F. G. SARGENT.

MACHINE FOR CLEANING WOOL AND OTHER FIBROUS MATERIALS.

APPLICATION FILED OCT. 20, 1905.

911,335. Patented Feb. 2, 1909.

4 SHEETS—SHEET 1.

Fig. 1.

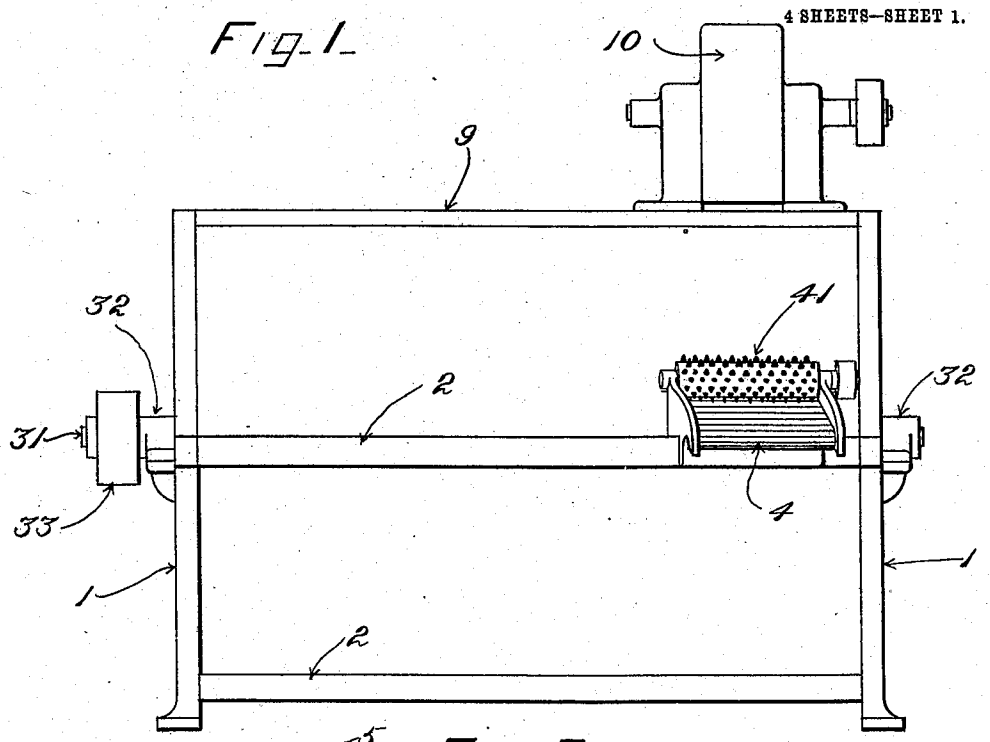
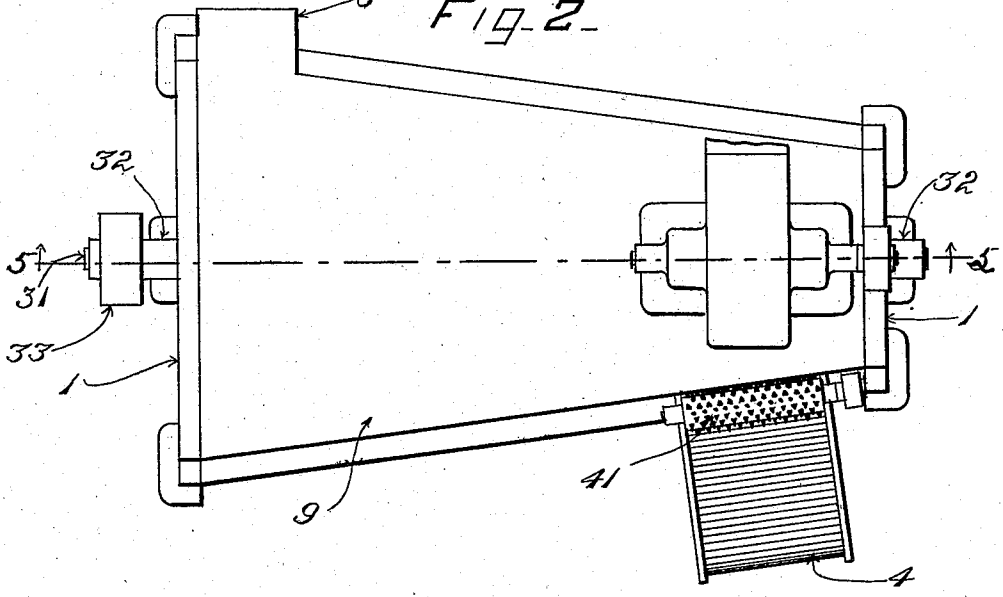


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

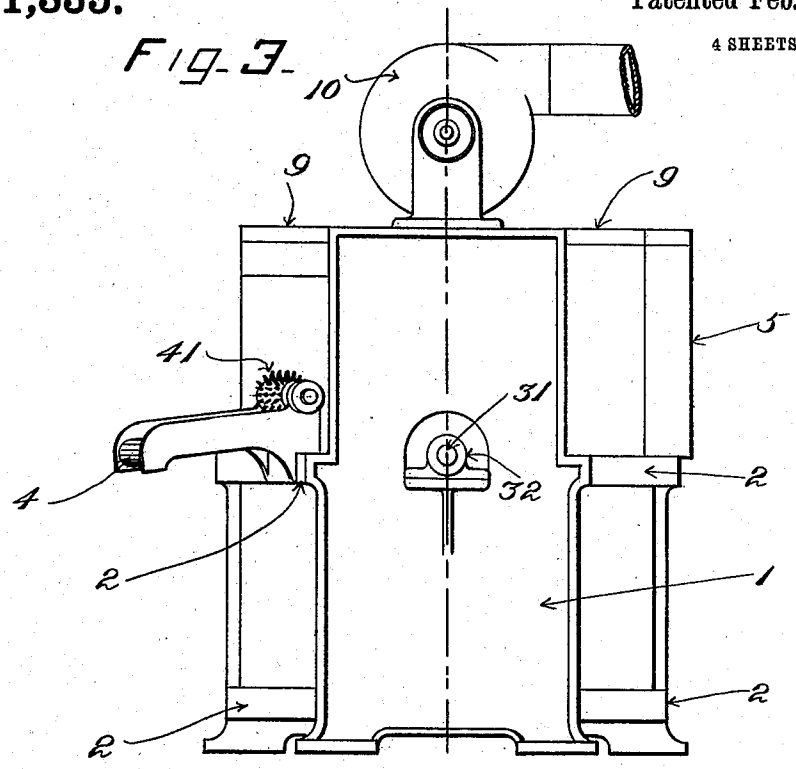
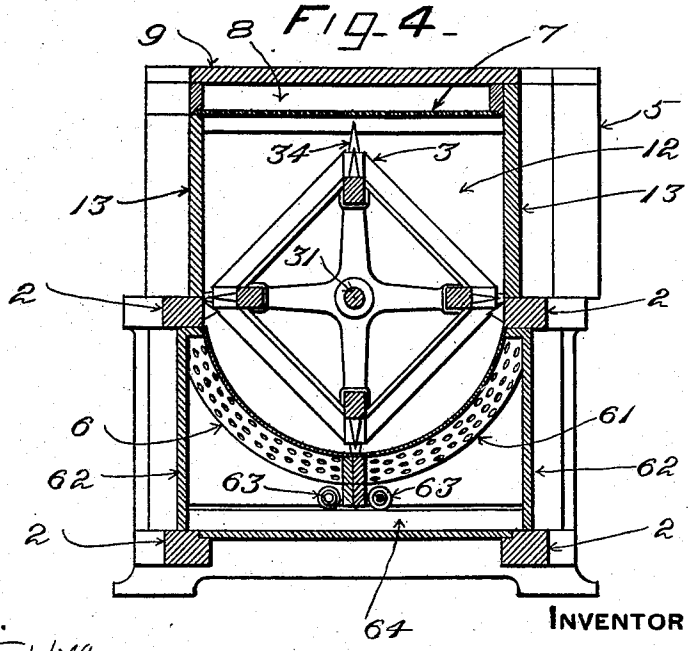


Fig. 4.



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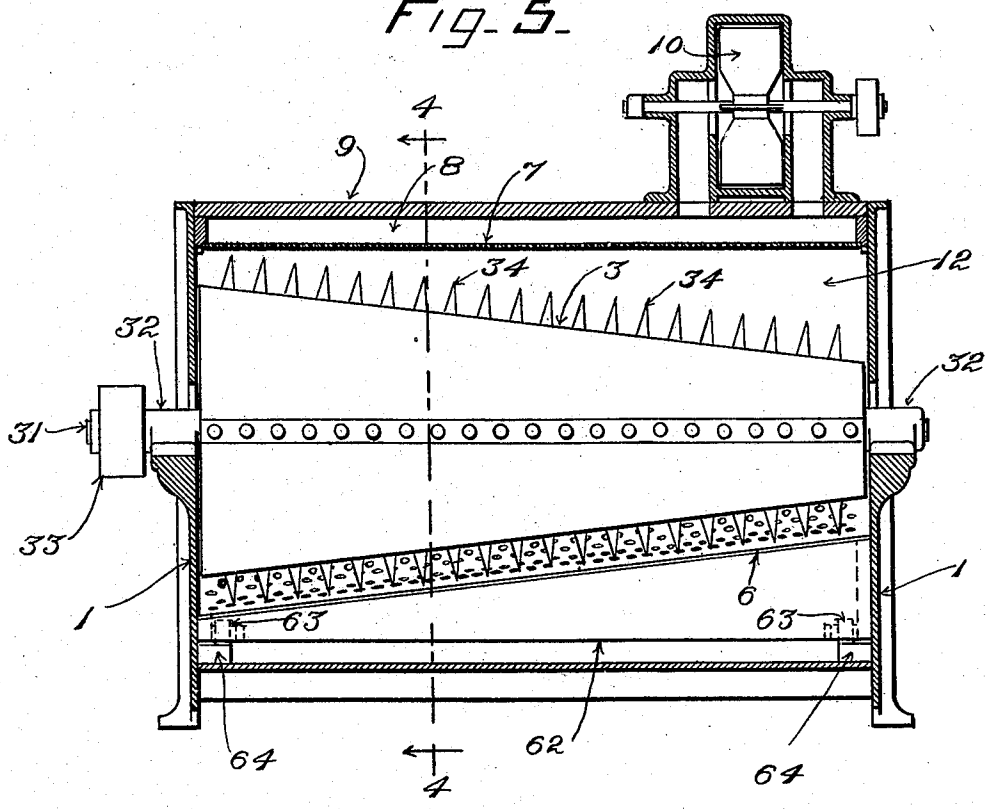
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4 SHEETS—SHEET 3.

Fig. 5.



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4 SHEETS—SHEET 4.

Fig. 6.

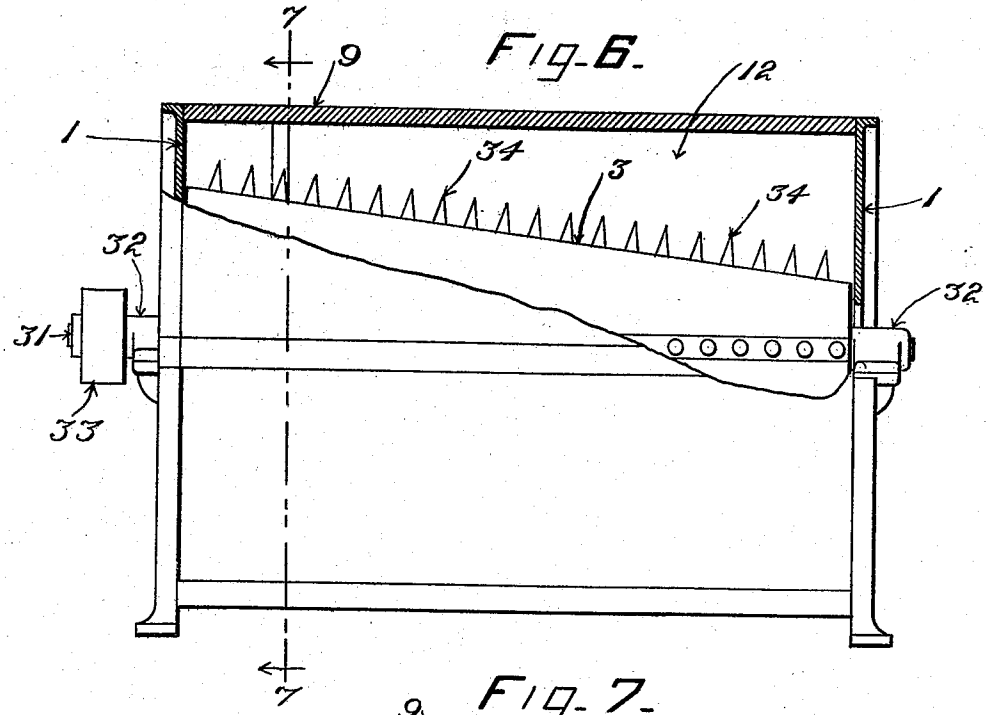
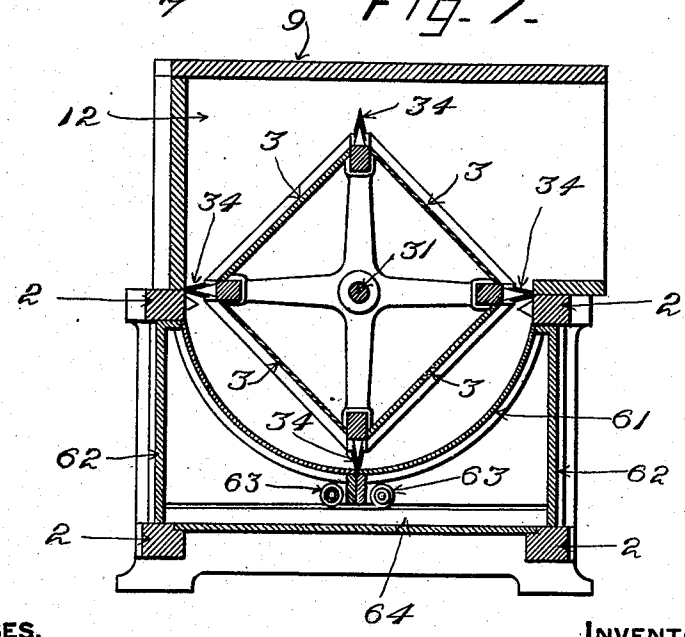


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR CLEANING WOOL AND OTHER FIBROUS MATERIALS.

No. 911,335. Specification of Letters Patent. Patented Feb. 2, 1909.

Application filed October 20, 1905. Serial No. 283,635.

To all whom it may concern:

Be it known that I, FREDERICK G. SARGENT, a citizen of the United States, residing at Graniteville, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Machines for Cleaning Wool and other Fibrous Materials, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has relation more particularly to cone dusters and other dusters wherein the fibrous material or stock is fed to the so-called cylinder or main cylinder of the machine at one end of such cylinder, and by the action of the cylinder is carried around by the latter in rotating and in addition caused to travel gradually in the direction of the length of the cylinder to the other end of the same, where it is discharged in a cleaned state.

The invention is applicable both to cone dusters, namely, machines in which the "cylinder" or "main cylinder" is tapering or cone-shaped, and to straight-cylinder dusters having the teeth or spikes arranged on the cylinder or main cylinder in a spiral order.

In most dusters in use of the general class aforesaid the hood, bonnet, or cover over the cylinder or main cylinder is constructed with a concave portion having a circular curve conforming to the path of the teeth or spikes of the said cylinder and located somewhat near to the said path. This concave portion confines the material or stock, holding it within the range of action of the teeth or spikes of the cylinder, so that the material or stock is carried around by the said teeth or spikes in a compact mass.

One general object of the present invention is to increase the efficiency of a machine of the said general class in removing dirt and dust from the material or stock. This object I attain by so constructing the upper portion of the casing around the cylinder as to provide an open space immediately adjacent the path of rotation of the teeth or spikes, such space permitting the material or stock to fly off the said teeth or spikes under the influence of centrifugal force, to fall again in a loosened mass into the path of the teeth or spikes, to be further acted upon and carried around by the latter until once more released and thrown off on again arriving at the said open space, and so on repeatedly as the material is worked gradually in the direction of the length of the cylinder toward the place of discharge.

A second object of the invention is to facilitate the removal and replacement of the draw or draws carrying the screen or screen-sections employed beneath the cylinder. This object is attained by making the said draw or draws movable upon trucks or rolls.

The invention is shown embodied in the drawings, in which latter,—

Figure 1 shows in side elevation a cone duster in which the invention is embodied, looking at the side on which the feeding devices are located. Fig. 2 is a plan thereof. Fig. 3 is an end elevation of the said cone duster, looking at the feeding end thereof. Fig. 4 is a view in vertical transverse section on the plane that is indicated by the line 4, 4, of Fig. 5. Fig. 5 is a view of the said cone duster in vertical longitudinal section in the plane that is indicated by the dotted line 5, 5, in Fig. 2. Fig. 6 is a side elevation, partly broken out, of a cone duster made without the top screen and fan of Figs. 1 to 5. Fig. 7 is a view in vertical section on the plane that is indicated by the dotted line 7, 7, in Fig. 6.

Having reference, first, to Figs. 1 to 5 of the drawings,—1, 1, are the end-frames of the cone duster which is shown in the said figures. 2, 2, etc., are upper and lower side-girths extending lengthwise of the machine at front and rear thereof and connecting with the said end-frames. 3 is the so-called cone or cylinder, hereinafter termed cylinder, it being provided with a shaft 31 to which the body of the cylinder is fast, the cylinder being supported by bearings 32, 32, applied to the end-frames 1, 1, and in which the said shaft is journaled, and 33 being the band-pulley fast upon the shaft 31 by means of which the cylinder is rotated. The teeth or spikes of the cylinder are designated 34, 34, etc. The devices for feeding stock into the machine to be acted upon comprise the feed-apron 4, Figs. 1, 2 and 3, and spurred or toothed roll 41, and are located on the front side of the machine, at the feeding or small end of the cylinder. The said devices feed the stock through an opening in the front of the machine to the interior space in which the cylinder works. 5, Figs. 2, 3, and 4, is the educt through which the stock is dis-

charged by the cylinder after having been caused to travel the length of the latter to the discharging end thereof. 6, 61, are screen-sections beneath the cylinder, conforming to the path which is described by the teeth or spikes 34, 34, etc., thereof, the heavy dirt and dust dislodged from the stock falling through the openings of the said screen-sections. 7, Figs. 4 and 5, is a perforated, or reticulated screen above the cylinder, 8 being a space or passage between the screen 7 and the top 9 of the hood, bonnet, or cover, (hereinafter termed the bonnet) the said space extending lengthwise of the machine, and 10 being a suction-fan in communication with the said space as shown in Fig. 5 and operating to withdraw the air therefrom.

In general, the operation of the parts which thus far have been described is the same as heretofore.

Referring, now, to the embodiment of the features of the invention:—At 12, Figs. 4 and 5, is an unobstructed or open space above the cylinder, extending lengthwise of the latter, and existing beneath the upper screen 7 and between the front and rear walls 13, 13, of the bonnet. The said walls rise perpendicularly at front and rear, respectively, of the cylinder, and the screen 7 extends straight across from one wall to the other, instead of being conformed to the curve of the path in which the teeth or spikes 34, 34, etc., travel as the cylinder rotates. The said open space affords an opportunity for the stock which is being carried around by the said teeth or spikes to detach itself from the latter and fly therefrom under the influence of centrifugal force. The stock thus thrown from the teeth or spikes falls loosely again upon the cylinder, and is reengaged by the teeth or spikes and further carried around by the cylinder, to be once more freed and thrown off on again arriving at the open space, the operations being repeated in each rotation of given portions of stock with the cylinder until by the progressive travel of the stock lengthwise of the cylinder such portions arrive at the educt 5 and are thrown off through the latter. In consequence of being thrown up from the teeth or spikes of the cylinder in the manner which has been explained, and again engaged by the said teeth or spikes, the stock is more thoroughly opened up and the dirt and dust are allowed to escape therefrom. Preferably, the screen 7, in the direction of its length, is parallel with the cylinder-shaft as shown in Fig. 5. With this arrangement, in the case of a cone-duster, the extent of open unobstructed space above the cylinder is greatest at the feeding end of the cylinder, where the stock is first acted upon, and where it contains the greatest amount of dirt and dust. Thereby the greatest facility for the loosening action and the separation of dirt and dust is afforded in the portion of the machine where the stock is first acted upon. The extent of the space above the cylinder diminishes toward the large or discharge end of the cylinder in proportion as the stock becomes more thoroughly loosened and cleaned. At 62, 62, Figs. 4 and 5, are the screen-draws, both being shown removable. To make them more easy to draw out, trucks or rolls 63, 63, are attached either to the screen-draws to run upon tracks 64, 64, upon the frame, or to the frame under the draws for the latter to run upon.

Figs. 6 and 7 illustrate a cone duster from which the screen 7 and fan 10 are omitted, the top 9 of the bonnet constituting the upper wall which incloses the open space 12.

From the disclosure of the application of the invention in connection with a cone duster, the manner of making application of the same in connection with a straight cylinder duster having the teeth or spikes arranged on the cylinder in a spiral order will be obvious to those who are skilled in the art.

The form, construction, and arrangement of the parts shown in the drawings may be varied more or less in practice without necessarily involving a departure from the principles of the invention.

I claim as my invention:—

1. A duster for fibrous materials provided with a rotating cylinder comprising a closed tapering body having its periphery armed with relatively short teeth or spikes, means for feeding fibrous material to the said cylinder at one end of the latter, and a casing confining the said material to the said teeth or spikes around a substantial portion of the said periphery, the duster having above the cylinder the open and unobstructed space into which the fibrous material as it travels spirally from one end of the cylinder to the other is repeatedly thrown from successive teeth or spikes of the cylinder, to fall again upon the latter, and a discharge opening at the other end of the cylinder.

2. The combination, in a duster for fibrous materials, with the rotating cylinder comprising a closed tapering body armed with teeth or spikes and operating to cause the fibrous material which is acted upon thereby to travel gradually lengthwise thereof from the feeding end to the discharging end, of the bonnet inclosing above the cylinder the open and unobstructed space into which the fibrous material is thrown from the teeth or spikes of the cylinder, to fall again upon the latter, and the said bonnet comprising upright front and rear walls, and the perforated or reticulated top screen extending horizontally across the space within such bonnet above said cylinder and also from end to end of the cylinder.

3. The combination, in a cone duster, with

the rotating cone-shaped cylinder comprising a closed tapering body or shell armed with longitudinal lines of relatively short teeth or spikes, of the bonnet having the top screen parallel with the length of the cylinder shaft, there being an open and unobstructed space between cylinder and screen into which the fibrous material is thrown from the teeth or spikes of the cylinder to fall again upon the latter.

4. The combination in a duster for fibrous materials, with the rotating cylinder operating to cause the fibrous material which is acted upon thereby to travel gradually lengthwise thereof from the feeding end to the discharging end, of the bonnet having upright front and rear walls and inclosing the open and unobstructed space above the cylinder into which the fibrous material is thrown from the teeth or spikes of the cylinder to fall again upon the cylinder, the screen extending across such space above the said cylinder, the air-space behind the said screen, and the suction-fan communicating with the said air space.

5. The combination, in a duster for fibrous materials, with the rotating cylinder operating to cause the fibrous material which is acted upon thereby to travel gradually lengthwise thereof from the feeding end to the discharging end, of the bonnet having perpendicular front and rear walls, the screen extending horizontally above the said cylinder, the air-space behind the said screen, and the suction-fan communicating with the said air-space.

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

FREDERICK G. SARGENT.

Witnesses:

WM. J. COULTER,

CHAS. G. SARGENT.