

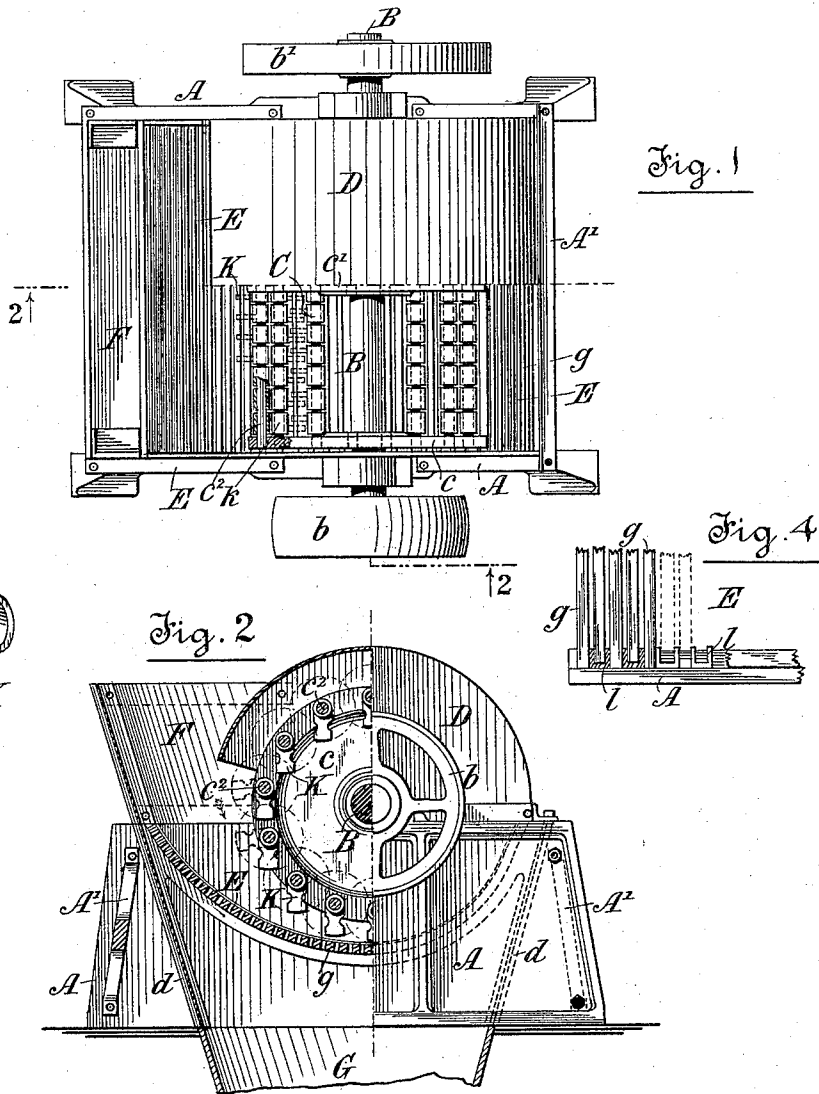
No. 696,628.

Patented Apr. 1, 1902.

A. A. DICKSON.  
DISINTEGRATING MACHINE.

(Application filed May 8, 1899.)

(No Model.)



Witnesses:

W. C. Wall  
R. B. Russell

Inventor:

Archibald A. Dickson,  
per  
Att. A. H. H. H.  
Attorney.

# UNITED STATES PATENT OFFICE.

ARCHIBALD A. DICKSON, OF TORONTO, CANADA.

## DISINTEGRATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 696,628, dated April 1, 1902.

Application filed May 8, 1899. Serial No. 716,046. (No model.)

*To all whom it may concern:*

Be it known that I, ARCHIBALD ANDERSON DICKSON, of the city of Toronto, in the county of York and Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Disintegrating-Machines, of which the following is a specification.

This invention relates to machines or apparatus adapted to rapidly and economically break up, disintegrate, or finely divide those vegetable, animal, and mineral substances which have to be reduced to some predetermined degrees for various purposes, the improvements being specially serviceable in the granulation of cold dry peat previous to compression according to my patented method of manufacturing peat fuel and for similarly treating other materials in which it is not desirable to unduly pulverize them or in the case of fibers existing therein not to break them to any large extent, while still reducing the mass to the desired degree of fineness. These being the objects of my invention, I have to state that the essential features of a disintegrating-machine constructed according thereto are a horizontally-arranged rotary cylinder, between the heads of which and concentric with its shaft are longitudinal bars, each of which has a number of beaters loosely strung thereupon side by side, so as to be able to turn completely around on the bars as pivots, and thus deliver blows upon the material upon tangential lines, while still yielding at each time of impact against solids, an eccentrically-set regulable screen, through which the disintegrated material will gravitate toward the point of delivery, and a peculiarly-arranged hopper and hood for directing the feed of raw material and controlling the same during the operation.

To afford a full comprehension of the construction and operation of my invention, I will describe the same in detail, having reference to the accompanying drawings, forming part of this specification, and will then point out the novelty in the claim.

In said drawings similar letters of reference indicate like parts in all the figures.

Figure 1 is a sectional plan view of the machine. Fig. 2 is a cross-sectional elevation taken on the line 2 2, Fig. 1. Fig. 3 is a de-

tail in perspective of one of the beaters, and Fig. 4 a detail of part of the screen.

The main framing consists of two side pieces A A and two or more connecting cross-stays A' A', these being bolted to a suitable bed-plate or to the floor, and the side pieces carrying suitable journal-boxes for the main breaker-shaft B. This shaft B carries the breaker-cylinder C (to be hereinafter more particularly described) upon that portion of it which lies between the side frames and has a driving-pulley *b* and a fly or balance wheel *b'* mounted thereon at opposite ends.

D is a hood or casing supported by the framing in any suitable manner and made concentric for the whole or greater part of its surface with the cylinder C, so as to effectually prevent the material or dust therefrom being thrown out at the top of the machine, the hood or casing, as shown, extending to a point on the same side as the feed, and thus securing the result stated, as this prevents the material being thrown back by the beaters.

The breaking-cylinder C and its shaft are not set precisely midway between the ends of the side frames, but so situated that a curved screen E, a portion only of which is concentric with the cylinder, may be set underneath same and centrally of the frame ends and in such relation to the cylinder as to allow an increased space between the periphery of the cylinder and the adjacent portion of the screen at one end of the latter for the ready admission of the material to be disintegrated in the desired quantity from a hopper F, located immediately above. This arrangement brings a portion of the screen immediately under the feed-orifice, through which that portion of the mass of material which already possesses the desired degree of fineness may pass and be discharged at once, thus, as in operating upon dry peat and analogous materials, which always have a large proportion of fine particles mixed with the lumps, instantly relieving the machine of all unnecessary load from the start, and consequently saving power and expediting the work of disintegration of any given mass of material. The hopper is stayed to the frame and also to the hood D, so as to be practically integral therewith. All of the framed parts are inclosed by boiler-plate or other

sheeting housing, so as to prevent the egress of dust, *d d* showing guides or stays in the side frames for the end sheets. The disintegrated material falls by gravitation through the screen E, which forms the bottom of the disintegrating-chamber, into a suitable delivery hopper or chute G. This screen is made up of a number of transversely-arranged bars *g g*, (preferably rectangular in section,) which are held at their extremities to the framing, as shown, or in any desired manner, washers *l l* being placed between the bars *g g* to preserve the desired spaces for the disintegrated material to pass through.

15 This construction allows of ready variation in the gage of the screen to suit different materials and purposes.

The breaker-cylinder C is made up by preference of two solid end disks or heads *c c*, supplemented for purposes of strength and rigidity by a similar centrally-situated disk *c'*, all of which are firmly keyed to the longitudinal shaft B. These disks are perforated near their rims to support any suitable number of

25 round bars or rods *c<sup>2</sup> c<sup>2</sup>*, upon the whole inside length of each of which are strung side by side a series of beaters *K K*, the bosses or eyes *k* of which are simply slipped upon the rods *c<sup>2</sup>*, so as not to bind but to be free to rotate completely thereupon, the spacing of these beaters being effected by the projection of the bosses *K* for some distance beyond the sides of the beater blade or finger proper. As the rods *C<sup>2</sup>* come somewhat near together, it being desirable to make the cylinder as close as possible, and the beaters *K* would otherwise interfere, I make their bosses project more upon one side of the finger than upon the other and regulate these distances, so that by

40 reversing their order in slipping them over alternate rods the fingers will be so spaced and hung that interference between the series upon neighboring rods will be prevented.

Of course a short and a long finger may be

45 carried by each boss and the different series be made to alternate in practically the same manner; but I have found single beaters arranged as I have described to fully answer the purpose. I may also otherwise vary the

50 construction and arrangement of parts without departing from the principle or sacrific-

ing the advantages of the invention. The length of these beaters must be such that their free ends will pass clear of the rods and central shaft, thus insuring their perfect and complete rotation and affording a beater-cylinder which is practically an open cage, the internal parts of which will also act upon the material finding its way thereinto, and thus assist the work of disintegration.

The operation of my disintegrating-machine will be so fully understood from the foregoing and from the drawings that I need only re-iterate that the salient features and results are that during the rapid rotation of the breaker-cylinder the breakers are at liberty to constantly revolve upon their own individual axes and deliver their blows upon the material upon lines tangential to the cylinder proper at the side where such material passes downward from the feed-hopper, and as they resume their vertical hanging position by gravitation the disintegrated material is assisted in its gravitation through the curved screen and thence delivered through the discharge hopper or chute. The perfect inclosure afforded by my arrangement of the hood and feed hopper effectually prevents the material from flying out of the machine and retains every particle of the mass in continual subjection to the disintegrating action of the beaters until the whole is divided finely enough to pass through the screen.

What I claim, and desire to secure by Letters Patent, is as follows:

The combination, in a disintegrating-machine, of a rotating cylinder, having a series of beaters or breakers pivoted thereto, a hopper, a curved concave grate or screen set eccentrically to the cylinder to form a throat contracting in the direction of the progress and elimination of the material as it is reduced, and a hood or casing extending over the beaters to a point on the same side as the feed.

Dated at the city of Toronto this 1st day of May, 1899.

A. A. DICKSON.

Witnesses:

ROBT. A. KELLOND,  
R. BRUCE WALLACE.