

No. 754,453.

PATENTED MAR. 15, 1904.

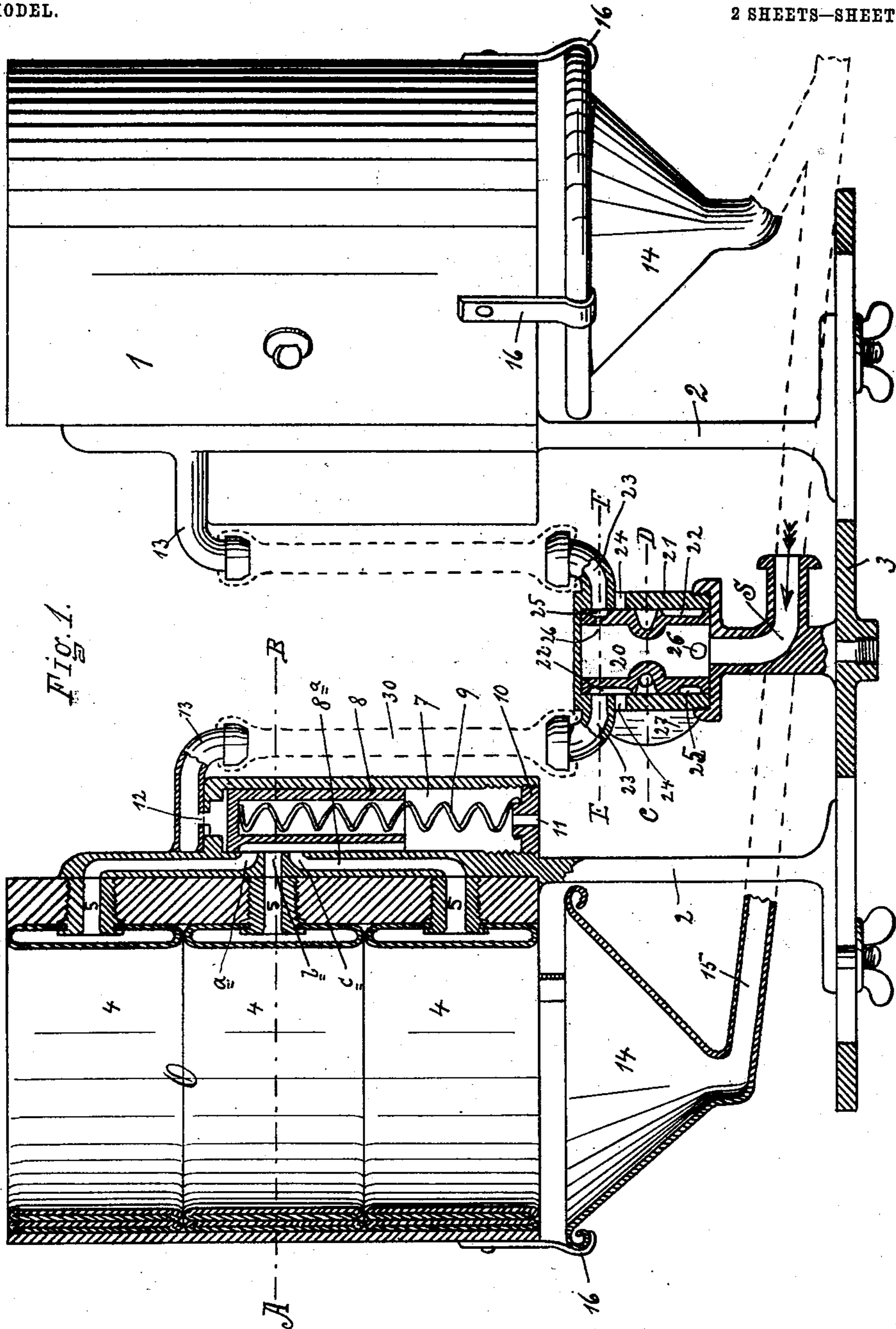
J. L. HULBERT & I. L. PARK.

MILKING MACHINE.

APPLICATION FILED OCT. 6, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

Rich. A. George

S. A. Brown

INVENTORS

JOHN L. HULBERT,

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By Milton C. Robinson

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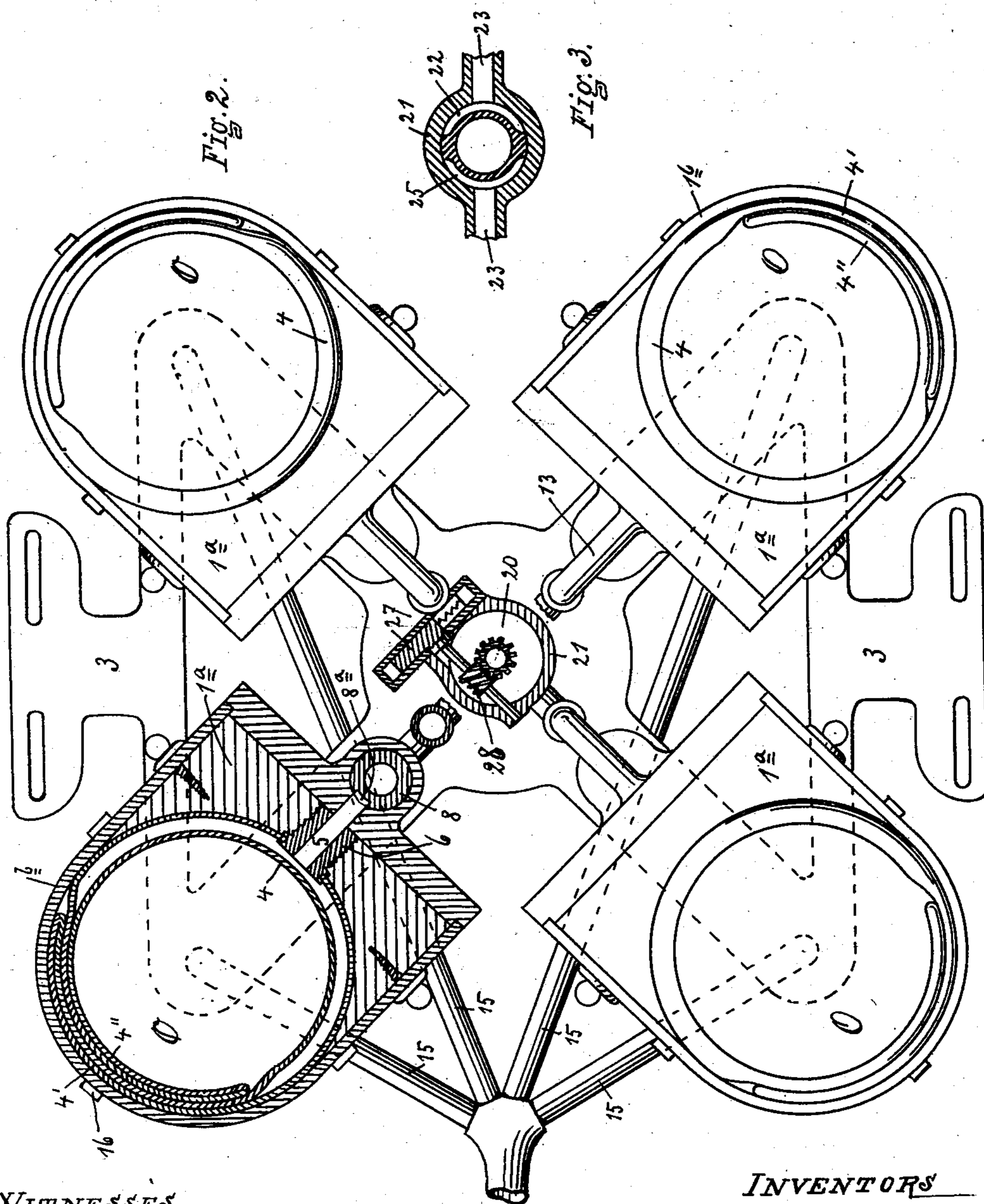
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APPLICATION FILED OCT. 8, 1902.

NO MODEL.

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UNITED STATES PATENT OFFICE.

JOHN L. HULBERT AND IRA L. PARK, OF HOLLAND PATENT, NEW YORK.

MILKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 754,453, dated March 15, 1904.

Application filed October 6, 1902. Serial No. 126,042. (No model.)

To all whom it may concern:

Be it known that we, JOHN L. HULBERT and IRA L. PARK, of Holland Patent, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Milking-Machines; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings and to the characters of reference marked thereon, which form part of this specification.

The object of our invention is to provide a milking-machine which simulates the operation of the human hand in the act of milking and which will successfully and expeditiously perform the operation of milking a cow and which is simple in its construction and reliable in its operation.

In the drawings, Figure 1 shows, partially in vertical section and partially in side elevation, our milking-machine and its operating parts. Fig. 2 shows in part a plan view and in part sections taken on lines with A B and C D of Fig. 1. Fig. 3 shows a section taken on line E F of Fig. 1.

Referring to the reference letters and figures in a more particular description, 1 1, &c., indicate the teat-receivers, which are supported adjustably by means of standards 2 2 from the frame 3. The teat-receiver consists of what might be considered a body 1^a and an adjustable keeper 1^b, providing an adjustable or enlargeable opening O, adapted to receive the teat. The receiver is provided in said opening with an inflatable lining consisting, as shown, of three inflatable tubes or sections 4 4 4, encircling the opening through the receiver. These inflatable tubes, bags, or sections, by whatever name called, are provided with overlapping portions 4' 4'', which make provision for the adjustment in enlarging or closing up the opening O. The sections are provided with a separate opening, as 5, providing an inlet and outlet for the section, and these are preferably provided by a screw-threaded nipple 6, engaging in the body 1^a of the teat-receiver. The openings of the three sections of the lining are brought by suitable

passage-ways to three ports *a*, *b*, and *c*, opening into the valve-casing 7. In the valve-casing 7 is a freely-sliding valve 8, which may be weighted, if desired, and is operated in one direction by the spring 9. The spring 9 is supported at its lower end on a screw-threaded adjustable plug 10. Extending along the side of the valve 8 is a groove 8^a, adapted to register with the ports *a*, *b*, and *c* and providing an exhaust-outlet. There is also provided through the plug 10 an outlet-opening 11. At the upper end the valve-casing 7 is provided with an inlet-opening 12 from the pipe 13. Beneath the teat-receiver is located the milk-receiver 14 in the shape of a funnel and provided with a conductor 15. The milk-receiver is detachably supported or secured to the teat-receiver by hooks or catches 16. The several conductors 15 from the teat-receivers are preferably brought together in a single-discharge tube.

For supplying air in pulsations to and exhausting to some extent the air from the inflatable lining of the teat-receiver we provide a rotary valve 20, arranged in a casing 21. This valve is arranged to control the supply of compressed air to the inflatable lining of the teat-receivers and is made double or the same at each end. It is provided with wide partially-encircling grooves 22 22. The width of the grooves 22 is such as to at the same time put in communication the pipe or tube 23 and the exhaust-opening 24. This is the same on both ends of the valve, except that the exhaust-openings and pipes are arranged on the quarter-turns from those shown in Fig. 1 of the drawings. The valve 20 is also provided with grooves 25 25. These grooves are put in communication with the interior of the valve 20 by openings 26. For rotating the valve 20 in the casing we provide a rotary engine 27, attached to a shaft carrying the worm 28, engaging suitable teeth in the valve 20. The engine 27 is supplied with compressed air for driving it from the same source that supplies the main machine. The main supply of air is taken in at S through the valve 20. When the valve 20 is in suitable position, the compressed air will be admitted through the opening 26 and the groove 25 to the pipe 23. The pipe 23 is connected with pipe 13 by means

of a piece of flexible tubing 30, which permits the adjustment of the teat-receivers on the frame. When the supply of compressed air from pipe 23 enters the pipe 13, it passes through the opening 12 into the valve-case 7 and when it has attained sufficient pressure will force the valve 8 downward against the tension of the spring 9. Upon passing the port *a* the air is admitted to one of the sections of the inflatable casing and the same is inflated, closing on the teat. As the valve 8 is forced farther down air is admitted successfully at the ports *b* and *c* to the remaining sections of the casing. When the valve 20 has been rotated to a suitable position, the air is cut off and the exhaust groove or port 22 is brought into operation, putting the pipe 23 in communication with the exhaust-opening 24. This relieves the pressure in the valve-casing 7, and the valve 8 is immediately forced up by the spring 9. In doing so the exhaust-groove 8^a in the valve is brought opposite the ports *a*, *b*, and *c* almost simultaneously, and all the sections of the casing are exhausted. As the valve 20 is continued in its rotation the operation described is repeated. As shown, the valve 20 is arranged to control two sets of receivers from the upper end and two sets of receivers from the lower end. The teat-receivers are made adjustable to accommodate varying sizes, and the whole device is preferably supported by a strap or girdle passing over the animal's back.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a milking-machine, a teat-receiver having a substantially cylindrical opening, a series of inflatable encircling tubes or bags within said opening, mechanism for supplying compressed air, and a valve for controlling the supply of compressed air to said inflatable tubes or bags successively and exhausting the same, substantially as set forth.

2. In a milking-machine, a teat-receiver having an opening to receive the teat, a lining for said opening having separately-inflatable

sections and a valve mechanism controlling the inflation and deflation of said sections successively, substantially as set forth.

3. In a milking-machine, a teat-receiver, having an inflatable lining in sections, ports or openings into said sections, a valve operating on and controlling said ports and adapted to open them successively, substantially as set forth.

4. In a milking-machine, a teat-receiver, and inflatable lining therefor, having separate sections with independent ports or openings into the several sections, a valve controlling said ports and adapted to open same successively to receive compressed air, and adapted to open them substantially simultaneously in exhausting, a spring for operating said valve in one direction and the same constructed and arranged to be operated by the compressed air in the opposite direction, substantially as set forth.

5. In a milking-machine, a teat-receiver having an inflatable lining in separate sections, means for supplying compressed air thereto, a valve controlling the entrances to said separate sections, a spring for operating said valve in one direction and means for operating it in the other direction by the compressed air employed for inflating the sections, substantially as set forth.

6. In a milking-machine, a teat-receiver having an inflatable lining in separate sections, mechanism for supplying compressed air, a valve for controlling the supply of compressed air to said sections successively, and a mechanism for controlling the supply of compressed air to produce pulsation, substantially as set forth.

In testimony whereof we have affixed our signatures, in presence of two witnesses, this 30th day of September, 1902.

JOHN L. HULBERT.
IRA L. PARK.

Witnesses:

E. WILLARD JONES,
CARA S. PARK.