

Feb. 2, 1932.

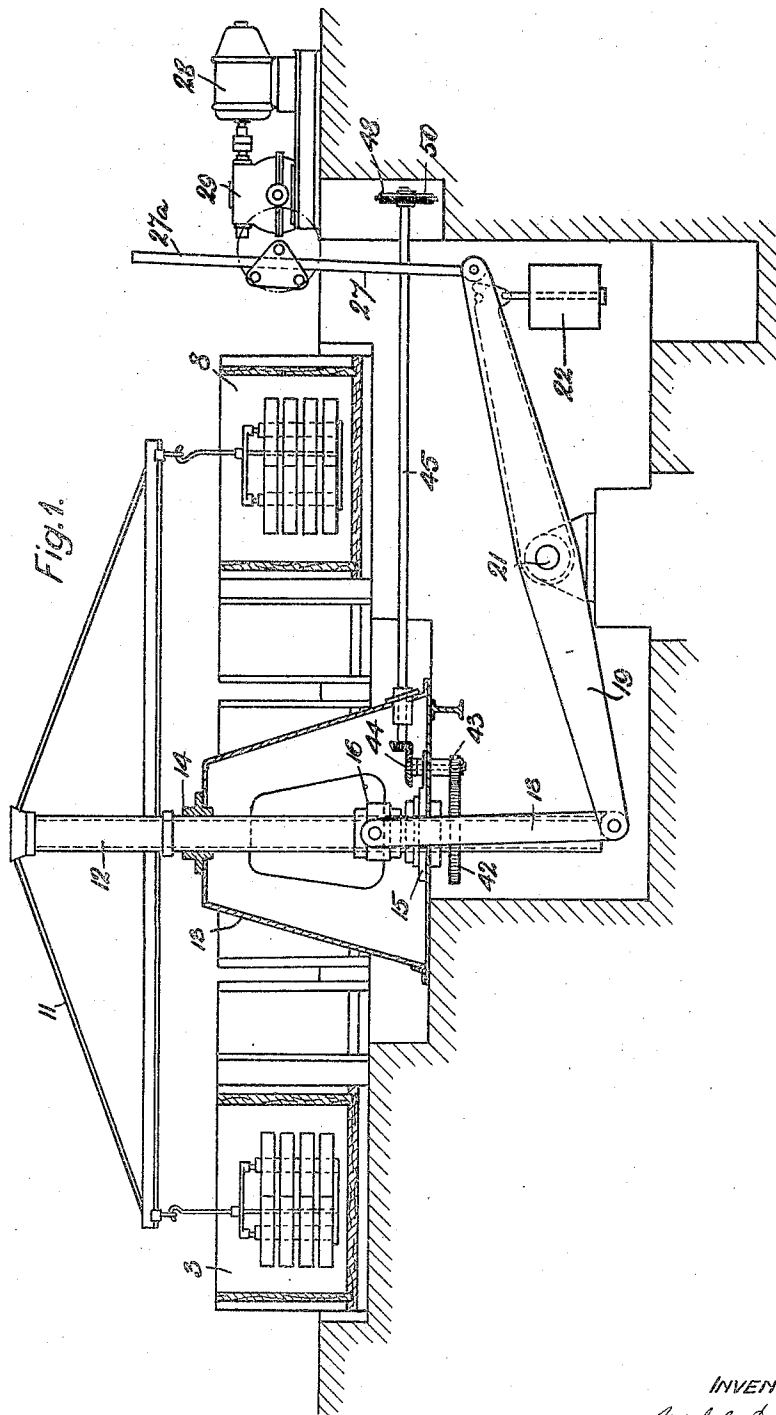
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1,843,598

MACHINE FOR WASHING, DYEING, OR THE LIKE TREATMENT

Filed Sept. 28, 1929

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

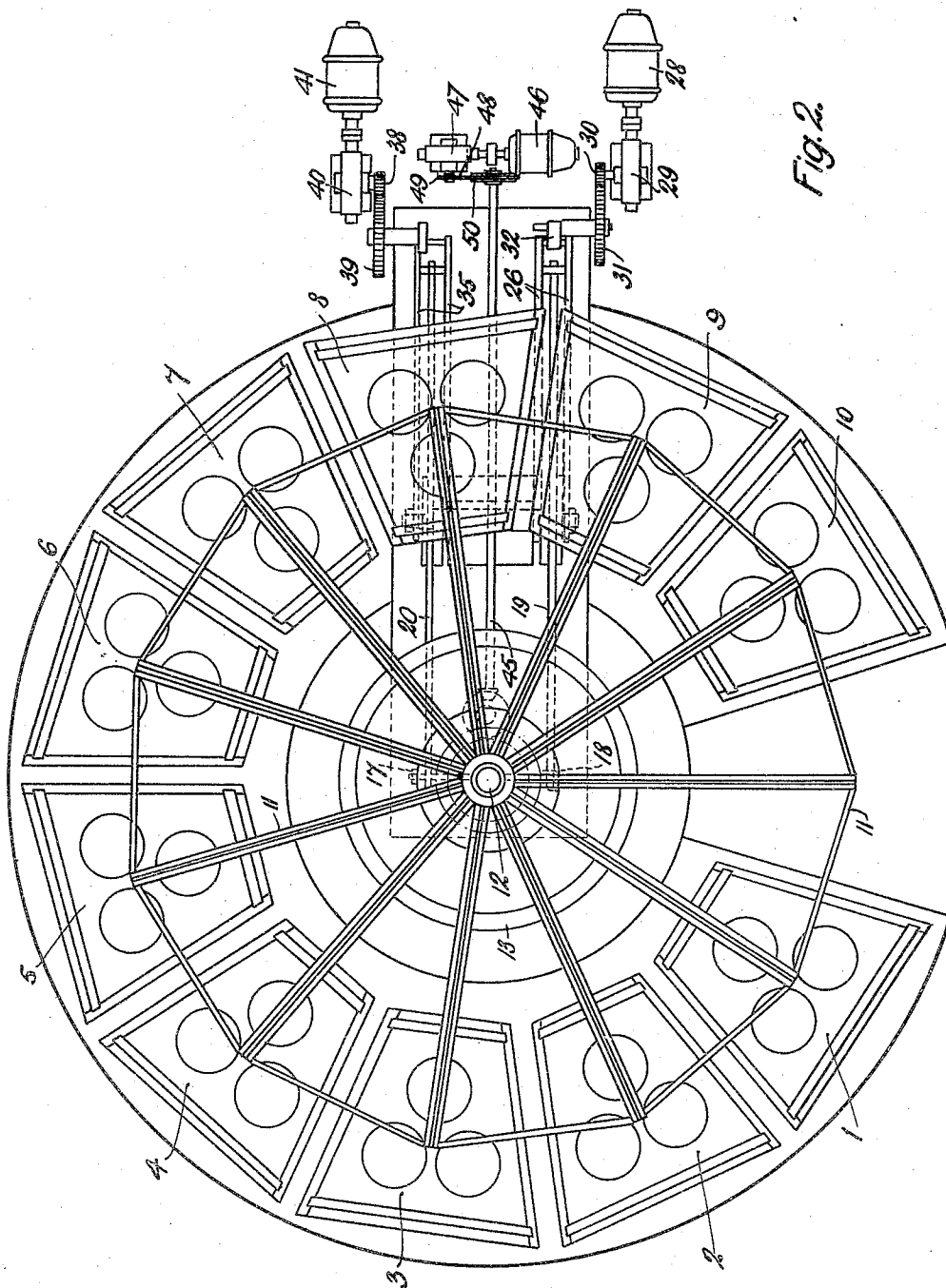


Fig. 2.

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Fig.3.

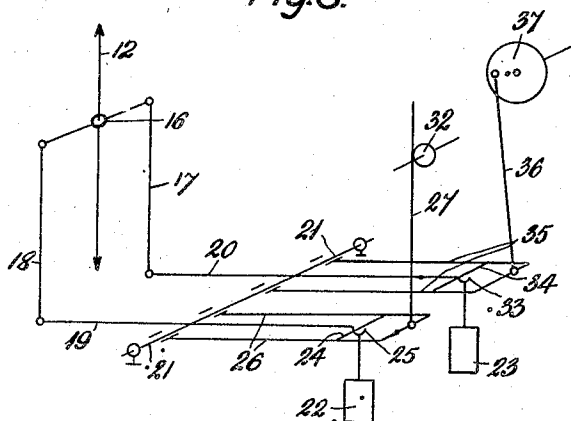
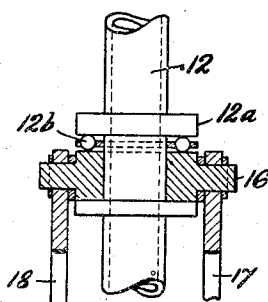


Fig.4.



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UNITED STATES PATENT OFFICE

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MACHINE FOR WASHING, DYEING, OR THE LIKE TREATMENT

Application filed September 28, 1929, Serial No. 395,931, and in France March 9, 1929.

The invention relates to a continuous running machine of high efficiency, enabling all the washing, dyeing or similar processes in the treatment of any material, for instance of cellulose-like substances in the form of flock, spools, hanks, tissues, manufactured articles and so forth to be effected without any actual handling of the material.

To this end, the machine is provided with a set of tanks containing the proper liquids and arranged circularly around a vertical axis, and the material to be treated is suspended from a circular or polygonal frame which is mounted upon a central pivot which as well as being rotated can be given a vertical ascending and descending motion enabling the material to be immersed successively in each tank, and also a motion of the same nature but of reduced range, enabling the material in the baths to be shaken without its being removed therefrom.

The material to be washed and cleaned, for instance, returns automatically to its starting point at the end of the cycle of operations, in order to be unloaded and replaced by other material.

An embodiment of the invention is illustrated by way of example in the accompanying drawings, which is intended to make clear the application and operation of the invention in the cleaning of materials in flock or in bulk.

Figure 1 is a vertical section of the apparatus.

Figure 2 is a plan view.

Figure 3 is a diagram illustrating the vertical motions.

Figure 4 is a view on a larger scale of the pivot-bearing assembly.

The tanks numbered from 1 to 10 and arranged in a circle, serve for the cleaning and washing. The material is placed in baskets stacked one upon another. As shown there are three such stacks of baskets suspended over each tank from a metal frame 11. This frame is secured to a tubular shaft 12 located at the centre of the apparatus.

The shaft 12 can slide or revolve in bearing rings 14, 15 carried by a pedestal 13. It is further provided with a race rib 12a

which rests upon balls 12b running on a collar 16. This collar 16 enables the shaft 12 to be raised while permitting its rotation. Two connecting rods 17 and 18 are articulated to opposite sides of the collar 16. The connecting rods are respectively pivoted to the inner ends of beams 19 and 20, both pivoted on an axis 21. Counterweights 22 and 23 are suspended from the outer ends of the respective beams 19 and 20, but these counterweights are insufficient to balance the load on the inner ends of the beams.

The beam 19 is actuated by a cross bar 24 which enters a hook 25 carrying the counterweight 22. The cross bar 24 forms part of a frame 26 oscillating on the shaft 21 and actuated at its outer end by a rod 27 provided with a rack 27a. The lifting of the shaft 12 is effected by means of an electric motor 28 coupled to a worm reducing gear 29 which rotates by means of gears 30 and 31, a pinion 32 meshing with the rack on the rod 27. Lowering is effected by reversing the motor. The cross bar 24 and the hook 25 are provided to permit the motion of the system comprising frame 11 and shaft 12 when the washing motion takes place. During such motion, hereinafter described, the hook 25 leaves the cross bar 24 and the system formed by the frame 26, the rack 27a and the pinion 32 remains stationary.

The washing motion is effected through the beam 20. This relatively limited motion consists in lifting and lowering the whole system through a few centimeters, without the baskets being lifted out of the tanks.

The beam 20 is provided with a hook 33 carrying the counterweight 23, and is actuated by a cross bar 34 forming part of a frame 35. This frame can freely oscillate on the axis 21 and is actuated at its outer end by a connecting rod 36 and a crank disc 37. A motor 41 rotates the crank disc through a worm reducing gear 40 and toothed wheels 38 and 39. While a crank disc has been disclosed it is obvious that the equivalents crank shaft or eccentric might be used.

The rotation of the frame 11 is effected by a toothed wheel 42 in which the shaft 12 is

slidably keyed. The toothed wheel 42 is driven from an electric motor 46 through a reducing gear 47, a chain 48 passing over sprockets 49, 50, a shaft 45, a bevel gear 44, and a pinion 43.

The construction illustrated is only given by way of example and it is evident that the distribution of the baskets and the arrangement of the parts which impart to them the essential motions described may be varied without departing from the scope of the invention as defined by the appended claims.

Newly loaded baskets may be substituted for already treated baskets above one of the tanks but as this has to be done rapidly and is inconvenient, I prefer to leave a space between tanks 1 and 10 as shown where the change may be made at floor level and at leisure while the remaining baskets are immersed.

What I claim is:—

1. Apparatus for treating articles by immersion in liquid, comprising a tank, a vertical shaft, means for suspending the articles from said shaft, a pair of similarly pivoted beams adjacently coupled at one end to said shaft, means for giving one of said beams an oscillating motion of small amplitude, and independent means for giving the other of said beams an oscillating motion of large amplitude.

2. Apparatus for treating articles by immersion in liquid, comprising a tank, a vertical shaft, means for suspending the articles from said shaft, a pair of beams coupled at one end to said shaft, one-way means engaging one of said beams for moving it downwards a small distance against the weight of the articles, and other one-way means engaging the other of said beams for moving it downwards a large distance against the weight of the articles.

3. Apparatus for treating articles by immersion in liquid, comprising a tank, a vertical shaft, means for suspending the articles from said shaft, a crank disc, a connecting rod actuated by said crank disc, means coupling said connecting rod to said vertical shaft, a pinion, means for rotating said pinion, a rack meshing with said pinion, means coupling said rack to said vertical shaft, and means for automatically disconnecting said connecting rod when said rack is in action and for uncoupling said rack when said connecting rod is in action.

4. Apparatus for treating articles by immersion in liquid, comprising a tank, a vertical shaft, means for suspending the articles from said shaft, a pair of coaxially pivoted beams each having its inner end connected to said shaft, a frame pivoted coaxially with one of said beams, a cross bar on said frame over the outer end of said beam, a pinion, means for rotating said pinion, a rack pivoted to said frame meshing with said pin-

ion, a second frame pivoted coaxially with the second of said beams, a cross bar on said second frame over the outer end of said second beam, a crank disc, and a connecting rod coupling said second frame and said crank disc.

5. Apparatus for treating articles by immersion in liquid, comprising a series of tanks arranged in a circle, a vertical shaft at the centre of said circle, means for rotating said shaft, means on said shaft for suspending the articles from said shaft, an axially fixed bearing on said shaft, a pair of coaxially pivoted beams each having its inner end connected to said bearing, a frame pivoted coaxially with one of said beams, a cross bar on said frame over the outer end of said beam, a pinion, means for rotating said pinion, a rack pivoted to said frame meshing with said pinion, a second frame pivoted coaxially with the second of said beams, a cross bar on said second frame over the outer end of said second beam, a crank disc, and a connecting rod coupling said second frame and said crank disc.

In testimony whereof I have signed my name to this specification.

MICHEL DASSONVILLE.