CLAIMS

WHAT IS CLAIMED IS:

1. A system for indicating an amount of a feeding fluid that is dispensed to an individual, comprising:

a chamber that stores feeding fluid;

a dosing mechanism that receives feeding fluid from the chamber, and dispenses discrete packets of feeding fluid, each discrete packet having a discrete packet volume;

a feeding apparatus that receives feeding fluid dispensed by the dosing mechanism and that allows feeding fluid to flow to the individual's mouth through an outlet of the feeding apparatus;

a sensor assembly that determines when the feeding apparatus is available to receive a new discrete packet of feeding fluid dispensed from the dosing mechanism; and

a counting mechanism that registers a count for each dispensing event performed by the dosing mechanism.

2. The system according to claim 1, further comprising a processor that determines the amount of feeding fluid that is dispensed to the individual based on the discrete packet volume and the number of registered counts.

3. The system according to claim 1, wherein the dosing mechanism comprises a peristaltic pump, wherein the sensor assembly comprises a hall effect sensor, and wherein the system further comprises:

a collapsible chamber that receives the discrete packets of feeding fluid dispensed by dosing mechanism and that allows the discrete packets of feeding fluid to flow toward the outlet of the feeding apparatus; and

a magnet in operative association with the collapsible chamber,

wherein the sensor assembly determines that the peristaltic pump should dispense the new discrete packet of feeding fluid when the magnet reaches a first distance away from the hall effect sensor and that the peristaltic pump should pause when the magnet reaches a second

distance away from the hall effect sensor, the first distance being greater than the second distance.

4. The system according to claim 1, wherein the dosing mechanism comprises a gate and a tube, wherein the sensor assembly comprises a full sensor and an empty sensor, wherein the gate allows passage of feeding fluid through the tube when the empty sensor indicates the tube is empty of feeding fluid, and wherein the gate prevents passage of feeding fluid through the tube when the full sensor indicates the tube is full of feeding fluid.

5. The system according to claim 1, wherein the dosing mechanism comprises a first compressible chamber and a second compressible chamber, and wherein the first and second compressible chambers alternate with filling and dispensing of feeding fluid.

6. The system according to claim 1, further comprising a sensor selected from the group consisting of a capacitance sensor and an infrared sensor, wherein the sensor is configured to detect a feeding fluid amount present in the chamber, and wherein the system is configured to signal additional feeding fluid to enter the chamber based on the detected feeding fluid amount.

7. A mobile computing device for displaying operational information for a feeding fluid system, the mobile computing device comprising:

a screen;

a processor;

an electronic storage location operatively associated with the processor; and

processor executable code stored on the electronic storage location and embodied in a tangible non-transitory computer readable medium,

wherein the processor executable code, when executed by the processor, causes the processor to generate a graphical user interface on the screen, the graphical user interface comprising a representation of feeding fluid dispensed orally to an individual from the feeding fluid system, wherein the representation is based on a count registered by a counting mechanism of the feeding fluid system, each count corresponding to a discrete packet of feeding fluid dispensed by a dosing mechanism of the feeding fluid system.

8. The mobile computing device according to claim 7, wherein the representation comprises an amount of feeding fluid dispensed to the individual from the feeding fluid system during one feeding session.

9. The mobile computing device according to claim 7, wherein the representation comprises an amount of feeding fluid dispensed to the individual from the feeding fluid system during multiple feeding sessions.

10. The mobile computing device according to claim 7, wherein the representation comprises a time indicator for a feeding session.

11. A method for indicating an amount of a feeding fluid that is dispensed to an individual, the method comprising:

storing feeding fluid in a chamber;

receiving feeding fluid from the chamber at a dosing mechanism;

dispensing discrete packets of feeding fluid, each discrete packet having a discrete packet volume, from the dosing mechanism toward a feeding apparatus, the feeding apparatus making the feeding fluid available for oral consumption by an individual;

determining, with a sensor assembly, when the feeding apparatus is available to receive a new discrete packet of feeding fluid dispensed from the dosing mechanism; and

registering, with a counting mechanism, a count for each dispensing event performed by the dosing mechanism.

12. The method according to claim 11, further comprising determining, with a processor, the amount of feeding fluid that is dispensed to the individual based on the discrete packet volume and the number of registered counts.

13. The method according to claim 11, wherein the dosing mechanism comprises a peristaltic pump, wherein the sensor assembly comprises a hall effect sensor, and wherein the method further comprises:

receiving, at a collapsible chamber, the discrete packets of feeding fluid dispensed by dosing mechanism; and

transmitting, from the collapsible chamber, the discrete packets of feeding fluid toward the feeding apparatus,

wherein the collapsible chamber is coupled with a magnet, wherein the sensor assembly determines that the peristaltic pump should dispense the new discrete packet of feeding fluid when the magnet reaches a first distance away from the hall effect sensor and that the peristaltic pump should pause when the magnet reaches a second distance away from the hall effect sensor, the first distance being greater than the second distance.

14. The method according to claim 1, wherein the dosing mechanism comprises a gate and a tube, wherein the sensor assembly comprises a full sensor and an empty sensor, and wherein the method further comprises:

allowing, with the gate, passage of feeding fluid through the tube when the empty sensor indicates the tube is empty of feeding fluid; and

preventing, with the gate, passage of feeding fluid through the tube when the full sensor indicates the tube is full of feeding fluid.

15. The method according to claim 1, wherein the dosing mechanism comprises a first compressible chamber and a second compressible chamber, and wherein the method further comprises alternating filling and dispensing of feeding fluid by the first and second compressible chambers.

16. The method according to claim 1, further comprising:

detecting, with a capacitance sensor, a feeding fluid amount present in the chamber; and

signaling the entrance of additional feeding fluid into the chamber based on the detected feeding fluid amount.

17. The method according to claim 1, further comprising:

detecting, with an infrared sensor, a feeding fluid amount present in the chamber; and

signaling the entrance of additional feeding fluid into the chamber based on the detected feeding fluid amount.

18. The method according to claim 1, further comprising:

displaying, on a graphical user interface of a screen of a mobile computing device, a representation of the amount of feeding fluid that is consumed by the infant.

19. The method according to claim 18, wherein the representation comprises the amount of feeding fluid consumed by the infant during one feeding session.

20. The method according to claim 18, wherein the representation comprises the amount of feeding fluid consumed by the infant during multiple feeding sessions.

CLAIMS

What is claimed is:

1. A breastmilk expressing and feeding system, comprising:

a negative pressure source configured to express breastmilk from a breast;

a chamber configured to store the expressed breastmilk;

a dosing mechanism that receives the expressed breastmilk from the chamber and dispenses discrete packets of the expressed breastmilk, each discrete packet having a discrete packet volume;

a collapsible chamber that receives the discrete packets of expressed breastmilk dispensed by the dosing mechanism;

a feeding apparatus having a nipple interior that receives expressed breastmilk from the collapsible chamber and that allows expressed breastmilk to flow from the nipple interior to a baby's mouth through an outlet of the feeding apparatus; and

a sensor assembly that determines when the collapsible chamber is available to receive a new discrete packet of expressed breastmilk dispensed from the dosing mechanism.

2. The system according to claim 1, further comprising a one-way valve disposed between the collapsible chamber and the nipple interior, wherein the one-way valve allows fluid flow from the collapsible chamber to the nipple interior and prevents fluid flow from the nipple interior to the collapsible chamber.

3. The system according to claim 1, further comprising a counting mechanism that registers a count for each dispensing event performed by the dosing mechanism.

4. The system according to claim 1, further comprising a breast flange in fluid communication with the chamber, wherein the breast flange defines a breast flange axis, the feeding apparatus defines a feeding apparatus axis, and the breast flange axis is either in-line with or superior to the feeding apparatus axis.

5. The system according to claim 1, further comprising a breast flange in fluid communication with the chamber, wherein the dosing mechanism comprises a pump, and a center of the pump

is positioned posterior to an anterior portion of the breast flange and anterior to a posterior portion of the breast flange.

6. The system according to claim 1, further comprising a breast flange in fluid communication with the chamber, wherein the chamber is positioned within a housing, and the feeding apparatus is attached with the housing and positioned inferior to the breast flange.

7. The system according to claim 6, wherein the feeding apparatus is removable from the housing.

8. The system according to claim 1, wherein the dosing mechanism comprises a peristaltic pump having a peristaltic tubing, and at least a portion of the tubing is positioned inferior to the nipple interior of the feeding apparatus.

9. The system according to claim 1, wherein the dosing mechanism comprises a gate and a tube, wherein the sensor assembly comprises a full sensor and an empty sensor, wherein the gate allows passage of expressed breastmilk through the tube when the empty sensor indicates the tube is empty of expressed breastmilk, and wherein the gate prevents passage of expressed breastmilk through the tube when the full sensor indicates the tube is full of expressed breastmilk.

10. The system according to claim 1, wherein the dosing mechanism comprises a peristaltic pump, wherein the sensor assembly comprises a hall effect sensor, wherein the system further comprises a magnet in operative association with the collapsible chamber, and wherein the sensor assembly determines that the peristaltic pump should dispense the new discrete packet of feeding fluid when the magnet reaches a first distance away from the hall effect sensor and that the peristaltic pump should pause when the magnet reaches a second distance away from the hall effect sensor, the first distance being greater than the second distance.

11. A method for expressing and feeding breastmilk, comprising:

contacting a breastmilk expressing and feeding system with a breast;

expressing breastmilk from the breast with a negative pressure source of the breastmilk expressing and feeding system;

storing the expressed breastmilk in a chamber of the breastmilk expressing and feeding system;

receiving expressed breastmilk from the chamber at a dosing mechanism of the breastmilk expressing and feeding system;

dispensing discrete packets of expressed breastmilk, each discrete packet having a discrete packet volume, from the dosing mechanism;

receiving, at a collapsible chamber of the breastmilk expressing and feeding system, the discrete packets of expressed breastmilk dispensed by the dosing mechanism;

allowing the discrete packets of expressed breastmilk to flow from the collapsible chamber and into a nipple interior of a feeding apparatus of the breastmilk expressing and feeding system;

allowing expressed breastmilk to flow from the nipple interior to a baby's mouth through an outlet of the feeding apparatus; and

determining, with a sensor assembly of the breastmilk expressing and feeding system, when the collapsible chamber is available to receive a new discrete packet of expressed breastmilk.

12. The method according to claim 11, wherein the step of allowing expressed breastmilk to flow from the nipple interior to the baby's mouth comprises allowing the discrete packets of expressed breastmilk to flow from the collapsible chamber, through a one-way valve, and into the nipple interior of the feeding apparatus, and wherein the one-way valve allows fluid flow from the collapsible chamber to the nipple interior and prevents fluid flow from the nipple interior to the collapsible chamber.

13. The method according to claim 11, further comprising registering, with a counting mechanism of the breastmilk expressing and feeding system, a count for each dispensing event performed by the dosing mechanism.

14. The method according to claim 11, wherein the step of contacting the breastmilk expressing and feeding system with the breast comprises engaging a breast flange of the breastmilk expressing and feeding system with breast, wherein the breast flange is in fluid communication with the chamber and defines a breast flange axis, wherein the feeding apparatus defines a feeding apparatus axis, and wherein the breast flange axis is either in-line with or superior to the feeding apparatus axis.

15. The method according to claim 11, wherein the step of contacting the breastmilk expressing and feeding system with the breast comprises engaging a breast flange of the breastmilk expressing and feeding system with breast, wherein the breast flange is in fluid communication with the chamber, wherein the dosing mechanism comprises a pump, and wherein a center of the pump is positioned posterior to an anterior portion of the breast flange and anterior to a posterior portion of the breast flange.

16. The method according to claim 11, wherein the step of contacting the breastmilk expressing and feeding system with the breast comprises engaging a breast flange of the breastmilk expressing and feeding system with breast, wherein the chamber is positioned within a housing of the breastmilk expressing and feeding system, and wherein the feeding apparatus is attached with the housing and positioned inferior to the breast flange.

17. The method according to claim 16, wherein the feeding apparatus is removable from the housing.

18. The method according to claim 11, wherein the dosing mechanism comprises a peristaltic pump having a peristaltic tubing, and wherein at least a portion of the tubing is positioned inferior to the nipple interior of the feeding apparatus.

19. The method according to claim 11, wherein the dosing mechanism comprises a gate and a tube, wherein the sensor assembly comprises a full sensor and an empty sensor, and wherein the method further comprises:

allowing, with the gate, passage of expressed breastmilk through the tube when the empty sensor indicates the tube is empty of expressed breastmilk; and

preventing, with the gate, passage of expressed breastmilk through the tube when the full sensor indicates the tube is full of expressed breastmilk.

20. The method according to claim 11, wherein the dosing mechanism comprises a peristaltic pump, wherein the sensor assembly comprises a hall effect sensor, wherein the collapsible chamber is coupled with a magnet, wherein the sensor assembly determines that the peristaltic pump should dispense the new discrete packet of expressed breastmilk when the magnet reaches a first distance away from the hall effect sensor and that the peristaltic pump should

pause when the magnet reaches a second distance away from the hall effect sensor, the first distance being greater than the second distance.