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H. D. WELLS

2,340,720

PULP BEATER AND SELECTOR

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FIG. 1.

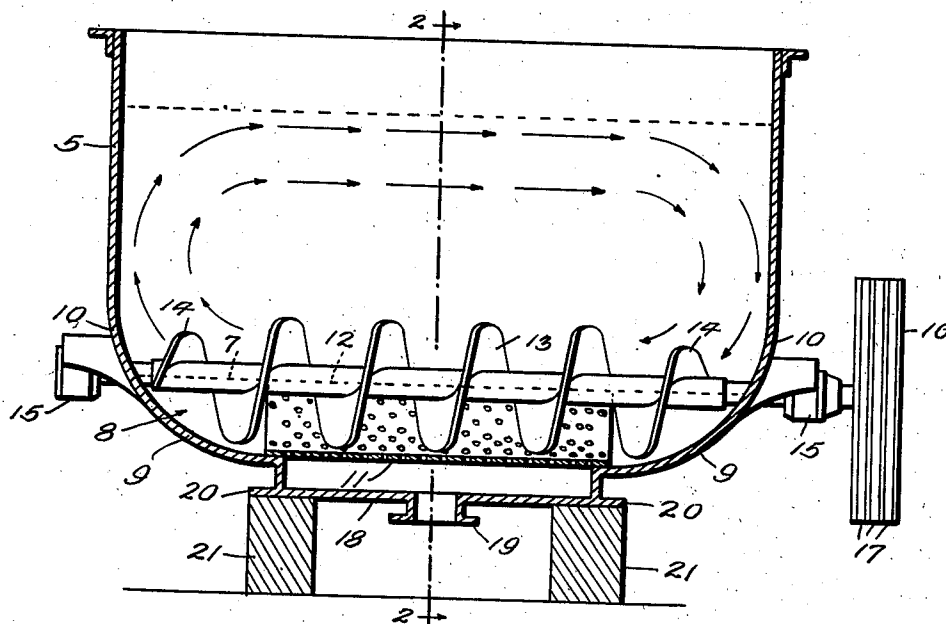


FIG. 2.

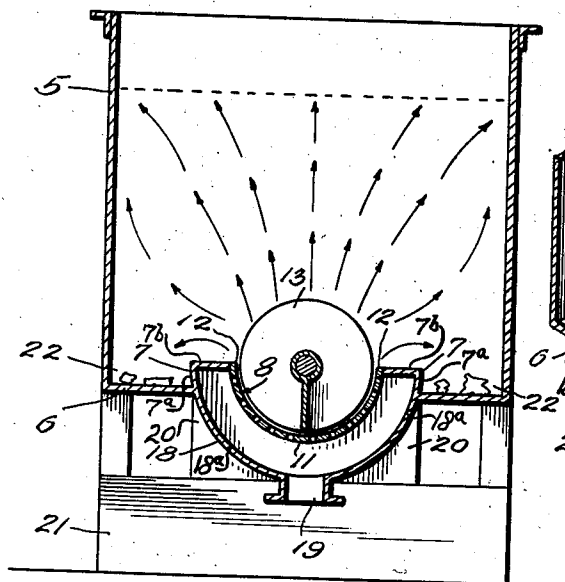
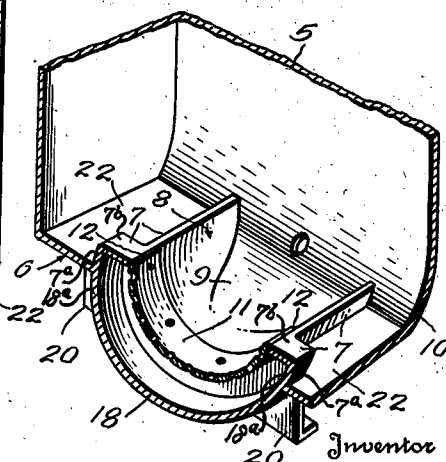


FIG. 3.



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PULP BEATER AND SELECTOR

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5 Claims. (Cl. 92-22)

The invention relates to a new and improved pulp beater and selector for use in paper-making, the object being to provide a simple and inexpensive, yet a highly efficient apparatus which will operate equally well for carrying out a batch process or a continuous process, whether operating on whole pulp bales, waste paper bales, broke, etc. In carrying out the above object, a further aim is to provide a novel construction which provides pockets to collect insoluble trash and prevent it from moving repeatedly into and out of a trough-like screen in which a beating and circulating worm is operable.

Figure 1 of the accompanying drawing is substantially a central vertical longitudinal sectional view.

Figure 2 is a transverse sectional view on line 2-2 of Fig. 1.

Figure 3 is a fragmentary sectional perspective view.

A preferred construction has been illustrated and will be rather specifically described with the understanding, however, that within the scope of the invention as claimed, variations may be made.

A tank 5 is provided, said tank being preferably of elongated form. The bottom 6 of this tank is provided with spaced parallel ribs 7 on its upper side, said ribs extending substantially between opposed portions of the tank side wall. Between these ribs, the tank bottom is provided with a substantially semi-cylindrical upwardly open trough or channel 8 extending throughout the length of said ribs, the channel bottom being provided with upwardly curved ends 9 which merge into similarly curved portions 10 of the tank side wall. The major portion of the length of the channel 8 is formed by a substantially semi-cylindrical screen 11 which may be of one piece or constructed from a plurality of screen plates. The longitudinal edge portions of this screen 12 project upwardly substantially even with the upper side of the ribs 7. In the construction shown, the intermediate portion of each rib 7, co-extensive with the length of the screen 11, comprises a longitudinal wall portion 7^a spaced outwardly from said screen 11, and a longitudinal top flange 7^b projecting inwardly from the upper edge of said wall portion 7^a to the upper edge of said screen 11.

A beating and circulating worm 13 is disposed longitudinally in the channel 8 in wiping relation with the screen 11, said worm having reduced ends 14 operable over the upwardly curved ends 9 of the channel bottom. The worm 13 is

mounted in appropriate bearings 15 and may be driven in any appropriate manner. For illustrative purposes, a pulley 16 is shown on one end of the worm shaft, engaged by a plurality of V-belts 17 appropriately driven.

Under the screen 11, there is provided a semi-cylindrical casing 18 to receive the pulp discharged through said screen, said casing 18 being provided with a pulp outlet 19. The longitudinal side walls 18^a of the casing 18, in the present disclosure, merge into the side wall portions 7^a of the ribs 7. The ends of the casing 18 may well form feet 20 to support the entire tank upon sills or the like 21.

The material to be pulped and an appropriate quantity of water are placed in the tank 5 and obviously the supply of feed water could be automatically controlled if desired. When the worm 13 is driven, the pulp and liquid are circulated in the tank as indicated by the arrows, performing an effective beating and selecting operation. The selected pulp discharges through the screen 11 and is received in the casing 18 from which it leaves through the outlet 19. With this outlet constantly open, the apparatus will effectively perform a continuous beating and selecting operation, but if desired, the outlet could be closed until the pulp has been beaten and circulated for some time and then opened to permit discharge of the pulp. The worm 13 in either instance will act to keep the screen clean by exerting a wiping action thereon. Any trash which cannot be converted into a sufficiently fine state to pass through the screen 11, will simply collect in the two pockets 22 formed at the outer sides of the ribs 7, from which it may be removed from time to time.

From the foregoing taken in connection with the accompanying drawing, it will be seen that novel provision has been made for carrying out the object of the invention, and attention is again invited to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. A pulp beater and selector comprising a tank having an upwardly open channel in its bottom extending substantially between opposed portions of the tank side wall, the sides of said channel being inwardly spaced from two other opposed portions of said tank side wall, the bottom of said channel having upwardly turned ends, said channel being provided with a substantially semi-cylindrical screen forming an extended portion of its length, circulating means mounted longitudinally in said channel in wiping

relation with said screen and having portions over said upwardly turned ends of said channel bottom, means under said screen for receiving the pulp discharged therethrough, and means projecting upwardly from the tank bottom between said channel and said two other opposed portions of the tank side wall to prevent trash on the tank bottom from moving laterally into said channel.

2. A pulp beater and selector comprising a tank having spaced parallel ribs on the upper side of its bottom and extending substantially between two opposed portions of the tank side wall, said ribs being spaced inwardly from two other opposed portions of said tank side wall, said tank having an upwardly open channel extending longitudinally between said ribs, the bottom of said channel being provided with upwardly turned ends, said channel having a substantially semi-cylindrical screen forming an extended portion of its length, a circulating worm mounted longitudinally in said channel in wiping relation with said screen, and means under said screen for receiving the pulp discharged therethrough, the portions of the tank between the outer sides of said ribs and said two other opposed portions of the tank side wall constituting trash-collecting pockets.

3. A pulp beater and selector comprising a tank having spaced parallel ribs on the upper side of its bottom and extending substantially between two opposed portions of the tank side wall, said ribs being spaced inwardly from two other opposed portions of said tank side wall, said tank having an upwardly open channel extending longitudinally between said ribs, the bottom of said channel being provided with upwardly turned ends, said channel having a substantially semi-cylindrical screen forming an extended portion of its length, a circulating worm mounted longitudinally in said channel in wiping relation with said screen, said worm having reduced ends over said upwardly turned ends of said channel bottom, and means under said screen for receiving the pulp discharged therethrough, the portions of the tank between the outer sides of said ribs and said two other opposed portions of the tank side wall constituting trash-collecting pockets.

4. A pulp beater and selector comprising a tank having an upwardly open substantially semi-cylindrical screen in its bottom, the longitudinal edge portions of said screen projecting above said bottom, in inwardly spaced relation with opposed portions of the tank side wall, a circulating worm mounted longitudinally in said screen in wiping relation therewith, and means under said screen for receiving the pulp discharged therethrough, the portions of the tank between the outer sides of said upwardly extending longitudinal edge portions of said screen and said opposed portions of said tank side wall constituting trash-collecting pockets.

5. A pulp beater and selector comprising an elongated tank having parallel side walls, parallel end walls and a bottom, said bottom having two laterally spaced longitudinal ribs extending from one of said end walls to the other, said ribs being disposed between said side walls and the longitudinal center of the tank and projecting upwardly from said bottom, whereby said ribs cooperate with the lower portions of said side and end walls and with the portions of said bottom between said side walls and ribs in forming trash-collecting pockets, the central longitudinal portion of said bottom being depressed between said ribs and constituting a semi-cylindrical trough which extends longitudinally from one of said end walls to the other and extends transversely from one of said ribs to the other, the ends of said trough being turned upwardly to said end walls and the major intermediate portion of said trough being perforated and constituting a selector screen, the intermediate portions of said ribs co-extensive with the length of said screen each comprising a longitudinal wall portion spaced outwardly from said screen, and a longitudinal top flange projecting inwardly from the upper edge of this wall portion to the upper edge of said screen, a screened pulp-receiving casing secured to said tank bottom under said screen and having side walls merging into said side wall portions of said ribs, and a circulating worm mounted longitudinally in said trough and having reduced ends within said upwardly curved ends of said channel.

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