

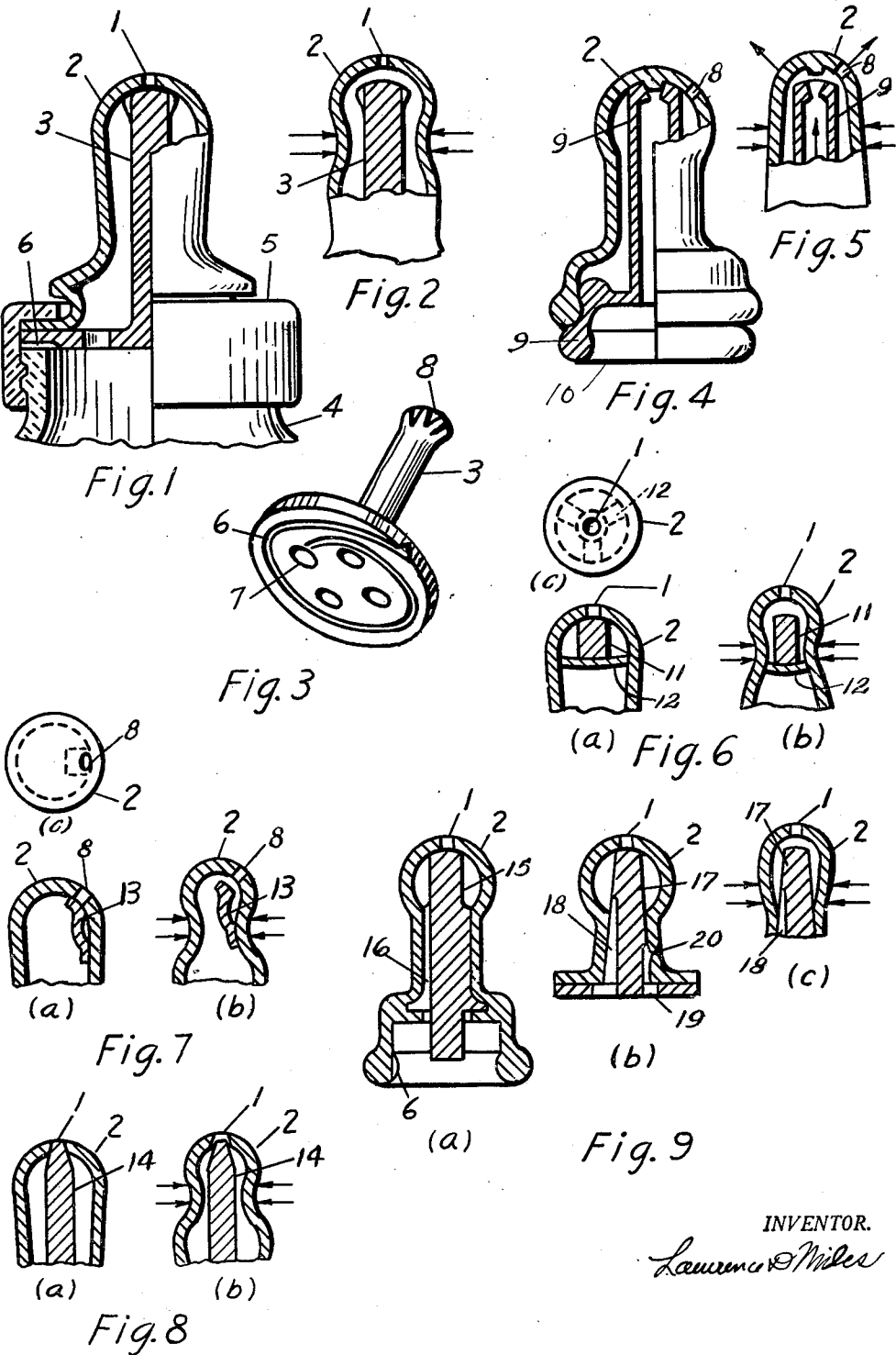
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NIPPLE AND DISPENSING DEVICE

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NIPPLE AND DISPENSING DEVICE

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This invention relates to dispensing nipples and devices, particularly to the types of dispensers and nipples used for the feeding of infants.

In nursing units of the prior art the rate of flow is largely determined by the varying size of a small orifice through unstable rubber type material. An orifice large enough for proper feeding causes too much leakage on the clothing, and, by flowing when the infant is not sucking, chokes him. An orifice small enough to prevent these difficulties requires long hard sucking and much air is taken into the stomach.

The result is that holes, too small for proper feeding are usually used. These holes close as the rubber swells and disintegrates under successive sterilizings. They are periodically enlarged with a hot needle by unskilled users, usually resulting in over size openings which cause choking and spillage until they partially close again.

This entirely haphazard situation is eliminated in my feeding device by using an orifice large enough so that the rubber will never swell sufficiently to appreciably decrease the orifice area. All leakage and choking are prevented by the nature of operation of the device as later disclosed.

A suitable feeding device must (1) continuously provide food at the proper rate in exchange for the proper effort; (2) not leak when the device is in nursing position but not in use and (3) not allow seepage when the infant is not expending effort upon the nipple. The first property minimizes the swallowing of air which causes colic. The second property eliminates wetting of the clothing around the infant's face and neck. The third property prevents choking which frequently causes an infant to regurgitate its food.

The object of this invention is, by employing new and useful principles, to prevent flow of liquid food excepting when physical pressure and/or partial vacuum are applied to the nipple.

It is a further object to provide a nursing unit which will deliver a predetermined quantity of food throughout the life of the unit in response to a given effort.

It is a further object to provide a nursing unit which will not leak when not being used even though inverted in nursing position.

It is a further object to provide a nursing unit which will not allow leakage into the mouth of the infant when he is not expending effort on the nipple.

It is a further object to provide a nursing unit,

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the performance of which is not dependent upon the size of small holes which change with successive sterilization and use.

It is a further object to provide a nursing unit which is simple and straightforward to clean, sterilize, and assemble.

With the foregoing objects in view which will be made clear in the following detailed description, reference is made to the accompanying drawings for the illustrative embodiment of this invention.

I am aware that some changes may be made in the arrangements and combinations of the parts and devices as well as in the details of the construction thereof without departing from the scope of the present invention as set forth in the following claims; hence I do not limit my invention to the exact arrangements and combinations described in the said specification, nor to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

Fig. 1 shows a preferred embodiment of the nursing unit as normally closed.

Fig. 2 shows the nursing aperture as opened by physical pressure on the nipple and/or partial vacuum as produced by the nursing infant.

Fig. 3 shows one embodiment of the shield element which operates in conjunction with the nipple to produce a properly opening and closing nursing orifice.

Fig. 4 shows another embodiment of the open and closed orifice principle, also an adapter on which the inner of the two contacting elements is mounted. The adapter can be so constructed as to adapt essentially any nipple to any bottle.

Fig. 5 shows the construction of Fig. 4 as the orifice is opened during use.

Figs. 6 (a) and (b) show the normal and the open views of an alternate construction in which the shield member is made fast to the nipple member and Fig. 6 (c) shows a top plan view of the construction shown in Fig. 6 (a).

Figs. 7 (a) and (b) illustrate another embodiment of the same principle, normal, and in use and Fig. 7 (c) shows a top plan view of the embodiment shown in Fig. 7 (a).

Figs. 8 (a) and 8 (b) illustrate, in open and closed condition respectively, another embodiment in which the flow of food is throttled or metered out according to the effort expended upon the nursing unit.

Figs. 9 (a), (b) and (c) show modifications adaptable to different styles of nipple mounting

in which the shield support is adapted to further meter the flow of food.

The novelty of my invention consists of several features which will be explained.

The nursing orifice 1 is normally closed by direct contact between the nipple 2 and the shield 3 so that no leakage occurs in normal relation, as shown by Fig. 1. The nipple 2 and shield 3 are mounted on the top section of a receptacle such as a nursing bottle 4 by the screw cap 5. When subjected to pressure from the gums and tongue of the infant and partial vacuum from his suckorial pads the members 2 and 3 separate as shown by Fig. 2, the orifice is then open and food flows.

The shield 3 is mounted on any suitable support. One simple and practical design, Fig. 3, mounts under the nipple as shown in Fig. 1. Vent groove 6 serves the second necessity for proper operation, namely that of admitting air into the bottle. Openings 7 through the shield mounting allow flow of food into the nipple. Fluting 8 allows passage of food even though nipple is elongated and compressed.

Similarly in Fig. 4 the orifice 3 located off the center of the nipple, normally closed, is opened when in use by the separation of nipple 2 and a shield member 9. The shield 9 is a hollow cylindrical member and engages at one end a small boss on the inner wall of the nipple when the nipple is closed. The other end of the shield member is supported from an adapter 10 which receives the open end of a nursing bottle or other receptacle (not shown).

In Figs. 6 (a), 6 (b), and 6 (c), I have shown a modification of the construction shown in Figs. 1 and 2 in which a shield member 11 is supported intermediate the ends of the nipple by means of a flexible spider 12. As illustrated the upper end of the shield engages the wall of the nipple about the orifice 1 in the normal position of the parts and as shown in Fig. 6 (b) is adapted to be retracted from the end of the nipple by the compression of the nipple wall either by exterior pressure or a partial vacuum created within the nipple.

In Figs. 7 (a), 7 (b), and 7 (c), I have shown a further modification of the construction shown in Figs. 4 and 5 in which the off center orifice 8 is selectively closed by a closure member or shield 13 which is joined to the side wall of the nipple body adjacent the orifice. In use the shield is moved away from the orifice by flexure of the nipple body.

The modification of my invention shown in Figs. 8 (a) and 8 (b) is very similar to that shown in Figs. 1 and 2. In this modification the shield member 14 is tapered at its outer end and is actually received within the orifice 1 in the closed or normal position of the nipple.

In Fig. 9 (a) I have shown a modification of my invention in which an elongated shield member 15 engages the inner wall of the nipple to close the orifice 1 in the normal position of the nipple and shield. The member 15 substantially fills the body of the nipple throughout a substantial portion of its length and is provided with a longitudinally extending groove 16 to control the flow of fluid to the upper portion of the nipple. Figs. 9 (b) and 9 (c) show a slightly modified form of my invention in which the shield or closure member 17 is provided with a flow controlling groove 18 and also a groove 19 for communication with an opening or air inlet 20 on the side of the nipple body.

What I claim as new and desire to secure by Letters Patent is:

1. A dispensing unit comprising a nipple of yielding material having an orifice through an outer wall thereof, a shield member supported within the nipple and normally engaging the wall of said nipple around said orifice to close said orifice, said member being movable relative to said nipple toward and away from said wall in response to deformation of said nipple to establish communication between the interior and exterior of said nipple through said orifice in response to pressure applied to the exterior walls of said nipple.

2. A nursing unit comprising a hollow nipple of resilient material having a dispensing orifice through an outer wall thereof and an opening for communicating with a receptacle, a shield member supported within said nipple and normally engaging an inner wall of said nipple to prevent communication between said opening and said orifice, said shield member being movable relative to said nipple in response to deformation of the nipple to establish communication between said opening and said orifice.

3. A nursing unit comprising an elongated hollow nipple substantially closed at one end except for a small orifice and open at the other end for communicating with a receptacle, an elongated member supported within said nipple and having a longitudinal passage therethrough, said member normally engaging the wall of said nipple at regions located on opposite sides of said orifice to prevent communication between said orifice and the passage in said elongated member.

4. A nursing unit comprising an elongated hollow nipple substantially closed at one end except for a small orifice and open at the other end for communication with a receptacle, an elongated member supported within said nipple and normally engaging at one end the wall of said nipple to prevent communication between said orifice and the passage in said member, said member having fluting around the circumference thereof adjacent said one end.

5. A nursing unit comprising a hollow nipple of yielding material having an orifice through a wall thereof and an opening for communication with a receptacle spaced from said orifice, a shield member supported in fixed relation to the nipple at a point removed from said orifice and normally engaging the wall of said nipple to prevent communication between the opening and orifice of said nipple, said member being movable relative to said nipple in response to deformation of said nipple to establish communication between said opening and said orifice.

6. A nursing unit comprising a hollow nipple of yielding material having an orifice through a wall thereof and an opening for communication with a receptacle spaced from said orifice, an elongated shield member supported within said nipple and normally engaging said nipple adjacent said orifice to prevent communication between the opening and orifice of said nipple and a transversely extending support for said member at a point within said nipple removed from said orifice.

7. A nursing unit comprising an elongated hollow nipple substantially closed at one end except for a small orifice and open at the other end for communication with a receptacle, an elongated member supported within said nipple

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and normally engaging at said one end the wall of said nipple to prevent communication between said orifice and the passage in said member, said member being movable away from and relative to said end wall in response to deformation of said nipple to establish communication between said opening and said orifice in response to pressure applied to the external walls of said nipple.

8. A nursing unit comprising a hollow nipple of yielding material having an orifice through a wall thereof and an opening for communication with a receptacle, a shield member supported within said nipple and attached to the wall thereof and normally engaging the inner wall of said nipple around said orifice to prevent the flow of liquid from the interior of said nipple through said orifice, said member being

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adapted to move away from said orifice in response to external pressure on said nipple member to establish communication between said opening and said orifice and permit the flow of liquid through said orifice.

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