

J. E. CHEESMAN.
 APPARATUS FOR TREATING LINT.
 APPLICATION FILED JAN. 24, 1911.

1,056,260.

Patented Mar. 18, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

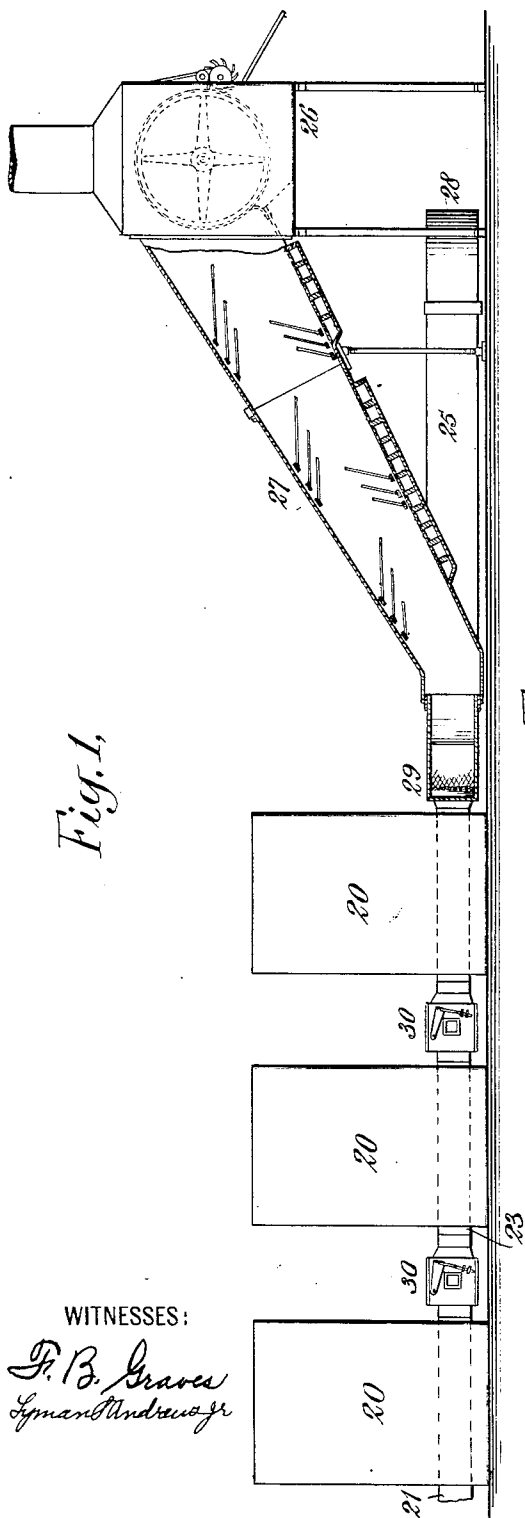


Fig. 2.

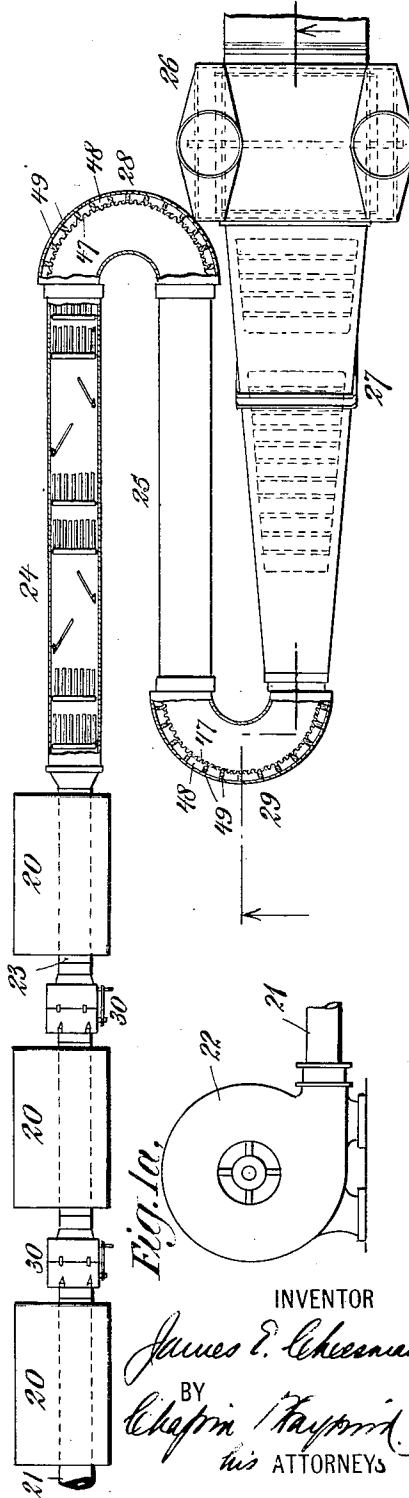
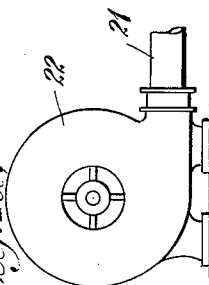


Fig. 1a.



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3 SHEETS—SHEET 2.

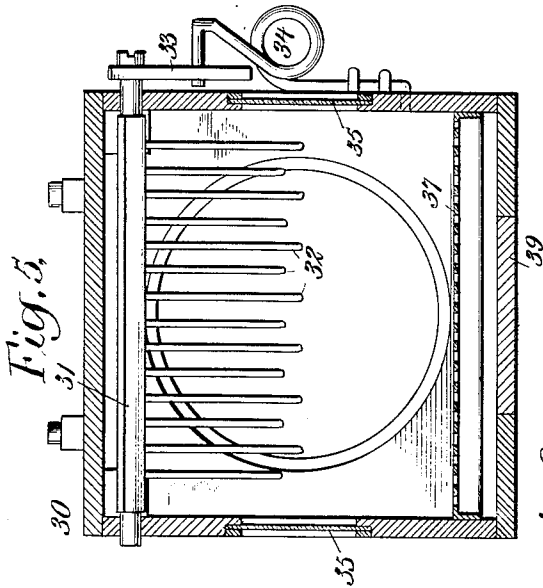


Fig. 9,



Fig. 11,

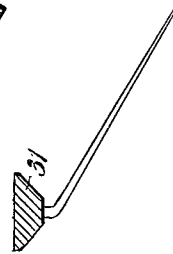


Fig. 10,

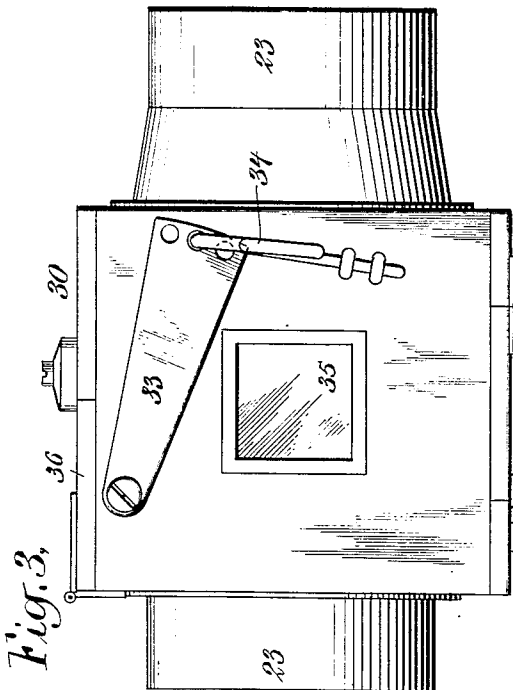
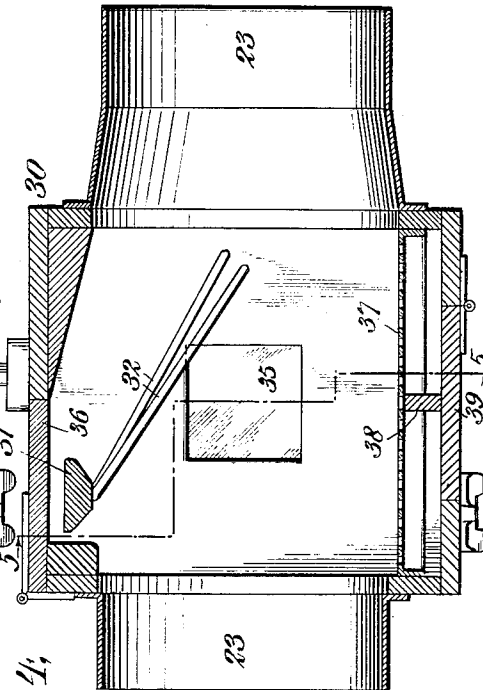


Fig. 4,



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 Leonard Anderson

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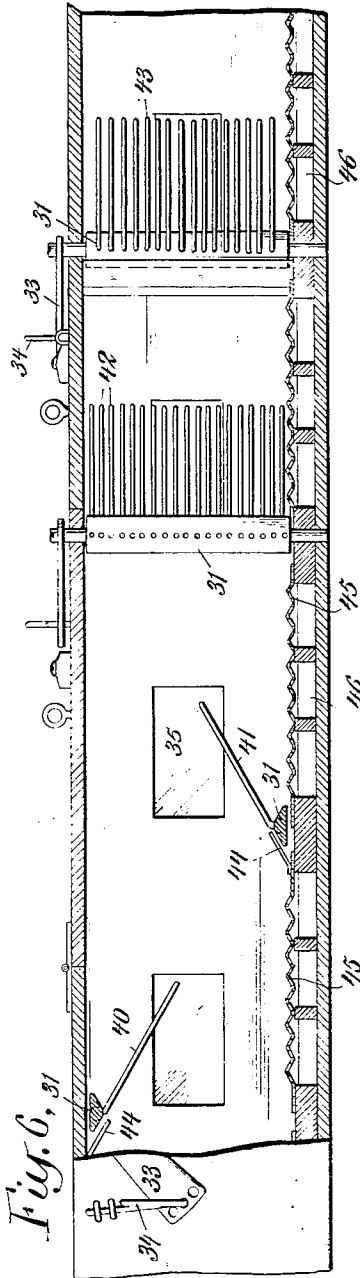
James E. Cheesman
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3 SHEETS—SHEET 3.



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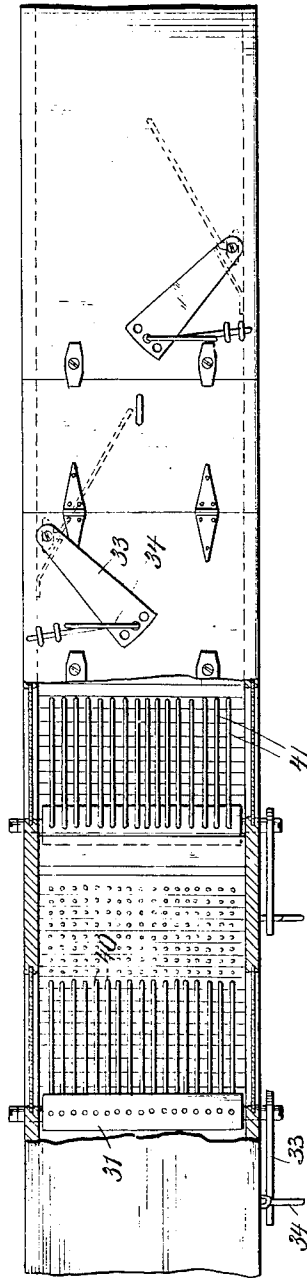
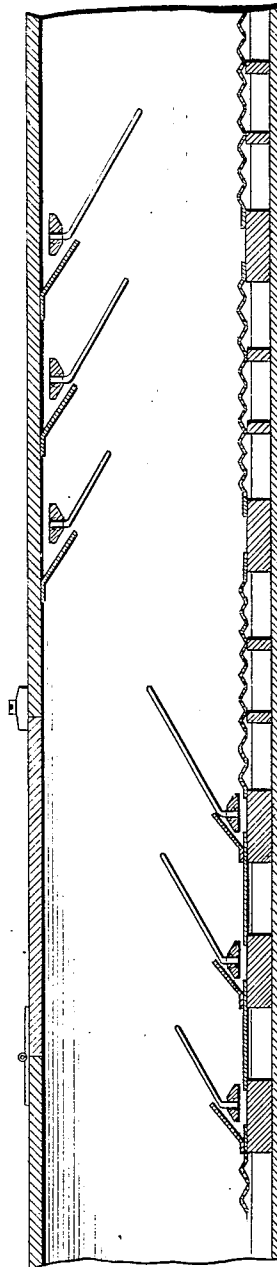


Fig. 7.



INVENTOR

Fig. 8. James E. Cheesman
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UNITED STATES PATENT OFFICE.

JAMES E. CHEESMAN, OF SOUTH ORANGE, NEW JERSEY, ASSIGNOR TO EMPIRE DUPLEX GIN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF ARIZONA.

APPARATUS FOR TREATING LINT.

1,056,260.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed January 24, 1911. Serial No. 604,318.

To all whom it may concern:

Be it known that I, JAMES E. CHEESMAN, a citizen of the United States of America, and a resident of South Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Treating Lint, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to apparatus for treating lint, and particularly to apparatus for separating the fibers of lint as it is delivered from a cotton gin, and for cleaning the same.

Cotton lint as it is delivered from a gin and particularly from a roller cotton gin, is in a more or less matted condition and the matted fibers hold more or less dirt, dust, sand, leafy trash, broken pieces of seed, and the like, and the object of my present invention is to separate the fibers from this matted condition so that the product will be in the nature of a fluffy one instead of a matted one, and in so separating the fibers to clean them from the dirt, dust, leafy trash, etc., so that both the appearance and condition of the product will be improved.

To the foregoing ends I provide a series of inclined projections or fingers in a lint flue through which the lint is moved by means of air currents, and I also provide screens for acting upon the fibers and chamber to the rear thereof for receiving the dust, dirt, leafy trash, etc., which will pass through the screens all as will be fully pointed out in the following specification.

My invention also consists in many novel details of construction and combinations of parts such as will likewise be clearly pointed out herein, and in order that my invention may be fully understood I will now proceed to describe an embodiment thereof, having reference to the accompanying drawings illustrating the same, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in part side elevation and part central longitudinal section of an apparatus constructed in accordance with my invention, the same including a battery of gins, a lint flue, and a condenser. Fig. 1^a is a view in side elevation showing a conventional illustration

of a blower adapted for connection with the lint flue. Fig. 2 is a partial top view and partial horizontal section of the apparatus shown in Fig. 1. Fig. 3 is a view in side elevation upon a larger scale of a portion of the lint flue between the individual gins of the battery. Fig. 4 is a view in central longitudinal section therethrough. Fig. 5 is a view in transverse section therethrough upon the line 5—5 of Fig. 4. Fig. 6 is a view in central vertical longitudinal section through a portion of the lint flue in advance of the entire battery of gins. Fig. 7 is a partial top view and view partially in horizontal section of the structure shown in Fig. 6. Fig. 8 is a view in central vertical section through a lint flue of slightly modified construction. Fig. 9 is a view in side elevation of a finger or projection of somewhat modified form. Fig. 10 is a view in transverse section therethrough. Fig. 11 is a view in side elevation of a still further modified form of the finger or projection.

Referring first of all to the general views Figs. 1 and 2 it will be seen that I have shown therein a portion of a battery of gins in multiple with a common lint flue 21. Air is supplied to the lint flue from any suitable source as, for instance, from an ordinary fan blower 22 as shown in Fig. 1^a. For convenience of description the lint flue may be divided up into a series of parts, though it will be understood that actually all these parts constitute the lint flue as a whole, the separation being an arbitrary one for the purposes of facilitating the description. The portion as far as the delivery end of the end gin, is termed herein the "main horizontal portion," and is designated in the drawings by the reference character 23. The portion in advance thereof and extending in the same direction is termed herein the "second horizontal portion" and is designated by the reference character 24. The portion parallel with the second said horizontal portion and which is termed herein the "return portion" is designated by the reference character 25, and the portion which leads therefrom to the condenser 26 is termed herein the "rising portion" and is designated by the reference character 27. The second horizontal portion and the return portion are connected by an

elbow 28 while the opposite end of the return portion and the adjacent end of the rising portion are connected by means of a second elbow portion 29.

5 The main horizontal portion is provided with enlarged housings 30 containing cleaning and separating chambers, one of such housings being arranged between each pair of gins. One of these housings is shown
10 in detail in Figs. 3, 4, and 5 to which reference will now be made. The general contour of the main horizontal portion 23 of the lint flue is conveniently circular in cross section as is shown in the drawings; while
15 the housing 30 is conveniently rectangular in cross section. Mounted horizontally in the side walls of the housing 30 near the upper end thereof is a bar 31 which carries a plurality of downwardly and forwardly
20 inclined bars or fingers 32. These bars or fingers are spaced apart as is shown in Fig. 5, being disposed directly in the path of the air currents in the lint flue. These bars or fingers may be arranged all in one plane
25 if preferred, or they may be staggered as is shown in Figs. 4 and 5, the alternate bars or fingers arranged in different planes having different angles of inclination. The exact form of these bars or fingers is not material and may be varied. In Figs. 4 and 5
30 I have shown the same as comprising cylindrical strips. In Figs. 9 and 10 the bar is shown as flattened, presenting the narrower edge thereof in the direction of the
35 flow of the currents. The cross section of this form is, however, uniform throughout the length as in the form shown in Figs. 4 and 5. In Fig. 11 I have shown another form in which the bars or fingers are in the
40 form of tapered strips, the diameter thereof gradually reducing toward the free ended extremities. Various forms of these fingers may be employed as may suit the particular conditions encountered.

45 Because of the fact that it may be necessary or desirable to adjust the angle of inclination of the bars or fingers I preferably journal the bar 31 in the side walls of the housing so that its angular position may be
50 adjusted. I conveniently provide the bar upon the exterior of the housing with an arm 33 by which it may be so adjusted, the said arm being adapted to engage at different points with a spring 34 by which
55 it may be retained in its adjusted position.

In order to permit the operator to watch the action of the device so as to know whether or not to adjust the fingers, I preferably provide the housing with windows
60 35, one being conveniently provided in each side wall of the housing as clearly appears in the drawings. I also conveniently provide a hinged door 36 at the upper part of the housing by which access may be had
65 to the interior thereof.

Beneath the fingers 32 I provide a perforated screen 37 through which dirt, dust, sand, and the like will fall, but which will oppose the passage of fibers. This screen is placed at some little distance from the bottom of the housing so as to form a receiving chamber for the dust, dirt, sand, and the like, and this chamber is preferably divided into two or more compartments by means of vertical walls 38 (see Fig. 4) so
70 as to prevent the air currents from sweeping the dirt, dust and the like, out again after it has entered the chamber. A hinged door 39 is conveniently provided at the bottom of the housing which may be employed for emptying the refuse from the chamber beneath the screen. 75

The second horizontal portion 24 of the lint flue contains a number of sets of inclined fingers of the same nature as those shown in the housing 30, as will be clearly understood by reference to Figs. 2, 6, and 7 of the drawings. Any desired number of these sets may be employed. They are conveniently disposed progressively at the top, bottom, and opposite sides of the lint flue, and Figs. 6 and 7 illustrate four sets thereof, the first set 40 projecting downward from the top of the lint flue, the next set 41 projecting upward from the bottom thereof, the next set 42 projecting inward from one side of the lint flue, and the next set 43 projecting inward from the other side thereof. Each set comprises a plurality of fingers mounted upon a transverse bar 31, such bar being conveniently adjustable and provided with an arm 33 by which it may be adjusted and retained in its adjusted position. In this construction I have shown diagonally arranged guards 44 in front of the supporting bars 31 so as to prevent any lint from clogging at the base of these bars and between the bars and the walls of the housing. These diagonal guards will deflect the lint toward the fingers as will be well understood. The bottom of this portion of the flue is preferably provided with a perforated screen 45 of corrugated form as shown in Fig. 6, the said screen being arranged above a plurality of dirt receiving chambers 46 in the manner described in connection with Fig. 4. The outer casing of the portion 24 is also provided with doors at different required points by which access may be had to the interior thereof and refuse be removed just in the manner described in connection with the housing 30. 85 90 95 100 105 110 115 120

The elbow portions 28 and 29 are provided with curved screens 47, being arranged just within the wall of greatest radius, a suitable space 48 being left to form a receiving space for dirt, dust, and the like, such space being divided by partitions 49. The lint in passing from the second 125 130

horizontal portion 24 of the flue, to the return portion 25, and from the return portion 25 to the rising portion 27, will have to pass through these elbow portions and will be deflected therein from one said portion to the other. The act of deflecting the lint will be performed by the curved screens so that the lint will be actually rubbed over the curved screens, by which a further cleaning and fiber-opening action will be effected. The return portion 25 of the lint flue may contain inclined fingers similar to those contained in the second horizontal portion 24, and the rising portion 27 may also contain such inclined fingers as will be well understood. Both the return portion and the rising portion will likewise preferably contain screens and dirt receiving chambers at the bottom thereof similar to that described in connection with the horizontal portion so that the lint will be continuously treated throughout its entire movement through the lint flue. Thereafter it will enter the condenser and will be treated therein in the usual manner.

The operation of the apparatus is as follows: Air currents produced by the operation of the blower 22 or other means for this purpose, will flow continuously through the lint flue from the inlet end thereof to the discharge end at which the condenser 26 is located. These air currents will draw in lint from the gins 20. As the product from each gin is drawn into the lint flue it will pass immediately to the housing 30 in front of the gin and in its continuous discharge through the lint flue the lint will pass through any of the housings in advance thereof and will also pass through the various cleaning and separating devices in the second horizontal portion, the return portion, the elbow portions, and the rising portion of the lint flue. The inclined fingers are, it will be remembered, directly in the path of the air currents and hence in the path of movement of the lint. The lint therefore will be projected against the fingers and will in fact pass from one set of fingers to the other. Each time the lint strikes a set of fingers the air acting upon it will tend to separate the fibers and to shake out the dirt, dust, sand, leafy trash, etc. The lint will be arrested by the fingers and temporarily held by them at successive points in the lint flue, the actual action being a gradual running along the inclined surfaces on the part of the lint until the lint reaches the extremities thereof and leaves them. In this process the fibers of the lint will be gradually divided and separated and a sufficient number of these sets of fingers should be arranged along the lint flue so that when the lint finally reaches the condenser the fibers will be no longer in the matted condition in which they are

received from the gin, but all separated. Thereafter upon being condensed in the condenser they will be delivered in an open, fluffy, homogeneous condition such, it is understood, being the most desirable condition therefor. Not only will the fibers be separated by the foregoing action, as has been explained, but the dirt carried by the fibers when in the matted condition aforesaid will be removed. This action not only takes place while the fibers are being arrested by the fingers, but also takes place in the rubbing of the lint over the corrugated screen surfaces. This is particularly true in the elbow portions wherein substantially the entire product will rub over the curved corrugated screens 47.

It may be noted that the process of operating upon the lint while disclosed herein is not claimed in the present specification, but reference is made to a copending application Serial Number 604,320, filed of even date herewith which is directed to this process.

In Fig. 8 a slightly modified form is shown in which a plurality of sets of fingers of progressively increasing length project from the same side of the casing, one in advance of the other. In such case the lint passing from one set of fingers will pass to the next set of greater length but projecting from the same wall instead of passing from one set projecting from one wall to another set projecting from another wall, as in the example shown in Figs. 6 and 7.

What I claim is:

1. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of free ended fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents and arranged to arrest and to temporarily hold the lint.

2. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of normally stationary free ended fingers projecting from different sides of the conduit into the path of movement of the lint, said fingers being inclined diagonally in the direction of the flow of the currents and arranged to arrest and to temporarily hold the lint, and means for manually adjusting the angular position of said fingers.

3. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and

- means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of free ended fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents, and a perforated dust screen located beneath the said fingers.
4. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of free ended fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents, and a perforated corrugated dust screen located beneath the said fingers.
5. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of free ended fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents, and diagonally arranged deflecting plates arranged in advance of the base of the said fingers to direct the lint away from the base of the fingers in a direction toward the free ends thereof.
6. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of free ended fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents and arranged to arrest and to temporarily hold the lint, certain of the said fingers being arranged at one angle, and others of the said fingers being arranged at another angle.
7. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of free ended longitudinally tapered fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents and arranged to arrest and to temporarily hold the lint.
8. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of sets of transverse rows of free ended fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents, the fingers in successive rows of each set being progressively longer than the fingers in the preceding row.
9. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of a plurality of sets of free ended fingers disposed therein in the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents, the said sets of fingers projecting from the top, bottom and the opposite sides of the said conduit.
10. In an apparatus for treating lint, the combination with a conduit having portions running in opposite directions, and an elbow portion connecting them, means for causing air currents to flow through the conduit, and means for admitting lint after it has been seeded into the conduit, so that it will be carried therethrough by the air currents, a plurality of free ended fingers projecting into the conduit into the path of movement of the lint, of a curved perforated screen located in the elbow portion near the portion of greatest radius thereof, the elbow having a chamber forming a dead air space behind the said perforated screen.
11. In an apparatus for treating lint, the combination with a conduit having portions running in opposite directions, and an elbow portion connecting them, means for causing air currents to flow through the conduit, and means for admitting lint after it has been seeded into the conduit, so that it will be carried therethrough by the air currents, a plurality of free ended fingers projecting into the conduit into the path of movement of the lint, of a curved perforated corrugated screen located in the elbow portion near the portion of greatest radius thereof, the elbow having a chamber forming a dead air space behind the said perforated screen.
12. In an apparatus for treating lint, the combination with a conduit, means for causing air currents to flow therethrough, and means for admitting lint after it has been seeded into the conduit so that it will be carried therethrough by the air currents, of

5 a plurality of transverse rows of free ended fingers projecting from different sides of the conduit into the path of movement of the lint, the said fingers being inclined diagonally in the direction of the flow of the currents, some of the fingers in each row being set at a greater angle of inclination than

others, said fingers being arranged to arrest and to temporarily hold the lint.

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Witnesses:

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