

(No Model.)

2 Sheets—Sheet 1.

B. ZIEGLER.
ROTARY DISINTEGRATOR AND SEPARATOR FOR FIBROUS MATERIALS.
No. 469,495.

Patented Feb. 23, 1892.

FIG. 1.

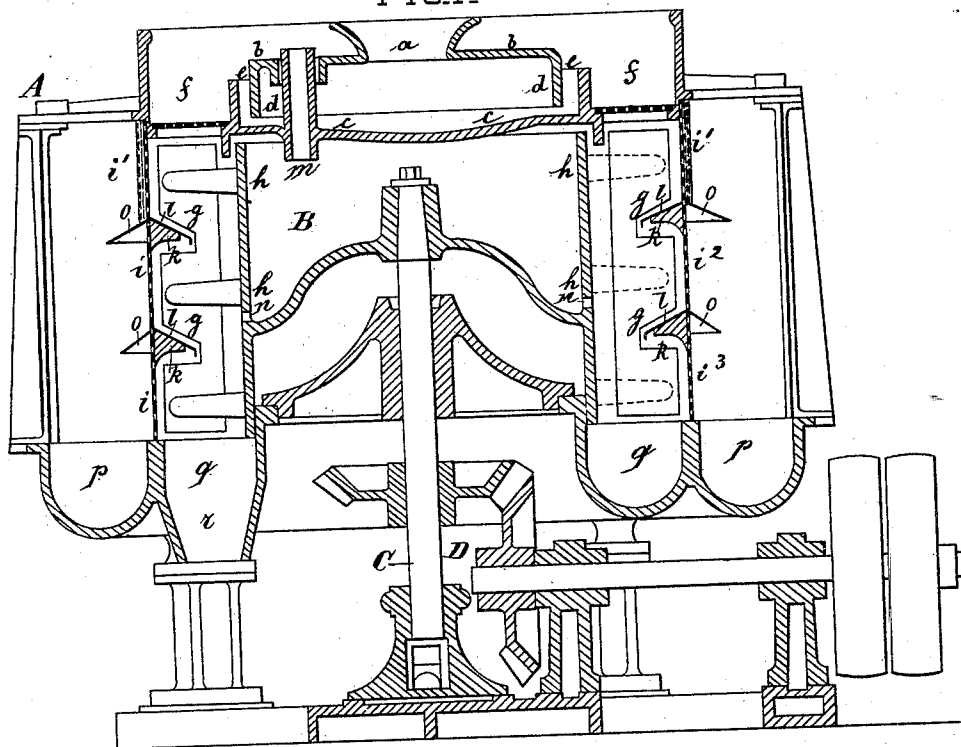
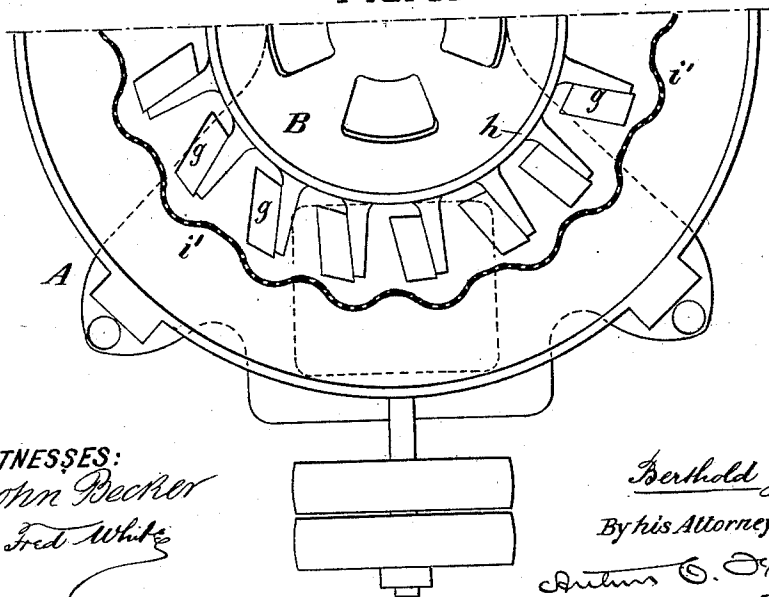


FIG. 4.



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INVENTOR:

Berthold Ziegler

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(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

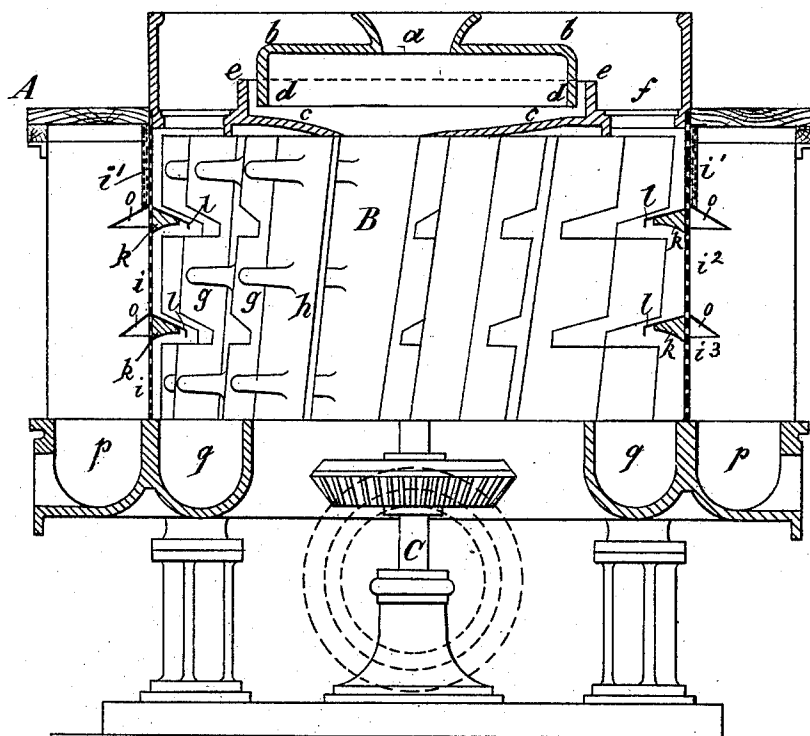
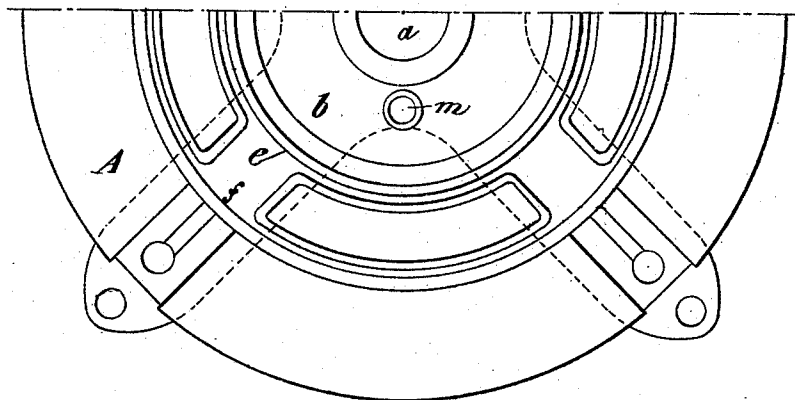


FIG. 3.



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UNITED STATES PATENT OFFICE.

BERTHOLD ZIEGLER, OF TODTNAU, GERMANY.

ROTARY DISINTEGRATOR AND SEPARATOR FOR FIBROUS MATERIALS.

SPECIFICATION forming part of Letters Patent No. 469,495, dated February 23, 1892.

Application filed July 14, 1891. Serial No. 399,534. (No model.)

To all whom it may concern:

Be it known that I, BERTHOLD ZIEGLER, a citizen of the Swiss Republic, residing in Todtnau, Germany, have invented certain new and useful Improvements in Rotary Disintegrators and Separators for Fibrous Materials, of which the following is a specification.

This invention relates to that class of machines wherein centrifugal force is utilized to disintegrate fibrous material and to separate the fine fibers from those not sufficiently disintegrated, as well as from branches and other impurities.

The invention aims to provide an improved machine of this character which will be more efficient and easier of operation than prior machines, which will serve to disintegrate the fibers as they are fed to the machine from the usual pulp-digester or other source of supply, and which will separate the fibers according to their degree of fineness.

In the accompanying drawings, which illustrate the preferred form of my invention, Figure 1 is a vertical axial section of my improved machine. Fig. 2 is a similar view thereof, but looking in a different direction, and showing the revolving parts in elevation. Fig. 3 is a fragmentary plan thereof, and Fig. 4 is a fragmentary horizontal position.

Referring to the drawings, A represents a stationary cylinder, B the rotary drum therein, and C the shaft carrying said drum, which shaft is driven by mitered gears D or in any other suitable manner. The drum A has an inner perforated or interstitial wall *i*, divided into sections or stages *i'* *i''* *i'''* by the intervening partitions or trays *l l* and rings *k k*. The section *i'* is preferably corrugated, as shown in Figs. 1 and 2. A gutter *p* is provided at the bottom of the cylinder A, and a similar gutter *q* is provided at the bottom of the cylinder within the wall *i*. The rotary drum B has a vertical wall *h*, carrying peripheral lugs, to which inclined beater-blades are secured, which blades as the drum is rotated travel in close proximity to the wall *i*, being notched at intervals or constructed in any other desired manner to provide for the rings *k* and annular trays *l* on the interior of the wall *i*. The fibrous material suspended in water is fed to the machine through the hopper *a*,

which hopper has an enlarged top *b*, surrounded by a depending flange *d*. Beneath the hopper *a* is a pan *c*, having raised annular flange *e* exteriorly of the flange *d* of the hopper, and exteriorly of the flange *e* of the pan is an annular trough *f*, having a perforated or sieve-like bottom. The material, when forced through the hopper *a*, flows beneath its flange *d* and thence over the flange *e* into the trough *f*. By this arrangement the material is fed quietly to the trough *f* and without commotion. The material pours through the sieve-like bottom of the trough *f*, which bottom serves to catch any large particles or impurities contained in the mass, and the material then passes directly upon the blades *g*, which are revolving at a high speed. As these blades engage the mass it is thrown with great force against the first section of the wall *i*, which, if corrugated, as shown, serves to disintegrate more thoroughly the fibrous material, and, if also perforated, as shown, will permit such of the fibrous material as is sufficiently finely disintegrated to pass through its perforations to its exterior. The fibers so passing through, together with the water accompanying them, will descend on the wall *i'* to the annular tray *o*, over which it falls to the gutter *p*. Such of the fibrous material as does not pass through the section *i'* returns to the blades *g*, going down over the inner tray *l*, and is again thrown outwardly and against the section *i''*. This action serves to further disintegrate the fibrous mass, and such of the fibers as are sufficiently fine pass through the perforations in the section *i''* and descend onto the annular tray *o*, from which they drop to the gutter *p*. The mass which does not pass through the section *i''* returns to the blades *g* below the second inner tray *l* and is again thrown upwardly against the section *i'''*. All of the mass that is sufficiently fine passes through this section and passes into the gutter *p*, from which the fiber is withdrawn, as desired, either to drying-machines or elsewhere. The fiber and other material which is not sufficiently disintegrated to pass through the section *i'''* falls into the inner gutter *q*, from which it is withdrawn through the spout *r*.

As much water is required in operating the

machine, this is supplied through the pipe *m* in the pan *c* into the interior of drum B, from whence it flows through the apertures *n* outwardly and into the fibrous mass.

5 If it is desired, the perforations in the different sections of the wall *i* will be graded, and by placing separate gutters under each of the trays *o* the different fibers may be drawn off separately, according to the degrees
10 of fineness. For this purpose the trays *o* are projected to different distances outwardly from the wall *i*.

It will be seen that my invention provides an improved centrifugal disintegrator and
15 separator in which the fibrous material on entering and passing through the machine will at each section of the wall *i* be repeatedly thrown by the beater-blades outwardly against the wall, and by this means the fiber which at
20 first is not sufficiently disintegrated will be thoroughly disintegrated, whereby the machine acts not only as a disintegrator, but also as a separator.

The machine can be variously modified in
25 details without departing from the invention, and it is not essential that the upper section *i'* be corrugated, as this section, as well as the others, will be constructed in the form which is best adapted to the particular uses of each
30 machine. Any number of sections may be used.

What I claim is, in a disintegrator or separator for fibrous and analogous materials, the following-defined novel features and combinations, substantially as hereinbefore set
35 forth, namely:

1. The combination, with the cylindrical wall *i*, divided into a plurality of sections, and partitions separating its sections, of the rotary drum B, having wall *h*, and blades *g*, con-

structed to rotate within said cylinder, and said blades being notched or otherwise formed opposite said partitions, whereby they clear the latter.

2. The combination, with the rotating drum B, having peripheral blades, of the interstitial cylinder *i*, surrounding said drum and subdivided into a plurality of sections *i'* *i''*, as
45 and for the purpose set forth.

3. The combination, with a rotary drum having blades, of a perforated cylinder *i*, surrounding said drum, and annular trays *l*, carried on the interior of said cylinder and subdividing the latter into a plurality of sections, said trays constructed to conduct the residuum
50 of one section to the next by returning such residuum toward the said blades.

4. The combination, with the rotating drum having beater-blades, of an interstitial cylinder surrounding the latter, and external peripheral tray *o*, surrounding said cylinder, whereby the latter is subdivided into sections, and the material discharged through the upper section is conducted away from the next
55 lower section.

5. The combination, with a rotating drum having beater-blades, and a cylinder within which said drum rotates, of an opening for supplying water to the interior of said drum, and apertures for permitting the discharge of
60 said water through said drum, as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of the subscribing witnesses.

BERTHOLD ZIEGLER.

Witnesses:

AMAND RITTER,
GEORGE GIFFORD,
CHS. A. RICHTER.