C. W. SHARTLE.

PAPER PULP PROCESS.

APPLICATION FILED MAR. 3, 1913.

1,173,748. Patented Feb. 29, 1916.

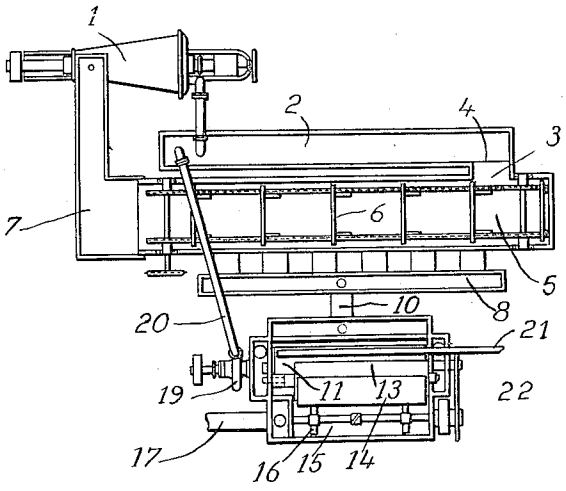


Fig. 1

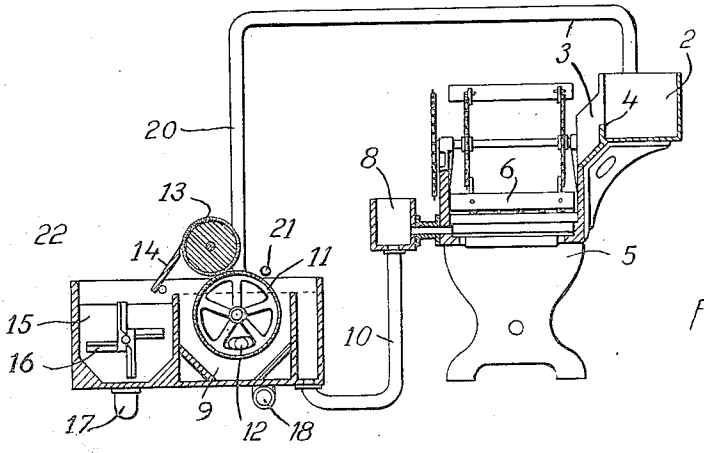


Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

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PAPER-PULP PROCESS.

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To all whom it may concern:

Be it known that I, CHARLES WELLS SHARTLE, a citizen of the United States, residing at Middletown, Butler county, Ohio, have invented certain new and useful Improvements in Paper-Pulp Processes, of which the following is a specification.

This invention pertaining to improvements in paper-pulp processes will be readily understood from the following description taken in connection with the accompanying drawing illustrating a form of apparatus which may be employed in carrying out my process, Figure 1 being a plan and Fig. 2 a vertical transverse section of the apparatus.

In carrying out my improved process I take the pulp, regardless of how it may have been produced, with a quantity of water and, by flotation, cause heavy impurities, such as metal and glass, to settle. I then screen the water-borne pulp to cause most of the water and the very fine pulp to separate from the coarser pulp which may need a further reduction. The water and fine pulp resulting from this screening I subject to a second screening to extract most of the water from the pulp and leave the pulp in condition for use or further treatment. The water screened out from the pulp by the second screening carries much valuable pulp and this water I carry back and deliver to the pulp being subjected to the first screening. The water thus proceeds in a circuit through the two screening operations, the only water leaving the system being that going out with the perfected pulp resulting from the second screening. I thus not only avoid the waste of water but I avoid the waste of the fine pulp which might go out with the wasting water.

The drawing illustrates merely one form of apparatus for carrying out my process.

In this drawing:—1, indicates a typical stock grinder, being illustrated as a Jordan engine: 2, a settling box through which the discharge from the stock grinder passes: 3, the outlet from the settling-box: 4, a dam at this outlet: 5, a screen receiving at its head end the outflow from the settling-box: 6, an endless chain of drag blades to drag the pulp tailward upon the screen: 7, a conduit to convey the tailings of the screen again to the stock grinder: 8, the outlet trough to receive the pulp and water which has passed through the screen: 9, a cylinder vat: 10, a conduit leading from the trough to the vat: 11, a making-cylinder running in vat 9 and constituting the second screen of the system: 12, water outlets from the interior of the making-cylinder: 13, a couch-roll coöperating with the making-cylinder: 14, a doctor for the couch-roll: 15, finished pulp vat receiving pulp from the doctor: 16, an agitator in the finished pulp vat: 17, outlet conduit from the finished pulp vat: 18, pipe placing in communication with each other the end compartments which receive the water through outlets 12 from the making-cylinder: 19, a pump to receive this water: 20, a conduit by means of which the pump discharges its water to the settling-box: 21, a shower-pipe which may be employed in keeping the cylinder-face clean and in furnishing any needed additional water to the pulp upon the making-cylinder: and 22, the making-machine as a whole.

The pulp from the Jordan engine, or from any other source, goes, along with sufficient water, to the settling-box; in the progress of the pulp through the settling-box the heavy impurities settle and may be removed as often as necessary; the thin pulp floats over the dam to the screen; the pulp is dragged tailward on the screen; the tailings of the screen may go again to the Jordan engine or may go elsewhere as desired; the water and fine pulp go through the screen and thence to vat 9; the making-cylinder drains out most of the water; the coating of the making-cylinder is couched off and then delivered by the doctor into the finished pulp vat; the finished pulp is discharged for use or further treatment; the agitator keeps the finished pulp in fair condition for discharge; the water carrying much fine pulp is received by the pump and delivered to the settling-box to join the pulp and add to the water therein.

I claim:—

1. The improved paper pulp process consisting in mixing the pulp with water; in treating the pulp while mixed with water to separate the fine pulp from the coarse pulp; treating the fine pulp to remove therefrom the most of the water; and then mixing such water and the entrained pulp with the pulp which has not yet been subjected to the first mentioned treatment.

2. The improved paper pulp process consisting of floating the pulp in water to remove the heavy impurities; separating the

fine pulp from the coarse pulp; removing the most of the water from the fine pulp; and mixing the water thus removed and its entrained pulp with the pulp undergoing treatment at some stage of the process prior to the removal of the water from the fine pulp.

3. The improved paper pulp process consisting of floating the pulp in water to remove the heavy impurities; separating the fine pulp from the coarse pulp; removing the most of the water from the fine pulp; and mixing the water thus removed and its entrained pulp with the pulp proceeding through the first-mentioned step.

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Witnesses:
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