

C. W. SHARTLE.

ENGINE.

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1,225,874.

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Fig. 1.

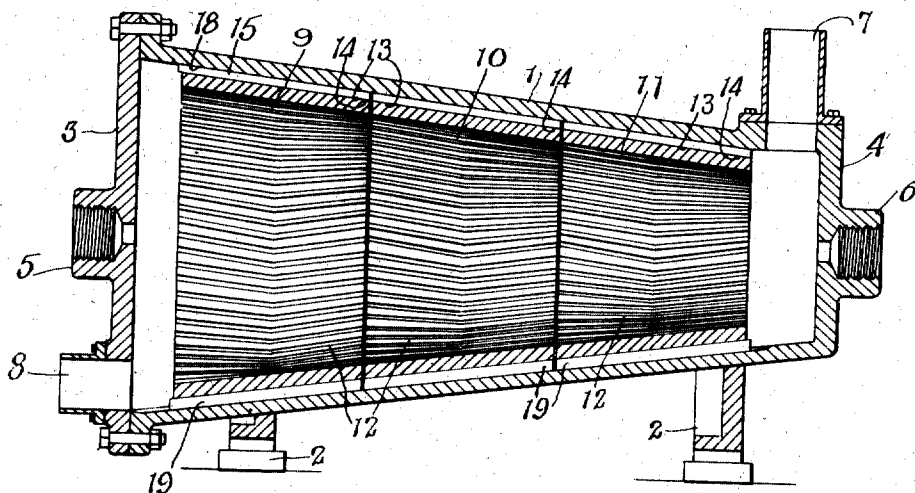


Fig. 2.

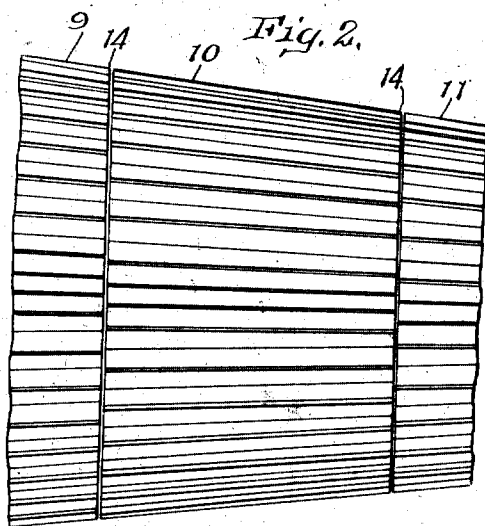
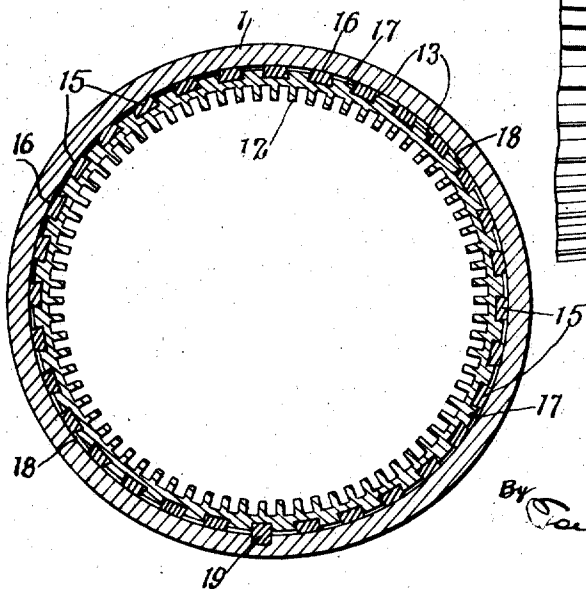


Fig. 3.



INVENTOR
Charles W. Shartle,

By *Carlson & Carlson*

Attorneys

UNITED STATES PATENT OFFICE.

CHARLES W. SHARTLE, OF MIDDLETOWN, OHIO.

ENGINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES W. SHARTLE, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Engines, of which the following is a specification, reference being had therein to the accompanying drawing.

16 This invention relates to what is known as "Jordan" engines, an apparatus used in the art of making pulp for the manufacture of paper. The office of the Jordan engine is to reduce or grind the pulp into small broken fragments.

The particular object of this invention is to afford a new and improved means of securing the inner lining of the Jordan engine to the outer casing thereof, by the use of lagging or strips of wood or metal occupying positions between the outer wall of the lining and inner wall of the casing and acting to bind the two structures together in a firm and lasting manner. I prefer the use of wood for the lagging or strips because its yieldability is helpful in more firmly binding the casing and lining together and because it will expand under the influence of the water used in the engine.

20 By preference the lagging or strips are located in dovetailed recesses or channels in the exterior surface of the lining, being thereby locked to the lining, while the outside faces of the lagging or strips fit with great firmness and binding effect against the inner surface of the casing.

In the accompanying drawings, Figure 1 is a longitudinal sectional view through the casing and lining of my improved Jordan engine; Fig. 2 is a side elevation showing the outside construction of the lining; and Fig. 3 is a transverse sectional view of the casing and lining.

45 In the embodiment of the invention here shown the outer casing 1 comprises a frusto-conical shell mounted upon suitable supporting brackets 2. The enlarged end of this shell is closed by means of a removable cover 3, while the reduced end is closed by means of a cover 4 integral with the casing. At 5 and 6 are shown bearings adapted to receive the inner rotatable member of the engine which is provided with teeth; the construction, however, being well known, and as it does not form a part of the pres-

ent invention it has been omitted. At 7 I have shown an inlet through which the material to be treated is conducted to the engine, while 8 indicates the outlet therefor. In engines of this nature there are provided fixed and movable knives, the movable knives being supported by the rotatable member mentioned above, the fixed knives being usually mounted upon the casing. However, these knives are subject to wear and corrosion and it is essential that means be provided for removing the same when worn without destroying or rendering the whole engine useless. For this purpose the casing 1 has a plurality of removable sections 9, 10 and 11 substantially as shown, constituting an inner lining. Each section is frusto-conical in form and adapted to fit within the casing. The sections are, of course, of increasing size from the reduced portion of the casing to the enlarged portion thereof and are each provided with a plurality of cutting teeth or knives 12. Each of the sections is provided with a plurality of dovetailed grooves or channels 13 arranged around the periphery thereof and extending longitudinally. These grooves taper toward the reduced end of the section, as indicated at 14, and shown more clearly in Fig. 2. Fitted within each of the grooves is a strip or lagging 15. These strips are tapered to conform to the taper of the groove and the outer portions 16 thereof project beyond the outer surface 17 of the section. In assembling the sections the smaller ones are inserted first with the laggings located within the grooves. The laggings are then driven home between the surfaces 17 and the inner surface 18 of the casing.

95 It will be seen that the diameter of each of the sections is less than the diameter of the part of the casing in which it is located. Each section is also integral throughout and non-expandible. When located in position the lagging acts as a wedge between the adjacent surfaces of the casing and lining. In order to properly position the sections of the inner lining and to prevent the rotation thereof relatively to the outer casing each of the sections is provided with a suitable key 19 which locks it to the adjacent casing. But this key may not always be used.

By the construction above described it will be seen that I have devised means for

locking the parts together in a simple and rigid manner without appreciably impairing the strength of the inner lining.

While I have shown and described one embodiment of the invention it will be understood that the same has been chosen for the purposes of illustration only and that I do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a Jordan engine, the combination, with an outer casing and an inner lining, of longitudinal strips or lagging interposed between the adjacent walls of the casing and lining and acting to bind the two structures together.

2. In a Jordan engine, the combination, with an outer casing and an inner lining, of strips or wood lagging interposed between the adjacent walls of the casing and lining and acting to bind the two structures together.

3. In a Jordan engine, the combination, with an outer casing and an inner lining, of longitudinal strips or lagging interposed between the adjacent walls of the casing and lining embedded in one of said structures and acting to bind both structures together.

4. In a Jordan engine, the combination, with an outer casing and an inner lining, the latter having channels in its exterior

surface, of strips or lagging inserted in said channels and bearing on their outer faces against the inner wall of the casing, to bind the two structures together.

5. In a Jordan engine, the combination, with a casing and a lining having longitudinal dovetailed channels on its exterior, of longitudinal lagging or strips inserted one in each of said channels and binding on their outer face against the interior surface of the casing.

6. In a Jordan engine, the combination, with a casing, and a lining composed of a series of sections, of longitudinal strips or lagging composing a like series, each section of the lining having a longitudinal series of the lagging or strips between it and the casing, to bind each lining section to the casing.

7. In a Jordan engine, the combination, with a casing and a lining, of lagging or strips interposed between the two structures and acting to bind them together, keyways in said structures, and a key occupying said ways and further interlocking said structures.

8. In a Jordan engine, the combination, with a casing and a lining, of lagging or strips interposed between the two structures and acting to bind them together by the swelling of the lagging or strips when subjected to the influence of water used in the engine.

In testimony whereof, I affix my signature.

CHARLES W. SHARTLE.