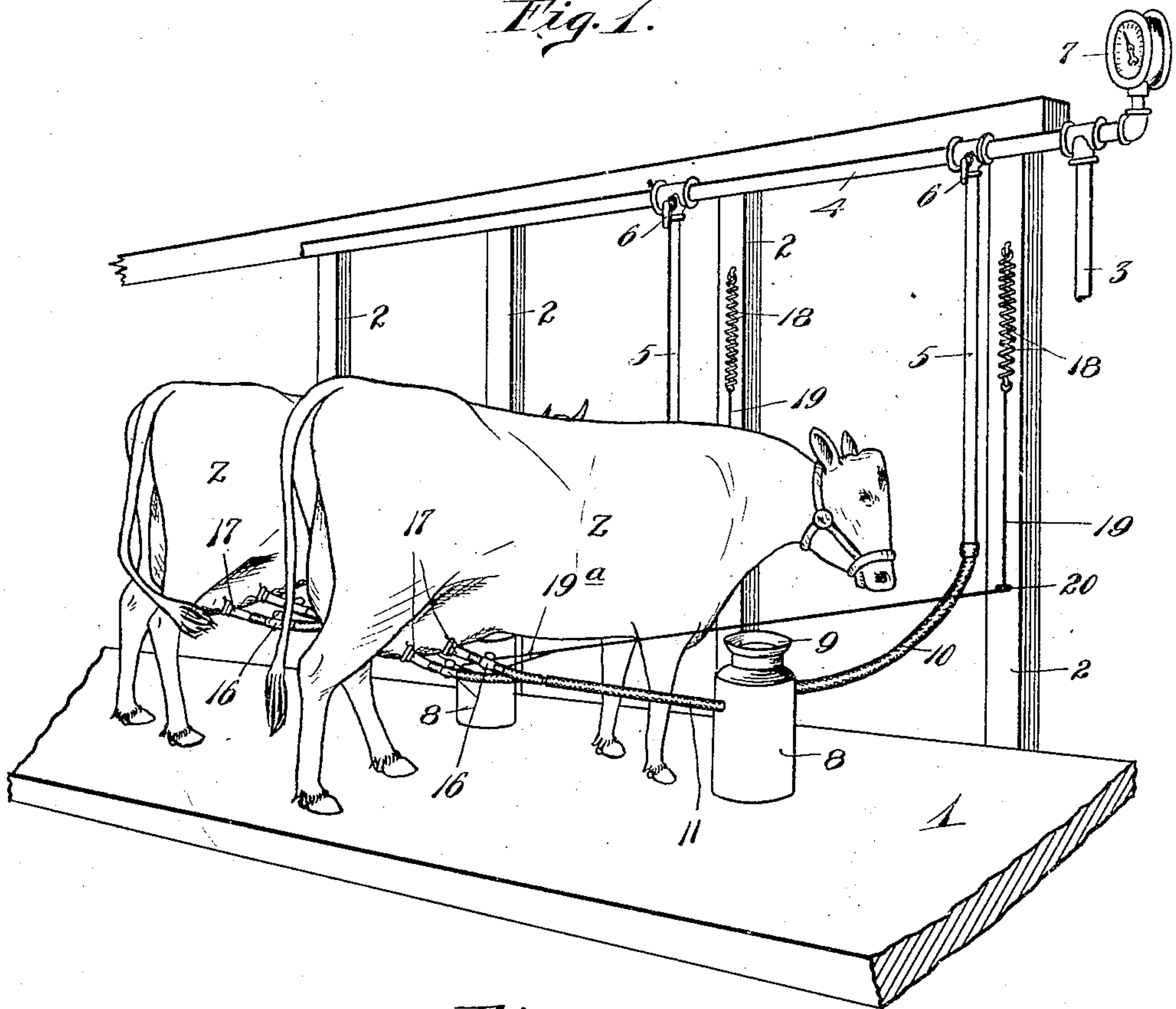


No. 798,608.

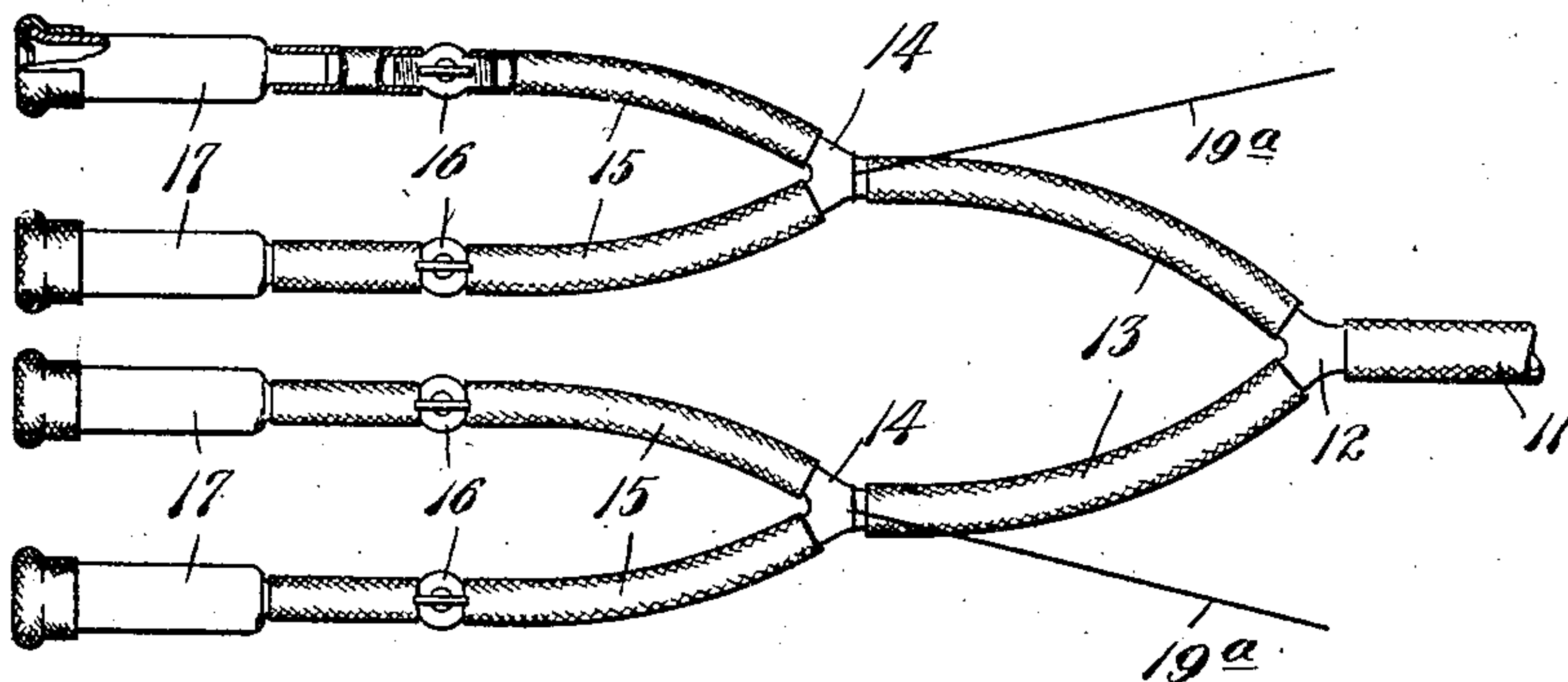
PATENTED SEPT. 5, 1905.

J. H. HOOVER.  
MILKING APPARATUS.  
APPLICATION FILED JUNE 6, 1905.

*Fig. 1.*



*Fig. 2*



*Witnesses.*

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*J. H. Hoover.*  
*By his Attorneys.*

William. Michael



# UNITED STATES PATENT OFFICE.

JOSEPH H. HOOVER, OF WATERLOO, IOWA, ASSIGNOR TO THE SANITARY COW MILKING COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF IOWA.

## MILKING APPARATUS.

No. 798,608.

Specification of Letters Patent.

Patented Sept. 5, 1905.

Application filed June 6, 1905. Serial No. 263,910.

*To all whom it may concern:*

Be it known that I, JOSEPH H. HOOVER, a citizen of the United States, residing at Waterloo, in the county of Blackhawk and State of Iowa, have invented certain new and useful Improvements in Milking Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a cow-milking apparatus of the character wherein milk is drawn from the cow through tubes and by suction or partial vacuum produced in the said tubes by an air-pump.

My invention has for its object to improve this class of apparatus in the several particulars hereinafter noted; and it consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

In the accompanying drawings, which illustrate my invention, like characters indicate like parts throughout both views.

Figure 1 is a perspective view illustrating my improved apparatus applied to the stalls of the barn and attached to the cows; and Fig. 2 is a detail view in plan showing one end of one of the milk-tubes and showing a novel arrangement of flexible branch and cup tubes, some parts being sectioned.

The numeral 1 indicates the floor, and the numeral 2 stall-posts, rigidly secured thereto in the usual or any suitable way.

The character *z* indicates the cows within the stalls and which are being milked by my improved apparatus.

The numeral 3 indicates an air-pipe which leads to an air-pump, (not shown,) but by means of which the partial vacuum is produced in the various tubes and pipes of the milking apparatus. At one end the pipe 3 leads from the horizontally-extended pipe 4, having depending branches 5, of which branches there is one for each stall. In the upper ends of the branch pipes 5 are valves 6, by means of which the branch pipes 5 may be independently opened and closed at will.

The numeral 7 indicates a vacuum-gage, which is in communication with pipe 4.

The numeral 8 indicates the milk-can, which is provided with a removable cover 9 of the usual or any suitable construction which will make the can approximately air-tight when

applied thereto. One of these cans 8 is connected to each of the branch pipes 5, preferably by means of a flexible hose or air-tube 10, that opens into the upper portion of said can. Another flexible tube or hose-section 11 opens from the upper portion of said can 8, and this tube at its outer end is connected by a three-pronged tubular coupling 12 to a pair of flexible branch tubes 13. Each branch tube 13 in turn is connected by a three-pronged tubular coupling 14 to a pair of flexible so-called "cup-tubes" 15, in which are interposed stop-cocks 16, by means of which the said tubes 15 may be independently opened and closed at will. To the outer end of each cup-tube 15 is applied a so-called "teat-cup" 17, which is of tubular form and preferably constructed of glass, being provided at its outer end with a tubular rubber cap 17. It will thus be seen that to each milk-tube 11 is yieldingly connected a set of four teat-cups and that these cups are capable of a very large range of adjustment with respect to each other, so that the device is perfectly adapted for application to cows in which the teats are located in very different relative positions. The large range of adjustment required in devices of this character for the application to different cows and the comparative small range of adjustment hitherto provided for in prior devices has been one of the causes for the commercial failure of such prior devices. In my improved arrangement the branch tubes 13 permit a large range of adjustment between the two pairs of cups, and the flexible tubes 15 afford, independently thereof, a large range of adjustment between the cups which make up the pairs.

In practice it has been found that better results may be obtained in the milking action when a yielding tension is constantly applied to the several teat-cups. Hence I attach a coiled spring 18 to a suitable anchorage, such as one of the posts 2, and to the free end of said spring I attach a draw-cord 19, which in turn is connected directly or indirectly to the said teat-cups. Preferably said draw-cord 19 is provided with branches 19<sup>a</sup>, that are attached one to each of the couplings 14. As shown, this cord 19 runs under a guide on the lower portion of the corresponding post 2. The spring 18 maintains an even pressure on the teat-cups, tending to draw them from working position, but not under sufficient



strain to overcome the suction due to the partial vacuum within the air-tubes and connections. If a cow should jump suddenly backward, the spring 18 will instantly yield, and hence will not materially increase the tension on the teat-cups. A weight if used in lieu of the spring would not be the equivalent to the said spring, because under a sudden jerk or movement of the cow the force required to overcome its inertia would very greatly increase for the instant the pull or drawing action on the teat-cups.

A milking apparatus involved in the substantially novel features of construction above described has been constructed and put into actual use and has been found extremely efficient for the purposes had in view.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

20 1. In a milking apparatus, a milking-tube having flexible branch tubes, said branch tubes each having two cup-tubes, and teat-cups applied to the ends of said cup-tubes, substantially as described.

2. In a milking apparatus, the combination 25 of a milk-tube 11, having flexible branch tubes 13 connected thereto by three-pronged tubular couplings 12, of flexible cup-tubes 15 provided with valves 16 and connected in pairs to said tubes 13, by three-pronged tubular couplings 30 14, and teat-cups 17 applied to the ends of said tubes 15, substantially as described.

3. In a milking apparatus, the combination 35 with a milk-tube having flexible branch tubes, of flexible cup-tubes connected in pairs to said branch tubes, teat-cups applied to the ends of said cup-tubes, a draw-cord 19 attached to certain of said tubes, and a coiled spring 18 anchored at one end and connected at its other end to said draw-cord, substantially as de- 40 scribed.

In testimony whereof I affix my signature in presence of two witnesses:

JOSEPH H. HOOVER.

Witnesses:

O. I. LEWIS,  
L. E. PARK.