No. 794,187. PATENTED JULY 11, 1905.

H. C. PFEIFER.

MECHANICAL PREPARATION OF WOOD PULP FROM SAWDUST.

APPLICATION FILED JUNE 27, 1904. RENEWED MAY 8, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

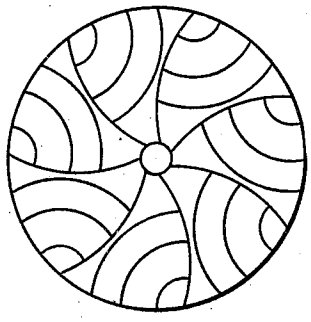


Fig. 2.

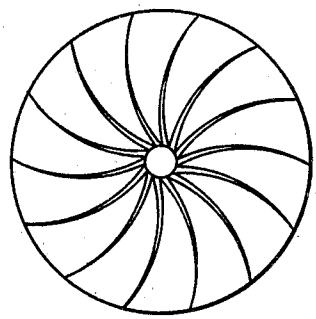


Fig. 3.

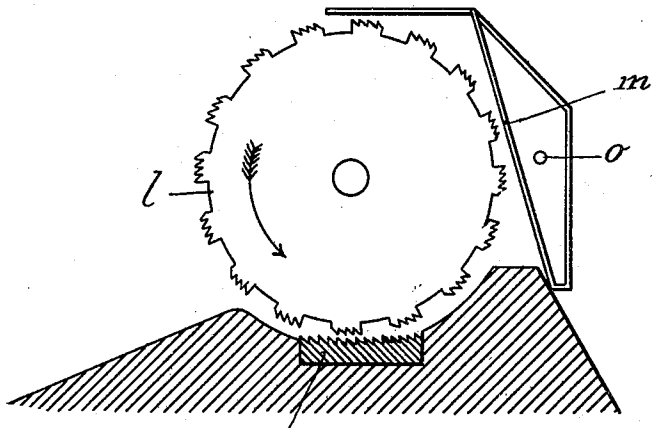
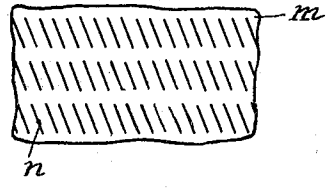


Fig. 4.



Witnesses.
W. Smart
L. Chatwin

Inventor
H. C. Pfeifer
By J. M. Herschel.
Attorney.

PHOTO LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 794,187. PATENTED JULY 11, 1905.

H. C. PFEIFER.

MECHANICAL PREPARATION OF WOOD PULP FROM SAWDUST.

APPLICATION FILED JUNE 27, 1904. RENEWED MAY 8, 1905.

2 SHEETS—SHEET 2.

Fig. 5.

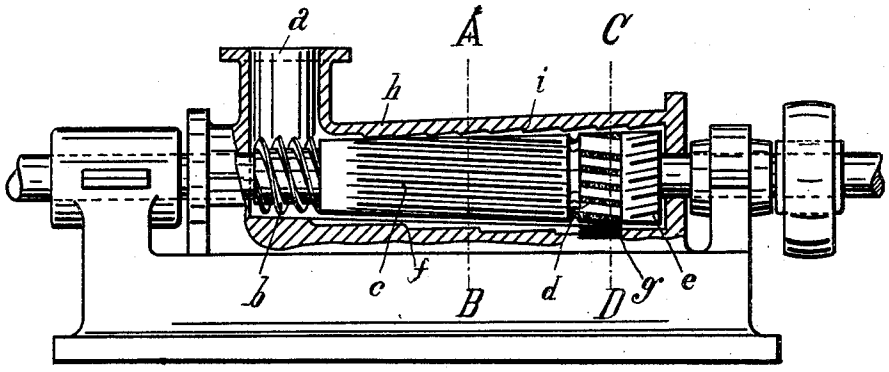


Fig. 6.

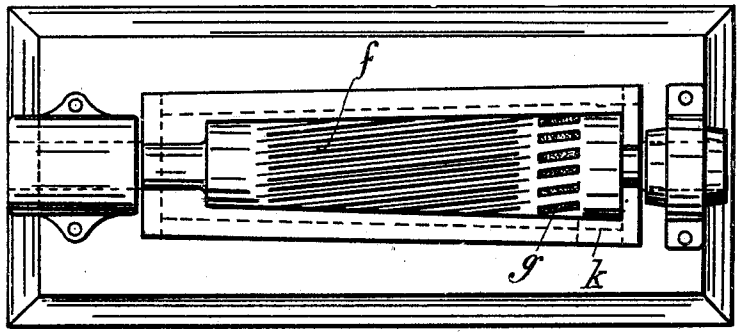


Fig. 7.

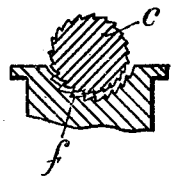
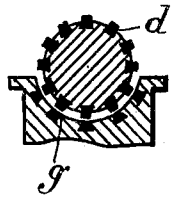


Fig. 8.



Witnesses.

W. Smart

L. Chatain

Inventor

H. C. Pfeifer.

By J. McKorschelg

Attorney.

PHOTO LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 794,187. Patented July 11, 1905.

UNITED STATES PATENT OFFICE.

HERMANN CARL PFEIFER, OF GÖRITZHAIN, GERMANY.

MECHANICAL PREPARATION OF WOOD-PULP FROM SAWDUST.

SPECIFICATION forming part of Letters Patent No. 794,187, dated July 11, 1905.

Application filed June 27, 1904. Renewed May 8, 1905. Serial No. 259,435.

To all whom it may concern:

Be it known that I, HERMANN CARL PFEIFER, a subject of the Emperor of Germany, residing in Göritzhain, Saxony, in the German Empire, have invented new and useful Improvements in the Mechanical Preparation of Wood-Pulp from Sawdust; and the object in view is to render this process more expeditious and successful than heretofore, and so permit of an increased employment of the said material in the art of paper-making.

The material as prepared by the mechanical methods heretofore known is comparatively rough and unfit for use except for very coarse paper, owing to the defective grinding processes to which it is subjected.

According to my improved process I proceed as follows: The sawdust is charged into a sorting apparatus, so as to thoroughly separate out all pieces of bark and coarse wood. It is then placed in a large mixing-vat and intimately soaked and impregnated with water. When sufficient water has been absorbed, the sawdust mixture is pumped by a piston-pump into the refiner for disintegration. The pump for this work should have a long cylinder, which will allow of the easy removal of any accumulated sawdust from its lower end. The refiner delivers the raw stuff to sorting-cylinders for separating the very fine fibers. These latter are charged into the hollander and are there once more ground for a long period until the whole is reduced to a pulp having a more slimy than felted touch. The hollander can only do the work efficiently when made entirely of stone. The delivery into the hollander is carried out by a scoop-wheel, and the grinding operation in the hollander is repeated to insure complete success. By the rotation of the hollander the pulp is thrown on an inclined strainer and issuing from which it is washed down by a water jet into a gutter leading to the paper-stuff vat or direct onto the paper-machine.

The mechanically-prepared sawdust pulp may be used by itself or with an admixture of wood-pulp prepared from block-wood for the manufacture of paper or pasteboard.

The accompanying drawings illustrate the means which I prefer to use for carrying out my process.

Figures 1 and 2 show the manner of sharpening the stones so as to prevent the sawdust clogging the mill.

Figs. 3 and 4, show the hollander provided with a rotary roller *l*, of very hard and fine sandstone, and having saw-toothed cutters, as shown. The said roller works in a base-block *p*, of coarse sandstone, also provided with saw-teeth. The hollander is fitted with a strainer *m*, consisting of a plate having long narrow slits *n* about 0.6 millimeter wide and ten millimeters long. At the rear of the strainer is situated the nozzle *o* of a water-pipe, serving to keep the strainer clean. At the foot of the strainer is a gutter, with slight fall to receive the stuff and deliver same either to the vat or direct onto the paper-machine. The coarser portion of the sawdust is returned to the aforesaid mixing-vat and again and again subjected to a renewed grinding operation until it is in sufficiently fine condition to leave the sorting-cylinder ready for the hollander.

Fig. 5 is a longitudinal section, and Fig. 6 a plan with the cover removed; and Figs. 6 and 7 are cross-sections on lines A B and C D, respectively, of another grinding-mill for the disintegration of sawdust. *a* is the feed-mouth of the mill, and *b* a conveyer situated beneath the former and serving to convey the sawdust to a taper roller *c*, provided with cutting-teeth. Rearward of the roller *c* is a grinder *d* and an ejector *e*. The casing or chamber shown in Fig. 6 is made to suit the said roller and has grooves or riflings *f* adjacent and in opposite direction to those of the roller *c*. This part of the chamber is made in steps having wide inlets and narrow outlets. The part adjacent the grinder is furnished with grinding-blocks *g* to coact with said grinder. The cover *h* is formed with worm-grooves *i*, which urge the material toward the delivery-opening *k*. The roller is adjustable lengthwise in its casing for the purpose of varying the fineness of the ground material.

What I claim as my invention, and desire to

secure by Letters Patent of the United States, is—

The process for the mechanical preparation of wood-pulp from sawdust, consisting in first freeing the sawdust from bark and coarse wood, then soaking and impregnating it with water in a large mixing-vat, then pressing it through a refiner and sorting-cylinder, and delivering the finest particles of fibers into a hollander for repeated grinding, substantially as and for the purpose stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN CARL PFEIFER.

Witnesses:

FRITZ EUGEN NEUBERT,

FRIEDRICH ERNST HAROLD.