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MANUALLY SUPPORTED BLOWER FOR CLEANING FLOORS AND THE LIKE

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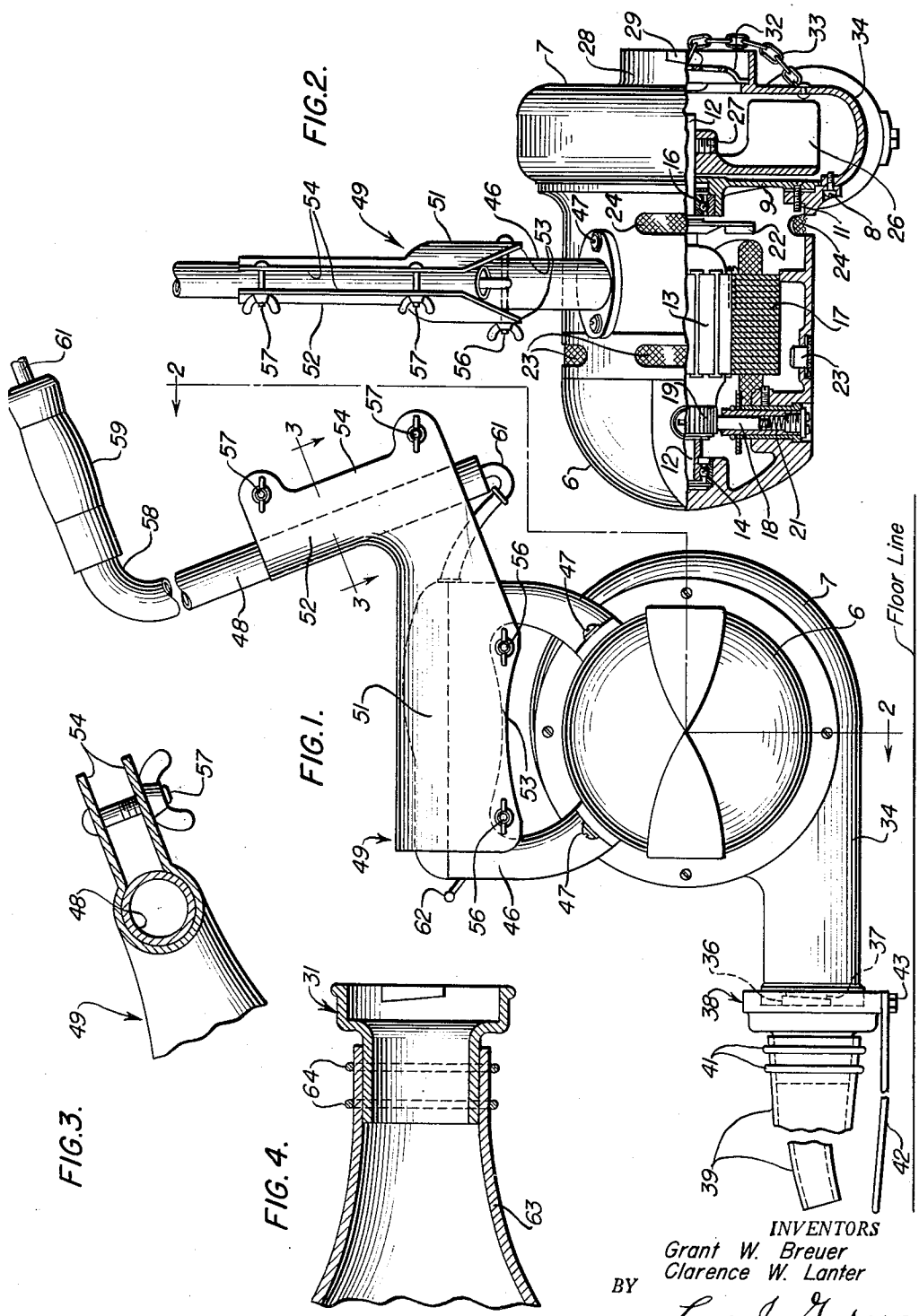

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MANUALLY SUPPORTED BLOWER FOR CLEANING FLOORS AND THE LIKE

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2 Claims. (Cl. 299—65)

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This invention relates to improvements in combined blower and suction devices, and is more particularly concerned with the provision of a portable unit of this type adapted for use in cleaning theatres and the like.

It has heretofore been the usual practice of cleaners to employ brooms and brushes to remove the dirt and trash from theatres, and it will be appreciated that such a practice necessitates the expenditure of considerable sums of money.

It is an object of the present invention to provide a relatively compact, light weight combined blower and suction device adapted to be positioned adjacent the floor of a theatre and provided with an air outlet nozzle formed and disposed to direct a stream of air in a direction substantially parallel to the floor. By conveying the portable unit between consecutive rows of seats, the dirt and trash may be blown and directed continuously toward one end of the theatre.

This invention further contemplates the provision of a hand portable blower-suction unit embodying means for dislodging popcorn boxes, candy, candy wrappers, and the like from the floor or seat frames.

This invention further contemplates the provision of a hand portable blower-suction unit having a flexible air outlet nozzle adapted to swing back and forth along a horizontal plane responsive to the flow of air therethrough.

This invention further contemplates the provision of a hand portable blower-suction device which may readily be converted into a vacuum cleaner adapted for use in cleaning theatre seats.

This invention further contemplates the provision of a hand portable blower-suction device which is relatively simple and inexpensive in construction and operation and which will not readily get out of order.

This invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims, and illustrated in the accompanying drawing wherein:

Fig. 1 is a side elevational view showing a hand portable combined blower-suction device embodying features of this invention.

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1.

Fig. 4 is an enlarged detail fragmentary sectional view showing a dirt bag for demountable connection to the air outlet of the blower when the device is employed as a vacuum cleaner.

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Referring now to the drawing for a better understanding of this invention, the combined blower and suction device is shown as comprising an electric motor housing 6 and a fan housing 7 which are secured together by means of screws 8. A partition plate 9 is secured to the inner end of the motor housing 6 by means of screws 11. The shaft 12 of an armature 13 is journaled at its one end in a bearing 14 provided on the motor housing 6, the other end of the shaft being journaled in a bearing 16 provided on the partition plate 9.

Field coils 17 and brushes 18 are enclosed within the motor housing, the brushes being urged into engagement with a commutator 19 by means of compression springs 21. An air circulating fan 22 is secured on the inner end of the armature shaft 12 to move streams of cool air through the screened air inlet apertures 23 and thence through the interior of the motor housing to cool the motor parts, the air being discharged from the housing through the air outlet apertures 24.

The inner end of the armature shaft 12 projects through the partition plate 9 into the fan housing 7 to receive and rotate a multiblade centrifugal fan 26 which is secured in position by a set screw 27. The fan housing 7 is formed with an axially disposed air inlet nozzle 28 formed with external locking lugs 29 for detachable engagement with internal locking lugs formed on an adapter provided on a flexible vacuum cleaning conduit (not shown). The adapter for the flexible vacuum cleaning conduit is similar in construction to the dirt receptacle adapter 31, illustrated in Fig. 4. An apertured plate 32 is demountably engaged within the air inlet nozzle 28, and is secured to the fan housing by a chain 33.

The fan housing 7 is formed with a tangentially disposed air outlet nozzle 34 provided with external locking lugs 36 for detachable engagement with internal locking lugs 37 formed on an adapter 38. An auxiliary nozzle 39, formed of flexible conduit, is secured to the adapter 38 by wire clamping bands 41. A rod or bar 42 is secured to the adapter 38 by means of screws 43, and preferably extends in a forward direction to a point adjacent the outer end of the auxiliary nozzle 39.

A hollow U-shaped handle 46 is secured to the motor housing 6 by means of screws 47; and a tubular supporting arm 48 is secured to the U-shaped handle by means of a clamp generally indicated at 49. The clamp 49 is preferably formed from sheet metal to provide a pair of

split cylindrical sections 51 and 52 to receive and engage the handle 46 and supporting arm 48, respectively.

The sections 51 and 52 are provided with opposing flanges 53—53 and 54—54, respectively, which are formed with aligning apertures to receive clamping bolts 56 and 57, respectively. As illustrated in Fig. 1, the supporting arm 48 is inclined in a forward direction to terminate at an offset handle portion 58 preferably disposed directly above the electric motor. The supporting arm is preferably formed about two feet in length and adapted to be adjusted axially relative to the clamping section 52 in order that a user may stand in an upright position to support the blower unit in operative position close to a floor to be cleaned. If desired, a suitable rubber grip 59 may be provided on the handle portion 58. The electric motor is connected to a source of current by an electric conduit 61 which extends through the supporting arm 48 and handle 46 to the motor terminals (not shown). A toggle switch 62 is mounted within the handle 46 and interposed in the conduit 61 to control the flow of current to the motor.

Fig. 4 in the drawing illustrates an adapter 31 secured to a dirt collecting bag 63 by means of wire clamping rings 64. Locking lugs 66 are formed on the inside of the adapter 31 for detachable interlocking engagement with the external locking lugs 36 formed on the outlet nozzle 34 when the device is to be employed as a vacuum cleaner, in which event a flexible inlet conduit (not shown) is connected to the inlet nozzle 28 by means of an adapter similar to those shown at 31 and 38.

In the use of a device of the type thus shown and described for cleaning trash from theatres, the device is manually supported by the operator in the position illustrated in Fig. 1, with the end of the outlet nozzle 39 disposed to direct a stream of air along the floor. As the operator moves through each row of seats, the air stream is directed to move trash toward one end of the theatre where it may be arranged in suitable piles for transfer to trash receptacles.

During the operation of the device, the end of the nozzle 39, when same is formed of flexible material, has a tendency to whip back and forth due to the reaction force set up by the outwardly moving stream of air and thus directs the air stream in different radial directions without turning the device. The bar 42 is provided to dislodge trash stuck to the floor or wedged between the seat frames. When the nozzle 39 is formed of rigid material, it may be employed in place of the bar 42 to dislodge trash.

When the device is to be used as a vacuum cleaner, the clamp 49 and supporting arm 48 may be removed, if desired. The dirt collecting bag 63 is then connected to the air outlet nozzle 34, and an inlet hose is connected to the air inlet nozzle 28.

While this invention has been shown in but one form, it is obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit and scope of the claimed invention.

We claim as our invention:

1. In a combined blower and suction device, a fan housing having an axial air inlet nozzle and tangential air outlet nozzle extending laterally therefrom, a fan to move a stream of air outwardly through said nozzle, an electric motor connected to said fan housing to drive said fan, means to manually support said device comprising a supporting arm extending laterally from said device in a direction opposite to said air outlet nozzle and upwardly from said device in a diagonal direction in the direction of said air outlet nozzle and disposed to suspend the device with the tangential air outlet nozzle parallel to and adjacent a floor to be cleaned, a handle portion provided on the upper end of said supporting arm and disposed above said device in vertical alignment with the center of gravity of said device, the outer end of said outlet nozzle being formed of flexible material and movable laterally responsive to the flow of air therethrough.

2. In a combined blower and suction device, a fan housing having an axial air inlet nozzle opening laterally of said device and a tangential air outlet nozzle extending forwardly of the bottom of said device, a fan to move a stream of air outwardly through said outlet nozzle, an electric motor connected to said fan housing to drive said fan, and means to manually support said device whereby the end of the tangential air outlet nozzle may be disposed and moved adjacent and parallel to a floor to be cleaned, said means comprising a supporting arm connected to the top portion of the rear of said device and extending upwardly and forwardly in an inclined direction from said device, and a rearwardly extending handle carried by the upper portion of said arm, said handle being in substantial vertical alignment with the center of gravity of said device.

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