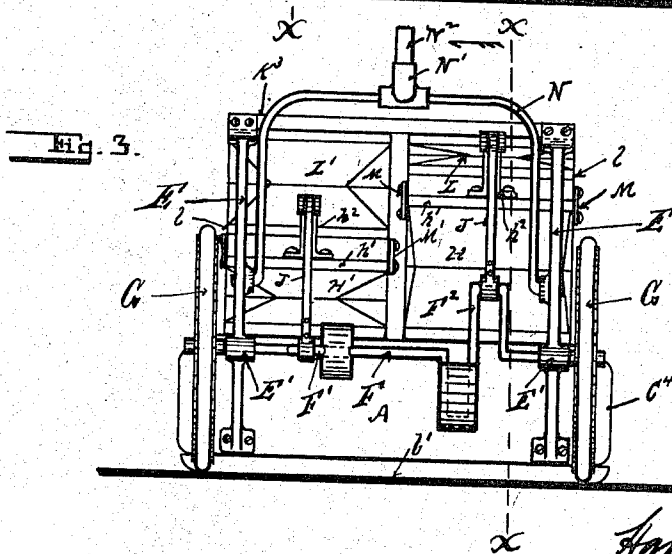
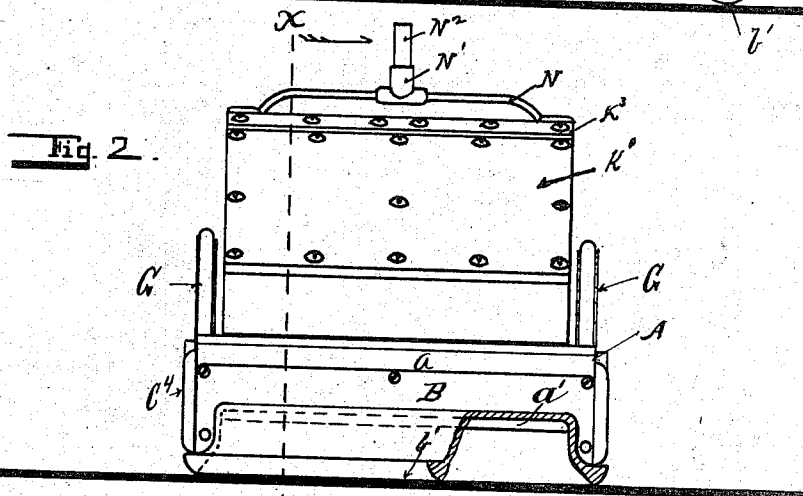
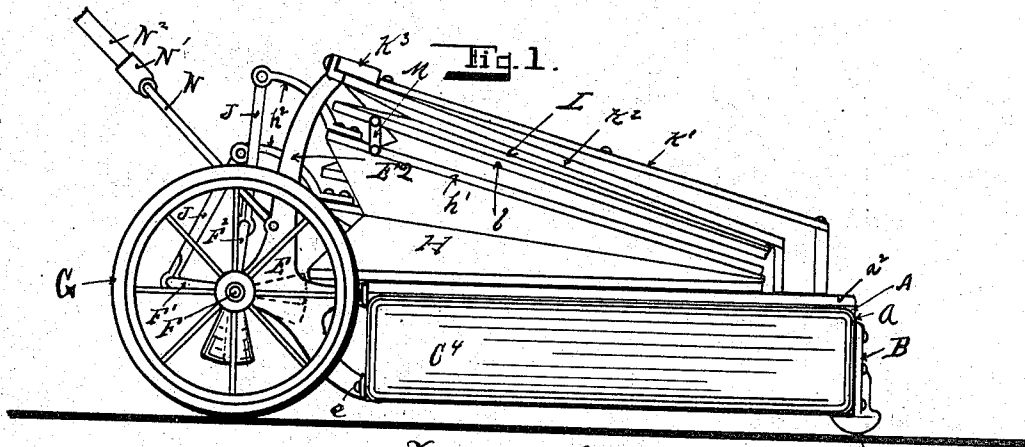


H. M. STURGEON.
PNEUMATIC CARPET CLEANER.
APPLICATION FILED OCT. 28, 1909.

996,810.

Patented July 4, 1911.

2 SHEETS—SHEET 1.

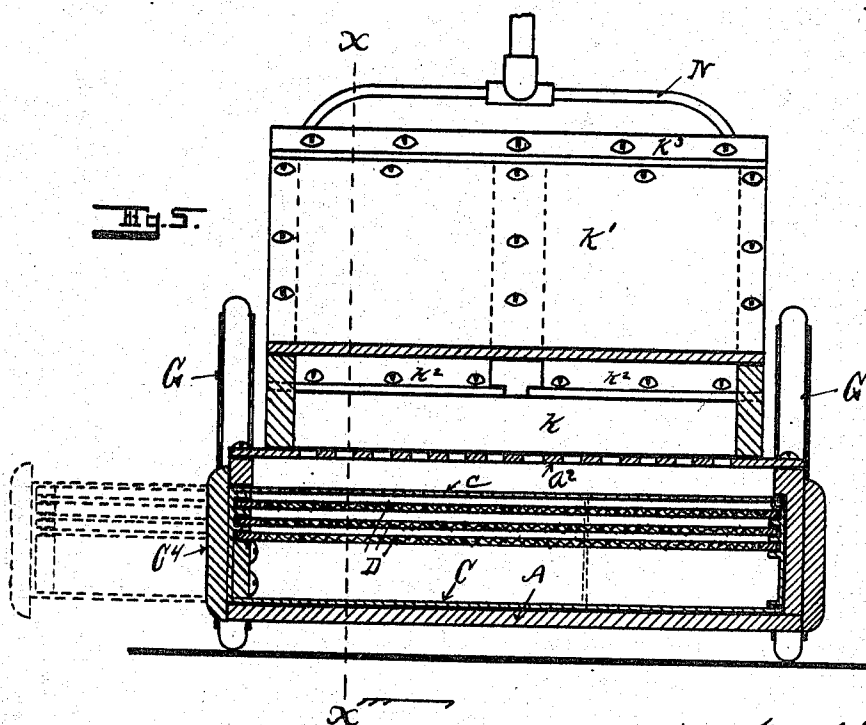
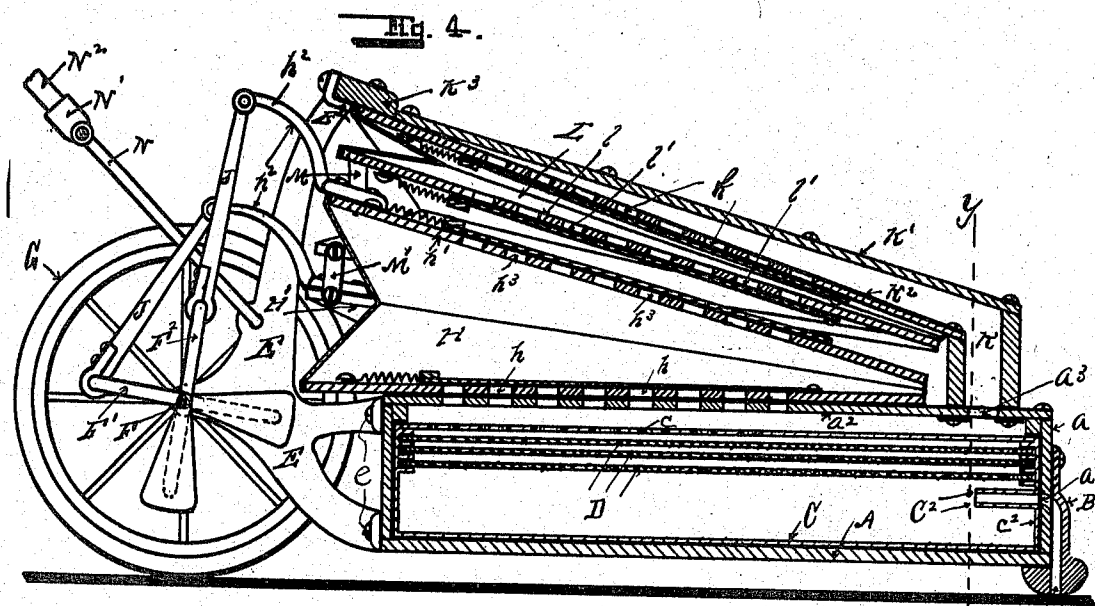


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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HAROLD M. STURGEON, OF ERIE, PENNSYLVANIA.

PNEUMATIC CARPET-CLEANER.

996,810.

Specification of Letters Patent.

Patented July 4, 1911.

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To all whom it may concern:

Be it known that I, HAROLD M. STURGEON, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Pneumatic Carpet-Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to carpet and floor cleaning apparatus, and particularly to that class thereof wherein a partial vacuum is employed to extract dirt and dust from the surface and body of carpets.

The object of my invention is to construct a pneumatic carpet cleaner adapted to be propelled over the surface to be cleaned by the operator, and wherein the power necessary to operate the suction apparatus is generated by means of the supporting wheels of the cleaner, and to provide the same with suitable screen devices whereby impurities are not permitted to enter the suction apparatus, nor to be discharged into the atmosphere. In carrying out these objects of invention I construct a dust box having a dust receiving slot in its front end, into which slot is inserted the exit end of a suction nozzle, which is secured to and supports the front end of said dust box. In the upper part of said box I secure one or more screens. The rear end of said dust box I support upon traction wheels connected together by means of a transverse crank shaft, and on the top of said suction box I place a suction creating device which communicates with the interior of said dust box above said screen device, and I provide suitable mechanism to transmit power from said crank-shaft to said suction device. This suction device consists preferably of a series of suction bellows cells, hinged at their front ends, so that the vibratory ends thereof will be nearly over the supporting traction wheels, so that the suction nozzle on the front end of the cleaner will not be affected by the vibrations of the said suction device, but will bear with a steady weight upon the carpet to be cleaned. These and other features of my invention will appear hereinafter in the

specification and claims, and are illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of my pneumatic carpet cleaning machine. Fig. 2, is a front elevation thereof. Fig. 3, is a rear elevation thereof. Fig. 4, is a vertical section of the same on the line $x-x$ in Figs. 2, 3 and 5, looking in the direction of the arrow. Fig. 5, is a view of the same partially in elevation and partially in section on the line $y-y$ in Fig. 4, looking in the direction of the arrow.

In these drawings, A, indicates the dust-box of my pneumatic cleaner which is adapted to serve as a frame therefor. Through the front wall, a , of this box I make an elongated opening, a' , preferably from end to end of the same, into which opening the exit end of the suction nozzle, B, is inserted. This suction nozzle, B, is preferably composed of a metallic plate, adapted to be secured and fitted against the front end of said dust box, said plate having an opening therein, preferably a longitudinal slot, b , which extends through the lower edge, b' , thereof, and upward to and communicating with the opening, a' , in the wall of the dust box, A. The lower edge of the suction nozzle, may be made in any form desired that will readily move over a surface to be cleaned without marring or abrading the same.

For convenience in operating my cleaner I preferably place within the dust box, A, a drawer, C, of size and shape to conform to the interior of the dust box, A, leaving a small space between the top, c , of the drawer and the top, a^2 , of the box, A, which acts as an air chamber. The upper wall, c , of the drawer, C, is provided with perforations to permit the passage of air therethrough. The front wall, c^2 , of the drawer, C, I provide with an elongated opening or slot, C^2 , which coincides and registers with the slot, a' , in the front wall of the dust box, A. Within the dust drawer, C, and above the slot, C^2 , in suitable runways I place one or more screens, D, each of which is composed of a frame covered with suitable screen material, preferably cloth or felt, which screens fit closely against the inside surfaces of the walls of said dust drawer, C, so as to prevent the passage of air around the edges of the screens, D. The inner end of the drawer, C, is provided with a closure, preferably hinged thereto, to prevent the escape of dirt and

dust therefrom, and to be opened to permit of the screens, D, being removed therefrom. The outer end of the drawer, C, is preferably provided with a panel, C⁴, which overlaps the opening in the end of the dust box, A, and effectually seals the same when in place against the end of the dust box.

To the rear end of the dust box, A, I secure end frames E, E, by means of screws, e, e, or in any other manner desired. These frames are provided with suitable bearings, E', (see Fig. 3), for the reception of the crank shaft, F, in which there are formed two cranks F', and F², preferably quartered to each other. Upon the ends of the crank-shaft, F, which project outward from the bearings, E', I secure wheels, G, which are adapted to support the mechanism and cause the shaft, F, to rotate when the mechanism is propelled forward or backward. The frames, E, are secured to the rear of the dust box, A, sufficiently near each other to permit each of the wheels, G, on the shaft, F, to be placed behind the ends of the dust box, A, so that they will not come in contact with any objects standing upon the floor during the operation of the machine.

In order to provide a perfectly steady current of air into the dust box, A, through the suction nozzle, B, I have provided a suction device preferably comprising a pair of double acting bellows cells, which I mount above said dust box, so that their hinged ends are adjacent to the suction nozzle, and the vibrating ends thereof adjacent to the supporting wheels, G, so that there will not be any shaking up and down of the suction nozzle, B, during the operation of the cleaner, but on the contrary the said nozzle will be allowed to bear downward upon the surface being cleaned with a steady pressure at all times, thereby greatly facilitating perfect operation. The arrangement of said suction device which I prefer is as follows, viz: Upon the upper side of the dust box, A, I place a pair of suction bellows cells, H, and H', which are of the type which are hinged at one end, with the said hinged end toward the front and their vibrating ends toward the rear, adjacent to the wheels, G, and crank-shaft, F, with the lower valve openings, h, thereof communicating with the interior of the dust box, A; to the upper boards, h', of the bellows cells, H, and H', I secure arms, h², and between the ends of these arms and the cranks, F', and F², in the crank-shaft, F, I connect pitmen, J, so that the rotation of the cranks, F', and F², will cause the bellows cells, H, and H', to expand and collapse, thereby drawing air through the valve openings, h, in their lower boards and discharging it through the valve openings, h³, in the upper boards.

Transversely on the top of the front end of the dust box, A, in front of the bellows

cells, H, and H', I construct an air duct, K, the lower end of which communicates, through openings, a³, with the interior of the dust box, above the screens, D, therein; said air duct K, extending backward and upward over the bellows cells, H, and H', where it is supported in an angular position by means of the upright arms, E², of the frames, E. To the underside of the air duct, K, I secure another pair of bellows cells, L, and L', which are directly above the bellows cells, H, and H', and are the same in every respect except that I preferably turn them bottom side up. The bottom board, l, of the cell, L, is connected with the top board of the cell, H, by means of links, M, M, and the bottom board, of the cell, L, is connected with the top board of the cell, H, by the links, M', M', so that when each of the bellows cells, H, and H', is expanded, each of the bellows cells, L, and L', is collapsed, thereby discharging air therefrom through the valve openings, l', while air is being drawn into the bellows, H, or H', through the valve openings, h, and when the bellows cells, H, or H', are collapsed, the bellows cells L, and L', are simultaneously expanded thereby drawing air therein from the air duct, K, and dust box, A. It will thus be seen that with the arrangement of bellows cells and crank and pitman mechanism hereinbefore described, I can obtain a steady current of air through the slot, a', and the suction nozzle, B, free from pulsations, so long as the wheels, G, are rotated.

For propelling my carpet cleaner forward and backward, I pivot, preferably to the side frames, E, E, a yoke, N, adapted to span the crank and pitman mechanism located between said side frames, and in a socket, N', in the central portion of said yoke, I secure a handle N². This handle and yoke, may however, be pivoted to any other portion of the mechanism, if found to be more convenient.

From the foregoing description and operation of the different portions of my carpet cleaner, the same will be obvious to all persons conversant with the use of such mechanisms, therefore further description thereof is deemed unnecessary.

Therefore having fully shown and described my invention so as to enable others skilled in the art to construct and utilize the same, what I claim as new and desire to secure by Letters-Patent is:

1. The combination in a pneumatic carpet cleaner, of a dust box, a screen device slidably mounted in the upper portion of said box adapted to be removed and replaced within said box, a suction nozzle secured to and supporting the front end of said box the exit therefrom entering said box under said screen device, journal bearings secured to the rear end of said box, a crank-shaft in said bearings, cranks in said shaft, a suction de-

vice above said box communicating with the interior thereof above said screen device, pitmen extending between the cranks in said crank shaft and said suction device, and traction wheels secured on said crank-shaft, adapted to support the rear end of said dust box and rotate said crank-shaft, substantially as set forth.

2. The combination in a pneumatic carpet cleaner, of a dust box, a drawer in the bottom of said box, a horizontal screen device in the upper portion of said box, a suction nozzle secured to and supporting the front end of said box the exit from said nozzle entering said box below said screen device, a suction device upon the top of said box, wheels supporting the rear end of said box, a crank shaft connecting said wheels, and pitmen extending between the cranks on said shaft and said suction device, substantially as set forth.

3. The combination in a pneumatic carpet cleaner, of a dust box having an opening in one side thereof, a screen device in the upper portion of said box slidably mounted be-

tween ways and adapted to be removed and replaced within said box through said opening, a drawer adapted to be inserted into said box through said opening and to close the same when in place, a suction nozzle secured to and supporting the front end of said dust box the exit therefrom entering said box below said screen device, journal bearings secured to the rear of said box, a crank shaft mounted in said journal bearings, cranks in said shaft, a suction device secured upon said box and communicating with the interior of the same, pitmen extending between the cranks in said crank-shaft and said suction device, and traction wheels secured on said shaft adapted to support the rear end of said box and rotate said crank-shaft, substantially as set forth.

In testimony whereof I affix my signature, in presence of two witnesses.

HAROLD M. STURGEON.

Witnesses:

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G. J. MEAD.