Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2482978 C 2011/04/05

(11)(21) 2 482 978

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(86) Date de dépôt PCT/PCT Filing Date: 2003/04/10
(87) Date publication PCT/PCT Publication Date: 2003/10/30
(45) Date de délivrance/Issue Date: 2011/04/05
(85) Entrée phase nationale/National Entry: 2004/10/19
(86) N° demande PCT/PCT Application No.: EP 2003/003728
(87) N° publication PCT/PCT Publication No.: 2003/089094
(30) Priorité/Priority: 2002/04/19 (DE102 17 486.5)

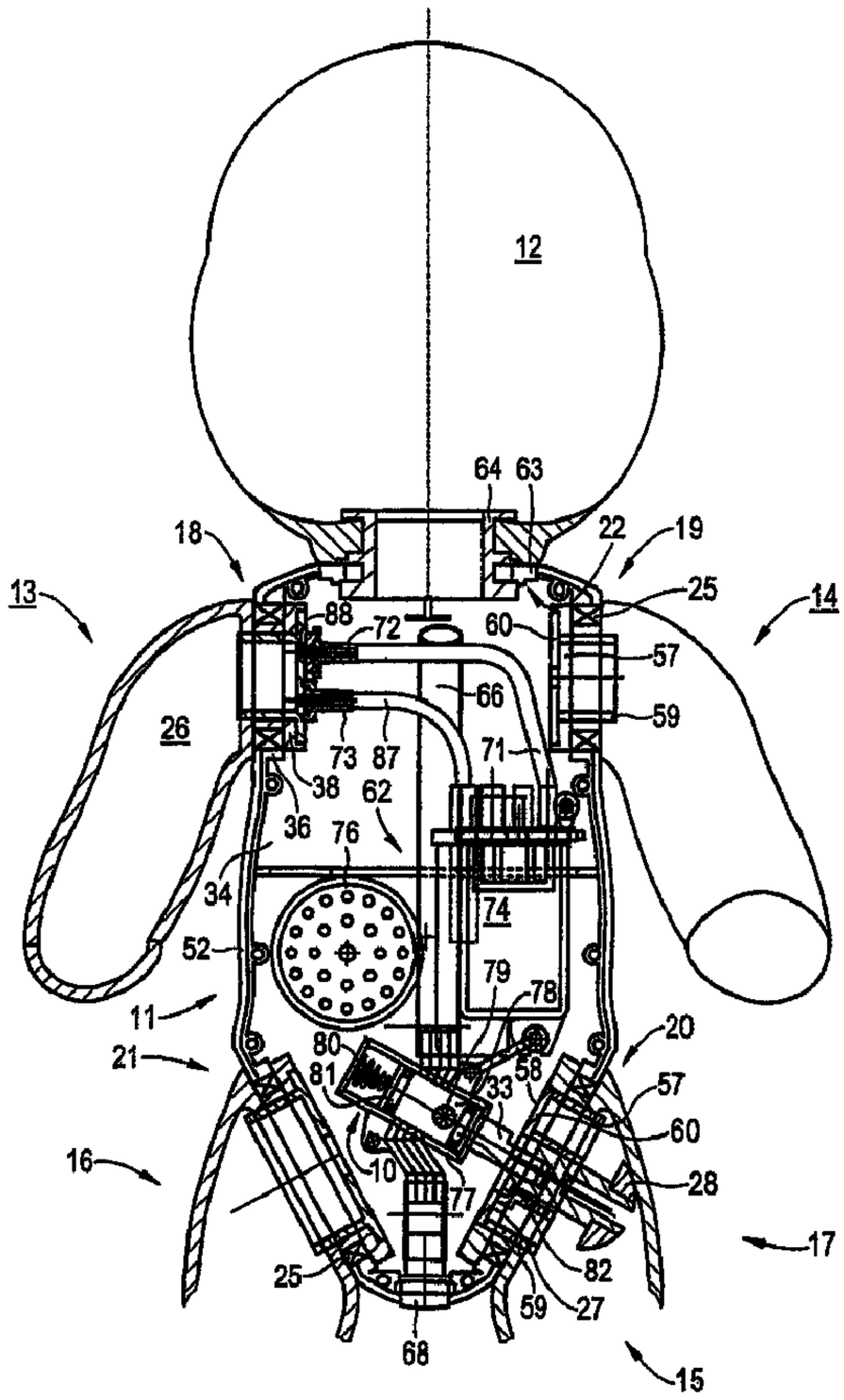
(51) Cl.Int./Int.Cl. *A63H 3/46* (2006.01), *A63H 3/24* (2006.01), *A63H 3/26* (2006.01), *A63H 3/06* (2006.01)

(72) Inventeur/Inventor:
MAAR, LIENHARD, DE

(73) Propriétaire/Owner:
ZAPF CREATION AG, DE

(74) Agent: GOWLING LAFLEUR HENDERSON LLP

(54) Titre : JOUET, EN PARTICULIER POUPEE A FONCTIONS
(54) Title: TOY FIGURE, PARTICULARLY FUNCTIONAL DOLL




(57) Abrégé/Abstract:
Disclosed is a toy figure, particularly a functional doll, comprising a central torso (11) which is provided with a body shell (35) surrounding a hollow space (34) inside the torso (11) and several extremities such as a head (12), arms (13, 14), and legs (15, 16),

CA 2482978 C 2011/04/05

(11)(21) 2 482 978

(13) C

(57) Abrégé(suite)/Abstract(continued):
which are arranged on the torso. At least the arms (13, 14) and legs (15, 16) are made of a soft elastic material. A functional unit (17) is integrated into the toy figure for ensuring one or several functions that are typical of a functional doll. The arms (13, 14) and/or legs (15, 16) and/or the head (12) are pivotally mounted on the torso (11) via fluid-tight joint connections (18 to 22).

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro

(43) Internationales Veröffentlichungsdatum
30. Oktober 2003 (30.10.2003)

PCT

(10) Internationale Veröffentlichungsnummer
WO 03/089094 A3

(51) Internationale Patentklassifikation[7]: A63H 3/26, 3/46, 3/24

(21) Internationales Aktenzeichen: PCT/EP03/03728

(22) Internationales Anmeldedatum:
10. April 2003 (10.04.2003)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
102 17 486.5 19. April 2002 (19.04.2002) DE

(71) Anmelder *(für alle Bestimmungsstaaten mit Ausnahme von US)*: **ZAPF CREATION AG** [DE/DE]; Mönchrödener Str. 13, 96472 Rödental (DE).

(72) Erfinder; und

(75) Erfinder/Anmelder *(nur für US)*: **MAAR, Lienhard** [DE/DE]; Mahnberg 1, 96472 Rödental (DE).

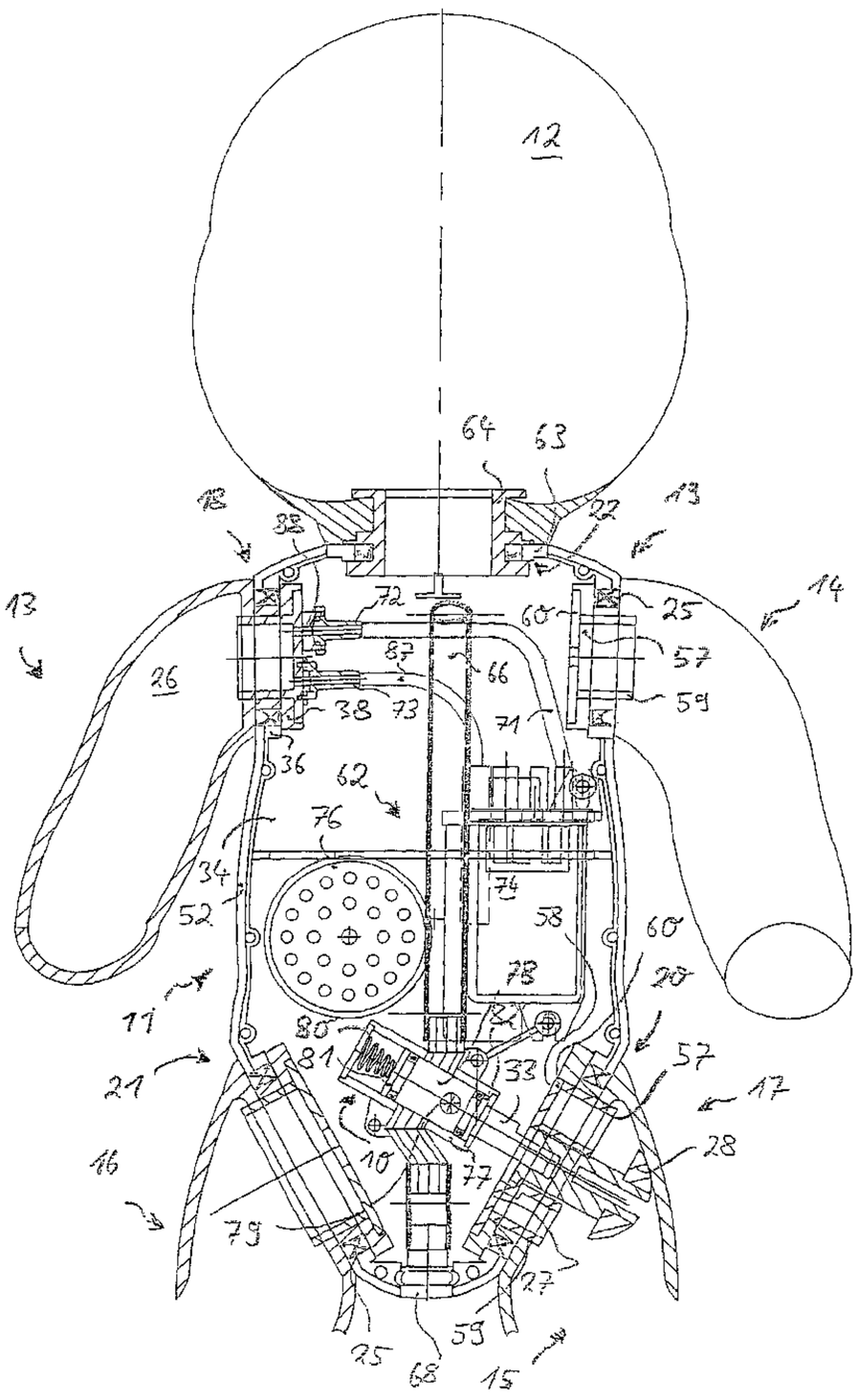
(74) Anwalt: **ZECH, Stefan, M.**; Meissner, Bolte & Partner, Bankgasse 3, 90402 Nürnberg (DE).

(81) Bestimmungsstaaten *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

*[Fortsetzung auf der nächsten Seite]*

(54) Title: TOY FIGURE, PARTICULARLY FUNCTIONAL DOLL

(54) Bezeichnung: SPIELFIGUR, INSBESONDERE FUNKTIONSPUPPE




(57) Abstract: Disclosed is a toy figure, particularly a functional doll, comprising a central torso (11) which is provided with a body shell (35) surrounding a hollow space (34) inside the torso (11) and several extremities such as a head (12), arms (13, 14), and legs (15, 16), which are arranged on the torso. At least the arms (13, 14) and legs (15, 16) are made of a soft elastic material. A functional unit (17) is integrated into the toy figure for ensuring one or several functions that are typical of a functional doll. The arms (13, 14) and/or legs (15, 16) and/or the head (12) are pivotally mounted on the torso (11) via fluid-tight joint connections (18 to 22).

(57) Zusammenfassung: Es wird eine Spielfigur, insbesondere Funktionspuppe vorgeschlagen, umfassend einen zentralen Rumpf (11) mit einer Körperhülle (35), die einen Hohlraum (34) im Inneren des Rumpfes (11) umgibt und mehrere am Rumpf (11) angeordnete Extremitäten wie Kopf (12), Arme (13, 14), und Beine (15, 16), wobei zumindest Arme (13, 14) und Beine (15, 16) aus weichelastischein Material gebildet sind. In der Spielfigur ist eine Funktiônseinrichtung (17) zur Gewährleistung einer oder meh rerer für eine Funktionspuppe typischen Funktionen integriert. Arme (13, 14) und/oder Beine (15, 16) und/oder der Kopf (12) sind über fluiddichte Gelenkverbindungen (18 bis 22) drehbeweglich am Rumpf (11) gelagert.

WO 03/089094 A3

WO 03/089094 A3

**(84) Bestimmungsstaaten** *(regional)*: ARIPO-Patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI-Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Veröffentlicht:**

— *mit internationalem Recherchenbericht*

**(88) Veröffentlichungsdatum des internationalen Recherchenberichts:** 24. Dezember 2003

*Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.*

# TOY FIGURE, PARTICULARLY FUNCTIONAL DOLL

## Description

The invention relates to a toy figure, in particular a functional doll, comprising a central torso with a body shell which encloses a cavity in the interior of the torso, and a plurality of extremities which are arranged on the torso, such as a head, arms and legs, at least the arms and legs being formed from flexurally elastic material, it being the case that a functional device for ensuring one or more functions typical of a functional doll is integrated in the toy figure, the functional alignment comprising a central functional section which is accommodated in the torso of the toy figure and at least one peripheral functional section which is arranged in an associated extremity.

Toy figures, in particular so-called functional dolls, in which a series of predetermined functions integrated in the toy figure increase the play value have been available for some time now. For example, dolls which laugh, cry, wet themselves, swallow and excrete soft food or can make certain sounds are known. It is often the case that these toy figures require batteries. A durable toy figure which is particularly unsusceptible to malfunctioning can be achieved if these functions are triggered mechanically, pneumatically and/or hydraulically rather than electrically.

An object of the present invention is to develop the abovementioned toy figures, in particular functional dolls, to the extent where their play value is increased yet further.

The present invention provides a toy figure, in particular functional doll, comprising:

a central torso (11) with a body shell (35) which encloses a cavity (34) in the interior of the torso, and

a plurality of extremities which are arranged on the torso (11), such as head (12), arms (13, 14), and legs (15, 16), at least the arms (13, 14) and legs (15, 16) being formed from flexurally elastic material,

whereby a function device (17) is integrated in the toy figure for ensuring one or a plurality of functions which are typical for a functional group, whereby the functional device (17) comprises a central functional section (62) arranged in the torso (11) of the toy figure and at least one peripheral functional section (26 to 30) which is arranged in an associated extremity,

characterized in

that the arms (13, 14) and/or legs (15, 16) and/or the head (12) are mounted on the torso (11), such that they can be rotated via fluid-tight joint connections (18 to 22),

whereby sealing means (23, 24, 25) are provided in the region of the joint connections which ensure a fluid-tight sealing for using the toy figure as bath doll,

whereby transfer means are guided through the fluid-tight joint connection (18 to 22) such that the at least one peripheral functional section (26 to 30) being in mechanical and/or pneumatic and/or hydraulic operative connection with the central functional section (62) via the associated fluid-tight joint connection (18 to 22).

At least two peripheral functional sections (26 to 30) in two different extremities (12 to 16) can be in operative connection with the central functional section (62).

Mechanical and/or hydraulic and/or pneumatic transfer means, in particular one or more hoses (31, 32), one or more air channels or an actuating slide (33), can be arranged in the region of the at least one fluid-tight joint connection (18 to 22).

First joint elements (36, 37, 63) can be provided on the torso (11) and can be brought into engagement with second, respectively correspondingly designed joint elements (38, 39, 64) on the extremities (12 to 16), at least one of the first joint elements (36, 37, 63) comprising a respective recesses (40, 41, 83) which are provided on the torso (11) and into which the second joint elements (38, 39, 64) can be latched.

First joint elements (36, 37) can be provided on the torso (11) and can be brought into engagement with second, respectively correspondingly designed joint elements (38, 39) on the extremities (13 to 16), the first joint elements (36, 37) being formed in each case in a joint cage (42) belonging to the torso and being partitioned off in a fluid-tight manner in the direction of the cavity (34) in each case by a sealing wall of the joint cage (42), and the mechanical and/or pneumatic and/or hydraulic transfer means (31 to 33) being guided through the sealing walls (24) in a fluid-tight mount.

The fluid-tight mount can be designed for ensuring a fluid-tight rotary movement between the sealing wall (24) and the transfer means (31, 32, 33).

The fluid-tight mount can be designed for ensuring a fluid-tight rotary movement between the sealing wall (24) and the second joint element (38, 39, 64).

The joint cages (42) can act as stiffening means in order to effect a sealing fit which is reliable even under stressing. The sealing walls (24), in comparison with the body shell (35), can be of torsionally rigid design. The joint cages (42) can be inserted as separate components into the torso (11). The joint cages (42) can be integrally formed in the torso (11) or as a half-shell on the half-bodies (52, 53) thereof.

At least one peripheral functional section can be designed as an actuating device for triggering a certain function of the functional device (17), in particular as a compressible chamber (26), as an eccentric (27) or as a pressure slide (28).

At least one peripheral functional section can be designed as an effect-producing device, in particular as a tear outlet (29) and/or as a food-/drink-receiving means (30), for ensuring a predetermined play effect.

In each case one peripheral functional section (26, 27, 28, 29) can be arranged in three different extremities (12 to 16), in particular in the head (12), in one of the arms (13, 14) and in one of the legs (15, 16), each peripheral functional section being in operative connection with the central functional section (62).

First joint elements (36, 37, 63) can be provided on the torso (11) and can be brought into engagement with second,

respectively correspondingly designed joint elements (38, 39, 64) on the extremities (12 to 16), an annular sealing means (23 to 25) being arranged between at least one first joint element (36, 37, 63) and the associated second joint element (38, 39, 64) and effecting fluid-tight sealing of the respective joint connection even in the case of rotary movement between the first and second joint elements (36, 37, 63; 38, 39, 64).

The first (torso-side) joint elements (36, 37, 63) can comprise a disk-like base plate (43) which is preferably integrally formed with the torso (11), the latter possibly being in two or more parts, is possibly likewise in a number of parts and has an outer and an inner abutment surface (44, 45), the base plate (43) containing a recess (40, 41, 83) which is provided for the insertion of the associated second joint element (38, 39, 64) and has a circular inner surface (46), and whereby accommodating devices (47) for fastening the annular sealing means (23 to 25) being provided on the circular inner surface (46). The accommodating devices can comprise an encircling groove (47).

The second joint elements (38, 39, 64) can comprise two mating plates (49, 50) which are spaced apart from one another at a predetermined distance by an encircling joint groove (48), the joint groove (48) being coordinated, in terms of shaping, with the fluid-tight sealing means (23 to 25). A bearing surface (51) for the annular sealing means (23, 25) can be provided within the joint groove (48).

The annular sealing means can be designed as an O-ring (23). The annular sealing means can be designed as an encircling sealing lip (54) which is arranged, on the torso side, on

the first joint element (36, 37, 63) or the second joint element (38, 39, 64), which is assigned to an extremity (12 to 16).

The annular sealing means (54) can be integrally formed with the first or second joint element (36, 37, 63; 38, 39, 64).

The annular sealing element can be designed as a cross-sectionally U-shaped double ring (25) with an outer and an inner sealing lip (55, 56). The body shell (35) of the torso (11) can be formed from two half-bodies (52, 53) which are welded to one another. The torso (11) can have a length of over 150 mm, preferably over 160 mm, in particular of over 170 mm.

The arms and/or legs (13 to 16) can be stiffened in the region of the joint connections (18 to 22) by reinforcing inserts (57). The reinforcing inserts (57) can have an outwardly oriented planar from surface (58). The reinforcing inserts (57) can comprise a cylindrical basic body (59) with a termination plate (60) which is joined thereto and is of slightly larger dimensions in the radial direction. The termination plate (60) can be inserted into a correspondingly designed, encircling groove (61) of the associated joint element (38, 39).

The fluid-tight joint connections (18 to 22) can be designed as separate components which are fastened in a fluid-tight manner, in particular attached by welding and/or adhesive bonding, between the torso (11) and associated extremity (12 to 16).

In another embodiment, the present invention provides a toy figure, comprising:

a central torso having a body shell enclosing a cavity in an interior of said torso;

a plurality of extremities disposed on said torso, said extremities including at least one of a head, arms, and legs, at least said arms and said legs being formed from a flexurally elastic material;

an integrated functional device having:

a central functional section disposed in said torso; and

at least one peripheral functional section disposed in an associated one of said extremities;

joint connections rotatably mounting at least one of said arms, said legs, and said head on said torso, at least one of said joint connections having seals fluid-tightly sealing said torso and said at least one of said arms, said legs, and said head;

a transfer device guided through at least one of said fluid-tight joint connections; and

said at least one peripheral functional section being in at least one of mechanical, pneumatic, and hydraulic operative connection with said central functional section through an associated one of said fluid-tight joint connections.

It is a basic idea of the present invention for such a toy figure equipped with joints and functions to be designed as a doll for playing with in the bath. The provision of suitable sealing means in the region of the joint connections gives the toy figure a fluid-tight design, transfer means, at the same time, being guided through the fluid-tight joint connection such that it at least one peripheral functional section is in mechanical and/or pneumatic and/or hydraulic operative connection with the central functional section via the associated fluid-tight joint connection. The sealing means in the region of the joint connections prevent water from passing into the hollow torso or the hollow extremities, in particular the head, the arms or legs.

The applicant has found that the conventional toy figures with integrated functional device of the generic type have the disadvantage that, on account of the joint connections, they were not of sufficiently fluid-tight design in order to be brought into contact with water. For the users, predominantly children from three to ten years of age, the play value of a toy figure, in particular functional doll, can be significantly increased by it also being possible for this figure or doll to be introduced into a basic of water, in particular into a bathtub, or even held under running water.

With the conventional functional dolls, in such a case, water penetrates through the joint connections, with the result that the functional device may be damaged, but at the very least water remains in the toy figure, which is extremely undesirable for hygiene-related reasons.

In a preferred configuration, at least two peripheral

functional sections are provided in two different extremities which are each in operative connection with the central functional section. Such a peripheral function may be formed, for example, by a compressible chamber which is formed in the arm and the compression of which causes a certain function, in particular the flow of tears, to be triggered by the functional device. The second peripheral functional section may be designed, for example, as a pressure slide within a flexurally elastic leg, in order to actuate a valve in the central functional section.

In order for the peripheral functional section to be connected to the central functional section in each case via the fluid-tight joint connections, mechanical and/or hydraulic and/or pneumatic transfer means which may comprise, for example, one or more hoses or lines or an actuating slide are provided in the region of these fluid-tight joint connections.

In a specific, particularly preferred configuration, first joint elements are provided on the torso and can be brought into engagement with second, respectively correspondingly designed joint elements on the extremities, at least one of the first joint elements comprising a respective recess which is provided on the torso and into which the second joint elements can be latched. These first joint elements are preferably integrally formed on the torso, so that this constitutes a favorable solution as far as the production costs are concerned. Furthermore, this solution, in the case of a functional doll, allows realistic modeling of human behavior - as far as the pivoting movement and the pivoting plane of the joint are concerned - to be achieved in a comparatively favorable manner.

In a first specific configuration, the fluid-tight

sealing may be effected in that the first joint elements provided on the torso are formed in each case in a joint cage belonging to the torso and are partitioned off in a fluid-tight manner in the direction of the cavity of the torso in each case by a sealing wall of the associated joint cage, the mechanical and/or pneumatic and/or hydraulic transfer means being guided through the sealing walls in a fluid-tight mount or fluid-tight sealing being effective between the sealing walls and the second joint elements.

The first joint elements, which are preferably likewise integrally formed on the torso, are partitioned off in a cage-like manner from the cavity by the sealing walls. It is also the case in this configuration that the body shell is preferably welded together from two parts, with the result that a sufficiently high rear-engagement means can be formed in the region between the sealing walls and the first joint elements in order that the second joint elements can be latched in permanently on the torso. In a specific configuration, it is also possible for the fluid-tight mount mentioned to fix an associated transfer means, for example a hose, in a fully fluid-tight manner, in particular by adhesive bonding or welding. Any rotary movements can then be absorbed by twisting of the hose or by a separate rotary bearing.

In a preferred configuration, the fluid-tight mount itself is designed as a rotary bearing for ensuring a fluid-tight rotary movement between the sealing wall and the transfer means. For example, an actuating slide can be mounted in a fluid-tight manner within the sealing wall along the axis of rotation of the joint movement.

According to a further advantageous aspect of the

invention, the joint cages which are preferably provided act as stiffening means in order to effect a sealing fit which is reliable even under stressing. The fluid-tight mounting has to be ensured even when, within the context of customary handling of the toy figure, the extremities are also subjected to transverse forces. In a configuration which is further regarded as advantageous, the sealing walls are thus of more torsionally rigid design than the body shell of the toy figure.

The joint cages can be inserted as separate components into the torso. As an alternative, the joint cages or two half-shells which form a joint cage can be integrally formed on the torso or on the half-bodies thereof.

If the joint cages are designed as separate components, it is also possible to use, for this purpose, a material which differs from, in particular is harder than, the material of the body shell. In the case of the joint cages being integrally formed on the half-bodies of the torso, it is recommended for the joint cages also to be integrally formed as half-shells in each case.

In an exemplary embodiment of the invention, at least one peripheral functional section is designed as an actuating device for triggering a certain function of the functional device, in particular - as has already been mentioned - as a compressible chamber, as an eccentric or as a pressure slide.

It is also possible, according to an exemplary embodiment of the present invention, for at least one peripheral functional section to be designed as an effect-producing device, in particular as a tear outlet and/or as a food-/drink-receiving means, for ensuring a

predetermined play effect. Here too, it is important to have reliable transfer means, between the central functional section and the peripheral functional section, which are guided through the fluid-tight joint connections and which are designed for the respectively envisaged rotary movements between the torso and extremity.

In another specific embodiment for sealing the joint connections, first joint elements are provided on the torso and can be brought into engagement with second, respectively correspondingly designed joint elements on the extremities, an annular sealing means being arranged between at least one first joint element and the associated second joint element and effecting fluid-tight sealing of the respective joint connection even in the case of rotary movement between the first and second joint elements.

This possible sealing method may be provided as an alternative, or in addition, to the already mentioned sealing by means of the sealing walls in the region of the first joint elements within the torso. A preferred configuration is one which does not have these separately provided sealing walls, since there is then no need to produce the latter and it is also the case that the transfer means need not be guided through the sealing walls. The annular sealing means may be configured here such that it is effective in the region of the bearing surfaces between the first and second joint elements and effects reliable sealing in any envisaged rotary position. In order to reduce frictional forces and wear and to increase the sealing action, a sealing lubricant, for example silicone lubrication, may be provided in addition.

In a specific, preferred configuration of the first (torso-side) joint elements, the latter comprise a

disk-like base plate which is preferably integrally formed with the body shell and has an outer and an inner abutment surface, the base plate containing a recess which is provided for the insertion of the associated second joint element and has a circular inner surface, and accommodating devices for fastening the annular sealing means being provided on this circular inner surface. This disk-like base plate, in particular the circular inner surface thereof, defines a stable bearing surface on which the annular sealing means can be provided at the same time. In a specific configuration, the accommodating devices for the annular sealing means may comprise an encircling groove such that the annular sealing means is retained in position by the encircling groove.

The second joint elements are designed to correspond to the first joint elements and may comprise two mating plates which are spaced apart from one another at a predetermined distance by an encircling joint groove, at least certain portions of the resulting joint groove defining sliding surfaces for the joint connection, and these and/or other portions forming a bearing surface for the annular sealing means within the joint groove.

In a specific configuration, the annular sealing means may be designed as an O-ring. This configuration results in durable and reliable sealing between the first and second joint elements, the elasticity of the O-ring being capable of compensating for production tolerances, deformation and wear.

In an alternative configuration which is particularly favorable in production terms, the annular sealing means is designed as an encircling sealing lip which is formed, on the torso side, on the first joint element or the second joint element, which is assigned to an extremity, preferably connected integrally to the first

joint element or to the second joint element. Production and installation costs are favorable precisely in the case of this sealing lip being integrally formed.

In a third alternative configuration, the annular sealing element may be designed as a cross-sectionally U-shaped double ring or grooved ring with an outer and an inner sealing lip. On account of its elasticity already being provided by the shape, such a sealing element is particularly well suited for compensating for any production tolerances, deformation or signs of wear.

In an advantageous configuration of the present invention, the body shell of the torso of the toy figure is formed from two half-bodies which are welded to one another at the manufacturer's. This gives the manufacturer more freedom in designing the body shell. Even undercut regions, in particular for forming the first joint elements, can thus be realized with justifiable production outlay.

It should be noted here that, in a further-preferred configuration, production of the toy figure by welding two half-bodies is carried out even in the case of the torso having a length of over 150 mm, preferably of over 160 mm, in particular of over 170 mm.

In an extremely advantageous configuration, the arms and/or legs are stiffened in the region of the joint connections by reinforcing inserts. It is precisely in the case of the flexurally elastic arms and/or legs, which are usually designed as hollow bodies, that there is the problem of these possibly being deformed, under unfavorable loading, such that, without reinforcing inserts, a fluid-tight joint connection possibly cannot be ensured with a sufficient degree of reliability. It

is thus a particular finding of the applicant that the reliability of the fluid-tight joint connection according to the invention, through which transfer means of a functional unit are guided, can still be increased to a significant extent by reinforcing inserts.

In a specific configuration, the reinforcing inserts have a cylindrical basic body with a termination plate which is joined thereto and is of slightly larger dimensions in the radial direction. The reinforcing inserts are inserted into a correspondingly designed recess of the associated joint element, this recess being designed as a cylindrical opening which is bounded at the top by an encircling groove. The termination plate reinforces the joint element as far as its distal periphery. Deformation of the flexurally elastic arms and/or legs then cannot give rise to any deformation in the region of the joint connections which is critical for the functioning of the fluid sealing.

Although basically not necessarily integral positioning of the first joint element in relation to the torso, and likewise not necessarily integral positioning of the second joint element in relation to the extremities, is preferred, it is also possible, as an alternative, for the fluid-tight joint connections to be designed as separate components which are then fastened in a fluid-tight manner, in particular attached by welding and/or adhesive bonding, between the torso and associated extremity. In these alternatives, it would be possible for the fluid-tight joint connections to be optimized in terms of their fluid-sealing function, and of the lead-through of the transfer means, without account being taken of the production process of the body shell or of the extremities. Connection of the transfer means and

fastening of the joint connections to the torso and the extremities, however, would then give rise to additional outlay during assembly of the toy figure.

The invention is explained in more detail hereinbelow, also in respect of the further features and advantages, by way of the description of exemplary embodiments and with reference to the attached drawings, in which:

figure 1 shows a schematic diagram, as seen partly in cross section, of one embodiment of a functional doll according to the invention,

figure 2a shows a schematic diagram, as seen partly in cross section, of an alternative embodiment of a functional doll according to the invention,

figure 2b shows a schematically simplified illustration of a lateral sectional view through the torso of a functional doll according to figure 2a,

figure 2c shows a basic sectional view, in the direction perpendicular to the longitudinal axis of the body, through the torso of a functional doll corresponding to the functional doll illustrated in figure 2a,

figure 3a shows a view of one half of the torso of a functional doll with first joint elements for fluid-tight sealing by way of annular sealing means configured as an encircling sealing lip,

figure 3b shows a second joint element arranged integrally on an extremity, corresponding to the configuration shown in figure 3a,

figure 4 shows a joint connection for a functional doll according to the present invention, which is sealed in a fluid-tight manner by an encircling sealing lip,

figure 5a shows a view of one half of the torso of a functional doll with first joint elements which are provided for sealing by way of sealing means designed as an O-ring,

figure 5b shows a second joint element, designed to correspond to the first joint element according to figure 5a, integrally formed on an extremity,

figure 6 shows a joint connection for a functional doll according to the invention, which is sealed in a fluid-tight manner by means of an encircling O-ring,

figure 7 shows a joint connection for a functional doll according to the present invention, which is sealed in a fluid-tight manner by an encircling double ring,

figure 8 shows a second joint element with an encircling double ring,

figure 9 shows the second joint element from figure 8 inserted in a first joint element in order to form a fluid-tight joint connection,

figure 10a shows a joint connection for a functional doll according to the invention, which is sealed in a fluid-tight manner by means of a joint cage,

figure 10b shows a half-body for a torso of a functional doll in which half-shells of joint cages can be inserted, and

figure 10c shows a half-body of a torso for a functional doll on which half-shells of joint cages are integrally formed.

Figure 1 illustrates a partly sectional view of one embodiment of a functional doll. The functional doll comprises a torso 11 which is made up of two half-bodies 52, 53, forms a body shell 35 and has extremities arranged on it, namely a head 12, arms 13, 14 and legs 15, 16. A cavity 34 is formed within the torso 11.

The arms 13, 14 are connected to the torso 11 via fluid-tight joint connections 18, 19 designed as arm joints and the legs 15, 16 are connected via fluid-tight joint connections 20, 21 designed as leg joints. Finally, the head is connected to the torso 11 via a likewise fluid-tight joint connection 22 designed as a neck joint.

Accommodated within the functional doll is a functional device 17 which has a central functional section 62 provided in the torso 11 and one or more peripheral functional sections provided in the extremities 12 to 16, the peripheral functional sections here specifically comprising a compressible chamber 26, an eccentric 27, a pressure slide 28 and a tear outlet 29 (see figure 2b) and a food-/drink-receiving means 30 (see figure 2b).

The central functional section 62 and the peripheral functional sections 26 to 30 are connected to one another via hydraulic and/or pneumatic and/or

mechanical transfer means which are yet to be explained in more detail.

Provided between the head 12 and torso 11 are lines 31, 32 which connect the food-/drink-receiving means 30 to a drink tank 65 and a storage tube 66, which serves as a food tank. The storage tube 66 serving as a food tank is oriented to run in a rectilinear manner parallel to the axis of the body of the functional doll, and is connected to a first evacuation opening 68 via a valve device 10. It preferably consists of a material which can be twisted over a certain angle range in order to follow pivoting movements of the head. The drink tank 65, for its part, is connected to a second evacuation opening 70 via an outflow line 69.

The already mentioned compressible chamber 26 is formed on or in the arm 13 of the functional doll. The compressible chamber 26 is in pneumatic operative connection with the cavity 34 formed in the torso 11, such that, when the arm 13 formed from flexurally elastic material is compressed, air is forced via the joint connection 18, through a first valve connector 72 and via a hose 71, into a tears tank 74 filled with liquid. A predetermined quantity of liquid is thus fed out of the tears tank 74 via a line 85, into the region of the eye sockets 86 of the functional doll and flows out of one or both eyes 75. The tears tank 74 may have a refilling device which is coupled to the food-/drink-receiving means 30. In order for the arm 13 to be allowed to relax into its starting position and, at the same time, for the volume, which increases again in the process, not to be filled with liquid from the tears tank 74, a second valve connector 73 is provided within the joint connection 18. Connected to the second valve connector 73 is an air-admission line 87 via which air can be taken in for the purpose of filling the cavity 34. First and second valve connectors 72, 73 each have

non-return valves (not shown) such that, via the first valve connector 72, air is always ejected out of the arm 13 in the direction of the tears tank 74 and, via the second valve connector 73, renewed filling of the arm 13 with air is ensured.

Finally, the cavity 34 of the torso also contains a mechanical voice 76, which is known per se in the case of toy figures. The mechanical voice 76 produces a pre-selected sound when the functional doll changes position.

The already mentioned valve device 10 can be actuated through the fluid-tight joint connection 20. The valve device 10 comprises, in the first instance, a valve chamber 77 with a valve piston 78 which is mounted in a displaceable manner therein and has a through-passage opening 79 provided for the through-passage of fluid in the open position of the valve device 10. The valve piston 78 is retained in the closed position by the action of a spring 80. The valve piston 78 is sealed in a fluid-tight manner in relation to the cylindrical valve chambers 77 via two sealing disks or O-rings 81, 82.

By means of an actuating slide 33, which projects into the joint connection 20, and of the pressure slide 28, which is arranged in a rotationally fixed manner on this actuation slide 33, it is possible to actuate the valve piston 78, in the case of the pressure slide 28 being subjected to pressure, in a certain angular position or in a certain angle range of the leg 15 in relation to the torso 11. Outside this angular position or this angle range, a translatory displacement of the valve piston 78 does not result in an open position of the valve device 10, which is explained in more detail in the applicant's parallel application of the same date.

Figure 2a illustrates an alternative embodiment of a functional doll as seen schematically partly in cross section. The embodiment illustrated here differs from the embodiment explained with reference to figure 1 essentially by the fluid-tight joint connections 18 to 22 being of modified design. The joint connections of the embodiment illustrated in figure 1 will be explained in more detail at a later stage in the text with reference to figures 7 to 9. The joint connections used in the embodiment according to figure 2a are likewise illustrated in more detail with reference to figure 10a. The significant difference is that the joint connections are partitioned off in relation to the cavity 34 of the torso 11 by joint cages 42 which have corresponding sealing walls 24. In this case, the transfer means, in particular an air channel 88, and the actuation slide 33 are guided in a fluid-tight manner through the sealing wall 24 of the joint cages 42, which will be described in more detail with reference to figure 10a.

Figure 2b illustrates a schematic diagram, in a lateral sectional view, of a functional doll corresponding to the embodiment shown in figure 1 or 2a. It can be seen here that the already mentioned lines 31, 32 and the storage tube 66 are guided through the joint connection 22 which forms the neck of the doll.

Figure 2c illustrates, in simplified form, a basic sectional view through a functional doll according to the embodiment shown in figure 2a. It is possible to see the joint connections 18, 19 of the arms 13, 14, these joint connections being retained in joint cages 42 in each case. Integrally formed on the joint connection 18 is an air-admission and air-extraction connection 89, which is connected to an air channel 88 through the joint connection 19. Located on the air-

admission and air-extraction connection 89, in turn, are the first valve connector 72 and the second valve connector 73 (concealed here) for the connection of a hose 71 and of the air-admission line 87, respectively.

Various preferred configurations of the fluid-tight joint connection 18 to 22 are explained in more detail hereinbelow.

Figures 3a, 3b and 4 illustrate a first alternative configuration for a fluid-tight joint connection. The already mentioned torso 11 contains a plurality of base plates 43, in which first joint elements 36, 37, 63 are provided and into which correspondingly designed second joint elements 38, 39, 64 can be inserted. Whereas, in the case of the embodiments illustrated here, the second joint elements 38, 39 of the arms 13, 14 and legs 15, 16 are integrally formed with the associated arms 13, 14 and legs 15, 16, the second joint element 64 of the head 12 is designed as a separate component, which is then adhesively bonded or welded to the head.

The first joint elements 36, 37, 63 comprise recesses 40, 41, 83 which are each provided in the base plates 43 and into which the second joint elements 38, 39, 64 can be inserted. The recesses each comprise an inner surface 46 which bounds the recesses along the circumference and on which an accommodating device, in particular a tapering groove 47, is provided. In the case of the embodiment which is illustrated with reference to figures 3a, 3b and 4, the groove 47 is defined by a notch with two surfaces running toward one another, a correspondingly designed sealing lip 54 of the second joint elements 38, 39 engaging in this notch. The second joint elements 38, 39 comprise mating plates 49, 50 which are spaced apart from one another by an encircling joint groove 48. The spacing between the joint plates 49, 50 corresponds approximately to

the thickness of the base plate 43 formed on the first joint elements 36, 37, 63. The mating plates 49, 50 - as can be seen from figure 4 - engage around the base plate 43 such that the joint connections 18 to 22 is stabilized by the abutment of the mating plates 49, 50 in each case against an inner abutment surface 45 and an outer abutment surface 44 of the base plate 43. The mating plate 49 here forms the joint-side termination of an extremity 12 to 16, whereas the mating plate 50 can merge, at the periphery, into the contour of the associated extremity.

The sealing lip 54 provided in the encircling joint groove 48 is designed to correspond to the shaping of the groove 47 provided in the first joint element 36, 37, 63. The sealing lip 54, at the same time, forms a bearing surface 51 for the joint connection 18 to 22.

In the configuration which is specifically proposed here, the sealing lip 54 is formed integrally with the associated extremity 12 to 16, which reduces the production costs. In order to ensure the desired fluid sealing with a sufficient level of reliability, however, it is very important for the sealing lip 54 and groove 47 to be coordinated precisely with one another. It goes without saying that, in respect of a kinematic reversal, it is also possible for the groove 47 to be formed on the second joint elements 38, 39, 64 of the extremities 12 to 16 and for a correspondingly configured sealing lip 54 to be provided within the first joint elements 36, 37, 63.

Figures 5a, 5b and 6 illustrate an alternative embodiment for fluid-tight sealing of the joint connections 18 to 22. The sealing here, rather than being achieved by a sealing lip 54 which corresponds with an appropriate groove 47, is achieved by an O-ring 23 which is effective between the first joint element

36, 37, 63 and the second joint element 38, 39, 64. The groove 47 on the inner surface 46 of the recess 40, 41, 83 of the torso 11 is shaped appropriately in order to stabilize the O-ring 23. Correspondingly, the encircling joint groove 48 of the second joint element 38, 39, 64 is provided with a cross-sectional shape which stabilizes the O-ring 23. At the same time, however, a bearing surface 51 possibly comprising a plurality of portions is defined within the encircling joint groove 48, this bearing surface sliding on the base plate 43 of the first joint elements 36, 37, 63.

The sealing by means of an O-ring 23 is extremely reliable and durable and also compensates for slight production tolerances which are present in certain circumstances.

Finally, figures 7, 8 and 9 illustrate a third alternative embodiment for fluid-tight sealing of the joint connections 18 to 22 which corresponds to the sealing illustrated in figure 1. In this case, instead of an O-ring 23, a double ring 25, which may also be referred to as a grooved ring, is inserted, for sealing purposes, between the inner surface 46 of the recesses 40, 41, 83, that are provided within the base plate 43, and the encircling joint groove 48 of the second joint element 38, 39, 64. A correspondingly configured groove 47 on the inner surface 46 of the base plate 43 may be dispensed with, as is illustrated with reference to figures 7, 8 and 9. The double ring 25 comprises an outer sealing lip 55 and an inner sealing lip 56, which are connected to one another at a common base 84 and can be deflected elastically in relation to one another at their distal ends.

As is shown with reference to figure 8, the double ring 25, for installation purposes, may be drawn onto the second joint elements 38, 39, 64 and is retained there

in the encircling joint groove 48.

In order to limit the deformation of the second joint elements 38, 39, 64 such that, in the case of normal usage, fluid-tight sealing of the functional doll remains ensured even if the extremities 12 to 16 are deformed, reinforcing inserts 57 are inserted in the second joint elements 38, 39, 64 in each case. These reinforcing inserts 57 comprise a cylindrical basic body 59 with a termination plate 60 arranged at the end thereof. The termination plate 60 has a planar front surface 58. The reinforcing inserts 57 can be inserted in each case into a correspondingly shaped recess within the second joint elements 38, 39, 64, a groove 61 being integrally formed on the periphery of the second joint elements for the purpose of accommodating the termination plate 60 in a flush manner. The second joint elements 38, 39, 64 are thus stiffened precisely in their distal region, namely at the outer mating plate 49, by the termination plate 60 of the respective reinforcing insert 57.

Figure 10a illustrates a fluid-tight joint connection 20 which is partitioned off from the cavity 34 of the torso 11 by a joint cage 42. In this embodiment, the joint cage 42 is formed by a sealing wall 24 which has an essentially cup-like basic shape and directly adjoins the body shell 35 in the inward direction such that the recess 41, which is provided in the outward direction for the insertion of the second joint element 39, has a smaller diameter than the joint cage 42 formed by the, in this case, essentially cup-like sealing wall 24. The second joint element 39 is retained in these undercuts formed in this way, in which case the first joint element 37 here need not just comprise the recess formed in the body shell 35; rather, the joint cage, which as far as possible is of corresponding design, can also perform a guidance

function for guiding the second joint element 39, as is also illustrated with the present embodiment. However, it is not in any way imperative for the joint cage 42 to perform such a joint or guidance function. Rather, it may be sufficient for the first joint element to be formed in a base plate 43 in the body shell 35 which is provided with a recess 41 and outer abutment surface 44 and inner abutment surface 45.

The sealing walls 24 of the joint cages 42 predominantly have a sealing function. For this purpose, they have a central opening 90 through which the transfer means are, in this case specifically the actuating slide 33 is, guided. An O-ring 91 is retained in the central opening 90 in order to seal the actuating slide 33 in a fluid-tight manner in relation to the cavity 34 of the torso 11 during a rotary or translatory movement of the actuating slide. Correspondingly - as can be seen from figure 2a - the air channel 88 is guided through the central opening 90 of the sealing wall 24, here too an O-ring 91 being provided for fluid-tight sealing between the air channel 88 and sealing wall 24.

In the case of the embodiment illustrated here, the O-ring 91, rather than butting directly against the actuating slide 33, effects sealing between the termination plate 60 of the second joint element and the sealing wall 24. As an alternative, however, it is also conceivable for the sealing to take place directly between the sealing wall 24 and the actuating slide 33.

Figure 10b illustrates a half-body for a torso of a functional doll in which half-shells of joint cages 42 can be inserted at the leg joints 20, 21. A half-shell 92 is provided with an outer groove 93, which can be latched onto a protrusion 94 formed on the half-body 52 of the body shell 35.

Figure 10c illustrates an alternative embodiment, in the case of which the half-shells 92 for the leg joints 20, 21 are formed integrally with the half-body 52 of the body shell 35. In both embodiments illustrated, the joint cages 42 for the arm joints 18, 19 are integrally formed on the body shell 35.

List of designations

| | |
|---|---|
| 10 | Valve device |
| 11 | Torso |
| 12 | Head |
| 13, 14 | Arms |
| 15, 16 | Legs |
| 17 | Functional device |
| 18, 19 | Joint connections, arm joints |
| 20, 21 | Joint connections, leg joints |
| 22 | Joint connection, neck joint |
| 23 | Sealing means, O-ring |
| 24 | Sealing wall |
| 25 | Sealing means, double ring (grooved ring) |
| 26 | Peripheral functional section, compressible chamber |
| 27 | Peripheral functional section, eccentric |
| 28 | Peripheral functional section, pressure slide |
| 29 | Peripheral functional section, tear outlet |
| 30 | Peripheral functional section, food-/drink-receiving means |
| 31, 32 | Transfer means, lines |
| 33 | Transfer means, actuating slide |
| 34 | Cavity |
| 35 | Body shell |
| 36, 37, 63 | First joint elements |
| 38, 39, 64 | Second joint elements |
| 40, 41, 83 | Recesses |
| 42 | Joint cage |
| 43 | Base plate |
| 44 | Outer abutment surface |
| 45 | Inner abutment surface |
| 46 | Inner surface |
| 47 | Accommodating devices, groove |

| | |
|---|---|
| 48 | Encircling joint groove |
| 49, 50 | Mating plates |
| 51 | Bearing surface |
| 52, 53 | Half-body |
| 54 | Sealing lip |
| 55 | Outer sealing lip (double ring) |
| 56 | Inner sealing lip (double ring) |
| 57 | Reinforcing inserts |
| 58 | Front surface |
| 59 | Cylindrical basic body |
| 60 | Termination plate |
| 61 | Groove |
| 62 | Central functional section |
| 65 | Drink tank |
| 66 | Storage tube |
| 68 | First evacuation opening |
| 69 | Outflow line |
| 70 | Second evacuation opening |
| 71 | Hose |
| 72 | First valve connector |
| 73 | Second valve connector |
| 74 | Tears tank |
| 75 | Eyes |
| 76 | Mechanical voice |
| 77 | Valve chamber |
| 78 | Valve piston |
| 79 | Through-passage opening |
| 80 | Spring |
| 81, 82 | Sealing disks (O-ring) |
| 84 | Base (double ring) |
| 85 | Line (tears tank - tear outlet) |
| 86 | Eye sockets |
| 87 | Air-admission line |
| 88 | Transfer means, air channel |
| 89 | Air-admission and air-extraction connection |
| 90 | Central opening |
| 91 | O-ring |

92 Half-shell (joint cage)

93 Groove (half-shell)

94 Protrusion

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A toy figure, comprising:

a central torso having a body shell enclosing a cavity in an interior of said torso;

a plurality of extremities disposed on said torso, said extremities including at least one of a head, arms, and legs, at least said arms and said legs being formed from a flexurally elastic material;

an integrated functional device having:

a central functional section disposed in said torso; and

at least one peripheral functional section disposed in an associated one of said extremities;

joint connections rotatably mounting at least one of said arms, said legs, and said head on said torso, at least one of said joint connections having seals fluid-tightly sealing said torso and said at least one of said arms, said legs, and said head;

a transfer device guided through at least one of said fluid-tight joint connections; and

said at least one peripheral functional section being in at least one of mechanical, pneumatic, and hydraulic operative connection with said central functional section through an associated one of said fluid-tight joint connections.

2. The toy figure according to claim 1, wherein said at least one peripheral functional section is at least two peripheral functional sections disposed in two different ones of said extremities and in operative connection with said central functional section.

3. The toy figure according to claim 1 or 2, wherein said transfer device is at least one of mechanical, hydraulic, and pneumatic, and is disposed in a region of at least one of said fluid-tight joint connections.

4. The toy figure according to claim 3, wherein said transfer device is one of at least one hose, at least one air channel, and at least one actuating slide.

5. The toy figure according to any one of claims 1 to 4, further comprising:

first joint elements at said torso;

second joint elements at said extremities, said second joint elements respectively corresponding to said first joint elements and engaging with said first, joint elements; and

at least one of said first joint elements having a respective recess on said torso and into which at least one of said second joint elements can be latched.

6. The toy figure according to claim 5, wherein:

said first joint elements have a disk-shaped base plate;

said base plate has:

an outer and an inner abutment surface;

a recess for receiving therein an associated one of said second joint elements; and

a circular inner surface; and

accommodating devices for fastening said seals on said circular inner surface.

7. The toy figure according to claim 6, wherein:

said disk-shaped base plate is integrally formed with said torso and is in at least two parts; and

said torso is in at least two parts.

8. The toy figure according to claim 6 or 7, wherein said accommodating devices have an encircling groove.

9. The toy figure according to any one of claims 5 to 8, wherein said second joint elements have an encircling joint groove and two mating plates spaced apart from one another at a predetermined distance by said joint groove, said joint groove being coordinated in terms of its shape with said seals.

10. The toy figure according to claim 9, wherein said joint groove has a bearing surface therewithin for receiving said seals.

11. The toy figure according to any one of claims 5 to 10, wherein said seals are formed as an encircling sealing lip disposed, on a torso side thereof, on one of said first joint element and said second joint element, associated with an extremity.

12. The toy figure according to any one of claims 5 to 10, wherein said seals are integrally formed with one of said first and second joint elements.

13. The toy figure according to any one of claims 1 to 4, further comprising:

first joint elements at said torso;

said torso having a joint cage with a sealing wall;

second joint elements being disposed at said extremities, being correspondingly configured to said first joint elements, and engaging said first joint elements;

said first joint elements respectively being formed in said joint cage and being fluid-tightly partitioned off in a direction of said cavity by said sealing wall; and

said transfer device being guided through said sealing wall in a fluid-tight mount.

14. The toy figure according to any one of claims 1 to 4, further comprising:

first joint elements at said torso;

said torso having a joint cage with a sealing wall;

second joint elements being disposed at said extremities, being correspondingly configured to said first joint elements, and engaging said first joint elements;

said first joint elements respectively being formed in said joint cage and being fluid-tightly partitioned off in a direction of said cavity by said sealing wall; and

said transfer device being at least one of mechanical, hydraulic, and pneumatic, being disposed in a region of at least one of said fluid-tight joint connections, and being guided through said sealing wall in a fluid-tight mount.

15. The toy figure according to claim 13 or 14, wherein said fluid-tight mount ensures a fluid-tight rotary movement between said sealing wall and said transfer device.

16. The toy figure according to claim 13 or 14, wherein said fluid-tight mount ensures a fluid-tight rotary movement between said sealing wall and said at least one of said second joint elements.

17. The toy figure according to any one of claims 13 to 16, wherein said joint cage acts as a stiffener to effect a sealing fit that is reliable even under stressing.

18. The toy figure according to any one of claims 13 to 17, wherein said joint cage is stiff and create a sealing fit that is reliable even under stressing.

19. The toy figure according to any one of claims 13 to 18, wherein said joint cage is inserted as a separate component into said torso.

20. The toy figure according to any one of claims 13 to 18, wherein:

said torso has half-bodies; and

said joint cage has half shells each integrally formed on said half-bodies of said torso.

21. The toy figure according to any one of claims 13 to 18, wherein said joint cage is integrally formed in said torso.

22. The toy figure according to any one of claims 13 to 21, wherein said sealing wall is relatively torsionally rigid as compared to said body shell.

23. The toy figure according to any one of claims 1 to 22, wherein said at least one peripheral functional section is an actuating device for triggering a given function of said functional device.

24. The toy figure according to claim 23, wherein said actuating device is one of the group consisting of a compressible chamber, an eccentric, and a pressure slide.

25. The toy figure according to any one of claims 1 to 24, wherein said at least one peripheral functional section is an effect-producing device for ensuring a predetermined play effect.

26. The toy figure according to claim 25, wherein said effect-producing device is at least one of the group consisting of a tear outlet and a food-/drink-receiver.

27. The toy figure according to any one of claims 1 to 26, wherein said at least one peripheral functional section is three peripheral functional sections disposed in three different ones of said extremities, each of said three peripheral functional sections being in operative connection with said central functional section.

28. The toy figure according to any one of claims 1 to 27, wherein said three different ones of said extremities include said head, one of said arms, and one of said legs.

29. The toy figure according to any one of claims 1 to 28, wherein:

said torso has first joint elements;

said extremities have second joint elements respectively correspondingly configured to said first joint elements;

said first joint elements engage said second joint elements; and

an annular sealing device is disposed between at least one of said first joint elements and an associated one of

said second joint elements and effects a fluid-tight sealing of a respective joint connection therebetween even when there is relative rotary movement of said associated ones of said first and second joint elements.

30. The toy figure according to any one of claims 1 to 29, wherein said seals are O-rings.

31. The toy figure according to any one of claims 1 to 29, wherein said seals are cross-sectionally U-shaped double rings with an outer and an inner sealing lip.

32. The toy figure according to any one of claims 1 to 31, wherein said body shell of said torso is formed from two half-bodies welded to one another.

33. The toy figure according to claim 32, wherein said torso has a length of over 150 mm.

34. The toy figure according to claim 32, wherein said torso has a length of over 160 mm.

35. The toy figure according to claim 32, wherein said torso has a length of over 170 mm.

36. The toy figure according to any one of claims 1 to 35, further comprising reinforcing inserts, at least one of said arms and legs being stiffened in a region of said joint connections by said reinforcing inserts.

37. The toy figure according to claim 36, wherein said reinforcing inserts have an outwardly oriented planar front surface.

38. The toy figure according to claim 36, wherein said reinforcing inserts have a cylindrical basic body with a termination plate joined thereto and having a larger dimension in a radial direction thereof.

39. The toy figure according to claim 38, wherein said termination plate can be inserted into a correspondingly configured, encircling groove of an associated one of said joint connections.

40. The toy figure according to any one of claims 1 to 39, wherein said fluid-tight joint connections are separate components fastened in a fluid-tight manner between said torso and associated one of said extremities.

41. The toy figure according to any one of claims 1 to 40, wherein said fluid-tight joint connections are attached by at least one of welding and adhesive bonding.

42. The toy figure according to any one of claims 1 to 41, wherein the toy figure is a functional doll.

43. The toy figure according to any one of claims 1 to 41, wherein said torso, said extremities, said functional device, said connections, said seals, and said transfer device form a functional doll.

FIG. 1

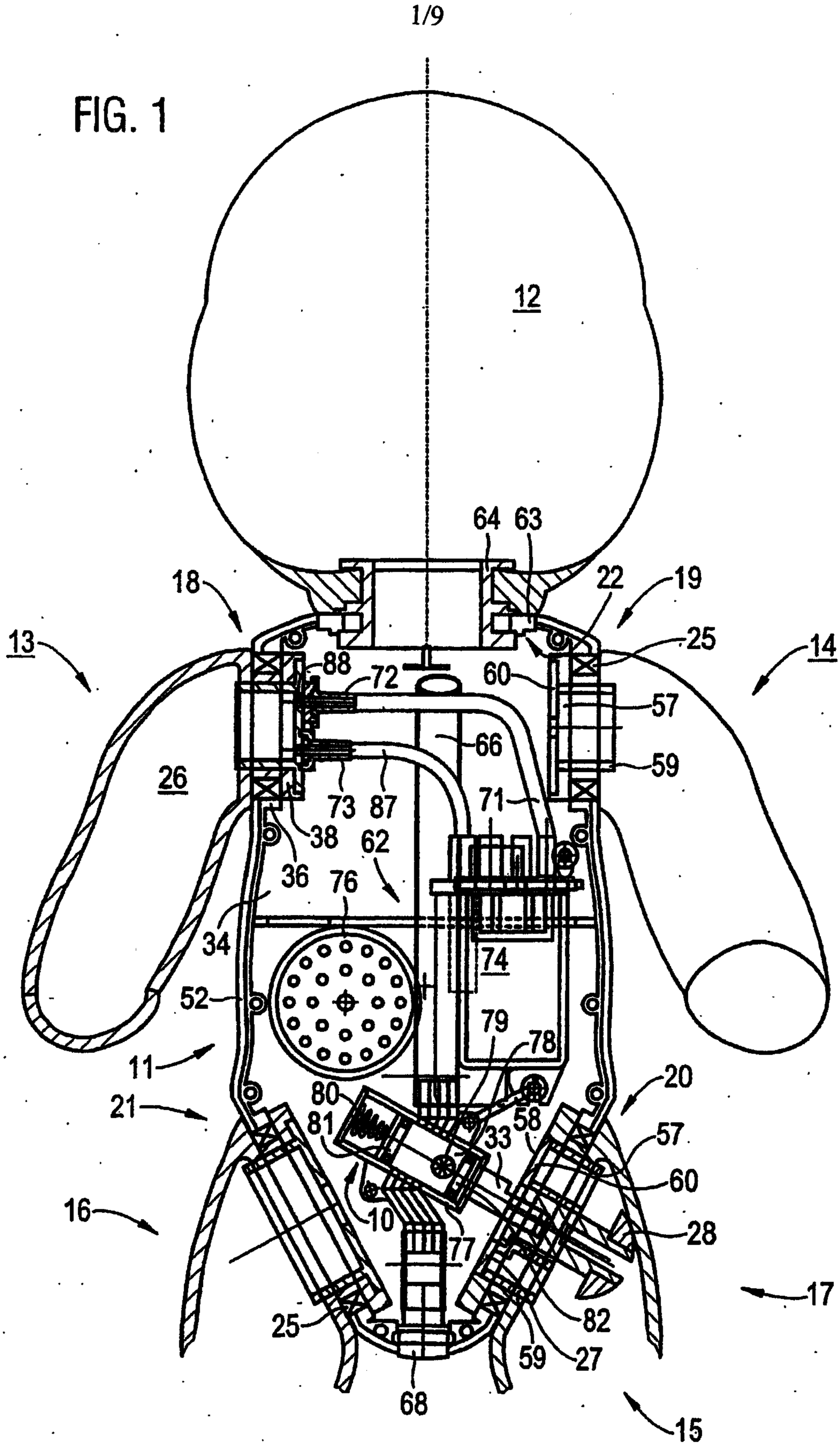

12
64
63
18
22
19
13
25
14
88
72
60
57
66
59
26
73
87
71
38
62
36
76
34
74
52
79
78
11
20
21
80
81
58
33
57
60
16
10
77
28
25
82
59
27
68
17
15

FIG. 2a

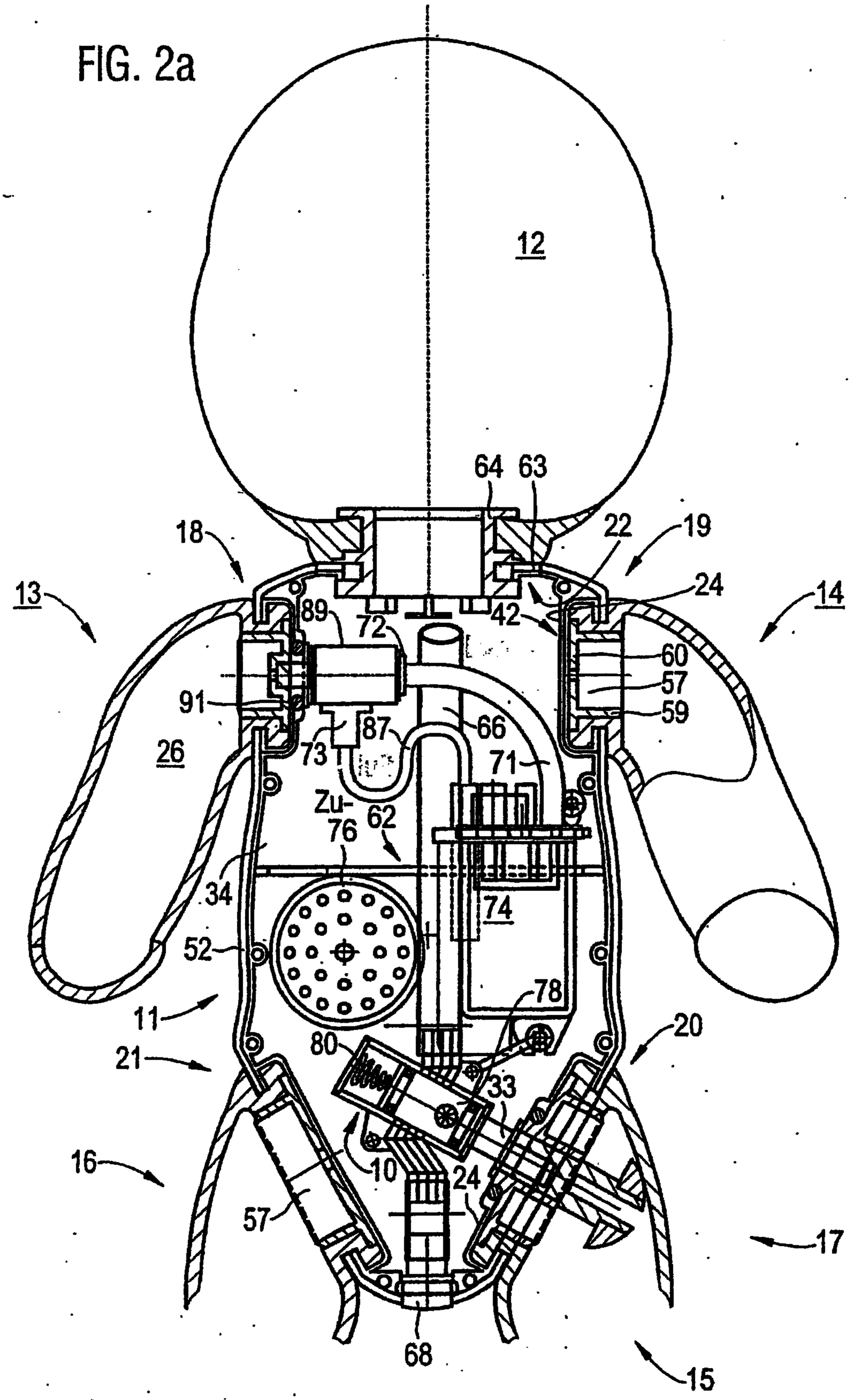

12
64
63
18
22
19
13
24
14
89
72
42
60
57
91
59
87
66
73
71
26
Zu-
76
62
34
74
52
78
11
20
80
21
33
16
10
24
57
17
68
15

FIG. 2b

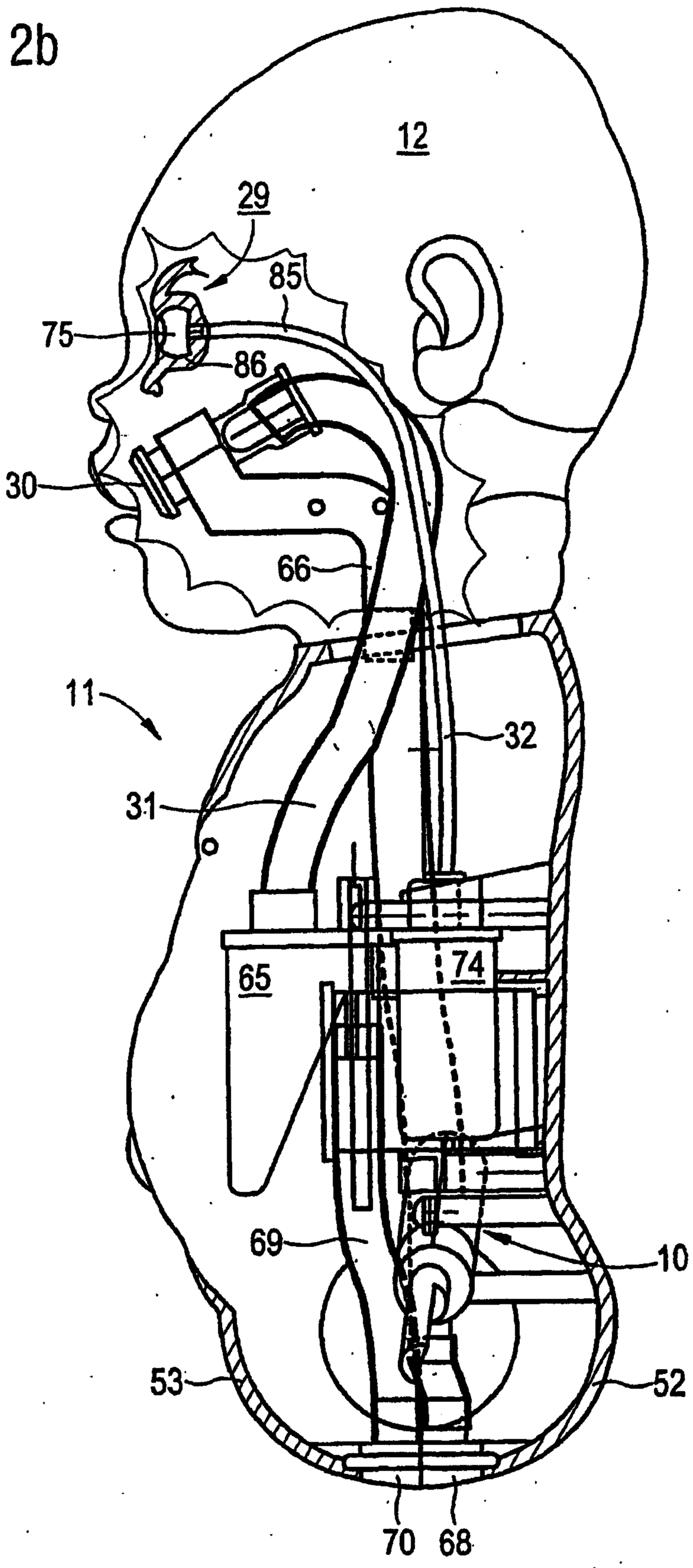


FIG. 2c

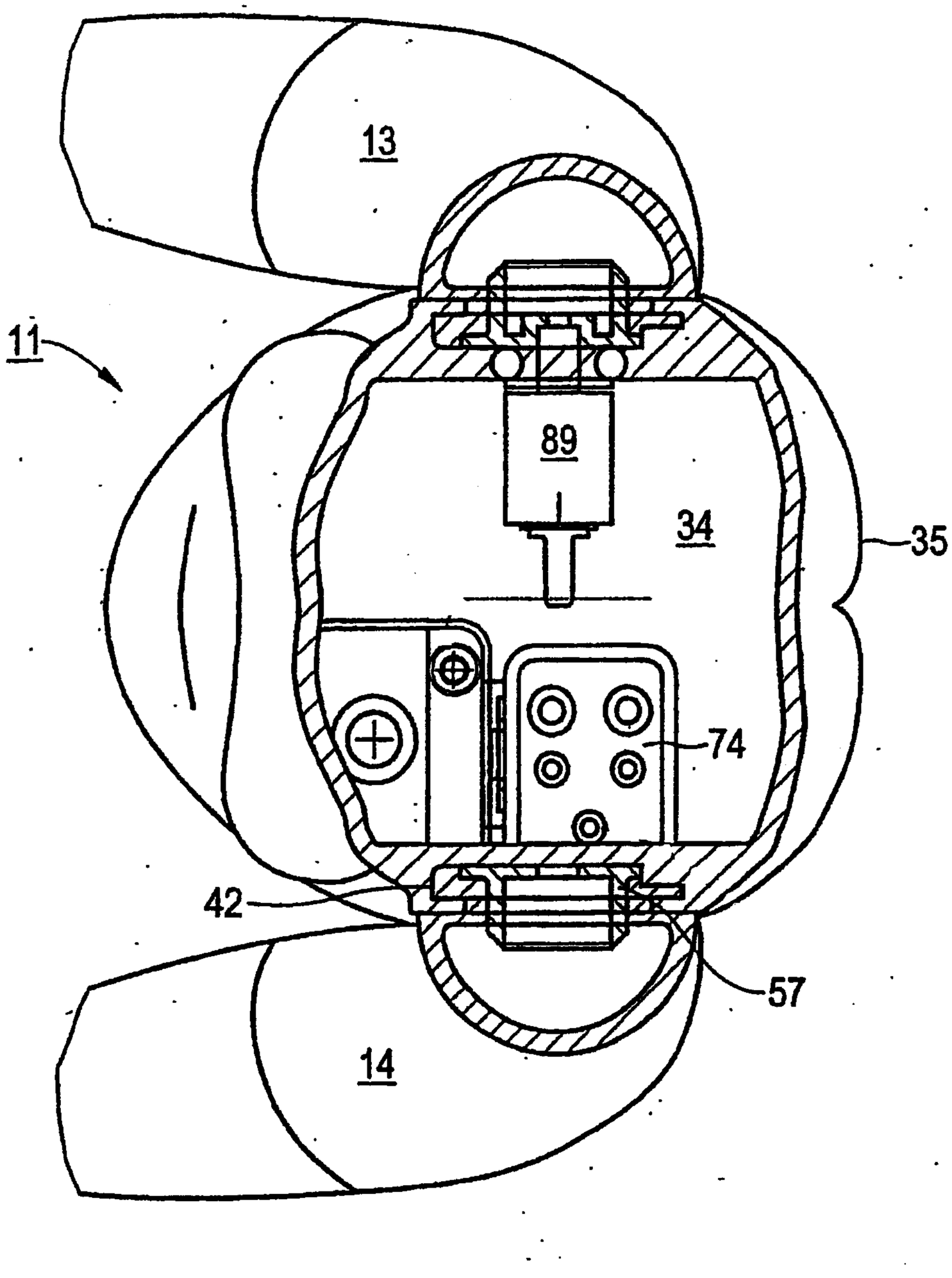


FIG. 3a

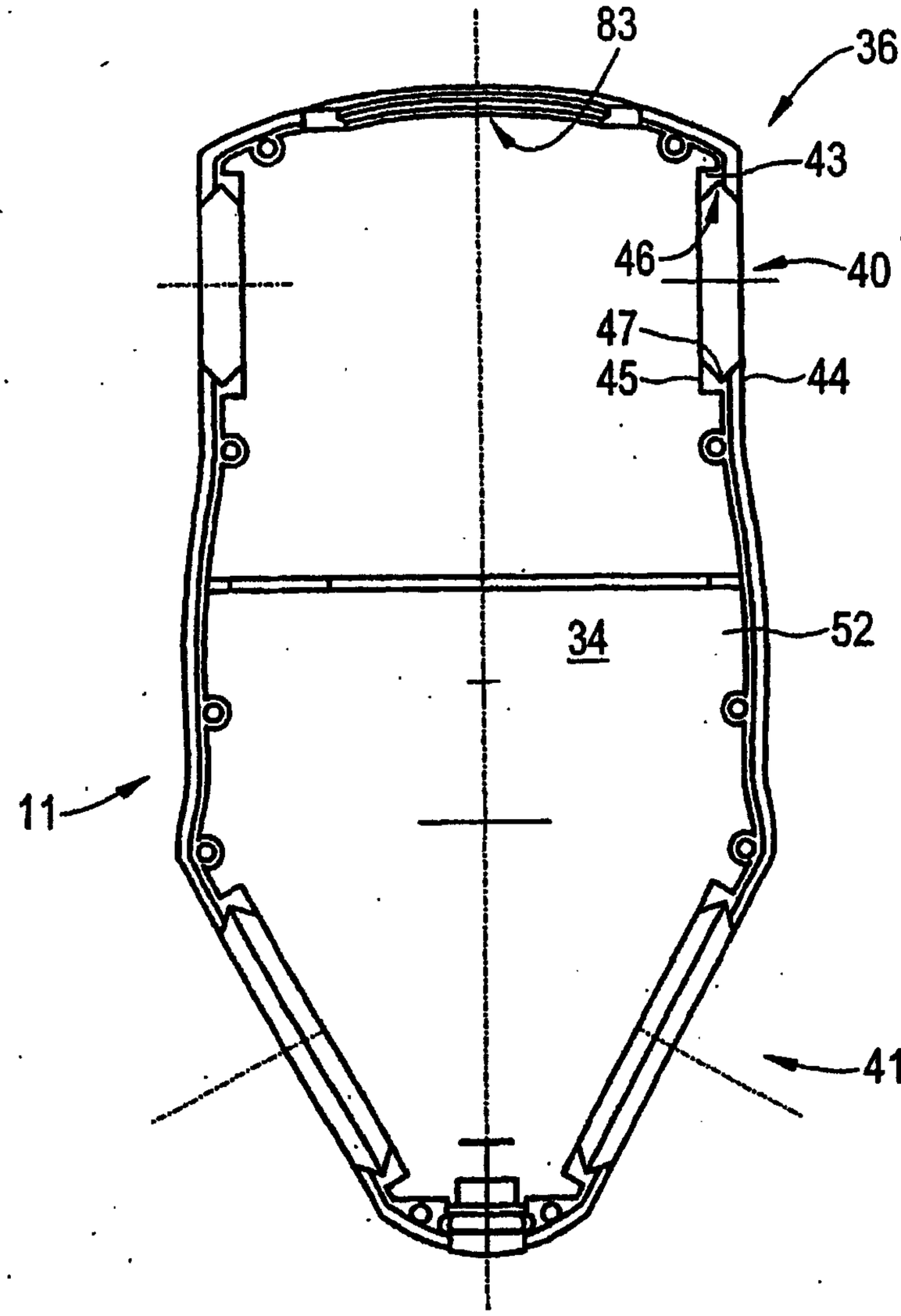



FIG. 3b

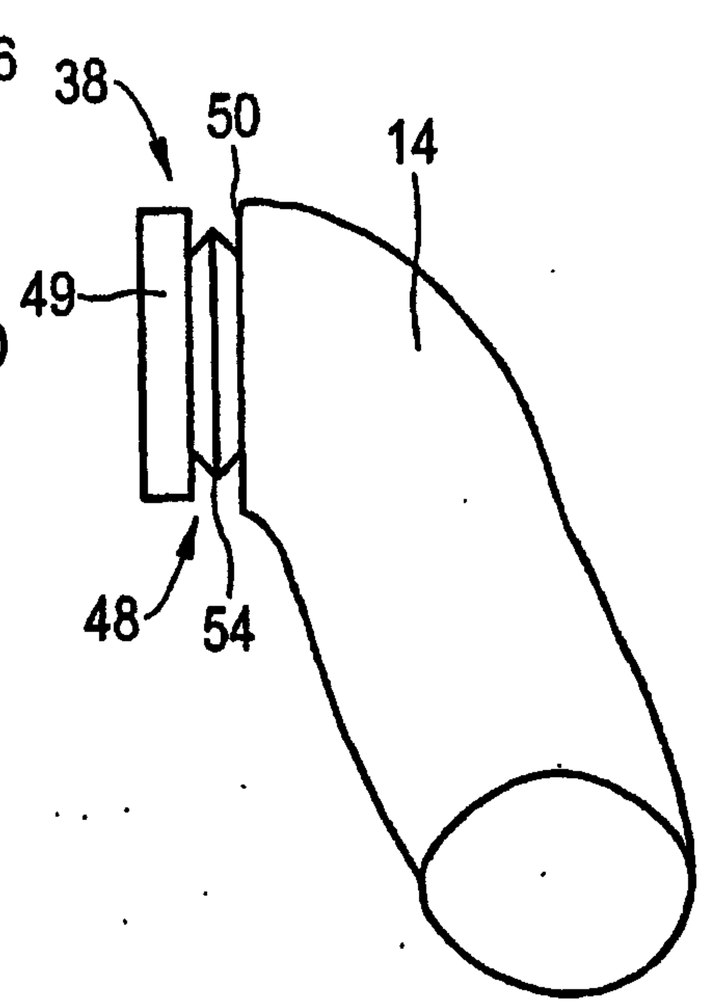



FIG. 4

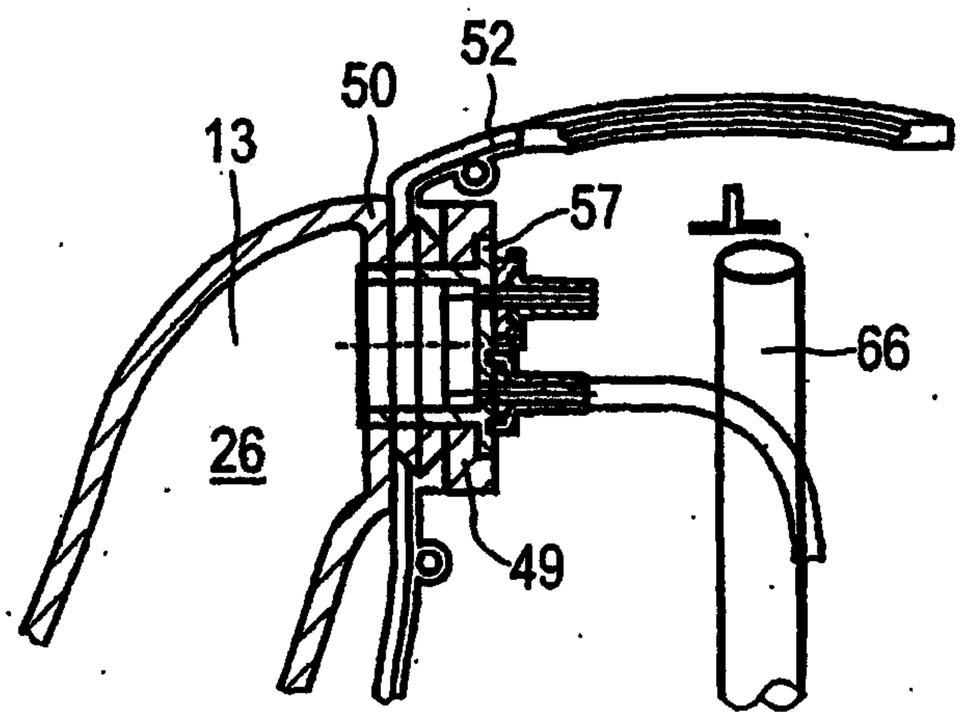


FIG. 5a

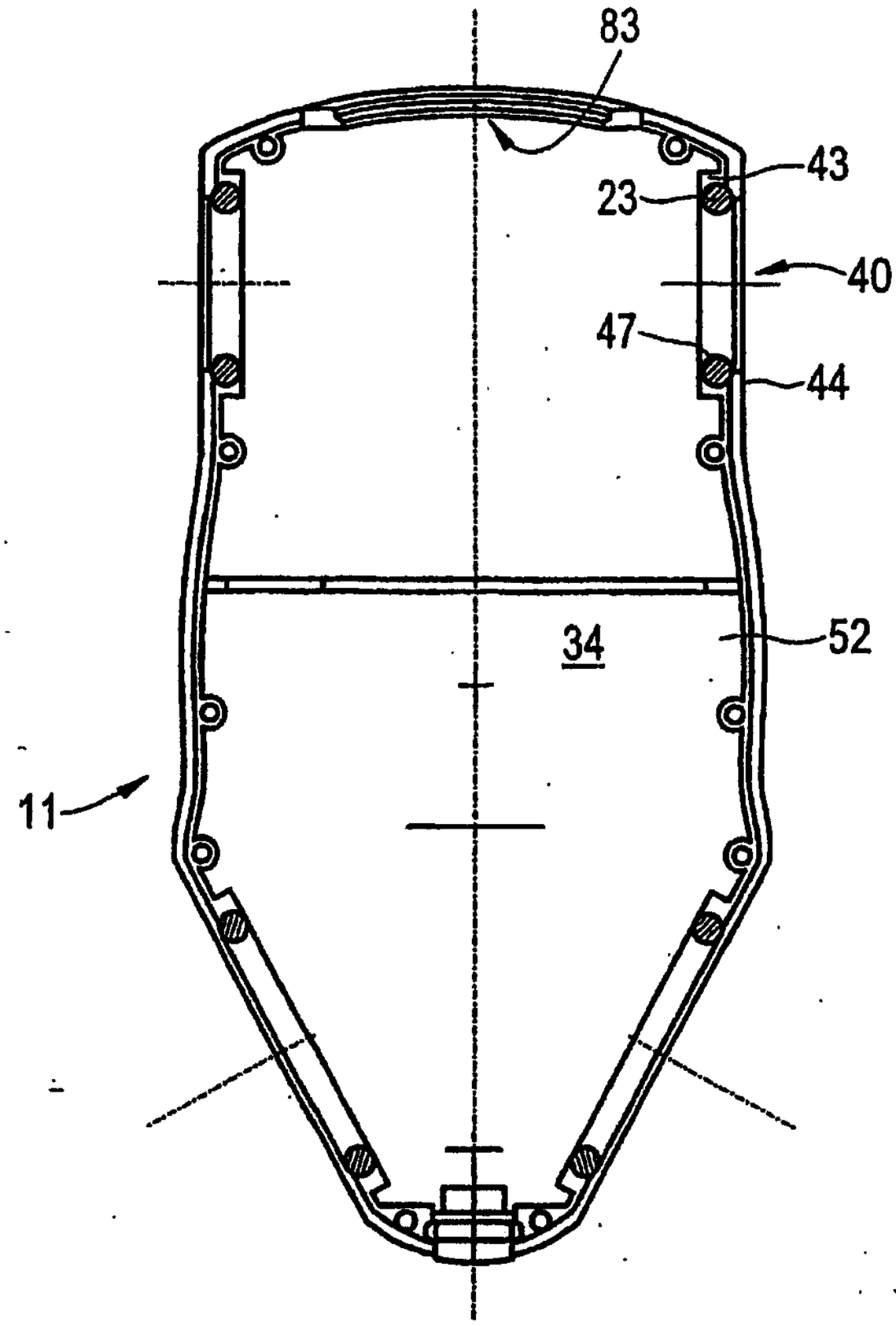



FIG. 5b

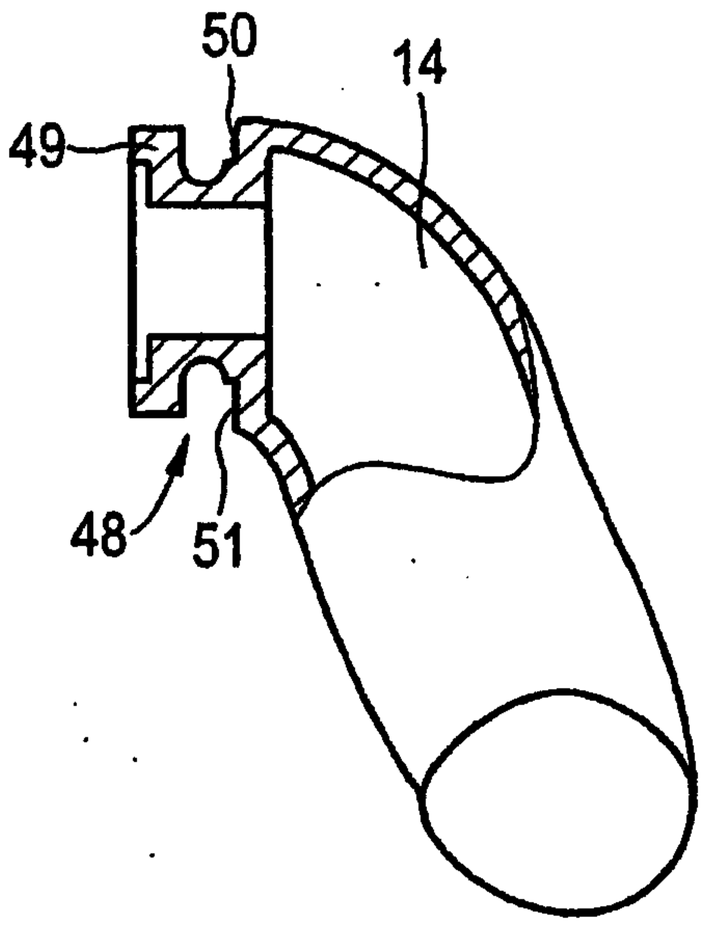



FIG. 6

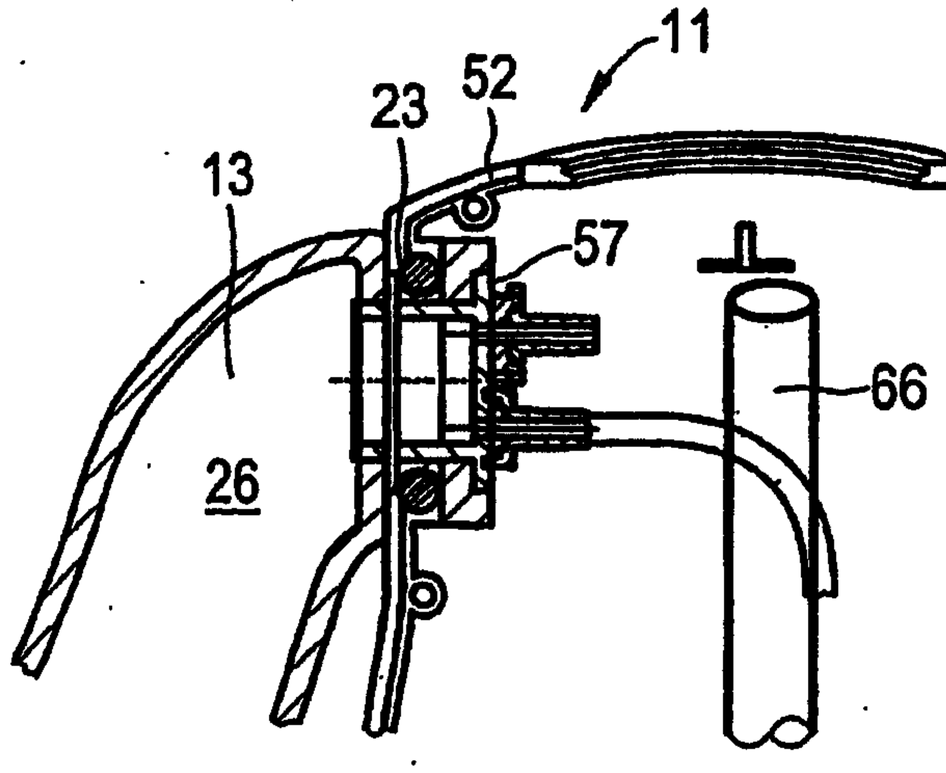


FIG. 7

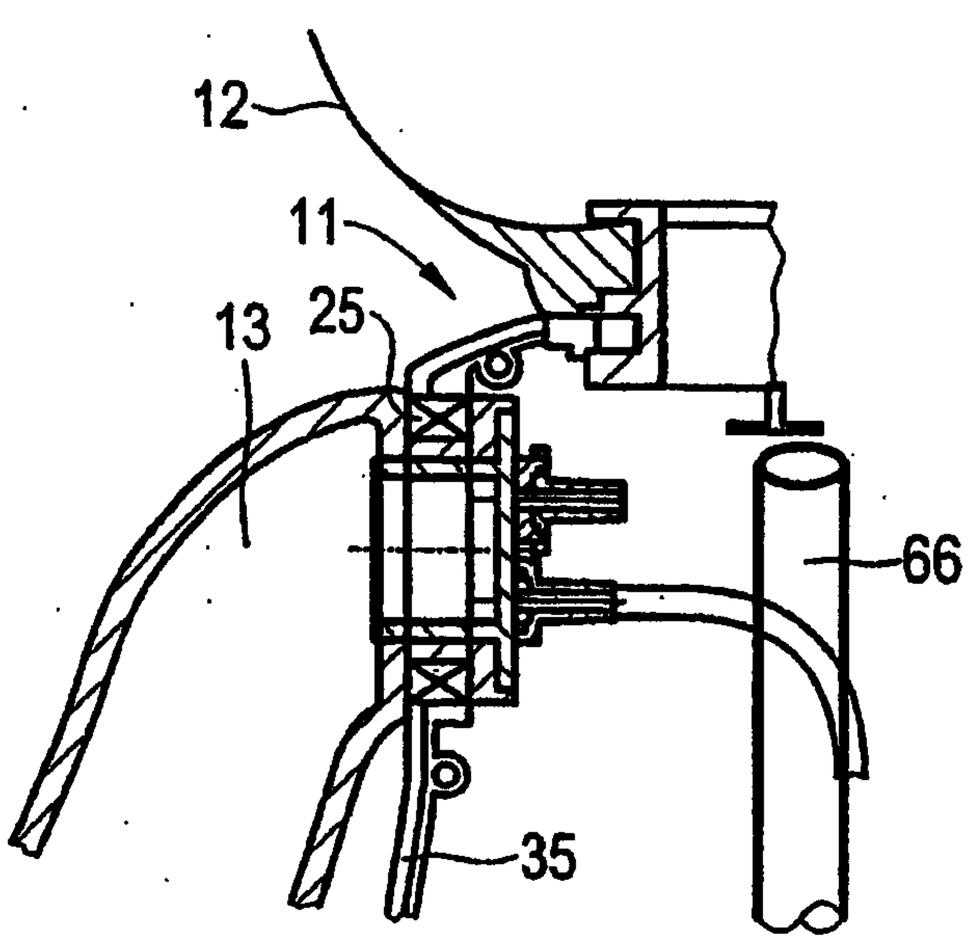



FIG. 8

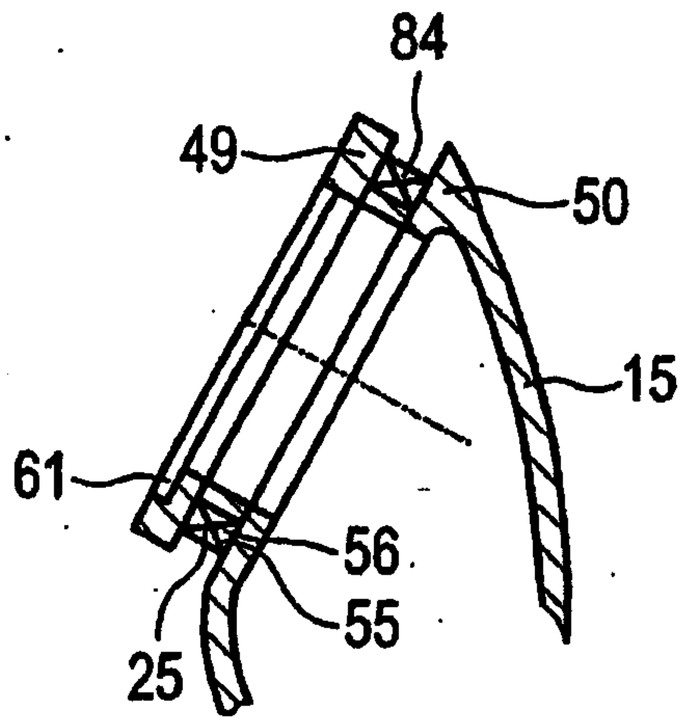



FIG. 9

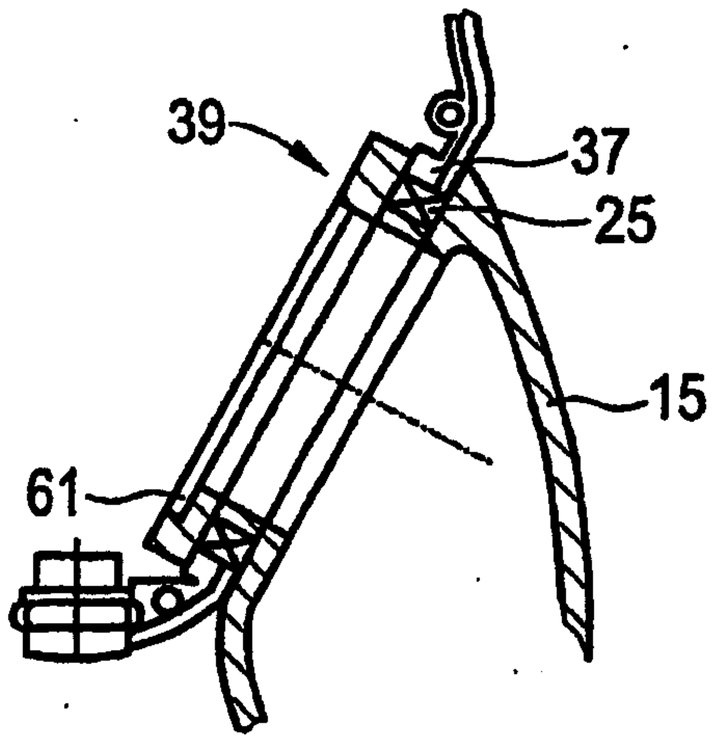


FIG. 10a

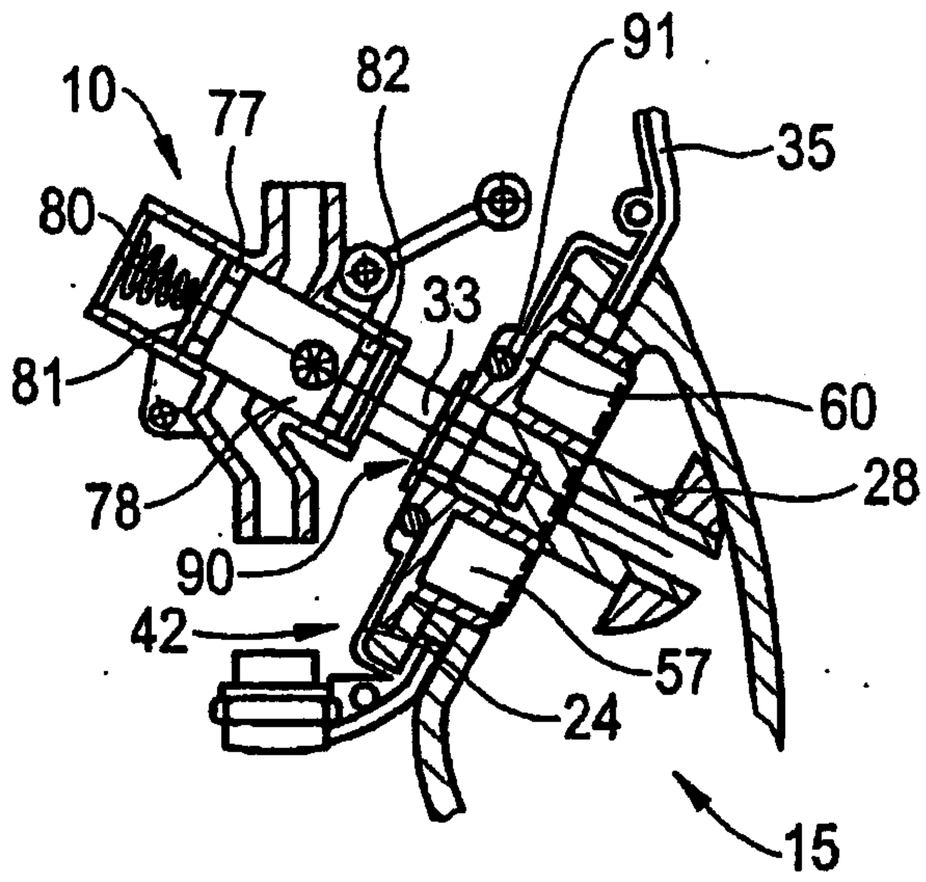



FIG. 10b

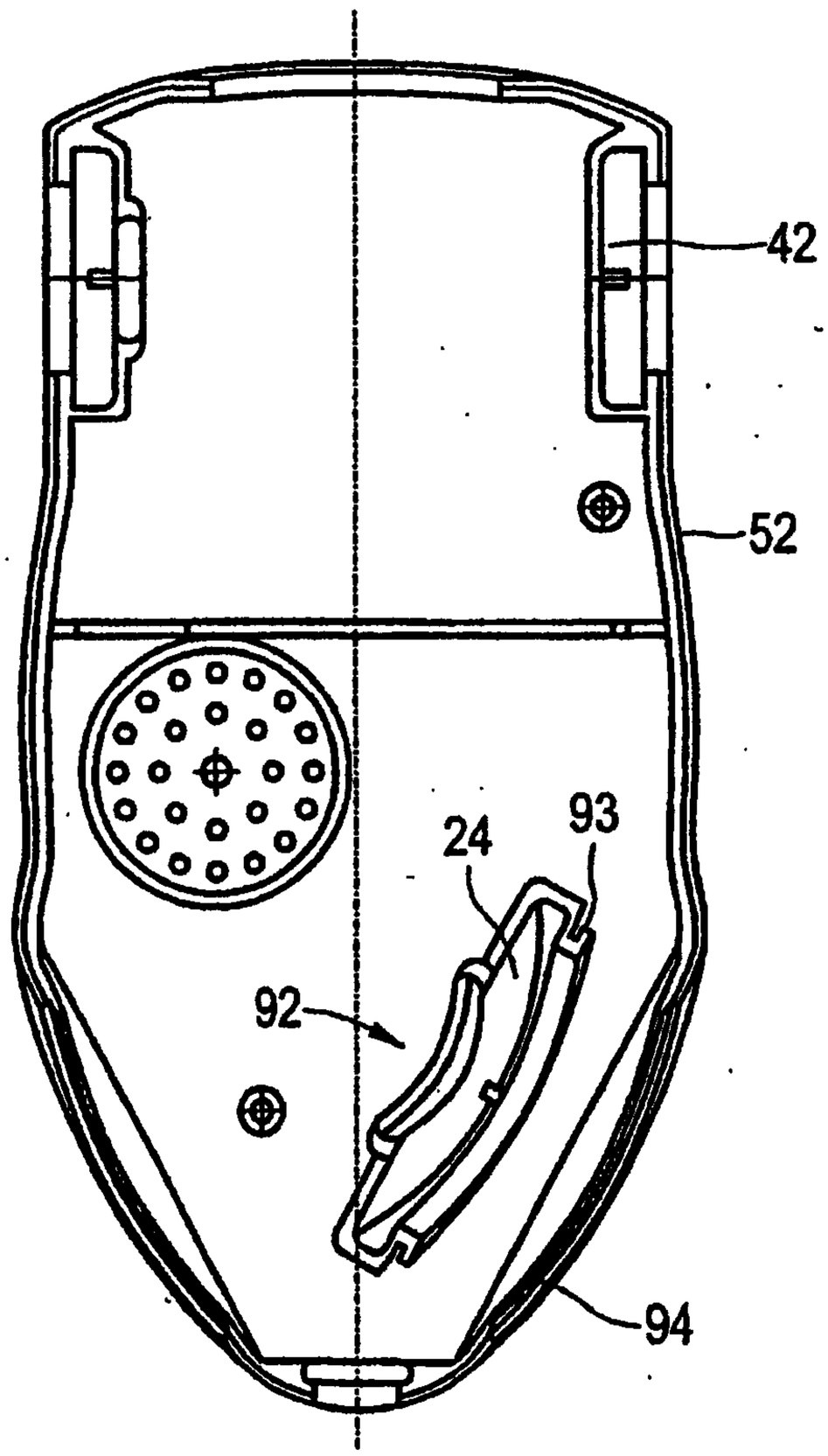
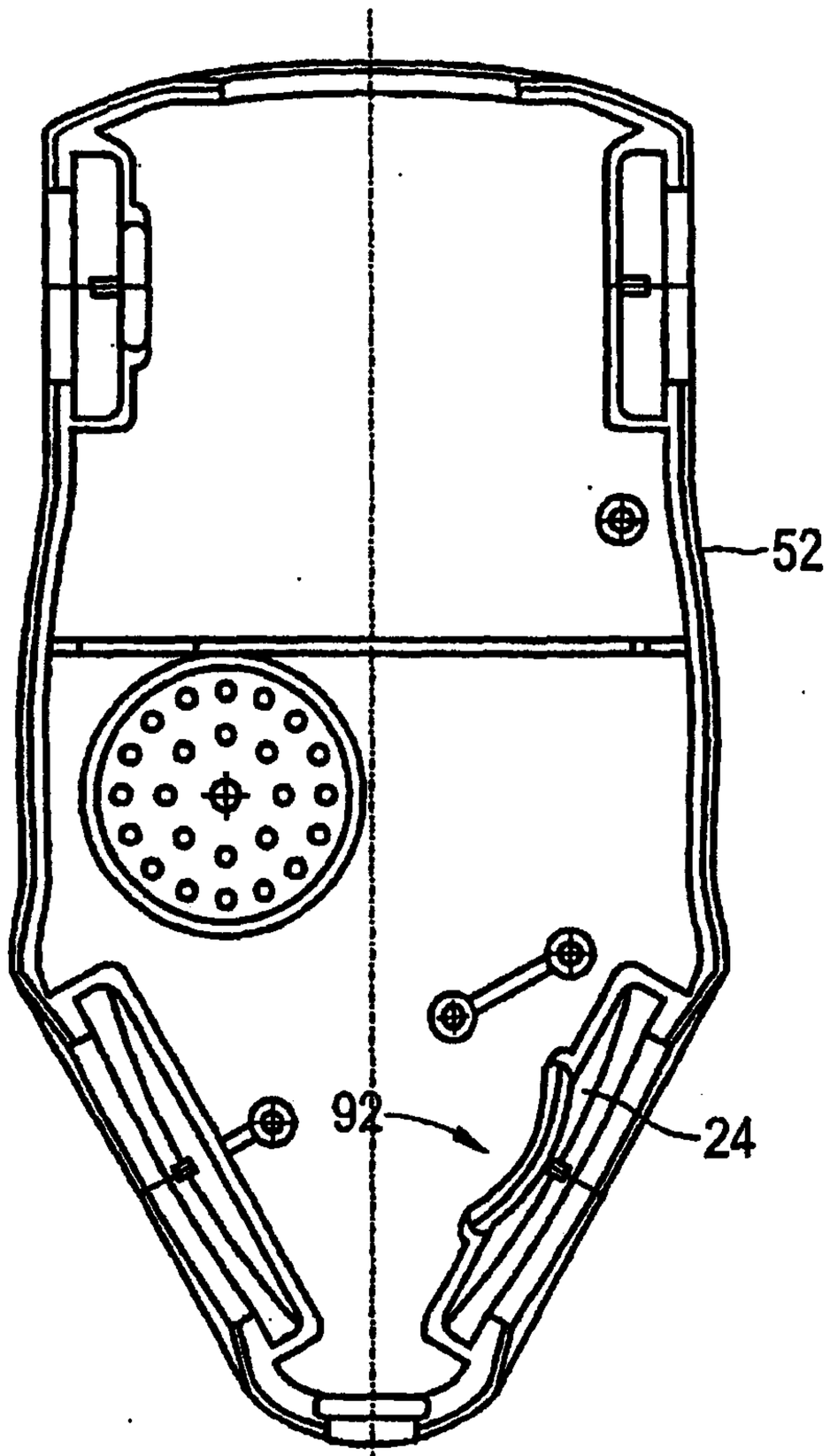
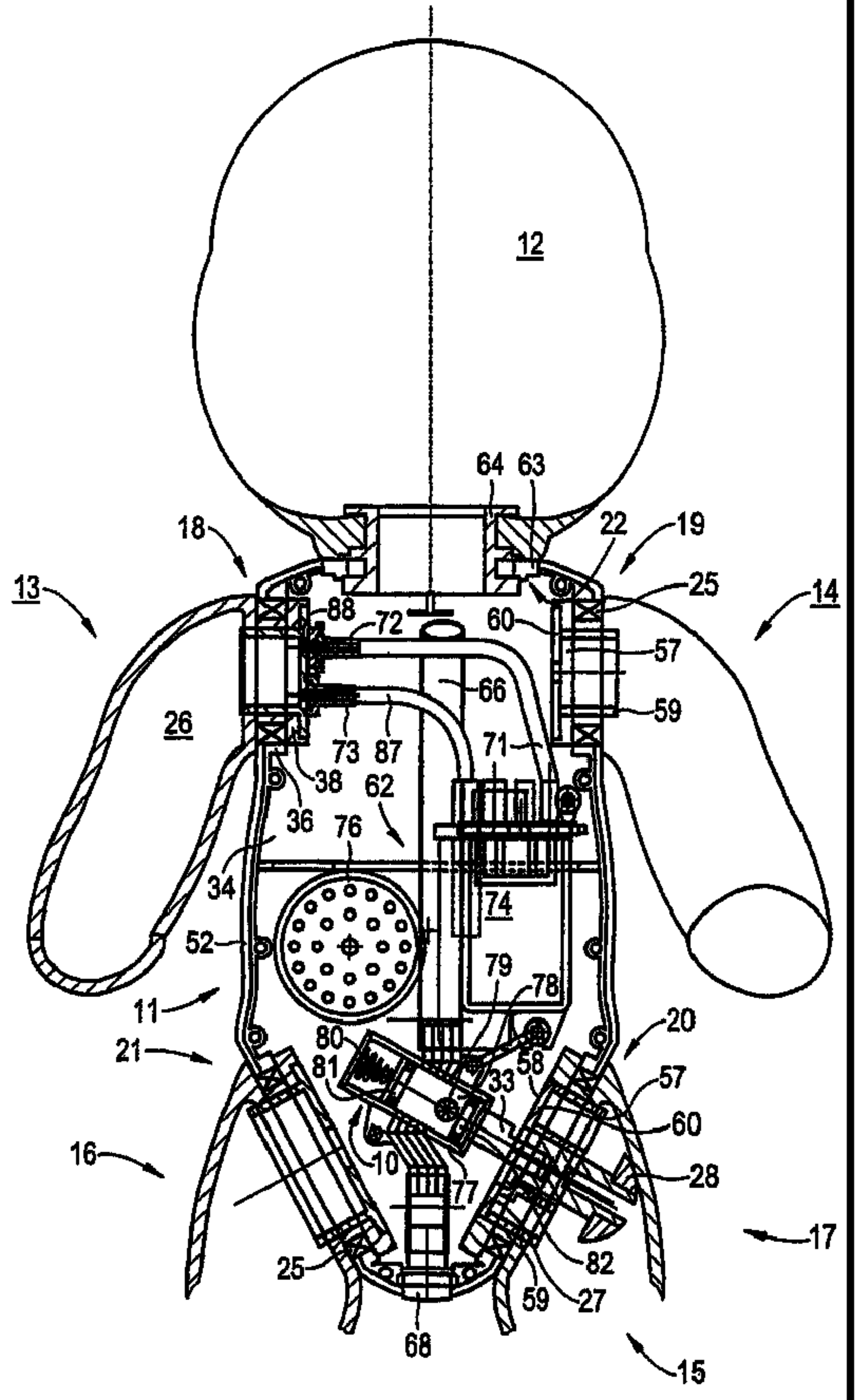


FIG. 10c




12
64
63
18
22
19
13
25
14
88
72
60
57
66
59
26
73
87
71
38
62
36
76
34
74
52
79
78
11
20
21
80
81
58
33
57
60
16
10
28
77
17
25
82
59
27
68
15