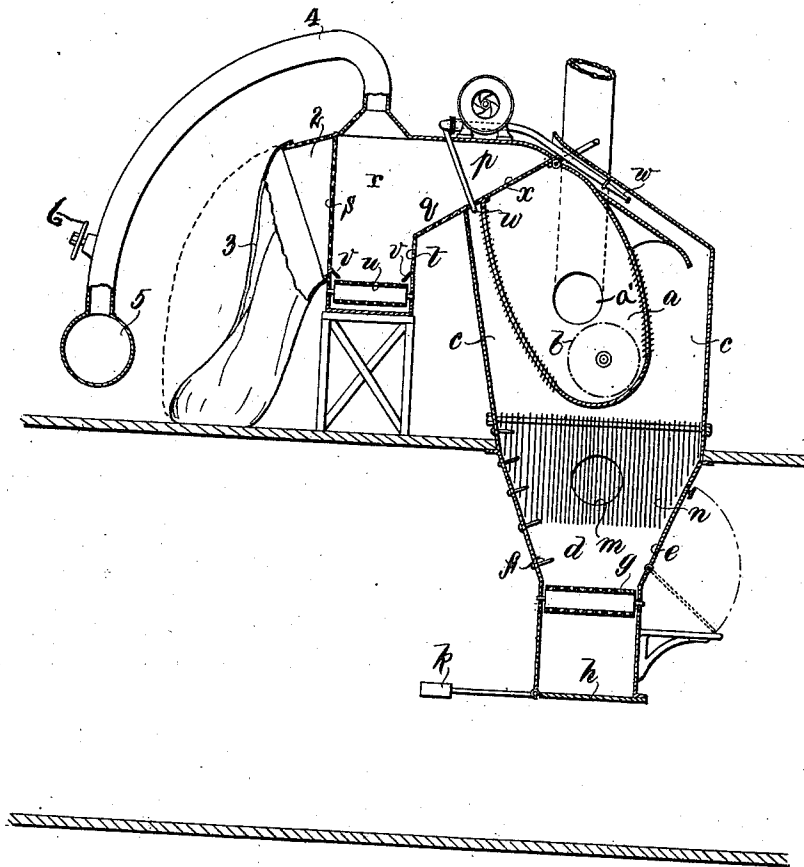


989,349.

J. HAMPSON.
FIBER CLEANING APPARATUS.
APPLICATION FILED MAY 6, 1910.

Patented Apr. 11, 1911.



Witness:
J. S. Givsta
S. Whitford

Inventor:
John Hampson
By Dickinson, Fisher & Whitford
his attys.

UNITED STATES PATENT OFFICE.

JOHN HAMPSON, OF CHILWORTH, ENGLAND, ASSIGNOR TO WOLCOT COMPANY LIMITED,
OF LONDON, ENGLAND.

FIBER-CLEANING APPARATUS.

989,349.

Specification of Letters Patent.

Patented Apr. 11, 1911.

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To all whom it may concern:

Be it known that I, JOHN HAMPSON, a subject of the King of England, residing at Tangley Mere, Chilworth, in the county of Surrey, England, have invented new and useful Improvements in Fiber-Cleaning Apparatus, of which the following is a specification.

This invention relates to improvements in fiber cleaning machinery and in apparatus for separating dirt and other impurities from fibrous materials, and refers to constructional improvements in and apparatus for use with willows or other fiber cleaning machines, by means of which it is extremely easy to keep the machine from clogging, thus making it work more efficiently, and by which the impurities from wool, cotton or other fibrous materials are removed in a more thorough manner, than has hitherto been practicable, so that a more thoroughly cleansed product is obtained, than is the case with the various classes of such machines and apparatus at present in use.

This particular invention is designed as an improvement on the structure shown in my companion case filed March 5, 1910, Ser. No. 547,598, and by the present arrangement I fit in connection with the exit aperture or apertures of one or more fiber cleaning machines, a closed chamber, having one or more of its walls composed of a sieve or grid. At the lower part of this chamber, I fit one or more endless open lattice conveyers, which carry away the treated product to suitable hoppers or the like placed for its reception. I also prefer to mount the fiber cleaning machine in an external chamber which comes at some little distance from the grid or mesh composing one or more of the walls of such machine. This chamber extends downward into a lower compartment and has a lattice or other like open conveyer at the bottom. Coming below the conveyer is a door which is provided with a counterbalance weight, keeping it normally closed, but which can be easily opened for the removal of the refuse passing through the conveyer. Suitable hoppers or the like are placed in connection with the conveyer for the reception of material falling thereon. Another suitable door is provided for giving access to the lower end of the chamber containing the cleaning machine and the com-

partment beneath the same, and an exit passage is furnished in connection with the compartment beneath the said machine, through which fog or floating particles or refuse of materials is exhausted. And in order that my said invention may be better understood, I will now proceed to describe the same with reference to the drawing accompanying this specification, which shows a vertical section of a fiber cleaning machine embodying my improvements. The fiber cleaning machine *a* is of elliptical shape and having the curved walls composed of grids or sieves and is provided as at *a'* with a pipe or any other suitable means for feeding the material into the machine. The machine has a rotary beater *b* fitted at the lower portion thereof. This chamber *a* is contained in an outer chamber *c*, the walls of which come at some little distance from the grids already referred to. This outer chamber *c* is provided with a lower compartment or chamber *d* to which access can be obtained by means of a suitable door *e*, for the purpose of inspecting or cleaning the grids or sieves. Rungs *f* are provided forming a ladder for enabling a person inspecting or cleaning the machine to reach the various parts. The compartment *d* below the machine is provided at the bottom with a perforated lattice conveyer *g*, and coming beneath this conveyer *g* is a flap *h* provided with a counterbalance weight *k* which keeps it normally closed. This flap *h* enables the person in charge of the machine to remove the dirt and refuse falling through the perforated conveyer *g* very quickly, as he has simply to open the door and the refuse falls out, the door immediately closing by the action of the counterbalance weight *k*.

Opening out of the chamber *d* is an exhaust aperture *m* and hanging within the said chamber *d* is a row or rows of wires *n* or other equivalent devices for the purpose hereinafter explained. *w* shows jets for the admission of air or the like, placed at the top of the chamber *c* and between such chamber and the outer walls of the cleaning machine *a*.

The exit aperture of the machine, which is provided with a pivoted flap *x*, opens into a chamber *p* extending along the whole length of the machine or row of machines where more than one are provided. The

chamber *p* is formed with the lower part *q* inclined downward. This inclined portion of the chamber opens into a longitudinal back portion *r*, which also extends downward. The wall *s* of this chamber from top to bottom opposite the inclined portion *q* of the chamber *p* is formed of a grid or network according to the nature of the fiber to be treated and the wall *t* of this chamber below the inclined portion *q* is also formed of a wire network or grid. Mounted outside the wall *s* is a projecting support 2.

3 is a bag fastened to the top and sides of the support 2 and along the bottom of the grid-like portion of the wall *s*.

4 is a pipe opening into the top of the chamber *r* and connected to a suction pipe 5 which may be in connection with the pipe leading from the aperture *m*.

Mounted at the bottom of the downwardly extending portion of the chamber *r* is a perforated lattice work conveyer *u*. This conveyer *u* is mounted and driven so that any fibrous material on it is drawn toward one end of the longitudinally extending chamber *r*. Plates *v* are added above the conveyer for directing the falling material on to the conveyer *u* and for keeping it away from the sides and axles of such conveyer. Suitable hoppers, not shown on the drawing, are provided at the end of the conveyer *u* for receiving the treated product. Suitable valves are provided in the exhaust passages, one of which is indicated at 6 in the pipe 4.

The operation of the whole apparatus will be easily understood: The fibrous material is fed into the machine *a* in the ordinary way, and beaten and blown by means of the rotary beater *b*. This causes the dirt and impurities to be expelled through the grid like walls with which the machine is provided. It is found in practice that a certain amount of shorter fiber passes through the grids of the machine *a* and the object of the portion of the apparatus first described is to save and utilize as far as possible this short fiber. This is effected in the following way:—A draft is produced either by means of the air jets or the like *w* and introduced into the chamber *c* at the top between the walls of such chamber and those of the machine *a*, or by means of a suction at the exhaust aperture *m*. As the refuse and short fibers descend through the chamber *d* the heavy dirt tends to fall more rapidly than the fibers and the suction thus causes the lightest particles of dirt and fiber to strike against the wires or the like at *n*. The light fibers cling to these wires from which they fall down or from which they may be removed from time to time by the person in charge of the machine, while the remainder of the light refuse passes through the exhaust. At the same

time the heavier dirt and short fibers which have passed through the machine *a* fall upon the conveyer *g*. The dirt passes through as the conveyer travels while the fiber is removed on the conveyer to a suitable hopper. This constitutes the second product. The dirt falls through on to the counterbalanced flap *h* and the person in charge of the machine can periodically open this door without interfering with the working of the machine for a longer time than possible. As soon as the dirt has been allowed to fall out, the flap *h* returns to its ordinary position under the influence of the counterbalance weight *k*. With regard to the first product or cleaned fiber expelled from the cleaning machine *a*, this passes through the flap *x* which is opened periodically for this purpose. It is thence blown against the outer wall *s* of the chamber *r*. A certain amount of dust or impurities still remaining in the fiber passes through the grids in this wall *s*, and into the bag 3 which under the influence of the puff of air assumes the position shown dotted in the figure. From the wall *s* the cleaned product again rebounds against the wall *t* which is also perforated so as to allow any further impurities to pass through. Finally, it falls down on the traveling conveyer *u* being prevented going around the edges thereof by means of the guide plates *v*. Any remaining dirt that may be mixed with the product passes through the perforations of the conveyer while the cleaned material or first product is carried away by the conveyer and delivered into a suitable hopper. Each time the flap *x* closes the bag 3 returns to its closed position ready to open at the next puff. Any small dust which may be flying about in the chamber *r* is at once removed by the suction pipe.

The advantage of employing a bag such as that marked 3 and shown on the drawing is that the puff of air is not impeded as is found to be the case when a solid outer casing or wall is provided coming beyond the grid like wall *s*.

The conveyer *g* may be dispensed with in some cases, and all the dirt and refuse may drop onto the door *h* with the counterbalance weight *k* for removal from the machine.

It will be understood that I may modify the invention in various ways as to detail to suit the particular requirements of the fiber to be treated.

I claim:

1. In a fiber cleaning apparatus, the combination of an elliptically shaped grid having a pivoted flap, a beater therein, a casing surrounding said grid, means for discharging jets of air into said casing around said grid, a casing having perforated conveyers communicating with said grid and exhaust

means connected to said last named casing, substantially as described.

2. In a fiber cleaning apparatus, the combination of an elliptically shaped, perforated grid, a beater therein, a casing surrounding said beater, said casing being provided with downwardly extending wires, exhaust means connected to said casing, and means for forcing jets of air into said casing
10 around said grid, substantially as described.

3. In a fiber cleaning apparatus, the combination of an elliptically shaped grid having a pivoted flap, a beater therein, a casing surrounding said grid, means for forc-

ing jets of air into said casing around said 15 grid, a second casing communicating with said grid by said pivoted flap, exhaust means connected to said last named casing and a bag connected to said second named casing to cover a part of the perforations 20 therein, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

JOHN HAMPSON.

Witnesses.

H. W. McBEAN,

A. E. VIDAL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
