(No Model.) 3 Sheets—Sheet 1.

H. A. WIDMAN, Jr.

CARPET CLEANER AND DUST CONVEYER.

No. 383,422. Patented May 22, 1888.

Fig. I.

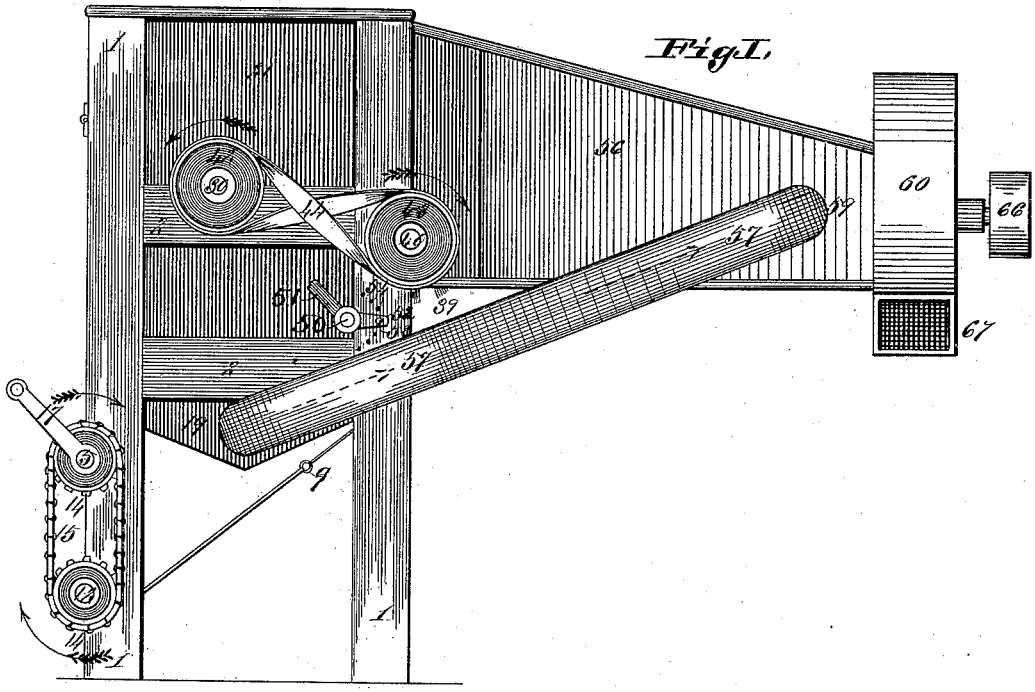
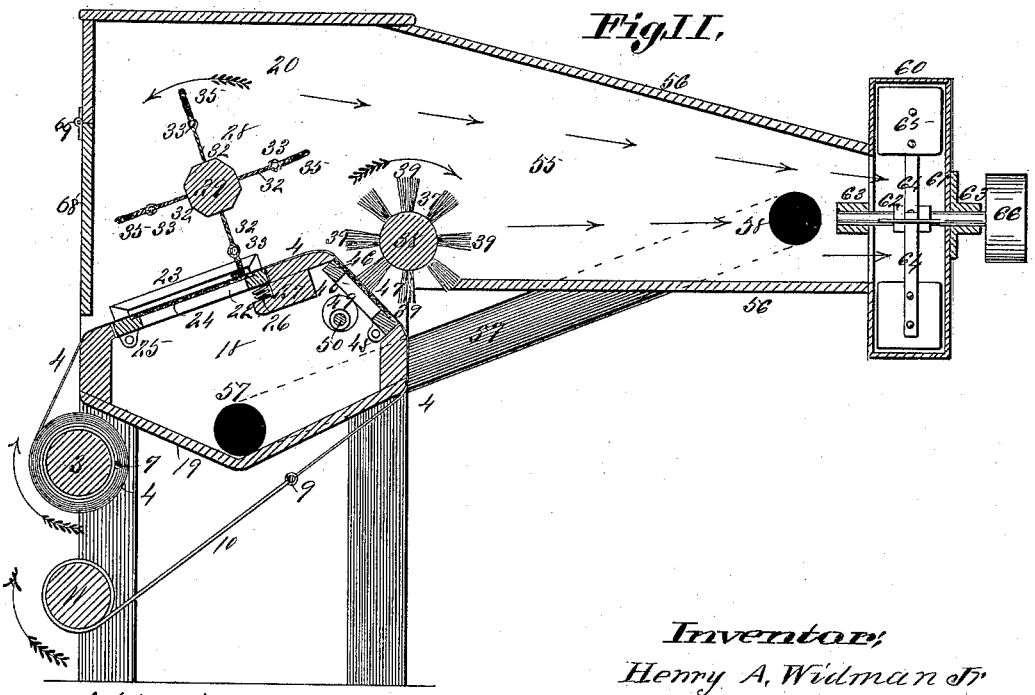


Fig. II.



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(No Model.) 3 Sheets—Sheet 2.

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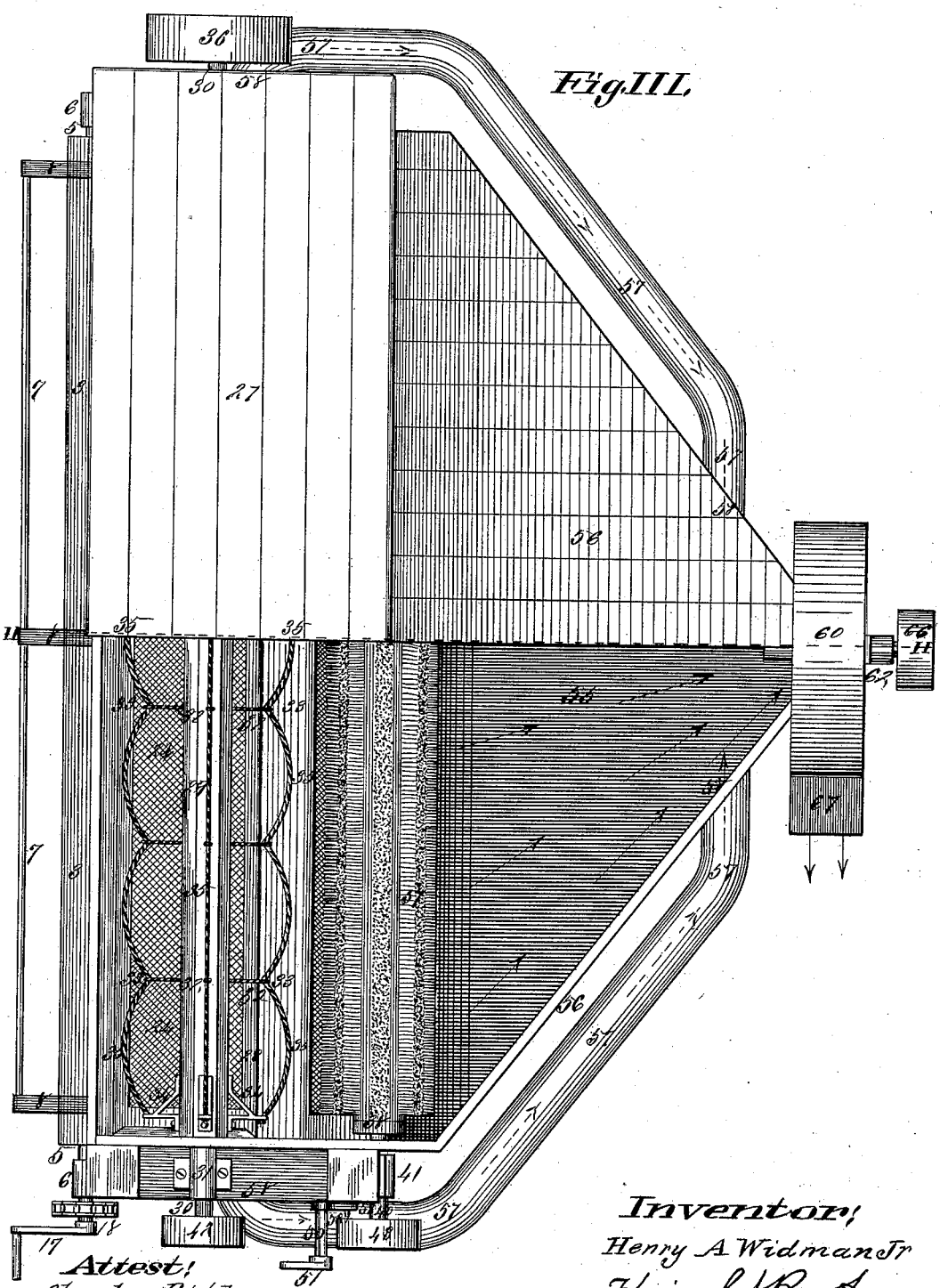
Fig. III.



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(No Model.) 3 Sheets—Sheet 3.

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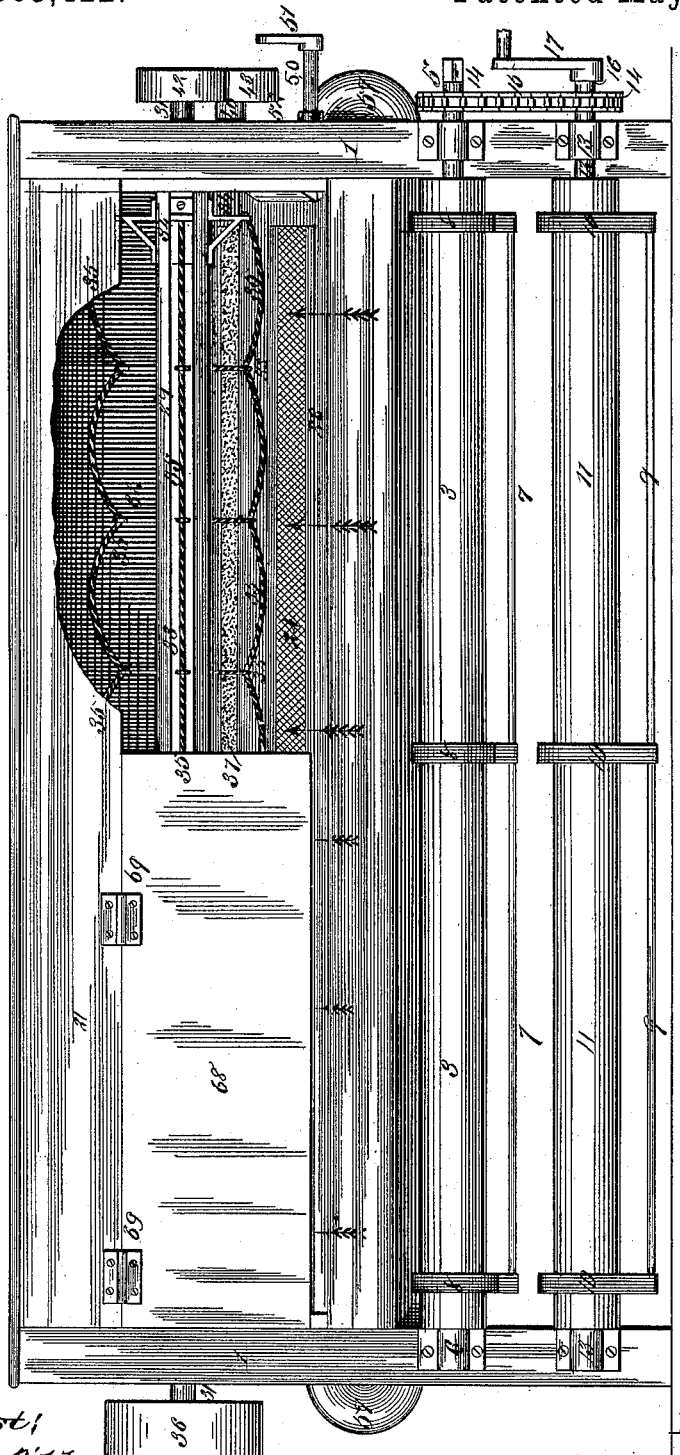

Fig. V.

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UNITED STATES PATENT OFFICE.

HENRY A. WIDMAN, JR., OF ST. LOUIS, MISSOURI.

CARPET-CLEANER AND DUST-CONVEYER.

SPECIFICATION forming part of Letters Patent No. 383,422, dated May 22, 1888.

Application filed July 2, 1887. Serial No. 243,217. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WIDMAN, Jr., of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Carpet-Cleaners and Dust-Conveyers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure I is an end view of the machine, showing the rotary brush and beater shafts and their band-pulley, the crank of the eccentric that adjusts the bed-screen beneath the brush, the crank sprocket-gear for rotating the carpet in the course of cleaning, the rotary fan-drum, and conductor through which the dust is drawn and expelled. Fig. II is a vertical cross-section taken on line II II, Fig. III, showing the circuit of the carpet from roller to roller under the action of the rotary beater and brush with the adjusting and adjustable bed-screens, the dust-conductors, and the rotary fan with its pulley-shaft. Fig. III is a top view of the machine with the cover half removed, showing the action of the rotary beater and brush with the course of the dust from the carpet to and through the rotary fan *via* the extension-chamber above and the dust-flues beneath. Fig. IV is a side view with half of the door removed and part broken away, showing the rotary beater, the drums on which the carpet is to be wound, the attachment straps from said drums, and rods to which the carpet is to be secured. It also shows the crank sprocket-wheel gear that moves the carpet beneath the rotary beater and brush in the course of cleaning.

This invention relates to devices for machine-cleaning of carpets; and the invention consists in features of novelty, hereinafter fully described, and pointed out in the claims.

Referring to the drawings, in which similar figures of reference indicate the same parts in all the views, 1 represents the vertical posts of my machine-frame, and 2 are the cross-ties that connect said posts.

3 is the drum reel or cylinder on which the carpet 4 is reeled preparatory to cleaning. The said drum-reel runs on the shaft or spindles 5 in box-bearers 6. One end of the carpet is secured by overlap-stitching or otherwise to a long iron rod, 7, which itself is secured by leather straps 8, or other suitable means, to the drum 3, to which the straps are fastened. The other end of the carpet is secured, as before described, to a second horizontal iron rod, 9, which is secured by straps 10, or other suitable means, to a second drum reel or cylinder, 11, to which the straps are fastened. The drum-reel 11 runs on a shaft or spindles, 12, that run in bearing-boxes 13.

Sprocket-wheels 14 14 are relatively rigidly secured on the shafts or spindles 5 and 12 of the two drums at their operative ends, and are co-operatively run by the drive-chain 15. One or both of the shafts 5 and 12 are formed square-sided at their operative ends 16 beyond the sprocket-wheels to seat the crank-handle 17; or said crank-handle may be screw or key seated on its shaft, if preferred.

18 represents the lower dust-chamber boxed in by casing 19, and 20 is the upper dust-chamber boxed in by casing 21.

An elongated opening, 22, forming a dust-vent in the inclined upper casing of the lower dust-chamber, is surmounted by a light frame, 23, in which a bed-screen, 24, supports the carpet, and at the same time permits the escape of dust into the chamber beneath while the carpet is being beaten.

The screen-frame is secured at its lower side to the casing by hinges 25, and is spring-bedded under its upper edge by spiral springs 26, that are seated on a pendent bracket, 27, which is secured to the casing to give the screen-bed beneath the carpet an elastic reactionary movement under the flagellation of the rotary beater 28 above it.

The rotary beater is formed as follows: Rotating drum-shaft 29, with spindles 30, that run in box-bearings 31, is secured on the upper cross-ties of the frame. Attached to said drum are short loop-cords 32, which at their outer extremities hold metal eyelets 33, the cords turning around the concavo-convex flanges of the eyelet and being embraced by said flanges. Four angle-brackets, 34, with perforations at their outer extremities to seat the ends of the beater-cords, are secured at and to each end of the drum-shaft. The beater-cords 35 are secured in the perforations of said brackets by having their ends knotted or otherwise

fastened, and the rope intermediately between the brackets passes through the aforesaid eyelets of the loop-cords and hangs loosely pendent between its points of attachment in the eyelets of the loop-cords, as shown in Figs. III and IV.

On one end of the drum-shaft, or on the projecting end of one of its spindle-bearing shafts, is rigidly secured the drive-pulley or band-wheel 36, which operates the rotary beater, and also the rotating brush 37. The band-wheel 36 may be driven by steam or horse power or by any other suitable means. When set in motion, it will be seen that the loop-cords, as shown in Figs. II, III, and IV, assume a radial position relatively to the drum-shaft, and so carry the beater-ropes around in a favorable position to beat the carpet. The rotary brush 37 is also formed on a drum-shaft, 38, from which the bunches of bristles 39 radially project. The spindles 40 of said shaft run in box-bearings 41, secured to the forward posts of the frame.

A pulley or band wheel, 42, rigidly secured on the projecting end of the spindle of the beater-drum shaft at the reverse end to that which carries the main driving-pulley, is co-operatively connected with the pulley or band wheel 43 by the endless belt 44.

An elongated aperture, 45, in the inclined forward end of the casing of the lower dust-chamber forms a second dust-vent into said chamber immediately beneath the action of the rotary brush. Said opening is surmounted by a light frame, 46, in which a bed-screen, 47, supports the carpet, and at the same time permits the escape of dust into the chamber beneath while the carpet is being brushed.

The screen-frame is secured at its lower edge to the casing of said dust-chamber by hinges 48, and is adjustably supported to increase or diminish the pressure of the carpet against the rotary brush above by two eccentrics, 49, that work on the shaft 50, and against which the ends of the screen-frame rest. The said shaft is turned by the crank-handle 51 to thus change the position of the eccentrics, and consequently elevate or lower the screen. A projecting arm, 52, rigidly attached to the shaft 50, is provided with a set screw or pin, 53, that works through it and enters one of a series of holes, 54, in the adjoining post to hold the eccentrics, with the screen that surmounts them, to enforce the required pressure of the carpet against the rotary brush.

55 represents a projecting extension of the upper dust-chamber, and is open to said chamber. It is inclosed, in conjunction therewith, by the casing 56. Dust-tubes 57 connect the lower dust-chamber, 18, with the projected extension 55 of the upper dust-chamber near its forward end, the entrance of said tube into the latter chamber being shown at its exit at 59.

60 represents the fan case or drum, which is secured to the front end of the extension of the upper dust-chamber. The rotary fan 61, whose shaft 62 works in bearing-boxes 63, attached to the fan-case, has radial arms 64 secured to said shaft that at their outer extremities carry the paddles 65. The shaft projects beyond its outer bearings in the case and has rigidly secured to it the drive-pulley or band-wheel 66, which may be driven by any suitable power, as is the main drive-pulley or band-wheel 36, that operates the rotary beater and brush.

The fan-case is provided with a discharge-mouth, 67, on its under side, to which may be connected any kind of tube or conductor to convey the dust to any desired point of delivery. Pendent doors 68 are secured above to the casing of the upper dust-chamber by hinges 69, on which they work.

The operation of the machine is as follows: One end of the carpet is secured to the iron rod 7 by overlap-stitching or by any other suitable means, the said rod being connected by straps to the drum-reel 3. The crank-handle 17 is then turned until a sufficient length of the carpet has been reeled onto the drum 3, to leave just a sufficient length loose at the other end of the carpet to enable the operator to conveniently secure it to the rod 9 by the same means used in fastening the first end, as shown in Figs. I and II.

As the straps from the rod 9 secure it to the drum-reel 11 by the same means the rod 7 is secured to the reel 3, and the drive-chain 15 co-operatively connects the sprocket-wheels on the shafts of the two reels, it follows that there is a continuous actionary circuit of the combined carpet, attachment straps, and drive-chain, (the chain closing and completing the circuit.) The crank-handle 17 is then turned backward in the reverse direction to that shown by the arrows (see Figs. I and II) until the front end of the carpet is brought under the rotary beater; also, the eccentrics 49, that back the screen 24, are adjusted relatively to the desired pressure of the rotary brush on the carpet by turning the crank-handle 51 of their shaft. The power is then applied by the connecting-band from the same being thrown over the band-wheel 36, that drives the rotary beater and brush, and the application of a second band (that may be driven by the same power) to the band-wheel 66, that drives the rotary fan-blower. By turning the crank 17 of the upper drum-reel shaft the carpet is kept moving during the process of cleaning under the operation of the rotary beater and brush and exhaust of the rotary fan, and as the sprocket-wheels of both reel-shafts are co operatively connected by the chain 15, not only is the soiled carpet unwound from the drum-reel 3, but also after cleaning it is by the one operation rewound onto the drum-reel 11. The carpet is then disconnected from rod 7, and is conveniently wound into a roll as it comes off the last-mentioned drum-reel and disconnected from rod 9. It is then ready for return to its owner.

It will be seen that during the whole cleaning process the action of the rotary fan keeps

up a continuous exhaust from both the upper and lower dust-chambers, clearing the dust away as fast as it is dislodged from the carpet and even helping to dislodge it, so that it materially assists the process of cleaning. It is also evident that by the attachment of a pipe or conductor to the discharge-mouth 66 of the fan-case the dust can be discharged whenever desired. For instance, the machine can be worked within a building under cover in all weathers, and require but a short conductor to convey the dust through a rear wall of the building, where it will not inconvenience the operators or any one else, as the only discharge from the dust-chambers is *via* the conductor, and that discharge is preferably beyond the building where the machine is worked.

The machine is preferably made sufficiently wide to take in carpets of any common width without ripping the seams; but I do not so confine myself, for it is evident that machines may be made either narrower or wider without any departure from the essential features of the invention.

The hanging doors 68 prevent the retrograde escape of the dust from the upper dust-chamber, allow free ingress to the air beneath said doors, confine the action of the rotary fan-blast within the chamber, with also the centrifugal air-current engendered by the rotary beater, deflecting it onto the carpet, and so assisting to drive the dust dislodged by the beater more effectually within the influence of the fan-exhaust.

I claim as my invention—

1. In a carpet-cleaning machine, the combination of the two reels from and upon which the carpet is respectively unwound and wound, an upper and lower casing containing the upper and lower dust-chambers, respectively, a reactionary bed-frame supported upon the lower casing, provided with a screened opening over which the carpet passes, a revoluble shaft having thereon rope-beaters adapted to beat the carpet above said screened opening, a revoluble shaft provided with bristles adapted to brush the loosened dirt from the carpet, and suitable means for operating the reels and shafts, substantially as set forth.

2. In a carpet-cleaning machine, the combination of the casing over which the carpet is adapted to be passed, a beater, a frame pivoted within an opening in the casing and provided with a screen secured within its sides, a brush adapted to operate above the opening, and means for adjusting the frame within the opening relatively to the brush and the carpet, consisting of a shaft provided with eccentrics adapted to bear upon the frame, and means for securing said shaft when turned in one or the other direction, substantially as and for the purpose set forth.

3. In a carpet-cleaning machine, the combination of the casing over which the carpet is adapted to be passed, a frame pivoted within an opening in the casing and provided with a screen secured therein, a revoluble brush above said opening in the casing, a shaft mounted in the casing and provided with a crank at one end outside of the casing, eccentrics fixed to the shaft and adapted to engage said frame, an arm rigidly attached to the crank end of the shaft, provided with a projection adapted to engage any one of a series of holes in the casing, whereby the eccentrics are held in any desired position against the frame, substantially as set forth.

4. In a carpet-cleaning machine, the combination of the upper casing, the lower casing provided with openings over which the carpet is adapted to be passed, the beater and brush mounted in the upper casing above said openings, an extension-casing connecting with the upper casing, dust tubes or pipes communicating with the lower dust-casing and the forward part of said extension-casing, and a fan-case secured to the end of said extension-casing, provided with a rotary fan, whereby the dust is exhausted from both the upper and lower casings simultaneously, substantially as set forth.

5. In a carpet-cleaning machine, the combination of the rotary beater, on the shaft of which is rigidly secured the band-wheel 36, that drives the machine, and the band-wheel 42, that, with the band-wheel 43 on the shaft of the rotary brush, co-operatively carries the endless belt 44, arranged to drive the beater and brush simultaneously, and the rotary fan 61, running on its shaft 62, and driven by the band-wheel 66 on said shaft, and producing an exhaust from the dust-chamber 18 below the carpet through the dust-tubes 57, and from the dust-chamber 20 above the carpet through the extension dust-chamber 55, that connects the chamber 20 with the case 60 of the rotary fan, arranged to draw the dust from the carpet as it is cleaned and discharge it through the mouth 67 of the fan-case, substantially as described, and for the purpose set forth.

HENRY A. WIDMAN, JR.

In presence of—
BENJN. A. KNIGHT,
SAML. KNIGHT.