E. PARTINGTON.

BEATING OR GRINDING OF PAPER PULP.

APPLICATION FILED MAR. 23, 1918.

1,277,637.

Patented Sept. 3, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

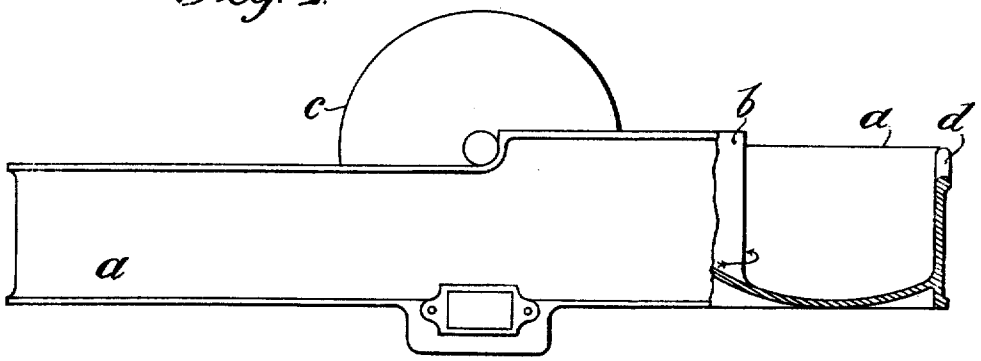
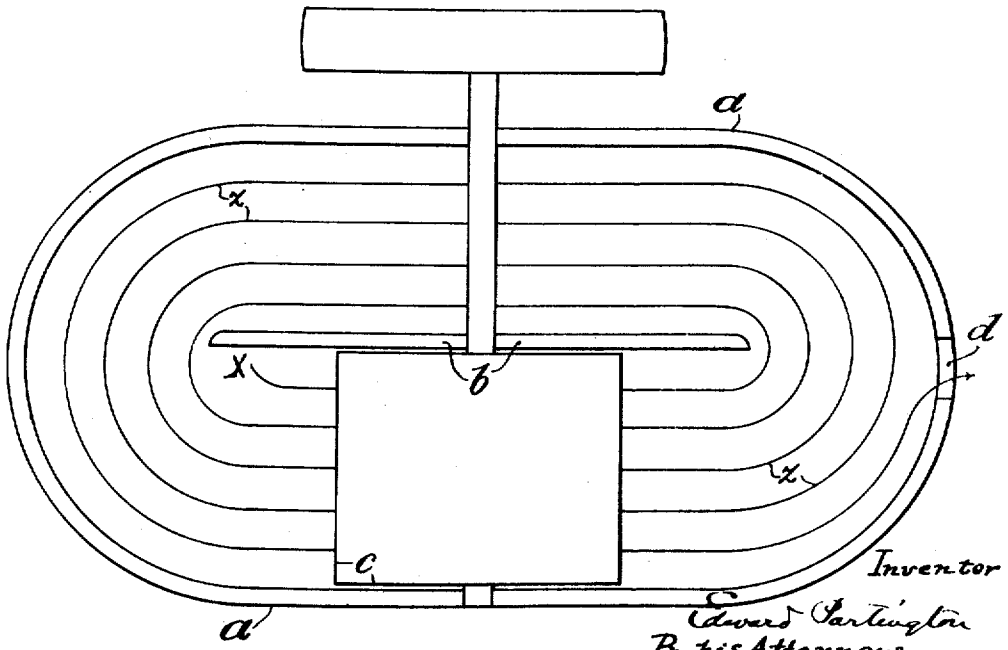


Fig. 2.



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By his Attorneys
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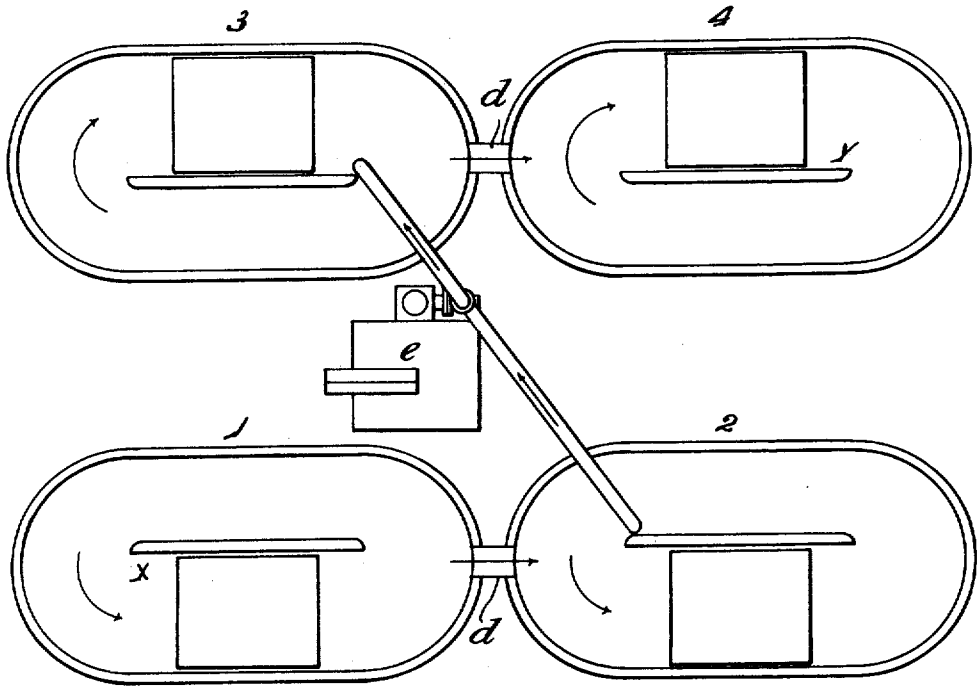
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

EDUARD PARTINGTON, OF WESTWOOD PARK, ENGLAND.

BEATING OR GRINDING OF PAPER-PULP.

1,277,637. Specification of Letters Patent. Patented Sept. 3, 1918.

Application filed March 23, 1918. Serial No. 224,377.

To all whom it may concern:

Be it known that I, EDUARD PARTINGTON, a subject of the King of Great Britain and Ireland, and a resident of Westwood Park, in the county of Worcester, England, have invented certain new and useful Improvements in the Beating or Grinding of Paper-Pulp, of which the following is a specification.

This invention relates to the beating or grinding of paper pulp in Hollander beating engines.

In the pulping of materials of paper-making in Hollander beating engines, the material to be pulped is generally fed into the vat of the engines and acted on therein until it is reduced or pulped to the required extent when the pulp is discharged. Thus, there is an intermittent discharge or delivery of pulp from the engine.

The object of the present invention is to provide for a continuous and regular discharge or delivery of pulp from one or more Hollander or beating engines.

According to this invention, the material to be pulped is fed into a Hollander engine and beaten therein until the pulp reaches a predetermined level when further material is fed in and a corresponding quantity of pulp discharged from the engine by displacement with or without the aid of a pump. In some cases, I may employ a number of engines, feed material to be pulped to one or more of the engines, displace partly beaten pulp therefrom to another engine or engines or two or more engines in succession and displace beaten pulp from such engine or engines or the last of them.

In the accompanying drawings, Figures 1 and 2 are, respectively, a more or less diagrammatic elevation and a plan, the former partly in section, of a single pulp-beating engine adapted for carrying out the invention, and Fig. 3 is a diagrammatic plan of four engines adapted therefor.

Referring first to Figs. 1 and 2, *a* is the vat of the engine, *b* the mid-feather, and *c* the beating roll. At the rear end of the vat *a* there is provided at a suitable level in the wall thereof, an overflow outlet *d*.

At the commencement of operations, material is fed into the vat *a*, and beaten or pulped therein by the roll *c* until the level of the pulp behind the roll rises to the overflow *d*. Further, material is then fed into the vat and as this material is beaten by the roll there is a corresponding discharge or displacement of pulp through the overflow *d*. The level of the pulp is, of course, highest behind the roll *c* and there is a gradual fall in level from behind the roll to the front thereof. If the pulp in the vat *a* is of a fairly thick consistency, it will be found that material fed near the mid-feather, either in front of or behind the roll, will spread across the vat to the wall thereof only slowly and will pass under the roll *c* several times before reaching the wall. Conversely, if material be fed near the wall of the vat, it will spread across to the mid-feather only slowly. Accordingly, therefore, I preferably feed the material in front of the roll *c* and near the mid-feather *b* (about the point indicated by the letter X in Fig. 2) so that as the pulp circulates in the vat, there is a gradual displacement toward the wall, as indicated by the line Z in Fig. 2, and the material fed in passes several times beneath the roll *c* before being displaced through the outlet *d*. The points of feeding and discharge may be reversed and in such cases the discharge will be effected by a pump, the suction pipe of which will be arranged at the normal level of the pulp at the point of discharge so that pulp can be drawn off only when there is a displacement of pulp from the wall of the vat to the mid-feather by the feeding of material, or the suction or discharge of the pulp will be adjusted to the displacement caused by the rate of feeding.

The material may be fed into the vat by an overhead pipe or chute, or by hand, or in any other appropriate manner.

In carrying the invention into effect with a plurality of beating engines, the material to be pulped may be fed to the first engine and acted upon in each engine in succession, the finished pulp being discharged from the last engine. In the example illustrated in Fig. 3, the material is fed into the vat of the first engine, and partially beaten pulp displaced by continued feeding passes by the overflow *d* to the second engine 2. From the engine 2 pulp is withdrawn by a pump *e* and delivered into the third engine 3 and from this engine pulp overflows to the last engine 4, from which finished pulp is discharged, preferably by means of a pump, from about the point indicated by the letter Y. Thus, there is a constant feed of material into the first engine and a continuous

discharge of finished pulp from the last engine.

It will be observed that in engines 1 and 3, the feed is near the mid-feather *b* and the discharge at the wall of the vat while in engines 2 and 4 the feed or inlet is at the wall of the vat and the discharge from near the mid-feather. In each case, therefore, the material or pulp must pass under and be acted upon by the beating roll *c* several times before it spreads across to the point of discharge.

As will be obvious, the arrangement is capable of considerable modification. For example, partially beaten pulp may be displaced or discharged from engine 2 to engines 3 and 4, and finished pulp taken from each of the latter engines, or material may be fed to both engines 1 and 2 and partially beaten pulp displaced or discharged from these two engines to engine 3.

In addition to providing a constant discharge or delivery of pulp, the invention also enables a better mixed and more uniformly beaten pulp to be obtained than is obtained from beating engines operating in the usual way.

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

1. The process of grinding or beating pulp for paper-making which consists in feeding material to be pulped into a Hollander beating engine and beating same therein until the pulp reaches a predetermined level, then feeding further material into the engine and simultaneously discharging a corresponding quantity of beaten pulp from the latter by displacement with, if necessary, the aid of a pump.

2. The process of grinding or beating pulp for paper-making which consists in feeding material to be pulped into one or more of a plurality of Hollander beating engines and beating same until the pulp reaches a predetermined level, then feeding further material into the said engine or engines and simultaneously discharging partly beaten pulp from each engine of the plurality to the next in succession and discharging beaten pulp from the last engine.

In witness whereof I have hereunto set my hand.

EDUARD PARTINGTON.

Correction in Letters Patent No. 1,277,637.

It is hereby certified that the name of the patentee in Letters Patent No. 1,277,637, granted September 3, 1918, for an improvement in "Beating or Grinding of Paper-Pulp" was erroneously written and printed as "Eduard Partington," whereas said name should have been written and printed as *Edward Partington;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of October, A. D., 1918.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.

Cl. 92—24.