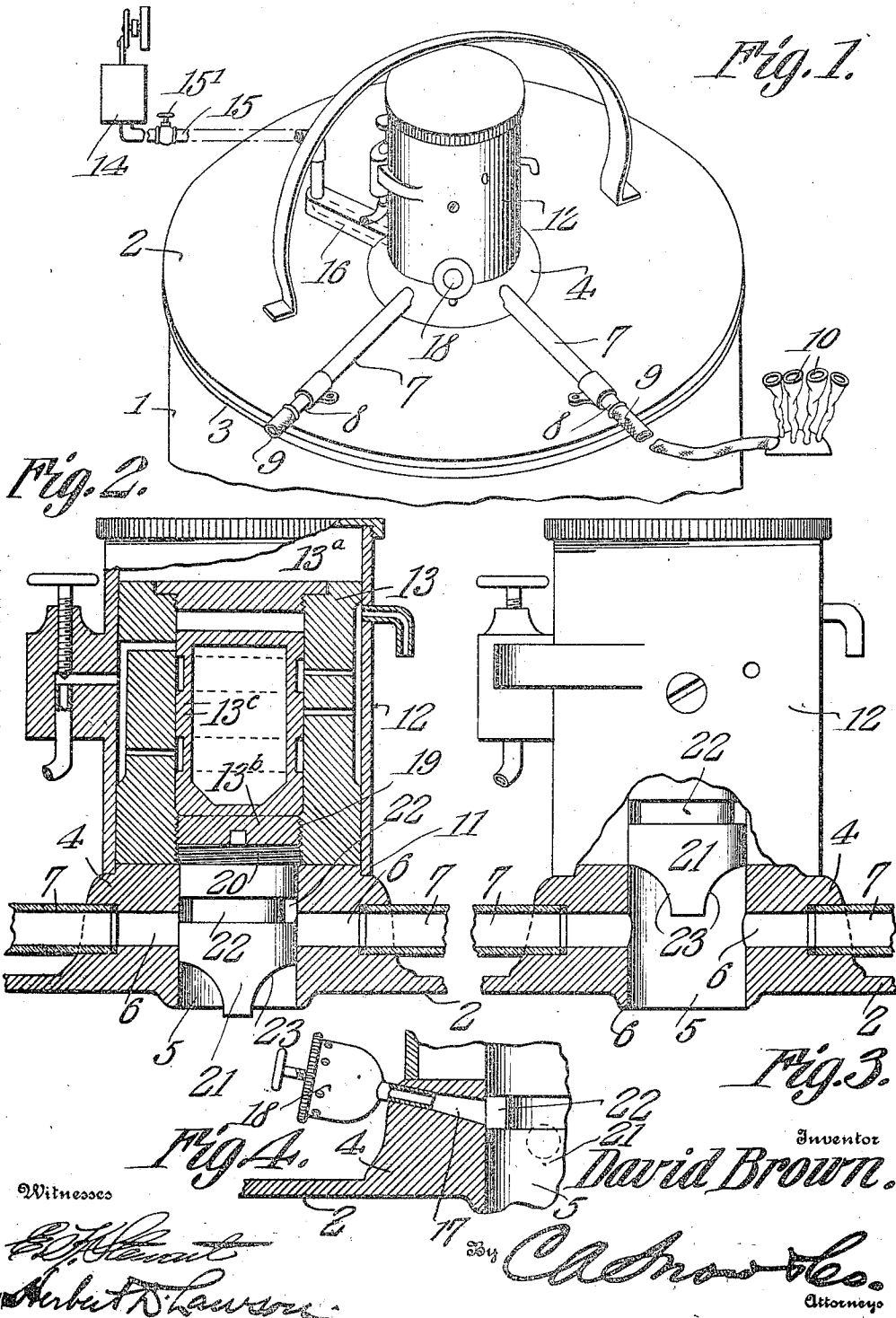


D. BROWN.
PULSATOR FOR MILKING MACHINES.
APPLICATION FILED APR. 20, 1909.

961,932.

Patented June 21, 1910.



UNITED STATES PATENT OFFICE.

DAVID BROWN, OF SPOKANE, WASHINGTON.

PULSATOR FOR MILKING-MACHINES.

961,932.

Specification of Letters Patent. Patented June 21, 1910.

Application filed April 20, 1909. Serial No. 490,990.

To all whom it may concern:

Be it known that I, DAVID BROWN, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented a new and useful Pulsator for Milking-Machines, of which the following is a specification.

This invention relates to pneumatic milking machines and more particularly to that part of the machine better known as the "pulsator".

The object of the invention is to provide a pulsator which is simple in construction, inexpensive to manufacture, perfectly sanitary, and which can be easily understood by an ordinary operator.

A further object is to provide a pulsator which can readily be removed from the driving mechanism or engine and can thus be kept entirely sterile, said pulsator being entirely free of holes, slots, or the like, such as ordinarily utilized, and which are quite difficult to clean.

Another object is to provide a machine of this character which is entirely free of springs, gears and other parts liable to get out of order.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a perspective view of the apparatus embodying the present improvements, the pump being shown diagrammatically and certain of the parts being broken away. Fig. 2 is a view, partly in elevation and partly in section of the engine, and showing the pulsator in its lower position. Fig. 3 is a similar view, showing the pulsator in its raised position. Fig. 4 is a section through a portion of the engine and showing the air inlet port and the valve.

Referring to the figures by characters of reference 1 designates a milk receptacle of the ordinary type, on which is arranged a cover 2, there being a gasket 3, of rubber or the like interposed between the cover and the receptacle so as to prevent leakage. The cover 2 is formed with a central upstanding portion 4 having a cylindrical bore 5 there-through, there being radial ports 6 com-

municating with the bore and having glass inspection tubes 7 extending therefrom and secured in any preferred manner upon the cover. Each of these tubes has its outer end attached to a nozzle 8 from which a flexible tube 9 of any suitable length extends, each of these tubes being provided at its outer end with a series of cups 10.

An annular groove 11 is formed upon the upper portion of the boss 4 and receives the lower end of an engine cylinder 12 which is removably mounted and has a reciprocating piston 13 therein. The engine is of the type shown in Patent No. 926,260, issued to D. Klein, on June 29, 1909, both the engine and the interior of the receptacle 1 being in communication with an exhausting pump 14 through a pipe 15, which opens through the cover 2 and also into a port 16 extending to the engine. The two ends of the piston 13 are closed by screw plugs 13^a and 13^b to retain the valve 13^c within the piston.

The ports 6 are arranged in the same horizontal plane and an air inlet port 17 opens into the bore 5 at a point above the ports 16, said inlet port being provided with a suitable air valve 18 of the ordinary or any preferred construction.

The piston 13 of the air engine has a central screw-threaded socket 19 in one end and below the plug 13^b and into which projects the screw-threaded end 20 of the pulsator 21. This pulsator is designed to fit snugly and reciprocate within the bore 5, it being provided at an intermediate point with an annular groove 22, while the lower end of the pulsator has opposed portions cut away, as indicated at 23. The distance between these cut-away portions and the groove 22 is such that when the pulsator is in its lowered position the ports 6 will be partly closed by the said pulsator, but said ports will communicate through the groove 22 with the air inlet port 17. When the pulsator is raised it closes the port 17 but the cut away portions of the pulsator permit communication between the two ports 16 and the bore 5.

It is of course to be understood that when the pump 14 is actuated it creates a partial vacuum within the receptacle 1 and the engine communicating with the pump is of such a type that the operation of the pump will cause the constant reciprocation of the piston 13, the valve and other mechanism utilized being similar to that employed in

ordinary forms of engines of this type. The teat-cups 10 are placed in position upon the cow to be milked, and, when all of the parts have been properly adjusted, the valve 15' 5 in the pipe 15 is opened so that a partial vacuum will be promptly produced within receptacle 1 and the engine set in motion. While the piston 13 of the pulsator is in raised position the ports 16 are in communication with receptacle 1 through the bore 5 10 and therefore a suction will be established through the tubes 7 and 9 and the cups 10 so as to draw milk from the teats and into the receptacle. During the return stroke of the 15 piston and the pulsator the ports 16 are cut off from communication with the receptacle 1 and are instead placed in communication with the port 17 through the groove 22. Air will therefore promptly rush into the ports 20 16 and the tubes 7 and 9 and the cups 10 so as to break the suction and momentarily relieve the teats and thus permit the milk to flow downward and fill them prior to the next suction. As soon as the pulsator is 25 again carried upwardly by the piston suction is reestablished between the receptacle 1 and the ports 6 and the milk which has accumulated within the teats is thus drawn through the ports and into the receptacle in 30 the manner hereinbefore described. Obviously this operation can continue as long as the pump 14 is in communication with the apparatus and as soon as the milking operation has been completed the valve 15' is 35 closed.

When it is desired to clean the apparatus the cylinder 12 is lifted bodily from the boss 4 and the pulsator can then be unscrewed from the piston 13 and thoroughly cleaned inasmuch as it is entirely free of all open-

ings, slots and the like which are difficult to properly clean.

It is of course to be understood that various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing the advantages of the invention. 45

What is claimed is:—

1. In a milking machine, a base having a bore extending therethrough and ports opening into the bore, an engine mounted upon the base and having an interiorly screw threaded piston, and a pulsator extending beyond one end of the piston and having a screw threaded end detachably engaging the 50 thread in one end of said piston, said pulsator being movable within the bore and having exterior means for establishing communication between the ports when the piston is in its lowermost position. 60

2. A milking machine including an engine piston mounted for reciprocation, and a port controlling pulsator reduced solely at one end and at an intermediate point, the other end of said pulsator being screwed into and 65 detachably engaged by the piston.

3. In a milking machine, a pulsator valve including a cylindrical body having opposed portions of one end cut away and having an intermediate annular groove, there being exterior screw threads upon the other end portion of said body. 70

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

DAVID BROWN.

Witnesses:

MARY E. COWAN,
JOHN E. BLAIR.