this way the container 5 can be wrapped around the air hose 4 as shown in Fig. 1 with either the flap 21 over the flap 22 or vice versa. Since either the hook fasteners 24 or the loop fasteners 26 will always remain exposed, the container can also be attached to fasteners placed on or formed as part of or inside the diver's wet suit, such as under the arm, or on another part of the diver's equipment, such as on or in a buoyancy

compensator. The container may also be placed in a pocket in the buoyancy compensator or in the wet suit.

Referring to Figs. 3 and 3C, it is seen that the third flap 27 has been broken away in Fig. 3 to show an inner pouch 28 which contains liquid 29 shown in Fig. 3C. The inner pouch 28 is filled while in the outer pouch 20 by opening the flap 27 and a flow check valve 31 having a hinged lid 32, which may be Halkey-Roberts model No. 1020 AF. The flow check valve 31 is attached to the inner pouch in a manner similar to the attachment of the flange 6. The flap 27 is held in the closed position by hook and loop fasteners 30 on the flap 27 and on the body of the outer pouch 20.

The upper portion of the outer pouch 20 has also been broken away to show that the end 6a of the flange 6 is disposed in the inner pouch 28. The flange passes through an opening 34 formed in the outer pouch. The inner pouch may be formed of insulating material and the end 6a may be secured as shown in U.S. Patent No. 4,526,298.

In order to use the drinking apparatus of the invention, the container 5 is attached to a diver's air hose with the hook and loop fasteners on the flaps as described above. The mouthpiece 2 which is attached to the container 5 through elements 6-16 is placed in the diver's mouth, as shown in

Fig. 1. The on-off valve 8 is normally pulled to place it in the to open condition as soon as the diver has reached his destination. When liquid is to be supplied to the diver's mouth, the diver merely squeezes the outer container 5 with his hand and a portion of the liquid will flow through the outlet portion 17. The check valve of the quick disconnect fitting 10 does not check fluid flow when connected. However, the check valve 7 will prevent the liquid from flowing back into the container and it will also prevent liquid from flowing to the outlet means 17 when the container is not squeezed. If the container is placed under the diver's arm, the action of the arm or elbow against the body will squeeze the container.

If the fitting 10 is disconnected while under water, or if the diver wishes to dive without the container and has removed the container with the elements 6-9, the check valve in the quick disconnect fitting will prevent water from the surroundings from flowing into the tube 16. Similarly, if the fitting is disconnected or the container filled with liquid remains above water, the check valve 7 and the on-off valve 8 will prevent the liquid from pouring out of the container.

The claims defining the invention are as follows:

1. Self-contained underwater drinking apparatus for scuba divers, comprising a container for liquid, a tube connected to said container for receiving the liquid from said container, a mouthpiece integral with said tube to be placed in the mouth of the diver for receiving the liquid from said tube, and means for forcing liquid from said container through said tube and into said mouthpiece, said mouthpiece having means for attaching said mouthpiece to a regulator supplying air to the diver, whereby a diver may receive both liquid and air through said mouthpiece without removing said mouthpiece from the mouth of the diver.
2. Drinking apparatus according to claim 1, wherein said container is flexible, and including means connected to said tube for permitting the liquid to flow through said tube when said container is squeezed and preventing the liquid from flowing through said ^{tube} ~~container~~ when said container is not squeezed.
3. Drinking apparatus according to claim 2, wherein said means for permitting and preventing liquid flow is a check valve.
4. Drinking apparatus according to claim 3, including a quick disconnect check valve connected to said tube between said first-mentioned check valve and said mouthpiece.



5. Drinking apparatus according to claim 4, including an on-off valve connected to said tube between said check valves.

6. Drinking apparatus according to claim 5, including a member connecting said container to said tube, said first-mentioned check valve being disposed in said member and said on-off valve being connected to said member.

7. Drinking apparatus according to claim 1, wherein said container includes means for attaching said container to the diver or to any part of his diving equipment.

8. Drinking apparatus according to claim 1, wherein said container includes means for attaching said container to an air hose connected to the regulator.

9. Drinking apparatus according to claim 7, wherein said container has flaps and said fixing means are in the form of hook and loop fasteners disposed on said flaps.

10. Drinking apparatus according to claim 1, wherein said container includes an outer pouch having means for attaching said container to the diver or to any part of his diving equipment, an inner pouch being disposed in said outer pouch and having a filling opening formed therein for the liquid, and means for retaining said inner pouch in said outer pouch.



11. Drinking apparatus according to claim 10, wherein said outer pouch has a flap and said retaining means are in the form of hook and loop fasteners disposed on said flap.

12. Drinking apparatus according to claim 10, including a ^{member}~~flange~~ connected to said inner pouch, a first check valve disposed in said ^{member}~~flange~~, an on-off valve connected to said ^{member}~~flange~~, and a quick disconnect check valve connected between said on-off valve and said mouthpiece.

13. Drinking apparatus according to claim 1, wherein said mouthpiece includes a bitepiece, and said tube has a portion being integral with said bitepiece.

14. Method for supplying liquid to the mouth of a scuba diver under water, which comprises connecting a mouthpiece to a regulator supplying air to the mouthpiece, connecting a tube to the mouthpiece, connecting a container for liquid to the tube, and squeezing the container forcing liquid from the container through the tube into the mouthpiece, whereby a diver may receive both liquid and air through the mouthpiece without removing the mouthpiece from the mouth of the diver.

15. Method according to claim 14, which comprises preventing the liquid from flowing through the tube when the container is not squeezed.

16. Drinking apparatus according to claim 1, wherein said attaching means of said mouthpiece are separate from said tube.



17. A drinking apparatus substantially as hereinbefore described with reference to the drawings.

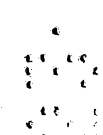
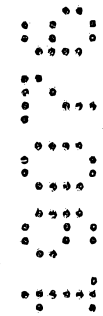
18. Method for supplying liquid to the mouth of a scuba diver under water substantially as hereinbefore described with reference to the accompanying drawings.

DATED this 21st day of January 1991

Irving Feder

By His Patent Attorneys

DAVIES & COLLISON



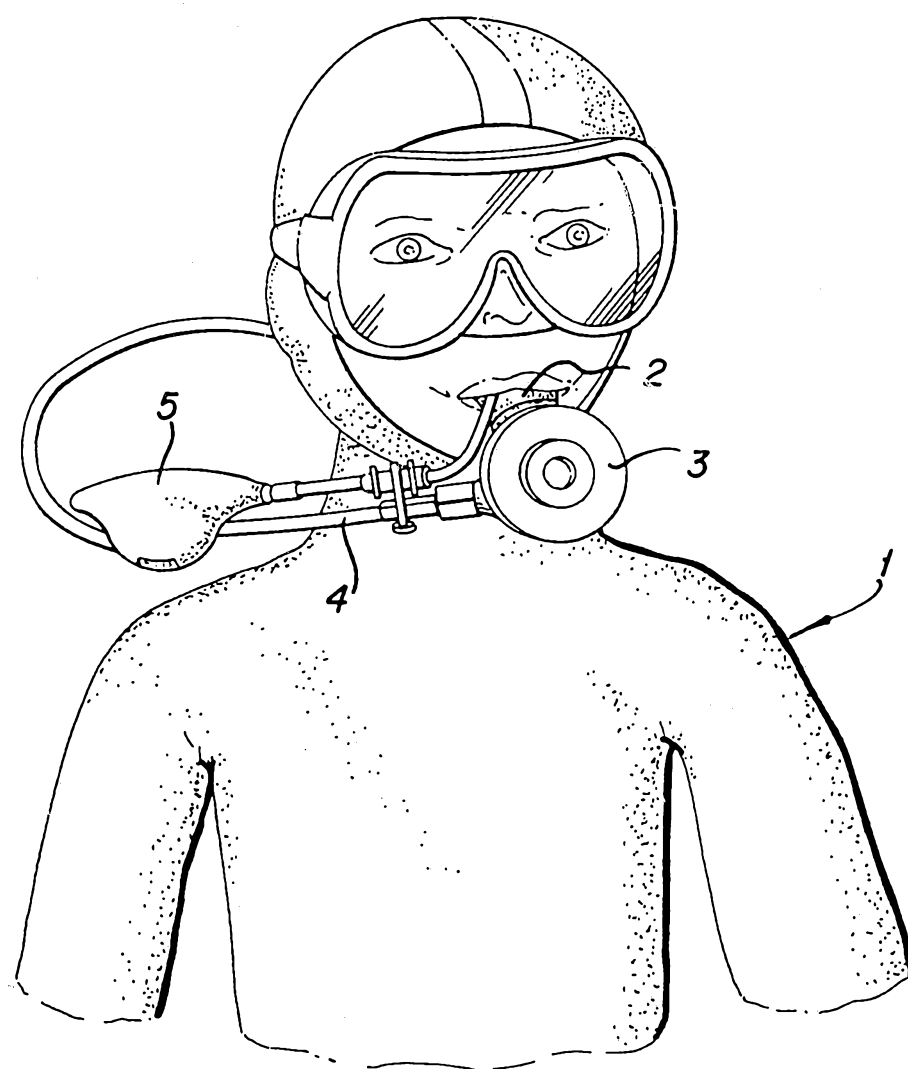


FIG. 1

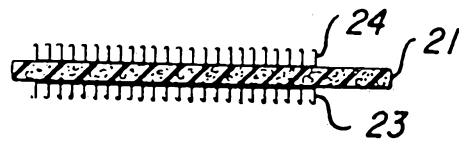


FIG. 3A



FIG. 3B

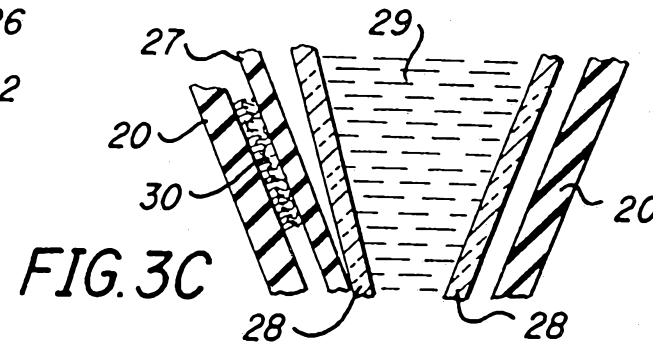


FIG. 3C

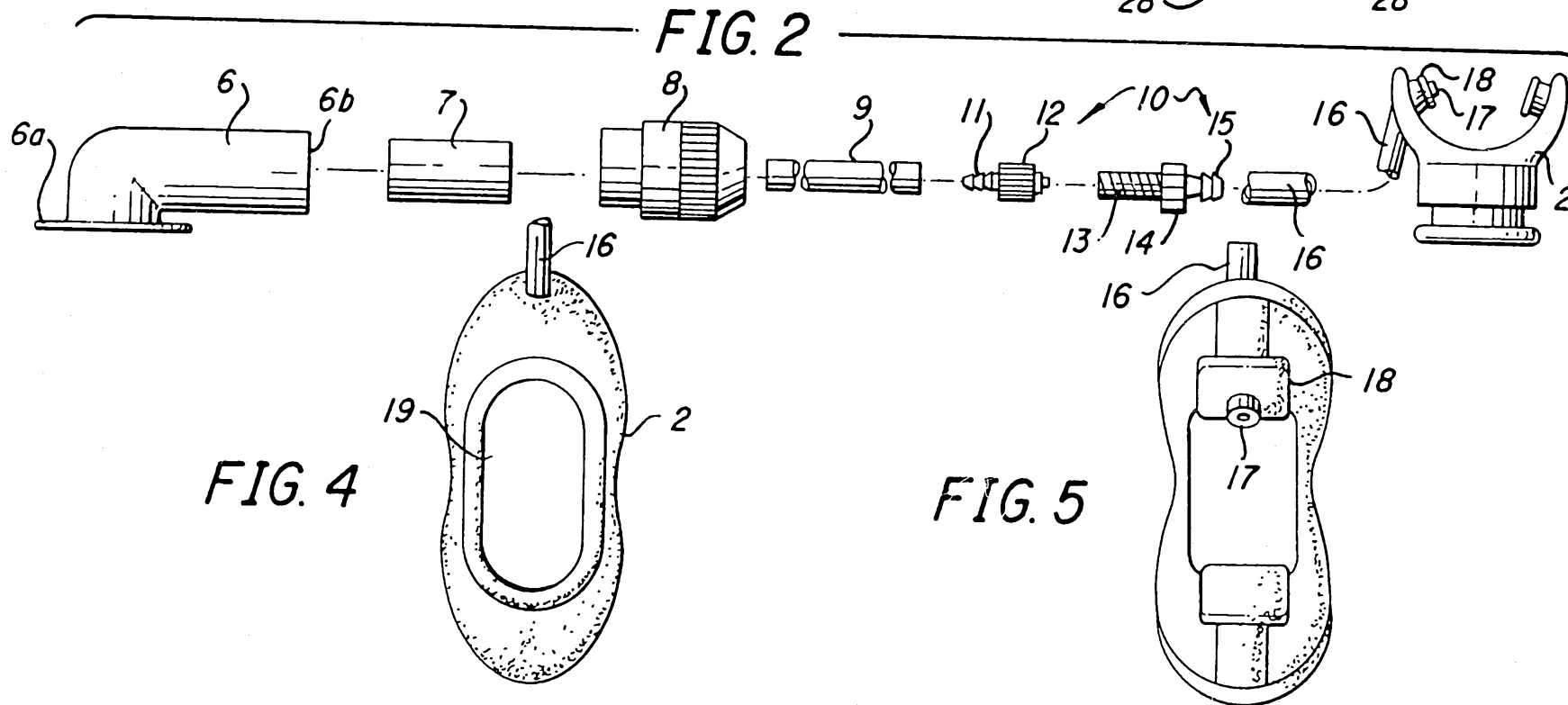


FIG. 4

FIG. 5

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