May 13, 1924. 1,494,265

H. D. MARTINDALE

FILLER OR LINING FOR PULPING ENGINES

Filed Jan. 10, 1922

Fig. 1.

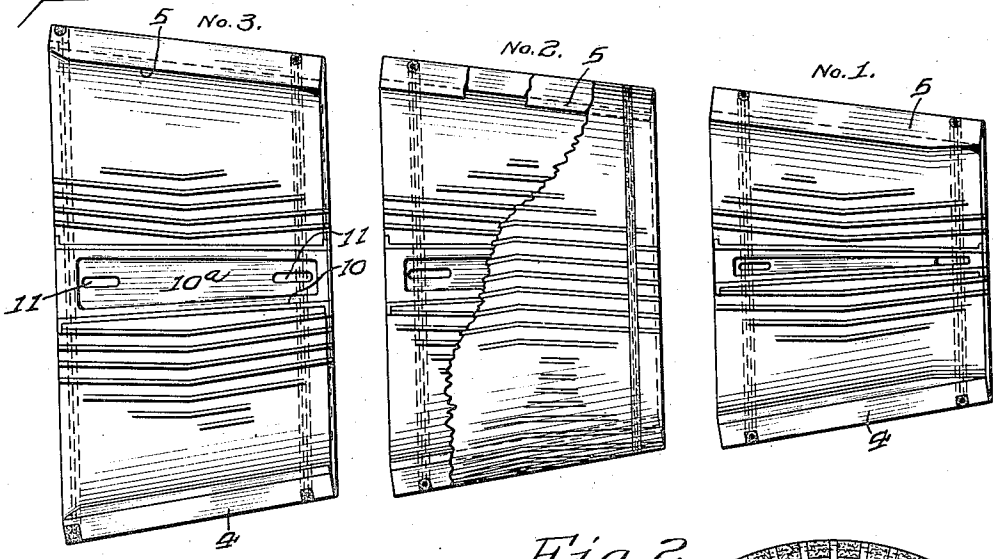


Fig. 2.

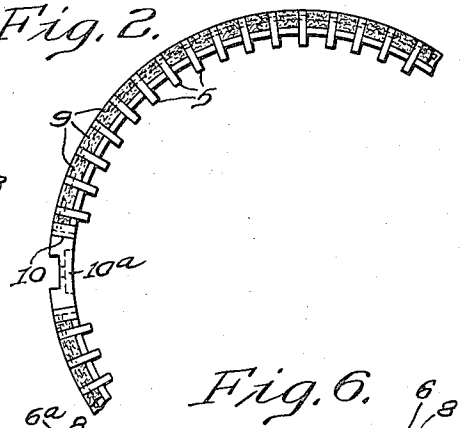


Fig. 3.

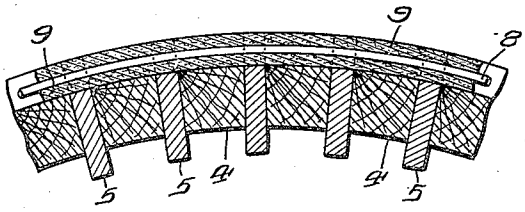


Fig. 4.

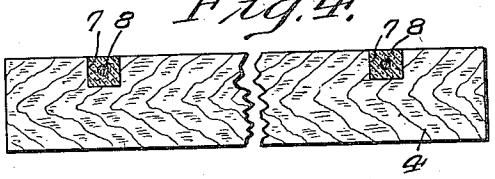


Fig. 5.



Fig. 6.



Fig. 7.



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UNITED STATES PATENT OFFICE.

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FILLER OR LINING FOR PULPING ENGINES.

Application filed January 10, 1922. Serial No. 528,226.

To all whom it may concern:

Be it known that I, HOMER D. MARTINDALE, a citizen of the United States, residing at Middletown, county of Butler, State of Ohio, have invented certain new and useful Improvements in Fillers or Linings for Pulping Engines, Commonly Called Jordan Engines, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

Reducing engines of this class, used for macerating and pulping raw stock for the production of pulp used in paper making comprise a metallic shell, suitably supported, of frusto-conical form, within which a plug so-called, with peripheral knives, is suitably mounted on a rotatable shaft. The interior of the metal shell is provided with a lining or filler so-called; this filler comprising as one of its elements a series of inwardly projecting metallic cutting blades which co-act with the knives of the aforesaid rotated plug.

Heretofore a type of such filler or lining most commonly in use, consisted of a series of blocks of wood, with interposed metallic blades, both of suitable shape, and projecting inwardly, and as so constructed such filler was usually built up piece by piece within the metallic shell, and the filler when thus constructed was required to be effectively maintained and held in place by interior locking means known, in this art, as an anchor bar.

My invention has for its objects to provide a combination of these individual pieces into a group, so as to enable them to be previously constructed and assembled as a unit, and then installed as such, within the metallic shell or casing and to effectually hold within the filler unit the blade elements which are component parts of it, and as the filler is conical in form, I construct them in a plurality of units; say three, of appropriate relative proportions to adapt them to be fitted within the conical shell; and to those ends, my invention consists in constructing such a filler, as a unit, composed of blocks of wood, or of some other hard material suitable for separating and holding the blades in place as component parts of the filler; these interposed blades of metal projecting inwardly beyond that inner surface of the filler which is formed by the wood blocks; binding such elements together, by peripherally applied means; forming the frusto-conical unit, as a split unit to provide therein a longitudinally disposed opening or space; and providing a wedge or key whose secondary function is to lock the unit lining to the interior surface of the shell, and whose primary function is for the twofold purpose of closing said space or opening, and expanding the structure to conform to and closely contact with the inner surface of the shell or casing. No anchor or locking bar, heretofore referred to, is either required or desirable, with my device.

In the accompanying drawings illustrating my invention, Fig. 1 is an elevation of a plurality of filler units, the centre one being partly broken away. Fig. 2 is a section of a segment of the filler. Fig. 3 is a like view, enlarged. Figs. 4 and 5 are elevations, partly in section, of the separator blocks, and Figs. 6 and 7 like views of the metal blades.

Referring now to said drawings the three completed sections or units, marked No. 1, No. 2 and No. 3, when a plurality thereof constitute the filler, are designed to be inserted in the shell or casing in the order stated, to conform to the frusto-conical shape of the bore thereof.

Referring first to Fig. 3, it will be seen that each section is built up from a series of separator blocks, indicated at 4, 4, alternating with a series of hard metallic blades, indicated at 5—5, which extend at one edge flush with the outer periphery of the assembled blocks, as indicated in Fig. 1, and at the opposite edge, project inwardly beyond the inner face of the assembled blocks, as shown in said Figs. 2 and 3. Each blade 5 is punched, on its outer edge, preferably twice in its length, and near each end, as indicated at 6—6 in Fig. 7, for the sections Nos. 1 and 2, and the same for section No. 3 shown in Fig. 6 except that for it the punching 6^a, at one end of that unit is preferably close thereto.

The separator blocks 4 are notched on the outer edge, near each end, as indicated at 7, 7 in Fig. 4, for sections Nos. 1 and 2, and

the same for section No. 3, except that for it the notching 7a, at one end of that unit, is preferably close thereto, so that it will register with the punching 6a (see Fig. 6) of the blade 5 of end unit No. 3.

When the separator blocks 4 and metallic blades 5 are brought into alternating and assembled relation, as stated, the punched out openings in the latter will be in register with the notches in the former, and form a pair of substantially parallel grooves each encircling the peripheral exterior of the split section or unit. See Figs. 2 and 3. Into each of the grooves thus formed, is laid a strand of heavy wire, operating as a retaining hoop, indicated at 8 in the several figures; and each groove is then filled with a composition metal, indicated at 9, which operates to imbed the retaining hoop and fixedly unite the separator and blade elements.

In building up the unit, a space, indicated at 10 (Fig. 1) is left by the split or opening between the otherwise co-inciding longitudinal edges of the conical body thus formed, and into this longitudinal space is inserted a wedge block indicated at 10a in Figs. 1 and 2 for the purpose of expanding the unit when placed within the shell of the engine and incidentally, of filling said space between the aforesaid assembled elements. This wedge 10a is preferably slotted at 11 to enable it to be secured, as by a screw or the like, to the interior surface of the engine shell or casing. The result of this is to provide a frustro conical unit, which, varying in size in the series, as indicated in Nos. 1, 2 and 3 of Fig. 1 enables me to provide a previously-constructed filler, composed of a series of such units arranged end to end as a complete unit of uniform frusto-conical form adapted to be readily inserted, separately or together in the shell or casing of the engine expanded to closely fit within it and fixedly maintained therein.

Having thus described my invention, I claim:

1. Means constituting a pre-constructed unitary device adapted to be inserted and expanded within the shell of a pulping engine and operating as a filler or lining therefor, said device comprising a series of metal blades and separator blocks, arranged in alternating relation, each of said blades and blocks having coinciding openings when said elements are so assembled including means to bind said elements together, through said coinciding openings therein and form a longitudinally-split frusto-conical body; and a wedge adapted to be inserted in the longitudinal opening formed by the split in said frusto-conical unit and operable to expand it radially when placed in operative position within the casing of the engine.

2. Means constituting a pre-constructed filler or lining for pulping engines, adapted to be inserted, expanded, and fixedly maintained within the shell of the engine, consisting of a plurality of frusto-conical split units, of varying radial dimensions adapted to register end to end and form a single unit of uniform frusto-conical form; when assembled in series arrangement within the shell of the engine, each of said units comprising a series of metal blades and separator blocks arranged in alternating relation, including means peripherally applied to said assembled elements to bind the same together to form a frusto-conical body split longitudinally; a wedge adapted to be inserted between the adjacent edges of said split and operable to expand said unit radially and simultaneously effect an unbroken periphery thereon when placed in operative position within the casing of the engine; and means forming part of said wedge element operable to secure the series of units, as an operatively single filler or lining, to the interior surface of the shell of the engine.

3. A filler or lining for pulping engines, adapted, as a unit, to be inserted, expanded and fixedly maintained within the shell or casing of the engine, composed of a series of longitudinally-disposed separator blocks, notched at one edge, a series of alternating metal blades having edge openings coinciding with said notches in the separator blocks, said elements being assembled to form a longitudinally-split frusto-conical body, means to retain said elements in assembled relation consisting of a split hoop imbedded in said notches, said means including a composition metal applied to fill said notches; and a wedge adapted to be inserted in the longitudinal opening formed between the adjacent edges of the split unit and operable to radially expand the unit and close said opening, said wedge including means to secure the unit to the inner surface of the engine casing.

4. A pre-constructed filler or lining for pulping engines, adapted to be inserted, expanded and fixedly maintained within the shell or casing thereof, composed of a series of frusto-conical split units of varying radial dimensions, arranged in series and adapted to register end to end to form an operatively single unit of uniform longitudinal conformation, each of said units comprising a series of longitudinally-disposed separator blocks, notched at one edge, a series of alternating metal blades having edge openings, said elements being shaped in assembled relation to form a frusto-conical unit split longitudinally, a split hoop imbedded in said notches and openings, including means to fixedly hold the same therein, and maintain the unit in the form

described; a wedge adapted to be inserted in the opening formed by the split aforesaid and operative to expand the series of units within the shell of the engine, and means co-acting with the wedge to fixedly secure the unitary device in place therein.

In testimony whereof, I have hereunto affixed my signature this thirty first day of December A. D. 1921.

HOMER D. MARTINDALE.

Witnesses:
B. F. HARWITZ,
CHAS. W. SHARETE.