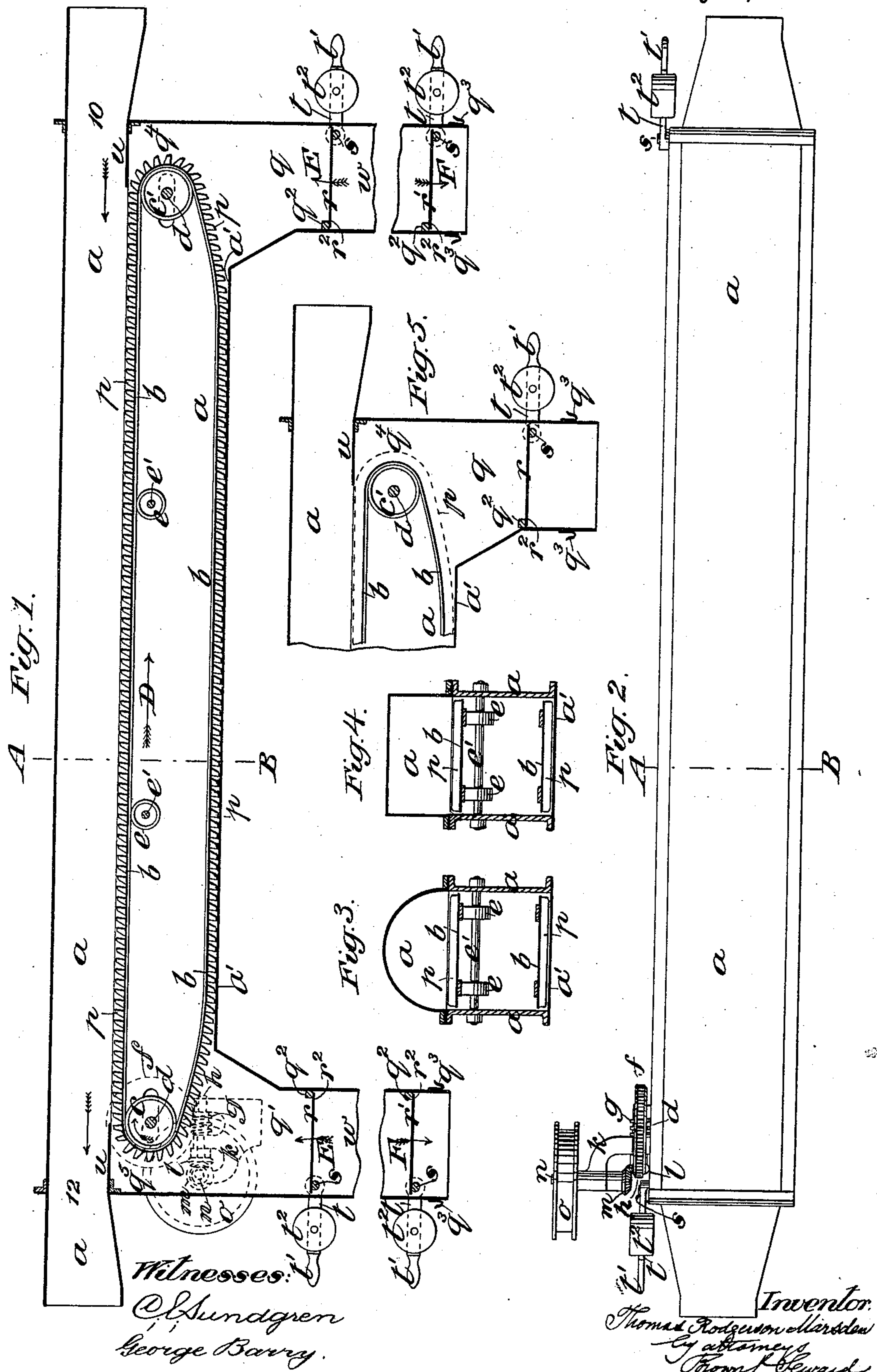


T. R. MARSDEN.
DUST TRUNK FOR COTTON OPENERS.

Patented May 8, 1894.



UNITED STATES PATENT OFFICE.

THOMAS RODGERSON MARSDEN, OF OLDHAM, ENGLAND.

DUST-TRUNK FOR COTTON-OPENERS.

SPECIFICATION forming part of Letters Patent No. 519,457, dated May 8, 1894.

Application filed January 23, 1892. Serial No. 419,006. (No model.) Patented in England April 13, 1889, No. 6,306.

To all whom it may concern:

Be it known that I, THOMAS RODGERSON MARSDEN, (foreman in the employ of Messrs. Platt Brothers and Company, Limited, of Oldham,) residing at 94 Greengate Street, Oldham, in the county of Lancaster, England, have invented certain new and useful Improvements in Dust-Trunks for Cotton-Openers Employed in the Preparation of Cotton and other Fibrous Materials, (for which I have obtained Letters Patent of the United Kingdom of Great Britain and Ireland, dated April 13, 1889, No. 6,306,) of which the following is a specification.

My invention relates to the "dust trunks" or "dust chambers" through or along which the cotton or other fibrous material passes in its transit from the "breaking up and feeding machines" to the "exhaust openers" or the combined exhaust openers and lap machines employed in the "preparation" of cotton and other fibrous materials.

According to the arrangements at present in use each of such "dust trunks" or "dust chambers" is usually formed or provided with "dust boxes" which communicate at their upper ends with the interior of the "dust trunk" or "dust chamber" and are at their lower ends each provided with a door or doors so that the external air is prevented from being drawn into the interiors of the said "dust boxes." When cotton or other fibrous material is passing along the "dust trunk" or "dust chamber" before mentioned, dust or dirt from the cotton or other fibrous material will fall into the "dust boxes" previously referred to. When it becomes necessary or desirable to remove from the "dust boxes" the dust and dirt accumulated therein, the "breaking up and feeding machine" and the "exhaust opener" will require to be stopped. After this stoppage the doors above mentioned may be opened so as to allow the dust and dirt to fall from the dust boxes and after the said doors have again been closed the machines may be again started. The stoppage whenever it is necessary or desirable to remove the accumulated dust and dirt from the dirt boxes is not only inconvenient, but also seriously interferes with the amount of work accomplished.

My invention consists in arrangements by which I am enabled to take a greater quantity of dust and dirt out of the cotton or other fibrous material while such cotton or other fibrous material is passing through or along the "dust trunk" or "dust chamber" through or along which the cotton or other fibrous material passes from the "breaking up and feeding machine" to the "exhaust opener" in conjunction with which such "dust trunk" or "dust chamber" is employed, and in arrangements by means of which the dust and dirt separated from the cotton or other fibrous material may be readily removed from the receptacles or chambers in which they are deposited without stopping the machines.

I employ for the purpose of conducting the cotton or other fibrous material from the "breaking up and feeding machine" to the "exhaust opener" a "dust trunk" or "dust chamber" of any convenient form, in the lower part of which "dust trunk" or "dust chamber" I place an "endless" traveling cleaning lattice, which passes around two or more rollers or pulleys placed at or near the ends or in other suitable parts of the "dust trunk" or "dust chamber." One or more or all of the rollers or pulleys before mentioned may be employed to transmit motion to the traveling lattice. I provide the traveling lattice with ribs or bars which act as cleaning bars. It is found that the cotton which is most heavily weighted with dust, dirt or other foreign matter always finds its place at the bottom of the stream of cotton passing through the trunks and is thus caused to strike against the cleaning bars while the cotton which is most free from dust, dirt or other foreign matter always finds its way to the top of the stream of cotton passing through the trunks. The cotton which strikes against or collides with the cleaning bars is momentarily arrested from time to time and consequently is shaken at each time that its motion is arrested and thus dust and dirt are shaken out of the cotton or other fibrous material. The spaces between the cleaning bars form pockets or receptacles into which the dust, dirt or other foreign matter separated from the cotton or other fibrous material by the cleaning bars may fall or be deposited. The movement

of the endless lattice will carry with it the dust and dirt which has been deposited in the pockets or receptacles between the cleaning bars of the traveling lattice so that when the cloth or lattice passes around the rollers or pulleys on its return journey, it will allow the dust or dirt to fall out of the said pockets or receptacles into the receptacle or chamber provided for it, at or near the end of the "dust trunk" or "dust chamber." The return movement of the lower portion of the lattice will also carry forward or remove any dust and dirt which may fall upon the lower surface of the "dust trunk" or "dust chamber" so as to allow them to fall into a receptacle or chamber at or near the other end of the "dust trunk" or "dust chamber." The lattice above mentioned may be caused to move so that the upper surface of such lattice shall move in the same direction as the cotton or other fibrous material passing through or along the "dust trunk" or "dust chamber" or in the contrary direction.

In order to enable the dust and dirt deposited in the said receptacle or chamber or receptacles or chambers to be readily removed therefrom while the machines are at work, I provide such receptacles or chambers with suitable doors and in order to further facilitate the removal from the said receptacles or chambers of the dust and dirt deposited therein I provide each of such receptacles or chambers with two doors or two sets of doors so that when one of such doors or one of such sets of doors is "opened" the accumulated dust and dirt will be allowed to fall into a lower portion of the receptacle or chamber from which it may be removed or allowed to fall after the said door or set of doors has been again closed. This door or set of doors having been closed the other door or set of doors may be "opened" to allow the dust or dirt to be removed, or the order in which the doors or sets of doors are "opened" or closed may be reversed. By such doors or sets of doors being "opened" and closed in proper order the accumulated dust or dirt will be allowed to fall and be removed from the said receptacle or chamber.

In the accompanying drawings Figure 1 is an elevation in longitudinal section, Fig. 2 a plan, Figs. 3 and 4 cross sections, taken on the line A. B. of Figs. 1 and 2, and Fig. 5 an elevation in longitudinal section showing a part of the "dust trunk" or "dust chamber." Fig. 4 only differs from Fig. 3 in that in Fig. 4 the "dust trunk" or "dust chamber" is shown as being rectangular in cross section, while in Fig. 3 it is shown as semi-circular in cross section.

According to my invention I employ for the purpose of conducting the cotton or other fibrous material from the "breaking up and feeding machine" to the "exhaust opener" a "dust trunk" or "dust chamber" (a) of any convenient form, having in one end an inlet 10 and in the other end an outlet 12.

Within the lower part of this "dust trunk" or "dust chamber" (a) I place an "endless" traveling cleaning lattice (b) which passes around two rollers or pulleys (c) (c') placed at or near the ends of the "dust trunk" or "dust chamber" (a). The rollers or pulleys c c', which with the traveling lattice are enclosed within the trunk or chamber a are respectively mounted upon axles (d) which are carried by and capable of being rotated in bearings secured to the "dust trunk" or "dust chamber" (a). The lattice (b) consists of an endless cloth extending nearly the full width of the dust trunk or dust chamber (a) so as to form a continuous surface and having secured to it cleaning ribs or bars (p) made of wood, metal or other suitable material and of any desired form and fixed at suitable distances from each other. The spaces between the ribs or bars when the lattice (b) is passing along its upper course form the pockets or receptacles into which the dust and dirt fall as they are separated from the cotton or other fibrous material while the cotton or other fibrous material is colliding with the cleaning bars (p) in passing over the surface of the lattice (b). In order to keep the upper surface of the lattice (b) as near a straight line as possible, I place between the rollers or pulleys (c) (c') rollers or pulleys such as (e) (e') which are mounted upon axles (e') carried by and capable of being rotated in bearings secured to the "dust trunk" or "dust chamber" (a).

Fast upon the axle d of the roller (c) I mount a wheel (f) gearing into which is a worm (g) fast upon a short shaft (h) carried by and capable of being rotated in a bracket (k) secured to the side of the "dust trunk" or "dust chamber" (a). Fast upon the shaft (h) is a bevel wheel (l) gearing into the bevel wheel (m) secured upon the short shaft (n) suitably mounted and provided with a pulley (o) which receives rotary motion from any convenient source. By this means motion is communicated to the roller (c) and thereby to the traveling lattice (b) which may be caused to revolve in the direction indicated by the arrow (D) as shown in Fig. 1, which I prefer, or in the contrary direction according as the pulley (o) is driven. The movement of the "endless" lattice (b) will carry with it the dust and dirt deposited in the pockets between the bars (p) so that when the lattice (b) passes around the roller or pulley (c') on its return journey it will allow the dust and dirt deposited in the pockets to fall into the receptacle or chamber (q) forming part of the "dust trunk" or "dust chamber" (a), such receptacle or chamber (q) being formed at or near one end of the "dust trunk" or "dust chamber" (a). The movement of the lower portion of the lattice (b) will carry forward or remove any dust or dirt which may fall upon the lower surface (a') of the "dust trunk" or "dust chamber" (a) with which it comes in contact so as to allow such dust

and dirt to fall into the receptacle or chamber (q') situate at or near the other end of the "dust trunk" or "dust chamber" (a).

In order to enable the dust and dirt deposited in the receptacles or chambers (q) (q') to be readily removed therefrom while the machines are at work, without it being necessary to "stop" the "breaking up and feeding machine" and "exhaust opener" and "lap machine" in connection with which the "dust trunk" or "dust chamber" is employed I provide each of the receptacles or chambers (q) (q') with two doors (r) (r') between which is a chamber (w). Each of the doors (r) (r') is secured to a shaft (s) which is supported by and capable of being turned in bearings formed upon or secured to the sides of the chambers or receptacles (q) (q'). Secured upon each of the shafts (s) (s') is a lever (t) one end of which is formed into a handle (t'). Secured upon the lever (t) is a weight (t^2) which counterbalances the weight of the door (r) and tends to turn such door (r) in the direction indicated by the arrow (E) and keeps the edge (r^2) of the door (r) in contact with the rib (q^2) secured to the chamber or receptacle (q) or (q'). When a quantity of dust and dirt has accumulated upon the upper surface of the door (r) the door (r) is turned by means of the handle (t') in the direction opposite to that indicated by the arrow (E) so as to allow the dust and dirt to fall into the chamber (w) and upon the upper surface of the door (r') which is constructed and operated like the door (r). The door (r) is then closed. The door (r') may now by means of the handle (t') be turned in the direction indicated by the arrow (F) and be caused to allow the dust or dirt to fall from the chamber (w) after which the door (r') is again closed. The above described order in which the doors (r) and (r') are opened may be reversed. By the doors (r) and (r') being opened and closed in proper order the accumulated dust and dirt will be allowed to fall and be removed from the receptacles or chambers (q) and (q'). In some cases I, as is indicated in Fig. 5 which shows one end only of the "dust trunk" or "dust chamber" (a) dispense with one of the two doors which are shown at each end of the "dust trunk" or "dust chamber" (a) in Fig. 1 and in such cases when a quantity of dust and dirt has accumulated in the chamber or receptacle (q) the attendant by means of the handle (t') turns the door (r) in a direction opposite to that indicated by the arrow (E) and allows the dust or dirt to fall from the chamber or receptacle (q) upon the floor or into a bag, or other receptacle, or the receptacle or chamber (q) may be carried down to the floor and thence into a dust chamber. When a bag is employed to receive the said dust or dirt, such bag may be hung upon hooks (q^3) with which the exterior surface of the chamber or receptacle (q) is provided. When the dust or dirt has been allowed to fall from the chamber or receptacle (q) the

door (r) is again closed. In some cases I form each of the weights (t^2) of such a weight that when a determined weight of dust or dirt has accumulated in the chamber or receptacle (q) or (q') the door (r) used with such chamber or receptacle will be opened in a direction opposite to that indicated by the arrow E by the weight of the accumulated dust or dirt overbalancing the weight (t^2) which dust or dirt will thereupon be allowed to fall from the said chamber or receptacle, the door (r) by the action of the weight (t^2) again closing after the dust or dirt has fallen from the chamber or receptacle.

In order to prevent or hinder air from being drawn into the "dust trunk" or "dust chamber" (a) at the junctions of the ends of the traveling lattice with the framing of the dust trunk (a) when the door (r) is opened, I place at the opposite ends of the cloth or lattice (b) plates (u) which I secure to the "dust trunk" or "dust chamber" (a) such plates (u) respectively extending over the spaces between the cloth or lattice (b) and the ends (q^4) (q^5) of the chambers or receptacles (q) (q') respectively.

I have above described my invention as applied in cases in which a "breaking up and feeding machine" is employed to deliver the cotton or other fibrous material to a "dust trunk" or "dust chamber" by which it is conducted to an "exhaust opener" or a combined exhaust opener and lap machine but in some cases I dispense with the "breaking up" part of the "breaking up and feeding machine" previously referred to, and the cotton or other fibrous material is then placed "by hand" upon the "feeding machine" or a "feeding table" from which it passes to the "dust trunk" or "dust chamber."

I will here call attention to an important characteristic of this machine which is that the space between the upper run of the traveling lattice and the top of the dust trunk is not divided by screens, gratings or other partitions and an unobstructed passage is left within the trunk above said lattice so that the cotton or fiber passing through the lower part of the said space is free to strike against and collide with the bars of the lattice and be thereby momentarily arrested from time to time to facilitate the shaking out of the dust therefrom.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a dust trunk having in its bottom a receptacle for dust and dirt, of a traveling lattice entirely inclosed within said trunk and having cleaning bars between which are pockets for the collection of dust and dirt to be deposited in said receptacle, the said trunk having within it above said traveling lattice an entirely unobstructed space, substantially as herein set forth.

2. The combination with a dust trunk hav-

- ing in one end an opening for the entrance of cotton or other fibrous material and in the other end an opening for the exit of said material and having in its bottom near each end
5 a receptacle for dust, of a traveling lattice inclosed within said trunk below said inlet and outlet openings and with its ends over said receptacles, doors in said receptacles for the removal of their contents, and plates *u u*
10 arranged in said trunk below said inlet and outlet openings and extending over the spaces between the ends of the traveling lattice and the ends of said receptacles, substantially as herein set forth.
- 15 3. The combination of a dust trunk, a traveling lattice having both ends inclosed within said trunk and having cleaning bars and pockets between said bars, a receptacle for dust and dirt in the bottom of said trunk and two doors in said receptacle which may be separately opened for the removal of the dust and dirt from said receptacle without interruption of the operation of the trunk, substantially as herein set forth.

THOMAS RODGERSON MARSDEN.

Witnesses:

HOWARD CHEETHAM,
18 Saint Ann Street, Manchester, England.

JOHN DODD,
The Hollies, Werneth, Oldham, England.