

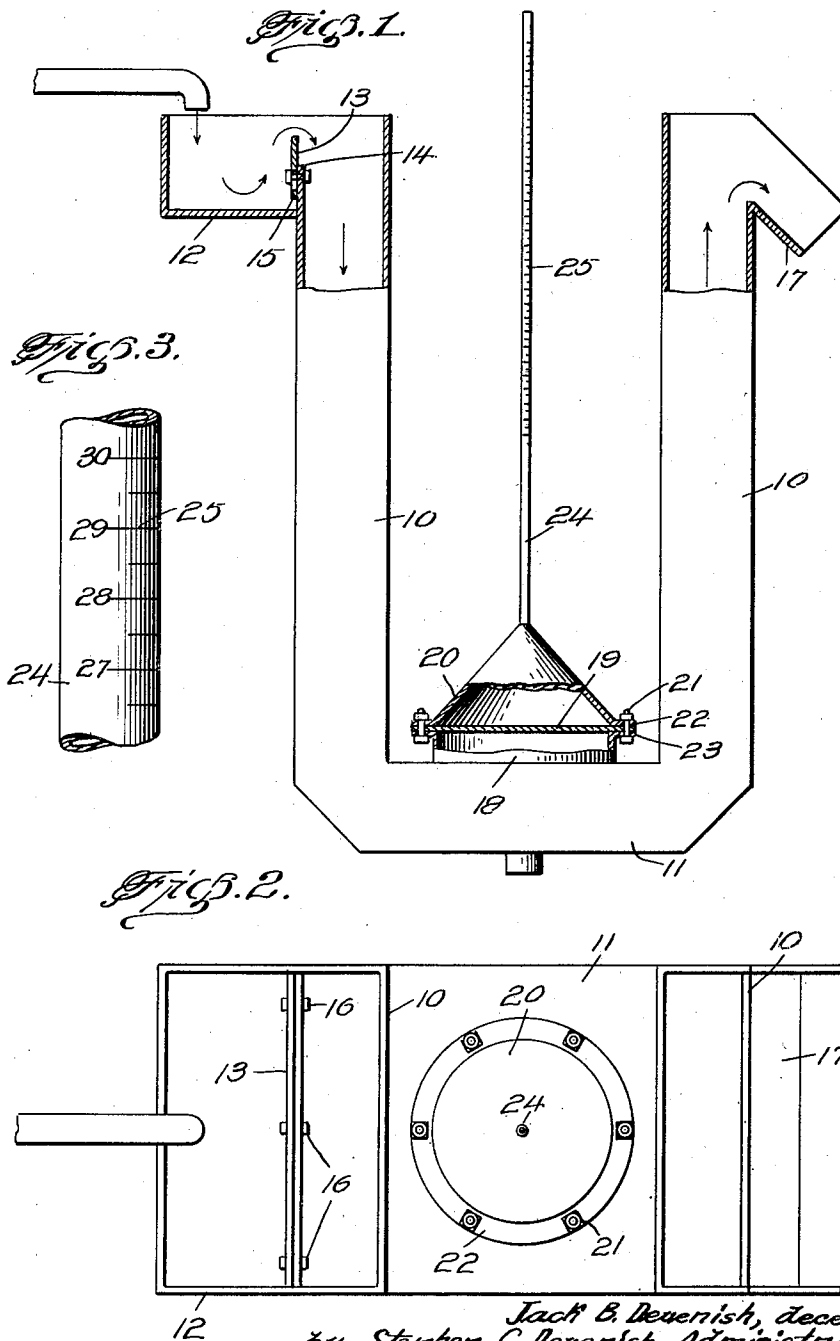
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DENSIMETER

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DENSIMETER

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1 Claim. (Cl. 265—44)

This invention relates to densimeters and has for an object to provide a meter adapted to automatically indicate the specific gravity of a pulp flowing through the meter.

5 A further object is to provide a device of this character which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

10 With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

20 Figure 1 is a side elevation of a densimeter constructed in accordance with the invention, with portions broken away.

Figure 2 is a plan view of the densimeter shown in Figure 1.

25 Figure 3 is an enlarged detail view showing the scale on the indicator sight glass.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, the densimeter is shown to comprise a U-shaped tube having upright legs 10 and a transversely disposed base 11 connecting the legs, the structure being formed of any desired material and of any desired cross section. A feed box 12 is secured to the upper end of one leg of the tube and is provided with an adjustable weir 13 for controlling the size of the inlet opening 14 through which pulp passes from the feed box into the tube.

40 The weir may be in the form of a board having vertically disposed slots 15 through which and through the upper end of the leg of the tube, adjusting bolts 16 are passed.

The other leg of the tube is provided at its upper end with a discharge spout 17 through which the pulp is discharged from the meter. The entrance end of the discharge spout is disposed at a lower level than any of the adjusted positions of the weir.

50 A chamber 18 is disposed on the top of the transversely disposed base 11 and communicates therewith. The chamber may be cylindrical in form, as best shown in Figure 2, and is closed at the top by an impervious flimsy diaphragm 19 which is responsive to pressure fluctuations in

the tube. The chamber is provided with a substantially conical cover 20 which is bolted to the chamber by bolts 21 passed through peripheral flanges 22 and 23 carried by the cover and the chamber respectively, and between which flanges 5 the peripheral edge of the diaphragm is clamped.

The cover of the chamber above the diaphragm constitutes an indicator reservoir from which rises a glass sight tube 24 which is marked with a scale 25 graduated in inches and fractions 10 thereof. The tube and indicator reservoir are filled preferably with water colored red or any other distinctive color so that the scale may be easily read during fluctuations of water level in the sight glass. The sight glass is extended 15 upward to a height considerably above the overflow level of the discharge spout 17.

In operation pulp enters and flows through the tube as indicated by the arrowheads on the drawing. The distance from the diaphragm 19 20 to the top of the incoming stream of pulp is maintained constant by manipulating the adjustable weir 13 thus maintaining a constant column of pulp to exert a pressure on the diaphragm, which is proportionate to the specific gravity of the pulp. However, there is a slight discrepancy due to the friction of the pulp and the climatic energy of the pulp in motion. Pressure of the pulp is exerted on the diaphragm, and forces the fluid in the sight glass to seek a level 30 commensurate to the pressure. Thus, a uniform flow of pulp, of a definite specific gravity, will always force the fluid to the same level.

As an example, when pulp of a specific gravity of 1.5 is flowing through the tube the water indicator will rise in the sight glass to a height 35 above the diaphragm of thirty inches. If the specific gravity of the pulp with the volume of flow over the weir remaining constant is 1.2, the water will rise in the glass to about twenty-four 40 inches.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

45 A pulp densimeter comprising a tube of U-form, a feed box secured to the upper end of one leg of the tube, a vertically adjustable weir in said feed box, a discharge spout connected to the top 50 of the other leg of the tube at a point lower than the lowest adjusted position of the weir to maintain a constant head of pulp in the tube, a chamber connected to the upper side of the cross member of the tube between the legs thereof and com- 55

communicating with the interior of said member, the lower part of the chamber being cylindrical, the upper part of the chamber being conical and constituting an indicator fluid reservoir, a flexible diaphragm arranged between the members of the chamber and responsive to pressure fluctua-

tions of pulp flowing through said tube, and a graduated glass tube extending upwardly from the upper end of the indicator reservoir.

STEPHEN C. DEVENISH.

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