T. HARVEY.

PAPER PULP APPARATUS.

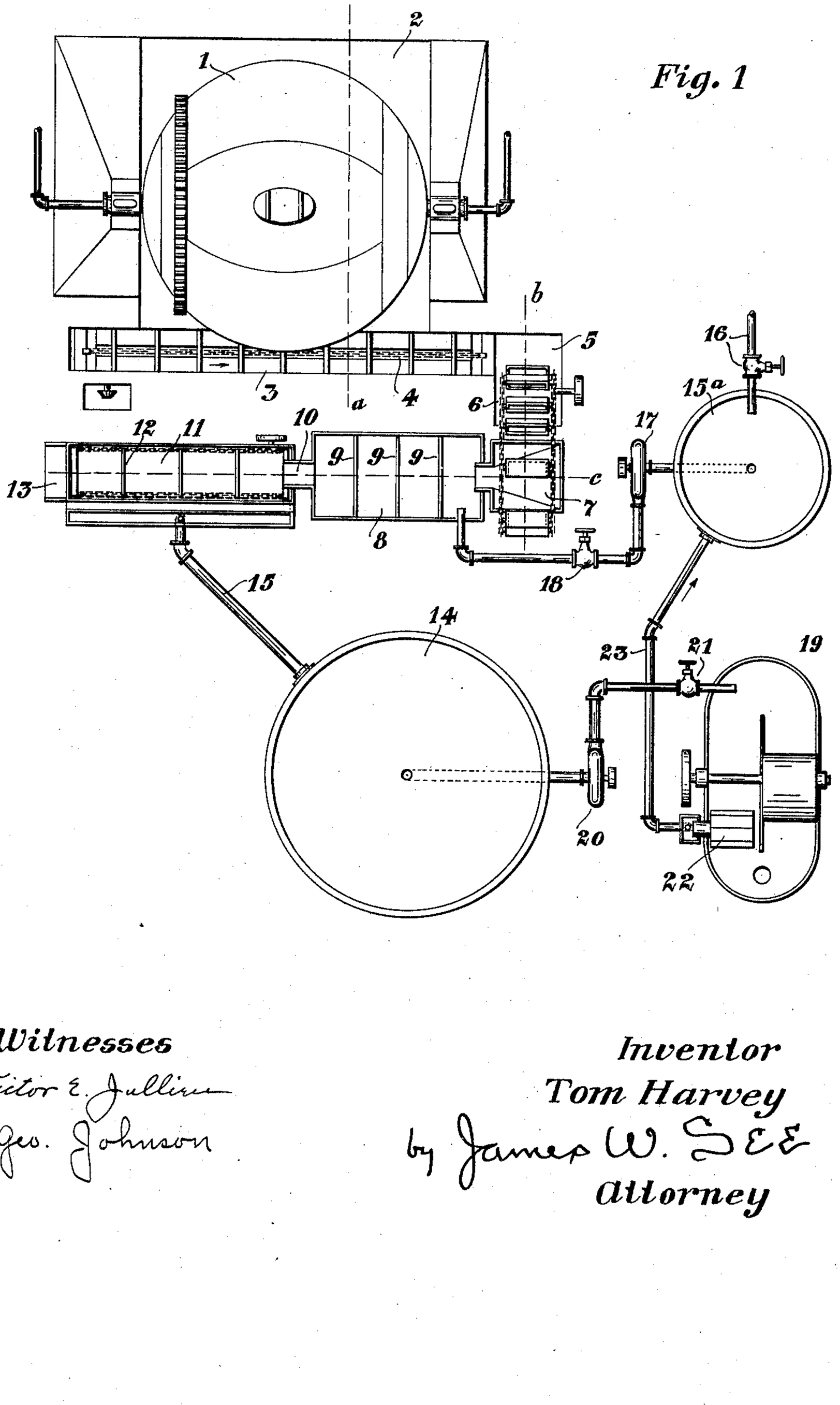
APPLICATION FILED NOV. 28, 1910.

983,441.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses

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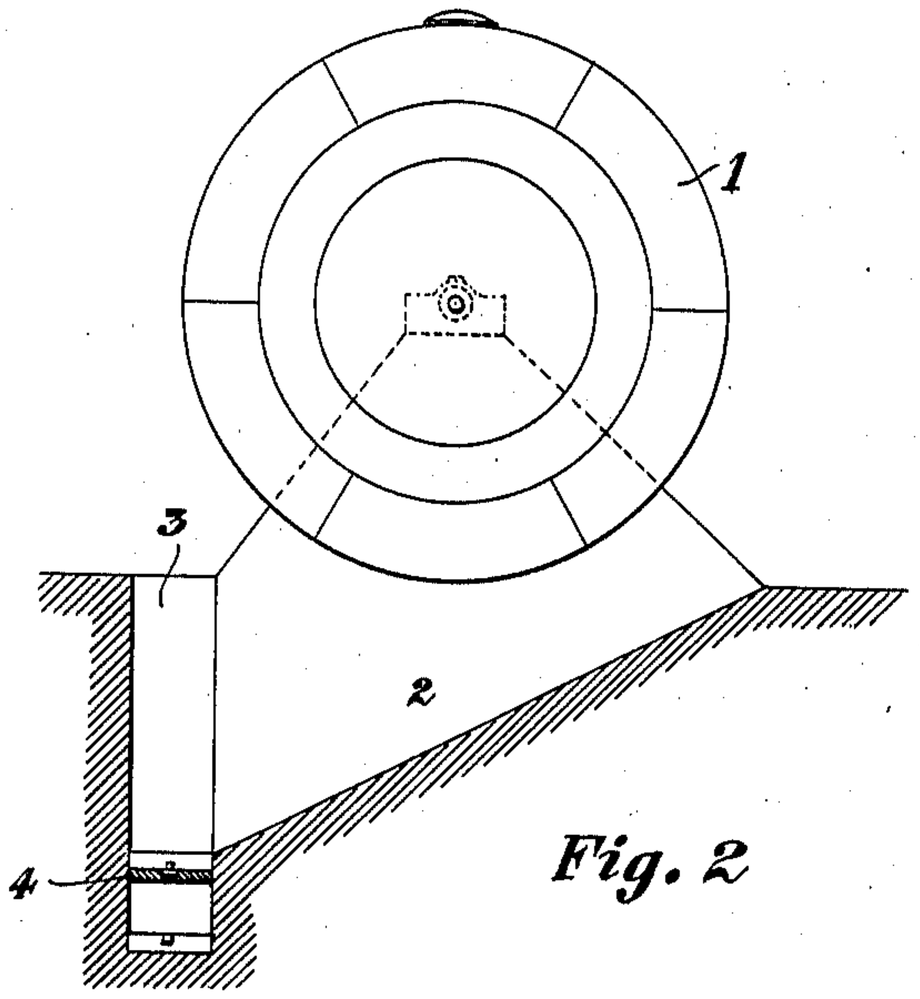

Fig. 2

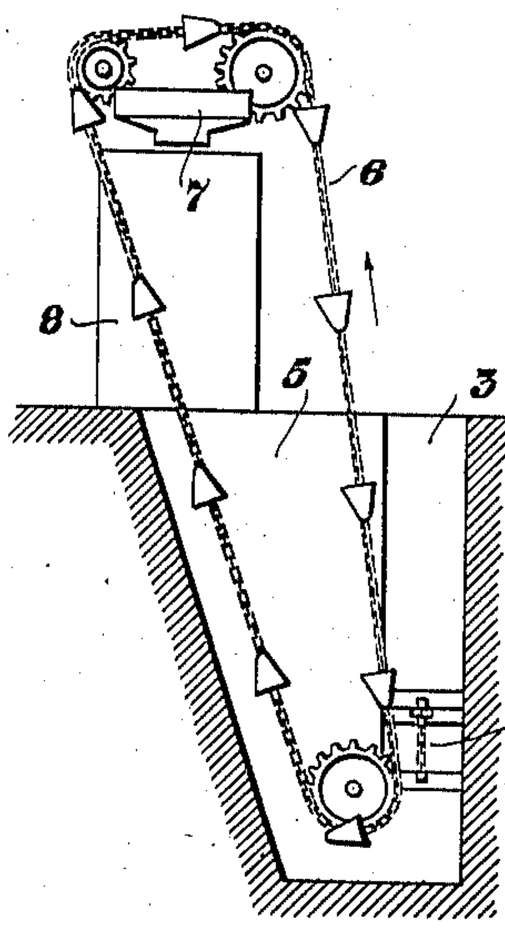

Fig. 3

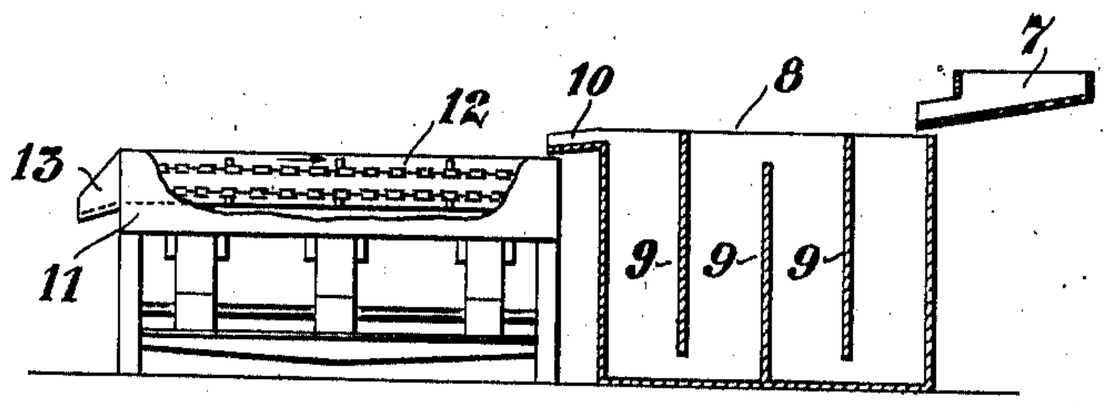

Fig. 4

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UNITED STATES PATENT OFFICE.

TOM HARVEY, OF MIDDLETOWN, OHIO.

PAPER-PULP APPARATUS.

983,441. Specification of Letters Patent. Patented Feb. 7, 1911.

Application filed November 28, 1910. Serial No. 594,430.

To all whom it may concern:

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

This invention, relating to an improved system of apparatus for making pulp from old paper stock, will be readily understood from the following description taken in connection with the accompanying drawings in which:—

Figure 1 is a plan of an apparatus exemplifying my invention: Fig. 2, a vertical section of the same in the plane of line *a* of Fig. 1: Fig. 3, a vertical section in the plane of line *b* of Fig. 1: and Fig. 4, a vertical section in the plane of line *c* of Fig. 1.

In the drawings:—1, indicates a paper maker's rotary, of ordinary construction: 2, a sloping floor thereunder: 3, a conveyer-pit to receive material from the sloping floor: 4, a conveyer disposed within the conveyer-pit and adapted to convey material from one end of the pit, the conveyer being illustrated as of ordinary chain-and-blade type: 5, a deep receiving-pit at the discharge end of the conveyer: 6, an elevator, illustrated as of chain-and-bucket type, disposed partly within the receiving-pit and adapted to elevate the material therefrom: 7, a hopper into which the elevator discharges the material withdrawn by it from the receiving-pit: 8, a settling-box into which the spout of the hopper discharges the material: 9, a longitudinal series of transverse partitions arranged across the settling-box, some of these partitions extending from the top to near the bottom of the box, while others extend from the bottom of the box to a point somewhat below the top of the first partitions: 10, the discharge-spout of the settling-box: 11, a paper maker's screen, of usual construction, the discharge-spout of the settling-box delivering to the head of this screen: 12, a chain-and-blade conveyer arranged over the plates of the screen and adapted to have its lower portion drag the material over the screen-plates from the head toward the tail of the screen: 13, a spout at the tail end of the screen for discharging therefrom the material which has not passed through the screen-plates: 14, a chest to receive and store the fine material received from the screen: 15, a conduit leading from the screen to chest 14: 15^a, a water-tank: 16, a valve-controlled water supply-pipe delivering into the water-tank: 17, a pump having its suction connected with the water-tank and having its discharge connected with the first compartment of the settling-box: 18, a valve for the control of the flow of water from the water-tank to the settling box: 19, a mixer, which may be of ordinary beating-engine type, whose office it is, not to cut up stock, but to mix material and secure proper consistency: 20, a pump having its suction connected with chest 14 and having its discharge connected with mixer 19: 21, a valve for the control of the flow of the pulp from chest 14 to the mixer: 22, a washer, of usual type, disposed within the mixer and adapted to extract water from the upper portion of the body of the material in the mixer: and 23, a conduit leading from the washer to the water-tank.

The old paper to be dealt with is charged into the rotary while the rotary is stationary and open, after which the rotary is started up and the stock cooked to a pulp. The cooking is to be carried on until the major portion of the stock is reduced to the desired ultimate degree of fineness. The stock having thus been properly pulped by cooking, the rotary is to be dumped, the material going down the sloping floor 2 and into pit 3 from whence conveyer 4 delivers it into the receiving-pit 5. Elevator 6 raises the stock and delivers it to hopper 7 from whence it discharges into the first compartment of the settling-box, and at the same time water is freely supplied to the settling-box by means of pump 17.

The material received from the rotary, while largely properly fine pulp, contains much foreign matter in the way of strings, sticks, old metal articles, etc. As the material freely charged with water passes through the settling-box going under one partition and then over the other and so on, the heavy foreign material is left behind in the compartments of the settling-box from which it may be removed when occasion requires. The lighter material flows away from the top of the settling-box through spout 10 to the screen and is dragged along the screen by conveyer 12. The properly fine pulp passes through the screen and goes through conduit 15 to chest 14, while the tailings from the screen discharge at spout 13 for disposal as refuse or, after sorting,

for subsequent treatment if deemed profitable.

Pulp and water from chest 14 is pumped into mixer 19, surplus water being removed by washer 22 from the upper portion of the material in the mixer, this water passing on to water-tank 15ª from which it is conveyed again by pump 17 to the settling-box, the object of the connection from the washer to the water tank being to save water and to lessen the amount of water to be supplied to the tank from conduit 16.

In the mixer, which is illustrated as of usual beating-engine type, there is no cutting action or pulping as is usual in beaters, the material being already perfectly pulped, the purpose of the mixer being first to secure proper consistency of the pulp by the extraction of water, and also to permit of the admixture with the pulp of such coloring matter or other kinds of stock as may be desired. The properly mixed product is to be withdrawn from the mixer for use in the paper-making machine.

I claim:—

1. A paper-pulp apparatus comprising, a rotary, a settling-box, mechanism for transferring the discharge from the rotary to the settling-box, means for supplying water to the settling-box along with the material discharged from the rotary, a screen arranged to receive the discharge from the settling-box, a chest, a conduit to convey to the chest the pulp and water which has passed through the screen, a mixer, means for conveying the pulp and water from the chest to the mixer, and a washer for extracting the water from the upper portion of the material in the mixer, combined substantially as set forth.

2. A paper-pulp apparatus comprising, a rotary, a settling-box, mechanism for transferring the discharge from the rotary to the settling-box, means for supplying water to the settling-box along with the material discharged from the rotary, a screen arranged to receive the discharge from the settling-box, a chest, a conduit to convey to the chest the pulp and water which has passed through the screen, a mixer, means for conveying the pulp and water from the chest to the mixer, a washer for extracting the water from the upper portion of the material in the mixer, and means for conveying to the settling-box the water extracted from the mixer by the washer, combined substantially as set forth.

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