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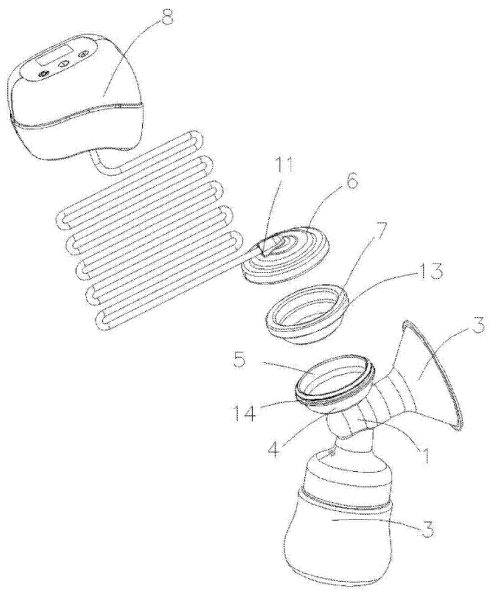
(54) Title of Utility Model

ELECTRIC BREAST PUMP CONVENIENT FOR BOTH SEPARATE AND COMBINED CONFIGURATIONS

(57) Abstract

An electric breast pump convenient for both separate and combined configurations includes a three-way connector, a first end of the three-way connector is connected to a suction head, and a second end of the three-way connector is connected to a container. A third end of the three-way connector is provided with an expansion opening, the expansion opening is connected to an annular edge, a connection cover is detachably provided on the annular edge, and an elastic diaphragm that separates the third end of the three-way connector into an inner cavity and an outer cavity is provided within the annular edge. The electric breast pump further includes an air pump main unit, an end face of the air pump main unit is provided with a circular protruding edge that matches the annular edge, and an upper airflow opening of the air pump main unit is located inside the protruding edge. The connection cover is provided with a lower airflow opening, and further includes a detachable air pipe. The beneficial effects of the utility model lie in that installation of the air pump main unit can be implemented in two ways, allowing the air pump main unit to be installed by selecting one of them, thereby respecting the usage habits of customers.



ELECTRIC BREAST PUMP CONVENIENT FOR BOTH SEPARATE AND COMBINED CONFIGURATIONS

TECHNICAL FIELD

[0001] The present utility model relates to a breast pump used for breastfeeding assistance.

BACKGROUND ART

[0002] A common electric breast pump in the prior art is formed by connecting a suction head to an air pump main unit and a milk bottle by a three-way connector. There are usually two ways to connect the air pump main unit to the three-way connector. The first is to use an air pipe to connect to the three-way connector. The advantage is that there are fewer handheld parts and the equipment is relatively light, while the disadvantage is that a platform is required to place the air pump main unit. The other way is to fix the air pump main unit directly onto the three-way connector. The disadvantage thereof is that the equipment is relatively heavy.

SUMMARY OF THE UTILITY MODEL

[0003] In order to overcome the deficiency of existing electric breast pumps in which the installation manner of an air pump main unit cannot be freely determined to suit different usage habits, the present utility model provides an electric breast pump convenient for both separate and combined configurations.

[0004] The technical solution of the present utility model to solve the technical problem thereof is as follows: an electric breast pump convenient for both separate and combined configurations, comprising a three-way connector, a first end of the three-way connector being connected to a suction head, and a second end of the three-way connector being connected to a container, wherein a third end of the three-way connector is provided with an expansion opening, the expansion opening is connected to an annular edge, a connection cover is detachably provided on the annular edge, and an elastic diaphragm that separates the third end of the three-way connector into an inner cavity and an outer cavity is provided within the annular edge; the electric breast pump further comprises an air pump main unit, an end face of the air pump main unit is provided with a circular protruding edge that matches the annular edge, the air pump main unit is configured to be detachably mounted on the annular edge by means of connecting the protruding edge to the annular

edge, and an upper airflow opening of the air pump main unit is located inside the protruding edge; the connection cover is provided with a lower airflow opening, and further comprises a detachable air pipe, and the air pipe connects the upper airflow opening and the lower airflow opening. The elastic diaphragm is used to prevent milk from flowing into the air pump main unit.

[0005] Further, the elastic diaphragm has a circular wrapping edge, the wrapping edge is sleeved on the annular edge, and the connection cover presses the wrapping edge against the annular edge; when the air pump main unit is installed on the three-way connector, the protruding edge presses the wrapping edge of the elastic diaphragm against the annular edge. Such an elastic diaphragm can be installed more securely.

[0006] Further, an annular groove is recessed on an outer annular surface of the annular edge, an outermost end of the wrapping edge of the elastic diaphragm is inwardly provided with an insert element, and the insert element is inserted into the annular groove.

[0007] Further, a lower end of the connection cover is divided into an inner ring and an outer ring, a clamping groove is provided between the inner ring and the outer ring, and the clamping groove clamps the wrapping edge of the elastic diaphragm against the annular edge.

[0008] Further, the outer annular surface of the annular edge is provided with a circle of barbs and an annular top edge, and the annular groove is located between the barbs and the top edge.

[0009] In the present utility model, when in use, the air pump main unit can be installed in two different ways. The first way is to install the connection cover on the annular edge, and then use the air pipe to connect the upper airflow opening and the lower airflow opening. The second way is to directly remove the connection cover and the air pipe, and connect the air pump main unit by engaging the protruding edge with the annular edge.

[0010] The present utility model has the following beneficial effects: 1. the installation of the air pump main unit can be implemented in two different ways, so that one of them can be selected to connect and install the air pump main unit, thereby respecting the usage habits of customers. 2. the elastic diaphragm is installed on the annular edge of the three-way connector by means of the wrapping edge and the insert element, thereby achieving secure installation.

BRIEF DESCRIPTION OF DRAWINGS

[0011] FIG. 1 is a schematic diagram of an embodiment of the present utility model.

[0012] FIG. 2 is a bottom-up schematic diagram of an embodiment of the present utility model.

[0013] FIG. 3 is a partial cross-sectional schematic diagram of an embodiment of the present utility model.

[0014] FIG. 4 is an enlarged schematic diagram of area A in FIG. 3.

[0015] FIG. 5 is an exploded schematic diagram of an embodiment of the present utility model.

[0016] FIG. 6 is a schematic diagram showing an air pump main unit directly connected to a three-way connector.

[0017] FIG. 7 is a cross-sectional schematic diagram of an air pump main unit directly connected to a three-way connector.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0018] The present utility model will be further described in detail below in conjunction with the accompanying drawings and specific implementations.

[0019] With reference to FIG. 1 to 7, an electric breast pump convenient for both separate and combined configurations is provided, comprising a three-way connector 1, a first end of the three-way connector 1 is connected to a suction head 2, and a second end of the three-way connector 1 is connected to a container 3. A third end of the three-way connector 1 is provided with an expansion opening 4, the expansion opening 4 is connected to an annular edge 5, a connection cover 6 is detachably provided on the annular edge 5, and an elastic diaphragm 7 that separates the third end of the three-way connector 1 into an inner cavity and an outer cavity is provided within the annular edge 5. The electric breast pump further comprises an air pump main unit 8, an end face of the air pump main unit 8 is provided with a circular protruding edge 9 that matches the annular edge 5, the air pump main unit 8 is configured to be detachably mounted on the annular edge 5 by means of connecting the protruding edge 9 to the annular edge 5, and an upper airflow opening 10 of the air pump main unit 8 is located inside the protruding edge 9. The connection cover 6 is provided with a lower airflow opening 11, and further comprises a detachable air pipe 12, and the air pipe 12 connects the upper airflow opening 10 and the lower airflow opening 11. The elastic diaphragm 7 is used to prevent milk from flowing into the air pump main unit 8.

[0020] Further, the elastic diaphragm 7 has a circular wrapping edge 13, the wrapping edge 13 is sleeved on the annular edge 5, and the connection cover 6 presses the wrapping edge 13 against

the annular edge 5. When the air pump main unit 8 is installed on the three-way connector 1, the protruding edge 9 presses the wrapping edge 12 of the elastic diaphragm 7 against the annular edge 5. Such an elastic diaphragm 7 can be installed more securely.

[0021] Further, an annular groove 14 is recessed on an outer annular surface 17 of the annular edge 5, an outermost end of the wrapping edge 13 of the elastic diaphragm 7 is inwardly provided with an insert element 15, and the insert element 15 is inserted into the annular groove 14.

[0022] Further, a lower end of the connection cover 6 is divided into an inner ring 16 and an outer ring 17, a clamping groove is provided between the inner ring 16 and the outer ring 17, and the clamping groove clamps the wrapping edge 13 of the elastic diaphragm against the annular edge 5.

[0023] Further, an outer ring 15 surface of the annular edge 5 is provided with a circle of barbs 18 and an annular top edge 19, and the annular groove 14 is located between the barbs 18 and the top edge 19.

[0024] In the present utility model, when in use, the air pump main unit 8 can be installed in two different ways. The first way is to install the connection cover 6 on the annular edge 5, and then use the air pipe 12 to connect the upper airflow opening 10 and the lower airflow opening 11. The second way is to directly remove the connection cover 6 and the air pipe 12, and connect the air pump main unit 8 by engaging the protruding edge 9 with the annular edge 5.

[0025] The present utility model has the following beneficial effects: 1. the installation of the air pump main unit can be implemented in two different ways, so that one of them can be selected to connect and install the air pump main unit, thereby respecting the usage habits of customers. 2. the elastic diaphragm is installed on the annular edge of the three-way connector by means of the wrapping edge and the insert element, thereby achieving secure installation.

CLAIMS

1. An electric breast pump convenient for both separate and combined configurations, comprising a three-way connector, a first end of the three-way connector being connected to a suction head, and a second end of the three-way connector being connected to a container, characterized in that: a third end of the three-way connector is provided with an expansion opening, the expansion opening is connected to an annular edge, a connection cover is detachably provided on the annular edge, and an elastic diaphragm that separates the third end of the three-way connector into an inner cavity and an outer cavity is provided within the annular edge; the electric breast pump further comprises an air pump main unit, an end face of the air pump main unit is provided with a circular protruding edge that matches the annular edge, the air pump main unit is configured to be detachably mounted on the annular edge by means of connecting the protruding edge to the annular edge, and an upper airflow opening of the air pump main unit is located inside the protruding edge; the connection cover is provided with a lower airflow opening, and further comprises a detachable air pipe, and the air pipe connects the upper airflow opening and the lower airflow opening.

2. The electric breast pump convenient for both separate and combined configurations according to claim 1, wherein the elastic diaphragm has a circular wrapping edge, the wrapping edge is sleeved on the annular edge, and the connection cover presses the wrapping edge against the annular edge; when the air pump main unit is installed on the three-way connector, the protruding edge presses the wrapping edge of the elastic diaphragm against the annular edge.

3. The electric breast pump convenient for both separate and combined configurations according to claim 2, wherein an annular groove is recessed on an outer annular surface of the annular edge, an outermost end of the wrapping edge of the elastic diaphragm is inwardly provided with an insert element, and the insert element is inserted into the annular groove.

4. The electric breast pump convenient for both separate and combined configurations according to claim 3, wherein a lower end of the connection cover is divided into an inner ring and

an outer ring, a clamping groove is provided between the inner ring and the outer ring, and the clamping groove clamps the wrapping edge of the elastic diaphragm against the annular edge.

5. The electric breast pump convenient for both separate and combined configurations according to claim 3 or 4, wherein the outer annular surface of the annular edge is provided with a circle of barbs and an annular top edge, and the annular groove is located between the barbs and the top edge.

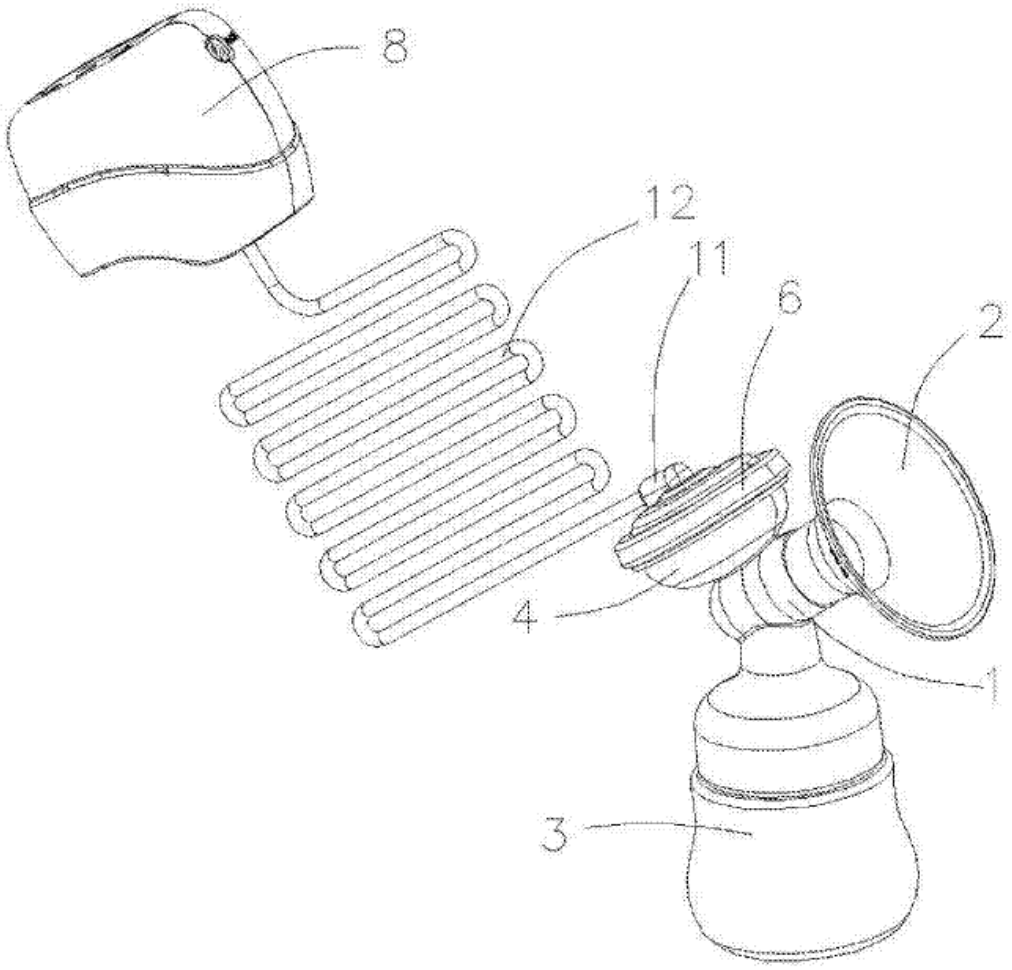


FIG. 1

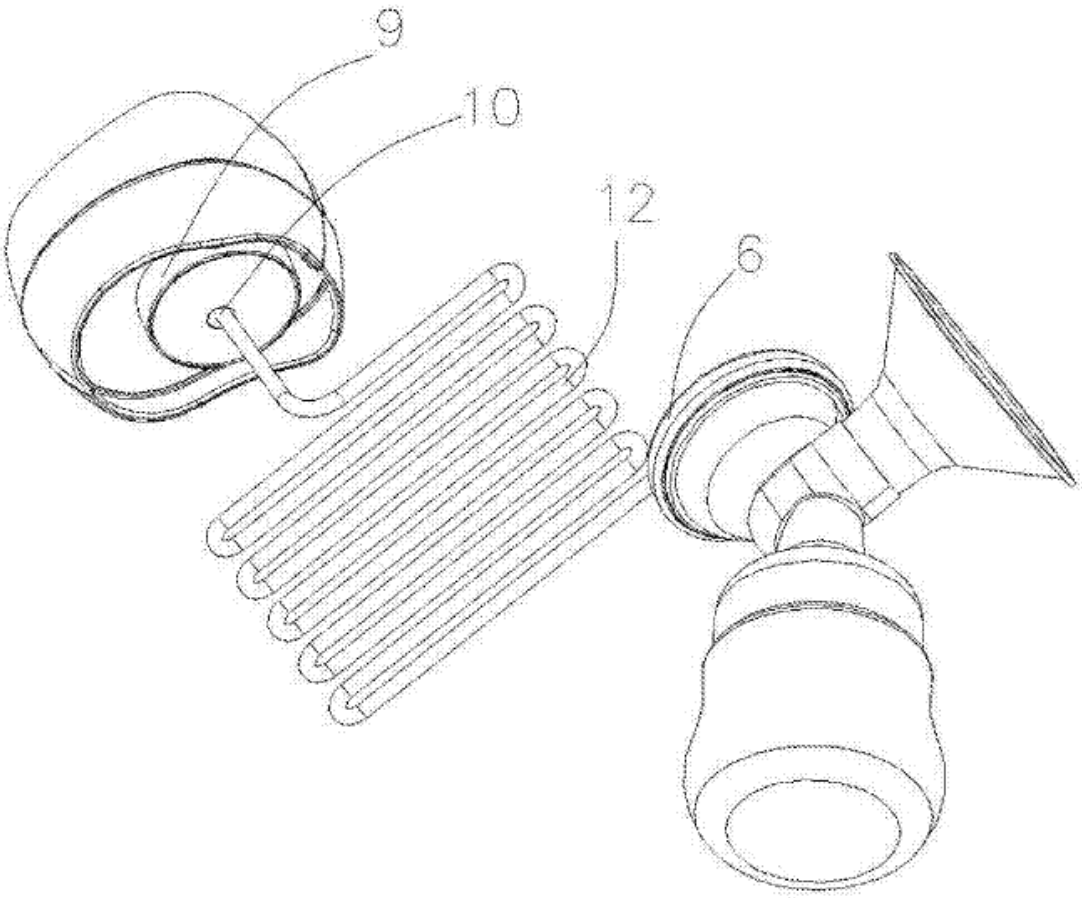


FIG. 2

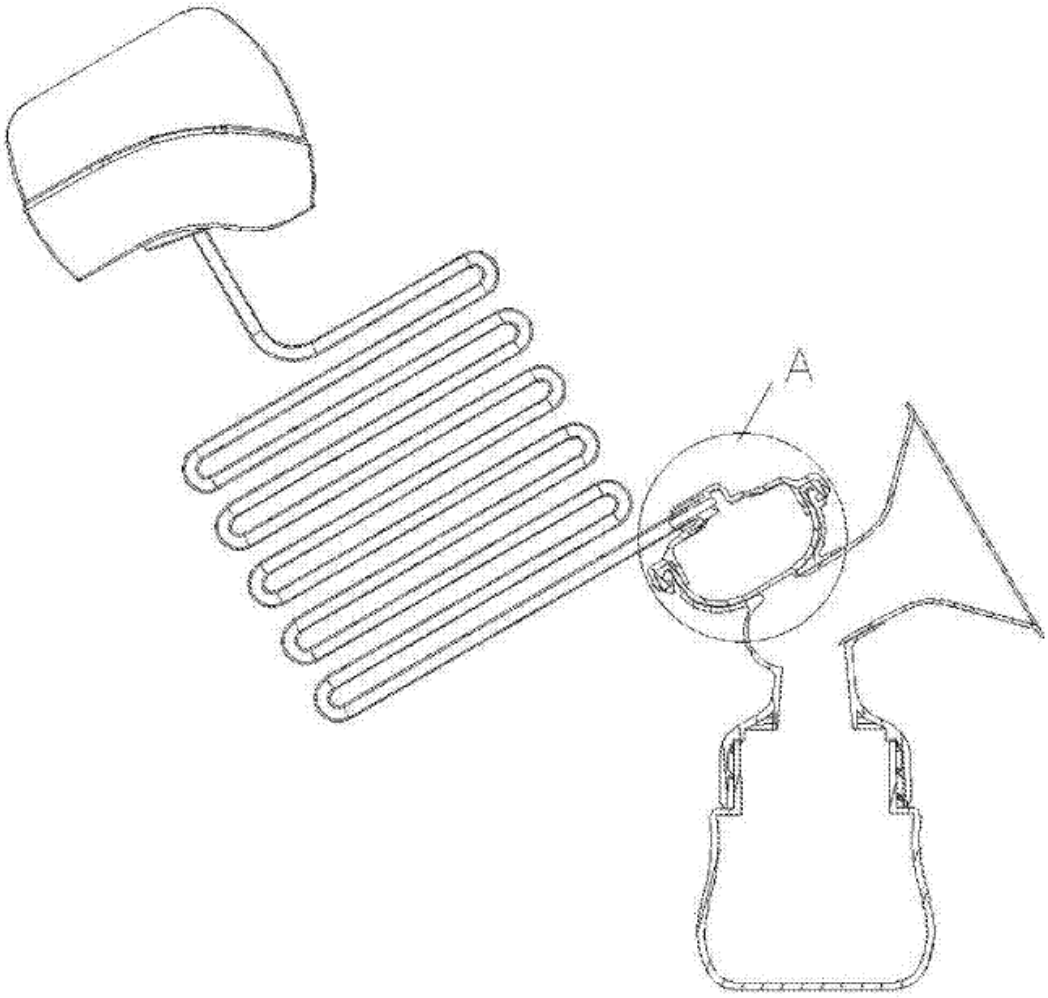


FIG. 3

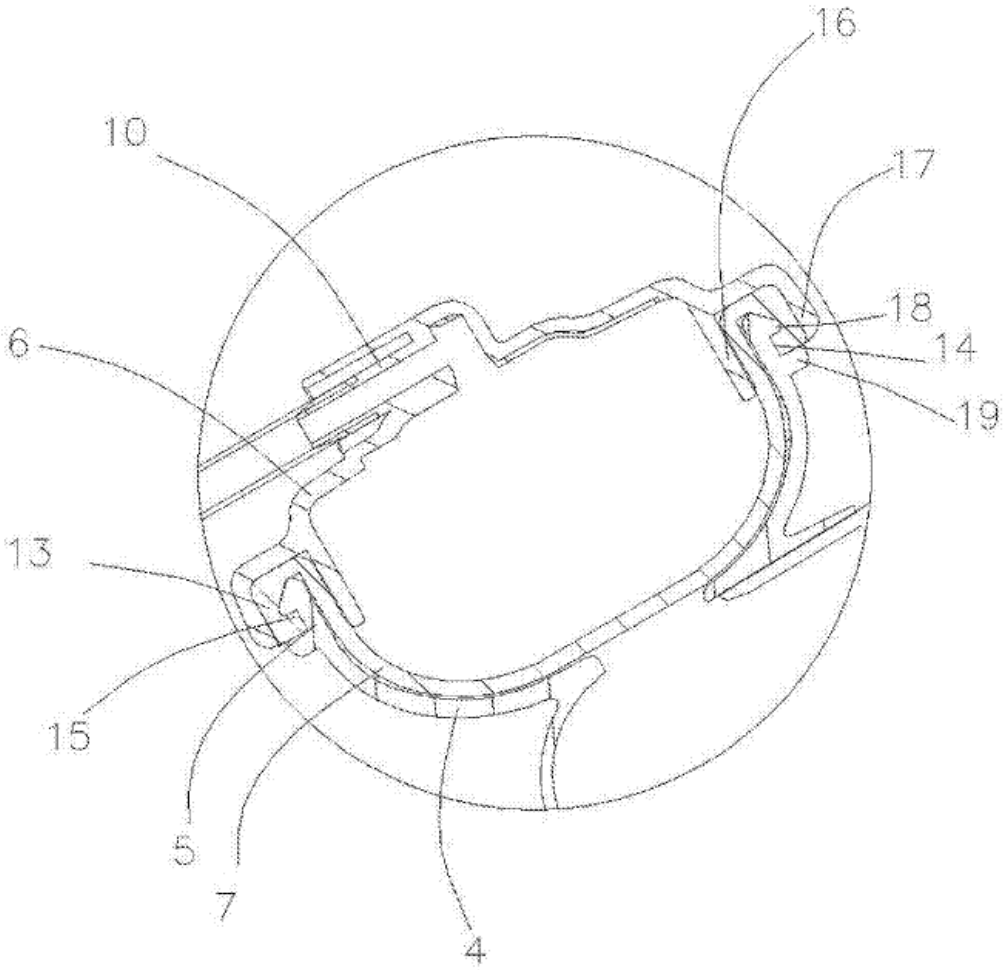


FIG. 4

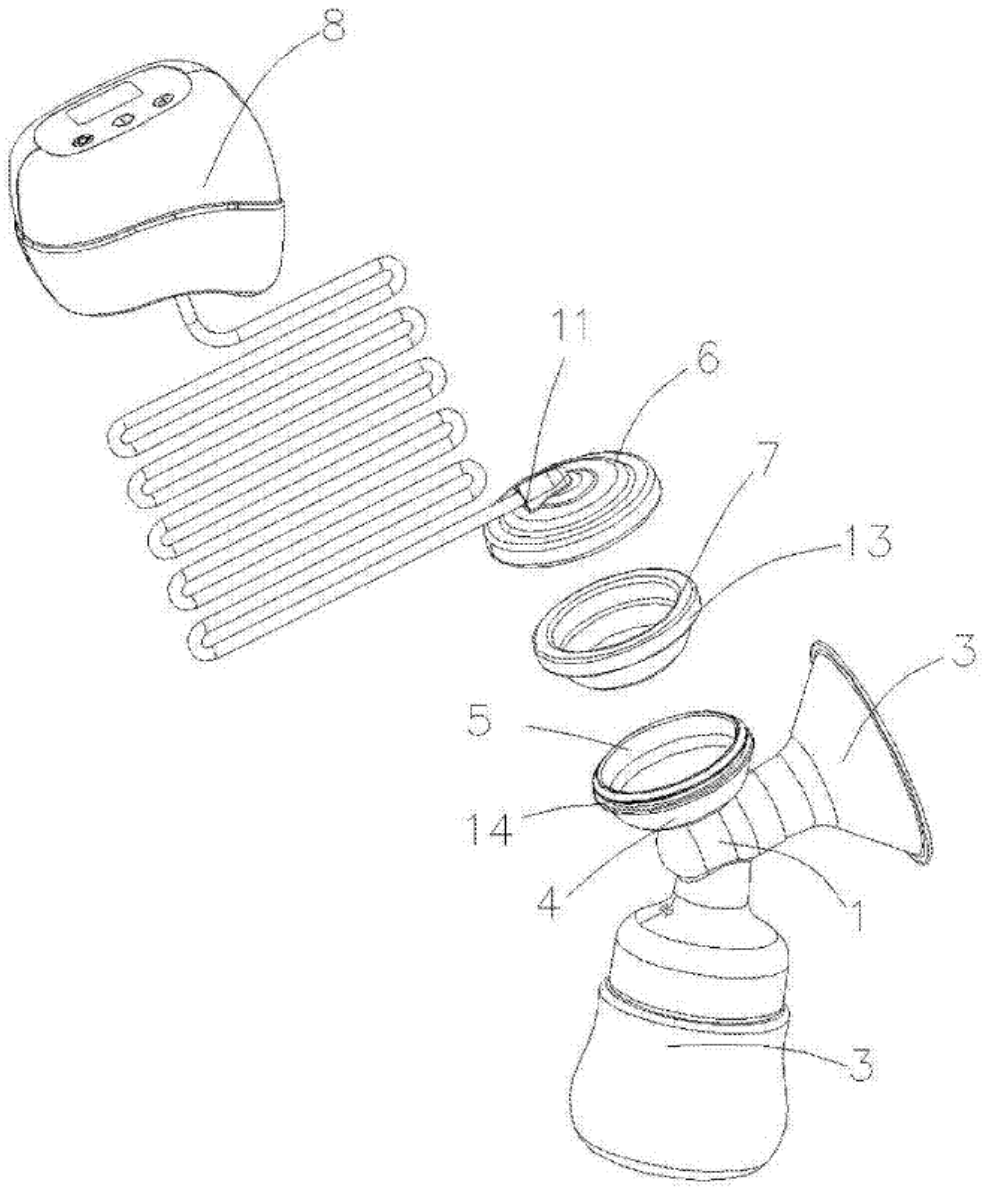


FIG. 5

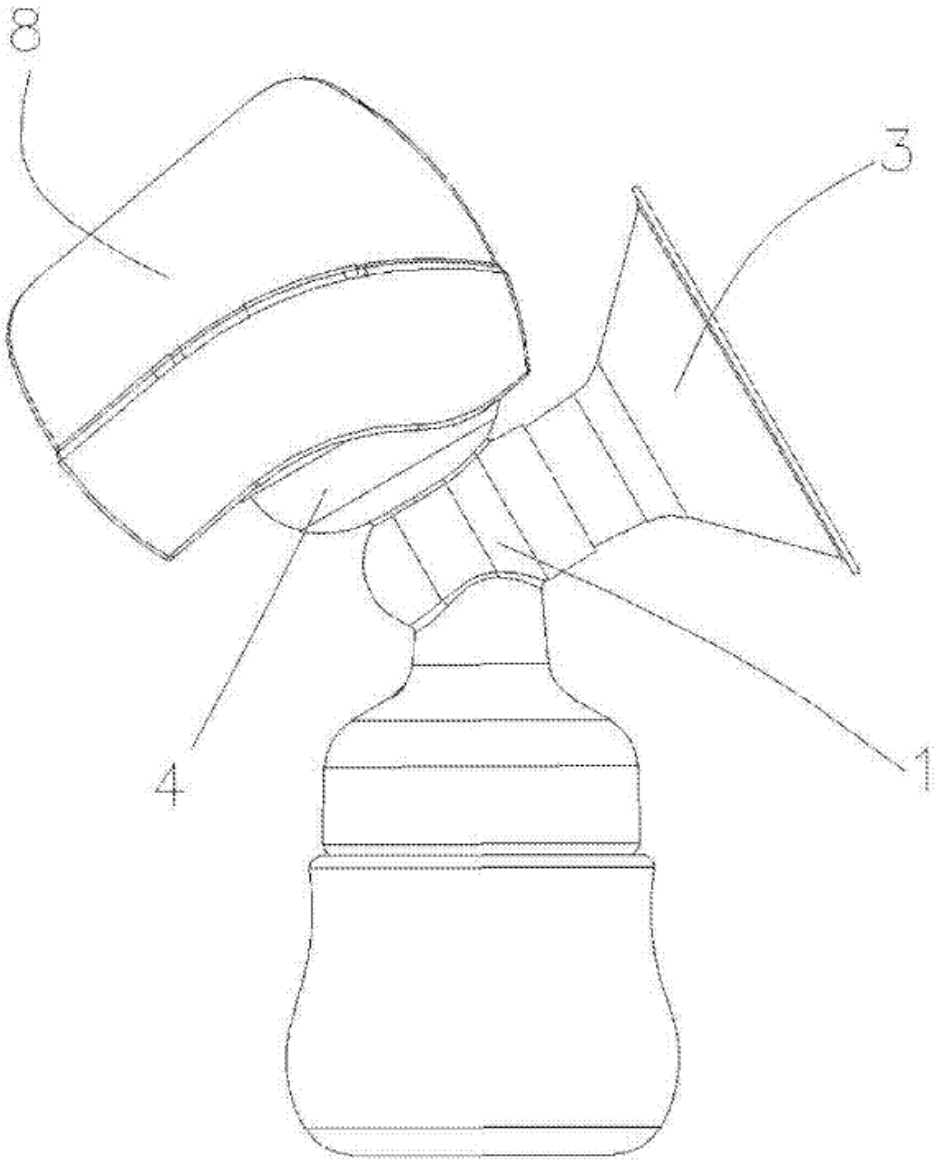


FIG. 6

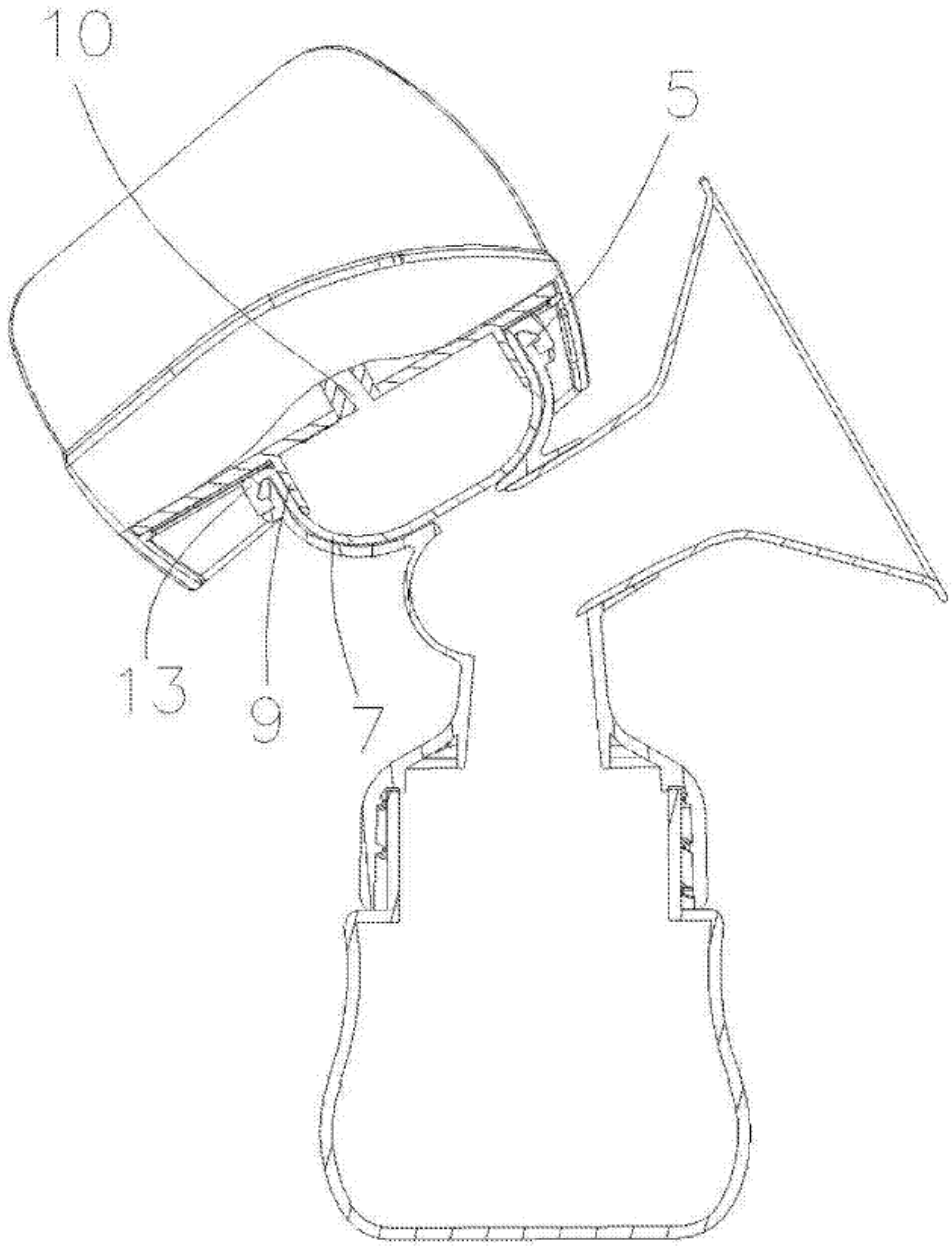


FIG. 7

Questel

TRANSLATOR'S CERTIFICATE OF TRANSLATION

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Questel Project Number: FRPC2430047UT-LZ_Q
Date: August 9, 2024

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

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Name