

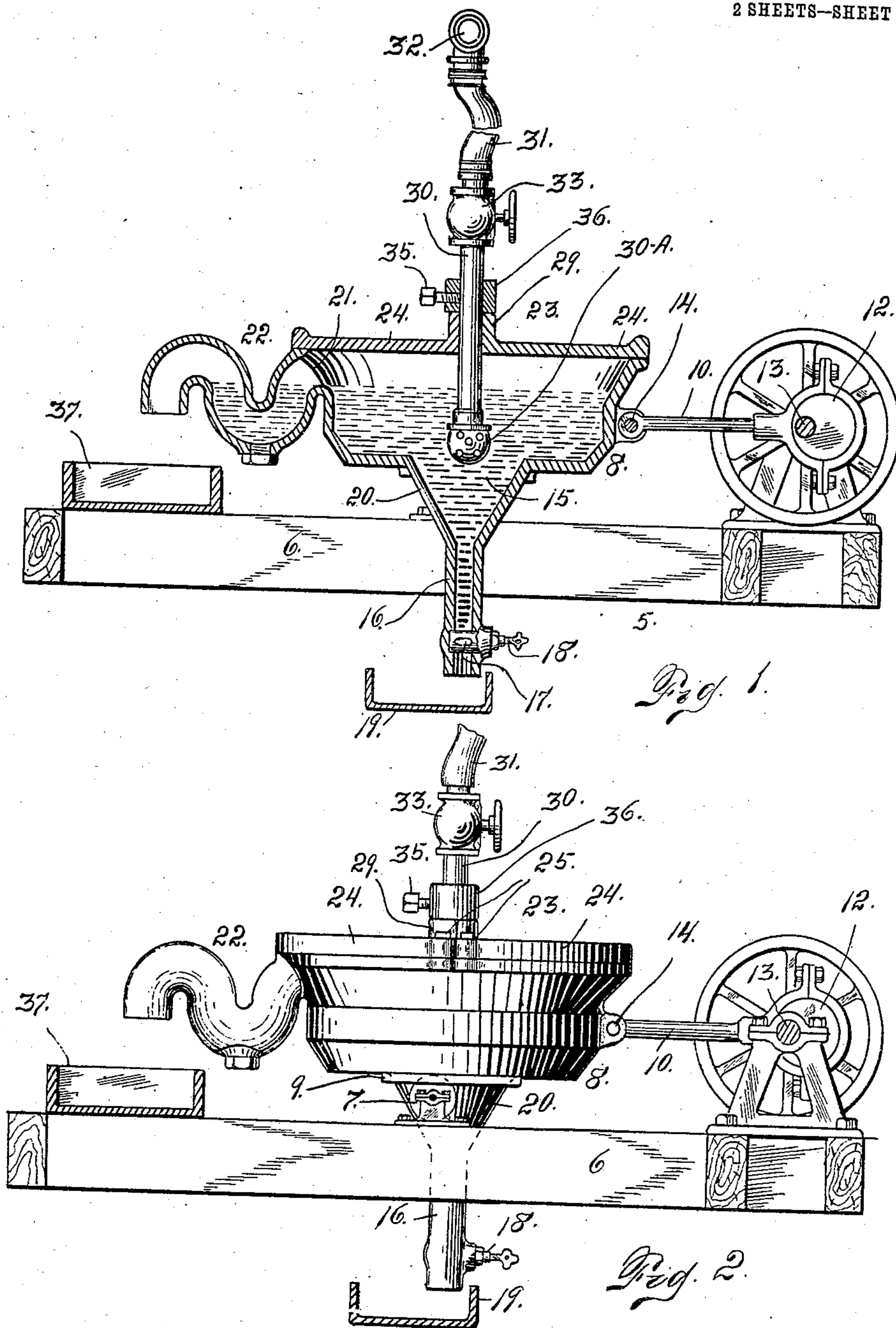
No. 884,299.

PATENTED APR. 7, 1908.

H. I. SEEMANN.
AMALGAMATOR.

APPLICATION FILED JUNE 5, 1907.

2 SHEETS--SHEET 1.



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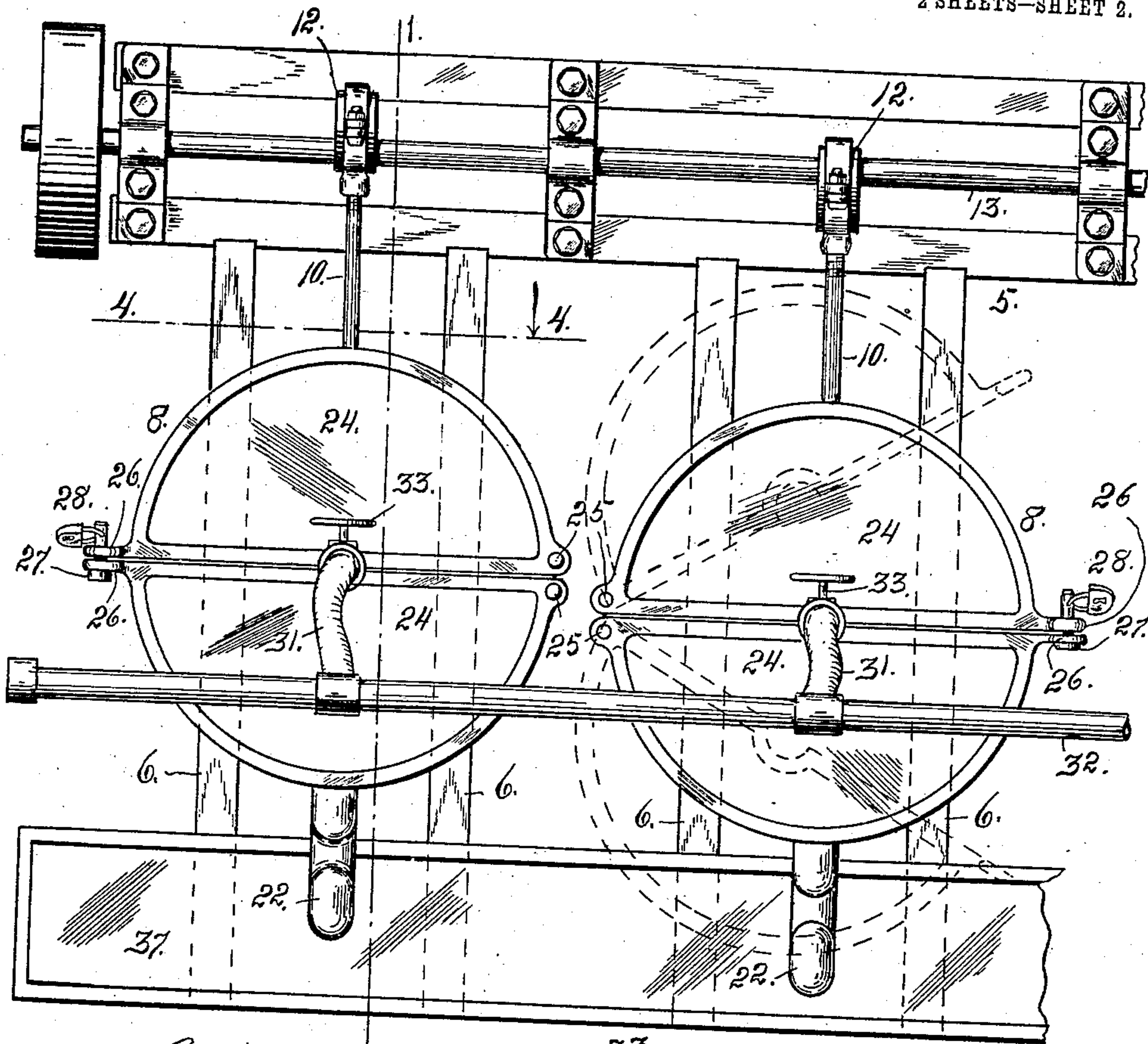


Fig. 3.

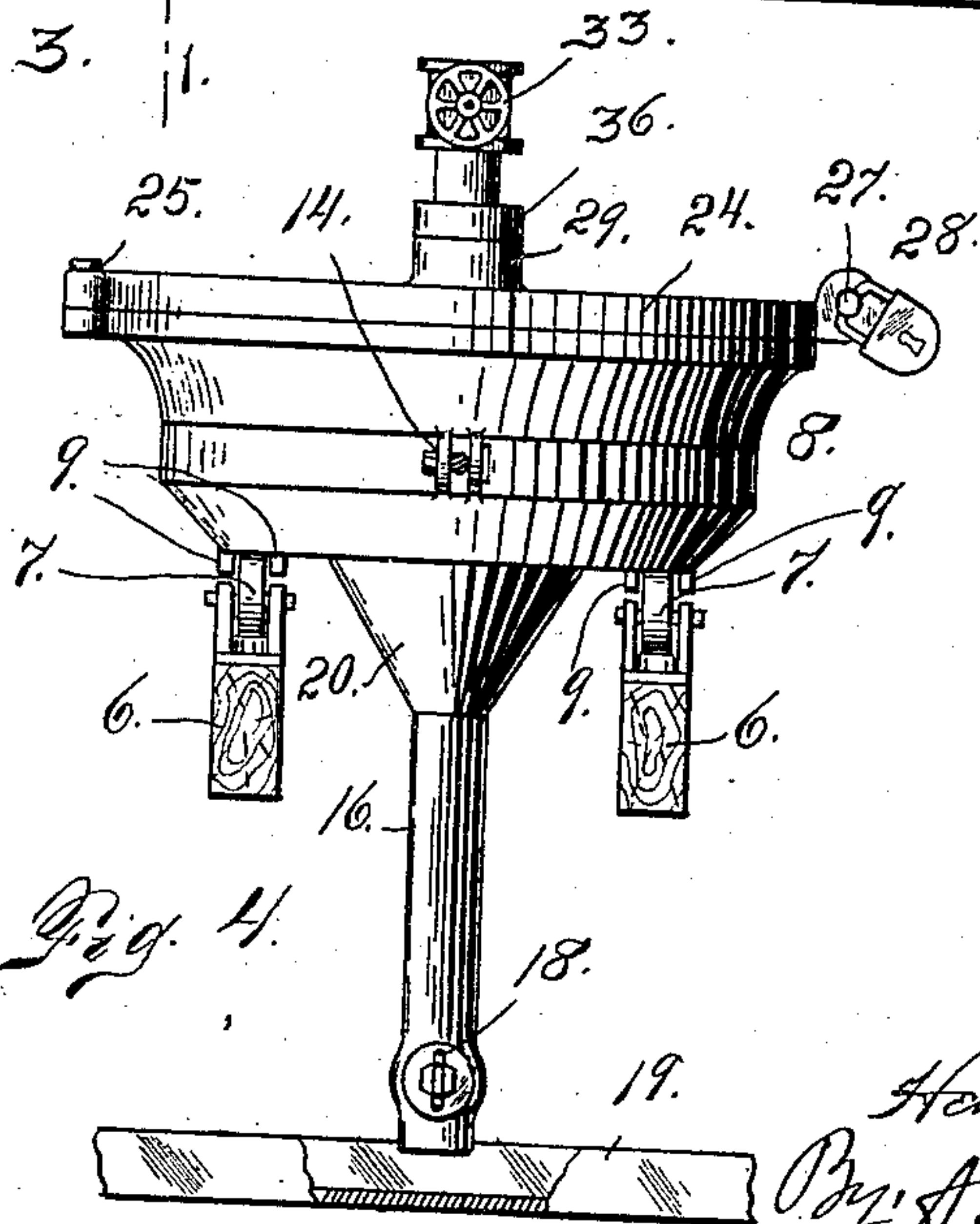


Fig. 4.

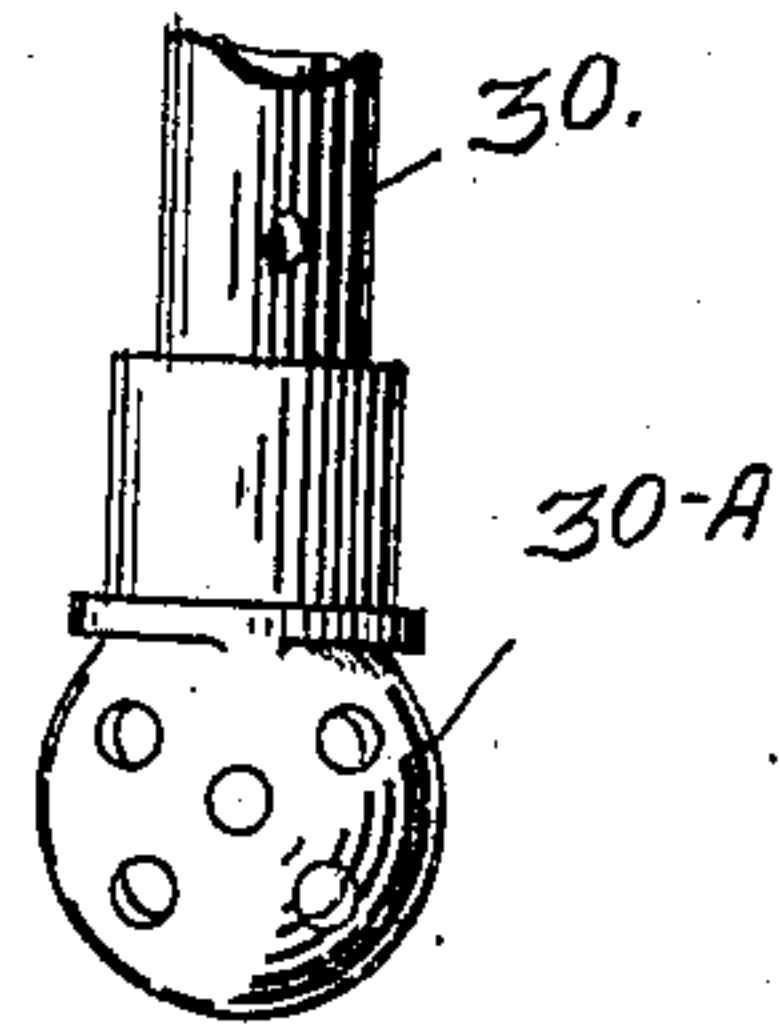


Fig. 5.

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HENRY I. SEEMANN, OF DENVER, COLORADO.

AMALGAMATOR.

No. 884,299.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed June 5, 1907. Serial No. 377,340.

To all whom it may concern:

Be it known that I, HENRY I. SEEMANN, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Amalgamators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in amalgamators of the class in which a quantity of liquid mercury is employed, into which the pulp to be treated is fed.

In my improved construction special provision is made for locking the amalgamating receptacle, to prevent the removal of amalgam or mercury therefrom except by a person holding the key or keys, and to this end the discharge spout or conduit of the receptacle, through which the gangue continually escapes during the operation of the machine, is trap-shaped, making it practically impossible to remove the mercury or amalgam therefrom, that is to say assuming that the top as well as the discharge at the bottom for the amalgam is locked.

In my improved construction the amalgamating tank or receptacle is subjected to a vibratory or shaking movement, which facilitates the separation of the metallic values from the gangue and therefore aids the mercury in the performance of its function.

Having briefly outlined my improved construction, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a section taken through one of my improved amalgamating tanks. This section is taken on the line 1—1 Fig. 3. Fig. 2 is an elevation of one of the amalgamating tanks, and the discharge troughs shown in section. Fig. 3 is a top plan view of the apparatus showing two of the amalgamating tanks in use. Fig. 4 is a section taken on the line 4—4 Fig. 3 viewed in the direction of the arrow. Fig. 5 is a view of the lower extremity of the pulp discharge conduit.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a suitable frame work provided with parallel side members 6 in which are journaled rollers 7 adapted to engage the bottom of the amalgamating tank 8 on opposite sides. The parts of the tank which engage the rollers 7 are provided with guides 9 two on each side, the space between these guides forming the path of the rollers. The tank 8 may be reciprocated in any suitable manner. As shown in the drawing the reciprocating movement is imparted by a pitman 10 connected with an eccentric 12 mounted on the shaft 13. The forward extremity of the pitman is pivotally connected with the tank as shown at 14. This tank is adapted to contain a quantity of mercury 15. This bottom is provided with a depending reduced extension 16 having a valve 17 at its lower extremity adapted to be operated only by a special key 18. Below the lower extremity of the extension 16 is a trough 19 into which the amalgam may be drawn. The bottom of the tank above the extension 16 is V-shaped as shown at 20. The rollers 7 engage the bottom of the tank on opposite sides of the part 20. The tank on the opposite side from the pitman connection 14, is provided near the top with an opening 21 leading to an S-strap 22 for the discharge of the gangue. The tank is provided at the top with a cover 23 composed of two members 24 each of which is pivotally connected with the tank as shown at 25. Opposite their pivoted extremities, each cover member is provided with an eye 26 through which is passed a pin 27 having an opening through which is passed the hasp of a padlock 28. Passing through a central opening formed in the cover 23 and engaging a sleeve 29 composed of divided members, is a feed pipe 30 communicating at the top with a flexible member 31 leading from the main feed conduit 32. The lower extremity of the pipe 30 is perforated as shown at 30^a and submerged in the mercury 15. At the upper extremity of the feed pipe 30 is located a valve 33 for regulating the discharge of the pulp to the tank.

When the apparatus is in use, any desired number of tanks may be operated from a single shaft 13. Where two tanks are operated as shown in the drawing, the eccentric should be so arranged that their points of maximum eccentricity are on opposite sides, whereby when one tank is at its forward limit of movement the other is at its rear-

ward. This balances the work of the shaft and gives a more even and steady movement to the tanks.

Before beginning the operation, the cover members 24 may be swung to the dotted line position at the right of Fig. 3, allowing the placing of a suitable quantity of liquid mercury in the tank. When this is done the cover members are brought together and secured by the padlock 28 or other suitable locking mechanism. It is assumed that when the cover members of the tank are locked together, that the feed pipe or conduit 30 is in place. The vertical position of this pipe is regulated by a set bolt 35 passing through a block 36 resting on the collar or sleeve 29. The conduit 30 when the set bolt is loosened, is free to slide in the block and sleeve. When, however, it is properly adjusted, and the set bolt inserted, it is securely locked in the proper position.

When after the mercury has been placed in the tank and the cover member is locked in position, the pulp to be treated may be delivered to the tank or tanks from the main feed conduit 32, by way of the flexible branch conduits 31. As the pulp passes from the feed pipe 30 through the perforated nozzle submerged in the mercury, the free metallic values are taken up by the mercury forming an amalgam. This work is facilitated by the shaking movement imparted to the concentrating tank as heretofore explained. The mercury and amalgam, by virtue of their greater specific gravity normally occupy the lowest position in the tank. They are, however, sufficiently agitated by the shaking movement of the tank, to allow the free metallic values from the pulp as it is fed into the tank, to settle therein and be caught thereby, while the gangue deprived of its free metallic values, overflows through the opening 21 at the top of the tank and passes out through the trap 22 into the troughs 37. After the operation has continued a suitable time, and the mercury has become laden to its capacity of metallic values, the amalgam may be drawn off from the bottom of the tank into the trough 19, by operating a valve 17 by the use of a special construction of key 18.

It is evident that my improved construction is sufficiently secure, to prevent the removal of any amalgam from the tank except by an authorized person or one holding the

key or keys for the purpose of unlocking the cover and turning the valve 27.

Having thus described my invention, what I claim is:

1. In an amalgamator, the combination with a tank adapted to contain a quantity of mercury, a cover composed of two pivoted members having centrally located recesses which when said members are brought together form an opening, means for locking the cover in the closed position, a feed conduit passing through said opening formed in the cover, its lower extremity being submerged in the mercury, the said feed conduit being vertically adjustable, the top of the tank being provided with a discharge opening, and a trap communicating with said opening for the discharge of the gangue from the tank, substantially as described.

2. An amalgamator, comprising a tank adapted to hold a quantity of liquid mercury, the said tank having a reduced bottom extension for the discharge of the amalgam, a valve located in this extension for controlling the escape of the amalgam therefrom, a trapped discharge of the gangue, connected with the top of the tank, and a cover composed of two pivoted members having centrally located recesses which when the said members are brought together form an opening through which the feed conduit passes, and means for locking the cover members, substantially as described.

3. An amalgamator, comprising a suitable frame, rollers mounted on the frame, a tank provided with bottom guides between which the rollers pass, means for imparting a reciprocating movement to the tank upon said rollers, a depending valve-controlled amalgam discharge nozzle, the upper part of the tank being provided with an opening, a trap communicating with said opening for the discharge of the gangue, a feed conduit projecting into the top of the tank, a cover composed of two pivoted members for closing the members at the top, and means for securely locking the cover members in place, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY I. SEEMANN.

Witnesses:

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