

No. 742,801.

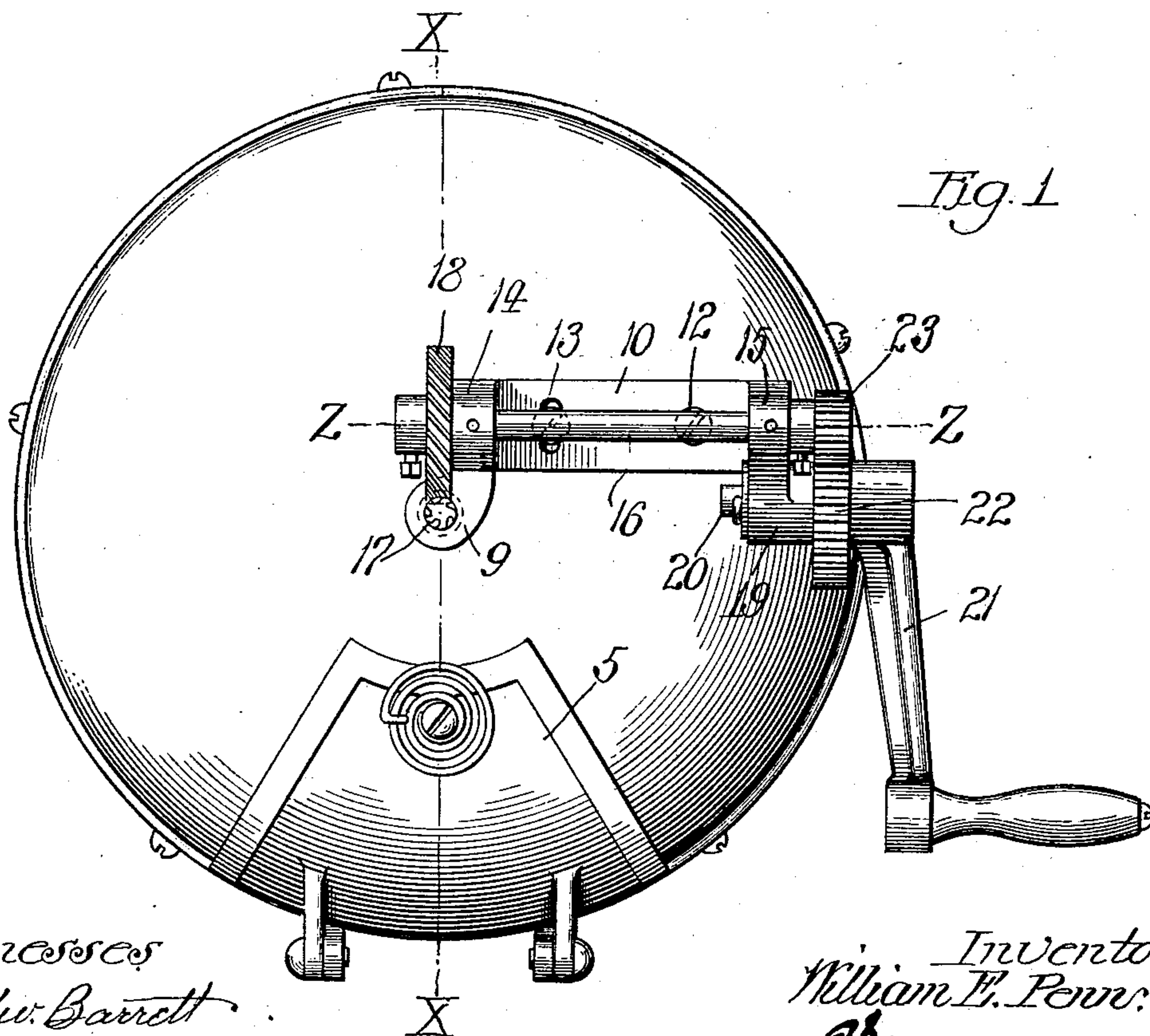
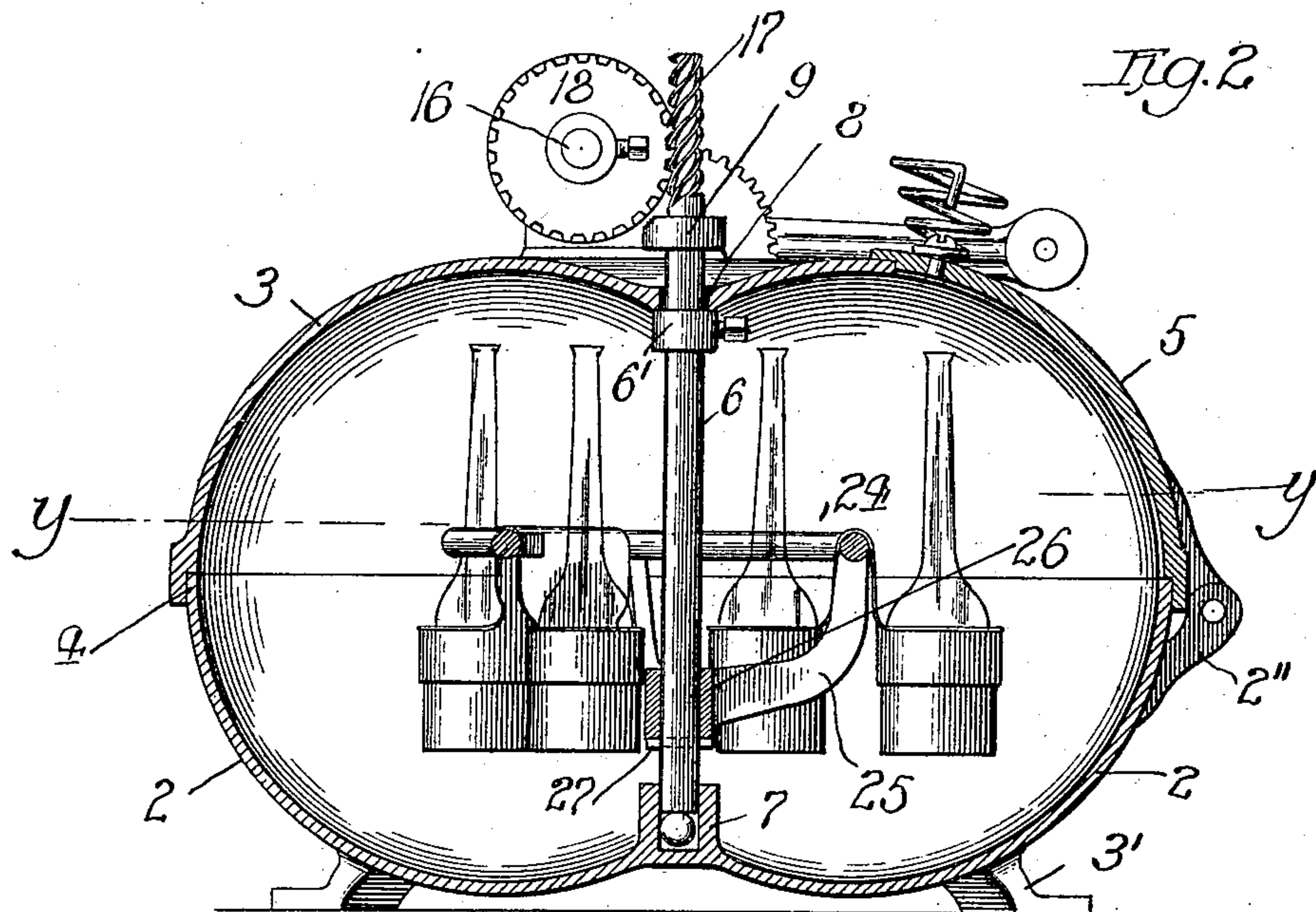
PATENTED OCT. 27, 1903.

W. E. PENN.
CENTRIFUGAL MILK TESTER.

APPLICATION FILED JULY 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3

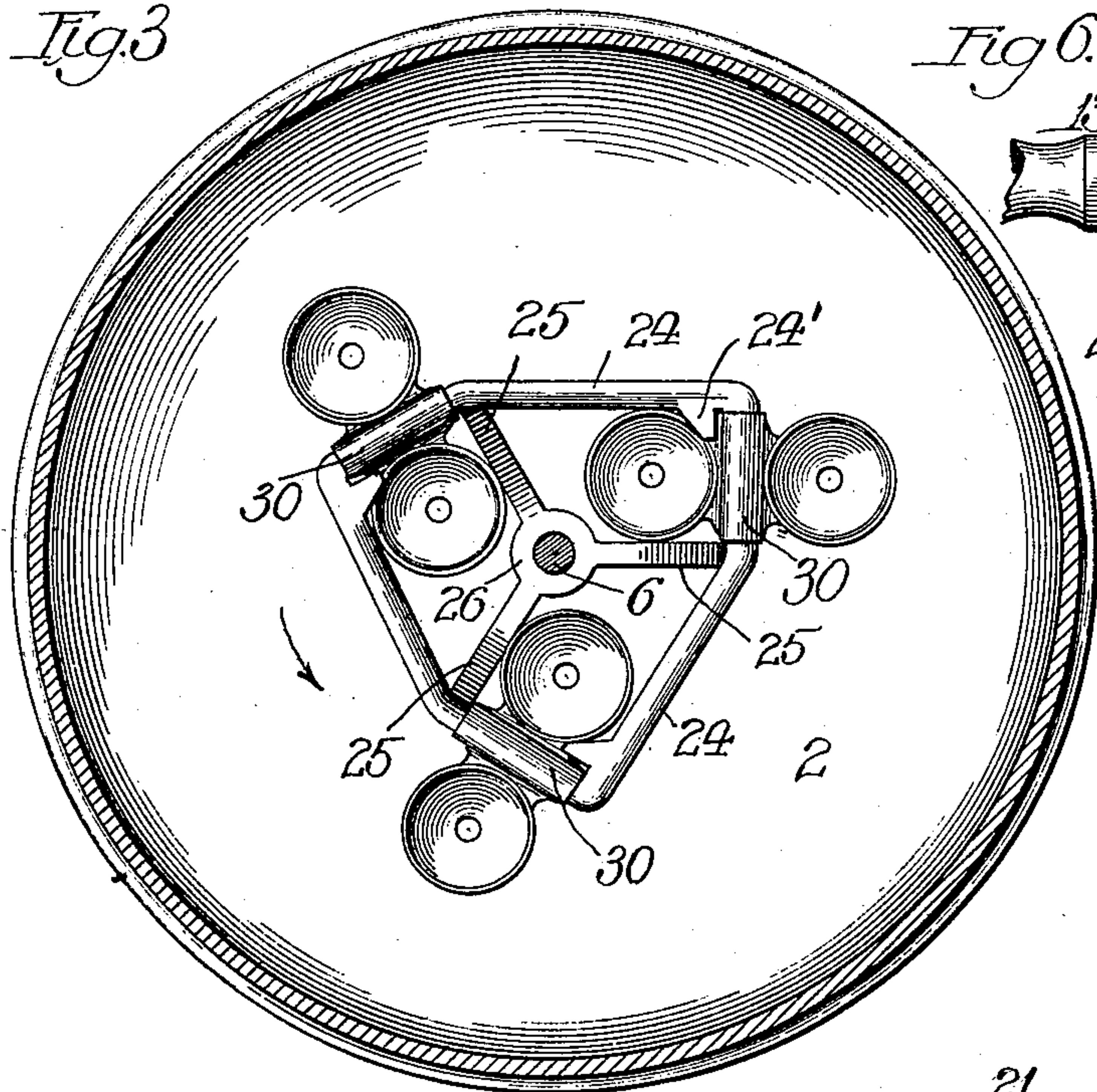


Fig. 6

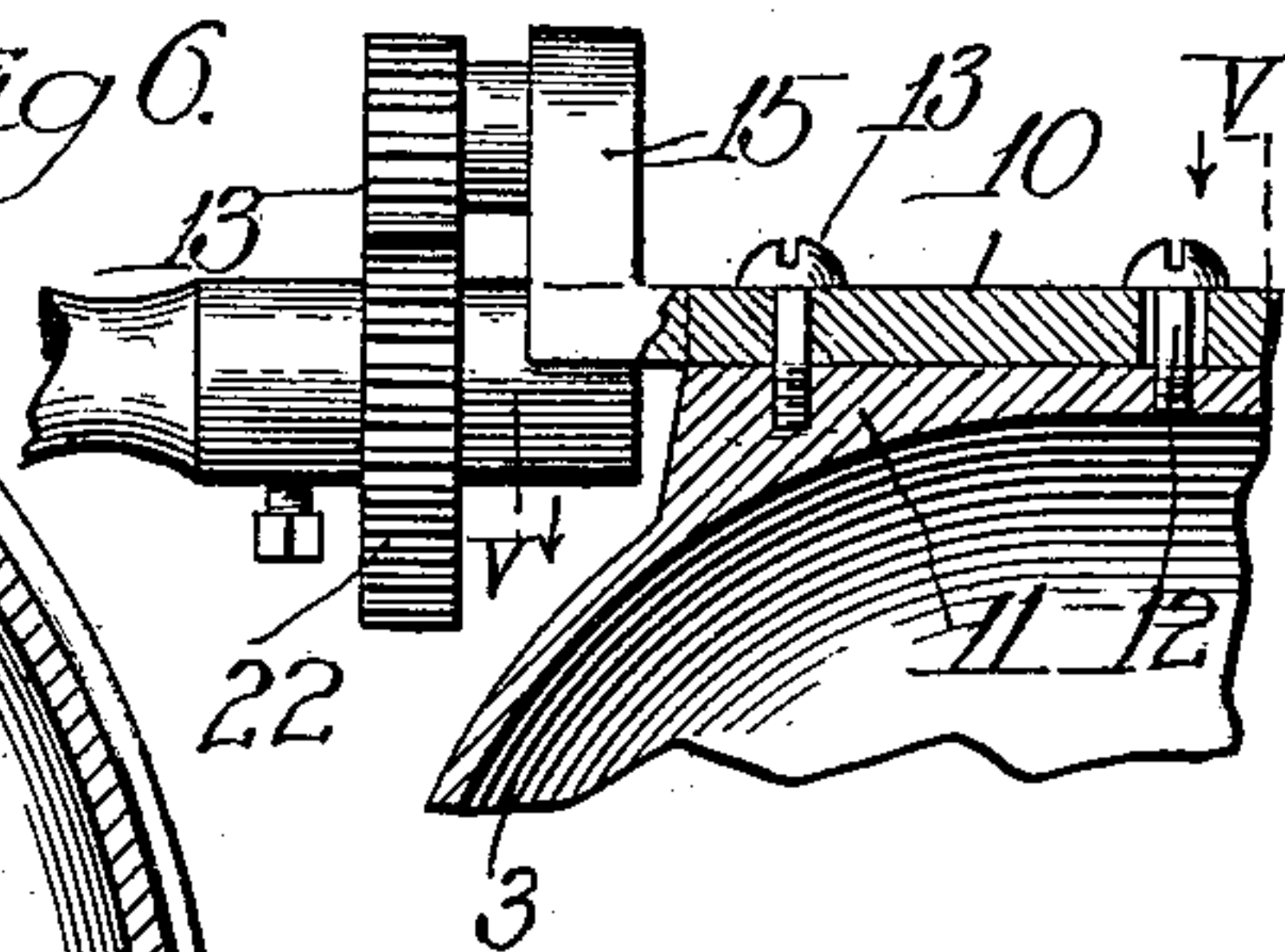


Fig. 7

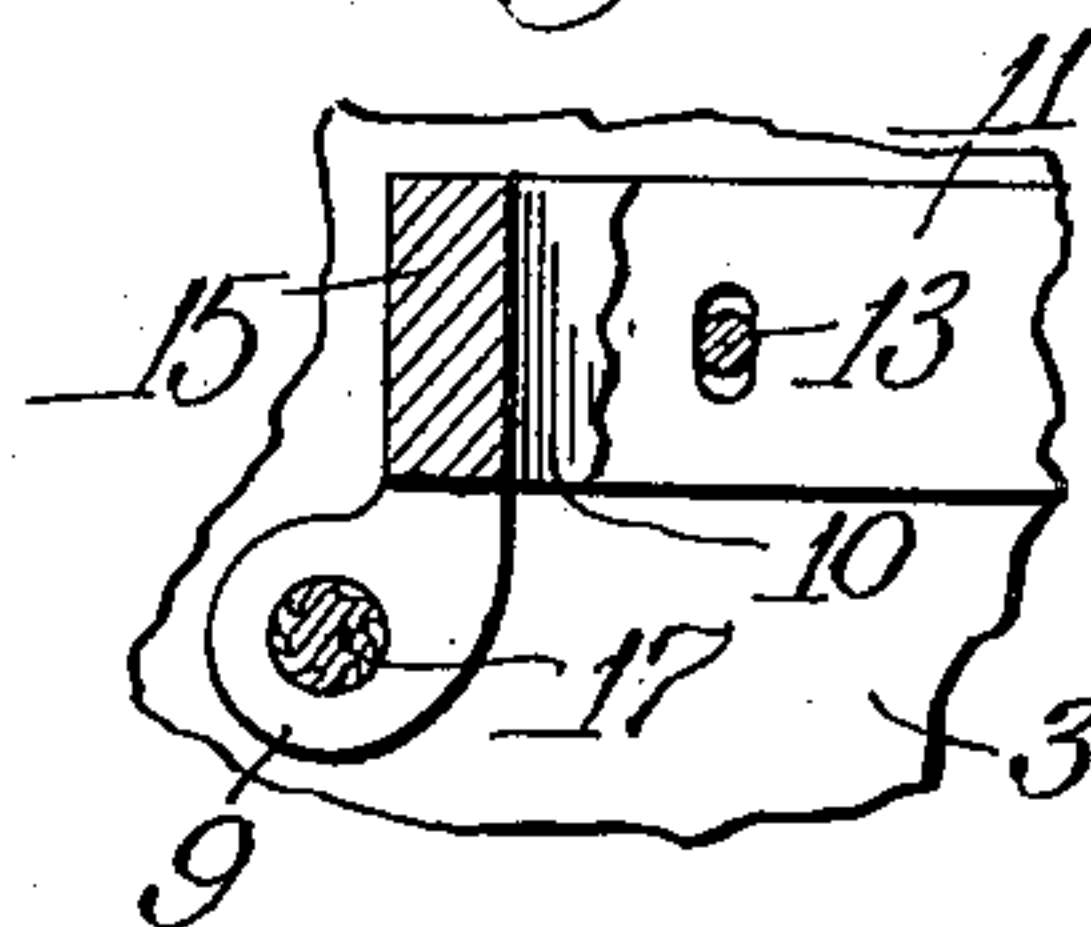


Fig. 5

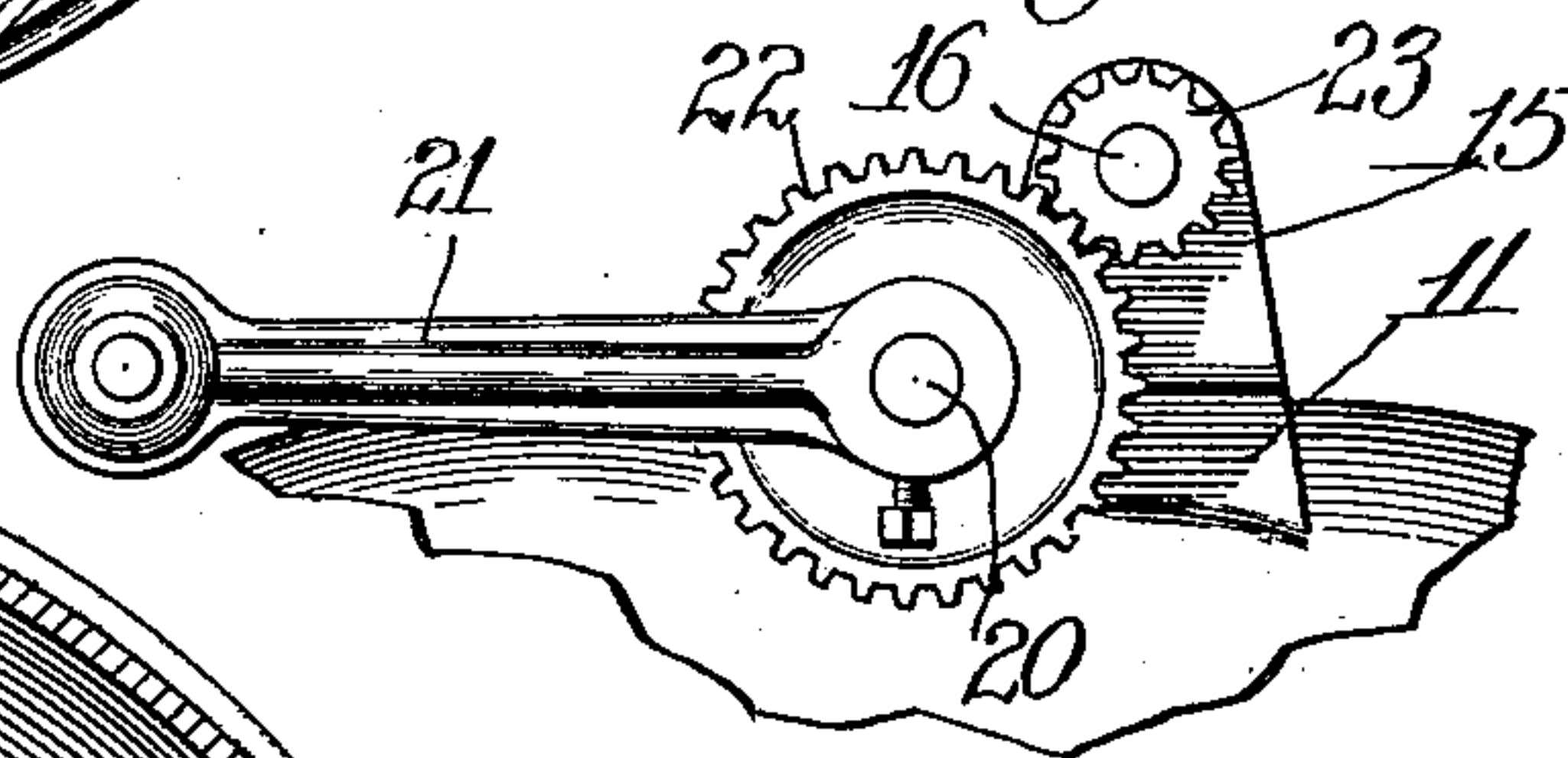
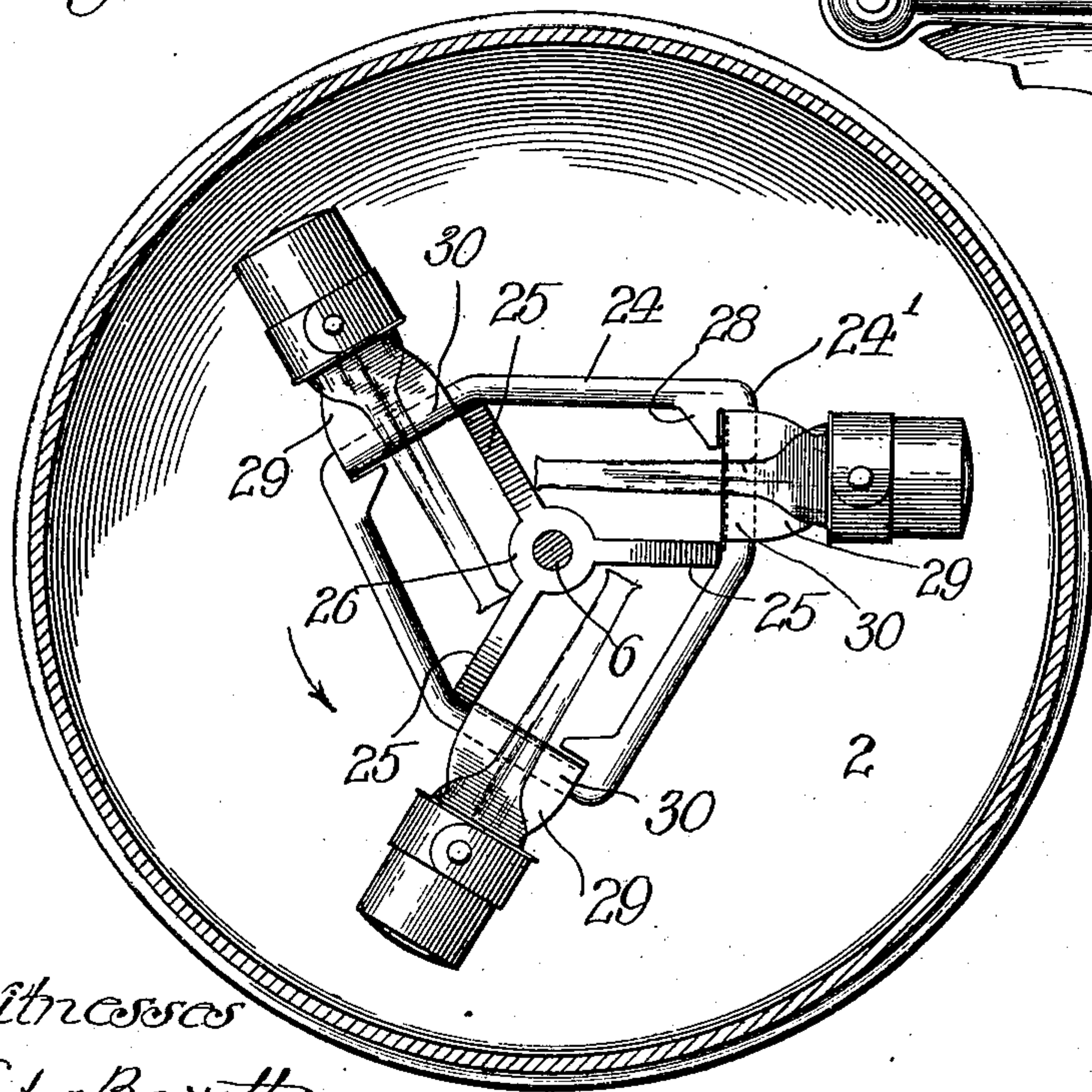


Fig. 4



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UNITED STATES PATENT OFFICE.

WILLIAM E. PENN, OF LAKEMILLS, WISCONSIN, ASSIGNOR TO CREAMERY PACKAGE MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CENTRIFUGAL MILK-TESTER.

SPECIFICATION forming part of Letters Patent No. 742,801, dated October 27, 1903.

Application filed July 3, 1903. Serial No. 164,124. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. PENN, of Lakemills, in the county of Jefferson and State of Wisconsin, have invented a certain new, useful, and Improved Centrifugal Milk-Tester, of which the following is a specification.

My invention relates to centrifugal milk-testers for conducting the well-known Babcock test, by which the percentage of fat contained in milk or cream is determined.

The invention has special reference to centrifugal milk-testers of that class which are operated manually; and the object of my invention is to provide a small compact inclosed tester that shall resemble and possess the good qualities of the larger steam-driven testers.

Another object of my invention is to provide a centrifugal tester of reduced diameter, and still another object is to provide a simple, compact, and thoroughly-efficient driving mechanism for the test-bottle carrier.

My invention consists generally in a centrifugal milk-tester comprising a vertical shaft, in combination with a bottle-carrier mounted thereon and provided with a rim having a series of pendants wherein the test-bottles are carried, the arrangement being such that the bottles assume a tangential position with relation to the shaft when the carrier is rotated; and, further, my invention consists in a centrifugal milk-tester comprising the aforesaid combination with an inclosing casing, wherein said shaft is arranged; and my invention also consists in and includes a driving mechanism connected with the upper end of the shaft upon the top of said casing, all as hereinafter described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a centrifugal milk-tester embodying my invention. Fig. 2 is a vertical section thereof substantially on the line X X of Fig. 1. Fig. 3 is a horizontal section on the line Y Y of Fig. 2. Fig. 4 is a similar view showing the pendants as

they appear during the rotation of the bottle-carrier. Fig. 5 is an end view of the operating-crank. Fig. 6 is a detailed vertical section substantially on the line Z Z of Fig. 1, and Fig. 7 is a horizontal section on the line V V of Fig. 6.

As shown in the drawings, the bottle-carrier of my machine is inclosed in a neat compact casing, which comprises the upper and lower halves 2 and 3, having a flanged joint 4. The lower part is provided with suitable legs 3' and the upper part has an opening which is closed by a door 5. This door is hinged on the lugs 2'' of the lower part and when opened permits access to the bottle-carrier that is arranged within the casing.

6 represents the tester-shaft. This is seated in the step-bearing 7, provided in the bottom portion of the casing. Said step-bearing is preferably in the form of a boss, which projects above the bottom of the casing, making said bottom a receptacle for milk and water that may be spilled therein and protecting the bearing of the shaft. The upper end of the shaft passes through the central opening 8 in the top of the casing and is held in the detachable bearing 9. This bearing is a part of the block 10, which rests upon a planed face or shoulder 11, provided on the top of the casing. (See Figs. 5 and 6.) The block is secured by two screws 12 and 13, which pass through the same into the shoulder 11. The opening for the screw 12 may be such as to fit the same snugly; but the opening for the screw 13 is preferably larger than the shank of said screw or may be a slot, which will permit the inner end of the block to be moved toward or away from the shaft 6. The upper end of the shaft 6 is provided with a worm-screw 17, and this is engaged by the large worm-gear 18, provided on the inner end of the shaft 16. The adjustability of the block 10 permits the shaft and worm-gear to be brought into exact positions for operation with minimum friction. It will be observed that the bearing 9 is a part of the block 10, but is considerably below the center of the gear 18, and any movement of the block will tend to throw the worm away either from or toward the worm-gear. The opening 8 is of

sufficient size to permit this movement of the shaft 6, and the same may be alined with ease. Vertical movement of the shaft is prevented by a collar 6', provided thereon beneath the top of the casing. The block is also provided with a bearing 19 on its outer end, overhanging the side of the casing. In this bearing is journaled the stud-shaft 20 of the crank 21, and the connection between the crank and the shaft 16 is made by means of the large gear 22 and the pinion 23 upon the crank and the shaft 16, respectively. By means of this mechanism taken as a whole the shaft 6 of the tester may be rotated at an extremely high speed.

The bottle-carrier referred to comprises the rim 24, the radial arms 25, and the hub 26, said parts preferably being integral and said hub being secured to the shaft 6 by a clutch-pin 27. The rim 24 forms a preferably irregular polygon and has for its essential portions the straight sections 24', which lie substantially at right angles to the radial arms 25. At the end of each such section 24' is a retaining or guard lug 28, with a slot between the same and the portion 24'. The bottle-pendants or twin cups 29 swing from the rim 24, the same having loops 30, which straddle the straight portions 24' of the rim, and when the bottle-carrier is rotated at a high speed these pendants swing outward and assume positions in a horizontal plane, as illustrated in Fig. 4. It will be noted that the pendants do not occupy radial positions and that their tendency to assume such positions is counteracted by the lugs 28. The bottles which are placed in the pendants have long necks, and when the pendants rise to a horizontal position said necks are thrown downward and approach the sides of the shaft 6 at tangents thereto. The purpose of this construction and arrangement is to secure sufficient space for the bottle-necks between the rim and the shaft and at the same time reduce the diameter of the bottle-carrier to such an extent as to make a material saving in the cost of the machines and in the space occupied thereby as compared with the ordinary circular bottle-carriers.

It is obvious that numerous modifications of my invention will readily suggest themselves to one skilled in the art, and I do not confine my invention to the specific constructions herein shown and described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A centrifugal milk-tester, comprising a suitable frame or casing, in combination with a vertical shaft, having bearings at its upper and lower ends, in said frame, a bottle-carrier on said shaft within said frame, and a manual shaft-driving mechanism, provided on the upper part of said frame, substantially as described.

2. In a centrifugal milk-tester, a suitable casing, in combination with a vertical shaft

having a lower bearing in said casing and an upper bearing adjustable on said casing, a bottle-carrier on said shaft, within the casing, a crank on the top of said casing, and a driving connection between said crank and the upper end of the shaft, substantially as described.

3. In a centrifugal milk-tester, a suitable casing, in combination with a vertical shaft, having a bearing in the bottom of said casing and in the top thereof, an adjustable bearing on said casing, a driving mechanism connected with said shaft and adjustable with said bearing, and a bottle-carrier on the shaft, within said casing, substantially as described.

4. A centrifugal milk-tester, comprising a suitable casing, in combination with a vertical shaft having a bearing in the bottom of said casing and extending through the top of the casing, a bottle-carrier on said shaft, a block carrying a mechanism adjustably secured on the top of said casing and provided with a bearing for the upper end of said shaft, said bearing being adjustable with said block, substantially as described.

5. In a centrifugal milk-tester, a suitable casing, in combination with a vertical shaft, having a bearing therein, a bottle-carrier on said shaft, a bearing-block adjustably secured on the top of the casing and having a vertical bearing for the upper end of said shaft, horizontal bearings provided on said block, a shaft therein, a crank upon said block for operating said shaft, and a worm and worm-gear on said shafts, substantially as described.

6. A centrifugal milk-tester, comprising a suitable casing, in combination with a bottle-carrier, a bottle-carrier shaft extending through the top of said casing, bearings upon the top of said casing, a driving-shaft arranged therein and operatively connected with a bottle-carrier shaft, and a crank connected with said driving-shaft and overhanging the side of said casing, substantially as described.

7. A centrifugal milk-tester, comprising a suitable casing, in combination with a vertical shaft therein, a driving mechanism on the top of said casing and connected with said shaft, and a bottle-carrier arranged on the shaft within the casing and including pendants arranged tangentially, substantially as described.

8. In a centrifugal milk-tester, a tester-shaft having suitable bearings, in combination with the bottle-carrier, arranged on said shaft, and provided with straight, tangential sections, provided with guard-lugs, and the pendants pivoted on said sections, substantially as described.

9. A centrifugal milk-tester, comprising a casing, in combination with a vertical shaft, having bearings therein, means for rotating said shaft, the bottle-carrier, arranged on said shaft within the casing, said carrier being polygonal in form, and pendants, provided upon said carrier and adapted to assume tan-

gential positions with relation to said shaft when the shaft and carrier are rotated, substantially as described.

5 10. A bottle-carrier for said centrifugal milk-tester, comprising a hub, radial arms and a polygonal rim, having straight, pivot portions and guard-lugs, substantially as described.

10 11. A centrifugal milk-tester, comprising a casing, provided with a step-bearing in its bottom, in combination with a vertical shaft, stepped in said bearing, said casing having an opening in its top for said shaft, a stop-collar upon the shaft, a bottle-carrier on said shaft, 15 a bearing for the upper end of the shaft, said bearing being adjustable upon the top of said casing, and a shaft-driving mechanism, also provided on the top of said casing, substantially as described.

20 12. A centrifugal milk-tester, comprising a suitable frame or casing, in combination with a vertical shaft therein, means for rotating

said shaft, a bottle-carrier having a hub secured to said shaft and provided with a rim, having a plurality of straight sections to receive bottle-pendants, said straight sections 25 being tangential and each being perpendicular to the radius of its end which is nearest to said shaft, and bottle-pendants suspended upon straight sections, substantially as described. 30

13. A bottle-carrier for testing-machines, comprising a hub and a rim, joined by suitable spokes or arms, said rim being polygonal and having straight tangential sections, each 35 of which is perpendicular to the radius between one of its ends and the center of said hub, substantially as described.

In testimony whereof I have hereunto set my hand this 22d day of June, A. D. 1903. 40
WILLIAM E. PENN.

Witnesses:

E. R. FARGO,
L. F. ANDERSON.