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PULSATORY DEVICE FOR MILKING MACHINES

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Fig. 1.

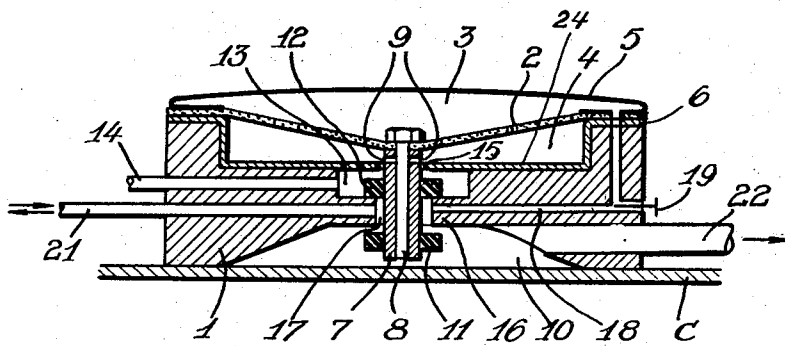
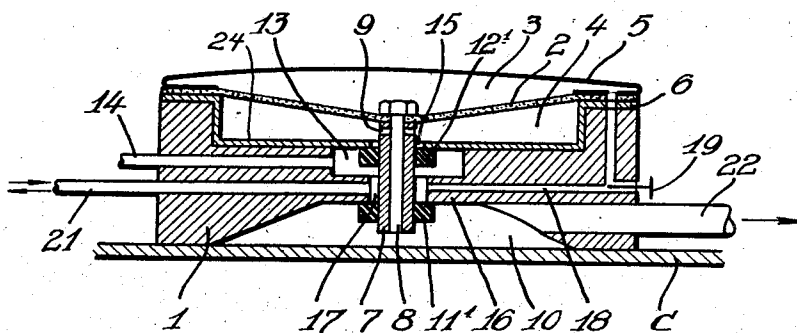


Fig. 2.



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PULSATORY DEVICE FOR MILKING
MACHINES

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3 Claims. (Cl. 137-103)

1 The invention relates to a milker pulsator of the diaphragm type and adapted to be fitted onto the cover of a milking machine jug or of a milker pail.

It is the main object of the invention to produce a pulsator of this type, which is particularly simply constructed, and may be operated for a long time without any risk of misadjustment and without the necessity of using parts which are liable to wear quickly.

A preferred embodiment of the invention will now be described, reference being made to the accompanying drawing, the description and the drawings being given by way of exemplification merely. In the drawings:

Figs. 1 and 2 are two sectional views of the pulsator in two different operative positions.

The body structure **1** of the pulsator is provided with an upper recess **24** and a lower or bottom recess **10**, the upper recess **24** being subdivided by a diaphragm **2** into two superposed compartments, viz. an upper compartment **3** and a lower compartment **4**. The diaphragm is held between a cover **5** and a plate **6**. The body structure **1** is secured to the cover **C** of the jug or milker pail. A vertical tube **7** is suspended from the center portion of the diaphragm and the inner bore **8** of the tube communicates through bore **9** surrounding the latter with the compartment **4**.

The lower end of the tube **7** opens into a lower recess or chamber **10** connected with a source of vacuum through a pipe **22**; the compartment **4** is in permanent communication with the source of vacuum through openings **9**, bore **8**, chamber **10** and pipe **22**.

The tube **7** carries two discs **11** and **12** made of rubber or any other suitable elastic material, the disc **11** being adapted to move inside chamber **10** while the other disc **12** is vertically movable in center chamber **13** surrounding the tube **7** and inside the body structure **1**; the chamber **13** is connected with the outer atmosphere through a channel **14**.

As already mentioned, the tube **7** is free in its movements due to the opening **15**, the diameter of which is larger than the outer diameter of the tube **7** and of the presence between the recesses **10** and chamber **13** of an annular projection **16** provided with a bore **17**, the diameter of which is substantially larger than the outer diameter of the tube **7**.

A pipe **18** connects the center chamber **13** and bore **17** surrounding the tube **7** with the compartment **3** located above diaphragm **2**. A screw regulator valve **19** is provided in pipe **18** which

2 permits the adjustment of the operational speed of the pulsatory arrangement.

The bore **17** communicates through pipe **21** with the teat cups, not shown.

The device is operated, as follows.

The diaphragm **2** is in its lower position as illustrated in Fig. 1; suction is created inside compartment **3** above the diaphragm **2** through the pipe **18**, the bore **17**, the chamber **10** and the channel **22**. Consequently, the tube **7** rises by reason of the connection between the compartment **4** and the atmosphere entering through the annular opening **15**, the chamber **13** and the pipe **14**. The pressure inside the compartment **4** will thus be less than the atmospheric pressure but higher than the pressure in the compartment **3**.

When the diaphragm **2** is in its uppermost position, the resilient discs **11** and **12** assume the position indicated by numerals **11'** and **12'** in Fig. 2 and an unrestricted vacuum action is created, inside the compartment **4** through the bores **9**, the bore **8**, the chamber **10** and the channel **22**. The compartment **3** maintains, at the same time, an exclusive atmospheric pressure through channel **18**, the chamber **17**, the chamber **13** and the channel **14**.

The change of vacuum and atmospheric pressure in the chambers is applied to the teat cups by the vertical movement of the discs **11** and **12**, carried by the tube **7** and the displacement of the latter is controlled through the variation of pressure in the compartments **3** and **4**.

In the position illustrated in Fig. 1 where the diaphragm is lowered, the disc **12** rests on its lower seat consisting of the annular projection **16**; the teat cups are therefore connected with the source of vacuum through the passages, **21**, **17**, **10** and **22**.

In the position illustrated in Fig. 2, where the diaphragm is raised, the lower disc **11** is in contact with its upper seat and atmospheric pressure prevails inside now, the tube **21** by reason of the annular space **17** into which it opens the latter being connected with the pipe through the center chamber **13**.

A pulsatory device executed according to the invention has the advantage of being very simple in structure; it is only operated by means of two washer-shaped closing members, or discs made of elastic or plastic material and cooperating with accordingly positioned rigid seats; one of these seats, namely the annular projection **16** formed on the body structure alternately serves as a seat for each of the discs **11**, **12**.

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Furthermore, the disks of misadjustment and wear are reduced to a considerable extent because the tube is allowed complete freedom of movement throughout its stroke and due to the absence of any rigid closing member frictionally engaging a metal surface.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent, is as follows:

1. A milker pulsator comprising in a body structure a top recess and a bottom recess, an inner centrally located chamber, covers for each of said recesses, a substantially horizontal bendable diaphragm extending throughout said top recess and dividing the same into an upper compartment and a lower compartment, said compartments being superposed upon each other, a tube vertically suspended from the center of said bendable diaphragm and thereby adapted to be vertically displaced, two vertically superposed bores between said tubes and said body structure adapted to connect said inner chamber to said upper recess and said lower recess, the inside of said tube being in permanent communication with said lower compartment, said tube opening freely at its lower end into said bottom recess, a passage permanently connecting said lower recess with a source of a vacuum, a passage to permanently connect said inner chamber with the outer

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atmosphere, a passage to permanently connect said lower bore with teat cups, a passage to connect said lower recess to the upper compartment, vertically superposed spaced resilient members fastened to said tube and vertically displaceable therewith and adapted to establish by their vertical displacement alternatively a connection between said bottom recess and both the passages leading to said teat cups and said upper compartment while the inner chamber communicates with said lower compartment, said resilient members being upwardly displaced to interrupt the connection between said lower recess, the passages leading to said teat cups and to said upper compartment while establishing communication between said inner chamber, the passage leading to the teat cups and said upper compartment upon movement of the diaphragm due to the atmospheric pressure acting on the same as opposed to the vacuum action upon the diaphragm in the upper compartment.

2. In a milker pulsator according to claim 1, the resilient members being disc-shaped.

3. In a milker pulsator according to claim 1, a valve being adjustably located in the passage connecting the lower bore and the upper compartment.

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