

No. 836,717.

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L. C. TRENT.
AGITATING AND MIXING APPARATUS.
APPLICATION FILED OCT. 5, 1905.

Fig. 1.

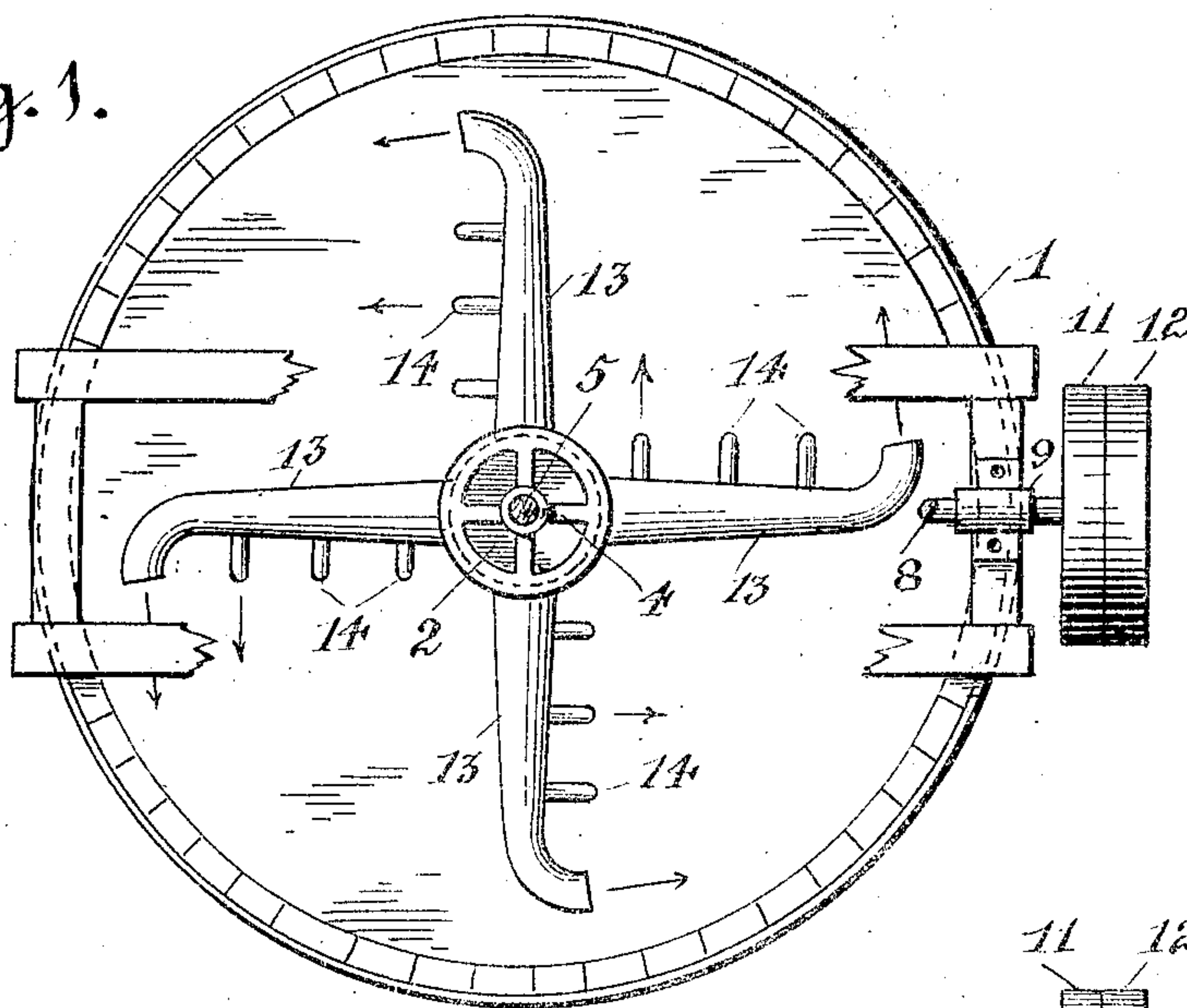


Fig. 2.

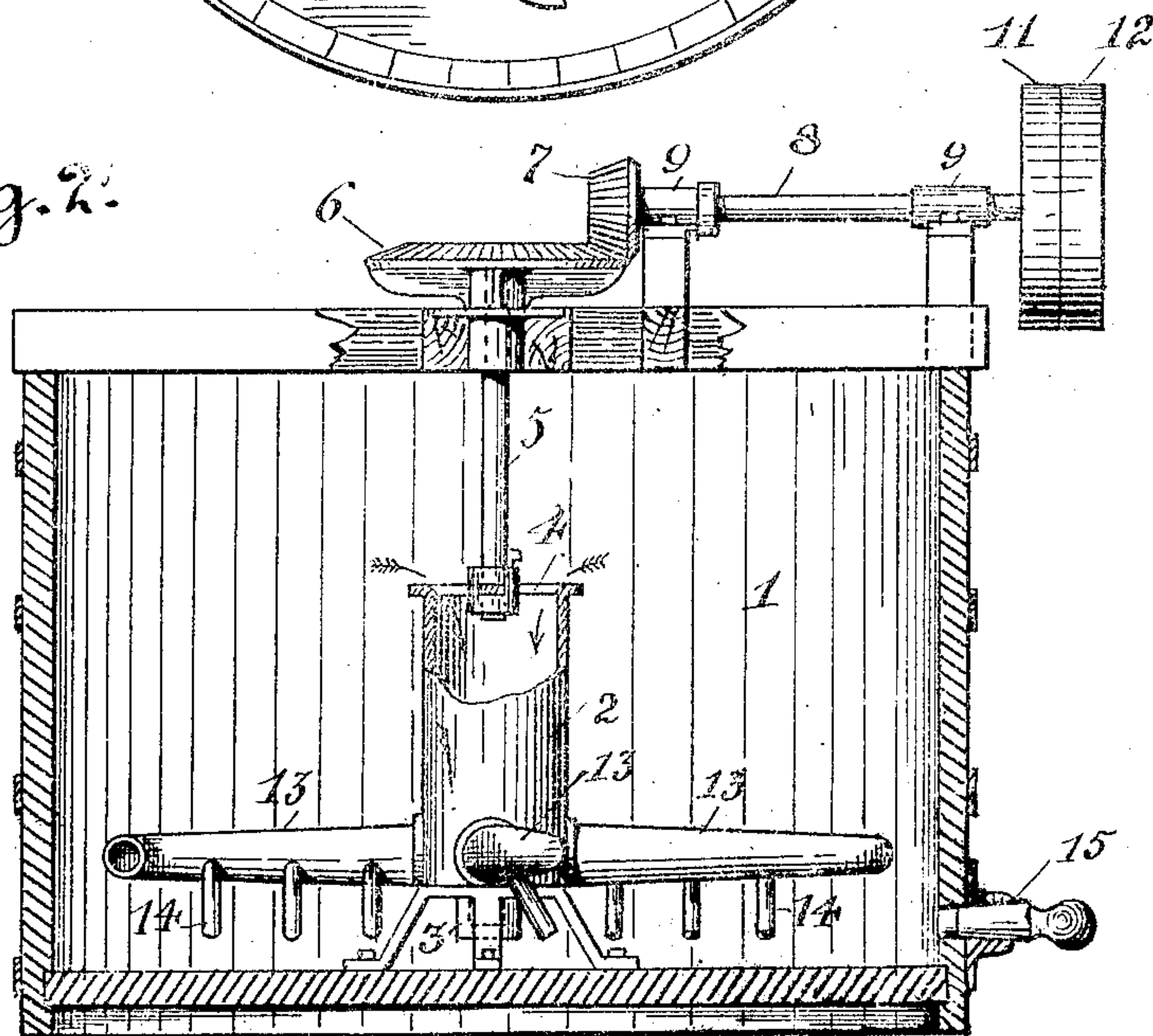
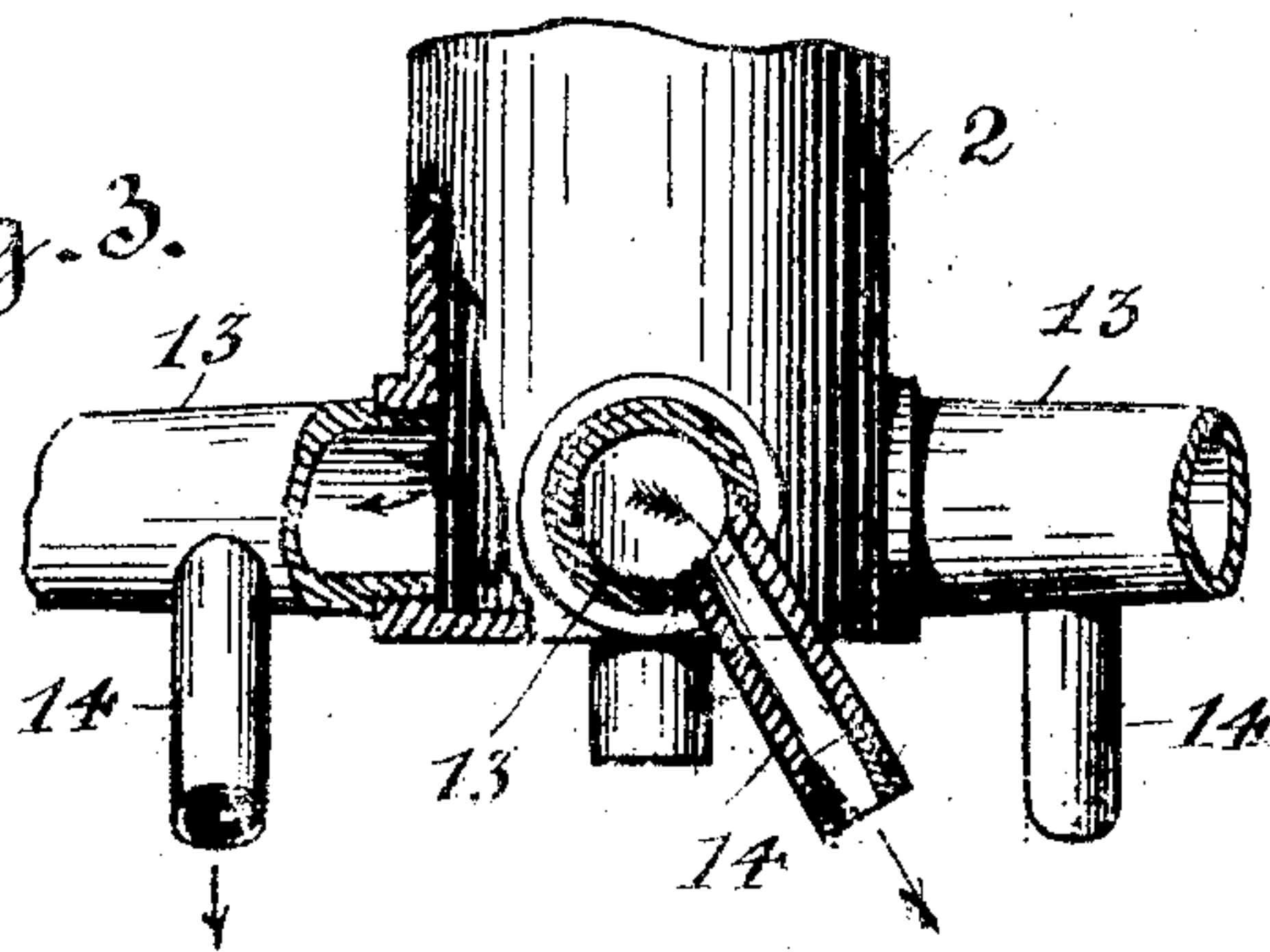


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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AGITATING AND MIXING APPARATUS.

No. 836,717.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed October 5, 1905. Serial No. 281,503.

To all whom it may concern:

Be it known that I, LAMARTINE C. TRENT, a citizen of the United States, residing at Vantrent, in the county of Placer, State of California, have invented certain new and useful Improvements in Agitating and Mixing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the same.

The present invention is designed for the agitating, mixing, and aeration of liquid slimes, clay, cement, slurry, and sludge generally, the object being to provide a cheap and effective apparatus for the treatment of the material, the apparatus being of such construction as to require the expenditure of but slight power for imparting movement to the rotating parts.

To comprehend the invention, reference should be had to the accompanying drawings, wherein—

Figure 1 is a top plan view of the mechanism disclosed by Fig. 2 of the drawings, the direction of discharge for the material from within the receiver into the receiving-tank being indicated by arrows. Fig. 2 is a vertical section of the apparatus with the parts shown in elevation, illustrating the position of the hollow receiver within the receiving-tank, the flow of the material into the receiver being illustrated by arrows; and Fig. 3 is a detail broken view of the receiver with the distributing-arms attached thereto, the flow of the material through the said arms being designated by arrows.

In the drawings the numeral 1 is used to designate any suitable form of a receiving-tank, preferably of circular form. The size or diameter of the said receiving-tank is dependent on the amount of material to be treated therein.

Within the receiving-tank 1 is arranged a rotatable hollow receiver 2, the upper end of which terminates at a point below the upper edge of the said receiving-tank. The lower end of said receiver 2 is closed and loosely mounted within a central bearing 3 of the tank 1, so that the receiver 2 is free to rotate in a horizontal plane.

The upper end of the receiver 2 is an open one, and to the same is bolted or otherwise secured a spider 4, to which spider is fastened the lower end of a vertical shaft 5. This shaft extends beyond the upper edge of the tank 1, and at its upper end the shaft carries a bevel-gear 6. The gear 6 meshes with

the pinion 7, secured to one end of a drive-shaft 8, which shaft works in suitable bearings 9 and is driven by means of a belt, (not shown,) which works over the fast and loose belt-pulleys 11 12 on the opposite end of the drive-shaft 8. The rotary motion of the drive-shaft 8 is thus transmitted to the shaft 5 for imparting rotation to the receiver 2.

From the lower end portion of the receiver 2 lead a series of discharge-outlets for the escape of the material from within the said receiver, which outlets in the present case are represented as a series of radially-extending hollow tapering distributing-arms 13. Preferably the outer end of each arm is slightly curved, so that the material will discharge therefrom at a tangent to the vertical axis of the hollow receiver. To secure a series of jet-streams from each distributing-arm, the said arms are provided with a series of outlet-nozzles 14, which nozzles are preferably inclined downwardly and in a direction opposite to the travel of the arms 13.

The material treated within the apparatus is withdrawn from the receiving-tank through the controlled outlet 15.

In operation the material to be treated is fed into the receiving-tank in any suitable manner until it overflows the upper edge of the hollow receiver or stand-pipe 2 in order to fill the same and its distributing-arms 13. Motion being imparted to the drive-shaft 8 imparts horizontal rotation to the receiver 2. During the rotary movement of the receiver 2 the material fed therein is forced under pressure from within the hollow distributing-arms, which arms are carried around within the receiving-tank with the receiver 2. The material is discharged from the distributing-arms tangentially to the vertical axis of the hollow receiver, the said discharge being in the form of jet-streams, which jet-streams impinge against the body of material within the receiving-tank, the radial arms being submerged therein. Owing to the disposition of the outlets for the jet-streams, an impelling action is imparted to the distributing-arms due to the strain or recoil of the escaping jets. The rotation of the horizontally-disposed radial arms within the body of material contained in the receiving-tank serves to thoroughly agitate and mix the said material or pulp. It will be understood that the receiver 2 is maintained filled by reason of the material within the receiving-tank overflowing the upper edge thereof.

Consequently there is a continuous flow or circulation of the material through the said receiver during the entire working of the apparatus.

5 Owing to the suction created by the flow of the material into the open end of the receiver, a given quantity of air will be drawn into the said receiver with the inflowing material. The air thus admitted intermixes
10 with and thoroughly aerates the material being treated. For the treatment of a cyanid solution the aeration of the material or solution is an important factor.

After the material has been treated the
15 same is withdrawn from within the receiving-tank through the opening of the outlet 15.

Having thus described the invention, what is claimed as new, and desired to be protected by Letters Patent, is—

20 1. In an apparatus for the described purpose, the combination with a receiving-tank or holding-receptacle for the material to be treated, of a receiver rotatably held therein, the upper edge of said receiver being below
25 the normal level of the material within the receiving-tank, so as to establish a continuous circulation of the material, a series of tubular distributing-arms radially extending therefrom, and means for imparting rotation
30 to the receiver within the tank or receptacle.

2. In an apparatus for the described purpose, the combination with a receiving-tank or holding-receptacle for the material to be

treated, of a controlled outlet to said tank or receptacle for the withdrawal of material 35 therefrom; of a receiver rotatably held within the tank or receptacle, the upper edge of said receiver being below the normal level of the material within the receiving-tank, a series of hollow distributing-arms radially extending 40 therefrom, of a drive-shaft for imparting rotation to the receiver, and of connection between the said receiver and the drive-shaft for transmitting to the receiver the motion of the said drive-shaft. 45

3. In an apparatus for the described purpose, the combination with a receiving-tank, or holding-receptacle for the material to be treated, of a vertically-disposed receiver rotatably mounted therein so as to place its 50 upper open end below the normal level of the material delivered into the said holding-receptacle, of a series of circumferentially-disposed discharge-outlets leading from the lower end portion of the receiver for the escape 55 of the material flowing into the receiver, and means for imparting horizontal rotation to the receiver.

In testimony whereof I have hereunto affixed my signature in the presence of witnesses. 60

LAMARTINE C. TRENT.

Witnesses:

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D. B. RICHARDS.