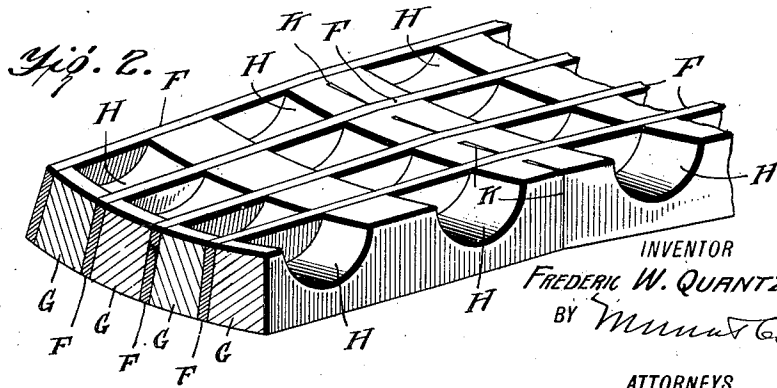
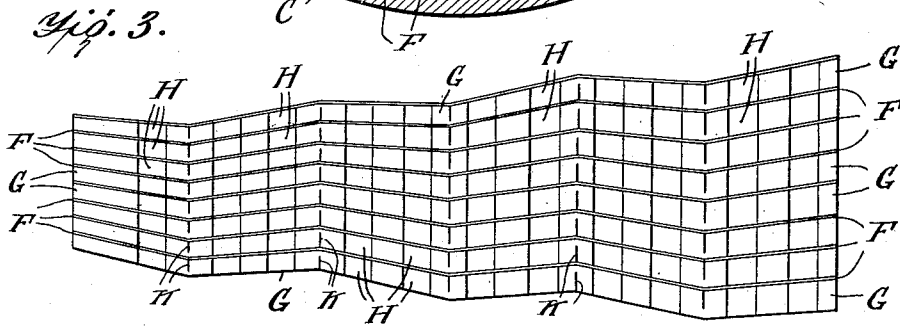
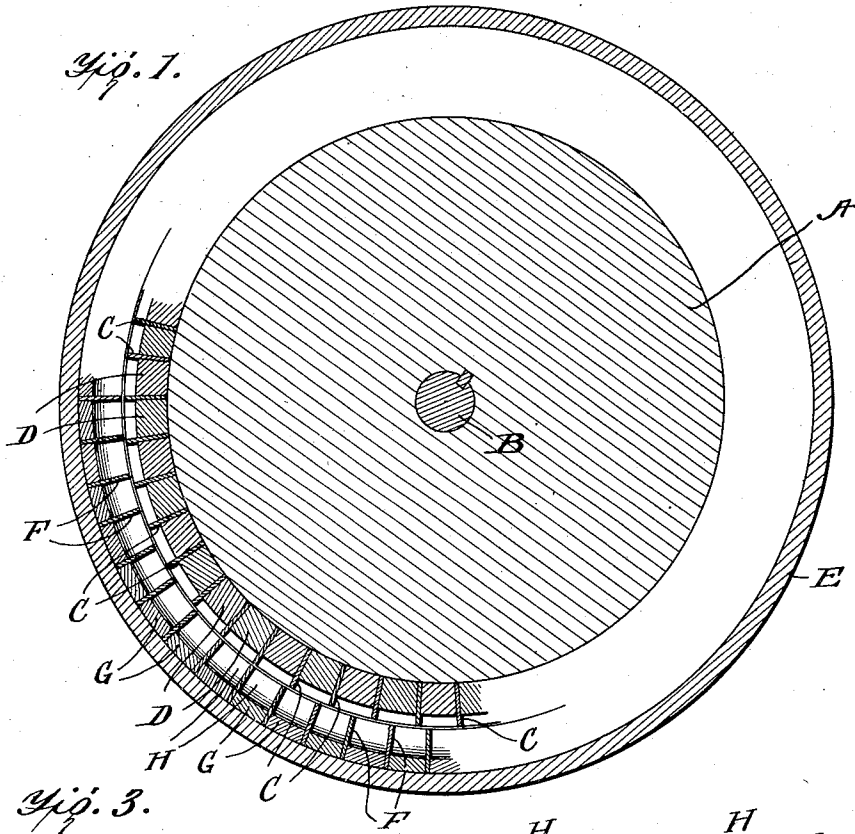


F. W. QUANTZ.
PULP REFINING ENGINE.
APPLICATION FILED MAR. 22, 1909.

933,582.

Patented Sept. 7, 1909.



WITNESSES

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UNITED STATES PATENT OFFICE.

FREDERIC W. QUANTZ, OF VINCENNES, INDIANA.

PULP-REFINING ENGINE.

933,582.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed March 22, 1909. Serial No. 485,061.

To all whom it may concern:

Be it known that I, FREDERIC W. QUANTZ, a citizen of the United States, and a resident of Vincennes, in the county of Knox and State of Indiana, have made certain new and useful Improvements in Pulp-Refining Engines, of which the following is a specification.

My invention relates to an improved device for the refining of paper pulp and it consists in the constructions, combinations and arrangements herein described and claimed.

The invention is an improvement in the so-called Jordan type of refining engine in which a cone-shaped plug which is provided with steel blades revolves in a shell or casing, also provided with blades, the stock being ground between the two sets of blades in its passage from one end of the device to the other. In the ordinary form of refining engine of this type the blades extend in a general longitudinal direction with respect to the shell being inclined to the axis thereof and are separated from each other by means of strips of wood, the inner portions of the blades projecting beyond the wood strips, thereby providing parallel grooves or channels. In this form of the device the pulp is forced into these channels and, owing to the centrifugal action of the revolving plug, part of the pulp remains in the channels and therefore passes entirely through the refining device without being reduced to the proper fineness.

The main object of my invention is to provide an improved shell filling which has the corrugated surface necessary for the reduction of the pulp, but which obviates the objection heretofore mentioned, in that all of the pulp is forced into repeated and intimate contact with the revolving plug, thereby rendering the product of uniform texture.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a transverse section through a refining engine, Fig. 2 is an enlarged view in perspective of a portion of the shell, showing the pockets, or recesses and Fig. 3 is a view showing the development of a portion of the shell lining.

In carrying out my invention I make use of the core A which is mounted for rotation on a central shaft B. On the periphery of the core are the radially extending blades

C which are separated by means of the wood strips D, the apparatus thus far described constituting the plug.

The shell, in which my improvement is embodied, consists of an outer casing E to which are secured a series of parallel steel bars or blades F. Between adjacent bars I arrange the wood strips G. The latter are of the same depth as the bars themselves, the inner edges of the bars and the separating strips being flush. At suitable distances apart, I provide recesses in the strips G, which constitute pockets H when the strips and bars are assembled. These pockets are clearly shown in Fig. 2.

Referring now to Fig. 3, it will be seen that the blades and the wood strips are bent at the usual angles and that the strips narrow in width as they near the smaller end. It will also be observed that the wood strip at the smaller front end is solid. This is to prevent the admission of any large body of foreign substances.

From the foregoing description of the various parts the operation thereof may be readily understood. As the pulp is caught up by the revolving plug it is carried between the two sets of steel bars and subjected to an abrading action. The centrifugal force of the plug forces the pulp down into the pockets in the filling of the shell. The same force, however, drives the pulp out again and into repeated contact with the plug, so that all of the pulp is brought into repeated engagement with the plug with the result that the product is uniform. With this construction I provide a corrugated surface for the shell but eliminate the channels and hence the tendency of some of the pulp to lodge therein and to escape through said channels without being subjected to the necessary reduction by the plug.

This design of shell filling maintains a corrugated surface until said shell is worn out thereby eliminating the usual expensive method of cutting down the wood filling to maintain a corrugated surface in the shell as the steel bars of said shell filling wear down.

While I have shown the pockets as being of semi-cylindrical shape it will be understood that any form of pocket or recess of greater or less size may be used and that the number of such pockets may be varied without departing in the least from the spirit and scope of the invention.

I claim—

1. In a refining engine, a plug, a shell therefor, blades carried by said shell and a strip having a series of pockets between adjacent blades.
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2. In a refining engine, a plug provided with longitudinal blades, a shell provided with blades disposed in angular relation with the axis thereof and a strip having a series of pockets between adjacent blades of said shell.
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3. In a refining engine, a plug provided with longitudinal blades, a shell provided with a series of blades, and a strip having a series of pockets with curved sides between adjacent blades of said shell.
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4. In a refining engine, a plug provided with outwardly extending radial blades disposed longitudinally thereof, a shell provided with inwardly extending blades disposed in angular relation with the axis thereof, and wood strips separating the blades of said shell, each of said strips being provided with a series of recesses into and out of which the pulp is forced in its travel through the refiner by the centrifugal force of the rapidly revolving plug.
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5. In a refining engine, a plug provided with outwardly extending radial blades disposed longitudinally thereof, a tapering shell provided with inwardly extending blades disposed in angular relation to the axis thereof, wood strips separating the blades of said shell, each of said strips being provided with a series of recesses, the end portions of the strips near the smaller end of the shell being solid to prevent the entrance of foreign substances.
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FREDERIC W. QUANTZ.

Witnesses:

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FELIX L. CADON.