(No Model.)

C. BREMAKER.

PAPER PULP DIGESTER.

No. 353,731. Patented Dec. 7, 1886.

Fig. 1.

Fig. 3.

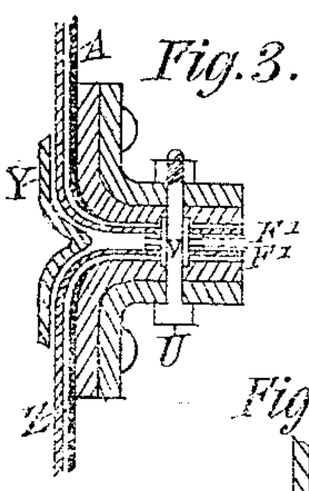


Fig. 2.

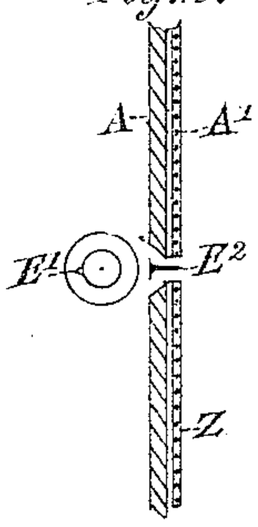
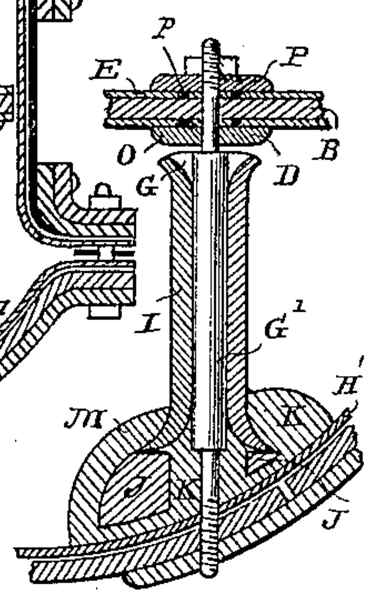


Fig. 4.



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PAPER-PULP DIGESTER.

SPECIFICATION forming part of Letters Patent No. 353,731, dated December 7, 1886.

Application filed April 10, 1886. Serial No. 198,454. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BREMAKER, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a certain new and useful Improvement in Paper-Pulp Digesters; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, forming part of this specification.

The object of my invention is so to improve the construction of pulp-digesters that they will better resist the wear and action of chemicals and variations of heat to which they are subjected; that their operation will be more effective and thorough, and that they may be more readily and thoroughly cleaned after use. To obtain these results I have devised the improvements hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 illustrates a central longitudinal sectional view of the apparatus; Fig. 2, an enlarged sectional view of a fragment of my improved lining; Fig. 3, an enlarged sectional view of the means for uniting the sections composing the shell or boiler, and Fig. 4 an enlarged sectional view of one of the improved standards or supports for the false bottom.

Like letters of reference in the different figures indicate corresponding parts.

In general construction the main shell or boiler herein shown resembles that shown in the patent granted Bremaker & Zier, December 29, 1875, and numbered 335,105.

The letter A designates the main vessel or shell, which is composed of a series of double-flanged separable rings or sections, each having a lining, Z, which, in accordance with my present invention, consists of a woven wire-cloth, A, and a sheet or sheets of lead united in the following manner: The wire-cloth is first coated with solder in the usual manner of applying it to surfaces, and the sheet or sheets of lead applied thereto, the edges being burned together. By this method the prepared sheets of lead readily and firmly unite with the wire-cloth. As indicated, one or more sheets of lead may be applied to one or both sides of the cloth, as may be found desirable or advantageous. The lining thus prepared is secured to the outer rings, either by burning or soldering them to said outer rings or by means of rivets or bolts B^2, or both, a washer-plate, C', being preferably employed on the inside when bolts or rivets are used. In order the more effectually to prevent leakage or liability to fracture, the washer-plates are further covered by lead plates or rings D', burned or soldered to the lining Z. When the coverings D' are employed, it may be desirable to provide a small opening, E', in the hole through which the rivet or bolt is inserted, to permit the escape of steam generated in the space between the covering D' and the lining Z.

The letter B designates the false bottom. In the present instance this is constructed of a main inner plate of an acid-resisting metal or alloy, covered on both faces and at all the exposed edges with plates or pieces E E, of lead. This false-bottom plate is provided with a suitable number of tapering holes, with the larger opening at the under side of the plate. The edges forming these holes also are provided with protecting-coverings *c*, of lead. It is obvious that the holes in the plate B may be cylindrical and the holes in the covering for the edges made tapering.

G' designates the standard or support for the false-bottom plate B, and is composed, preferably, of an inner core, in the form of a bolt, threaded at both ends, made of a suitable acid-resisting metal or alloy, and a suitable covering of lead. One end of the bolt is passed through the false-bottom plate B and the other through the lower end or head of the vessel or boiler A. Washers O and P are employed on the bolt at each side of the false bottom where the bolt or standard passes through it, a securing-nut being used at the extreme upper end to hold the parts firmly together. In order to relieve the plates E of pressure or strain at the points where the false bottom is supported by the standards, I employ pins or nubs D, cast or formed upon the inner main plate. In addition to a protecting-covering of lead, I, a ring, J, also of lead, is secured about the lower end of each standard or bolt, and in applying this ring the space K is filled with fused solder, and when hard the lower edge is burned to the lining H' and the upper edge to the covering I. The lead ring J and the lower end of the covering I may be further

protected, or the stability of the standard or support increased, by an additional coating, M, also burned to the ring and covering I and lining H′. The upper end of the lead covering or tube I is spread out around the bolt or inner core in funnel shape, the bolt thoroughly tinned, and the space filled with melted lead G, the covering I being subsequently burned securely to said filling. This manner of forming the standards insures freedom from leakage.

L indicates a plate or cover, of composition or acid-resisting metal, supported upon a suitable flange or lugs, N, in the upper end of the digester. The plate in this instance is provided with holes *o′ o′*, countersunk from both faces thereof to the middle, to avoid clogging with stock when the valve is opened for blowing off steam and gas.

The digester sections or rings are secured together at the adjacent flanges by means of bolts U, and as great inconvenience has been experienced by the action of the acid at these joints, I employ a thimble or tube, V, of sheet metal to surround the bolt at the contacting faces of the flanges. I may, in addition to this ring V, employ a washer or ring of gum or lead, and when of the latter material it can be soldered or burned to the flanges, so that when the securing-nut is turned down upon the bolt to secure the parts together the joint will be as nearly tight as practicable. As a further protection for the joints between the sections or rings of the digester-vessel, I may use strips of sheet-lead Y, bent, as shown, to permit compensation for contraction or expansion, soldered or burned to the linings of two adjacent sections over the joint.

The letter H designates a short pipe or chamber, connecting the digester-vessel A and a blow-off valve, P′. This pipe or chamber is preferably provided with a hand-hole and a removable cover for the same at its upper side, to permit the cleansing of the valve and other parts.

Q designates the valve, and S S pipes entering the valve-chamber at its upper end on either side of the valve-stem.

T T are stop-cocks or valves to open and close the pipes S S, through which water or water and steam is passed for cleansing the valve, &c.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a pulp-digester, the herein-described perforated false-bottom plate, consisting of an acid-resisting metal plate having nubs or pins cast or formed upon one or both its faces at the points where it is supported and a lead or similar covering for said plate, the said nubs or pins projecting through the covering to or near its surface, for the purpose set forth.

2. In a pulp-digester, the bottom plate, B, provided with tapering holes C C, flaring downwardly, substantially as shown and described.

3. In a pulp-digester, a supporting bolt or standard for the false bottom, provided with a lead covering or ring, J, surrounding the lower end, soldered to said lead covering and to the lining of the digester-head, masses of solder M and G, applied at the bottom and top, respectively, in the manner and for the purpose set forth.

4. In a paper-pulp digester, the plate L in the upper end of the digester-boiler, provided with holes O, contracting inwardly from both faces, substantially as and for the purpose set forth.

5. In a pulp digester, the combination, with the main vessel or boiler A and a blow-off valve, of the pipe or chamber H, connecting the two, provided with an opening to permit the removal of stock lodged therein, and a removable cover for said opening, as set forth.

6. In a pulp-digester, the combination, with the blow-off valve, of the pipes S S, for introducing steam or water under pressure into said valve to cleanse the same, and stop-cocks or valves T T, to regulate the flow in said pipes, as set forth.

7. In a pulp-digester, the combination, with the securing-bolts or like fastening devices U, of the metal thimbles V and suitable rings or washers, W, surrounding said bolts or fastening devices, as and for the purpose set forth.

8. In a pulp-digester, a lining, Z, composed of a sheet of wire-cloth and a sheet or sheets of lead, and an intermediate filling of solder for uniting the said sheets, substantially as described.

9. In a pulp-digester, the improved means herein described for securing the lining in place, consisting of the countersunk head-rivets B^2, corresponding holes in the lining and outer shell, and the washer-plates C′ on the inner end of said rivets, a groove or opening, E′, and a covering, D′, substantially as set forth.

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Witnesses:
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