

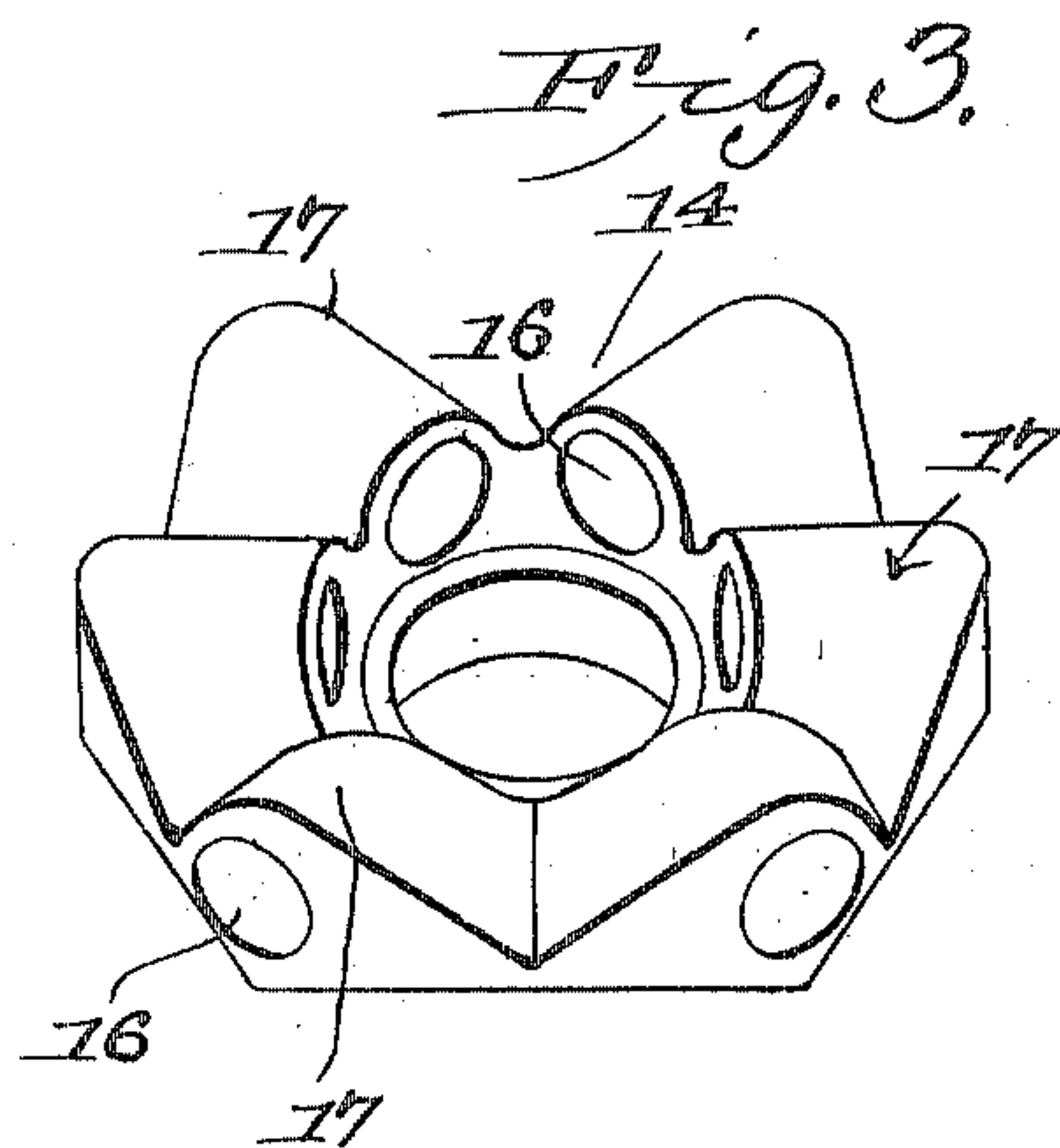
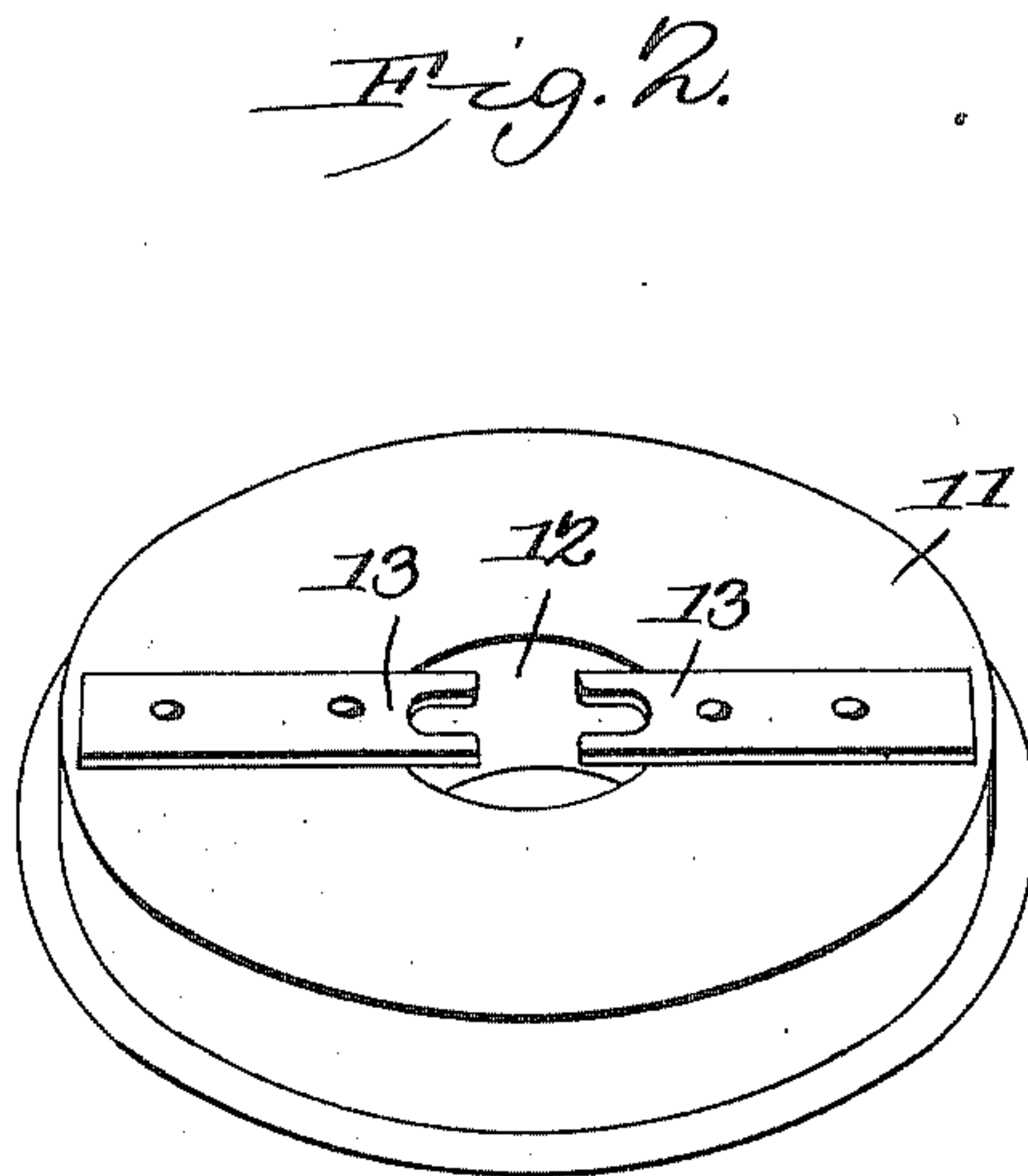
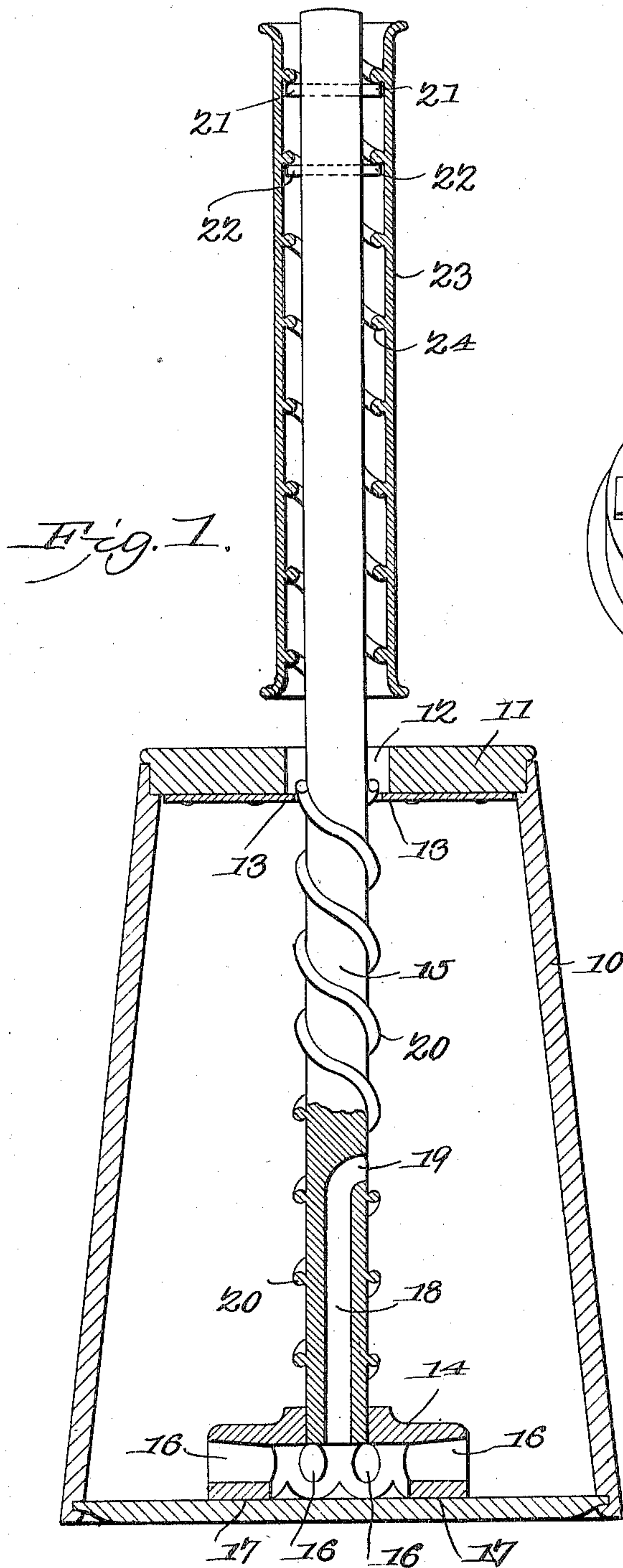
No. 817,310.

PATENTED APR. 10, 1906.

J. L. FORBES.  
CHURN.

APPLICATION FILED JULY 28, 1905.

3 SHEETS—SHEET 1.



Witnesses

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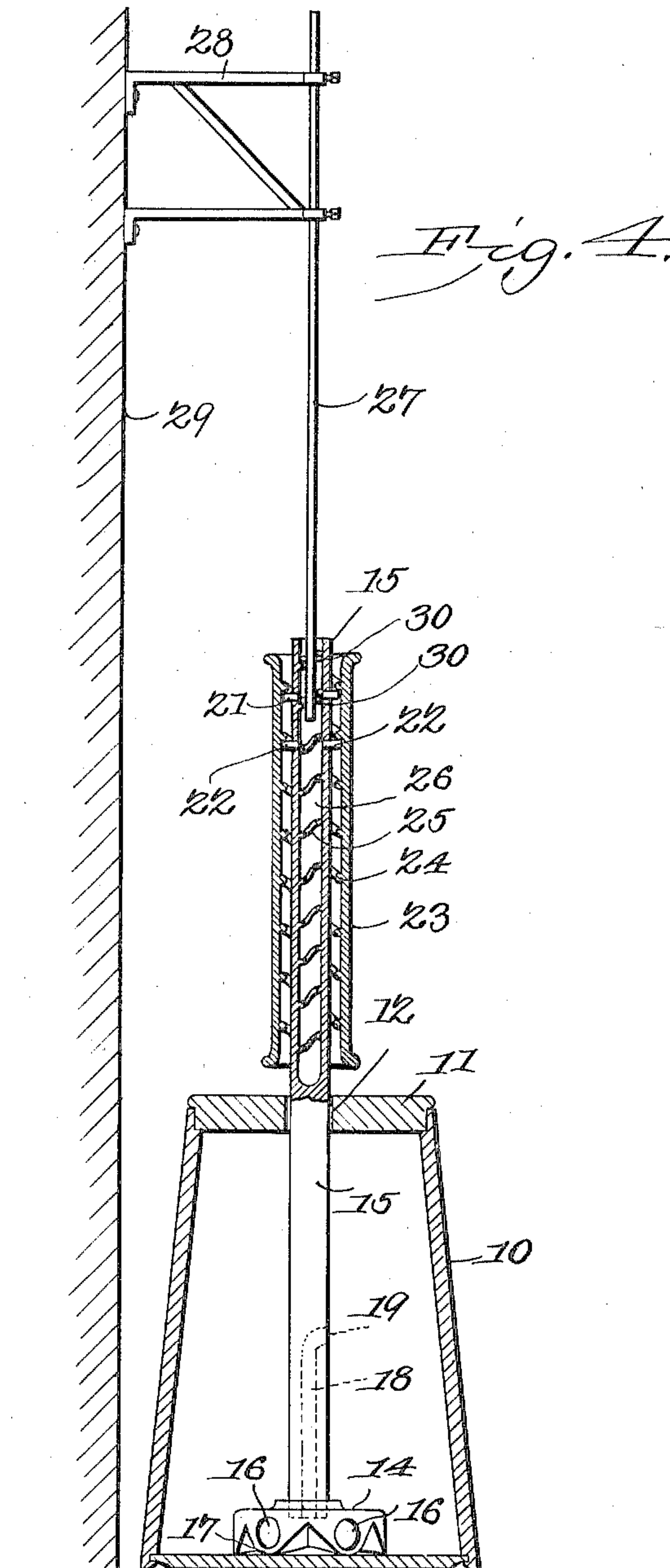
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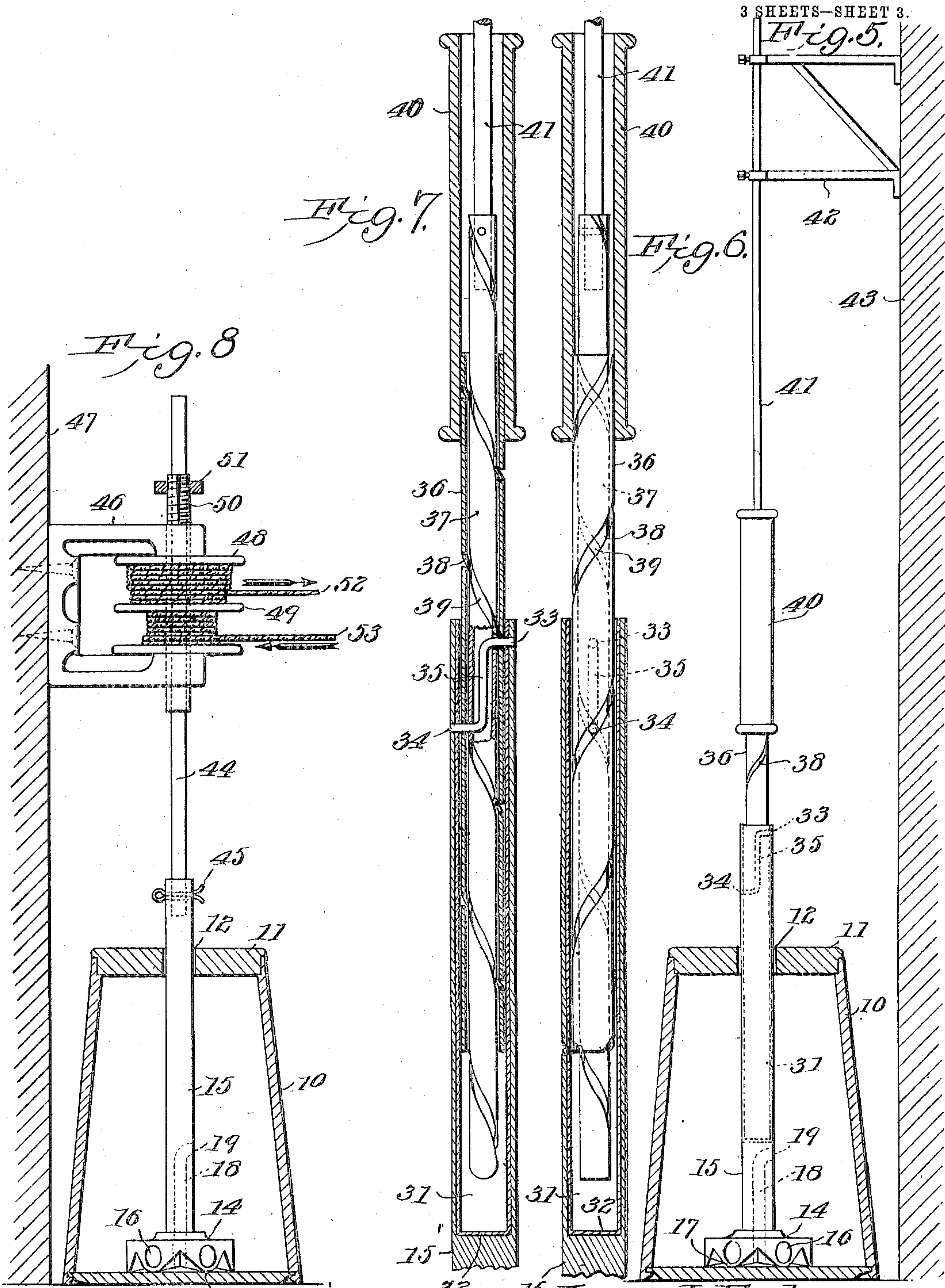
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

JAMES L. FORBES, OF PINE APPLE, ALABAMA.

## CHURN.

No. 817,310.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed July 28, 1905. Serial No. 271,877.

*To all whom it may concern:*

Be it known that I, JAMES L. FORBES, a citizen of the United States, residing at Pine Apple, in the county of Wilcox and State of Alabama, have invented a new and useful Churn, of which the following is a specification.

This invention relates to improvements in churns, and has for its object to improve the construction and increase the efficiency of devices of this character.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in certain novel features of construction, as hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which corresponding parts are denoted by like designating characters, is illustrated the preferred form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the invention is not necessarily limited thereto, as various changes in the shape, proportions, and general assemblage of the parts may be resorted to without departing from the principle of the invention or sacrificing any of its advantages.

In the drawings thus employed, Figure 1 is a sectional elevation of the improved device, illustrating one manner of arranging the same. Fig. 2 is a perspective view, inverted, of the closure of the cream-receptacle as employed in the construction shown in Fig. 1. Fig. 3 is a perspective view, inverted, of the improved dasher member. Fig. 4 is a view similar to Fig. 1, illustrating another form of the dasher-operating mechanism. Fig. 5 is a view similar to Fig. 4, illustrating another modification in the construction. Figs. 6 and 7 are enlarged sectional details of the modified construction shown in Fig. 5. Fig. 8 is a sectional view illustrating another modified construction of the device.

In operating the improved device a receptacle 10 for the milk from which the butter particles are to be separated is employed, and this receptacle may be of any suitable material and of any size or capacity, but will preferably be of the "barrel" form and provided with a detachable closure 11, the latter with a central aperture 12 for the dasher-rod and provided with oppositely-disposed inwardly-extending stop-lugs 13, as shown more clearly in Fig. 2, when one form of the operating mechanism is employed.

The dasher member (represented as a whole at 14) is in the form of a hollow drum opening downwardly and with a rod 15 extending therefrom through the aperture 12 in the closure 11. The side wall of the dasher member is pierced at intervals with lateral apertures 16, and the lower rim of the same is curved to conform to the apertures, so that the lower surface of the dasher is formed into a plurality of small curved sections beneath the lateral apertures. The dasher is of wood and with relatively thick walls to provide correspondingly-large bearing-surfaces to the curved portions, and thus increase the effectiveness of the action, as hereinafter explained. Extending upwardly into the rod 15 is a cavity 18, communicating at one end with the interior of the dasher and having a lateral branch 19 at the other end leading through the side of the rod. The dasher-rod 15 is provided with a screw-thread by means of which the latter, together with the dasher 14, connected thereto, may be rapidly rotated back and forth at the same time that it is moved vertically in the receptacle, and this screw-thread may be exteriorly of the rod, as at 20 in Fig. 1 or as at 25 within a cavity 26 in the rod, as in Fig. 4. The threads are preferably in double form or extended to insure greater longitudinal movement.

When the exterior threads 20 are employed upon the rod 15, as in Fig. 1, they will be engaged by the stops 13, so that when the rod is moved longitudinally of the cream-receptacle it will be rotated by the action of the stationary stops upon its screw-threads, as will be obvious.

Transverse spaced stop-pins 21 22 are disposed in the free end of the rod 15, and slidably disposed upon the rod is a sleeve 23, the latter having an internal screw-thread 24, engaging the stop-pins. By this arrangement it is obvious that when the sleeve 23 is moved in one direction the rod 15 and its attached dasher will be rapidly rotated and moved longitudinally of the receptacle 10 in one direction, and then when the sleeve is moved in the opposite direction the rotative and longitudinal movements will be reversed. Thus alternate reciprocal and rotary motion will be imparted to the dasher member and a most thorough and effective action produced upon the milk.

When the dasher is moved upwardly and downwardly and rotated in opposite direc-



tions, the milk is drawn into the relatively large open interior of the dasher member and forced laterally through the apertures 16. The dasher being thus operated and the combined area of the apertures 16 being greater than the central area of the same, the milk will be thrown outwardly faster than it enters, thereby creating a partial vacuum or producing a certain degree of "suction" through the apertures 18 and 19, thus constantly forcing air into the milk. As butter cannot be churned from milk without introducing air, the importance of this aerating feature of the invention is apparent, and the simplicity and thoroughness with which this is accomplished in the present invention is a very important and valuable feature of the same.

In the form of the construction shown in Fig. 4, with the threads interiorly of the rod 15, a stationary rod 27 is supported, as by a bracket 28, from a stationary structure, such as a wall 29, and provided with lateral pins 30 in its lower end for engaging the thread 25 in the same manner and for the same purpose as the stops 13 on the cover 11 in the construction shown in Figs. 1 and 2, as will be obvious. When the construction shown in Fig. 4 is employed, the sleeve 23 and rod 27 may be removed, leaving the dasher-rod and dasher member to be operated manually, if required, which may be convenient under some circumstances.

The threads 20 or 25 may be attached to the rod 15 in any required manner or formed integral therewith, as preferred.

The dasher may be employed to "take up" the butter after the churning action is completed, as will be obvious.

The parts are easily separable for thorough cleansing and may be inexpensively manufactured and of any required material or of any size, so that the improved devices may be employed upon churns of any capacity.

In the modifications shown in Figs. 5, 6, and 7 the dasher-rod 15 is formed hollow from a point above the cavity 18 and a sheet-metal lining or shell inserted therein, as represented at 31, the shell being closed at the lower end, as at 32, so that any lubricating material which may be inserted into the shell will not pass into the churn-body. Disposed transversely of the shell 31 near the top are pins 33 34, spaced apart vertically and connected by a vertical portion 35, the two pins serving the same purpose as the spaced pins 21 22 in the structures shown, respectively, in Figs. 1 and 4. Disposed within the shell 31 are two tubular members 36 37, one within the other and provided with reversely-disposed spiral grooves 38 39, the pins 33 34 extending through both the spiral grooves, as shown. Attached rigidly to the outer tubular member 36 is a hand-grip member 40, and connected into the upper end of the tubular member 37 is a rod 41, the latter ex-

tended upwardly and connected, as by brackets 42, to a stationary support, such as a wall at 43, the rod 41 and brackets 42 being similar to and performing the same functions as the rod 27 and brackets 28 in the modified structure shown in Fig. 4. The operation of the modified structure shown in Figs. 5, 6, and 7 is substantially the same as that shown in Fig. 4, as will be obvious.

In Fig. 8 another modified construction is shown consisting of a rod 44, coupled, as at 45, to the dasher-rod 15 and extending upwardly through a bracket 46, the latter secured to a stationary support, such as a wall 47. Mounted for rotation in the bracket 46 is a cable-drum 48, divided by a central flange 49 into two parts and with the rod 44 passing centrally through the drum. Extending above the drum 48 and also above the upper member of the bracket 46 is a split sleeve 50, tapered externally and also threaded externally and provided with a nut 51. By this simple means the dasher-rod may be clamped to the drum at any desired point by simply setting the nut 51 upon the sleeve 50. Cords 52 53 are connected reversely to the two parts of the drum 48, so that by alternately drawing upon the same the dasher-shaft may be rotated alternately from left to right and from right to left, the extent of the movement being controlled by the lengths of the cords and the sizes of the drums.

Having thus described the invention, what is claimed is—

1. A churn-dasher having a hollow interior opening downwardly and with spaced apertures leading laterally through the side walls, the combined area of the apertures being greater than the internal area of the dasher member, a hollow rod extending from said dasher member and communicating with said hollow interior, and means for simultaneously rotating said dasher member and moving the same longitudinally of the body of the milk, whereby a partial vacuum is produced within the hollow dasher and a quantity of air forced through the milk at each stroke of the dasher.

2. In a churn, a downwardly-opening hollow dasher having spaced apertures through its side walls, a dasher-rod connected to said dasher and provided with a longitudinal recess communicating with the same and terminating in a lateral branch leading therefrom, and means for simultaneously reciprocating and reversely rotating said dasher and its connected dasher-rod.

3. In a churn, a hollow churn-dasher opening downwardly and having spaced lateral apertures through its side walls, a hollow stem connected to said dasher and communicating with the interior of the same and provided with an internally-threaded longitudinal cavity and spaced lateral pins, a sleeve slidably engaging said dasher-rod and



provided with an internal screw-thread for engaging said transverse stop-pins, and a rod having means for supporting in stationary position and provided with lateral pins for engaging the internal thread of said dasher-rod.

4. In a churn, a hollow dasher opening downwardly and having spaced lateral apertures through its side walls, a hollow stem connected to said dasher and communicating with the interior of the same and provided

with a threaded portion, a threaded sleeve slidably engaging said rod, and laterally-extending stop-pins for engagement by said threaded members.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES L. FORBES.

Witnesses:

J. N. STANFORD,  
J. J. COOK.