

J. RIPCZINSKE.

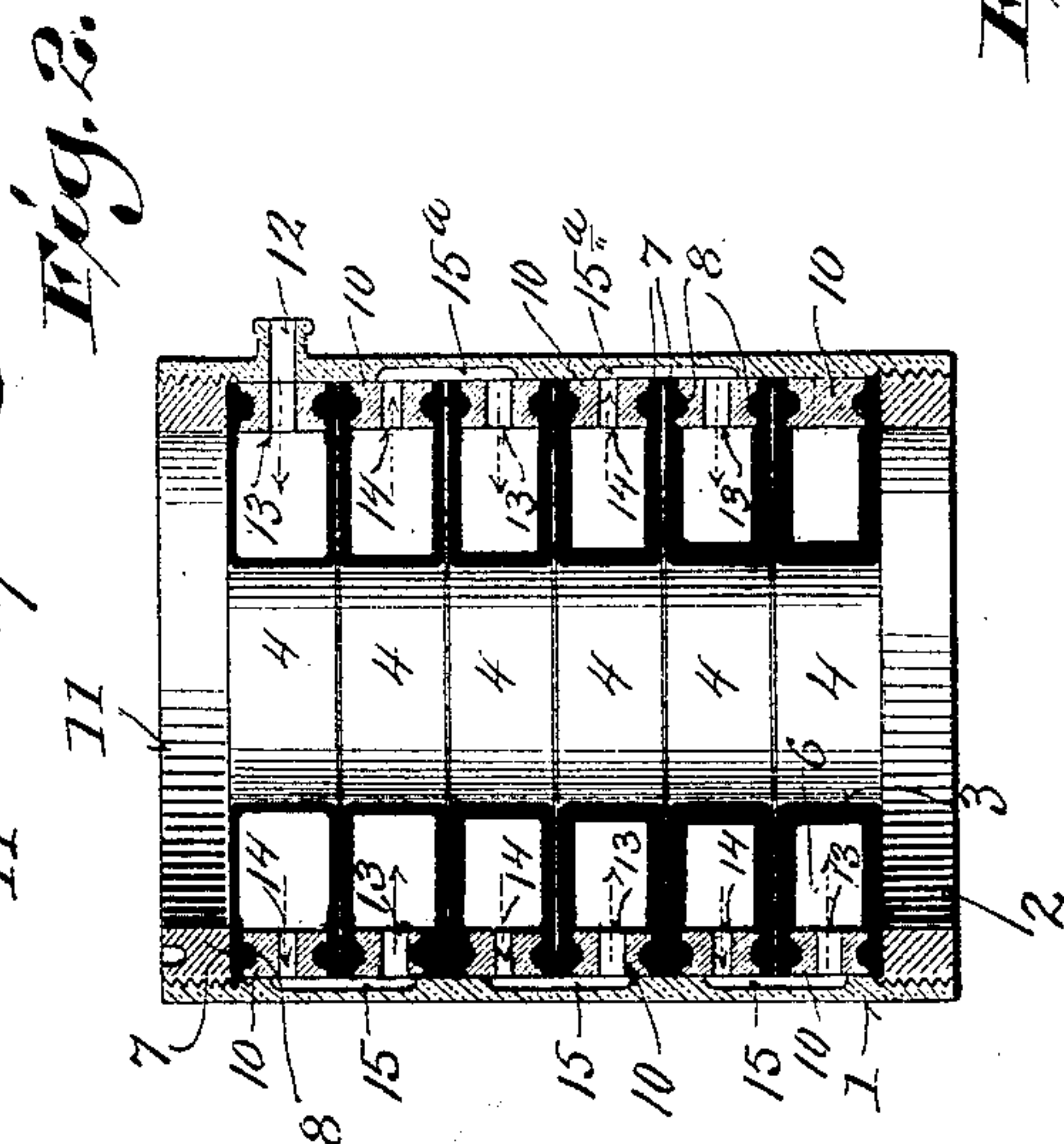
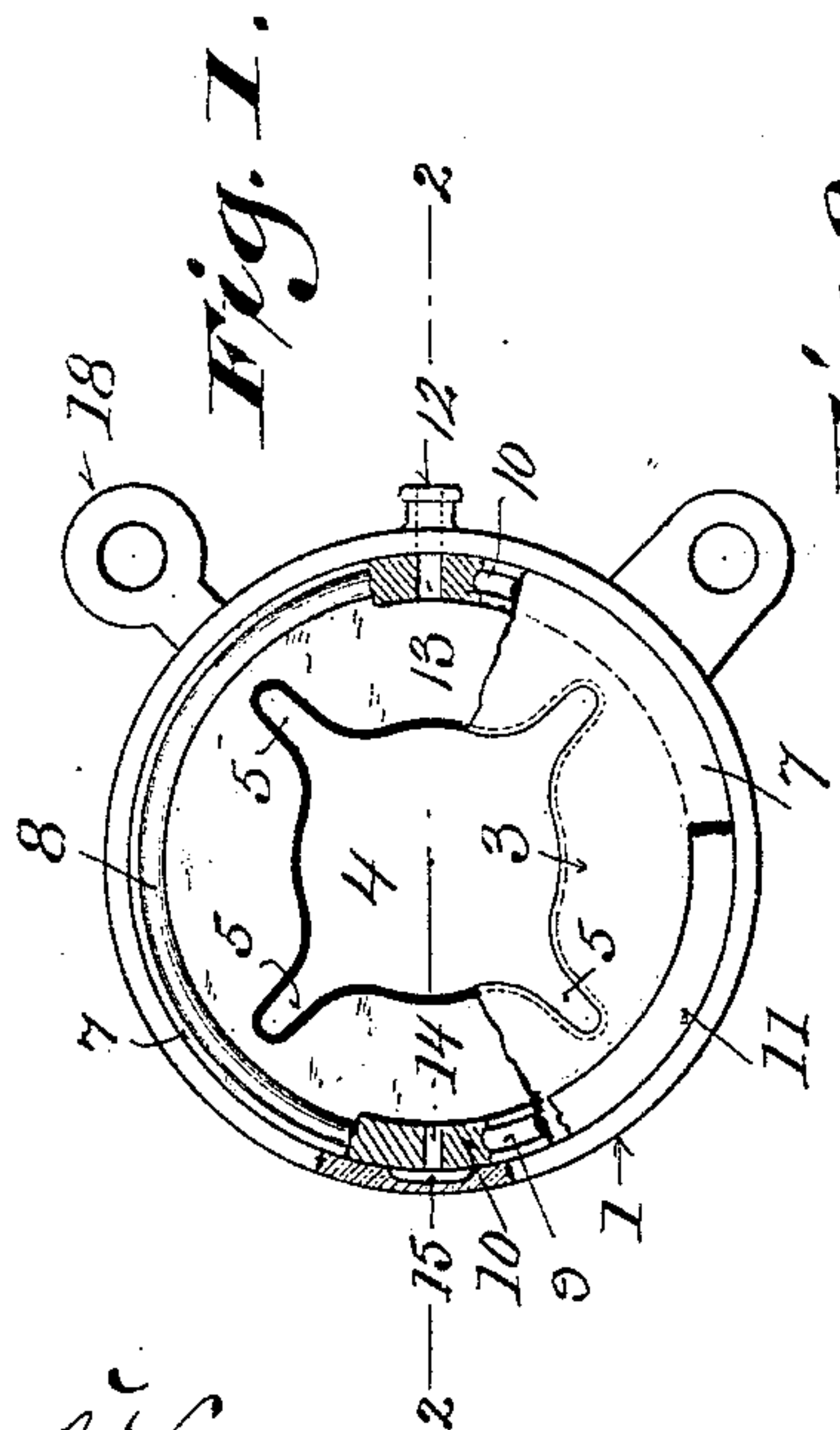
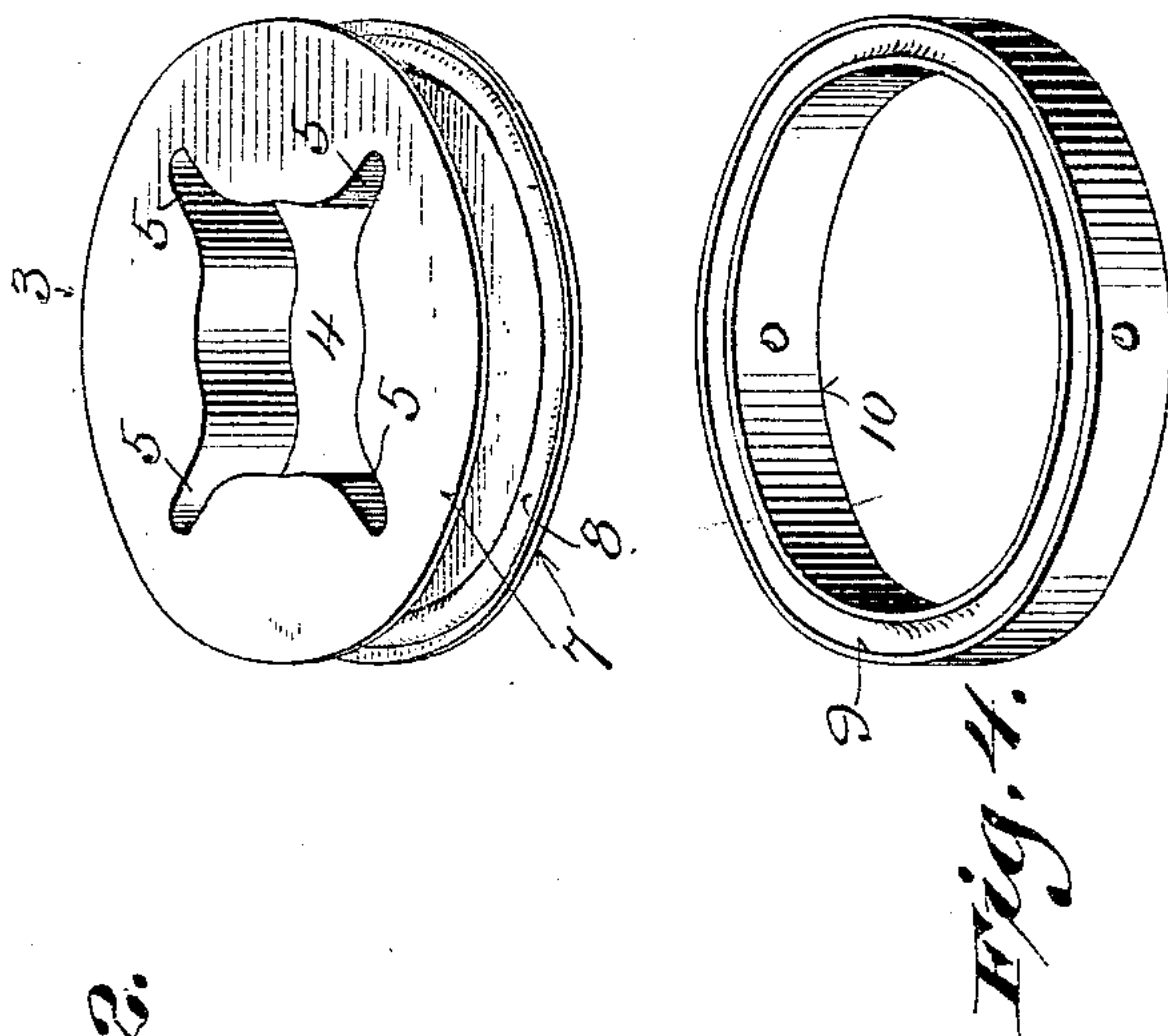
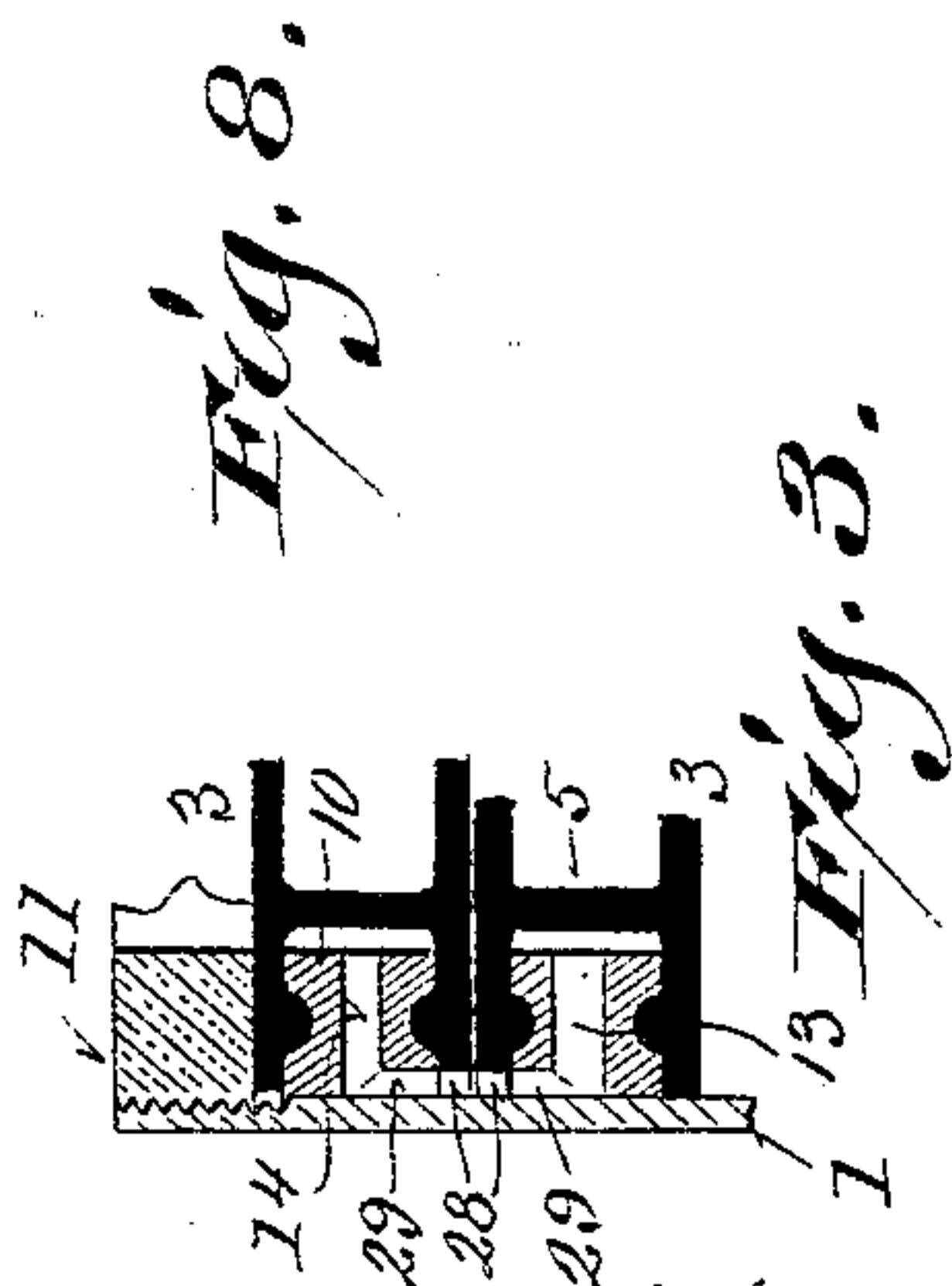
COW MILKER.

APPLICATION FILED JULY 27, 1908.

904,564.

Patented Nov. 24, 1908.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 7.

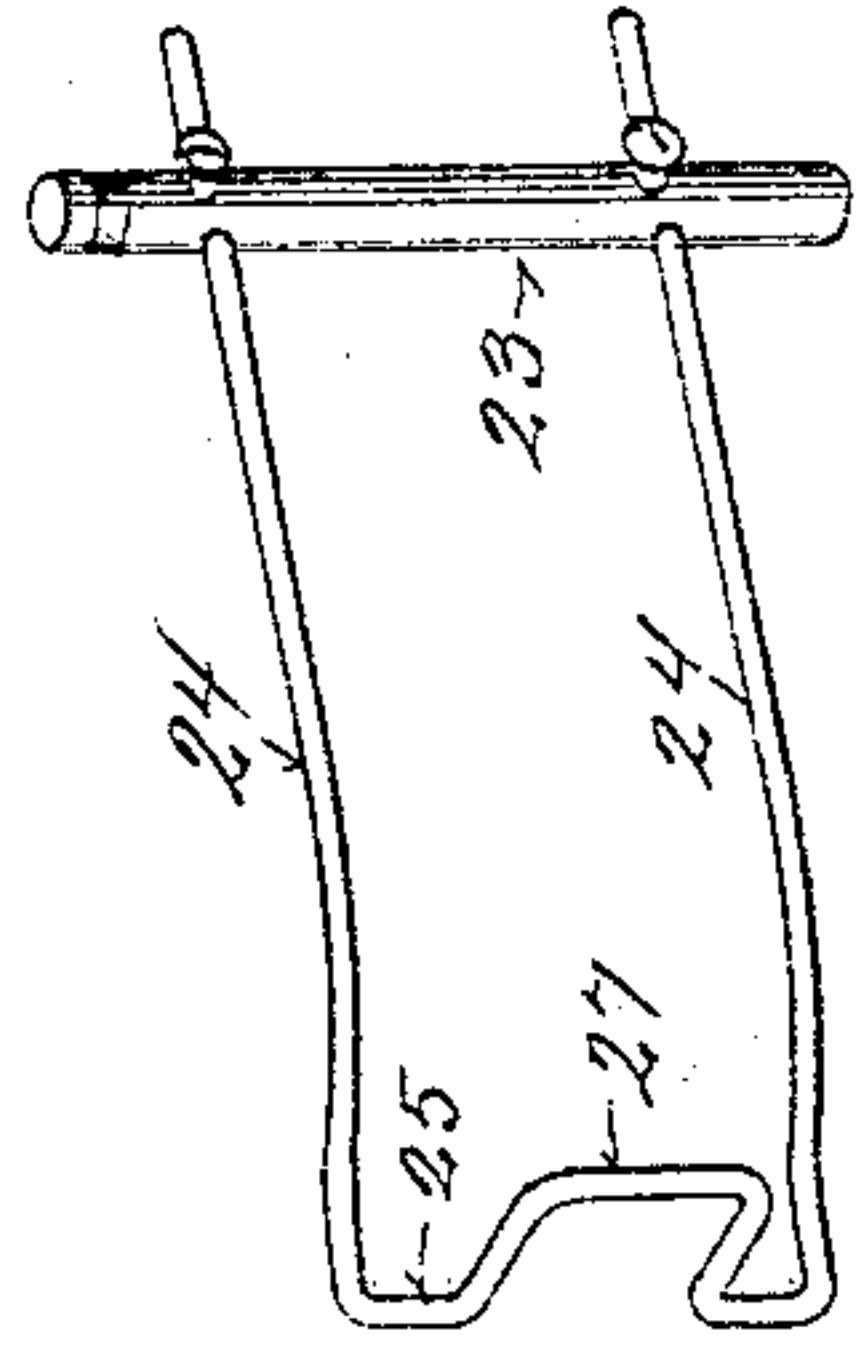
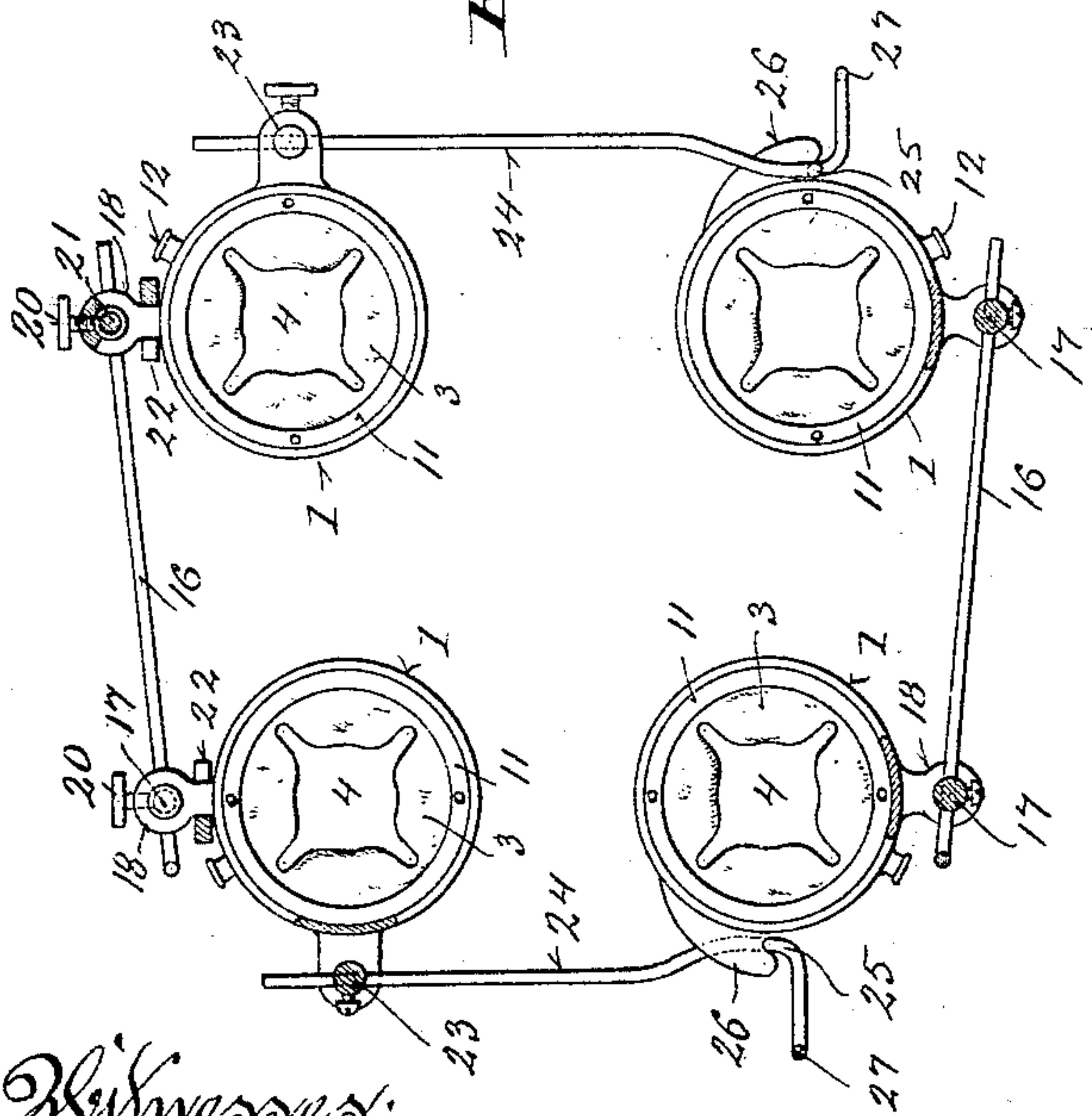
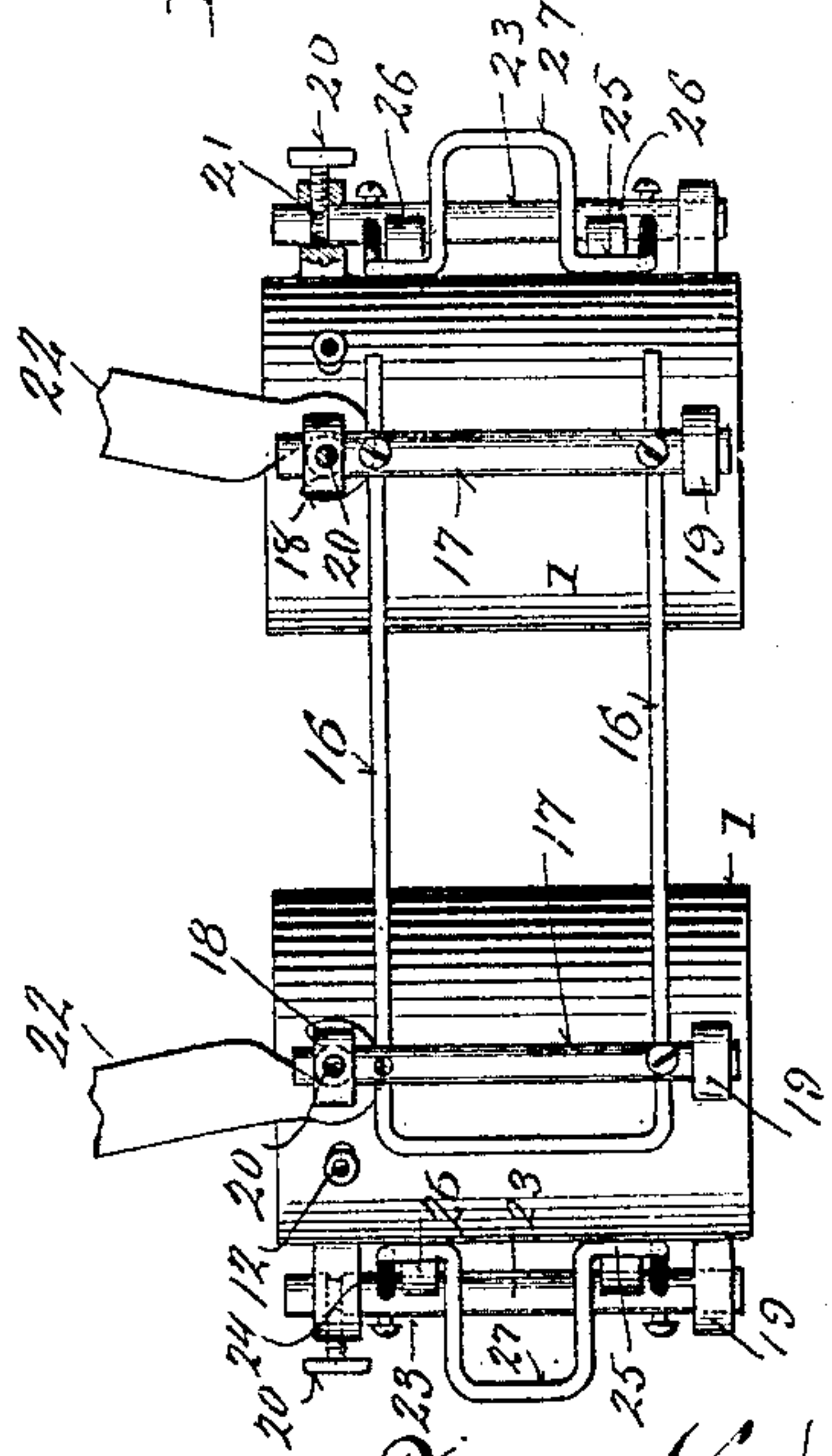


Fig. 5.



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Fig. 6.



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S PATENT OFFICE.

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COW-MILKER.

No. 904,564.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed July 27, 1908. Serial No. 445,495.

To all whom it may concern:

Be it known that I, JOSEPH RIPCZINSKE, a citizen of the United States, and resident of Wausau, in the county of Marathon and State of Wisconsin, have invented certain new and useful Improvements in Cow-Milkers; and I do hereby declare that the following is a full, clear, and exact description thereof.

The object of my invention is to provide simple, durable, and effective pneumatic apparatus for milking cows, the construction and arrangement being such that the teat is firmly compressed at its base by the first one of a series of pneumatically operated flexible membranes, these membranes holding said teat while the remainder of the series exert a similar pressure thereon consecutively from the teat base to its end, thus expelling the milk in a similar manner attained by hand, the upper or first membrane during this operation serving to check a backflow of milk into the glands.

Another object of the invention is to provide a simple means for adjusting and holding the several teat shells in position with relation to the teats, each shell serving as a casing for a series of membranes.

The invention therefore consists in certain peculiarities of construction and combination of parts as hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a plan view of a shell provided with a series of flexible membranes embodying the features of my invention and adapted to be fitted to a cow's teat, parts of the shell and first membrane being broken away and in section to better illustrate the structural details; Fig. 2, a transverse section of the same, as indicated by line 2—2 of Fig. 1; Fig. 3, a perspective view of one of the membranes detached from the shell; Fig. 4, a similar view of a membrane supporting ring; Fig. 5, a plan view of a set of shells coupled in position for use, parts being broken away and parts in section to more clearly illustrate the coupling attachments; Figs. 6, a side elevation of same with parts broken away and parts in section; Fig. 7, a detached perspective view of one of the attaching devices; and Fig. 8, a detail sectional view of the preferred form of air-passage.

Referring by numerals to the drawings, 1 indicates a shell composed of any suitable

material and having its bottom edge provided with a spanner-ring 2 in screw-thread connection with the shell, upon which ring is seated an elastic membrane 3, being the last one of a series. Each membrane consists of a flat disk-like chambered body having a central circular aperture 4 therein intersected by radially disposed slots 5, which slots extend to a point adjacent to the outer circumferential edge of the membrane. The upper and lower faces 7 of the membrane have oppositely disposed inner annular beads 8. The beads fit into annular recesses 9 of a metallic ring 10, which ring serves as a closure for the exterior edge of the membranes and also act as spacing fillers when the series are stacked one upon the other, as shown in Fig. 2. The last or upper membrane is backed by a spanner ring 11, similar to that previously mentioned, which ring is in screw-thread connection with the interior wall of the shell, whereby the series of membranes and rings 10 are firmly clamped between said ring and the bottom ring 2 of the shell, the spanner rings being capable of adjustment and can be readily removed to replace any or all membranes.

The shell is provided with an air-passage comprising a nipple 12, which registers with a corresponding aperture 13 in the wall of the first ring 10, constituting an inlet-vent whereby air is admitted to the chambered or hollow space of said membrane. A similar but smaller outlet-aperture 14 formed in the ring 10 communicates with the aperture 13 in the adjacent ring 10 and membrane, by means of a channel 15 in the shell wall. The air from this second membrane passes through its smaller outlet-aperture 14 and a channel 15^a in the shell to the next membrane and so on in a zigzag course throughout the entire series, the last ring being provided with an inlet-aperture to its corresponding membrane only. The walls of the first chambered membrane are comparatively thin, the walls of each succeeding membrane being slightly thicker so that the elasticity of the series gradually diminishes, thus when submitted to a predetermined air-pressure, the first membrane will expand to a greater degree or exert more pressure than the next and so on. In practice, however it has been found that the desired results in some instances may be obtained wherein the walls of the last three membranes are similar in thickness, these last membranes being utilized

to expel the milk from the extreme end of the teat.

The principle upon which my present invention is operated, is similar to that disclosed in Patent No. 859,254, for cow-milker, granted to me July 9, 1907, and hence the pump, air-pipe connection, and supporting-sling are not deemed necessary to the description or illustration in this application, these features being immaterial and may be varied within the skill of mechanics.

From the foregoing description it will be understood that should the shell be inserted upon a teat and air forced therein in the direction of the arrows in Fig. 2, the first membrane will expand and thereby grip the teat firmly. Owing to the difference in area of the inlet and discharge vents, the air will be slightly retarded in entering the chamber of the next membrane, its time of expansion being delayed and so on down through the entire system of membranes, each is successively and separately expanded, thus producing a step-by-step gradually diminishing pressure upon the teat until the entire milk contained therein is expelled, the first membrane in the meantime checks any tendency of the milk to backflow into the glands. Now if suction be applied to the air-passage nipple 12, the first membrane will be instantly retracted, and thereafter each successive membrane will be similarly retracted in a step-by-step movement, thus permitting the teat to expand and fill for the next operation. The peculiar formation of the circular apertures 4 of the membranes previously mentioned, prevent the same from buckling when the suction is applied, each circular section which is divided by the slots 5 being arranged to act as a diaphragm when the same are expanded.

Provision for coupling and adjusting a set of shells to the four teats of a cow is as follows: Each pair of shells are connected by U-shaped rods 16, which rods pass through apertures of spindles 17 and are adjustably held therein by suitable set-screws as shown. The spindles are revolvably mounted in ears 18, 19, extending from the body-portion of the shells, the upper ears 18 being provided with set-screws 20 which extend into annular grooves 21 of the spindles, and thus while preventing end-play of said spindles, the latter are free to swing with the rods 16 in order to compensate for any angle due to horizontal adjustment of the pairs of shells with relation to each other, said adjustment being necessary to compensate for the varying distance between the teats of cows. The shanks of the upper ears 18 are preferably rounded to receive clips 22, that are connected to a suitable sling (not shown) by which sling the pairs of shells are supported from the cow's back. One pair of the shells have spindles 23 similarly con-

nected to said shells as those spindles previously described. These spindles have ends of spring bails 24 adjustably secured thereto by set-screws, the opposite ends of the bails being formed with cross-bars 25 which snap over and lock upon recessed faces of lugs 26 that project from the opposite pair of shells. By the above described coupling mechanism, it will be seen that the pairs of shells which are suspended at either side of a cow may be adjusted to vary the width between the shells of each pair and when placed in position can be quickly joined together by the spring bails 24, these bails also permitting adjustment in order to vary the distance between the pairs of shells. The bail cross-bars are provided with raised loop-portions 27 which serve as handles to facilitate detachment of said cross-bars from the shell lugs when it is desired to separate the pairs of shells.

While I have shown and described the shell as being lined with a series of separable membranes, it is obvious that in some instances the membranous lining may be constructed from a single piece having separate chambers therein connected by suitable air-passages whereby the desired result may be obtained.

In place of conducting the air through channels in the shell, as shown in Fig. 2, I prefer to form the upper and lower walls of adjacent membranes with notches 28, which notches register with channels 29 in the walls of the rings 10, as shown in Fig. 8.

By means of this construction the shells may be made of thinner material and when the membranes are compressed by the spanner-ring there will be no liability of the channels becoming out of alinement therewith.

I claim:

1. A cow-milker comprising a shell having a membranous lining consisting of a series of separate chambers located one above the other, the walls of the chambers being of varying thickness progressively from the first chamber, and air-passages connecting the chambers.

2. A cow-milker comprising a shell having a membranous lining consisting of a series of separate chambers located one above the other, the walls of the chambers being of varying thickness progressively from the first chamber, and air-inlet and discharge passages for each chamber, the air-discharge passage of one chamber being connected to the air-inlet passage of the next chamber.

3. A cow-milker comprising a shell, a series of separable chambered membranes fitted into the shell one above the other, the membranes being varied in thickness, air-inlet and discharge passages for each shell, the discharge passages being of less area than the inlet passages, and channels connecting the discharge passages of the membranes

with the inlet-passage of the next membrane throughout the series.

4. A cow-milker comprising pairs of shells, rods adjustably connected to the shells
5 of each pair, lugs carried by one pair of shells, and spring bails adjustably secured to the other pair of shells for engagement with the lugs.

5. A membrane for pneumatic cow-milk-
10 ers comprising a flat chambered body having a central aperture formed with radially disposed slotted extensions.

6. A membrane for pneumatic cow-milk-
ers comprising upper and lower apertured
15 circular walls, vertically disposed walls con-

necting the apertured edges of said upper and lower walls, oppositely disposed circular beads extending from the inner faces of the aforesaid upper and lower walls, and a grooved metallic ring adapted to be fitted be- 20
tween the beads constituting a closure for the membrane.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee, in the county of Milwaukee and State of Wis- 25
consin in the presence of two witnesses.

JOSEPH RIPCZINSKE.

Witnesses:

GEO. W. YOUNG,

GEORGE FELBER.