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STRAINER FOR SUGAR JUICES AND THE LIKE

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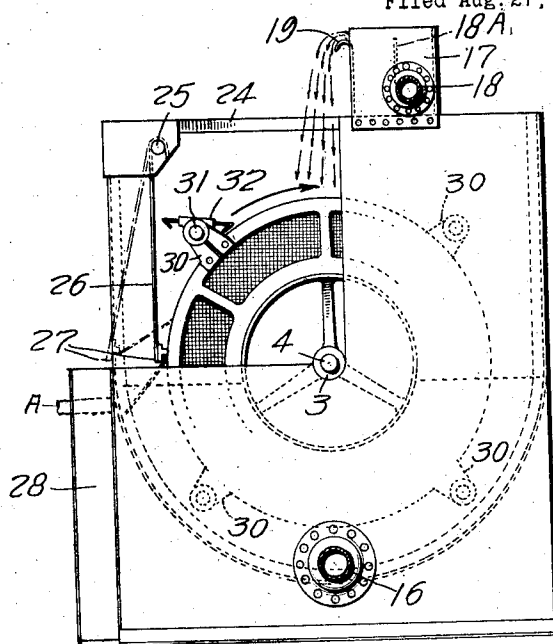


Fig. 1.

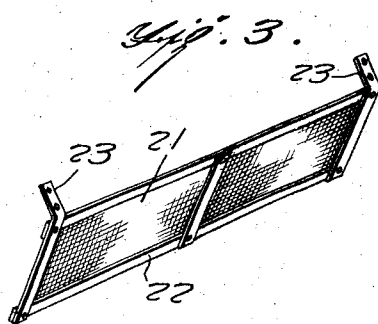


Fig. 3.

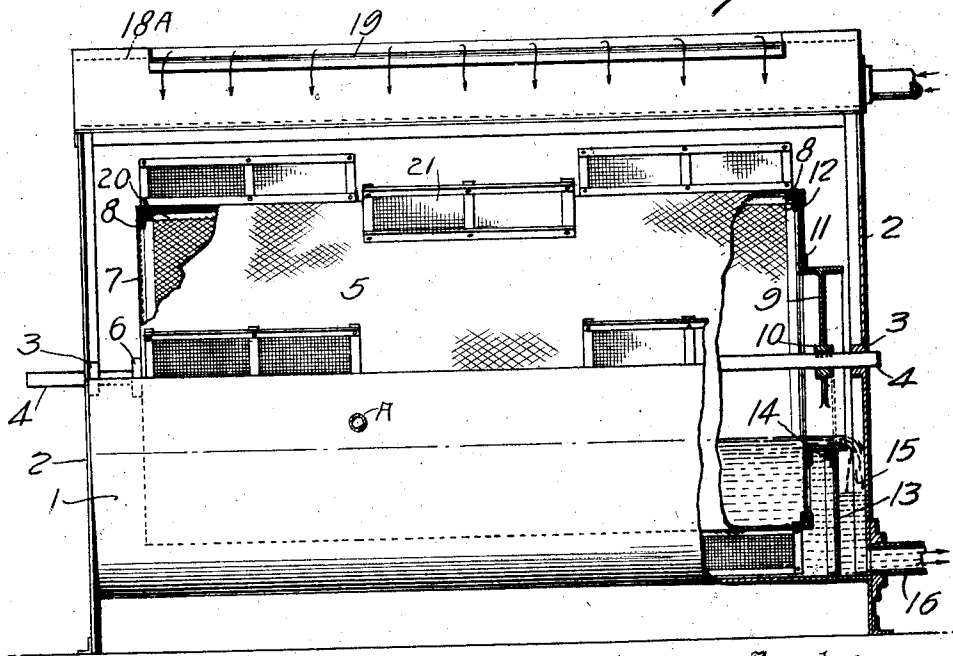


Fig. 2.

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STRAINER FOR SUGAR JUICES AND THE LIKE.

Application filed August 27, 1923, Serial No. 659,684, and in Great Britain January 13, 1923.

This invention relates to strainers for sugar juices and the like; and it comprises a tank, a revoluble drum in the tank, means, such as paddles or the like, on the drum and arranged to carry solid matters from the receptacle, and means for withdrawing juices through the foraminous drum to an outside point, such means comprising a dam or the like over which the juices flow after they have passed through the drum; all as more fully hereinafter set forth and as claimed.

In copending application, Serial No. 590,966, filed September 27, 1922, I have described and claimed certain improvements in strainers for sugar juices and the like, in which there is provided a revoluble foraminous drum, a tank or the like for the drum, screen paddles arranged to carry the solid matters from the bottom of the tank, scraping devices to scrape the solid matter off the paddles and means for withdrawing the juices from the drum. In said prior application, the means described comprised generally pipes or the like extending towards the bottom of the tank but inside the revoluble screen, with connections for withdrawing the liquid from the tank. The present invention comprises certain improvements in the straining device, and particularly, the means for withdrawing the liquid from tank.

In the accompanying drawings showing one form of a specific embodiment of my invention—

Fig. 1 is an end view of the apparatus;

Fig. 2 is a side view partly in section; and

Fig. 3 is a detailed perspective of one form of strainer paddle which may be used.

Referring to the drawings 1 indicates a tank of sheet iron or steel having end walls 2 which carry bearings 3 for the shaft 4. The shaft supports the screen drum or cylinder 5 through the hub 6 on the left and the side wall screening 7 carrying the angle irons 8 to which are attached irons carrying sections of screening forming the drum 5. At the right the shaft carries the spoke hub or wheel 9 by means of the key 10 and this hub is flanged as at 11 and carries the side wall 12 of screening material. The angle iron 8 serves to connect the side walls 12 with the irons of screen sections forming the drum 5. Preferably at one side, but if desired at both sides, the screen drum may be provided with the hub and a partition plate forming the dam to be described. For sake of simplicity of illustration this partition plate forming the dam is shown at one end of the apparatus. The bottom of the tank is provided by means of rivets and the like with a partition plate 13 extending upwardly in the tank to the outer face of the hub and being curved at the top to fit against the outer face of the hub 9 and in effect form a seat therefor. This partition plate is provided with a channel 14 formed by means of a section of angle iron carrying packing which engages the outer face of the wheel 9. This construction described results in the formation of a passage one side of which is formed by the end wall 2 of the tank and the other side of which is formed by the partition plate 13. The bottom of this passage is provided with an off-take pipe 16 to conduct strained juices to evaporators or other points in the plant for further operation. The tank is provided at the top with a trough 17 having inlet 18 for juice from the mill with a partition 18^a dividing the trough into two sections and acting as a wall to prevent forcible feeding of the juices to the drum. The trough 17 is further provided with the lipped overflow 19 directing the juices to the top of the screen drum along its length. The screening of the drum may be formed by the angle irons 20 carried by the angle irons 8 and such irons 20 are provided at intervals with straining paddles 21 of wire gauze or the like mounted in frames 22 and united to the angle irons 20 by means of the arms 23. The tank is further provided with the framework 24 carrying shaft 25 to which a number of scraper arms 26 are pivoted. These scraper arms carry scrapers 27 at their extremities and are arranged to contact with the strainer paddles 21 so that when the drum revolves (through means of a pulley and mechanism, not shown) in the direction of the arrow shown in Fig. 1, the solid material carried up by the paddles is

scraped off of them by means of the scraper arms 26 and this solid material is delivered into the chute 28. This construction just described has the advantages pointed out in my copending application, Serial No. 590,966, filed September 27, 1922. The screen of the revolving drum may be made of exceptionally fine mesh wire since there are no scrapers contacting directly with it, and it therefore will last a long time even though made of fine mesh gauze. The gauze of paddles 21 may either be made of fine material or of coarser material. They are the only parts of the apparatus which come in contact with scraping devices and it is a simple matter to renew them if they should be worn out, but since there are a plurality of these repeatedly running through the liquid accumulating in the bottom of the tank when coarser screening than that of the drum is used the necessity for replacing these straining paddles is infrequent.

Instead of the type of strainer paddles shown in detail in Fig. 3 and in dotted lines in Fig. 1, I may use pivoted paddles. The ends of the drums may carry brackets 30 carrying shafts 31 to which are journaled a plurality of paddles 32. These paddles being free to swing will assume a vertical position when at the bottom of the tank and will occupy the space between the bottom of the drum and the bottom tank and thus force solid matter into proximity to the scraping arms 26. The paddles 32 may be perforated.

In operation the sugar juices from the mill are pumped through juice inlet 18 to the tank 17. They overflow the dividing wall 18^A and flow from the trough onto the top of the drum as the drum is revolved. Solid matter is caught on the periphery of the drum carried down to the bottom of the tank and is caught by the paddles as the drum revolves, carried up into proximity to the scraping arms 26 and scraped from these paddles into the chute 28. The paddle arms revolving with the drum are constantly picking up solid matter from the bottom of the tank and delivering it to the chute 28. The juices which reach the inside of the drum can only do so by passing through the screening either at the periphery or at the ends. The only outlet is through the hub or pulley 9 since the partition plate 13 in communication with this hub forms a dam over which the juices must flow to the passage 15 and thence to exit through 16. With this construction it is not necessary to provide suction pipes or siphoning arrangements for withdrawing the strained juices from the tank.

To prevent unstrained juice from overflowing the dam and the side walls of the tank, there is provided an overflow pipe A. Overflowing, unstrained juices may be returned for straining.

What I claim is:

1. Apparatus for straining sugar juices and the like comprising a tank, a foraminous drum mounted to revolve therein, a coaxial hub member mounted in one end of the drum, said hub member comprising a central portion and a spaced circular flange, the said flange being attached along one edge to the face of the drum, paddles carried on the periphery of the drum and arranged to remove solid matter from the tank, means for introducing juices to be strained to the drum, and a dam extending from the bottom of the tank upwardly between the end wall of the tank and the end of the drum and contacting with the face of said circular flange whereby a seal is provided between said flange and dam which is effective to prevent the passage of solid matter therebetween upon longitudinal movement of the drum in the said tank.

2. Apparatus for straining sugar juices and the like comprising a tank, a wall extending from the bottom of the tank upwardly to form a dam, and a foraminous drum mounted to revolve in the tank and having one open end, a hub member comprising a central portion and a spaced circular flange mounted coaxially with said drum, the face of said circular flange revolving in contact with said dam to form a seal therewith, such seal being effective irrespective of longitudinal movement of said drum within said tank.

3. Straining apparatus for sugar juices and the like comprising a tank, a foraminous drum arranged to revolve therein, a hub carried by one end of the drum providing a circular flange and a partition wall extending from the bottom of the tank to the face of said flange whereby the hub may revolve with respect to the partition wall and move longitudinally of said tank without permitting solid matter to pass between said flange and wall, and whereby the partition wall together with the hub forms a dam over which the juices may flow.

4. Straining apparatus for sugar juices and the like comprising a tank, a foraminous drum arranged to revolve therein, a hub carried by one end of the drum comprising a circular flange, and a partition wall extending from the bottom of the tank to the face of said flange and contacting therewith whereby the hub may revolve with respect to the partition wall and move longitudinally of said tank without permitting solid matter to pass between the flange and partition wall, and packing between the partition wall and the said hub.

5. A straining apparatus for sugar juices and the like comprising a tank, a foraminous drum arranged to revolve therein, a hub carried by the drum at one end comprising a circular flange, a partition plate

extending from the bottom of the tank to the said flange and in contact therewith, said partition wall being located between the end wall of the drum and the end wall of the tank whereby there is formed a dam over which the juices may flow, and packing between said partition wall and flange which prevents passage of solid matter therebetween irrespective of the longitudinal position of said drum in the said tank. 10

In testimony whereof, I have hereunto affixed my signature.

SAMUEL S. PECK.