

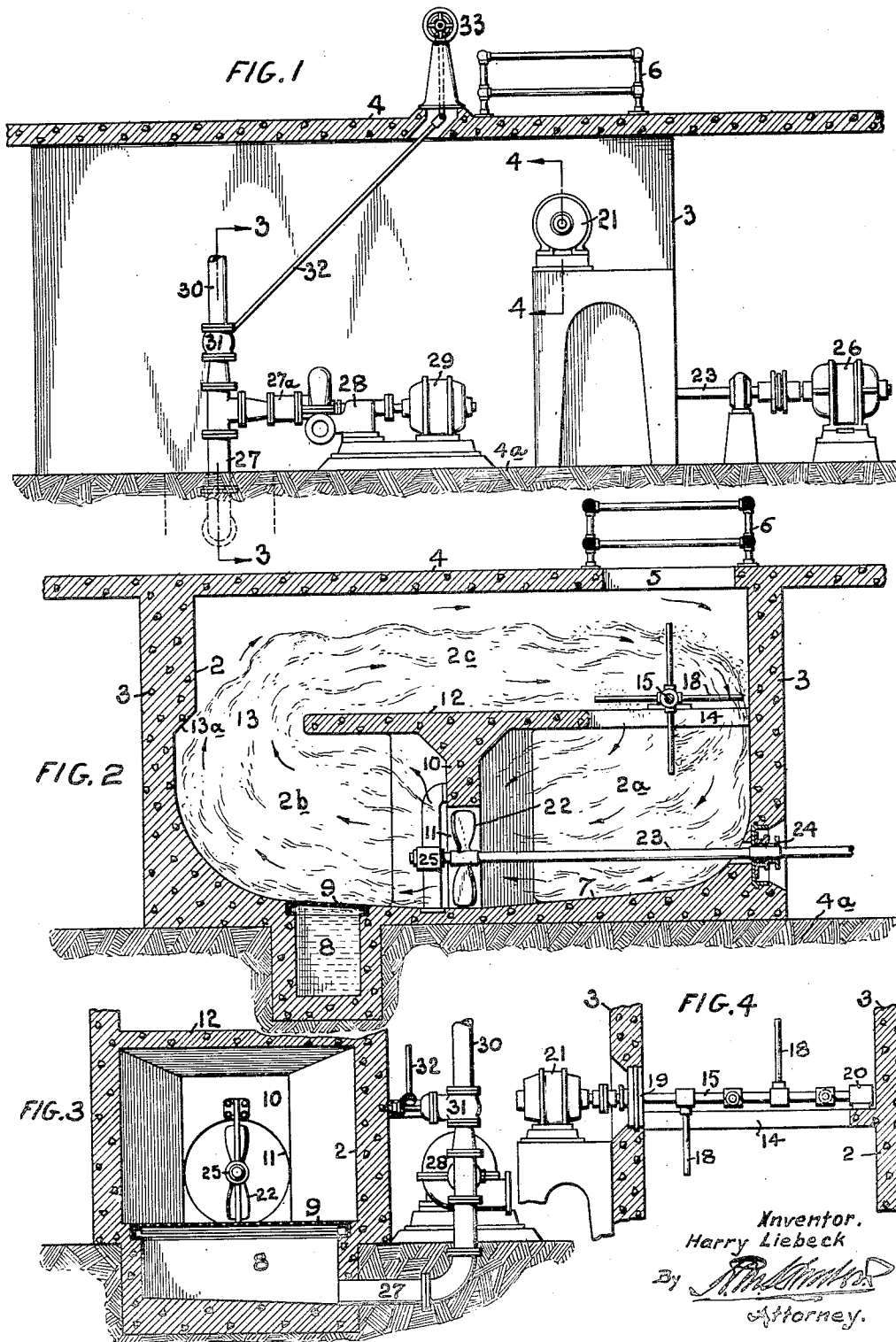
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DRY BROKE BEATER

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DRY-BROKE BEATER

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My invention comprises a machine which may be designated as a dry broke beater, the purpose of which is for beating up what is known as "dry broke" waste paper that comes from the last drier of a paper making machine or any other source having a character suitable for being utilized in the making of paper stock. When employed in a paper mill, it is usually located in the basement near the last drier or reel at the delivery end of the paper making machine, being fed through an aperture in the floor whereby the paper may be disposed of in as simple a manner as possible.

Specifically considered, my improved dry broke beater consists of a large tank partly filled with water which is put into circulation within the tank by means of mechanical devices such as a propeller which simultaneously subdivides or shreds the "dry broke" paper stock and, at the same time, thoroughly circulated in the water to bring it to a condition of great subdivision.

The machine is further provided with a plurality of feeder paddles secured to a horizontal rotating shaft which perform the specific function of dragging the "dry broke" downward and into the circulating water within the tank. When the subdivision is sufficiently secured the same may be drawn off through a suitable screened outlet and allowed to flow to a broke chest where it is stored subject to further use as needed. All paper material in the tank not subdivided sufficiently to pass through the screened outlet is continued in circulation and action of the propellers until it is reduced to a suitable condition for transference. The pumping means employed may operate to withdraw the subdivided "dry broke" from the tank or, by suitable manipulation of valves, the tank of the dry broke beater may be filled with water directly or through the screen, in which latter case the reverse circulation of the water will act to keep the strainer in a more or less cleansed condition.

My invention also comprehends details of construction which, together with the features above stated, will be understood by reference to the drawing in which: Fig. 1 is a

dry broke beater apparatus embodying my improvements; Fig. 2 is a vertical section of the same taken longitudinally of the machine; Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 1; and Fig. 4 is a vertical sectional view taken on line 4—4 of Fig. 1.

The tank 2 of the dry broke beater is preferably formed with concrete walls 3, 4 and 7, the latter resting upon a basic foundation 4a. The upper wall 4 constitutes the floor level in the room wherein the paper making machine is located and from which the "dry broke" paper material is derived. In this floor 4 there is an aperture 5 opening from the paper machine room above into the dry broke beater adjacent one end of the tank therein and preferably provided with a railing 6 about the opening to prevent any one falling into the broke beater and coming in contact with the beaters or propellers therein. The lower part of the interior of the beater structure is formed as a tank and at its lower portion it communicates through a screen 9 with a conduit well 8 to or from which the fluids may be circulated by suitable pumping means, as more fully described hereinafter. This tank-like structure is transversely divided by a division wall 10 which is extended into a horizontal table-like portion 12 which provides an upper chamber portion 2c and also two horizontal tunnels or passages 2a and 2b respectively on opposite sides of the division wall 10. The table-like portion above the passage 2a is formed with an opening 14 and the top of the passage 2b opens into the upper chamber 2c through an opening 13. It will be further understood that the transverse wall 10 is provided with a tubular aperture 11 near the floor of the tank and in which aperture is arranged a propelling and disintegrating device 22 which is secured to a horizontal shaft 23 journaled adjacent to the wall 10 in a suitable bearing 25, said shaft also being journaled in a water tight stuffing box 24 whereby the shaft extends through the wall of the tank and connects with an electric motor 26 or other means for rotating the said

shaft and its propeller or disintegrating means 22.

15 is a horizontal shaft arranged immediately above the opening 14 in the table portion 12, said shaft being journaled near its ends in bearings 19 and 20, and said shaft is rotated by an electric motor 21. The horizontal shaft 15 is provided at intervals along its length with laterally extending arms 18, said arms arranged to radiate at different angles about the shaft to which they are secured, and; in practice, are adapted to operate as feeder paddles which drag downward and into the tank.

15 In operation, the water and paper stock which may be in it are circulated by means of the propeller 22 in the direction indicated by the arrows and this is assisted to some extent by the action of the feeder paddles 18. 20 It will be manifest, however, that, if desired, shaft 15 and its paddles may remain stationary during the actual beating operation, but such paddles will be utilized when charging the apparatus with the "dry broke". 25 The shape of the transverse division 10 and the presence of the table structure 12 cause the water and its contents to concentrate in passing through the aperture 11 and, at the same time, cause the material to be thoroughly broken up and disintegrated. Furthermore, 30 the water under the action of the propeller 22 is caused, in passing through the curved passage 2b, to be directed upward and in the direction of the arrows in the upper compartment 2c by reason of its impact with the inclined shoulder 13a in the main wall in substantial alinement with the table portion 12.

The pumping means shown is well adapted for the purposes of the present invention, but 40 I do not limit myself thereto. When the tank is to be discharged of the treated "dry broke", the suction of the pump 28 is applied to the well 8 by the suction pipe 27, the screen 9 holding back any large sized particles of the "dry broke" which may be present. The 45 material withdrawn under the action of the pump 28 may be delivered to a suitable dry broke chest for future use, this being accomplished by connecting the discharge port of the pump 28 with a suitable conduit leading to such chest. To fill the tank with water, 50 the water supply may be in communication with the inlet pipe 30 and under the control of a gate valve 31 in turn operated by a valve operating means 32 leading to the paper making machine room where hand controlled means 33 are located for operating the said supply valve 31. The pump is shown as operated by an electric motor 29 and the pump 60 may be provided, if desired, with a recording valve 27a.

It will be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated 65 as desirable, and while I have in the present

instance shown and described the preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that I do not restrict myself to the details stated as the same are susceptible of modification in various particulars, without the departing from the spirit or scope of the invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A dry-broke paper apparatus for subdividing the paper and subjecting the same to a lixiviating treatment preliminary to transfer of the same, which comprises a tank divided horizontally into upper and lower chambers opening into each other at their ends and the lower of which chambers is divided transversely by a contracted opening, a feed opening into one end of the upper chamber, a rotating feeder device arranged below the fixed opening and having arms for engaging and downwardly feeding the "dry broke" stock, and a rotating circulating and disintegrating propeller means arranged in the contracted opening in the lower chamber and adapted to act upon the materials fed downward by the feeder device.

2. The invention according to claim 1, wherein further, the lower chamber is provided with a discharge well having a screen to limit the size of the paper material which will pass through it.

3. The invention according to claim 1, wherein further, a well is provided below the lower chamber and having a screen in its upper part to limit the size of the paper material to pass into the discharge from the apparatus, and wherein also means are provided for admitting water substantially free from paper stock into the apparatus through the screen for simultaneously supplying fluid to the chambers and clearing the screen from any clogged condition.

4. The invention according to claim 1, wherein further, the feeder device is arranged immediately adjacent to the communicating passage at one end of the upper and lower chambers and is adapted to mechanically transfer paper stock from the upper chamber into the lower chamber and to the intake side of the rotating circulating and disintegrating propeller means.

5. The invention according to claim 1, wherein further, the tank is formed between the floor and ceiling of a basement structure, and wherein also the ceiling constitutes a floor of the building immediately above the tank and the feed opening is formed through the said combined floor and ceiling at a point immediately above the feeder device.

In testimony of which invention, I hereunto set my hand.

HARRY LIEBECK.