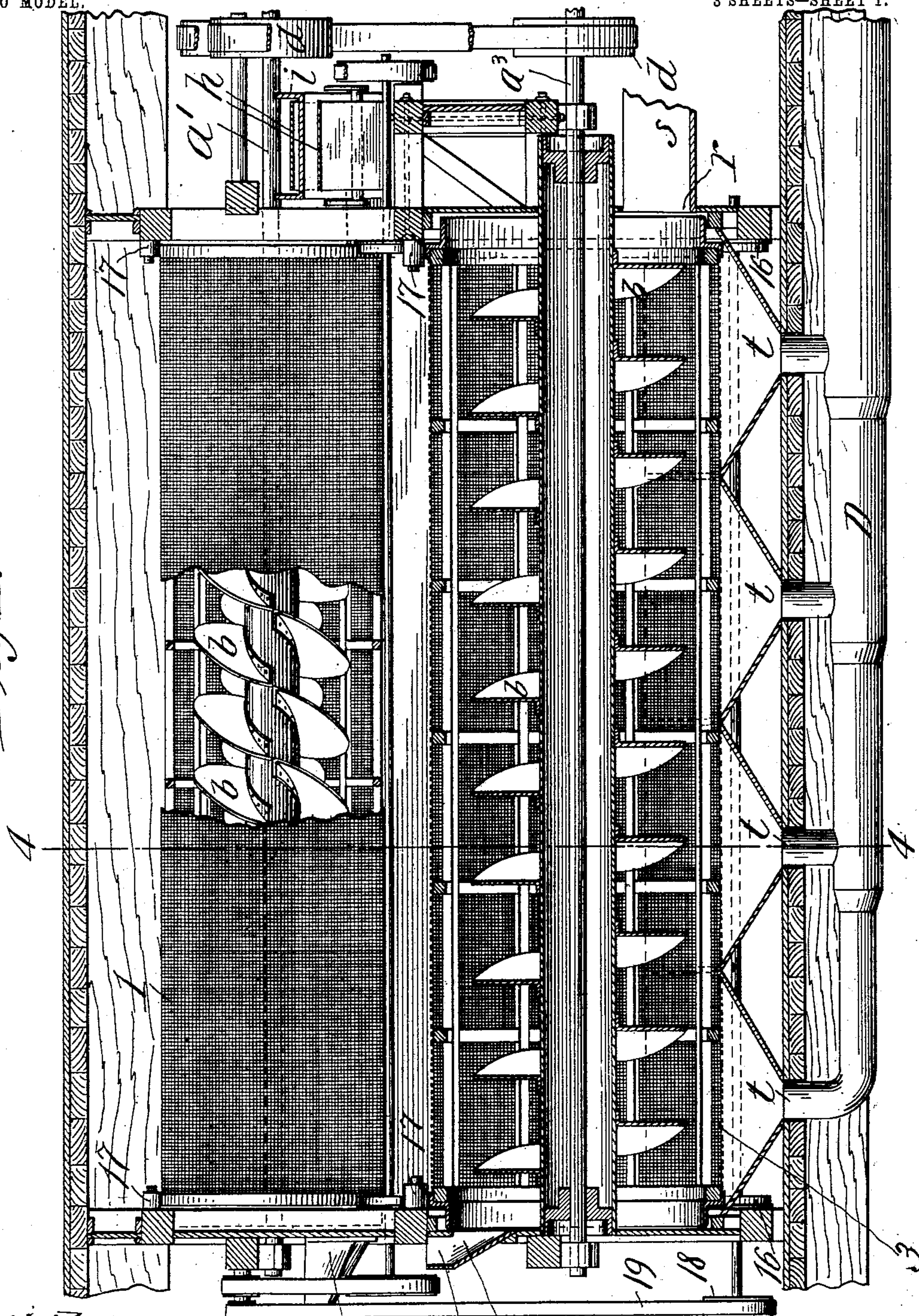


E. T. S. THAYER.
RAG DUSTING MACHINE.
APPLICATION FILED FEB. 5, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 3.

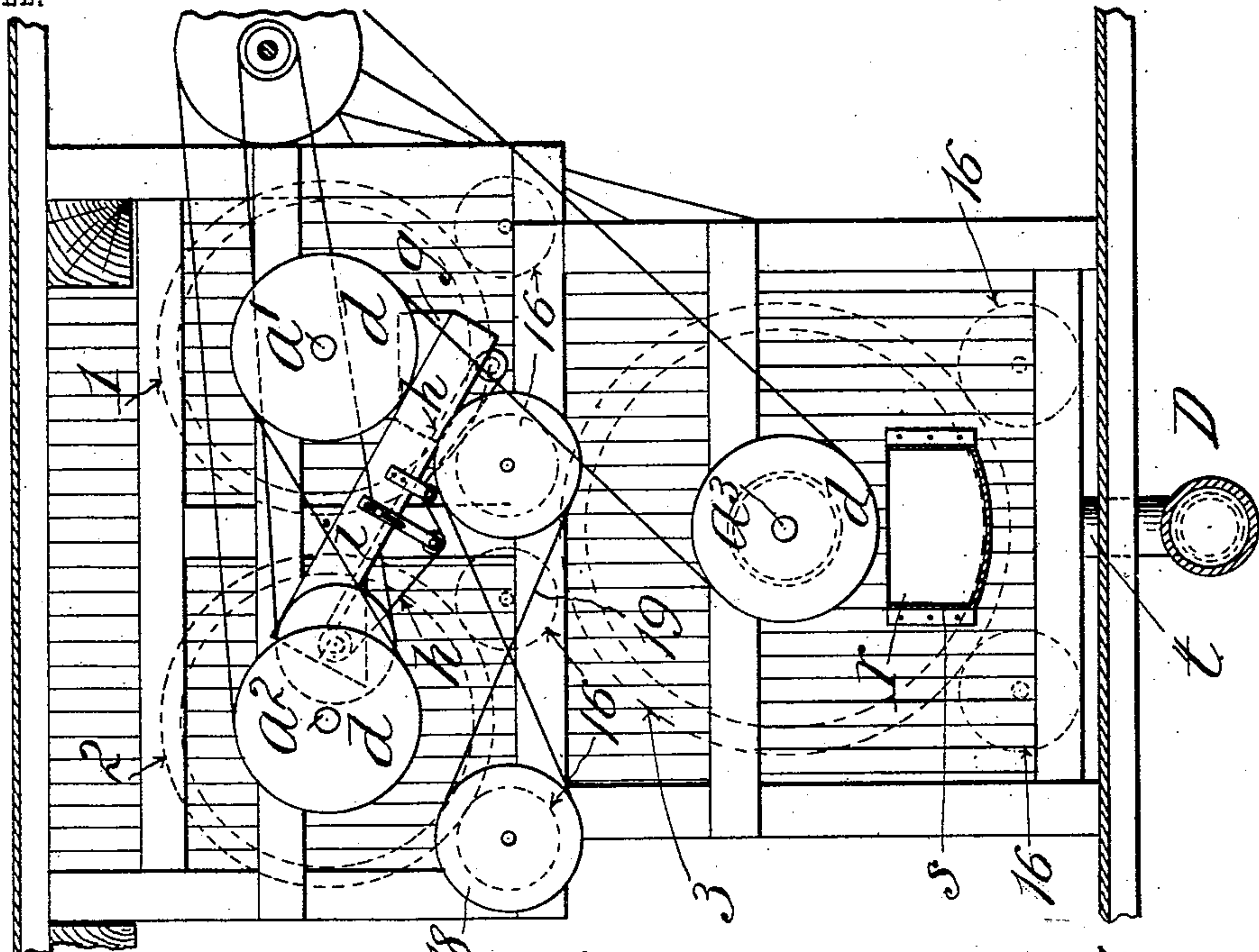
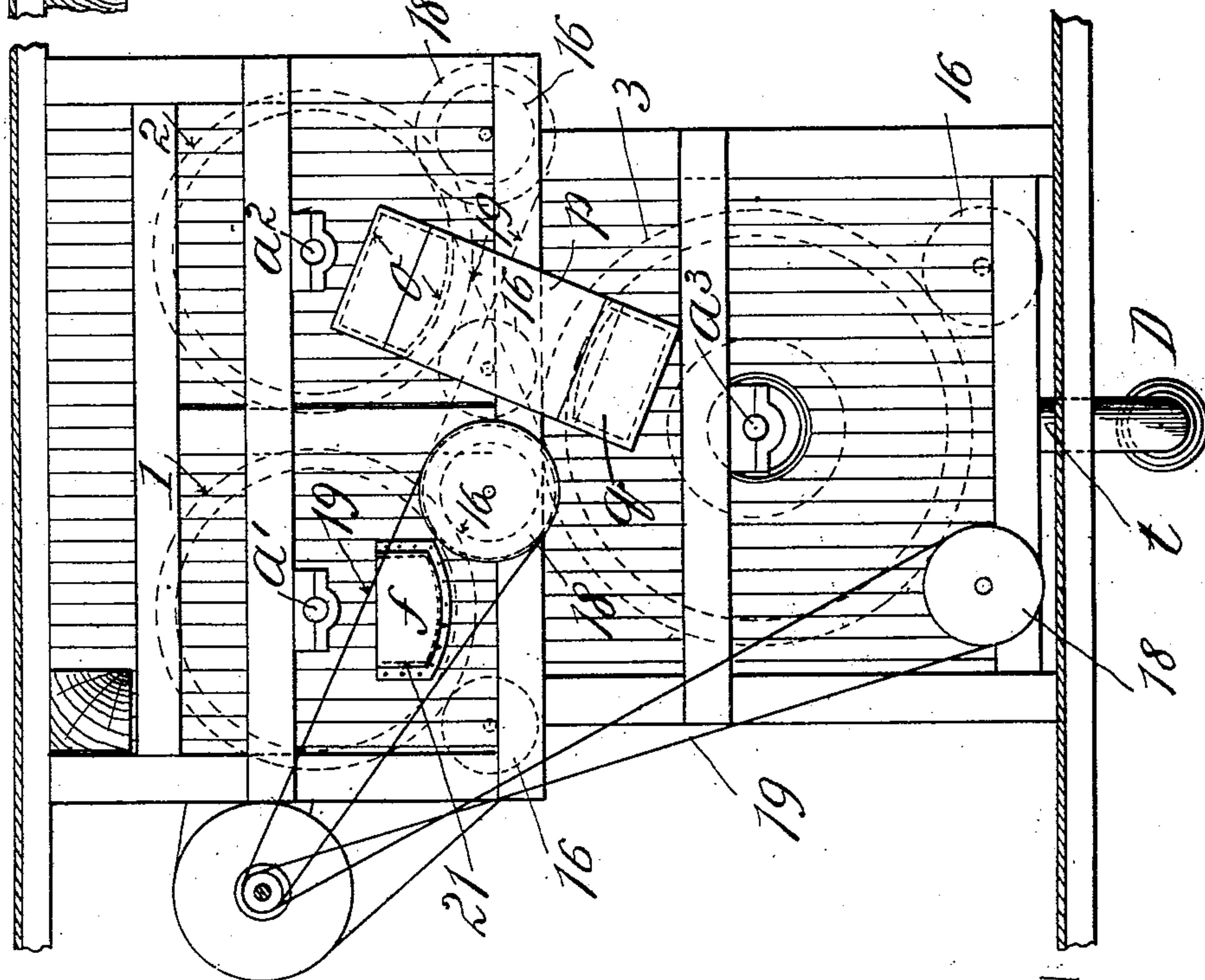


Fig. 2.



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UNITED STATES PATENT OFFICE.

EUGENE T. S. THAYER, OF WEST SPRINGFIELD, MASSACHUSETTS.

RAG-DUSTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 745,743, dated December 1, 1903.

Application filed February 5, 1903. Serial No. 142,099. (No model.)

To all whom it may concern:

Be it known that I, EUGENE T. S. THAYER, a citizen of the United States of America, and a resident of West Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Rag-Dusting Machines, of which the following is a full, clear, and exact description.

10 This invention relates to an improved apparatus or machine for the removal from rags or other stock to be made into paper of the dust or dirt which may be incorporated therein.

As the invention is carried out I provide a plurality of screen-cylinders, together with means for insuring the entrance of the rags or stock into one end of the first thereof, so that the rags will be automatically blown or moved through to the end thereof and have the dirt or dust sifted and withdrawn therefrom, such dirt or dust passing through the screen sides of the cylinders, and the rags upon emerging from the end of the one screen-cylinder opposite from the end at which they had entered are automatically carried into the initial end of the next cylinder, and while being given a progressive movement therethrough have the dust and dirt further sifted and withdrawn therefrom, and the rags may be carried from the second cylinder into and through and subject to the action of a third cylinder before being finally discharged for further treatment in the manufacture of paper.

Under this invention not only is floor-space materially economized, but the capacity and efficiency of the duster are largely increased.

Prominent features of the invention consist in the relative arrangement of a plurality of the screen-sided cylinders with means for the transferring of the rags which have passed through and been subject to the action of one of the cylinders to the next cylinder in which further similar dust-removing action is accomplished, in the relative arrangement of the upper and lower screen-cylinders within a casing therefor, and means having suction communication with the sides of each of the screen-cylinders, whereby the dust therefrom is withdrawn and carried away, and a guard device so located as to be unobstructive of the suction action for the

carrying away of the dust, and yet to prevent the dust which passes out from an upper cylinder or cylinders from falling upon and through the screen-covering of the lower cylinder; and more particularly the invention consists in the constructions or combinations and arrangements of parts, all substantially as hereinafter described in connection with the accompanying drawings and set forth in the claims.

In the drawings, Figure 1 is a sectional view substantially centrally and horizontally through the machine, some parts beyond the central plane of section being indicated as removed or broken away for clearer illustration. Figs. 2 and 3 are elevations at opposite ends of the machine. Fig. 4 is a cross-section vertically on the line 4 4, Fig. 1. Fig. 5 is a perspective view of one of the blades for the fan-shaft for a screen-cylinder.

Similar characters of reference indicate corresponding parts in all of the views.

The casing A, in which in the present instance three axially-parallel screen-cylinders 1, 2, and 3 are inclosed and arranged for rotation, is represented as occupying a height corresponding to the space between two floors and has the comparatively large lower compartment 30 and the two upper longitudinally-extended compartments 10 and 20, these being divided by the vertical central longitudinally-extending partition 15, (shown in Fig. 4 in cross-section and understood as removed in Fig. 1,) whereby the upper screen-cylinder 1 is disclosed beyond the plane of section. The two separated upper compartments 10 and 20 open downwardly to communication with the upper portion of the lower compartment.

The screen or sifter cylinders, which are endwise open and have their ends in proximity to the end walls of the casing, are supported on lower pairs of short rollers 16 16 and are constrained against displacement by rollers 17 at the top middle portions of each extremity of the cylinders. Shafts a' , a^2 , and a^3 are mounted in suitable journal-bearings in opposite ends of the case axially coincident with the screen-cylinders and support fan or blower blades b , so that under the rotation of the respective shafts the whirling of the blades, which are properly inclined, will im-

part a blowing and impelling force endwise through the screen-cylinders. Each fan-shaft has at its one end a pulley *d*, the several pulleys being, by belt connection or
 5 otherwise, driven, the direction of driving being such that the fan-shafts of cylinders 1 and 3 will be rotated in the same direction, which is the reverse of the direction of driving rotation of the fan-shaft for cylinder 2.
 10 One of each pair of the lower rollers 16 for the respective cylinders is positively rotated at a comparatively slow rate of speed by having on the stud or arbor thereof a driving-pulley 18, around which runs a suitably-
 15 driven belt 19. The driving of one of the rollers of each pair 16 frictionally rotates the corresponding cylinder.

At the entrance end for cylinder No. 1 there is an opening through the end wall of
 20 the casing, the same being indicated by the dotted line 21 in Fig. 2, leading to which opening is a hopper or chute *f* for guiding the rags or stock into the first cylinder. The rotary motion of the cylinder causes a tum-
 25 bling of the rags therewithin, and the fan causes an endwise progression of the rags through the cylinder, and at the opposite end of the casing is a discharge-opening (indicated at *g*) for the stock, so that the same
 30 may emerge onto an apron *h*, which is endless and has the upper course thereof arranged to run within an upwardly-open incline trough which leads the stock for entrance into the receiving end of screen-cyl-
 35 inder No. 2, the opening *k* being properly provided through the end wall of the casing opposite from the initial end of cylinder No. 1, and the stock being tumbled and sifted and caused to move in the opposite direc-
 40 tion from that of its progression through cylinder 1 emerges from the second cylinder through the opening indicated at *o* in Fig. 2, and is thence guided down through the almost vertical chute *p* at the outside of the
 45 end of the casing for entrance into the initial end of cylinder No. 3, the opening therefor through the casing being indicated at *q*, and the stock is tumbled, sifted, and forced endwise, emerging finally from the third cylin-
 50 der through the end opening *r* at the farther end of the casing onto the guide trough or chute *s*, or the delivery may be made in any common way, as into a receptacle or bin or onto a carrier-apron.

55 Ranging below the casing and in a longitudinal line thereof is an exhaust-pipe *D*, the same having a plurality of rising extensions *t t*, which enter at different points into the lower portion of the compartment 30 within
 60 the casing, and it is to be understood that the suction is to be maintained in the several chambers in the casing through said pipe and its branch connection.

F F, Fig. 4, represent guards, indicated as
 65 in the form of thin metallic plates, understood as extending from end to end of the casing and arranged in downwardly and out-

wardly inclined positions, being supported at their upper edges to a lower portion of the
 aforementioned partition 15 and having their 70 lower edge portions secured to the vertical joists, at the inner faces of the latter, which joists constitute the framing for the inclosing casing *A*. As clearly represented in Fig. 4,
 75 these guards effectually shield the lower screen-cylinder from the dust and dirt which is sifted out and drawn from the two upper cylinders, and yet ways for the passage of
 the dust downwardly to the suction-pipe are constituted at *u u* between the lower outer 80 surfaces of the guard-plates and the inner faces of the side walls of the lower compartment, such ways also establishing suction communication between the bottom of the
 lower compartment and the lower portions 85 of the two upper compartments.

Of course it is clear that the rags in their transits through the several cylinders are subject to the suction effects as well as the
 90 tumbling and sifting actions within the cylinders, so that by the time they are finally discharged at the last end opening *r* the dust and dirt has been effectively separated and withdrawn therefrom.

It is to be appreciated that the dust-guard 95 plates *F F*, arranged as described, not only serve as a shield for the third cylinder, but they also insure that there is a distinct and independent suction in each of the cylinder-
 containing compartments and in conjunction 100 with the intermediate partition 15 prevent dirt or dust which may spread laterally from the two upper screen-cylinders from entering the one from the other.

Having thus described my invention, what 105 I claim, and desire to secure by Letters Patent, is—

1. In a rag-dusting machine, in combination, a casing having therewithin a plurality of axially-parallel screen-cylinders with en- 110 trance and discharge openings for the rags into and from the ends thereof, fan-shafts rotatable in said cylinders having inclined blades, and means for rotating said shafts,
 115 means for conveying the rags from the final end of one cylinder into the initial end of the cylinder secondary thereto, and a suction-conduit connected with said casing for the purposes set forth.

2. In a rag-dusting machine, in combina- 120 tion, a casing, having a suction-conduit connected with a lower portion thereof, a screen-cylinder arranged in a lower portion of said casing and one or more screen-cylinders in
 the casing above said cylinder, the several 125 cylinders having entrance and discharge openings for the stock at respectively opposite ends thereof, means for rotating the cylinders, means for conducting the stock emerg-
 130 ing from the discharge end of an initial cylinder, into the entrance end of a succeeding cylinder, and a dust-guard wall between the lower cylinder and the cylinder or cylinders thereabove, the same being arranged non-ob-

structive to the exertion of suction by said conduit in the space in which the upper cylinders are located.

3. In a rag-dusting machine in combination, a casing, having a suction-conduit connected with a lower portion thereof, and having a compartment at its bottom, and two upper partition-separated compartments thereabove and in communication with the lower compartment, screen-cylinders arranged in the compartments having entrance and discharge openings for the stock at respectively opposite ends, fan-shafts rotatable in said cylinders, means for rotating the cylinders, and means for conducting the stock emerging from the discharge end of an initial cylinder, into the entrance end of a succeeding cylinder.

4. In a rag-dusting machine the casing having therein a lower compartment and the compartments 10 and 20 thereabove separated from each other and downwardly open, a suction-conduit connected with the lower portion of the lower compartment, endwise-open, longitudinally-ranging screen-cylinders, 1 and 2, arranged in the upper compartments, and a screen-cylinder 3 thereunder in the lower compartment, said casing having an entrance-opening through its end wall, leading into the first cylinder, and a discharge-opening through its opposite end wall adjacent the corresponding end of the first cylinder, and having an entrance-opening through the latter end wall, to the second cylinder, a carrier-apron arranged between the two last-named openings and means for imparting traveling movement thereto, and the said casing having a discharge-opening through its end wall adjacent the delivery end of the second cylinder, and having an entrance-opening in such wall adjacent the receiving end of the third cylinder, a rag-conduit arranged between the said latter-named openings, and a delivery-opening through the end of the casing corresponding to the discharging end of the third cylinder.

5. In a rag-dusting machine the casing having therein a lower compartment and the compartments 10 and 20 thereabove separated from each other and downwardly open, a suction-conduit connected with the lower portion of the lower compartment, endwise-open screen-cylinders, 1 and 2, arranged in the upper compartments, and a screen-cylinder 3 thereunder in the lower compartment, fan-shafts in the respective cylinders, and means for rotating the cylinders independently of said fan-shafts, said casing having an entrance-opening through its end wall, leading

into the first cylinder, and a discharge-opening through its opposite end wall adjacent the corresponding end of the first cylinder, and having an entrance-opening through the latter end wall leading into the second cylinder, a carrier-apron arranged between the two last-named openings and means for imparting traveling movement thereto, and the said casing having a discharge-opening through its end wall adjacent the delivery end of the second cylinder, and having an entrance-opening in the same wall adjacent the receiving end of the third cylinder, a chute or spout arranged between the said latter-named openings, and a delivery-opening through the end of the casing corresponding to the discharging end of the third cylinder.

6. In a rag-dusting machine, the casing having therein a lower compartment and the compartments 10 and 20 thereabove and the separating-partition 15 therefor, a suction-conduit connected with the lower portion of the lower compartment, endwise-open screen-cylinders, 1 and 2, arranged in the upper compartments, and a screen-cylinder 3 thereunder in the lower compartment, fan-shafts in the respective cylinders, and means for rotating the cylinders independently of said fan-shafts, the guard-plates F F supported by lower portions of the partition 15, and downwardly divergent, and having their lower portions separated from the side walls of the casing, said casing having an entrance-opening through its end wall, leading into the first cylinder, and a discharge-opening through its opposite end wall adjacent the corresponding end of the first cylinder, and having an entrance-opening through the latter end wall leading into the second cylinder, a carrier-apron arranged between the two last-named openings and means for imparting traveling movement thereto, and the said casing having a discharge-opening through its end wall adjacent the delivery end of the second cylinder, and having an entrance-opening in the same wall adjacent the receiving end of the third cylinder, a chute or spout arranged between the said latter-named openings, and a delivery-opening through the end of the casing corresponding to the discharging end of the third cylinder.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

EUGENE T. S. THAYER.

Witnesses:

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A. V. LEAHY.