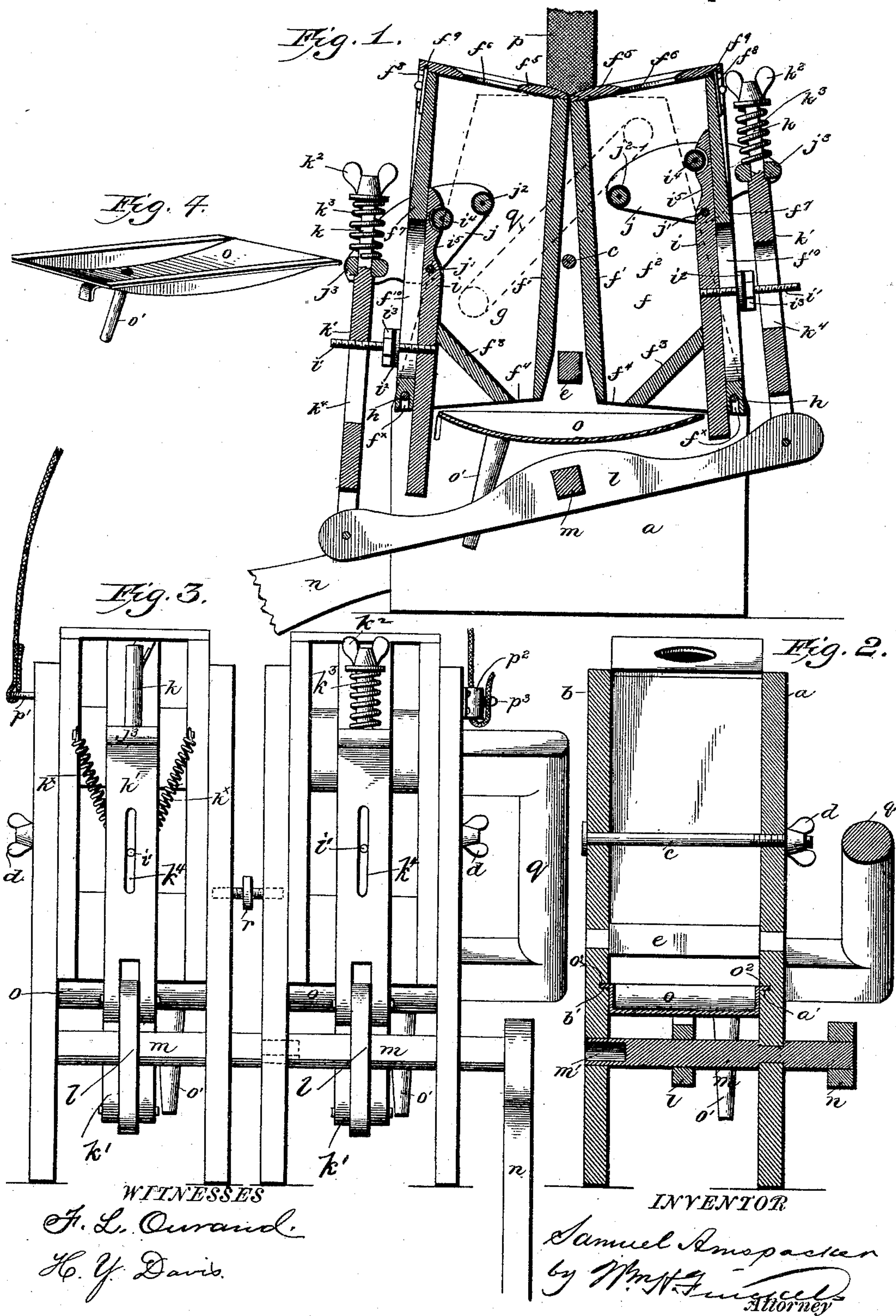


S. AMSPACKER.
COW MILKER.

Patented Sept. 1, 1891.



UNITED STATES PATENT OFFICE.

SAMUEL AMSPACKER, OF MUDDY CREEK FORKS, PENNSYLVANIA.

COW-MILKER.

SPECIFICATION forming part of Letters Patent No. 458,611, dated September 1, 1891.

Application filed September 26, 1890. Serial No. 366,244. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL AMSPACKER, a citizen of the United States, residing at Muddy Creek Forks, in the county of York and State of Pennsylvania, have invented a certain new and useful Improvement in Cow-Milkers, of which the following is a full, clear, and exact description.

The object of this invention is to provide an apparatus for milking cows which shall operate upon the teats after the manner of the action of the human hand.

A further object is to construct such apparatus in a manner that it may be adapted for use upon two or the four teats at once.

A further object is to construct such a milking-machine in a manner that will admit of its being readily adjusted to teats differently spaced upon the udder, and also of its being taken apart or disassembled to provide for easily and perfectly cleaning it.

In accordance with the above objects I construct a milking apparatus having two chambers, in which teat pressing and pulling devices are arranged and move up and down alternately with an action resembling that of the human hands in milking, the movements of the two pressing and pulling devices being imparted by a single shaft and appropriate yielding intermediate mechanism. The shaft is adapted to be coupled with a duplicate apparatus to be operated therefrom to provide for acting upon the four teats at once. The chambers are adjustable to provide for properly spacing them to conform to the difference in location of the teats on the udders on different cows or upon the udder of the same cow. This adjustment and the disassembling of the apparatus are under the control of a single clamping device.

The parts and combinations of parts of the invention will be described first, and then particularly pointed out and distinctly claimed.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a vertical longitudinal section; Fig. 2, a cross-section; Fig. 3, an end elevation of the double machine, and Fig. 4 a perspective view of the catching and discharge basin.

a and *b* are side pieces connected by the bolt *c* and its thumb-nut *d* and the cross-bar

e, the said bolt and cross-bar being arranged loosely in one side, so as to permit the separation of the sides for adjustment and disassembling, as will appear more fully hereinafter. Between the sides *a b* are arranged two chambers *f g*, and these chambers are alike, and description of one will suffice for both. The chamber is composed of a back *f'* and parallel sides *f''*, secured thereto, an inclined bottom *f'''* between the sides, and outlet *f''''* for the discharge of the milk, and a top plate *f''''''*, having an opening *f''''''''* for the insertion of the teat. The chamber is secured between the sides by means of a rod *h*, passed transversely through the sides of the apparatus and the sides of the chamber and forming a pivot upon which the chamber may be moved. This rod *h* also serves to receive a movable and detachable end piece *f''''''''* of the chamber, the lower end of said end piece being provided with a notch or groove *f''''''''''* to embrace said rod, the upper end of said end piece *f''''''''* being secured to the top piece *f''''''''* by means of a catch *f''''''''''*, engaging the groove or nick *f''''''''''''* in the underside of the top piece. The catch *f''''''''''* is simply a swinging catch pivoted to the end piece *f''''''''*. The end piece *f''''''''* is slotted longitudinally at *f''''''''''''*. On the inside of the end piece *f''''''''* and within the chamber is arranged a slide *i*, frictionally held to the said end piece by means of a bolt *i''*, spring-washer *i'''*, and nut *i''''*, and the bolt *i''* extends through the slot *f''''''''''''* in the said end piece *f''''''''*. This slide *i* is adapted to be moved up and down in the chamber *f*. The upper end of the slide *i* is beveled, and in a recess is provided a rubber or other elastic roller *i''*, and beneath the roller the said slide is recessed, as at *i''''*, to permit the compression of the teat in milking. Two levers *j* are pivoted to the slide *i* at *j''* to rock thereon and to be carried by said slide. In these levers is pivoted a rubber or other elastic roller *j''*, which co-operates with the roller *i''* in acting upon the teat. These levers extend across the chamber, and they also extend outside of the chamber and have pivoted in their ends a yoke *j''''*, which is pierced vertically to receive the stem *k* of a pitman *k''*. Between the yoke *j''''* and an adjusting-nut *k''''* is arranged a spring *k''''''* to render the action of the levers elastic. Instead of interposing a spring *k''''''* between the yoke and the nut *k''''*, I

may, as shown in Fig. 3, interpose springs k^+ between the pitman k' and the journals of the yoke j^3 for the same purpose, leaving the stem k of the pitman to project through the yoke as a guide. The pitman k' is pivoted to a rock-lever l , which is arranged upon a rock-shaft m , the latter having its bearings in the sides a and b and adapted to be operated by means of a lever or hand-piece n . The rod i projects through a slot k^4 in the pitman, and at a certain period of the movement of the said pitman the said rod comes into contact with the upper end of said slot to effect the downward movement of the lever j and impart the pull to the teat, as indicated in the left-hand side of Fig. 1. As indicated in the right-hand side of Fig. 1, the said rod i' is at the bottom of the slot k^4 when the levers j are in their uppermost position to begin action upon the teat.

As clearly indicated in Fig. 1, the apparatus is arranged to have one of the compressing and pulling devices to begin to engage a teat while the other one is acting upon it to discharge the milk, and this action is alternate.

While I prefer to employ rollers at i^4 and j^2 , yet it is within my invention to employ stationary devices, and either or both may be elastic or inelastic, although I prefer to employ elastic bodies.

Milk is discharged into the chambers and flows through the openings f^4 into a collecting and discharging pan o . This pan has its bottom curved by preference, so that the milk shall flow to and be discharged from the spout o' into any suitable receptacle. The collecting and discharging chamber o is made with lateral flanges o^2 , which fit in grooves a' and b' in the sides a and b in such manner that the said pan may be readily withdrawn endwise from the machine for purposes of cleaning. The bolt c , through its nut d , serves to bind the chambers in between the sides and hold them in position. When it is necessary to adjust the said chambers so that their openings f^6 shall coincide with the location of the teats on the udder, then the nut d is loosened and the said chambers may be parted laterally at their tops by swinging them upon the rods h until the proper spacing of the teat-openings f^6 is had; and here I may remark that by removing the nut d the machine may be taken apart or disassembled for cleaning or other purposes. So, also, by disengaging the catch f^8 from the notch f^9 the end piece f^7 may be swung outwardly and entirely removed, carrying with it all the connected parts and exposing the interior of the chamber for any desired purpose, and also to obtain access to the internal parts carried by said end piece.

In order to secure the apparatus to a cow, I employ an elastic band p , fastened to one of the side pieces p' and adapted to be passed over the back of the cow and secured to the other side piece by means of a clip p^2 , (see Fig. 3,) the said clip p^2 being provided with a button or other device p^3 , to which the free end of the band may be secured, as by eyelet-holes. The elasticity of the band provides for the automatic following of the apparatus close up to the udder as the latter is exhausted of milk. A handle or grip q is secured to one of the sides to enable the operator to steady the apparatus and also to provide facility for handling it.

In order to adapt the apparatus for duplication, so as to act upon the four teats at once, I duplicate the apparatus just described, excepting that I use a single handle n . Such duplication is shown in Fig. 3. The action of two apparatuses is effected by connecting the shaft m of one apparatus with a squared cavity m' to receive a correspondingly-squared projection of the shaft m . A right and left hand screw r is let into the adjacent side pieces of the two apparatuses to unite them, and also to serve as means for separating them laterally to properly space them with respect to the arrangement of the teats upon the udder. Ordinarily it will not be necessary to inclose the outer ends of the chambers f and g ; but if necessary an outer wall may be applied to each, and such outer wall may be made removable at pleasure.

The operation is as follows: In Fig. 1 while the parts in chamber g are shown in correct position at the end of the downstroke the parts in chamber f are not quite in the highest position, and the position chosen in the said figure for the said parts in chamber f is selected in order to prevent obscurity of parts. The view, however, is sufficient to illustrate the operation. The teat is inserted in the opening f^6 , and the levers j are elevated until they come in contact with and embrace the said teat between the rollers j^2 and i^4 . Upon the beginning of the downward movement the levers are tilted, so that the roller j^2 rises and approaches the teat laterally until it compresses the said teat between itself and the roller i^4 and into the cavity i^5 , and upon the further descent of the parts this pressure is increased until the rod i' comes in contact with the end of the slot k^4 , and then the full pulling action upon the teat is had. If such downward movement be continued in excess, then the springs k or their equivalents, the springs $k^+ k^+$, will yield, and the yoke j^3 will rise against the pressure of said springs and take off any undue pressure that would otherwise result upon the teat. Of course after the full limit of the downward motion has been reached then the lever is reversed and the parts rise, and as they rise the levers j are given a reverse movement and release the teat in readiness to obtain a fresh hold for the next succeeding down movement.

It will be understood from the foregoing description that the pitmen k' give to the levers j their original rocking motion, and that the slides i when engaged through rods i' with the pitmen give to the said levers j the pull-

ing motion, and also serve to elevate them after the completion of the downstroke.

What I claim is—

1. A milking apparatus comprising two chambers arranged between suitable supporting sides and each containing a teat compressing and pulling device composed of rocking levers carried by a slide, the said levers and slide containing devices to engage a teat, means to rock said levers, and a connection between the slide and said rocking means to raise and lower the said levers, substantially as described.

2. A milking device composed of sides, two chambers arranged between said sides and supported thereby, a teat compressing and pulling device arranged in each of said chambers and including slides upon which the said teat compressing and pulling devices are mounted, a rocking lever, and pitmen connecting said lever and teat compressing and pulling devices, and a projection from each of the slides engaged periodically by the said pitmen, substantially as and for the purpose described.

3. In a cow-milking device, a chamber into which the teat is inserted, a teat pulling and compressing device, a slide upon which the said teat pulling and compressing device is mounted to rock, and a rocking device therefor, consisting of a rock-shaft, a pitman attached to said lever, a yoke mounted upon said pitman and engaging the teat pulling and compressing device, and a suitable number

of springs interposed between the said pitman and the yoke, substantially as and for the purpose described.

4. In a milking apparatus, a chamber and teat pulling and compressing devices, combined with a movable end of said chamber, to which the said teat pulling and compressing devices are attached, and whereby access may be had to the inside of the chamber, substantially as described.

5. In a milking apparatus, two milking chambers and teat pulling and compressing devices in each, combined with sides between which said chambers are arranged and a transverse bolt connecting the sides and serving to clamp the chambers between the sides in any given position and to permit the ready disassembling of the apparatus, substantially as described.

6. A milking apparatus composed of two independent sets of milking chambers and teat pulling and compressing devices, an operating-shaft common to both, and an adjusting device interposed between the two sets to properly space them, substantially as described.

In testimony whereof I have hereunto set my hand this 23d day of September, A. D. 1890.

SAMUEL AMSPACKER.

Witnesses:

DANIEL B. MINNICH,
SETH MINNICH.