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E. SLADE & J. B. CLEARIHUE.
APPARATUS FOR GRADING FIBROUS MATERIAL AND SEPARATING DUST
THEREFROM.

APPLICATION FILED MAY 19, 1906.

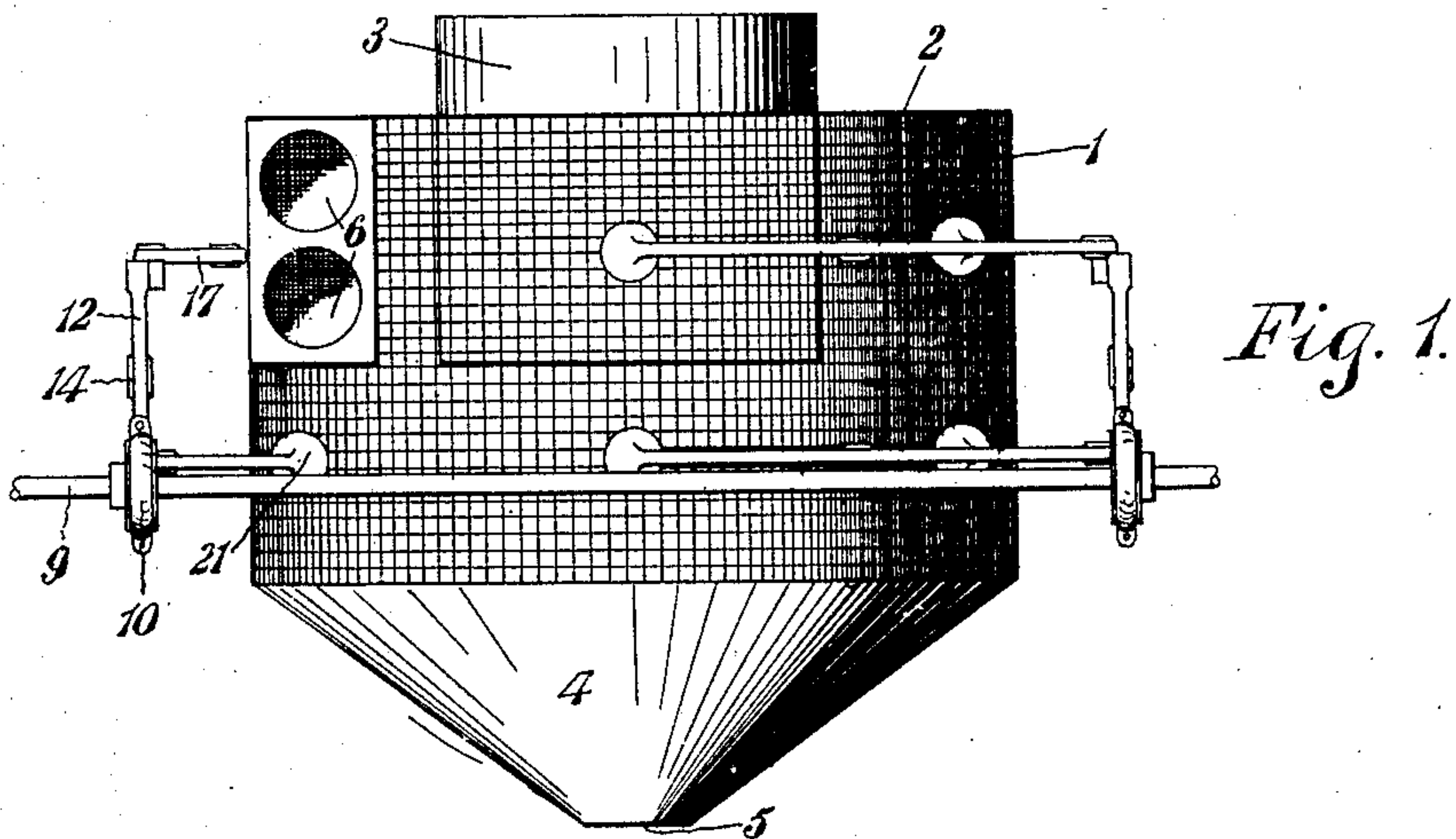


Fig. 1.

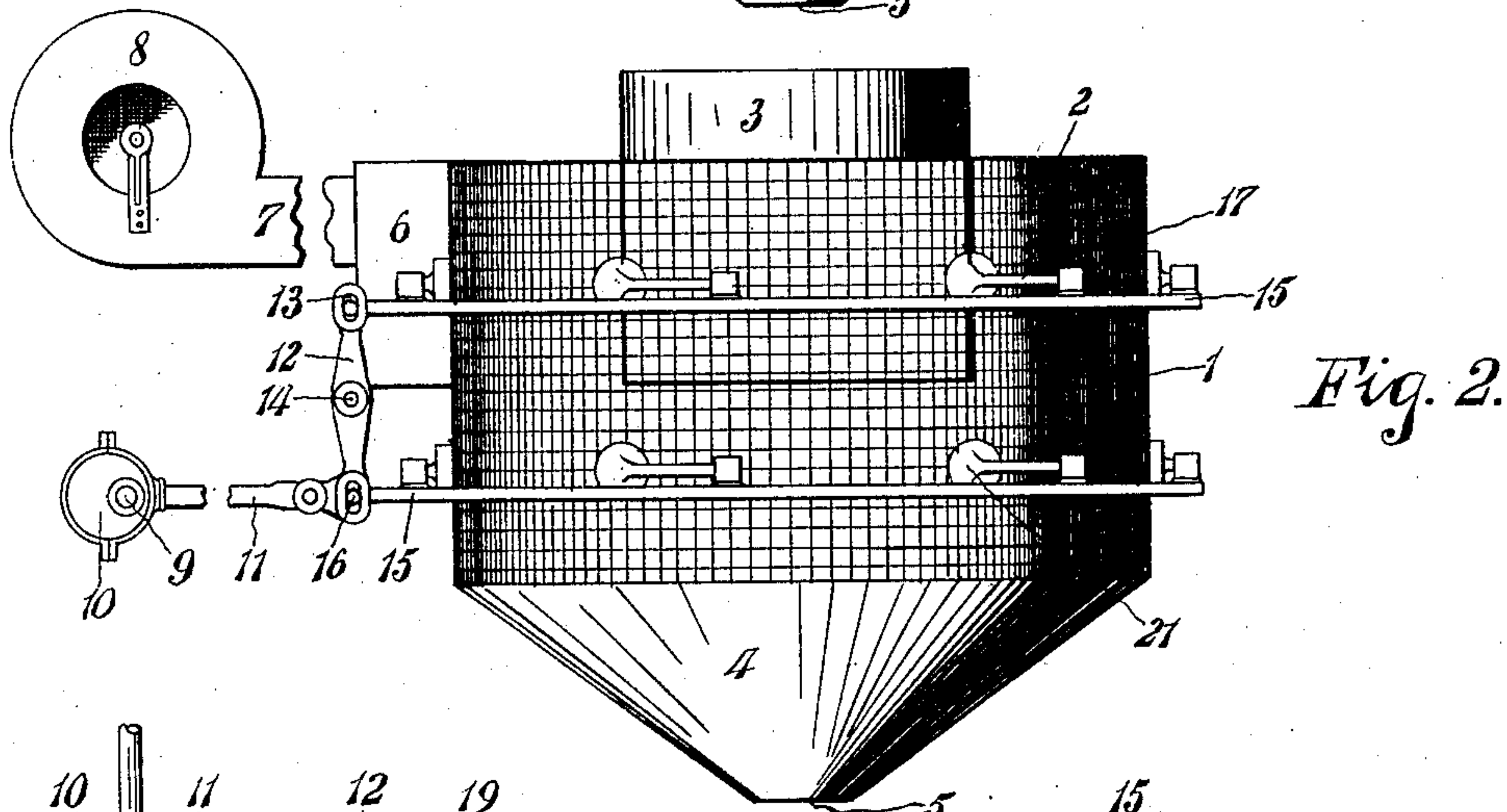


Fig. 2.

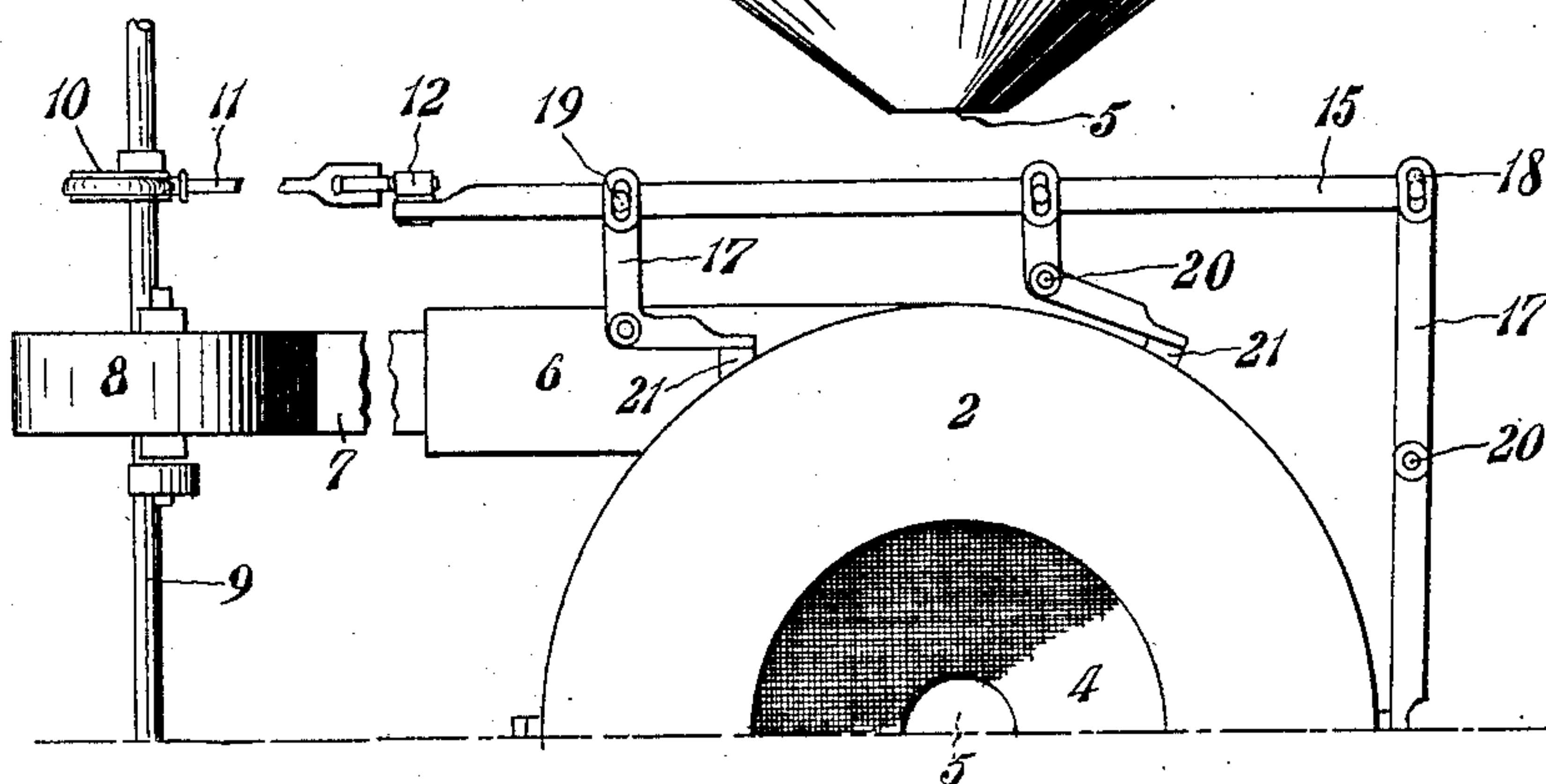


Fig. 3.

Witnesses

Stuart R. Allen.

William A. Armstrong

Inventors

Edward Slade.

Joseph B. Clearihue.

By *Fred B. Fetherstonhaugh* Attys.

UNITED STATES PATENT OFFICE.

EDWARD SLADE AND JOSEPH BREMNER CLEARIHUE, OF BLACK LAKE, QUEBEC, CANADA.

APPARATUS FOR GRADING FIBROUS MATERIAL AND SEPARATING DUST THEREFROM.

No. 869,742.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed May 19, 1906. Serial No. 317,685.

To all whom it may concern:

Be it known that we, EDWARD SLADE and JOSEPH BREMNER CLEARIHUE, both of the town of Black Lake, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Apparatus for Grading Fibrous Material and Separating Dust Therefrom, of which the following is a full, clear, and exact description.

Our invention relates to a device for grading fibrous material and separating dust therefrom, and is particularly adapted to be used in the treatment of asbestos fiber. It has heretofore been found impossible to completely separate from the fiber the powdery dust contained in the material, and, as this dust has a very injurious effect on the adhesive quality of the fiber, it is most important that it should be removed. Furthermore, the apparatus at present in use for grading and combing the fiber is not only expensive to install and operate, but has a tendency to destroy the quality of the fiber by unduly working or machining same.

The object of our invention is to provide a simple and inexpensive device that will not only eliminate a great part of the costly and unsatisfactory apparatus at present in use for treating the fiber but will completely separate the dust or powder from the material, and, at the same time, grade the fiber to thereby obtain a more evenly graded and valuable product than has been possible heretofore.

A further object is to provide means for successfully treating the lower grade of fiber that has formerly been considered practically valueless.

A still further object is to effect a large reduction in the motive power required for operating the plant.

Further objects and advantages will appear from the following description and from the drawings which illustrate our invention, and in which,

Figure 1 is an elevation of the preferred form of our apparatus. Fig. 2 is an elevation at right angles to Fig. 1, showing one of the blowers. Fig. 3 is a half plan view of the device.

Referring to the drawings, 1 represents a cylindrical chamber consisting of a wire screen of any suitable mesh, having a partial cover 2 which is annular in form and through which passes a pipe 3. The pipe 3, which is approximately half the diameter of the chamber 1, extends downwardly into the interior of said chamber a suitable distance so that an annular space is left at the top of the cylinder between the pipe and the wall of the chamber. The lower end of the chamber is provided with a conical bottom of sheet metal or similar material having an opening 5 in the apex thereof adapted to discharge the fiber from the chamber. Near the top of the chamber are one or more inlet apertures 6 connected with the discharge end of a blower or rotary fan 8 by means of the pipes 7. The blower pipes 7 are directed

into the upper end of the chamber 1 in a tangential direction, so that the contents of said pipes will be discharged into the annular space above referred to, between the bottom of the pipe 3 and the cover of the chamber.

In order to prevent the wire mesh from clogging with fiber and dust, we employ a plurality of mechanical beaters, which are actuated from the driving shaft 9 by means of the eccentrics 10, eccentric rods 11, and pivoted rockers 12. The rockers 12 are pivoted at their centers 14 and are provided at their ends with slots 13 to allow for the arc or travel. Parallel rods 15 are attached to the ends of the rockers 12 by means of the pins 16 engaging in the slots 13. Each of the rods 15 is provided with pins 19 which engage in slots 18 in the outer extremities of the beater levers 17. The levers 17, which are preferably of spring steel, are pivoted at 20, and carry on their free extremities the beaters 21, which are made of rubber or other suitable material.

The operation of our device is as follows:—The rock asbestos, having been passed through a series of crushers and sufficiently ground, is carried to the blowers 8 which travel at a high velocity and discharge the fibrous material through the inlets 6 into the chamber 1. The material enters the cylinder, tangentially, near the top, at a high rate of speed, and is forced around the circumference, traveling downwardly in a spiral direction. The lighter particles of dust are carried off through the pipe 3, but a large percentage of dust, together with the shorter grade of fiber, passes through the wire mesh and is collected in the chamber which surrounds the apparatus. The mechanical beaters above described are constantly hammering upon the wall of the cylinder and serve to keep the mesh open and free from clogging. The longer and heavier grade of fiber falls to the bottom and is carried off through the lower aperture onto an ordinary vibrating screen which separates from it any gritty substances that have not passed through mesh of the cylinder. The dust being entirely removed, this grade of fiber will be ready for the market without further handling or working. The shorter grade of fiber, which has passed through the mesh of the cylinder, can then be treated in exactly the same manner by means of a cylindrical screen of closer mesh. It will be obvious that by means of this apparatus all the dust or powder will be completely removed, and, at the same time the fiber will be graded without wasting or destroying any of the material. A series of cylindrical screens of gradually diminishing mesh may be used and the entire product reduced to marketable form of various grades in a perfectly dustless condition.

While we have shown the preferred form of our apparatus it will be understood that we do not wish to limit our invention to cylindrical screens, but reserve the right to use screens or perforated sheets of any form

whatever. It will also be obvious that other means than the mechanical beaters herein described may be used for preventing the mesh from clogging. Furthermore, this apparatus may be used in grading and cleaning various other materials besides asbestos fiber.

Having thus described our invention so that the same may be readily understood by those skilled in the art to which it appertains, what we claim and desire to secure by Letters Patent is,

10 1. In a device for grading and cleaning fibrous material, a cylindrical chamber having perforated walls and provided with a discharge aperture at the bottom and a vent pipe at the top, means for discharging the fibrous material tangentially into said chamber, and means for vibrating said chamber to prevent the mesh from clogging.

15 2. In a device for grading and cleaning fiber, a cylindrical chamber having perforated walls and a discharge aperture at the bottom, a central interior vent pipe extending downwardly into said chamber, a plurality of pipes extending tangentially into said chamber, and a beater device adapted to prevent clogging of the perforated wall.

20 3. In a device for grading and cleaning fiber, a cylindrical chamber having perforated walls and provided with

a discharge aperture at the bottom and a centrally located vent pipe extending downwardly from the top of said chamber, means for vibrating said chamber to prevent the perforated walls from clogging, inlet pipes extending tangentially into said chamber, and means for discharging the fibrous material at a high velocity through said inlet pipe and obliquely against the interior walls of said chamber.

4. In a device for grading and cleaning fibrous material, the combination with a cylindrical chamber having perforated walls and provided with a conical discharge aperture at the bottom and a centrally located vent pipe extending downwardly from the top of said chamber, of a plurality of eccentrically actuated beaters, a plurality of inlet pipes extending tangentially into said chamber, and blowers connected with said inlet pipes adapted to discharge the fibrous material at a high velocity against the perforated walls of the chamber.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

EDWARD SLADE.

JOSEPH BREMNER CLEARIHUE.

Witnesses:

A. JONCAS,

G. W. BERLAST.