(No Model.) 2 Sheets—Sheet 1.

J. D. PICKLES.

DUSTING ENGINE.

No. 454,525. Patented June 23, 1891.

Fig. 1

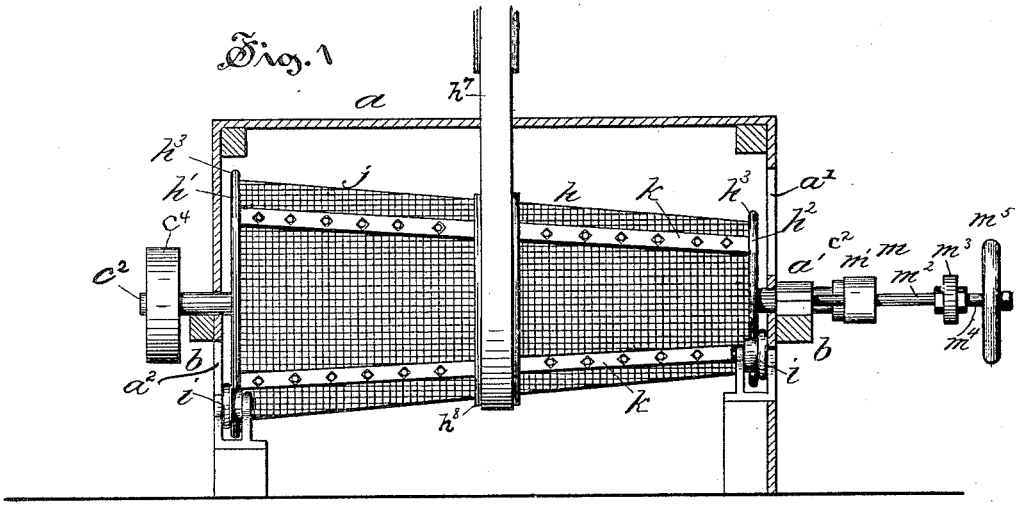


Fig. 2

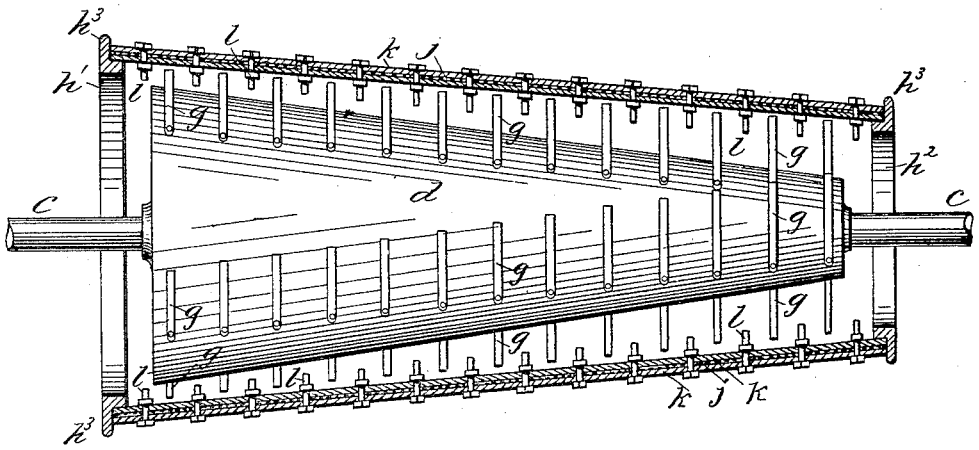
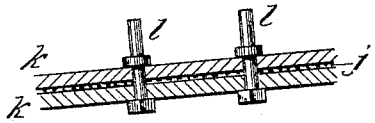


Fig. 6



Witnesses:

A. D. Jenkins.

H. E. Backarach.

Inventor.

James D. Pickles

by Simonds & Burdett,

attys

(No Model.) 2 Sheets—Sheet 2.

J. D. PICKLES.

DUSTING ENGINE.

No. 454,525. Patented June 23, 1891.

Fig. 3

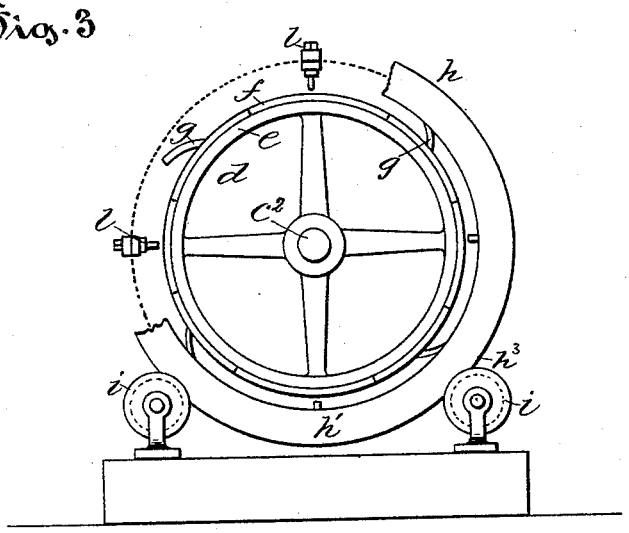


Fig. 4

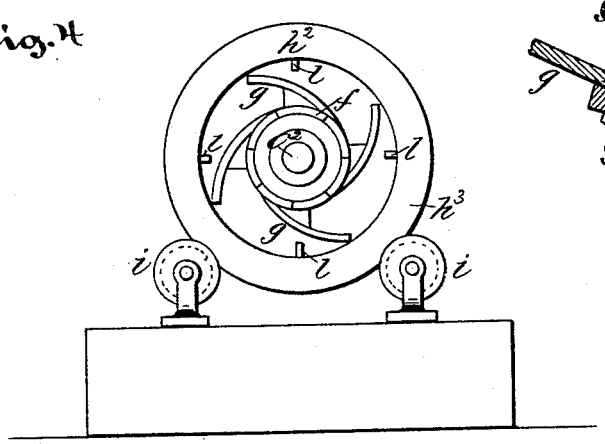


Fig. 7

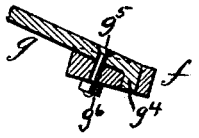
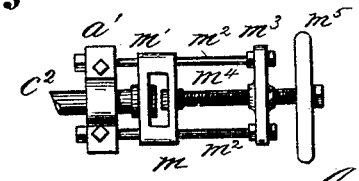


Fig. 5



Witnesses:

A. P. Jenkins.

H. E. Bacharach.

Inventor,

James D. Pickles,

by Simonds & Burdett,

Attys.

UNITED STATES PATENT OFFICE.

JAMES D. PICKLES, OF BUCKLAND, CONNECTICUT.

DUSTING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 454,525, dated June 23, 1891.

Application filed April 14, 1890. Serial No. 347,766. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. PICKLES, of Buckland, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Dusting-Engines, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a machine for the more thorough cleaning of rags or other material adapted for use as paper-stock; and to this end my invention consists in details of the several parts making up the machine as a whole, and in their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a view in side elevation of the machine, the supporting-frame being in section. Fig. 2 is a view, on an enlarged scale, in lengthwise central section of the machine, the inner cone being shown in elevation. Fig. 3 is a detail end view of the cone and screen, on an enlarged scale, partly broken away. Fig. 4 is a detail view of the opposite end, on an enlarged scale. Fig. 5 is a detail top view of the cone-adjusting device. Fig. 6 is a detail view, on an enlarged scale, in section of the screen, showing the manner of securing the pins or duster-arms in place. Fig. 7 is a detail view, on an enlarged scale, in cross-section of one of the lagging-strips on the cone and of one of the pins or duster-arms, showing the manner of securing it to the lag.

In the accompanying drawings, the letter *a* denotes the casing or frame, within which the moving parts of the machine are supported and arranged. At suitable points, as on cross-beams *b*, the bearings *a'* for a central shaft *c* are secured, and on this shaft is mounted the duster-cone *d*. This cone *d* is made of spiders or like parts fastened to the shaft *c* at suitable intervals, and to these spiders *e* are fastened lagging-strips *f*, that in turn support the teeth or duster-arms *g*, that are securely bolted to the lagging-strips. These pins or arms *g* are secured at intervals along the surface of the cone either in successive lines around it or in a spiral line, the object of the latter construction being to aid in causing a progressive feeding movement of the rags or other stock in the duster. The pins are round in cross-section and are curved backward, so as to present the curved side in the direction of motion. These pins are preferably made with a short bend g^4 at the base, and are secured to the lagging-strips by thrusting this end into a socket-hole in the strip which anchors the pin, and a bolt g^5 is passed through a hole in the pin and through the strip near the base, and held by a nut g^6, as shown in Fig. 7. Outside of this cone is arranged a rotary screen *h*, that turns about the same axial center as the cone and like it has the general shape of the frustum of a cone, the angular sloping surface of the cone being greater, however, than that of the screen. The object of making the cone and screen of different tapers is to allow proper space to first thoroughly open out the rags or other stock, and then to dust them by throwing them in contact with the screen, and it is also to give more surface on the cone for the spreading out of the stock as it advances from the inlet end, so that the apparatus will not become clogged, but allow each piece to get a proper dusting, and the object in the difference in length of the cone and the surrounding screen is to enable the distance between the ends of the pins or arms on the cone to be changed with relation to the inner surface of the screen by a lengthwise adjustment of the cone within it, the length of the pins of course being constant. The screen is somewhat longer than the cone, so that it extends far enough beyond the line of both ends of the cone to completely inclose the periphery of the latter.

The screen is made up of the heads h' h^2, each having a flange h^3, that rests upon the tread of the flanged rollers *i*, on which the screen is mounted, so as to turn readily about the inclosed cone. The shell of the screen is made up of a cover *j*, of perforated material or of a net-work of wire, the holes or interstices being of suitable size with reference to the work to be done. This cover is supported by lengthwise strips *k* of stiff material, as iron, that also support the pins *l*, that are straight pieces of round iron held in place by a nut outside and head within the screen. These pins in the screen are fixed at intervals corresponding to those of the duster arms or pins *g* on the cone, and they vary in length from the larger to the smaller end of

the shell, being longer at the smaller end. The pins on the cone also vary in length in the same way, and the respective sets of pins on the screen and on the cone are alternately arranged as to position.

In order to provide for the lengthwise adjustment of the cone d, the shaft c, on which it is supported, has both ends c^2 extending beyond the bearings c', and one end is connected to a slide-piece m', forming part of the adjusting device m. This slide m' is supported and movable along the rods m^2, that have secured to their outer ends the yoke-piece m^3. Through a threaded socket in this yoke-piece a feed-screw m^4 extends, the inner end being connected to the slide m' in such manner as to provide for a rotary movement only of the screw within the slide, while the outer end of the feed-screw is provided with a hand-wheel m^5, by means of which the screw may be turned in such manner as to cause the slide to be moved outward or inward along the supporting-rods. This movement of the slide carries with it the shaft c, and by means of the adjusting device the lengthwise position of the cone within the screen may be determined within a certain extent of adjustment.

The within-described machine is particularly adapted for use in opening out and dusting rags, although its use is not limited to that particular material, as jute, paper-shavings, old paper, or any other kind of material used for paper-stock may be dusted and cleaned in the machine that may require, if anything, mere minor changes within the mechanical skill of the workman to adapt it to the special or particular kind of material to be used. The material usually comes compressed in bales, and it is fed into an opening a' (see Fig. 1) in one end of the machine either by hand or by other convenient means. This opening a' in the frame-work or cover of the machine is directly opposite the open end of the screen, and material to be cleaned is introduced through this opening into the outside shell. At the other end of the shell and cone the material is delivered through an outlet-opening a^2 in the cover, and is removed in any convenient manner. On entering the machine the material is carried around by the outside shell until it falls onto the pins on the inside cone, and is by them struck and driven to the opposite side of the revolving screen, the cone and screen traveling in the same direction, the former at a much greater rate of speed than the latter. For dusting rags I have found a rate of speed about five to one to be practicable. The material is then carried around, dropped onto the pins on the cone, and again thrown against the screen, and the operation continued until the material slowly works its way to the large end or outlet of the screen that is open on the ends.

The cleaned material is fed from the machine into a suitable receptacle in any convenient manner. The specific means or manner of feeding the paper-stock to or delivering it from the duster forms, however, no part of my within-described invention.

The cone is driven by means of a belt passing over a pulley c^4 on the shaft on which the cone is mounted, and the screen is driven by a belt h^7, passing over a pulley h^8 on the surface of the screen, or a pulley secured to either of the heads. The equivalent devices of gear-wheels may be employed, if desired. The form or shape of the pins is not essential to the operation of the apparatus.

I claim as my invention—

1. In an apparatus for dusting and cleaning paper-stock, in combination, a rotary cone provided along its periphery with a number of projecting pins or duster-arms, a revolving tapered screen inclosing the periphery of the cone, having a perforated or reticulated surface and provided with inwardly-projecting pins, and means for revolving the cone and screen, all substantially as described.

2. In combination with a rotary cone having a series of projecting pins longer on the smaller end than on the larger end of the cone and a tapered screen with its wall surrounding the cone and concentric with it and provided with pins projecting from the inner surface of the perforated body, the angle of slope of the surface of the cone being greater than that of the screen, all substantially as described.

3. In a machine for dusting paper-stock, in combination with a rotary cone provided with duster arms or pins and a screen with perforated walls inclosing the periphery of the cone and tapered lengthwise, the angle of slope of the surface of the cone being greater than that of the screen, all substantially as described.

4. In an apparatus for dusting and cleaning paper-stock, in combination, a rotary cone having a series of projecting pins or duster-arms on its periphery, a revolving tapered screen inclosing the periphery of the cone and having a perforated surface and provided with inwardly-projecting pins arranged in altenation with the pins of the cone, the adjusting device for moving the cone lengthwise, and means for revolving the cone and screen, all substantially as described.

JAMES D. PICKLES.

Witnesses:
CHAS. L. BURDETT,
ARTHUR B. JENKINS.