M. KRAUT.

LIQUID FEEDING APPARATUS.

APPLICATION FILED MAY 9, 1921.

1,416,840.

Patented May 23, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

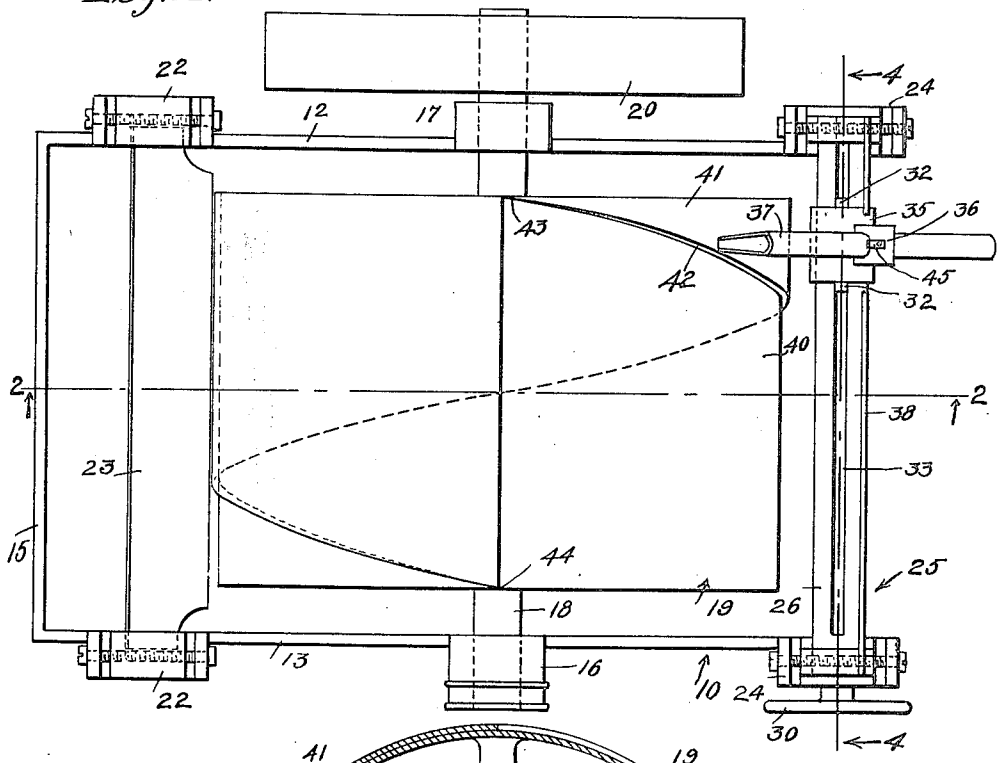
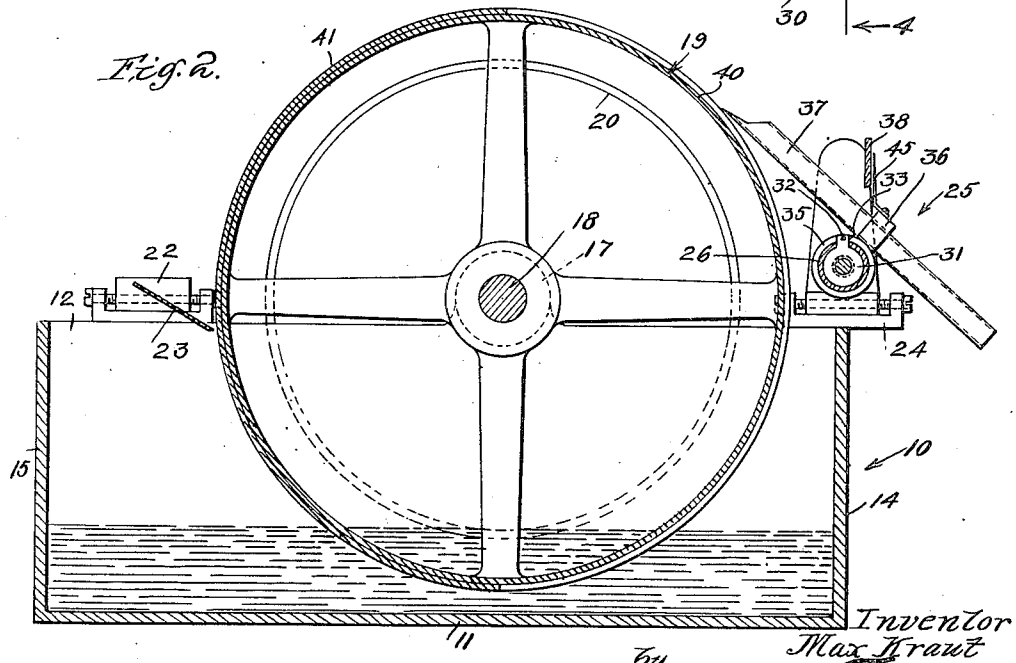


Fig. 2.



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Fig. 3.

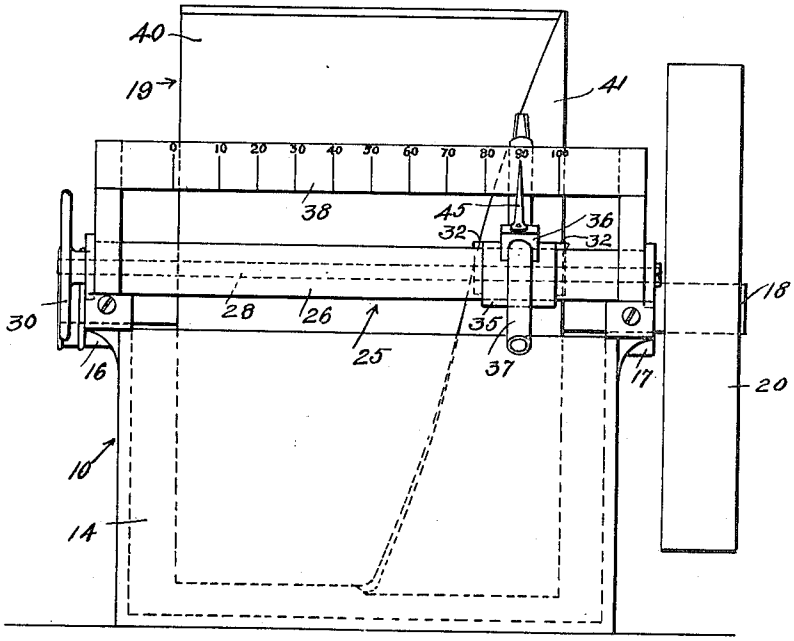
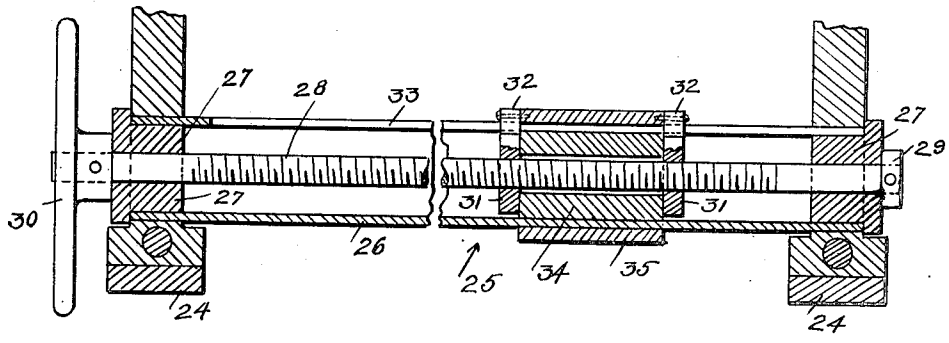


Fig. 4.



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UNITED STATES PATENT OFFICE.

MAX KRAUT, OF LOS ANGELES, CALIFORNIA.

LIQUID-FEEDING APPARATUS.

1,416,840. Specification of Letters Patent. Patented May 23, 1922.

Application filed May 9, 1921. Serial No. 468,133.

To all whom it may concern:

Be it known that I, MAX KRAUT, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Liquid-Feeding Apparatus, of which the following is a specification.

My invention relates to an oil feeding device adapted for use in connection with mineral flotation processes to deliver various types of liquid reagents to flotation machines, or similar structures, and it relates more specifically to improvements in my oil feeding apparatus, illustrated and described in my U. S. Letters Patent No. 1,358,857, entitled "Oil feeders," issued November 16, 1920.

In the above entitled patent a mechanism was illustrated and described for removing a predetermined quantity of liquid from a revolving drum or disc intermittently, and at intervals to receptacle or an apparatus. While such a mechanism has been found to be highly efficient in operation, yet the expense connected with manufacture has precluded a general adoption.

It is a main object of my invention to provide a simple apparatus that will effectually and efficiently remove intermittently a predetermined quantity of liquid from a revolving drum, and deliver the same to an apparatus, without the employment of a complicated mechanism.

Other objects and advantages will be apparent from the following description, reference being had to the drawings accompanying the same, in which:

Fig. 1 is a plan view of my improved oil feeding apparatus.

Fig. 2 is a longitudinal section through the apparatus taken on line 2—2 of Fig. 1.

Fig. 3 is a front elevation of the apparatus.

Fig. 4 is an enlarged detail sectional view of the liquid removing mechanism, taken on line 4—4 of Fig. 1.

Referring more particularly to the drawings, 10 designates a liquid tank formed of suitable material, preferably rectangular in configuration, having a bottom wall 11, side walls 12 and 13, and end walls 14 and 15. Bearings 16 and 17 are secured to side walls 12 and 13 in which is journaled the transversely disposed shaft 18, having keyed or otherwise secured thereto an annular drum 19 arranged approximately midway between walls 12 and 13 adapted to project into the tank 10.

Secured to the ends of shaft 18 is a pulley 20 adapted to be driven at any suitable speed by means of a belt connection to a source of power (not shown).

Secured to walls 12 and 13 at the rear thereof are bearings 22 in which is adjustably mounted a downwardly inclined gauge blade 23, the lower edge of said blade lying adjacent the periphery of the drum 19. By adjustably mounting gauge blade 23 in bearings the edge of the gauge blade may be minutely adjusted towards or away from the periphery of the drum in order that the thickness of the liquid film adhering to said drum may be efficiently regulated.

Adjustably mounted in bearings 24, secured to the side walls 12 and 13 of the tank at the front end thereof, is a liquid removing mechanism 25, which preferably consists of a cylindrical housing 26 having bearing blocks 27 rigidly secured in its ends. Mounted in blocks 27 is a threaded shaft 28 provided on one end thereof with a collar 29 rigidly secured thereto, and at the other opposite end with a hand wheel 30 designed for rotating the threaded shaft. Mounted on shaft 28, and in threaded engagement therewith are nuts 31 spaced apart, each nut being provided with a lug 32 which extend through a longitudinally disposed slot 33 formed in the cylindrical housing 26, the lugs preventing a rotation of the nuts 31 when the shaft 28 is rotated. Disposed within housing 26 and loosely engaging shaft 28 is a cylindrical member 34 adapted to prevent an uneven movement of the nuts 31 when the threaded shaft 28 is rotated. Mounted on housing 26 and disposed between nuts 31, is a sleeve 35 provided with a radially extending lug or bearing 36 in which is rigidly mounted a liquid removing member or trough 37, the upper end of said trough being cut away and flattened, as clearly shown in Figs. 1 and 2 of the drawings, so that the liquid may be readily removed from the face of the drum rim as the same rotates. Secured in any

suitable manner to the upper ends of the bearings 24, is a horizontally disposed gauge bar 38, having a scale suitably marked thereon to enable an operator to adjust the trough 37 transversely of the drum's rim, the purpose of such an adjustment in connection with the drum being more fully explained hereinafter.

One of the important features of my improved apparatus relates to the formation of the rim of the drum in combination with the liquid removing member. The rim of drum 19 is divided into two faces, 40 and 41, lying in different planes, rim face 41 lying above face 40, and the inner curved edge 42 of face 41 extends from a point 43 at the one side of the drum and terminates at a point 44 located on the other oppositely disposed side of the drum. The curved edge of rim face 41 is here shown in the form of a helix, but any other form of curve may be employed if found desirable. I have illustrated and described the drum rim as consisting of two rim faces lying in different planes, but it should be understood that the rim face 40 performs no function in the operation of my apparatus, but is merely formed on the drum for the purpose of strengthening its construction and facilitating the casting operation.

In the operation of my improved apparatus the liquid removing member or trough 37 is moved along shaft 28 by means of hand wheel 30, until the pointer 45 secured to the lug or bearing 36 reaches the desired point on the gauge bar 38. In Fig. 3 of the drawings the trough 37 is shown as set along shaft 28 at a point indicated by division —90— on the gauge bar scale. As the drum rotates in the liquid tank, it will be apparent that the trough will remove or receive all the liquid from the rim face 41 of the drum that lies in its path, with the exception of the time in which it is out of contact with said face, scale point —90— indicating about 90% of the drum circumference. If the trough is set at the —100— point then the trough will be continuously in contact with the face 41 and remove the liquid therefrom in a constant manner. It will be perfectly obvious that when the trough is set along shaft 28 at the zero mark, no liquid will be delivered thereto, as the flattened point of the trough will not contact with rim face 41 during the drum's rotation.

From the above description it will be perpectly obvious that I can take off the rim face 41 of the drum an exact predetermined amount of liquid, and by reason of the peculiar formation of the drum's rim it will be delivered in an intermittent manner.

It will also be apparent that by reason of the mutilated drum rim I am enabled to dispense with all complicated mechanisms for obtaining an intermittent delivery and a predetermined quantity of liquid to the trough.

What I claim is:

1. An apparatus of the class described, comprising a liquid receiving tank, a rotatable element having a mutilated rim mounted in said tank adapted to collect a film of the liquid on its rim face, and means for removing a predetermined quantity of said liquid from said liquid collecting rim face during its rotation.

2. An apparatus of the class described, comprising a liquid receiving tank, a drum mounted in said tank for rotation, said drum having a mutilated rim, and adjustable means contacting with said drum's rim face for removing liquid therefrom during the rotation of said drum.

3. An apparatus of the class described, comprising a liquid receiving tank, a drum mounted in said tank for rotation, the rim of said drum being of mutilated form, and a transversely adjustable means mounted on said tank for removing a predetermined quantity of liquid from the face of said drum rim during its rotation.

4. An apparatus of the class described, comprising a drum mounted for rotation in a liquid tank, the rim of said drum being of mutilated form, and means for removing a film of liquid from the face of said drum rim during said drum's rotation.

5. An apparatus of the class described, comprising a drum mounted for rotation in a liquid tank, the rim of said drum being of mutilated form, the inner edge of said rim starting from one of the side edges of said drum and terminating at the oppositely disposed side edge of said drum, whereby liquid may be removed from the face of said drum rim intermittently and in predetermined quantities.

6. An apparatus of the class described, comprising a liquid receiving tank, a drum mounted in said tank for rotation, the rim of said drum being of mutilated form, and means for removing a predetermined quantity of liquid from the peripheral face of said drum rim during its rotation.

7. An apparatus of the class described, comprising a liquid receiving tank, a drum mounted in said tank for rotation, the width of the rim of said drum increasing from one of its side edges to the full width of the rim at its oppositely disposed edge, whereby liquid may be removed from the rim face of said drum intermittently and in predetermined quantities.

8. An apparatus of the class described, comprising a liquid receiving tank, a drum mounted in said tank for rotation, the width of the rim of said drum increasing from one of its side edges to the full width of the rim at its oppositely disposed edge, the

point of beginning of said drum rim lying directly opposite to the point of ending of said rim, whereby liquid may be removed from the rim face of said drum intermittently and in predetermined quantities.

9. An apparatus of the class described, comprising a liquid receiving tank, a drum rotatively mounted in said tank, the rim of said drum being cut away in the form of a helix, and a liquid collecting means arranged at substantially right angles to the rim face and contacting therewith and being transversely adjustable of the same, whereby the length of time of contact with the face of said drum rim may be varied so as to remove a liquid film therefrom intermittently and in predetermined quantities.

10. An apparatus of the class described, comprising a liquid receiving tank, a drum rotatively mounted in said tank, the development of the rim of said drum being triangular in configuration, and a liquid collecting means mounted on said tank and contacting with the rim face during its rotation, said collecting means being adjustable transversely of the drum, whereby the time of contact with the rim face will be proportionate to the distance of the liquid removing means from one side of the drum to the other.

In witness that I claim the foregoing I have hereunto subscribed my name this 5th day of April, 1921.

MAX KRAUT.