

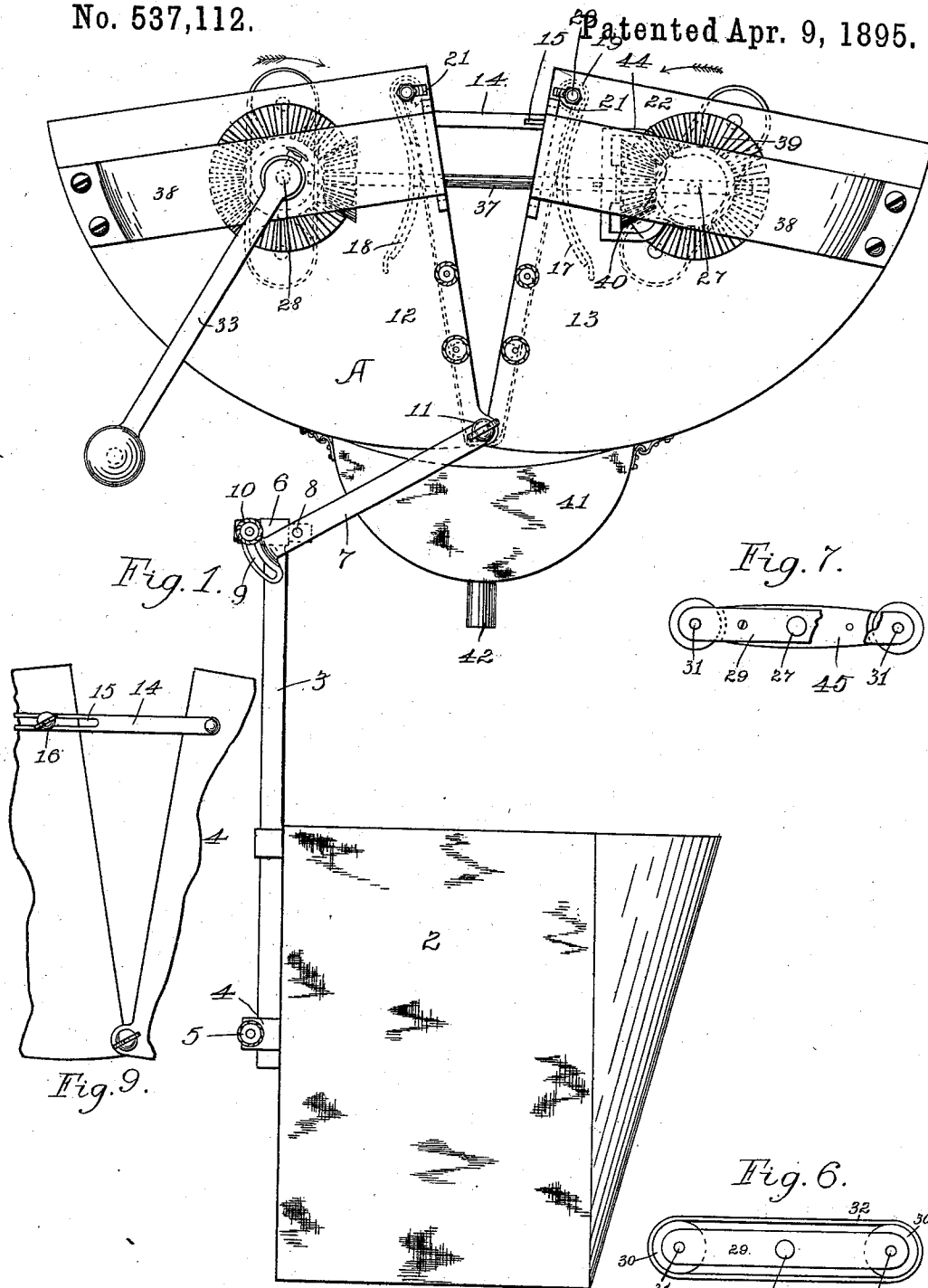
(No Model.)

2 Sheets—Sheet 1.

E. H. HOBE.
MILKING MACHINE.

No. 537,112.

Patented Apr. 9, 1895.



Witnesses:
F. Bradbury.
A. S. Johnson

Inventor:
Engbreth H. Hobe.
per: T. D. Murwin
Attorney.

(No Model.)

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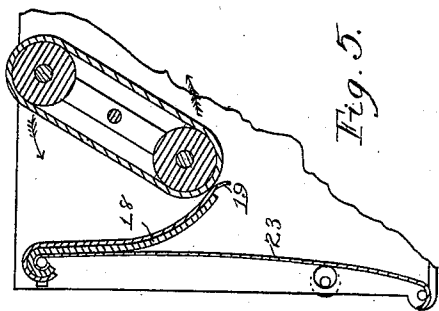


Fig. 5.

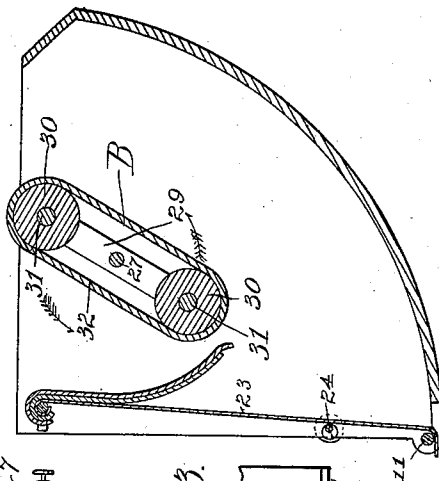


Fig. 3.

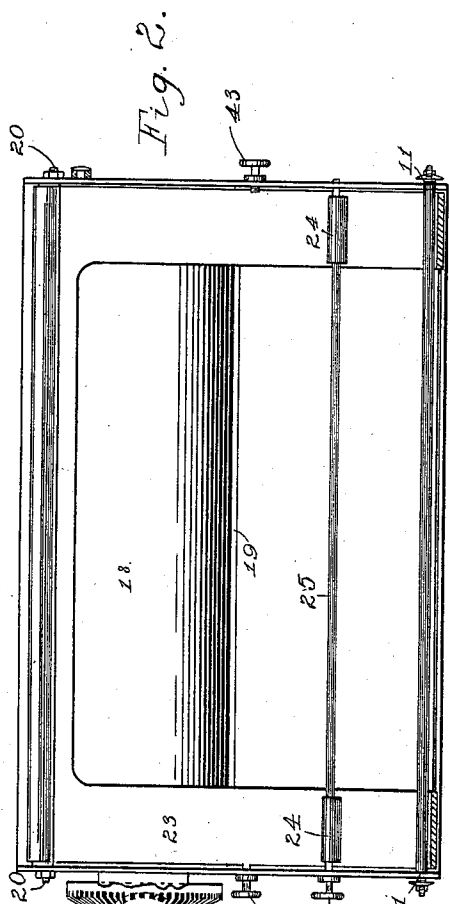


Fig. 2.

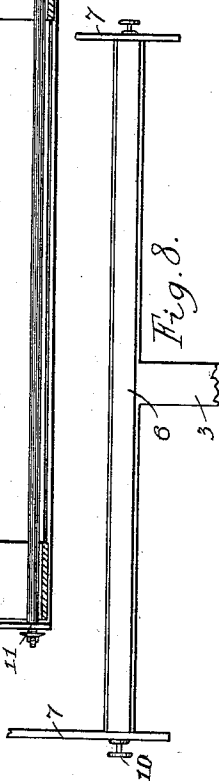


Fig. 8.

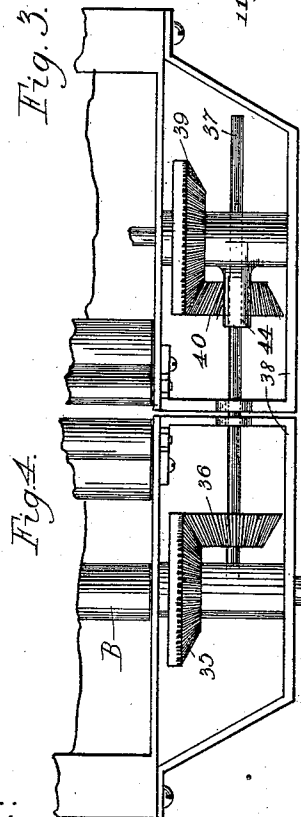


Fig. 4.

Witnesses:

F. Bradbury.
A. S. Johnson.

Inventor:

per: Engebreth H. Hobe.
J. D. Morris
Attorney.

UNITED STATES PATENT OFFICE.

ENGBRETH H. HOBE, OF ST. PAUL, MINNESOTA.

MILKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 537,112, dated April 9, 1895.

Application filed September 12, 1894. Serial No. 522,833. (No model.)

To all whom it may concern:

Be it known that I, ENGBRETH H. HOBE, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Milking-Machines, of which the following is a specification.

My invention relates to improvements in milking machines, its object being to provide an improved means of adjustment of the apparatus to the teats of different cows, and for different sized animals, and also improved means for operating the same, and consists in the construction and combination hereinafter described and claimed.

In the accompanying drawings forming part of this specification, Figure 1 is an end elevation of my improved machine. Fig. 2 is a side elevation of the inner face of one of the funnel sections of the apparatus. Fig. 3 is a vertical, cross section of one of the funnels showing the rotary compressor and the spring abutment, and its adjusting cam. Fig. 4 is a detail of the adjustable driving gear. Fig. 5 is a detail of the compressor and its spring abutment. Fig. 6 is a detail end view of the rotary compressor. Fig. 7 is a similar view of a modified construction of the same. Fig. 8 is a detail of the supporting standard and its attachments, and Fig. 9 is a detail of the adjustable connecting device between the funnel sections.

In the drawings, the pail or receptacle 2 of any suitable form is provided with the standard 3 slidably adjustable in the guides or ears 4 by means of the set screw 5, and having a top cross bar 6. To the ends of this cross bar are connected the arms 7 by means of the pivots 8, the arms having the curved slot 9 through which passes a set screw 10 for securing the arm in adjusted positions. Between the outer ends of the arms 7 is supported the compound or double funnel A, being adjusted to requisite position by means of the securing set screw 11, and is made up of two similar sections 12 and 13, both turning on the common pivot or shaft 11 and adjustable to and from each other by means of the connecting link 14 pivoted at one end to one section, the other end being provided with a longitudinal slot 15 through which passes a set screw 16. The sections 12 and 13 are preferably in the form of similar sectors of a cylin-

der. In the adjacent sides of the sections are supported similar concave abutments 17 and 18. Each of these is preferably covered 55 with a detachable soft rubber sheet 19 and is hooked over and suspended upon a rod or equivalent support 20, which is laterally adjustable by playing in slots 21 in the ends 22 of the funnel. These abutments have rear 60 adjustable and elastic support upon the sheet metal spring straps 23, which are fastened to the rods 20 and pass down around the shaft 11. The position of each abutment is adjustable by means of the cams 24 mounted upon 65 the shaft 25 and turned by means of a thumb screw 26 so as to press the spring inward to any required degree, carrying with them the abutments.

Mounted upon the shafts 27 and 28, having 70 suitable bearings in the end of each funnel, are the rotary compressors B. These are preferably made up of the cross pieces 29 fixed to the shaft and carrying at each end rolls 30 journaled on the shafts 31. Upon these rolls 75 I prefer to arrange the endless elastic belt 32, of sheet rubber or other suitable material. The compressor B is so positioned that in its rotation it will sweep down the concave face of the adjacent abutment, the belt 32 travel- 80 ing over its carrying rolls so as to prevent undue friction between it and the abutment.

The two compressors B are driven from a common source of power such as a crank 33 secured to the shaft 28 by means of the spring 85 catch 34. The shaft 28 carries a bevel gear 35 with which meshes a bevel pinion 36 secured to the shaft 37, having suitable bearings on the outside of the ends of the funnel, the shaft and pinions being protected by a 90 suitable guard 38. Similarly the shaft 27 is provided with a bevel gear 39 with which meshes a bevel pinion 40 sliding on the shaft 37 and held from turning thereon by a suitable feather or other means, (not shown,) and 95 from disengagement with the gear by the yoke 44. It will thus be seen that no matter what the relative angular position of the funnel sections 12 and 13 may be, the turning of the crank 33 by means of the intermediate gear, 100 will simultaneously drive both compressors B. Arranged underneath the funnel is the trough or conductor 41, having an outlet pipe 42 leading to the receptacle 2.

The parts of the apparatus are of such size and so positioned that the teats of the cow can be inserted in pairs between the compressors and their abutments, the position of the funnels being adjusted to the distance between the pairs of teats inserted into them. Any suitable support for the receptacle underneath the body of the cow may be provided such as a strap passing over the back and with its ends secured to the abutments 43. In the modified construction of compressor shown in Fig. 7, the belt is dispensed with and the space between the rolls filled by the block 45, the rolls thus making direct contact in the operation of the machine.

Operation: The apparatus being adjusted to proper height and the funnel sections spaced to correspond with the position of the teats, and the teats being inserted into the spaces between the compressors and their abutments, upon turning the crank 33 the compressors are rotated in the direction indicated by the arrows, the abutments being so arranged, as illustrated in Fig. 1, that they act alternately. As the compressor bears against the teats the abutments yield slightly under the pressure, if it be in excess of the resiliency of the spring 23, the belt 32 traveling on its rolls as the compressor passes down the teats, so as to prevent irritating friction upon them. The operation is continued until the milk is all expressed from the teats and udder, when the machine can be disengaged.

I claim—

1. In an apparatus of the class described, the combination with the connected funnel sections, of the milking device in each section and the means for adjusting said sections to and from each other.

2. In an apparatus of the class described, the combination of the similar funnel sections, the connecting bottom hinge therefor, the means for adjusting their tops to and from each other, the milking device in each section, and the driving mechanism for said devices.

3. In an apparatus of the class described, the combination with a suitable receptacle, of a standard connected therewith, the sectional funnel adjustably supported upon said standard above the receptacle, means for adjusting the positions of the sections to and from each other, the milking device in each section and their common operating mechanism.

4. In an apparatus of the class described,

the combination of the similar funnel sections hinged together at the bottom, means for adjusting their tops to and from each other, a milking device in each section, the operating shaft for each device, the counter crank shaft, and the sliding gear connections for driving said operating shafts from said counter shaft.

5. In an apparatus of the class described, the combination of the concave abutment having a laterally slidable support, the spring cushioning said abutment, the pair of parallel rolls carried upon an intermediate shaft and adapted to be rotated by said shaft adjacent said abutment, and the endless belt carried by said rolls.

6. In an apparatus of the class described, the combination with the funnel, of the concave abutment having a laterally slidable top support, the strap spring cushioning said abutment, the cam for adjusting the tension of said spring, the pair of rolls mounted upon an intermediate shaft adapted to turn adjacent to said abutment and the elastic belt carried by said rolls.

7. In an apparatus of the class described, the combination with the concave abutment, having laterally adjustable top support, of the spring bearing against the rear of said abutment and the means for adjusting the position and tension of said spring.

8. In an apparatus of the class described, the combination of the concave abutment having pivotal top support, the pair of rolls carried by a driving shaft adjacent to said abutment, and means for laterally adjusting said abutment to and from said rolls.

9. In an apparatus of the class described, the combination of the concave abutment having pivotal top support, the pair of rolls carried by a driving shaft adjacent to said abutment, and means for swinging the bottom of said abutment toward said rolls.

10. In an apparatus of the class described, the combination with a suitable receptacle and the sectional funnel adjustably connected therewith, of means for adjusting the relative positions of said receptacle and funnel, the milking device in each funnel section, and their common operating mechanism.

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

ENGBRETH H. HOBE.

Witnesses:

T. D. MERWIN,
H. S. JOHNSON.