

A. J. MEIER.
 SANITARY CARPET CLEANER.
 APPLICATION FILED APR. 25, 1907.

935,919.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

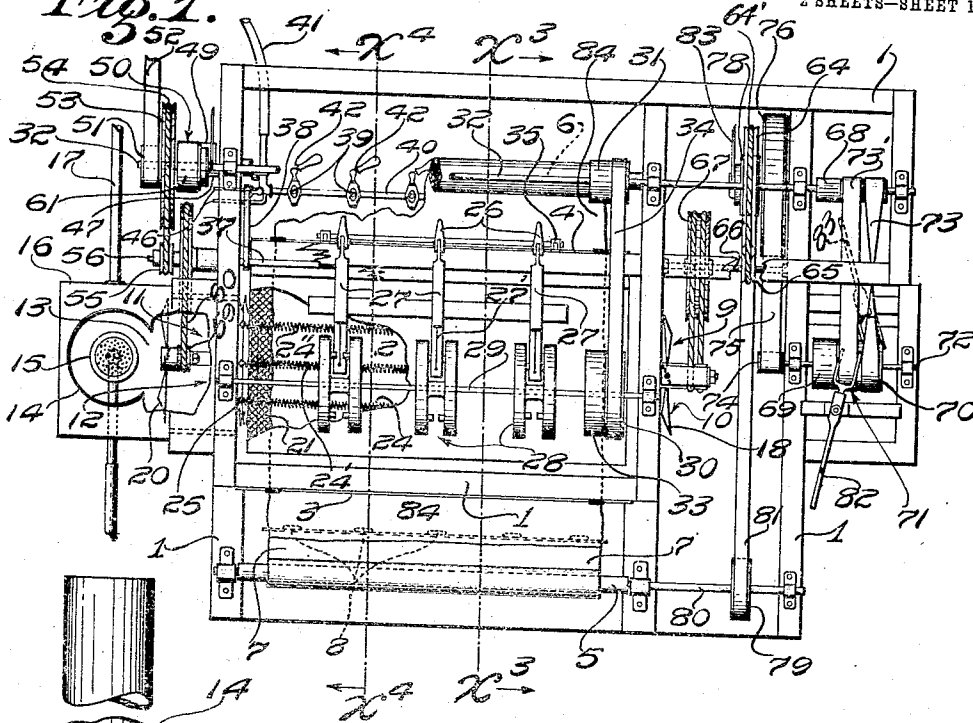
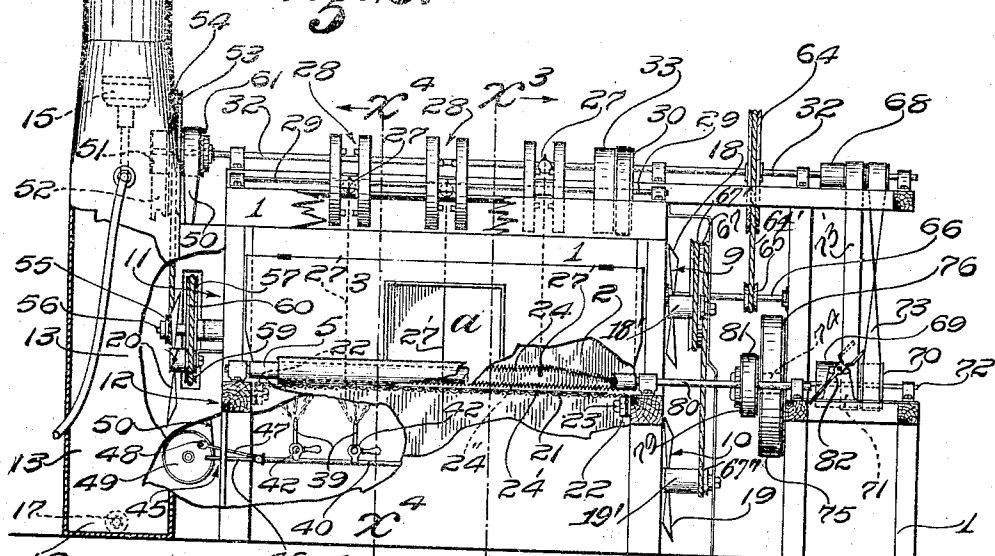


Fig. 2.



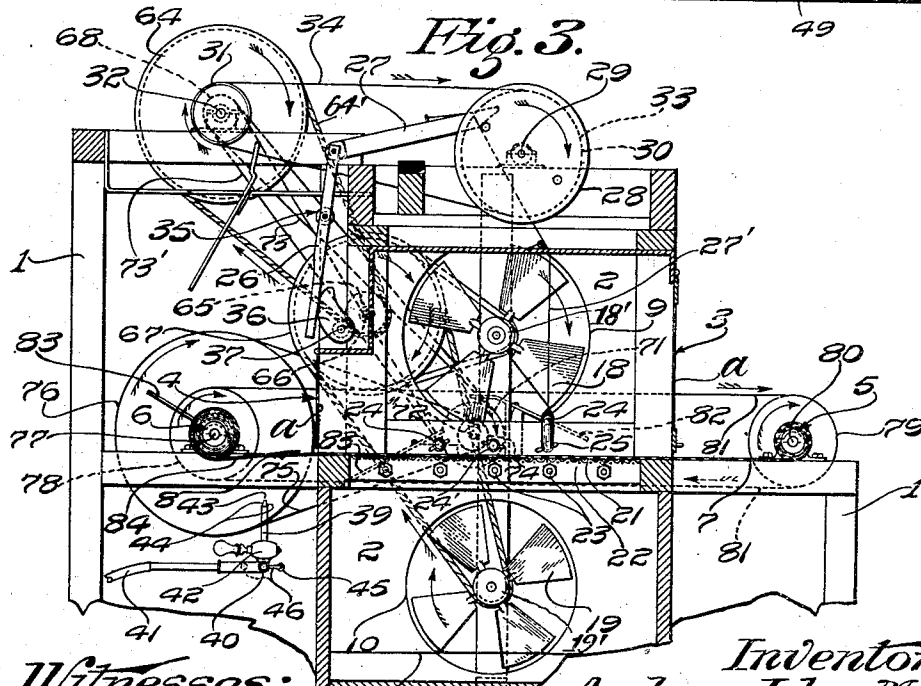
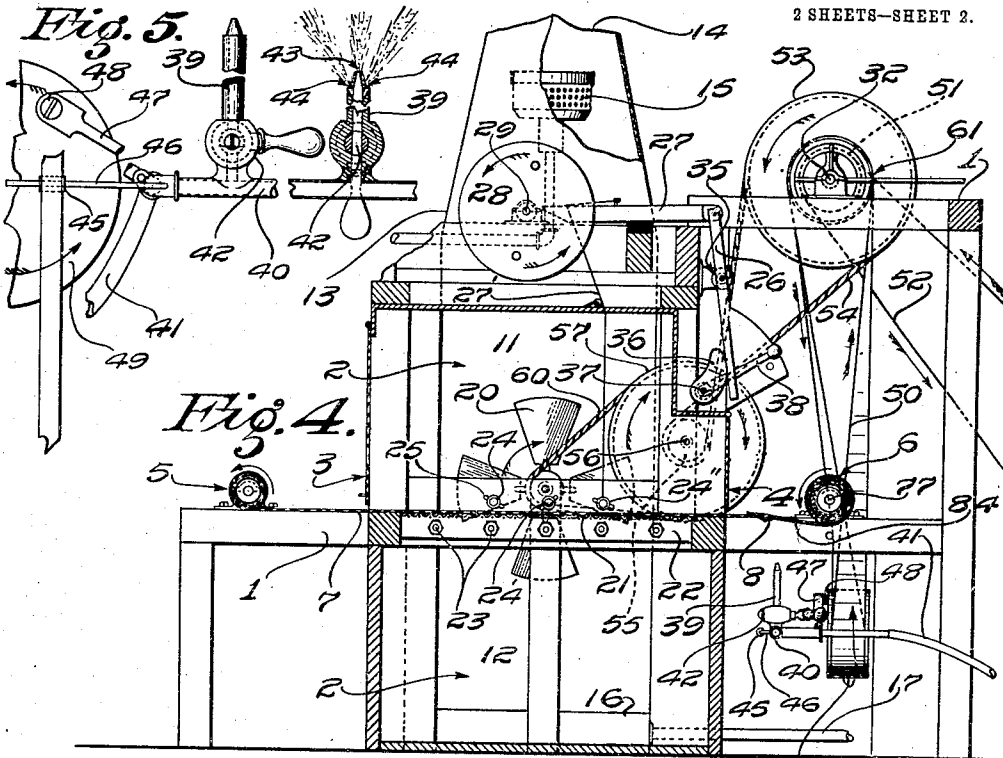
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 by *James R. Townsend*
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ANDREW JOHN MEIER, OF LOS ANGELES, CALIFORNIA.

SANITARY CARPET-CLEANER.

935,919.

Specification of Letters Patent.

Patented Oct. 5, 1909.

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To all whom it may concern:

Be it known that I, ANDREW JOHN MEIER, a citizen of the United States, residing at Longbeach, in the county of Los Angeles and State of California, have invented a new and useful Sanitary Carpet-Cleaner, of which the following is a specification.

It is of the objects of this invention to provide a carpet cleaner which will perfectly remove from carpets and rugs and the like, all dirt and dust that can be removed therefrom in the dry state, and which will dispose of the dust without expelling it into the open air; to accomplish such cleaning without damage to the fabric; to provide for treating the carpet or rug chemically as by ammonia or other cleaning agent, as the carpet or rug passes through the machine; to accomplish the cleaning without wrinkling or mussing the carpet or rug; to enable the operator to operate at will for a greater or less time upon any portion or portions of the carpet or rug as the same may require greater or less cleaning action thereon; to immediately release from each portion of the fabric the dust and dirt contained therein, and to carry it away without bringing it into contact with other portions of the carpet or rug being cleaned; to act upon the fabric in the most advantageous way for dislodging the dust and dirt therein; and also to accomplish these objects by simple mechanism, easy to construct, and not liable to get out of repair. The invention may be carried out in various forms of construction.

The accompanying drawings illustrate the invention in the form I at present deem most desirable.

Figure 1 is a plan view of a sanitary carpet-cleaning device embodying this invention, parts being broken away to expose parts that would otherwise be hidden. Fig. 2 is a front elevation of the same, portions being broken away to expose interior parts that would otherwise be hidden. Fig. 3 is a section on line x^3-x^3 , Figs. 1 and 2, looking to the right. Fig. 4 is a section on line x^4-x^4 , Figs. 1 and 2, looking to the left. Fig. 5 is a fragmental detail partly in section, showing the spraying means for treat-

ing the carpet or rug chemically or with cleansing agents, as ammonia and the like.

1 is the frame of the machine provided with a cleaning chamber 2, portions of the front and rear sides of which are formed of swinging panels or doors 3, 4, at front and back, provided with transparent panes a .

5, 6, designate front and rear take-up rollers at the front and rear sides respectively of the cleaning chamber, each provided with fastening means in the usual manner, by which the carpet or rug to be cleaned may be attached at its ends to the front and rear rollers respectively; the body of the rug extending through the cleaning chamber and beneath the hinged doors or panels 3 and 4. Said fastening means may consist of a strip of flexible material as canvas, or the like, fastened to the rollers front and rear and of sufficient length to pass from one roller to the other, so that when a rug has been cleaned and wound upon one of the rollers, the fastening strip of the other roller will have been drawn through the cleaning chamber and brought onto the side thereof on which the rug or carpet has been fully wound, so that the strip may be unfastened from the rug or carpet and will be in position to be attached to the next rug or carpet to be operated upon and will be ready to draw the same through the cleaning chamber.

The fabric to be cleaned may be fastened to the fastening strips 7 by any suitable means, as by safety pins 8. The cleaning chamber 2 is open at both ends above and below the plane in which the carpet or rug will extend when stretched from roller to roller. One end of said chamber is arranged to receive air from a direct source of air supply, and may be open to receive air directly from the open air, as indicated by the inlet orifices 9 and 10.

Upper and lower outlet orifices 11 and 12 open into the dust-chamber 13 which communicates at the top with a stack or any other suitable air outlet 14. The upper end of the dust-chamber may be formed by the lower end of the stack. It tapers upwardly, and a sprinkler 15 is arranged to direct sprays of water upwardly and out-

wardly toward the walls of the dust-chamber so as to wash the dust out of the air and prevent the dust and dirt from passing up out of the dust-chamber. The bottom of the dust-chamber is formed as a water-holding receptacle 16 having an overflow 17 through which the water may flow after the dust has been deposited in the receptacle 16. Draft appliances, as the blowers or fans 18, 19, and the suction-fan 20 are provided, the blowers at the inlet orifices and the suction-fan at the outlet orifice directing air through the cleaning-chamber to the dust-chamber.

21 designates a foraminous resilient fabric supporter in the form of an open resilient woven wire sheet, corresponding in its character to ordinary woven wire mattress springs; the same being supported at the opposite ends of the machine by any suitable means, preferably comprising bars 22 and nuts 23.

24, 24', 24'' designate carpet pounders in the form of coil springs arranged above the fabric support 21 and supported at their ends respectively by fastening means 25 in the form of screw-eyes screwed into the frame 1 at opposite ends of the cleaning chamber. The tension of the mattress springs is maintained by the bars 22 secured by the nuts 23 and the tension of the coil springs that form the carpet pounder is maintained by the screw-eyes. Suitable means are provided for drawing the resilient pounders thus formed away from the fabric support and then releasing the same to allow the tension thereof to operate to cause the pounders to forcibly strike the rug, carpet or other fabric supported by the fabric support 21. A plurality of the pounders is provided and the means for drawing the same away from the fabric support are severally connected to said pounders at different distances from the end thereof, respectively, so that one of said pounders may most forcibly strike the carpet, rug or other fabric to be cleaned at the middle thereof, while others of the pounders may be made to strike said fabric most forcibly at one or the other ends thereof.

In practice I have used three coil springs for the purpose of pounding the carpet or rug. In actual practice the several pounders will be operated in alternation. The operation of the pounders may be accomplished by various means. The means I have employed comprise levers 27 connected by connections 27' with the pounders respectively, and operated by cams 28, mounted on a shaft 29, driven by a pulley 30, which may be driven by a belt 34 from a pulley 31, on line shaft 32. An idler 33 is provided on shaft 29 upon which belt 34 may run freely when it is desired to stop the pounding apparatus.

The levers 27 are adjustably mounted by means of shifting frame 26, which is pivoted at 35 and is adjustable by a cam 36, mounted on a shaft 37 controlled by a lever 38.

Various inter-connections for the simultaneous and intermittent driving of the various parts of the machine may be provided and will be hereinafter described.

For the purpose of chemically treating the carpet as by ammonia or germicides, or other cleansing materials, a spraying device comprising nozzles 39 mounted on and opening from a reciprocating pipe 40, is provided; said pipe being connected by flexible hose 41 with a suitable supply receptacle, not shown, for the cleansing agent. The several nozzles are controlled by valves 42, and may have a plurality of outlets, as the central outlet 43, and other outlets 44 arranged around the central outlet. These nozzles are arranged to direct the cleansing agent upwardly against the underside of the fabric to be treated, and extend in a line across the machine underneath the space between the two rollers, and preferably on that side of the machine from which the cleaned fabric finally emerges.

45 designates ways for supporting rods 46 which carry the pipe 40.

47 is a pitman connecting the spray pipe with the wrist-pin 48 of the pulley 49 driven with the other machinery of the apparatus, so that when the belt 50 is driven, the spray-pipe and its nozzles will be rapidly reciprocated transversely of the machine, underneath the fabric that is to be cleaned. The cleansing agent will be placed under sufficient pressure in the source from which it is drawn, to cause the cleansing material to be driven up against and into the fabric to be cleansed. The purpose of this is to purify the fabric that is being wound upon the final take-up roller.

The line shaft 32 has mounted on its extremity a pulley 51 which is connected by a belt 52 with any source of power, not shown, for operating the apparatus. A grooved wheel 53 is likewise mounted on the shaft 32, and is connected by a crossed belt 54 with pulley 55 mounted on the counter shaft 56, for the purpose of driving the fan or blower 20 located in the dust chamber.

Upon the shaft 56 is mounted a large grooved wheel 57 which drives a small grooved wheel 59 by means of belt 60. The required additional speed of the fan 20 is obtained by the drive to the counter-shaft 56 and thence to the grooved wheel 59 which is fixed to the fan 20. On said shaft 32 is a friction-clutch-pulley 61 which is connected by the crossed belt 50 with the pulley 49 for reciprocating the spraying apparatus.

A pulley 64 is mounted on the shaft 32 and connected by a belt 64' with pulley 65 on the countershaft 66 on which is mounted a pulley 67 arranged to operate the fans 18 and 19, the former through belt 67' and pulley 18' and the latter through belt 67'' and pulley 19'. Said pulleys 18' and 19' are fixed to their fans 18 and 19 respectively.

68 is a long driving pulley on the shaft 32 designed to be connected alternately with idlers 69 and 70, and with a fixed pulley 71; all of which are mounted on a countershaft 72.

Crossed and straight belts 73, 73' are arranged to be driven by the pulley 68 and to alternately drive the fixed pulley 71, the idler 69 being provided for the straight belt 73' and the idler 70 being provided for the cross belt 73 to carry said belts respectively, when running idle. By this construction when belts 73, 73' are respectively running on pulleys 70 and 69, the countershaft 72 will remain stationary. By shifting either the one or the other belt onto the fixed pulley 71, the shaft will be driven in one or the other direction depending on whether a straight or cross belt is in action. The countershaft 72 is connected by suitable means with the rollers 5 and 6 to drive the carpet in one and the other direction as the countershaft is rotated. On the end of the countershaft 72 is a small pulley 74 connected by belt 75 with the pulley 76 which is mounted on the roller shaft 77. A pulley 78 is mounted on the countershaft 77 and connected with a pulley 79 mounted on the roller shaft 80 by a belt 81 thus connecting the rollers for operating the wind-up of the carpet, as is clear. The forward or rearward motion of the carpet within the cleaning chamber is controlled by the belt-shifters 82 and 83 which shift the belts 73' and 73 respectively.

In practical operation the carpets or rugs may be placed with their right sides undermost so that the force of gravity will assist in removing the dirt in the same course in which it entered the fabric; when the same was in use as a floor covering, whereby the dirt will fall out from within the pile of the fabric without any tendency to enter the fabric any farther than it had entered the same before the fabric was placed in the machine. Furthermore the pounders are made to operate on the side of the fabric which was undermost when the fabric was in use as a floor covering, and which side is uppermost in the machine so that the action of the pounders serves to drive the dirt downward out of the fabric into the bottom of the cleaning channel from whence it is carried by the draft into the dust chamber 13 to be there acted on by the spray and thus carried

into the basin 16 while the free air flows on out of the stack.

The force of the pounder action can be increased or diminished by shifting the eccentric means 36, thereby carrying the ends of levers 27 into various positions relative to the centers of the cams 28 whereby said cams are caused to lift the levers more or less, thus to stretch the spiral spring pounders to a greater or less tension before they are released.

The pulley 78 that drives the belt 81 and pulley 79 for winding and unwinding the carpet is loose on the roller shaft 77 and is connected therewith through pulley 76 which is controlled by clutch 83 so that by shifting the clutch the shaft 77 and roller 6 may be allowed to turn independently to unwind the fabric from roller 5.

The carpet 84 in Fig. 1 is shown partly drawn through the cleaning chamber, while in Figs. 3 and 4 the canvas is shown in the cleaning chamber in position for drawing the carpet through such chamber. By reason of the resilient support for the carpet the same is caused to spring up and down in response to the action of the pounders and is relieved of any strain that might tear the fabric.

The transparent panes *a* allow the operator to inspect the operation and he may stop the travel of the carpet at any time that the presence of dust in the cleaning chamber may warn him that the fabric has not been fully cleaned. The pounders may thus be made to act on one portion until it is cleaned. Or the fabric may be run back and forth one or more times slowly or rapidly until the absence of dust in the cleaning chamber indicates that complete cleaning has been effected.

What I claim is:—

1. In a carpet cleaner, a frame forming a cleaning chamber and ports for admission to the chamber, a coiled wire fabric stretched horizontally in the chamber, means for passing a carpet taut through the chamber over the coiled wire fabric, coil springs stretched in the chamber above the coiled wire fabric, said carpet passing under the coil springs, and means for snapping the coil springs against the carpet.

2. In a carpet cleaner, means forming a cleaning chamber, a coiled wire fabric stretched horizontally in the cleaning chamber, front and rear take-up rollers at the front and rear sides of the cleaning chamber, means for attaching a carpet to said rollers, means for operating the rollers to pass the carpet through the cleaning chamber upon the coiled wire fabric, coil springs stretched in the cleaning chamber above the coiled wire fabric, said carpet passing

under the coil springs, and means for snapping the coil springs against the carpet.

3. In a carpet cleaner, means forming a cleaning chamber, a coiled wire fabric stretched horizontally in the cleaning chamber, means for passing a carpet through the cleaning chamber over the coiled wire fabric, coil springs stretched in the cleaning chamber in position for the carpet to pass under
10 the coil springs, and adjustable means for

snapping the coil springs against the carpet, each spring being operated independently.

In testimony whereof, I have hereunto set my hand at Los Angeles California this 13th 15 day of April 1907.

ANDREW JOHN MEIER.

In presence of—

JAMES R. TOWNSEND,
M. BEULAH TOWNSEND.