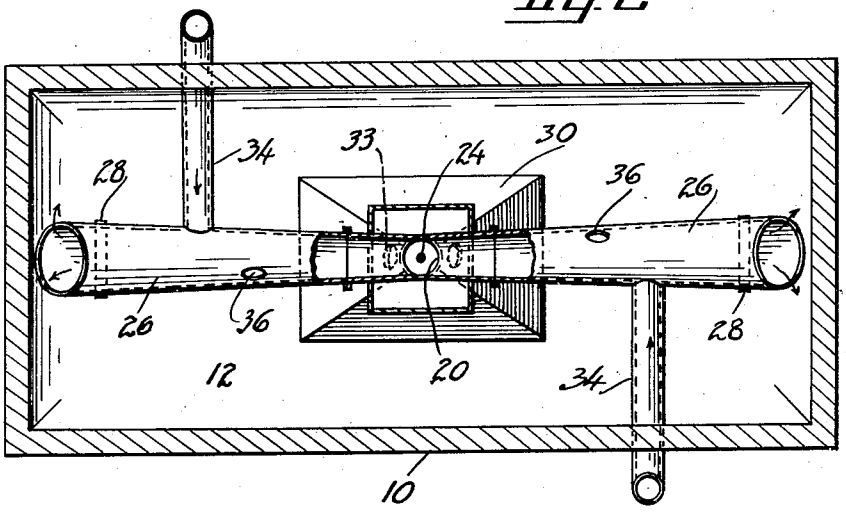
July 4, 1939. J. A. ROSMAIT 2,164,944

PULP STOCK AGITATING APPARATUS

Filed June 10, 1936 2 Sheets-Sheet 1

Fig. 2



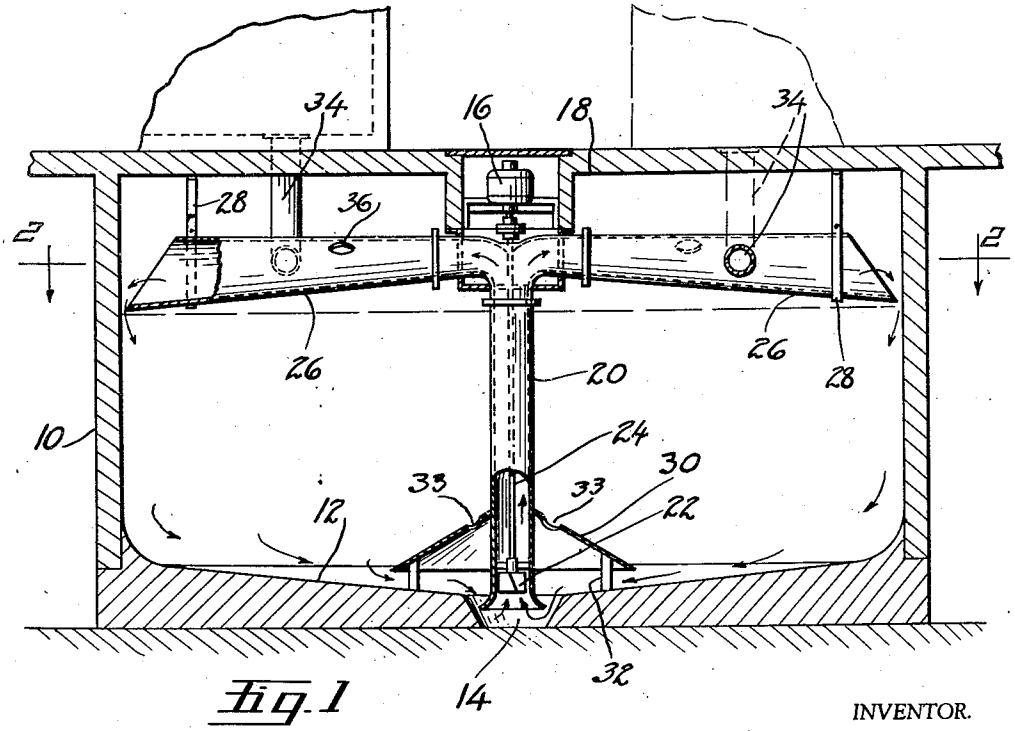


Fig. 1

INVENTOR.

John A. Rosmait

BY

Parker & Burton

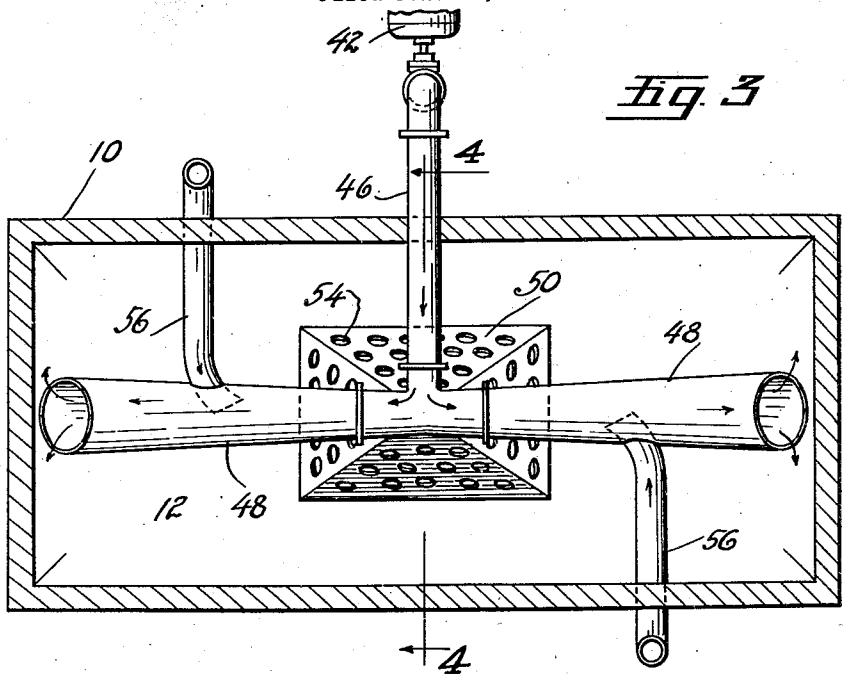
ATTORNEYS.

July 4, 1939. J. A. ROSMAIT 2,164,944

PULP STOCK AGITATING APPARATUS

Filed June 10, 1936 2 Sheets-Sheet 2

Fig. 3



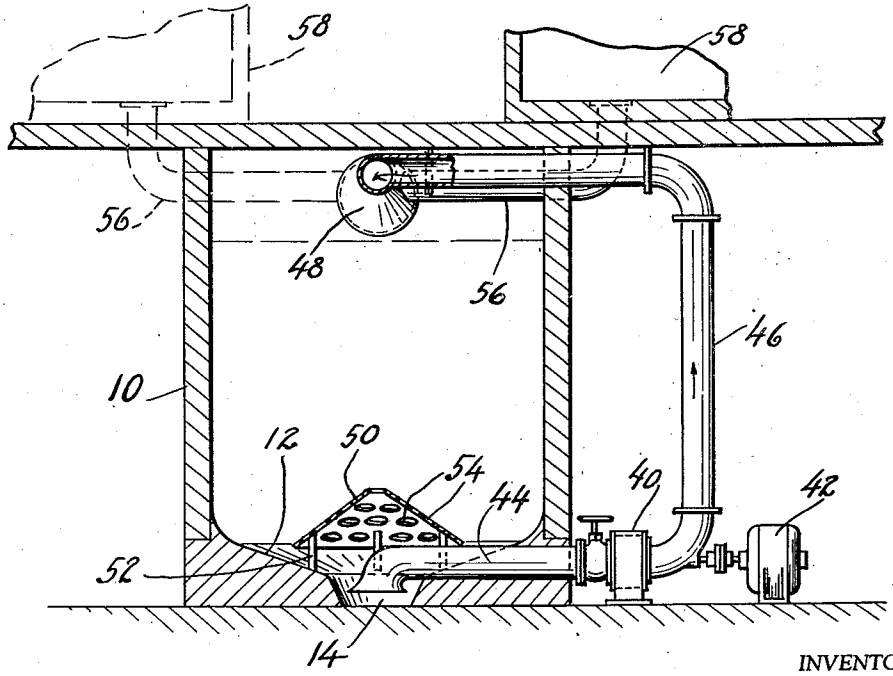


Fig. 4

INVENTOR.
John A. Rosmait
BY
Parker & Burton
ATTORNEYS

Patented July 4, 1939 2,164,944

UNITED STATES PATENT OFFICE

2,164,944

PULP STOCK AGITATING APPARATUS

John A. Rosmait, Manistee, Mich.

Application June 10, 1936, Serial No. 84,593

3 Claims. (Cl. 92—37)

My invention relates to improvements in pulp stock storage chests and agitating apparatus adapted to agitate the pulp stock while in storage and to maintain a uniform consistency thereof.

Pulp stock is composed largely of water. The pulp wood fibers are carried in the water. There is a tendency for these fibers to collect in masses in the chest. In the utilization of the pulp stock in the fabrication of paper it is desirable to have the stock at a uniform consistency throughout. To maintain this uniform condition of the pulp stock various devices are provided for agitating the same. Various types of mechanism have heretofore been provided for recirculating the pulp stock. My invention relates to a chest provided with improved recirculating mechanism adapted to maintain the pulp stock within the chest in a uniform condition throughout.

Various types of chests have been provided in the paper industry. These are long rectangular chests, upright cylindrical chests, and chests of various sizes and shapes. The particular embodiment of recirculating apparatus here illustrated is particularly useful in connection with a chest the length of which is substantially greater than its width or height and which is referred to herein as an elongate chest.

An object of the invention is to provide recirculating apparatus communicating with a chest of the character described which apparatus is adapted to withdraw pulp stock from a depressed portion of the chest floor and to deliver the stock against separated upper portions of the chest wall.

A feature of importance is that the pump is provided with a plurality of flaring outlets terminating adjacent to opposite walls of the chest at the top thereof. Another feature is that the pump intake and collector basin, sump, or depressed portion of the floor of the chest from which pulp stock is withdrawn by the pump intake, is surmounted by a dome shaped baffle which is adapted to cause the pulp stock to flow outwardly thereover toward the side wall of the chest and to cause such stock to enter the pump intake by flowing inwardly under the outer margin of the baffle and underneath the baffle.

Another meritorious feature is that additional pulp stock may be delivered into the flaring outlets of the pump. This delivery may be by pulp conduits which enter into the interior of these pump outlets. These conduits may enter the pump outlets so as to deliver additional pulp stock thereinto counter to the direction of flow of pulp stock through the outlets from the pump.

An important characteristic is that the pump is of the axial flow type. In the preferred embodiment it has an intake that extends downwardly vertically into the chest to a point adjacent to the floor thereof. This pump intake is disposed substantially centrally of the chest and the chest floor slopes downwardly toward such intake from all sides. The pump is provided with discharge outlets that extend toward opposite ends of the chest to discharge the pulp stock adjacent to said ends.

Various other objects, advantages, and meritorious features of my improved construction will more fully appear from the following description, appended claims and accompanying drawings, wherein:

Figure 1 is a vertical longitudinal sectional view through a pulp stock storage chest embodying my invention,

Fig. 2 is a horizontal cross-sectional view taken on line 2—2 of Fig. 1,

Fig. 3 is a plan of a pulp stock storage chest embodying my invention in a form slightly modified as compared with the construction shown in Figs. 1 and 2, and

Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 3.

In the various embodiments of the invention illustrated in the several figures of the drawings an elongate rectangular type of chest 10 is illustrated. This chest is provided with a floor 12 which slopes downwardly from all sides toward a depressed portion, collector basin, or sump 14. This chest may be made of suitable materials well known in the industry such as concrete. It is made in such size as is desired for the installation sought.

In the embodiment shown in Figs. 1 and 2 there is provided an axial flow pump driven by a motor 16. This motor may be supported from the ceiling 18 of the tank. There is a tubular pump intake 20 which extends downwardly vertically into the chest terminating within the collector basin 14. Pump impeller 22 is driven by a shaft 24. Pulp stock is withdrawn through the pump intake 20 and discharged through flaring pump outlets 26.

The pump is here shown as provided with a pair of flaring discharge outlets 26 which extend across the upper portion of the chest as shown in Figs. 1 and 2 toward opposite ends of the chest. These outlet tubes may be suspended from brackets or bands 28 or the like. They terminate adjacent to the end walls of the chest

so that the pulp stock discharged therefrom strikes against such end walls. This striking of the pulp stock against the end walls of the chest assists the de-aeration thereof so as to facilitate the continuous functioning of the pump.

The chest is provided with a crown shaped baffle structure 30 encircling the pump intake 20 and supported by legs 32 or the like. This baffle extends outwardly and downwardly from the pump intake and its margin is supported spaced above the floor of the chest. It is adapted to direct the pulp stock outwardly toward the side wall of the chest and to cause the same to flow inwardly underneath the margin of the baffle to enter the sump 14. The baffle may be provided with a pair of apertures 33 adjacent to its upper end to permit a certain amount of pulp stock to flow through to prevent the pulp stock collecting as a dead mass underneath the baffle.

Conduits 34 may extend from beaters or the like to deliver additional pulp stock into the pump outlets 26. The pump outlets are shown as provided with apertures 36 into which overflow conduits from Jordans or the like may discharge additional pulp stock.

The pump outlets increase in diameter as they approach their discharge end. The additional pulp stock admitted thereinto mixes with the pulp stock being recirculated by the pump causing the stock to turn over and over as it flows through the outlets. This produces a more thorough admixture of pulp stock than would be the case if delivery were made directly into the chest from these additional sources. The bringing of the pulp stock from the center of the chest at the bottom up to the top of the chest and its discharge into the top of the chest against the opposite end walls and the provision of the baffle surmounting the pump intake all tend to produce thorough admixture and de-aeration of the pulp stock. It promotes efficiency of the recirculating mechanism and produces an effective thorough admixture of the stock so as to prevent the formation of dead spots therein. The stock so recirculated is maintained at a substantially uniform consistency throughout.

In Figs. 3 and 4 is shown a modification of the construction shown in Figs. 1 and 2. The pump is indicated as 40. It is driven by a suitable motor 42. The pump intake 44 is adapted to withdraw pulp stock from the sump 14 of the chest. The pump has a delivery outlet 46 which terminates within the chest in two oppositely directed flaring discharge outlets 48. These discharge outlets are adapted to discharge pulp stock delivered by the pump against opposite ends of the chest as hereinabove described in connection with the embodiment shown in Figs. 1 and 2.

The collector basin and pump intake is surmounted by a crown shaped baffle 50 which is supported spaced above the floor of the chest by supports 52. This baffle differs from the baffle shown in Figs. 1 and 2 in that it is provided with a large number of apertures 54 through which pulp stock can flow as well as underneath the margin of the baffle.

The conduits 56 for delivery of additional pulp from the beaters or the like are shown as entering into the interior of the pump outlets 48 and terminating within such interior adjacent to the centerline of said outlets as shown in dotted line in Fig. 3. These conduits 56 also enter the interior of the pump outlets so that the pulp delivered through the conduits is not only directed into the center of the pulp streams flowing through the outlets but is directed thereinto counter to the direction of flow of the pulp stream through the outlets. These conduits 56 may communicate with beaters 58 as shown in Fig. 4. Otherwise the construction is as heretofore shown and described.

According to the embodiments of the invention illustrated pulp stock is withdrawn from a low portion of the chest floor at approximately the center thereof and delivered into the top of the chest against the side walls of the chest and this is true whether the pump is located directly over the chest as shown in Figs. 1 and 2 and communicates therewith through an intake depending vertically below the pump or whether the pump is located outside the chest and communicates through an intake shown as illustrated in Figs. 3 and 4. In either case an additional pump may be provided to withdraw pulp stock from the chest for use in the manufacture of paper. This forms no part of the invention and is not here illustrated. Such connection for delivery to the remainder of the system might be with the outlet of the pulp recirculating mechanism if desired.

What I claim is:

1. A storage chest for pulp stock having a floor sloping toward a depressed sump portion, a pump having an intake extending vertically down into the chest and into the depressed sump portion thereof terminating above the floor of the sump portion to withdraw pulp stock therefrom, a dome-shaped baffle encircling the pump intake adjacent to its lower end, said baffle extending outwardly and downwardly from the pump intake surmounting the depressed floor portion of the chest and spaced thereabove, and extending outwardly over the floor of the chest beyond said sump, said pump having oppositely directed discharge outlets adapted to deliver pulp stock into the chest adjacent to spaced apart portions of its side walls, each of said outlets flaring from a portion of reduced diameter at its intake end toward a portion of maximum diameter at its outlet end and means for delivering additional pulp stock into said outlets to mix with the pulp stock flowing therethrough from said pump, said pump intake terminating within the sump in a flaring end portion spaced from the sump wall and below the chest floor to cause the pulp stock to bend sharply as it flows through the sump into said pump intake.

2. In a pulp stock storage chest, a floor sloping gradually downward toward substantially the center of the chest, said floor having a sump in substantially the center thereof towards which the pulp stock in the chest is directed by the sloping floor, a pipe system for causing continuous circulation of pulp stock in the chest, said pipe system having an intake pipe extending into said sump and having an intake opening below the upper edge of said sump but spaced from the bottom thereof, the position of said intake opening causing the flow lines of said pulp stock to bend sharply as they pass into the sump and thus into the intake opening whereby the pulp stock is agitated and mixed before entering said intake opening, a dome shaped baffle surmounting said sump in spaced relationship and extending outwardly over the floor beyond the margin of the sump, said pipe system including a pump communicating with said intake and oppositely directed outlets terminating adjacent opposed portions of the tank walls, each outlet increasing in diameter from its intake end toward its discharge end.

3. A storage chest for pulp stock having a floor sloping toward a depressed portion, a T-shaped pump structure having its upright portion serving as the pump intake extending vertically down into the chest and communicating with the depressed floor portion thereof to withdraw pulp stock upwardly therefrom, and a crown shaped baffle surrounding the pump intake and flaring outwardly and downwardly therefrom surmounting in spaced relationship the depressed floor portion of the chest and projecting outwardly over the floor of the chest substantially beyond the depressed floor portion of the chest, said pump having the arms of the T-shaped structure serving as oppositely extending outlets leading toward opposite side walls of the chest and terminating adjacent thereto, each of said outlets flaring from a minimum diameter portion at its intake end toward a maximum diameter portion at its outlet end.

JOHN A. ROSMAIT.