

No. 610,650.

Patented Sept. 13, 1898.

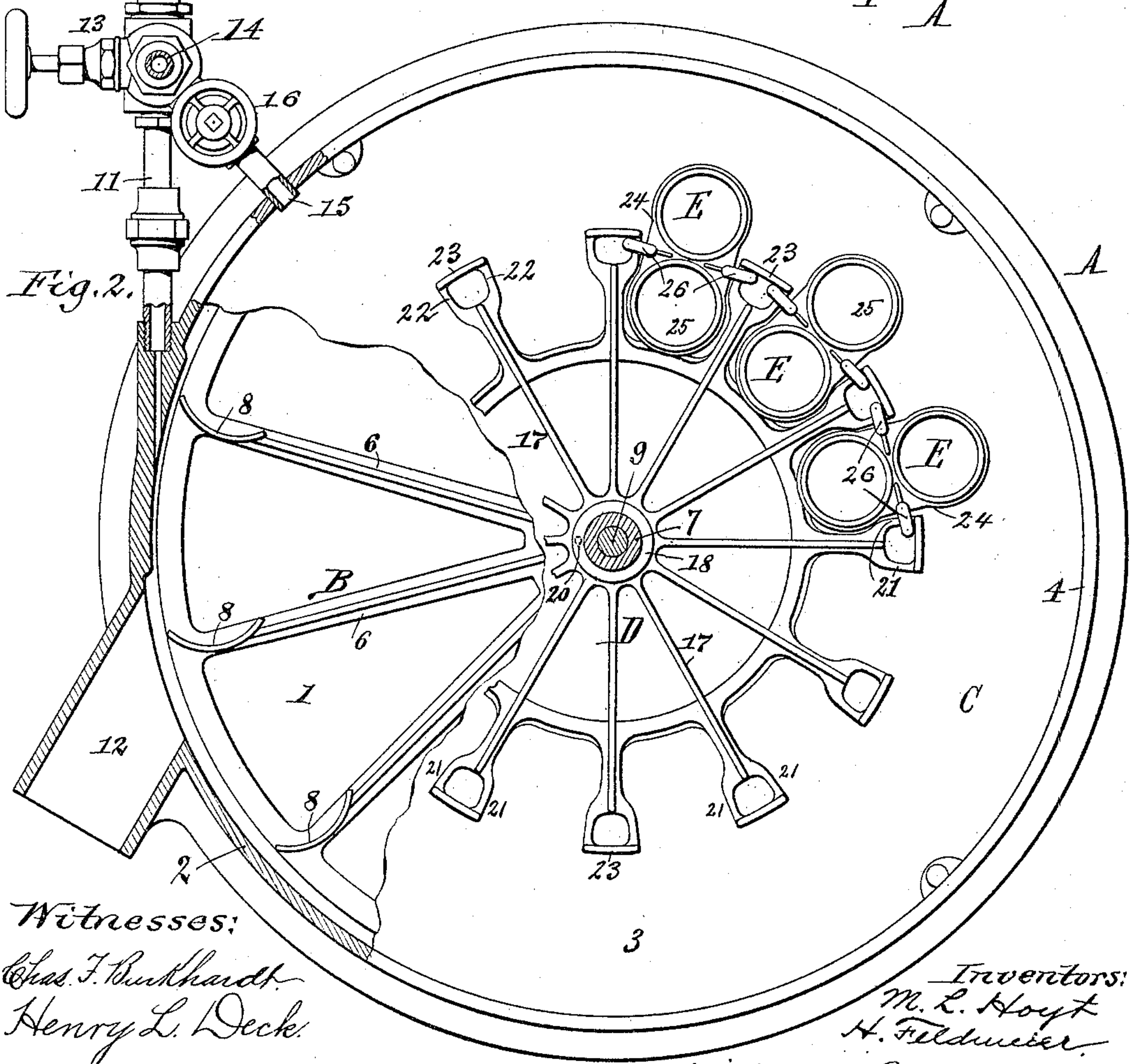
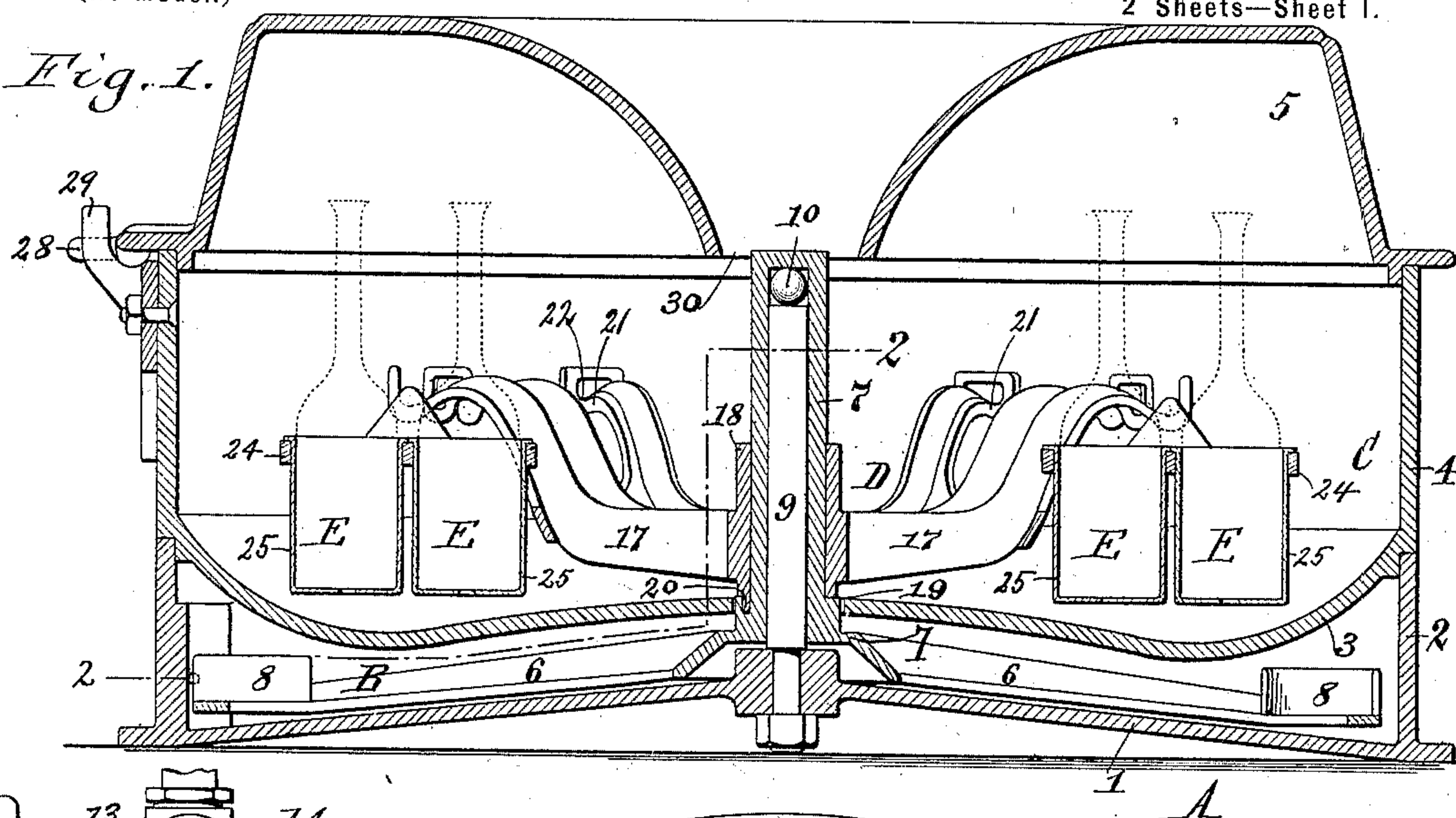
M. L. HOYT & H. FELDMEIER.
CENTRIFUGAL MILK TESTER.

(Application filed May 6, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



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2 Sheets—Sheet 2.

(No Model.) *Fig. 6.*

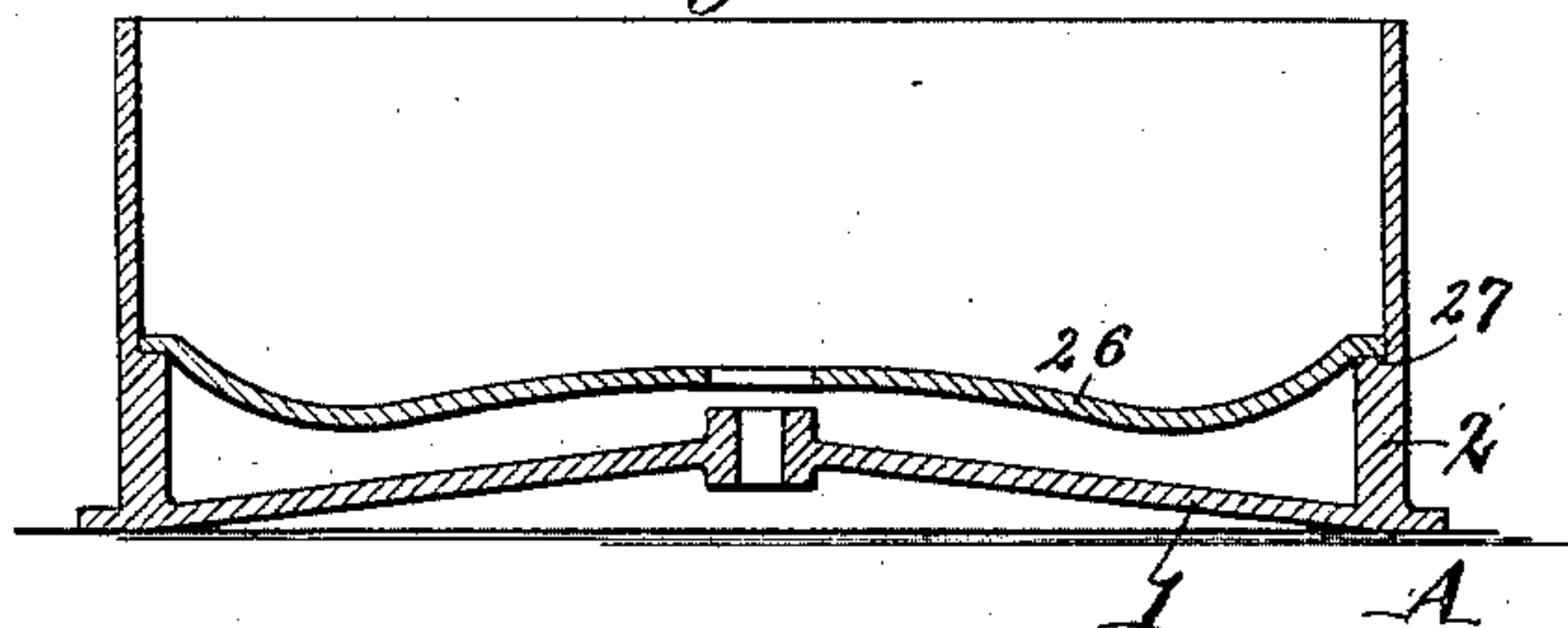


Fig. 4.

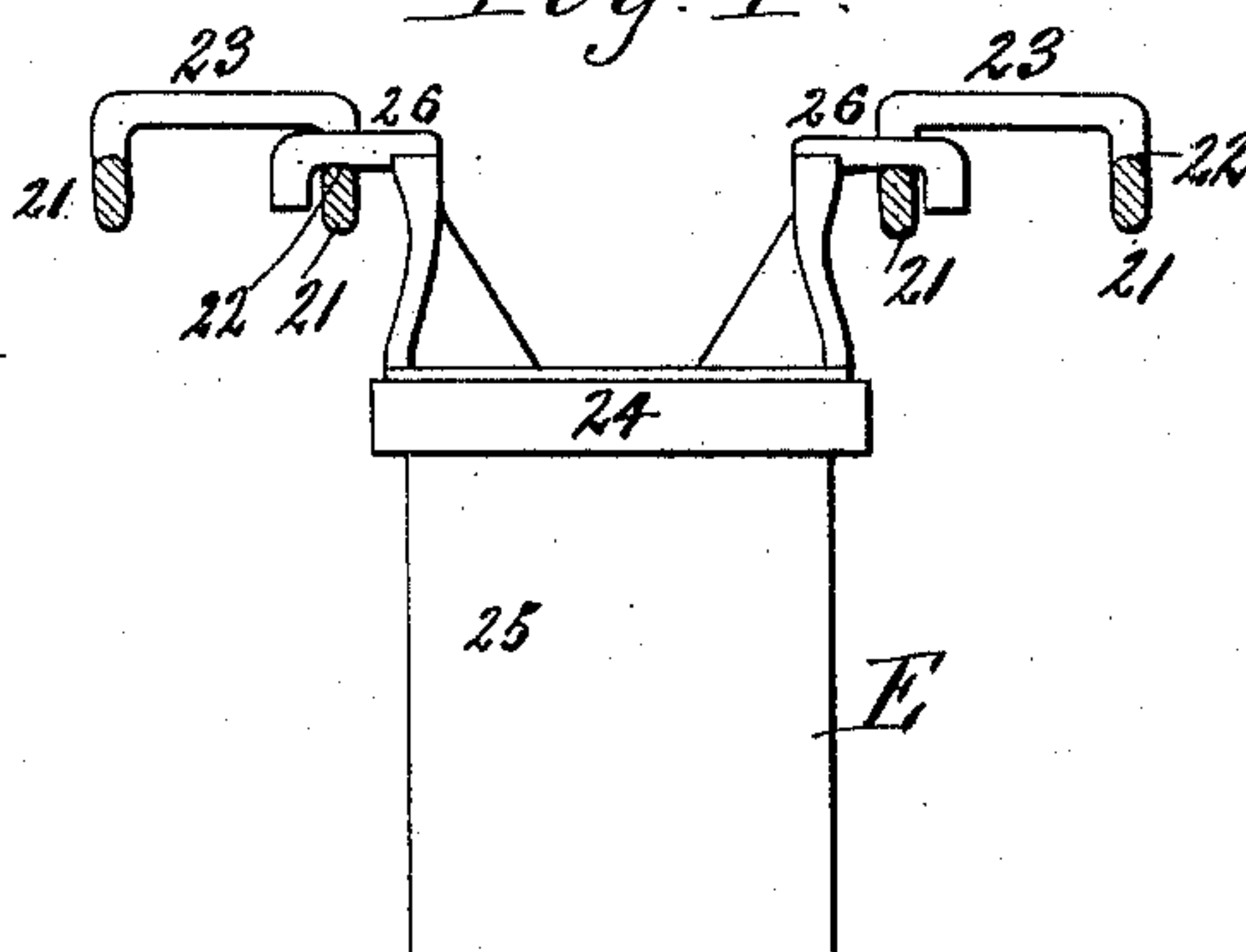


Fig. 3.

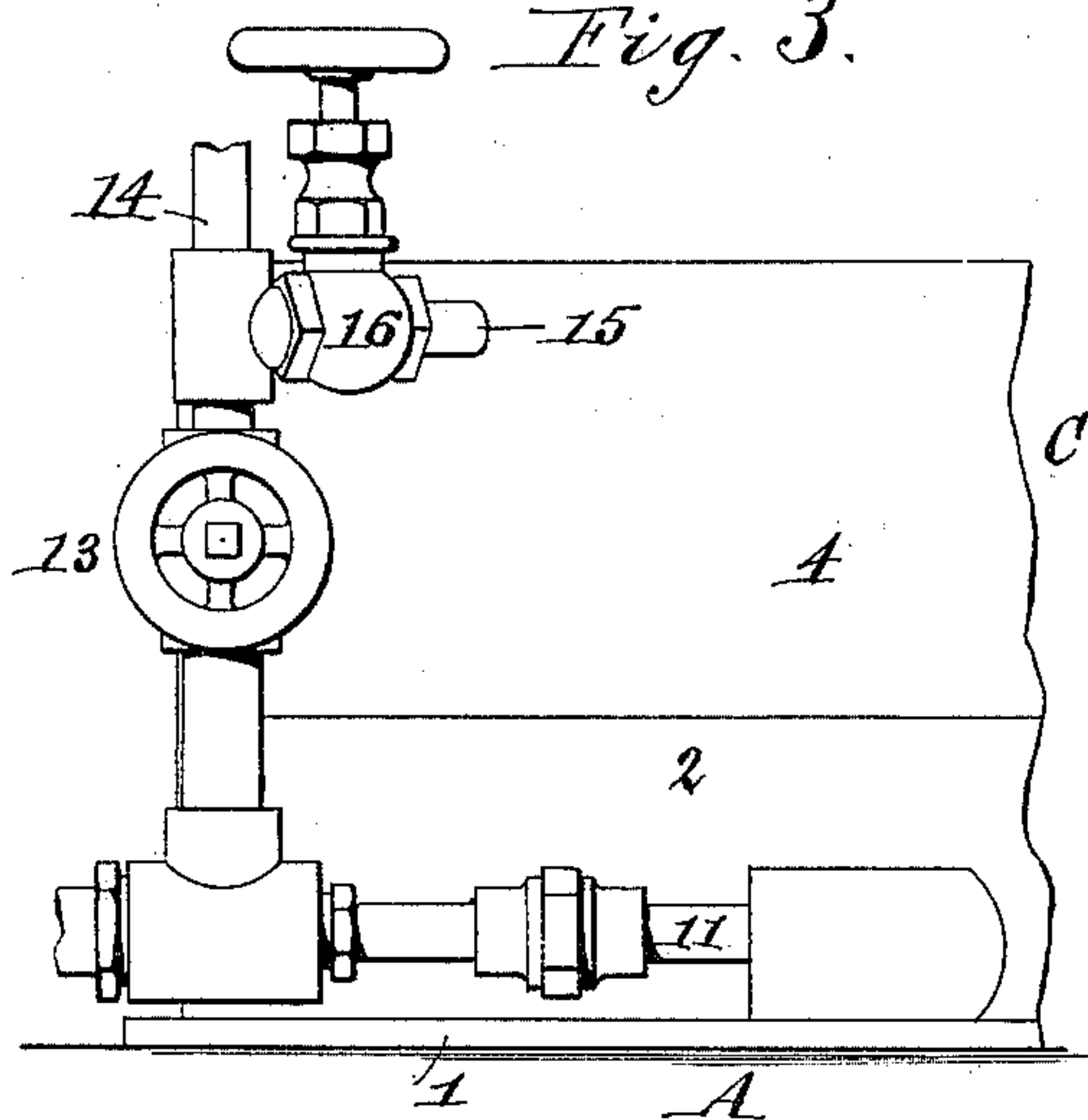


Fig. 5.

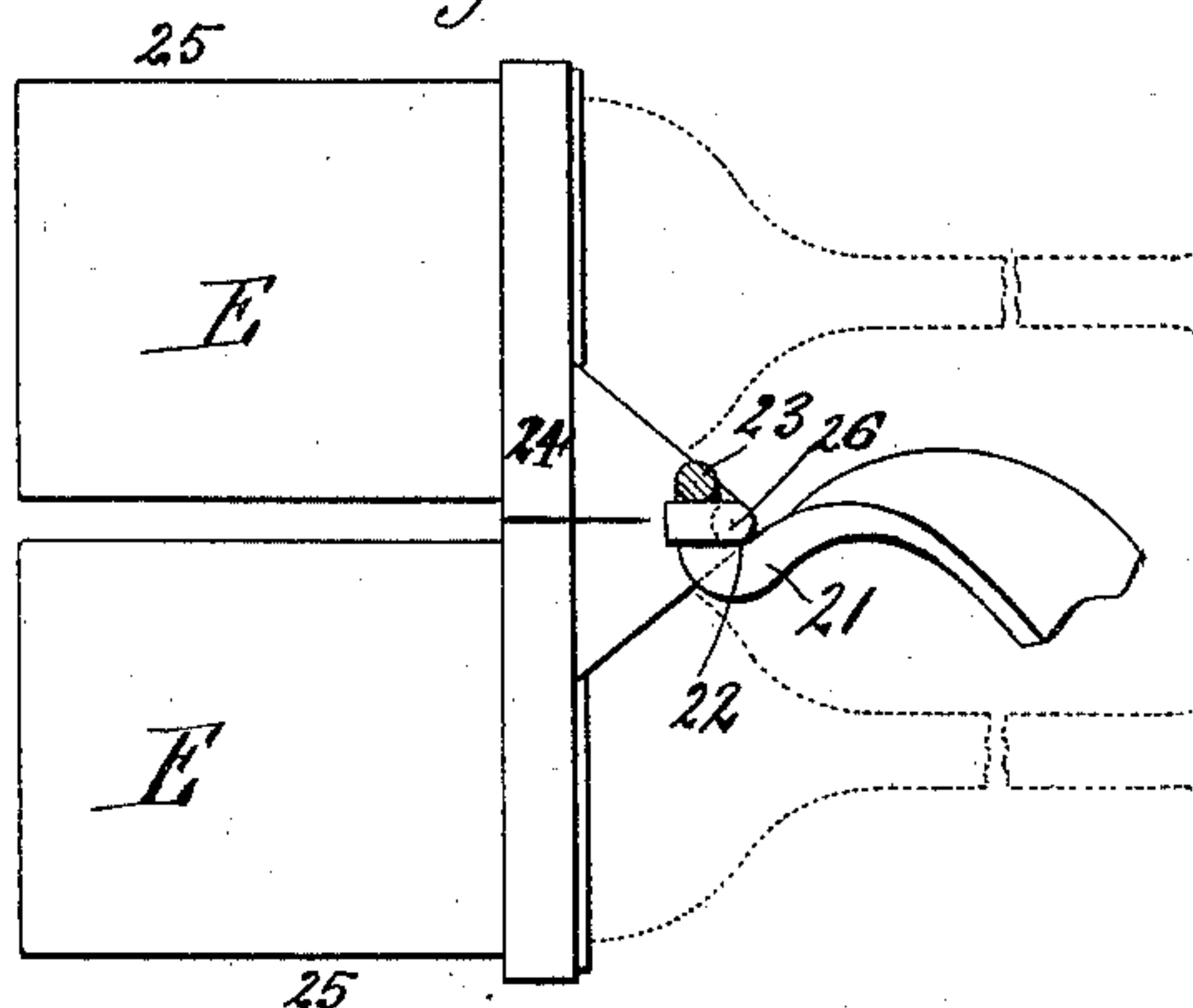
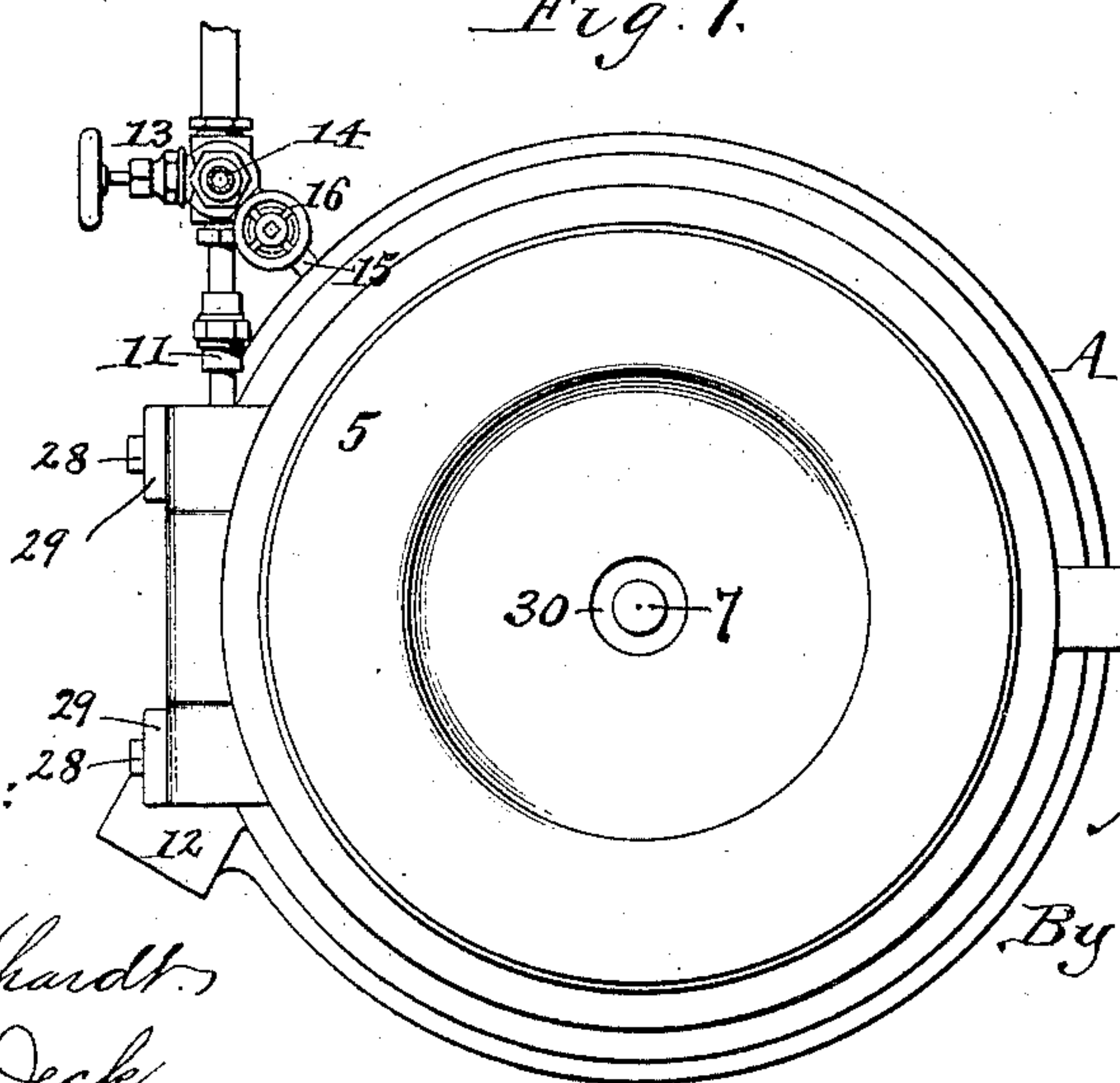


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL MILK-TESTER.

SPECIFICATION forming part of Letters Patent No. 610,650, dated September 13, 1898.

Application filed May 6, 1897. Serial No. 635,300. (No model.)

To all whom it may concern:

Be it known that we, MATTHEW L. HOYT, residing at Birchton, in the county of Saratoga, and HARVEY FELDMEIER, residing at Little Falls, in the county of Herkimer, State of New York, citizens of the United States, have invented a new and useful Improvement in Centrifugal Milk-Testers, of which the following is a specification.

This invention relates to that class of milk-testing machines which are employed for exposing the liquid to be tested to centrifugal action for quickly separating the butter-fat and which contain a carrier adapted to rotate about a vertical axis and provided with detachable holders in which the test-bottles are placed, the carrier being actuated by a steam-jet acting upon flights or buckets connected with the carrier.

The objects of our invention are to improve the connection of the steam-motor with the bottle-carrier, so that the latter can be readily connected with the motor or detached therefrom; to provide for heating the chamber in which the bottle-carrier rotates by a steam-supply which is independent of that which actuates the motor, and to improve the construction of the bottle-carrier and bottle-holders.

In the accompanying drawings, consisting of two sheets, Figure 1 is a vertical sectional elevation of our improved centrifugal testing-machine. Fig. 2 is partly a top plan view of the upper chamber with the cover removed and partly a horizontal section of the lower chamber in line 2 2, Fig. 1. Fig. 3 is a fragmentary side elevation showing the steam connections. Fig. 4 is a front elevation of one of the bottle-holders, showing the same in the position which it assumes when at rest. Fig. 5 is a side elevation of the same in the position which it occupies when the machine is running. Fig. 6 is a vertical section showing a modified construction of the case on a reduced scale. Fig. 7 is a top plan view on a reduced scale.

Like letters and numerals of reference refer to like parts in the several figures.

A represents the base portion of the inclosing case of the machine, consisting of a bot-

tom plate 1 and an upright cylindrical wall 2. B is the steam motor or wheel, arranged in this base portion.

C represents the upper chamber, consisting of a bottom 3, a cylindrical upright wall 4, and a cover 5. The wall 4 of the upper chamber rests upon the cylindrical wall 2 of the base, and the bottom of the upper chamber forms a cover for the lower chamber formed in the base.

D represents the bottle-carrier, which is arranged in the upper chamber, and E represents the bottle-holders, which are supported in said carrier.

The steam motor or wheel B is provided with arms 6, connected to a hub 7 and carrying at their outer ends buckets or flights 8. The hub 7 turns about a vertical arbor 9, which is secured to the bottom plate 1 of the lower chamber and projects into the upper chamber. The hub 7 is closed at its top and rests upon the upper end of the arbor 9, preferably by an interposed ball 10, so that the hub also extends from the lower chamber into the upper chamber. The lower chamber is provided with a tangential steam-inlet pipe 11, by which the steam-jet is delivered against the buckets of the steam-wheel, and with an exhaust-pipe 12. The steam-inlet pipe 11 is provided with a stop-cock 13 and receives the steam from a main supply-pipe 14.

15 is a branch pipe which connects the main steam-supply pipe 14 with the upper chamber and which is provided with a stop-cock 16, whereby the admission of steam to the upper chamber is regulated. This separate steam-supply to the upper chamber, in which the test-bottles are rotated, enables the temperature of that chamber to be nicely regulated, as may be best suited for making the desired separation, and it also enables the temperature to be maintained after the steam-motor has been stopped, so that the fat can be kept melted and the results can be read off at the convenience of the operator.

The bottle-carrier D is provided with arms 17, which radiate from a hub 18 and are preferably connected by webs about midway between said hub and their outer ends. The hub 18 surrounds the hub of the steam-wheel

and rests upon a shoulder 19 on the hub of the latter and is coupled therewith by a pin or projection 20, formed on one of these parts and entering a corresponding depression in the other part, or by some other device which permits the ready removal of the bottle-carrier. This construction of the parts permits the bottle-carrier to be removed without disturbing the steam-wheel, and it mounts the steam-wheel and the bottle-carrier on the same support or arbor. Each arm 17 of the bottle-carrier extends outwardly and upwardly from the hub 18 and has its outer end bifurcated or formed by two side bars 21, having on their upper sides depressed seats 22 and having their upturned front ends connected by a raised cross-bar 23, which bridges the opening between the side bars.

Each bottle-holder E is composed of a top frame 24, having two circular portions in which are secured the upper ends of two cups 25, of tin or other suitable material and of the proper size to hold the body of a test-bottle, the latter being indicated by dotted lines. The frame 24 of the holder is provided with laterally-projecting hook-shaped trunnions 26, arranged above the upper ends of the cups and at right angles to a line drawn through the axes of the cups. These trunnions are adapted to be placed into the depressed seats on the adjacent side bars of two adjoining arms of the carrier, the holder hanging by the trunnions between the arms. In this position of the parts, which they assume when at rest, the downwardly-turned ends of the trunnions project downwardly in the opening between the bars of the arms, as represented in Fig. 4. When the machine is in operation, the bottle-holder is swung outward by centrifugal force and assumes a horizontal position, as shown in Fig. 5, and in this position the ends of the trunnions project outwardly underneath the raised cross-bars 23 of the arms, whereby the trunnions are locked in their seats while the carrier rotates; but they are free to be removed when the carrier is at rest. The top frame and trunnions of the bottle-holder are cast in one piece, of brass or other suitable material.

The upturned outer portions of the arms 17 locate the seats for the pivots or trunnions of the bottle-holders at such a height above the plane of the lower portions of the arms that the bottle-holders can be arranged comparatively near the axis of rotation, while at the same time leaving ample room for the necks of the inner test-bottles to dip below

the plane of the trunnion-seats as the bottle-carriers swing out into a horizontal position. This produces a bottle-carrier which is compact or of comparatively small diameter and which is light-running and permits of the arrangement of a greater number of bottle-holders in a carrier of a given diameter.

Instead of forming the upper chamber separately from the lower chamber, as shown in Fig. 1, the circular wall of the upper chamber may be formed in one piece with that of the lower chamber and the bottom 26 of the upper chamber separately from the circular wall and resting upon a shoulder 27 on the inner side of the latter, as shown in Fig. 6.

The cover 5 is connected with the upper chamber in any suitable manner—for instance, by lugs 28, formed on the cover and entering loops 29 on the upper chamber, as shown in Figs. 1 and 7. The cover is preferably curved downwardly toward the center and provided with a central opening 30.

We claim as our invention—

1. In a centrifugal testing-machine, the combination with a lower chamber and a steam-motor arranged therein, of an upper chamber, a bottle-carrier arranged therein and connected with said steam-motor, and a steam-supply connected with said upper chamber independently of said steam-motor, substantially as set forth.

2. The combination with an inclosing casing composed of a lower and an upper chamber, of a steam-motor arranged in the lower chamber and provided with a hub which projects into the upper chamber, a suitable support for said steam-motor and a bottle-carrier arranged in said upper chamber and having a hub which surrounds the hub of said steam-motor and is rotated by the same, substantially as set forth.

3. The combination with a rotary bottle-carrier having its arms provided with side bars connected by a raised cross-bar, of a bottle-holder having laterally-projecting trunnions which are supported on said side bars in rear of said cross-bar and which have downwardly-turned ends which engage under said cross-bar when the bottle-holder is swung out, substantially as set forth.

Witness our hands this 3d day of May, 1897.

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Witnesses:

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