

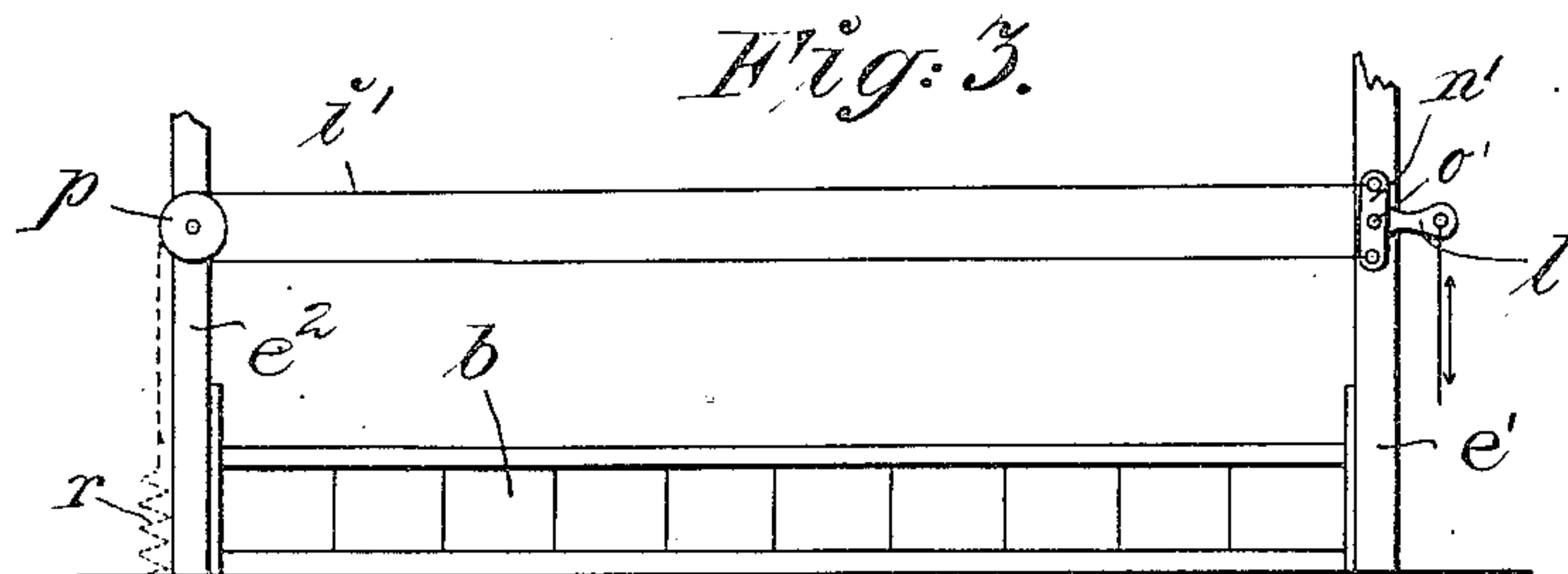
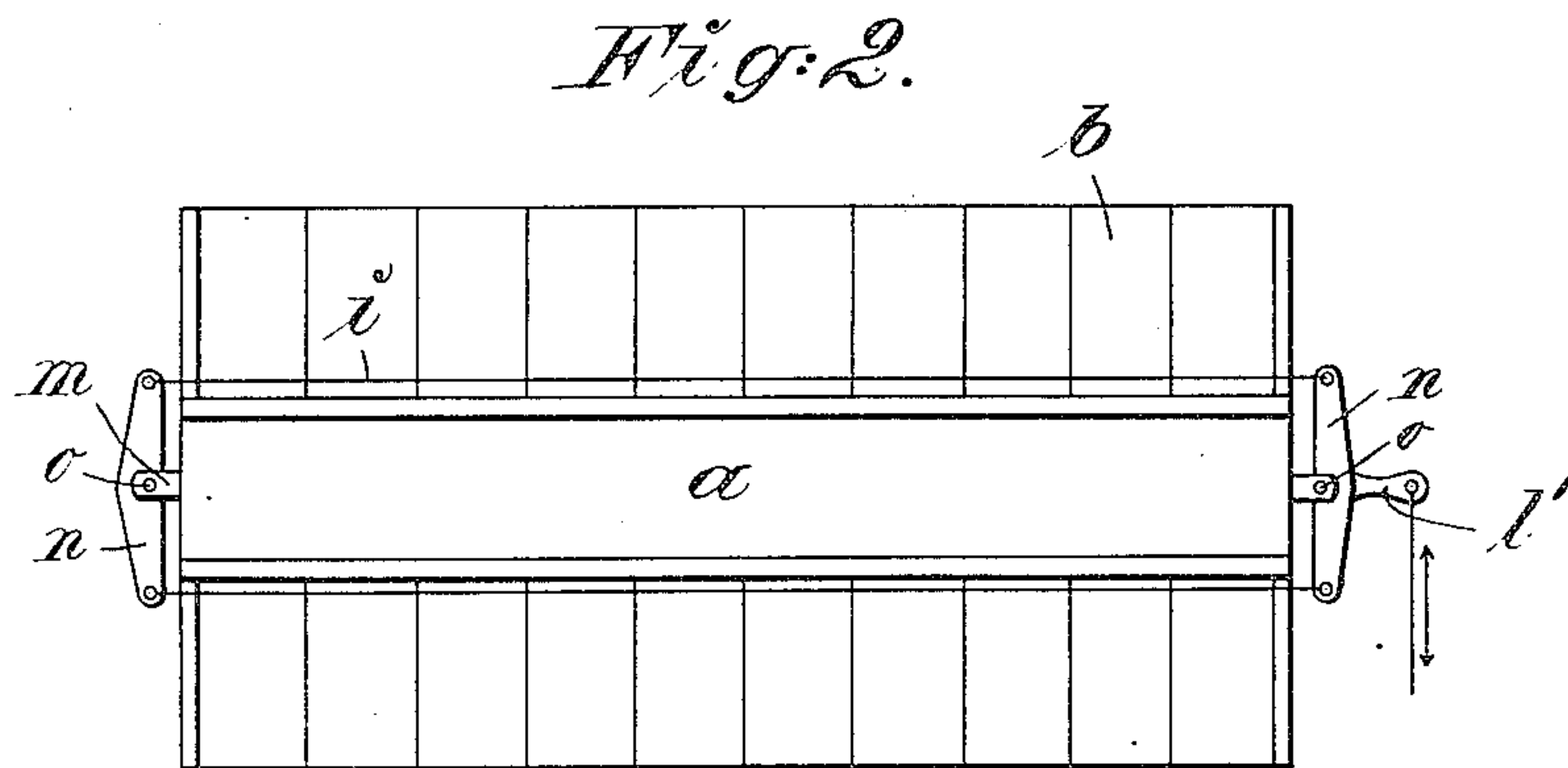
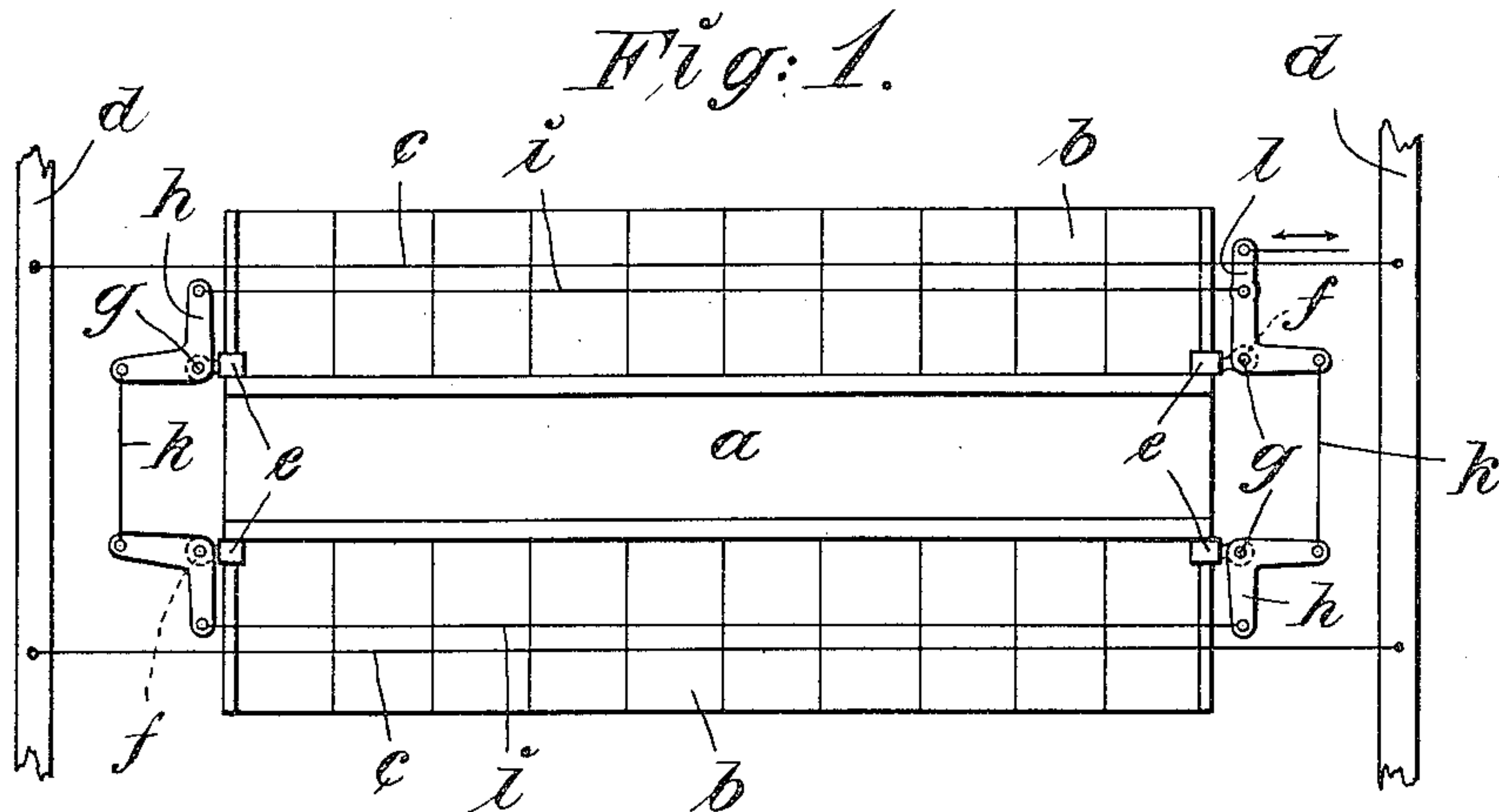
No. 843,757.

PATENTED FEB. 12, 1907.

B. & F. LJUNGSTRÖM.
APPARATUS FOR OPERATING MILKING MACHINES.

APPLICATION FILED APR. 28, 1906.

3 SHEETS—SHEET 1.



Witnesses.

H. L. Amer.

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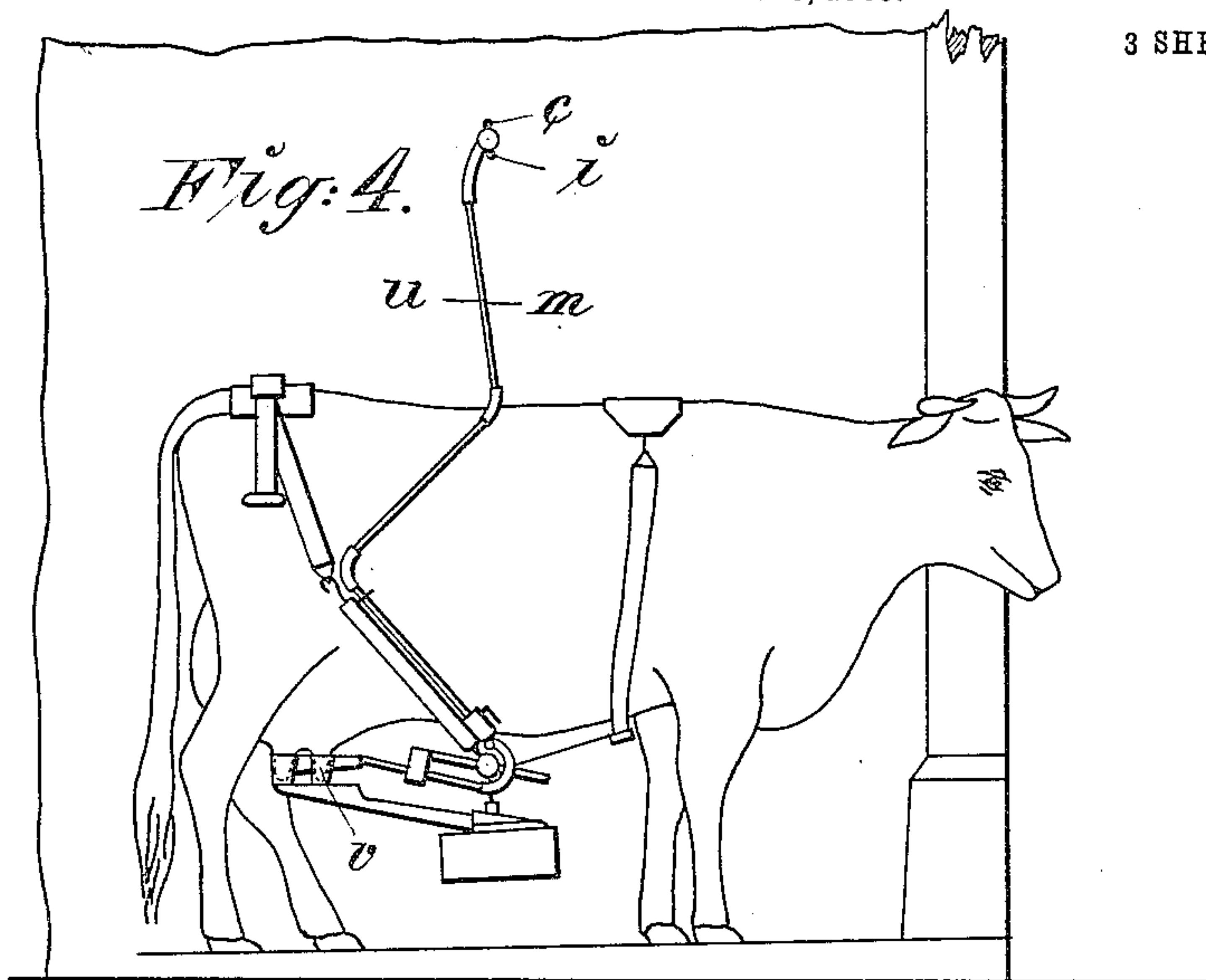
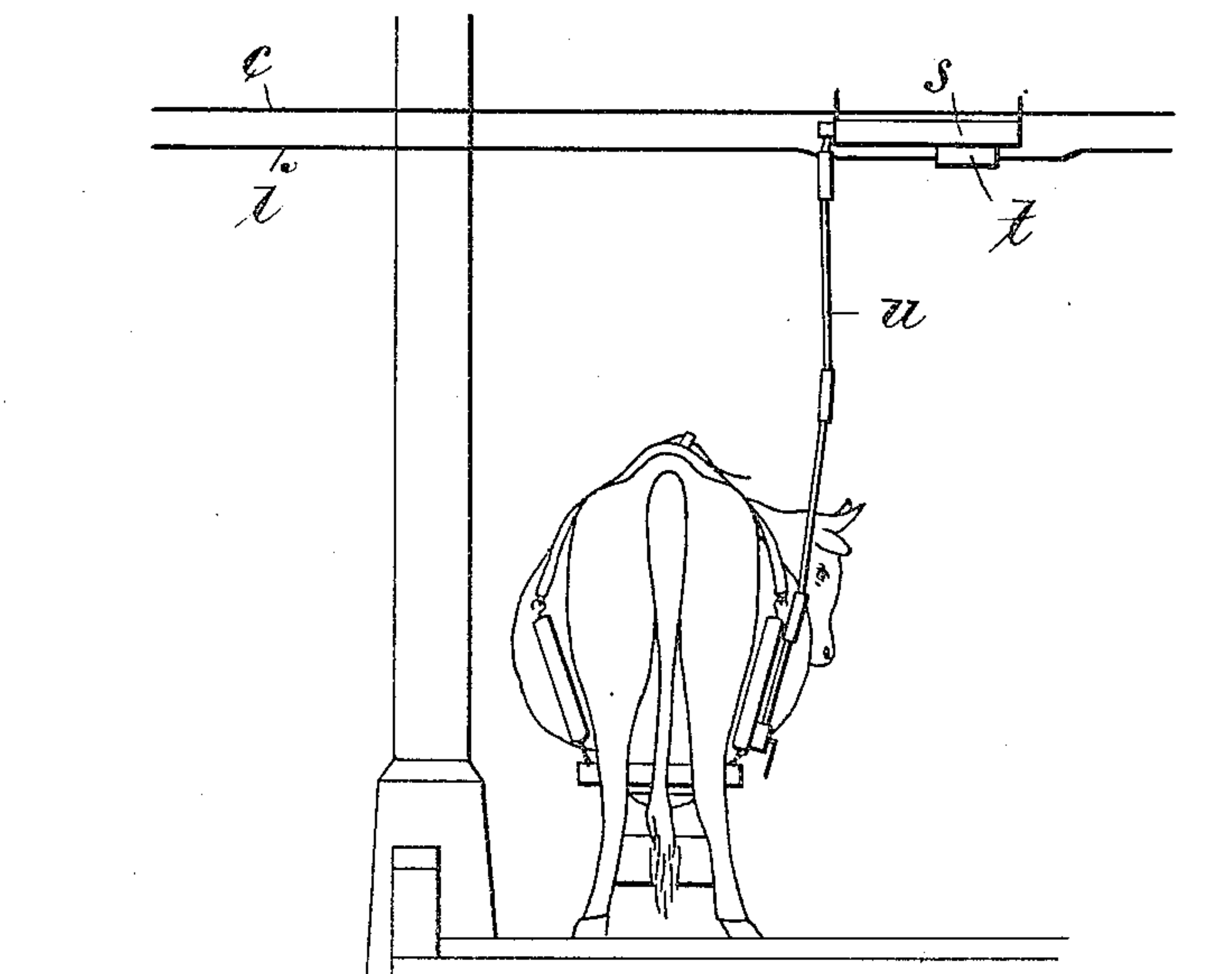


Fig: 5.



Witnesses.

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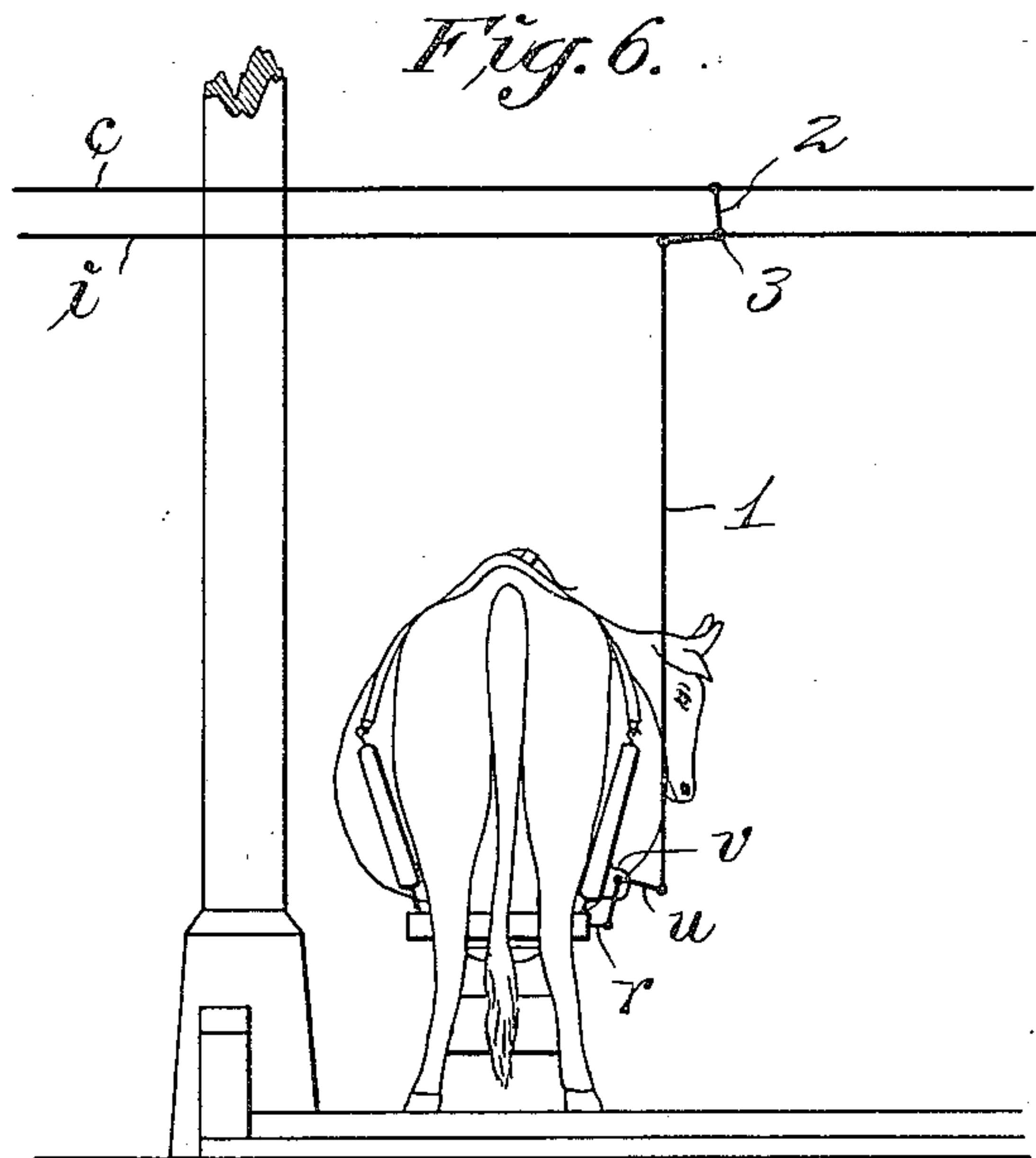
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3 SHEETS—SHEET 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

BIRGER LJUNGSTRÖM AND FREDRIK LJUNGSTRÖM, OF STOCKHOLM, SWEDEN, ASSIGNORS TO AKTIEBOLAGET SEPARATOR, OF STOCKHOLM, SWEDEN, A COMPANY.

APPARATUS FOR OPERATING MILKING-MACHINES.

No. 843,757.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed April 28, 1906. Serial No. 314,214.

To all whom it may concern:

Be it known that we, BIRGER LJUNGSTRÖM and FREDRIK LJUNGSTRÖM, subjects of the King of Sweden, and residing at Stockholm, Sweden, have invented certain new and useful Improvements in Apparatus for Operating Milking-Machines; and we 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to apparatus for operating milking-machines actuated by means of a reciprocating motion, and it more especially relates to milking-machines of the kind shown and described in United States Letters Patent No. 784,693, granted March 14, 1905, wherein a plurality of pistons moving in cylinders are pressed successively upon the teats, said pistons being actuated to and fro by means of a pulsating liquid put in motion by means of a pump.

The invention has for its object to operate either in a cow-house or open field several milking-machines simultaneously by means of mechanism that is inexpensive and which may be easily and quickly installed.

The invention is schematically shown in the annexed drawings in several constructional forms, in which—

Figure 1 is a plan of a cow-house having an apparatus installed therein constructed according to this invention, the milking-machines being omitted; Fig. 2, a similar view showing a modified form of apparatus. Fig. 3 is an elevation of another form of apparatus, and Figs. 4 and 5 show the application of the apparatus in connection with a milking-machine and pump for operating the same. Fig. 6 shows the application of the apparatus in connection with a milking-machine and bell-crank lever connections for operating the same.

In Fig. 1 a well-known form of a hay-rack is designated by the letter *a*, on two sides of which are constructed a plurality of stalls *b* for the cows, the end walls of the house being designated by the letter *d*. Wires or rods *c* are stretched between the walls *d* at the

proper distance from the racks, and on these wires are mounted a plurality of pumps or the like *s*, to each of which is connected a milking-machine *v*. (Shown in Figs. 4, 5, and 6.) At each of the four corners of the rack *a* is mounted a post *e*, and on each post is mounted a bracket *f*, in which is mounted a bell-crank lever *h*, secured therein by and adapted to swing on a pin *g*. The ends of these levers are connected with each other by means of wires or rods *i*, running parallel to the rack *a*, and by wires or rods *k*, running at right angles to the wires *i*, forming a rectangular framework.

As above stated, a plurality of motors are rigidly mounted on the wires *c*. When pumps are used for operating the machines, the piston of each pump is connected to one of the wires *i* by means of a connecting-piece *t*, Fig. 5. A reciprocating motion is imparted to the wires *i*, and consequently to the pistons, by means of a handle *l*, formed on one of the bell-crank levers *h*, thereby operating all of the pumps simultaneously.

In Fig. 2 another means is shown for mounting the reciprocating rods or wires *i*. At each end of the rack *a* is mounted a stud *m*, on which is mounted a beam *n*, adapted to rock on a pin *o*, the two ends of each beam being connected by the wires or rods *i*, running parallel to the rack *a*. Motion may be imparted to the rocking beams by means of a lever or handle *l'*, which may be operated by any suitable means.

Fig. 3 illustrates still another way of mounting the reciprocating wires. In this instance an independently-operated wire is used for each set of stalls. On one of the posts *e'* at one end of the rack is mounted a double bell-crank lever *n'*, adapted to rock on a pivot *o'*, and on a post *e''* at the opposite end of the rack is mounted a pulley *p*. The wire *i*, being connected to one arm of the bell-crank lever *n'*, passes over the pulley *p* and is connected to the other arm of said bell-crank lever. Any suitable means may be used for operating the free arm of the bell-crank whereby the two parts of the wire move in opposite directions. As indicated in dotted lines, the wire instead of being secured to two arms of the lever may be secured to one arm only, the other end of the wire being secured to a spring or a weight *r*.

In Fig. 6 there is shown another modified form. On the milking-machine a rod *r* is arranged to have a reciprocating motion. By means of a bell-crank lever *u*, swinging on the pin *v*, the said rod *r* is connected with rod 1, which is secured to the one end of the bell-crank lever 2, swinging on the pin 3, secured to the wire *i*. The other end of the lever 2 is secured to the wire *c*. When the wire *i* gets a reciprocating motion, said motion will be imparted to the rod *r* by means of the bell-crank levers *u* and 2 and the rod 1, connecting them.

While the apparatus is shown and described as being installed in a cow-house, it is apparent that it may be erected in an open field by erecting posts for supporting the wires *i* and the bell-crank levers *h*.

We claim—

1. In an apparatus of the character described, the combination with the milking mechanism of a supporting member, a motion-transmitter supported thereby, a rod connected with the motion-transmitter, means to reciprocate the rod to actuate the motion-transmitter and means connecting the transmitter and the milking mechanism.

2. In an apparatus of the character described, the combination with the milking mechanism of a supporting member, a cylinder supported thereby, a plunger in the cylinder, a rod connected with the plunger, means to reciprocate the rod to actuate the plunger, and a conduit connecting the cylinder and milking mechanism.

3. In an apparatus of the character described, the combination with the milking mechanism, of a supporting member, a cylinder secured thereto, a plunger in the cylinder adapted to reciprocate parallel to the supporting member, a rod to which the plunger is connected, means to reciprocate the rod to actuate the plunger, and a conduit

connecting the cylinder and milking mechanism.

4. In an apparatus of the character described, the combination with the milking mechanism of two parallel stationary supporting members, a plurality of cylinders mounted thereon and connected with the milking mechanism, a plunger in each cylinder adapted to reciprocate parallel to the supporting members, an operating member mounted parallel to and in proximity to each supporting member, means to connect the operating members, means to connect the latter with each plunger, and means to rock the connections of the operating members.

5. In an apparatus of the character described, the combination with the milking mechanism of two horizontally-mounted parallel supporting-rods, a plurality of supports, a rocking member pivoted on each support, wires parallel to the supporting-rods connecting the rocking members, and means connecting the said members with the milking mechanism.

6. In an apparatus of the character described, the combination with the milking mechanism, of two stationary horizontally-mounted supporting-rods, a plurality of perpendicular supports, a bell-crank lever pivoted on each perpendicular support, wires parallel to the supporting-rods connecting the bell-crank levers in pairs, laterally-disposed wires connecting the pairs of levers, means to rock the levers and wires connecting the levers with the milking mechanism.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

BIRGER LJUNGSTRÖM.

FREDRIK LJUNGSTRÖM.

Witnesses:

HJ. FETTERSTRÖM,
HARRY ALBIHN.