

U. C. DAVIS.
DUSTING MACHINE.
APPLICATION FILED JUNE 23, 1909.

969,609.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

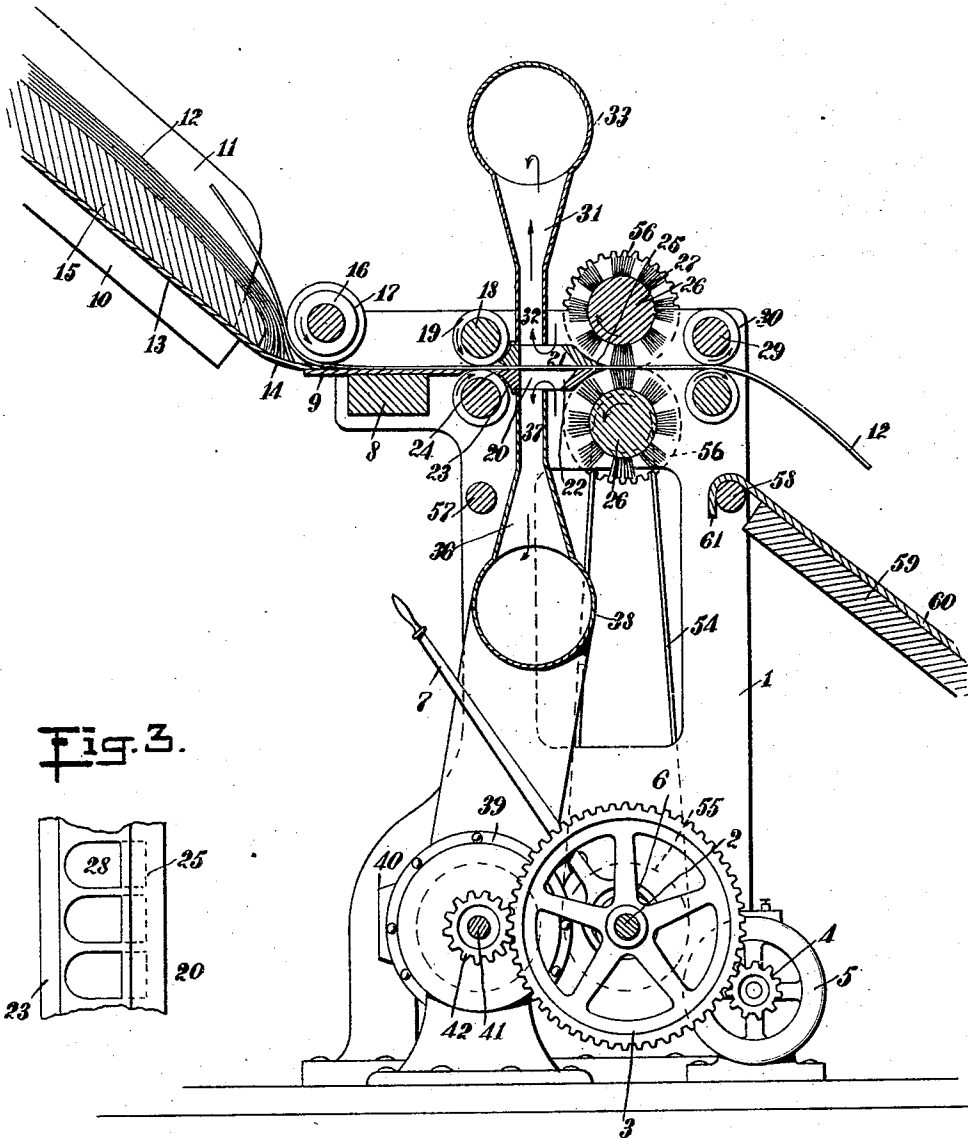
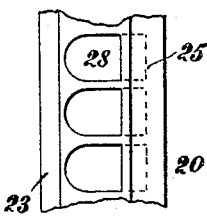


Fig. 3.



WITNESSES

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INVENTOR

Ulysses C. Davis
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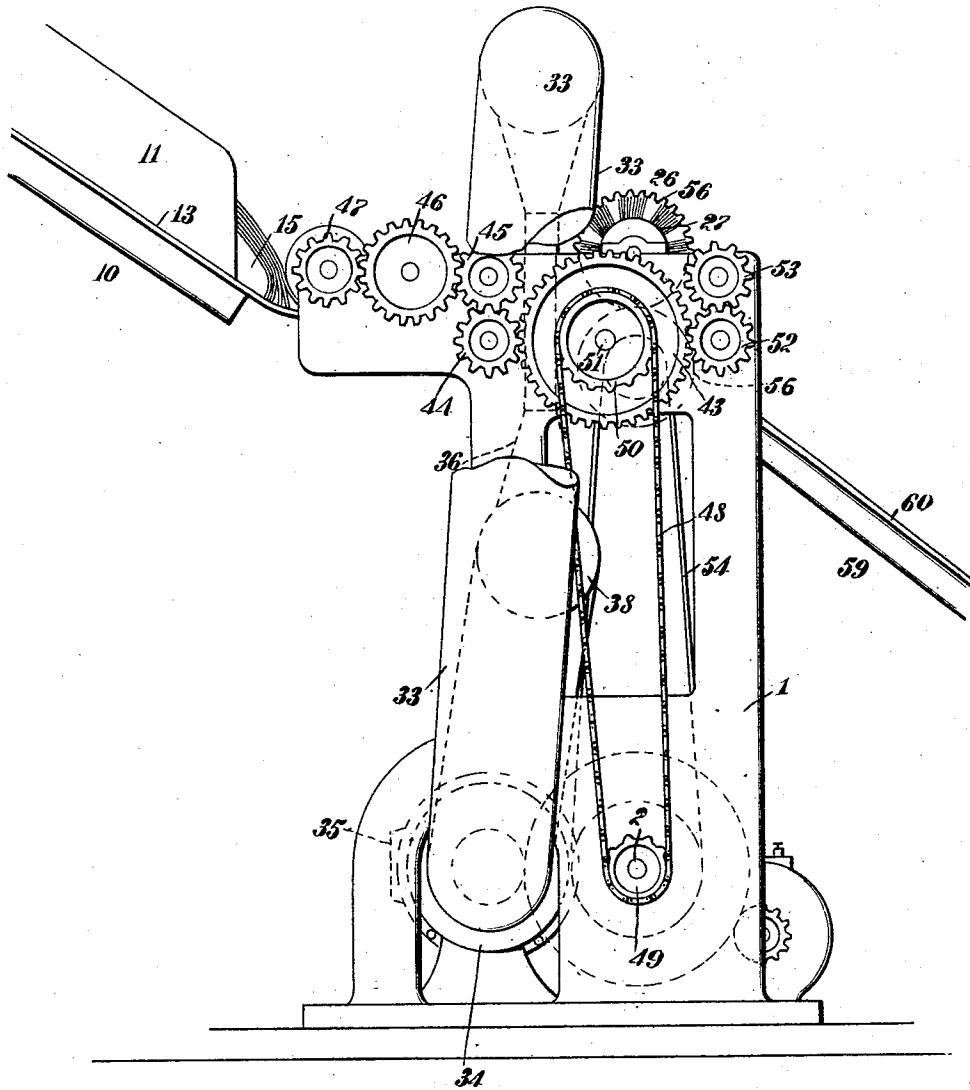
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2 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE

ULYSSES CECIL DAVIS, OF PITTSFIELD, MASSACHUSETTS.

DUSTING-MACHINE.

969,609.

Specification of Letters Patent.

Patented Sept. 6, 1910.

Application filed June 23, 1909. Serial No. 503,835.

To all whom it may concern:

Be it known that I, ULYSSES C. DAVIS, a citizen of the United States, and a resident of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Dusting-Machine, of which the following is a full, clear, and exact description.

This invention relates to a dusting machine for dusting bronzed paper, and the object of the invention is to produce a machine for this purpose which will operate upon the paper without necessitating the use of grippers for advancing the paper in the dusting operation.

Specifically the invention relates to the special means of dusting the paper and of removing the dust.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical central section taken through the machine in the direction in which the feeding movement of the paper takes place; Fig. 2 is a side elevation looking in the same direction, certain parts being broken away; and Fig. 3 is a plan showing a short portion of a comb or guide through which the paper passes during the dusting operation.

Referring more particularly to the parts, the frame of the machine consists of two side plates 1, 1, in the lower part of which a clutch shaft 2 is mounted. On this shaft there is a gear wheel 3 that is driven by a pinion 4 which is driven by a motor 5. By means of a clutch 6 operated by a clutch lever 7 the mechanism of the machine may be thrown into or out of operation, as desired. In the upper part of the machine a horizontal cross bar 8 is provided, upon which rests a small feed plate or table 9. Adjacent to this table there is provided an inclined feed trough 10 having side boards 11 which project upwardly to receive the edges of the paper sheets 12. The feed trough 10 is provided with a bottom plate 13, the lower end of which is formed into a curved guide 14 which extends down over the outer edge of the table 9, as indicated.

On this bottom plate 13 there rests a feed block 15 which is formed of wood, or similar material. The outer face of this block, near its lower edge, is curved or tapered slightly so that the lower edges of the sheets 12 normally extend beyond this lower edge and rest upon the curved guide face 14. The weight of the block is adapted to hold the face of the outermost sheet of paper against the face of the main feed roller 16. This feed roller is provided with rings 17 of rubber, or similar material, adapted to engage the sheets of paper frictionally and advance the same one by one into the dusting mechanism.

Near the inner edge of the table 9 a pair of auxiliary feed rollers 18 are provided, and these rollers have rings 19 of rubber, or similar material, which are adapted to press the sheet so as to advance it into a comb or guide 20. This comb is in the form of an elongated plate formed of two sections 21 and 22. These sections present flat faces which lie a slight distance apart, sufficient to permit the sheet of paper to pass between them. The butt edges of the sections are formed with concaved faces 23 which lie adjacent to the faces of the auxiliary rollers 18, and between the rollers the rear edges of the sections are cut away so as to form converging guide lips 24 which form a receiving mouth to take the forward edge of the paper as it advances from the rollers.

The forward edges of the comb sections are formed with sharp forwardly projecting noses presenting concaved arcuate faces 25. These faces 25 conform to the curvature of the brushing faces which are presented by brushes 26. These brushes are in the form of rollers having bristles 27, the ends of which pass along adjacent to the faces 25, as indicated in Fig. 1. The comb sections are formed throughout their length with a plurality of equidistant openings 28. The brushes 26 rotate in the direction indicated by the arrows thereupon, that is, they rotate in opposition to the direction of advance of the paper. Beyond the brushes 26, the paper passes between a pair of delivery rollers 29 which are provided with rings 30 adapted to press the opposite sides of the paper so as to pull it between the brushes, as indicated. When the paper is passing between the brushes, as indicated, it should be understood that the body of the sheet will be guided in mid-position between the brushes

so that the dust on the paper will be effectually removed from the paper.

In order to carry off the dust, I provide a draft system, and for this purpose, over the
 5 upper section 21 of the comb I provide an elongated suction nozzle 31 having a mouth 32 at the lower end thereof. This mouth rests against the upper side of the section 21, and its rear edge closes the rear sides of the
 10 openings 28. The forward edge of the mouth passes longitudinally of the machine, and leaves the forward portions of the openings 28 uncovered so that they are in communication with the atmosphere adjacent to
 15 the brushes. This suction nozzle 31 is in connection with a draft flue 33 which passes across to the left side of the machine, thence it passes downwardly and is connected with an exhaust fan 34 having a delivery nozzle
 20 35. A similar arrangement is adopted on the under side of the comb to remove the dust, comprising a suction nozzle 36 having a mouth 37, the upper end of which presses against the under side of the comb. This
 25 mouth closes the rear sides of the openings in the lower comb section, and leaves their forward portions open, as indicated. This nozzle 36 is connected with a draft flue 38 which extends downwardly. At the right
 30 side of the machine it connects with an exhaust fan or blower 39 having an outlet or delivery mouth 40. These fans 34 and 39 are mounted on a fan shaft 41 which is provided with a pinion 42 meshing with the
 35 aforesaid gear wheel 3, which enables the fans to be driven continuously.

Any suitable mechanism for driving the rollers may be adopted. I have provided a main driving gear wheel 43 on the left side
 40 of the frame which meshes with a pinion 44 on the lower roller 18. A similar pinion 45 of equal diameter meshes with the pinion 44 so that driving the lower roller will also drive the upper roller. The rollers rotate
 45 in opposite directions. The main feed roller 16 is driven by means of an idle gear 46 from the pinion 45, said idle gear meshing with a pinion 47 on the roller 16, as indicated. The main gear wheel 43 is driven by
 50 a sprocket chain 48 from a sprocket wheel 49 on the shaft 2, said sprocket chain passing over a suitable sprocket wheel 50 which is rigid with the gear wheel 43 and mounted to rotate therewith on a stub shaft 51. The
 55 delivery rollers 29 are provided with pinions 52 and 53 which mesh together, the pinion 52 also meshing with the gear wheel 43.

In order to drive the brushes 26 I provide a belt 54 which passes around a belt wheel
 60 55 mounted on the shaft 2 of the opposite side of the machine. The upper end of this belt passes around the end of the lower roller or brush 26 so that it rotates this brush in the direction of the arrow. The end of the
 65 lower brush or roller is provided with a gear

wheel 56 which meshes with a similar gear wheel 56 on the end of the upper roller. In this way the two brushes will be driven at the same speed and in opposite directions.

The frame plates 1, 1, are connected by
 70 horizontal brace bars 57 and 58, the latter of which is on the delivery side of the machine and supports the upper end of an inclined delivery table 59. For this purpose the delivery table is provided with a plate
 75 60, the upper end of which is bent over so as to form a hook 61 engaging over the brace 58, as shown.

In the operation of the machine the weight of the feed block 15 maintains the lower
 80 portion of the pad of sheets 12 in engagement with the main feed roller 16. This roller advances the sheets one by one to the auxiliary rollers 18, and these in turn advance it through the comb. As it passes
 85 from the nose of the comb it comes into contact with the bristles of the brushes 26 which remove the dust and drive it in a rearward direction. On account of the suction fans 34 and 39, an inward draft or suction is produced, as indicated by the arrows, at the
 90 openings 28 which draws the dust into the nozzles 31 and 36. This dust may be delivered into a trap or dust filter connected with the delivery nozzles 35 and 36, if desired.
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Attention is called to the fact that the presence of the draft adjacent to the sheets of paper as they pass through the comb does not tend in any way to press them laterally, which might develop a frictional resistance
 100 to their passage. It will be noted that the openings 28 are on both sides of the passing sheet so that the draft created by the fans is balanced.

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

1. In a dusting machine of the class described, the combination with a frame, a guide for the paper mounted on said frame, feed rollers adjacent to said guide and adapted to advance sheets of paper through the same, and brushes adjacent to said guide and adapted to remove the dust, the said guide having openings therein at both
 110 faces of the passing paper, of pneumatic means having intake mouths engaging opposite sides of the guide at the said openings and adapted to withdraw the dust.
 115

2. In a machine of the class described, in
 120 combination, a frame, a guide comb having openings therein, means for advancing the paper through said guide comb, rotatable brushes adapted to brush the faces of the paper as it passes from said guide comb, and suction nozzles partially closing said openings and adapted to remove the dust in the vicinity of said guide comb.
 125

3. In a machine of the class described, in
 130 combination, a frame, a guide comb pre-

senting an upper section and a lower section and having openings passing therethrough, means for advancing the paper between said sections, means for brushing the paper beyond said guide comb and so as to throw the dust toward said guide comb, and suction nozzles partially closing said openings and adapted to withdraw the dust.

4. In a machine of the class described, in combination, a guide comb presenting oppositely disposed sections and having openings passing therethrough, rotatable brushes adapted to engage the paper as it passes from said guide comb and adapted to throw the dust toward said comb, and suction nozzles closing the sides of said openings remote from said brushes and leaving the portions of said openings adjacent to said brushes partially open, whereby an inward draft at said nozzles will remove the dust.

5. In a machine of the class described, in combination, a frame, a guide comb mounted in said frame and having openings therethrough, feed rollers adjacent to said comb, means for driving said rollers in a direction to advance the paper through said comb, brushes adjacent to said comb and adapted to throw the dust rearwardly with respect to the direction of advance of the paper, delivery rollers adapted to receive the paper from said brushes, means for rotating said delivery rollers to advance the paper, and suction nozzles engaging said comb and partially closing said openings and adapted to withdraw the dust.

6. In a dusting machine of the class de-

scribed, the combination with a frame, a guide for the paper mounted in said frame, means for advancing the paper through the guide, the said guide having openings therein at both faces of the passing paper, and brushes adjacent to the delivery side of the guide, of suction nozzles engaging opposite sides of the guide at the said openings and adapted to withdraw the dust.

7. In a dusting machine of the class described, the combination with a frame, a guide for the paper mounted in said frame, the said guide being formed in sections having their adjacent faces flat and spaced apart for the passage of the paper, each of said sections having openings therein, means for advancing the paper through said guide, the openings in said sections of the guide being at both faces of the passing sheet, said guide having concaved faces on the delivery side thereof, and brushes adjacent to the delivery side of the guide and adapted to remove the dust, of pneumatic intake mouths disposed on opposite sides of the path of said paper, the said mouths engaging the guide sections, and the rear edges of said mouths closing the rear sides of the openings in said guide sections.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ULYSSES CECIL DAVIS. [L.S.]

Witnesses:

GEORGE WM. WALSH,
HENRY WEBER.