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H. HOUGH.
APPARATUS FOR AGITATING LIQUIDS.
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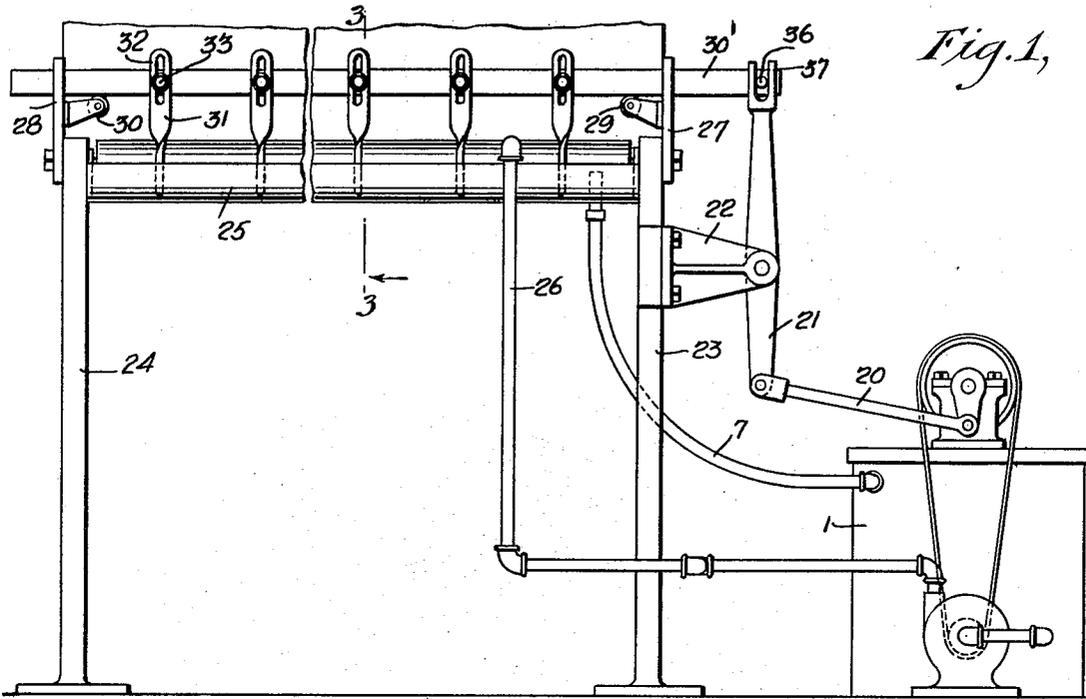


Fig. 1,

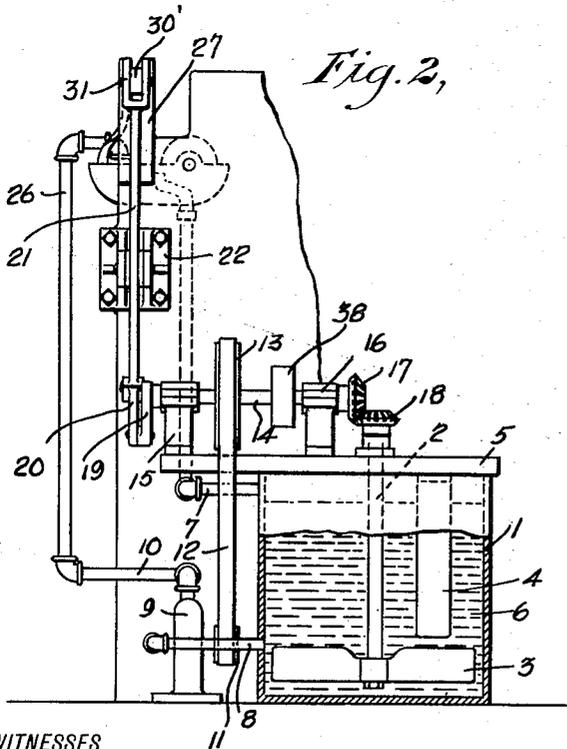


Fig. 2,

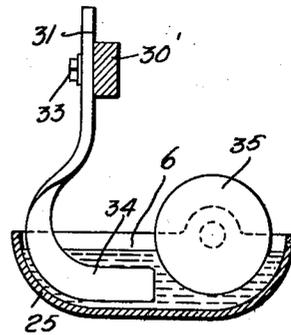


Fig. 3.

WITNESSES

Edw. Thorpe
Robert J. Aulseizer

INVENTOR
Harry Hough
BY *Mumford*
ATTORNEYS

UNITED STATES PATENT OFFICE.

HARRY HOUGH, OF SALEM, MASSACHUSETTS.

APPARATUS FOR AGITATING LIQUIDS.

Application filed June 14, 1921. Serial No. 477,427.

To all whom it may concern:

Be it known that I, HARRY HOUGH, a citizen of the United States, and a resident of Salem, in the county of Essex and State of Massachusetts, have invented a new and Improved Apparatus for Agitating Liquids, of which the following is a full, clear, and exact description.

This invention relates to a method and apparatus for agitating liquids, and has particular reference to the agitating of coating liquids for substances such as leather.

An object of the invention resides in the provision of a method and apparatus for agitating liquids used in the coating of leather whereby the purity and consistency of the liquid is maintained at a uniform value throughout the operation of the agitating device.

Another object resides in the provision of means whereby the liquid is kept in constant circulation and agitated by a simple, strong, efficient apparatus requiring a minimum amount of labor to operate and maintain its operation.

A further object resides in the particular construction and arrangement of parts which are hereinafter described and claimed and shown in the accompanying drawings.

The invention is illustrated in the drawings, of which—

Figure 1 is a side view of the apparatus; Figure 2 is an end view showing the agitating tank in partial section; and Figure 3 is a detail section.

The preferred form of my invention, as shown in the drawings, is adapted to be applied to the agitation of liquids such as chemical compositions or coating substances which are used in connection with the finishing and treatment or coating of leather. In processes of this nature, it is desirable that the coating substance be kept continually of a uniform consistency and purity. To this end, I have provided a receptacle or tank 1 provided with a vertically extending agitator shaft 2 to the lower end of which an agitator propeller 3 is attached. A baffle plate 4 is connected to a cover plate 5 and acts to prevent or interrupt the rotation of the body of liquid 6 under the influence of the propeller 3. The tank is provided with an inlet pipe 7 at its upper end, and an outlet pipe 8.

The outlet pipe 8 leads to a pump 9 of any suitable design, which has an outlet 10.

This pump is driven by a pulley 11 to which is connected a power belt or other transmission device 12. This belt is connected to a pulley 13 on the power shaft 14. This shaft is mounted in bearings or journals 15 and 16 disposed on the top of the cover plate 5. One end of the shaft 14 has a bevel gear 17 meshing with a similar gear 18 on the top of shaft 2 outside the cover plate 5. The other end of shaft 14 is provided with a crank arm 19 to which a pitman 20 is connected. This pitman 20 connects to one end of an oscillating lever 21. This lever 21 is pivoted on a suitable bracket or hanger 22 which is disposed against a supporting frame or standard 23. Another standard 24 is disposed at a suitable distance from the standard 23 and these standards are adapted to support a trough such as 25, which is and is preferably in the form of a long shallow trough adapted to receive a body of liquid which is fed thereto from the outlet pipe 10 of the pump 9. The outlet pipe 10 leads by means of a pipe 26 to the trough 25 to which the liquid from the pump is delivered.

At the upper end of each of the standards 23 and 24 are disposed roller brackets 27 and 28 adapted to support rollers 29 and 30. On these rollers and through suitable apertures in the brackets 27 and 28 there rests and extends a bar 30'. This bar throughout its length is provided with a plurality of depending agitator bars 31 which are provided with slots 32 through which suitable bolts and nuts, such as 33, are adapted to extend from the bar 30' whereby the agitator bars or blades 31 can be adjusted on the bar 30'. The lower ends of the agitator bars 31 are bent horizontally in the form of blades 34 and are disposed at the proper height above the bottom of trough 25 to produce the required agitation of the liquid 6 within the trough 25.

Extending longitudinally along one side of the trough 25 is a roller 35 disposed in suitable bearings at the ends of the trough. This roller is adapted to rotate either by being directly actuated or by contact with another roller. The means for operating the roller, whichever type it is, is not shown. This roller is adapted to convey liquid or coating substances from the trough 25 and transmit it to any other desired surface which the roller 35 comes in contact. One end of bar 30' is provided with a pin 36

adapted to lie in a slot 37 on the upper end of lever 21. The oscillation of lever 21 through the rotation of shaft 14 will cause the reciprocation of bar 30' and the consequent reciprocatory agitating action of the blades 34 in the liquid 6 in the trough 25. The shaft 14 can be actuated by any suitable means, such as a belt (not shown) being connected to the power pulley 38 mounted on the shaft.

In the operation of this device, the shaft 14 is rotated by the application of power thereto, whereupon the agitating propeller stirs up the liquid within the receptacle or tank 1, and the beating of this propeller on the liquid tends to keep its consistency uniform and to purify it from any gases that may reside therein. The pump 9 being actuated from the shaft 14 operates to draw the liquid from the bottom of the tank out of the pipe 8 and force it through the pipes 10 and 26 into the trough 25. Here an additional agitation ensues and a certain amount of the composition is picked up by the roller 35 and transferred to any desired surface with which this roller is co-operatively related. The rotation of shaft 14 keeps the agitating blades 34 in constant action. The inlet pipe 7 is connected through the bottom of the trough 25 so that the liquid in the trough can constantly run back into the tank 1 to be retreated.

What I claim is:

1. An agitating apparatus, which comprises a liquid trough, a plurality of agitators disposed therein, means for operating said agitators, an agitating receptacle, circulating connections between the trough and the receptacle, agitating means within said receptacle, and power means adapted to operate the agitating means both in the receptacle and in said trough.

2. An agitating apparatus, which comprises a liquid trough, a plurality of agitators disposed therein, means for operating said agitators, an agitating receptacle, circulating connections between the trough and

the receptacle, agitating means within said receptacle, power means adapted to operate the agitating means both in the receptacle and in said trough, and a pump in said circulating connection to cause the flow of liquid between the trough and the receptacle.

3. An agitating apparatus, which comprises a trough adapted to contain liquid, a reciprocating member disposed within said trough, a plurality of agitator bars dependent from said reciprocating member into the liquid, an agitating tank, an agitator within said tank, a shaft connected to said agitator, power means adapted to operate said shaft, and a lever connected to the reciprocating member, said lever connected to said shaft whereby the power means operates both the agitating and the reciprocating member.

4. In a device of the class described, the combination of a liquid trough, a liquid container, overflow means from the former to the latter; means for conducting liquid from the container to the trough, rotary agitating means in one of said elements, reciprocating agitating means in the other of said elements, and means common to both of said agitating means for concomitantly operating them.

5. An agitating apparatus, which comprises a trough adapted to contain liquid, a reciprocating member disposed within said trough, a plurality of agitator bars dependent from said reciprocating member into the liquid, an agitating tank, an agitator within said tank, a shaft connected to said agitator, power means adapted to operate said shaft, a lever connected to the reciprocating member, said lever connected to said shaft whereby the power means operates both the agitator and the reciprocating member, inlet and outlet pipe connections between the trough and the tank, a pump in said connection to cause the circulation of liquid between the trough and the tank, and connections between the pump and the shaft.

HARRY HOUGH.