May 10, 1927. E. W. LINDQUIST 1,627,655

ROTARY SCREEN FOR SCREENING PULP AND PAPER STOCK

Filed July 6, 1925

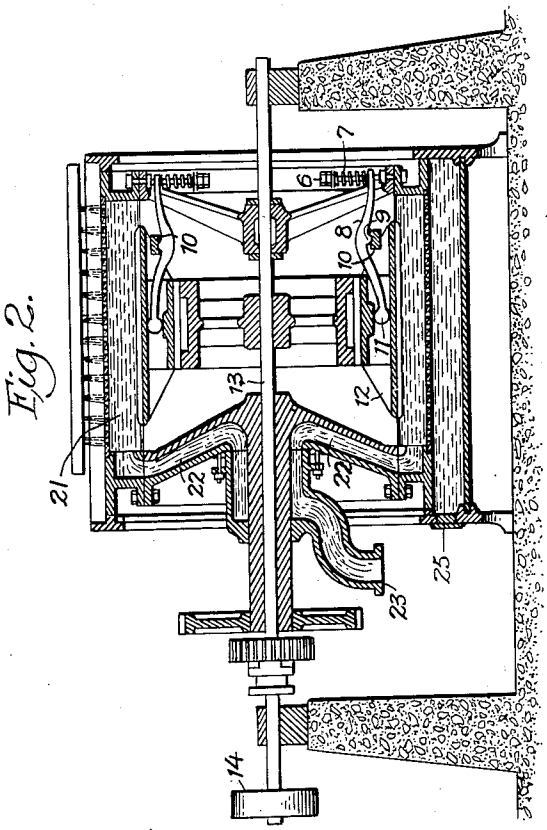


Fig. 2.

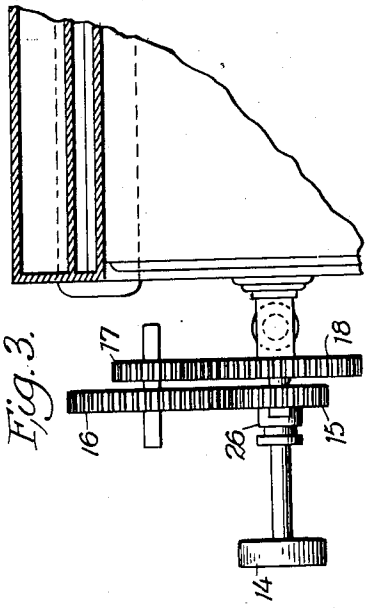


Fig. 3.

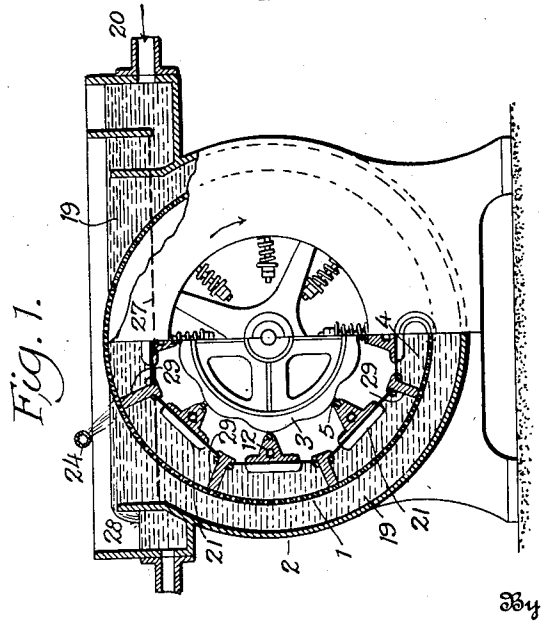


Fig. 1.

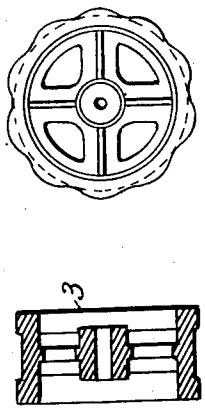


Fig. 4.

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UNITED STATES PATENT OFFICE.

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ROTARY SCREEN FOR SCREENING PULP AND PAPER STOCK.

Application filed July 6, 1925. Serial No. 41,641.

This invention relates to rotary pulp screens, and has for its object the simplification of the structure of pulp screens employing separate suction chambers around the rotating drum, by eliminating suction plungers, and a general arrangement that permits the replacement of the screens during operation, and by details of construction hereinafter described and claimed.

Referring to the drawings, in which like parts are similarly designated—

Figure 1 is a partial end view and partial transverse section.

Fig. 2 is a longitudinal section.

Fig. 3 is a plan view of the driving gearing.

Fig. 4 shows the diaphragm operating wheel in cross section and in elevation.

The rotating pulp screen comprises a substantially cylindrical casing or vat 2 in which is rotatably mounted a screen drum 1 spaced from the cylindrical inner walls of the casing. The casing is open at the top, and the width of this opening is sufficient to permit the drum to be inserted in the casing therethrough. A suitable launder surrounds and extends somewhat above the rim of the opening in the top of the casing and is provided with an inlet pipe 20.

The drum 1 is provided with removable screen sections, each section covering a segmental suction chamber 21 formed between longitudinal balks 29.

The chambers are closed toward the inside of the drum 1 by flexible diaphragms secured to and extending between these balks. Each screen section is perforated with numerous fine slots, as customary. The drum is supported by a spider at each end, which spiders are loosely supported on a driving shaft 13 driven by a belt pulley 14, or otherwise.

One of the spiders is provided with channels 22 each connected to a suction chamber 21, and all of said channels discharge into a central, stationary collecting chamber and thence through a discharge pipe 23 for the screened stock.

The collecting chamber surrounds the hollow shaft of the spider, which is driven by a speed reduction train of gears, 15, 16, 17, 18, of which the gear wheel 15 is mounted on the driving shaft 13 and driven therefrom through the medium of a clutch 26.

Each diaphragm 4 has centrally secured thereto an actuator or shoe 12 substantially triangular in cross section and whose apex 5 lies in the path of an operating wheel 3 having one or more peripherally undulated rims for actuating the diaphragms, whereby connecting rods or other intermediate devices are dispensed with.

Each actuator 12 has a longitudinal opening in which engages the rounded head 11 of a lever 8 pivoted on a balk 9, and the tail of the lever is engaged by a coil spring 7 mounted on a radial bolt 6.

A spray pipe 24 is arranged to clean the screen sections as they rotate into their uppermost position, the dirt, slivers and some stock flow over the edge of the casing 1 into the launder or overflow box 28.

In the lower part of the casing between the screen and casing wall I provide a clean-out opening, 25.

It will thus be seen that the screen sections are on the exterior of closed suction chambers 21 individually discharging screened pulp to the collector and discharge pipe 23.

The interior of the drum 1 is free of stock, and the operating parts are accessible at all times.

By reason of the open-top arrangement of the casing the drum may be stopped by disengaging clutch 26 and expose an entire chamber when the level of the stock is permitted to recede to about the line 27. The screen or diaphragm or both may then be replaced without stopping the screening action, the remaining diaphragms operating as usual.

It will also be noted that all the levers 8 and springs 7 are at the same screen end, which greatly facilitates adjustment of the spring tension.

I claim—

1. A rotary cylindrical pulp screen divided into a plurality of sections and each section forming the outer wall of a chamber; in combination with imperforate flexible diaphragms each closing a chamber corresponding to a screen section, means for vibrating the diaphragms and a pulp outlet for each chamber.

2. A rotary pulp screen divided into sections and each section forming the outer wall of a chamber; in combination with flexible diaphragms each closing a chamber corresponding to a screen section, means to separately discharge each chamber from be-

tween its screen and diaphragm, a collector chamber common to the discharge means and a discharge pipe from said chamber.

3. A rotary pulp screen divided into sections and each section forming the outer wall of a chamber; in combination with flexible diaphragms each closing a chamber corresponding to a screen section, a spider for the screen having hollow arms each forming a discharge passage for a chamber, and a collector into which all the arms discharge.

4. In a rotary pulp screen the combination with a casing having an open top and a supply and overflow launder therefor; of a rotary screen having a plurality of sections said screen arranged to have its upper part move through said open casing top, a suction member for each screen section and means to operate said members, whereby a chamber may be repaired by permitting the stock level to lower, without interrupting the operation of the other chambers.

5. In a rotary pulp screen, the combination with a casing having an open top and a launder at such top to maintain the stock level at the top; of a rotary sectional screen in the casing, a diaphragm for each screen section, a shaft on which said section is loosely mounted, means on the shaft for vibrating the diaphragms, a speed reducing gearing between the shaft and screen and a clutch interposed between said shaft and gearing to permit the rotation of the screen to be stopped without stopping the vibrating means.

6. In a rotary pulp screen divided into separate screen sections, each section having a suction compartment; a diaphragm for each section, an actuator for each diaphragm, a centrally arranged rotating wheel having an undulating surface for moving with the actuators in one direction, a lever connected to each actuator and separate means to urge the levers to move their actuators in an opposite direction.

7. A rotary cylindrical pulp screen divided into a plurality of screening sections, each section forming the outer wall of a chamber; in combination with a flexible diaphragm forming an inner closing for each chamber, an actuating shoe for each diaphragm, a central shaft on which said screen is loosely mounted and a wheel on said shaft having an undulating rim directly contacting with the shoes to flex said diaphragms in one direction, and individual means to positively reversely operate said diaphragms, all accessible at one end of said screen.

In testimony that I claim the foregoing as my invention, I have signed my name.

ERNEST W. LINDQUIST.