A. B. LIPSEY.

Disintegrating Apparatus.

No. 230,140. Patented July 20, 1880.

Fig1.

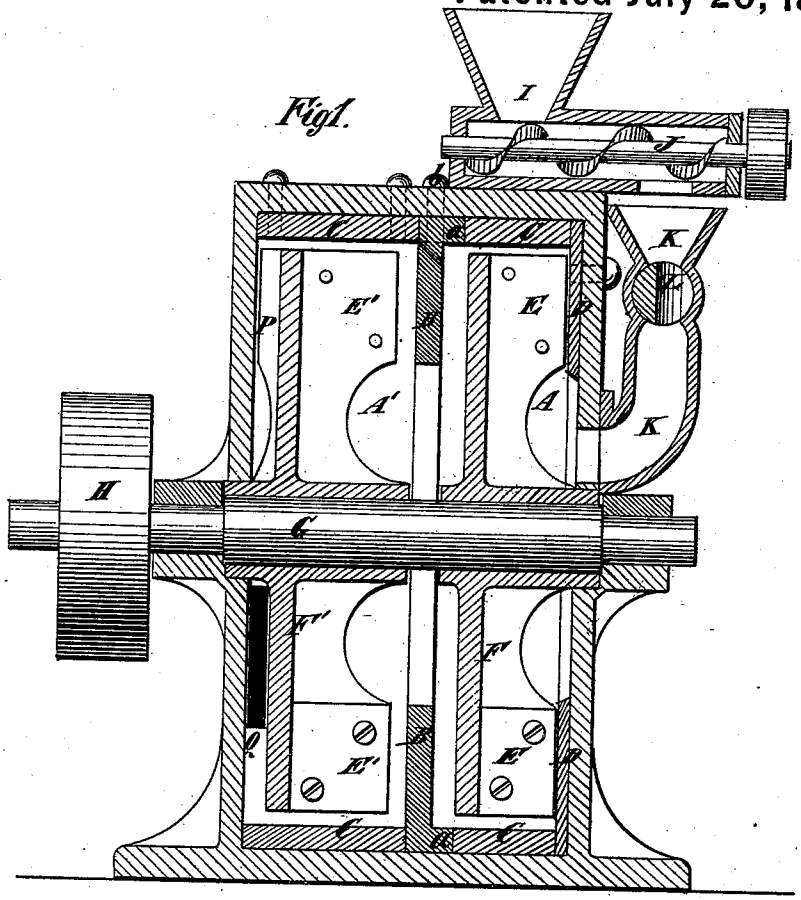


Fig3.

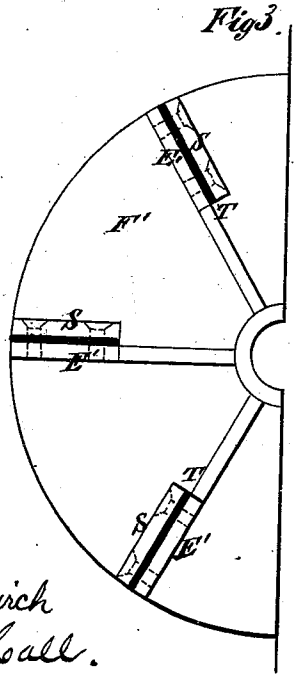
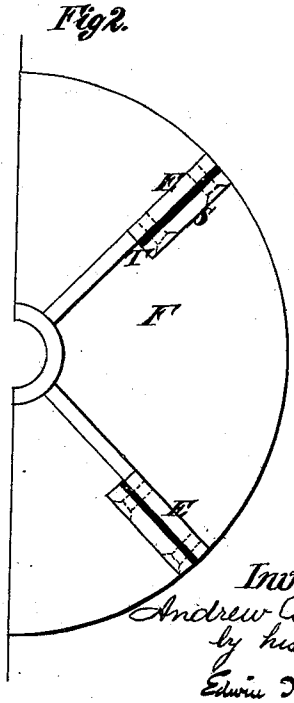


Fig2.



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UNITED STATES PATENT OFFICE.

ANDREW B. LIPSEY, OF WEST HOBOKEN, NEW JERSEY.

DISINTEGRATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 230,140, dated July 20, 1880.

Application filed April 25, 1879.

To all whom it may concern:

Be it known that I, ANDREW B. LIPSEY, of West Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Disintegrating-Machines, of which the following is a specification.

The object of this invention is to produce a simple, compact, and durable machine for disintegrating or pulverizing various substances.

The invention consists in the combination of chambers arranged side by side, disks furnished with series of beaters extending from their sides, revolving therein, and a partition having a central opening and arranged between the different disks and beaters, whereby I produce a machine in which material is pulverized or disintegrated finer and finer as it passes from one chamber to another.

It also consists in the combination, with such a machine, of a novel arrangement of fan-blades for expelling disintegrated material from the chamber to which it last passes.

It also consists in various combinations and details, hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a transverse section of a machine embodying my invention. Fig. 2 is a side view of one-half of a disk with beaters employed in one chamber of the machine, and Fig. 3 is a side view of one-half of a disk with beaters employed in the other chamber of the machine.

Similar letters of reference designate corresponding parts in all the figures.

A A′ designate two chambers, shown as of cylindric form and arranged side by side. They may be made in two semi-cylindric castings, one half of each chamber being made in one casting, and the other half of each chamber being made in another casting, and the two castings thus made may be hinged together at one point and secured by suitable fastenings at an opposite point. B designates a partition whereby the two chambers are separated from each other. It is of annular form, extending from the inner periphery of the chambers inward, leaving an opening between them at the center, and it is furnished with flanges *a*, which, by screws *b*, or otherwise, are fastened rigidly to the chambers, so as to secure the partition thereto. Of course, when the chambers are made in two semi-cylindric castings the partition will preferably be correspondingly made.

C designates rings constituting peripherical linings for the chambers, and D designates an annular plate-like lining fitting upon the side of the chamber A. These linings are designed to be made of hard material—such, for instance, as chilled cast-iron—and to be renewable. They are fastened in place by screws, may be made in semicircular sections corresponding to the sections of the chambers, and are renewable.

E E′ designate two series of beaters extending, respectively, from the sides of disks F F′, supported on a shaft, G, revolving within the chambers A A′, and separated by the partition B.

The beaters have renewable faces S, secured in place by screws, bolts, or other suitable means, with cushions of elastic or yielding material T, such as india-rubber, behind them to lessen the wear on them. These two series of beaters revolve at the same radii or distance from the shaft G and at the same rate of speed, but as the aggregate surface of the series of beaters E′ exceeds that of the beaters E the material is drawn by them from the chamber A into the chamber A′. This increase of surface may be attained by increasing the size of the beaters, or their number, or both, as represented. The beaters E in the chamber A, by their impact on the material subjected to them, disintegrate or pulverize it and cause it, by centrifugal force generated in it in whirling round, to approach the periphery. The beaters E′ in the chamber A′ have therefore to generate a suction in the said chamber A′ sufficient to draw the material against the centrifugal force toward the center of the chamber, in order that it may pass through the opening in the partition B and then outward, in order that it may pass over the disk F′ to reach the said beaters E′. Hence the lighter or finer particles only are drawn into the chamber A′, the heavier or coarser particles being left in the chamber A to be further disintegrated or pulverized.

A partition with a small opening will therefore cause the material to be disintegrated or pulverized finer than a partition with a larger

opening, and by changing one partition for another I can adapt the machine admirably for different materials.

Preferably the hubs of the disks F F′ are extended into the sides of the chambers, so as to preclude oil employed to lubricate the shaft G from entering the chambers.

The same result might be attained by driving one series of beaters faster than the other series, and without altering the arrangement, position, or size of the chambers. The shaft G may be driven by a belt on a pulley, H, or in any other suitable manner.

By this combination of beaters and chambers I am enabled to employ chambers of the same diameter, and to produce a circulation of material to be disintegrated through them by a current of air generated by the beaters, and hence without tilting or otherwise changing the position of the chamber.

I designates a hopper wherein the material to be disintegrated or pulverized is placed, and J designates a screw-conveyer leading therefrom and provided with an outlet arranged over a pipe or conduit, K, communicating with the chamber A. The latter has a funnel-shaped mouth to receive the material from the conveyer, and is furnished with a check or valve, L, whereby the passage of the material through it may be controlled. This check or valve is constructed like an ordinary cock, having the key cut entirely away on one side, and may be turned to partially or wholly close the conduit when desirable.

The material when disintegrated escapes from an opening, Q, in the chamber A′, it being preferably aided in its passage through the same by fan-blades P, extending from the side of the disk F′ opposite to that upon which the beaters E′ are arranged.

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

1. The combination of chambers arranged side by side, disks furnished with series of beaters extending from their sides, revolving therein, and a partition having a central opening and arranged between the said disks and beaters, substantially as specified.

2. The combination of chambers arranged side by side, disks furnished with series of beaters extending from the sides, revolving therein, and a partition having a central opening and capable of being detached and replaced by another having a central opening of a different size, substantially as specified.

3. The combination of chambers arranged side by side, disks furnished with series of beaters extending from their sides, revolving therein, a partition having a central opening and arranged between the different disks and beaters, and a series of fan-blades for dispelling the disintegrated material from the chamber which it last enters, substantially as specified.

ANDREW B. LIPSEY.

Witnesses:
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