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CONVERTERS FOR VACUUM CLEANERS

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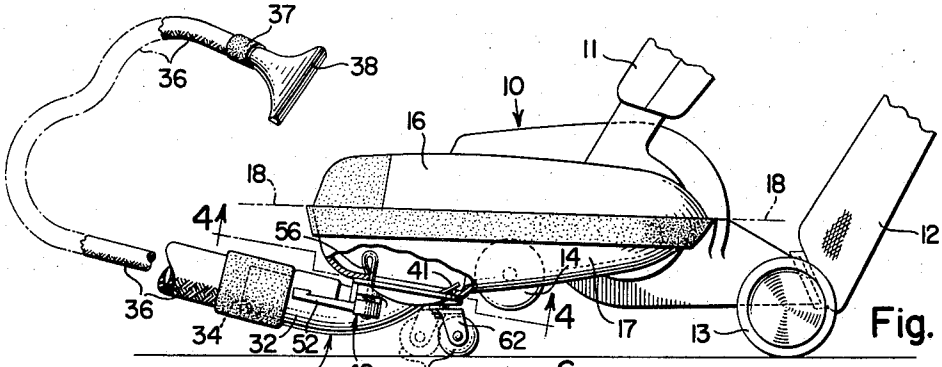


Fig. 1.

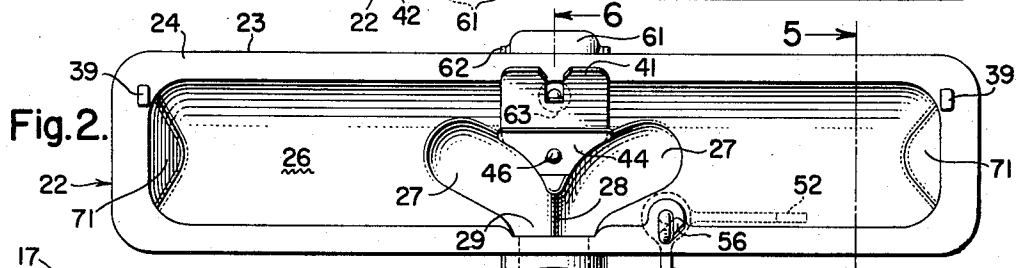


Fig. 2.

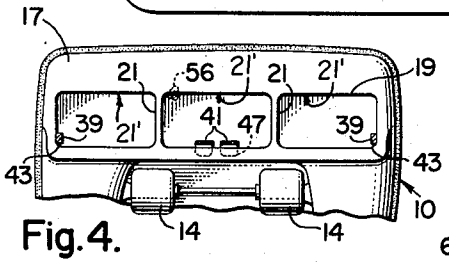


Fig. 4.

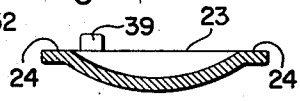


Fig. 5.

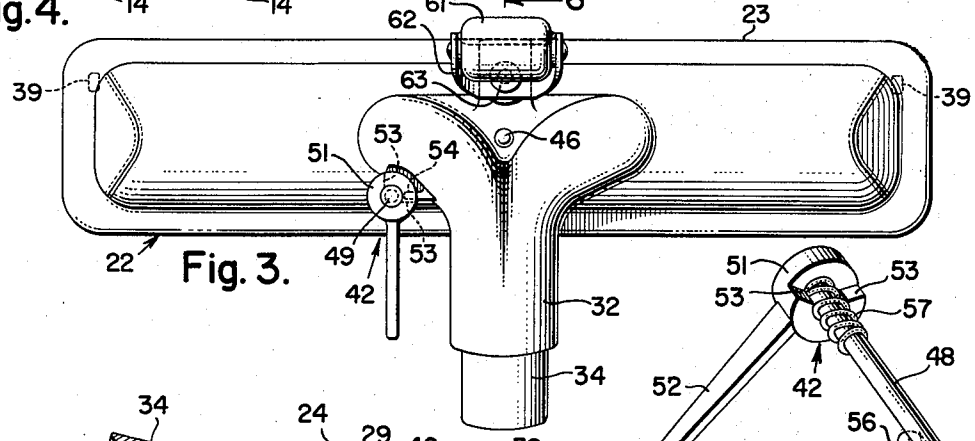


Fig. 3.

Fig. 7.

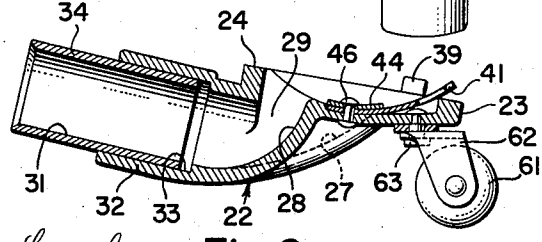


Fig. 6.

WITNESS

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CONVERTERS FOR VACUUM CLEANERS

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4 Claims. (Cl. 15—338)

This invention relates to vacuum cleaners and more particularly to devices generally known as converters which are used to connect a hose and extension tools to the mouth of a floor type vacuum cleaner.

The object of the present invention is to provide an improved converter by which a floor type vacuum cleaner may be used to clean draperies, radiators, upholstery, etc.

Another object of the invention is to provide a vacuum cleaner converter which may easily be connected to or disconnected from the mouth of a floor type vacuum cleaner.

A further object of the invention is to provide a vacuum cleaner converter of such shape and configuration that dirt and dust will not become lodged within the converter.

A still further object of the present invention is to provide a vacuum cleaner converter equipped with means which makes it easy to pull a floor type cleaner around by a hose which is attached to the cleaner by means of the converter attachment.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the accompanying drawings:

Fig. 1 is an elevational view of a portion of a floor type vacuum cleaner equipped with a converter embodying the present invention,

Fig. 2 is a plan view of the converter, before it is attached to the vacuum cleaner,

Fig. 3 is a bottom view of the converter shown in Fig. 2,

Fig. 4 is a view taken on the plane 4—4 of Fig. 1 and showing the suction mouth of the vacuum cleaner,

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2,

Fig. 6 is a sectional view taken substantially on the line 6—6 of Fig. 2, and

Fig. 7 is a perspective view showing the latch mechanism removed from the converter.

The drawings, which form a part of the present patent application, illustrate a preferred embodiment of a converter designed for use with an ambulatory type vacuum cleaner 10. The vacuum cleaner 10, among other elements, includes a propelling handle 11, a dust-bag 12, rear wheels 13, front wheels 14, an upper casing shell 16 and a lower casing shell 17, the two shells being joined on a normally inclined plane indicated by the numerals 18—18. The lower casing shell 17 is provided with a suction mouth 19 of the type clearly illustrated in U. S. Patent No. 2,649,609, the suction mouth being provided with two cross-bars 21 which divide the suction mouth into three openings 21'. The converter 22

of the present patent application is adapted to be attached to this suction mouth 19 by means hereinafter described

The converter 22 comprises a rectangular dished tray 23 having a rectangular plane surface 24 acting as a boundary for the tray. The length and the width of the tray 23 and the surface 24 are substantially equal to the length and width of the area surrounding the suction mouth 19 of the vacuum cleaner 10. The rectangularly shaped plane surface 24 bounds a rectangularly-shaped concavity 26 and the central portion of the concavity 26 has a deep double-lobed depression 27—27 of which the lobes join along a central cusp line 28 to form a throat 29 from which exits a cylindrical passageway 31 in a neck 32 formed integral with the dished tray 23. The neck 32 is counterbored, as at 33, to receive one end of a cylindrical tube 34 to which may be connected a flexible hose 36. The free end of the hose 36 is preferably provided with a connector 37 adapted to receive any one of several cleaning attachments 38 designed selectively to clean draperies, radiators, upholstery, etc.

As a matter of convenience in describing the various parts of the vacuum cleaner 10, the portion of the cleaner near the mouth 19 will be referred to as the front, while the portion near the bag 12 will be referred to as the rear. In like manner the part of the converter near the neck 32 will be referred to as the front and the portion remote from the neck 32 will be referred to as the rear.

The means for securing the converter 22 to the mouth 19 of the vacuum cleaner 10 includes a pair of upstanding rectangular lugs 39—39, a spring member 41 and a movable latch 42. The lugs 39—39, which protrude from opposite ends of the surface 24 adjacent the rear thereof are positioned so that they enter the suction mouth openings 21' adjacent to their rear corners 43—43 and thus help to align the concavity with the mouth 19. The spring member 41, which is in the form of a curved plate and has two tines, is secured to the inner concave surface of the tray 23 by means of a washer plate 44 and a rivet 46. The free bifurcated or tined end of the spring 41 extends above and over the plane surface 24 in such a manner that, when the plane surface 24 is placed against the lower surface of the cleaner 10 surrounding the mouth 19 and the lugs 39—39 are located in the corners 43—43, the two tines of the spring member 41 extend upwardly into the mouth 19 and overlap, as seen at 47 in Fig. 4, the upper surface of the portion of the cleaner 10 surrounding the suction mouth 19, thus causing the spring 41 to flex and securely press the rear portion of the surface 24 against the mouth of the vacuum cleaner 10.

The latch 42 comprises a circular stem 48, of which one end is riveted, as at 49, into a cylindrical hub 51 which carries a radially disposed operating handle 52. The hub 51 has a sectoral recess, bounded in part by two radial surfaces 53—53 which selectively engage a lug 54 formed integral with the outer surface of the converter 22. The stem 48 is turnably mounted in and passes through a hole in the wall of the converter 22 and the extended end of the stem 48 is bent into an offset J-form of such shape and configuration that when the handle 52 is turned to the position shown in solid lines in Fig. 2 the free end 56 of the bent portion of the stem 48 acts as a cam to engage the inner surface of the mouth 19. Because a helical spring 57, which surrounds the stem 48, is located between the hub 51 and the lower surface of the tray 23, and because of the action of the spring member 41, the plane surface 24 of the converter 22 is forcibly pressed against the outer surface of the mouth 19 of the cleaner 10.

Movement of the handle **52** from the position shown by solid lines in Fig. 2, to the dotted line position, frees the end **56** of the stem **48** from engagement with the inner surface of the mouth **19** with the result that the converter **22** is released from the cleaner **10**. It will be noted that the end **56**, in moving to the position shown in Fig. 1, causes the spring **41** to flex thus assisting to make an air-tight seal between the converter **22** and the mouth **19** of the cleaner **10**.

In order that the cleaner **10** may be pulled around by the hose **36**, the bottom of the converter **22** is provided with a caster **61**, of which a U-shaped support **62** is pivotally mounted on a rivet **63** secured to the converter **22**. Since the support **62** can turn through an angle of 360 degrees about the rivet **63**, the cleaner **10** is easily guided in any direction by the hose **36**.

In order to prevent accumulation of dust and dirt on the interior surface of the dished tray **23**, the ends thereof are sloped, as shown at **71**, and the throat **29** is formed in a novel manner by having the central cusp line **28** form or present a mound or elevated separation between the two outwardly flaring lobed depressions **27**. It has been found that this arrangement of surfaces regulates air currents within the converter in such a way that any tendency to accumulate dust or dirt is prevented and all dirt is swept away by the air currents and deposited in the dust bag **12**.

Having thus set forth the nature of the invention, what we claim herein is:

1. A converter adapted to be secured to the open mouth of an ambulatory type vacuum cleaner to connect a hose thereto, said converter comprising a tray having an interior, a plane surface bounding said tray, a pair of lugs rising above said plane surface and entering the mouth of the vacuum cleaner, a single spring plate secured to a side portion of said tray at a location near the center of said tray and rising above said plane surface and entering the mouth of the vacuum cleaner, a single movable latch member carried by a side portion of said tray at a location opposite the side which carries the said spring plate, a hub formed as a part of said latch member, an operating handle extending from said hub, a stem riveted to said hub and extending through and turnably mounted in said tray, a bent portion formed on the end of said stem, said bent portion adapted to engage the inner surface of the mouth of said vacuum cleaner, a spring surrounding said stem and located between said hub and the outer surface of said tray thereby biasing the bent portion of said stem into engagement with the inner surface of said mouth, a neck secured to said tray and having a cylindrical passageway in communication with the interior of said tray, and means for securing a hose to said neck.

2. A converter adapted to be secured to the open mouth of a ambulatory type vacuum cleaner to connect a hose thereto, said converter comprising a tray having an interior, a plane surface bounding said tray, a pair of lugs rising above said plane surface and entering the the mouth of the vacuum cleaner, a single spring plate secured to a side portion of said tray at a location near the center of said tray and rising above said plane surface and entering the mouth of the vacuum cleaner, a single movable latch member carried by a side portion of said tray at a location opposite the side which carries the said spring plate, a cylindrical hub formed as a part of said latch member and having a sectoral recess bounded in part by a pair of radial surfaces, an operating handle radially extending from said hub, a circular stem riveted to said hub and extending through and turnably mounted in said tray, a J-shaped bent portion formed on the end of said stem, said bent portion adapted to engage the inner surface of the mouth of said vacuum cleaner, a helical spring surrounding said stem and located between said hub and the outer surface of said tray thereby biasing the J-shaped bent portion of said stem into engagement with the inner surface of said mouth, a neck formed integral with said tray and having a cylindrical passageway in communication with the interior of said tray, and means for securing a hose to said neck.

3. A converter adapted to be secured to the open mouth of an ambulatory type vacuum cleaner to connect a hose thereto, said converter comprising a tray having a concavity with sloping ends and two lobed depressions partially joined by a common throat, a cusp separating said lobed depressions, a plane surface bounding said concavity, a pair of lugs rising from said plane surface and entering the mouth of the vacuum cleaner, a single two-tined spring plate secured to a side portion of said tray at a location near the center of said tray within the concavity thereof and rising above said plane surface and entering the mouth of the vacuum cleaner, a single movable latch member carried by a side portion of said tray at a location opposite the side which carries the said spring plate, a hub formed as a part of said latch member and having a recess bounded in part by a pair of surfaces, an operating handle extending from said hub, a stem riveted to said hub and extending through and turnably mounted in said tray, a J-shaped bent portion formed on the end of said stem, said bent portion adapted to engage the inner surface of the mouth of said vacuum cleaner, a spring surrounding said stem and located between said hub and the outer surface of said tray thereby biasing the J-shaped bent portion of said stem into engagement with the inner surface of said mouth, a neck secured to said tray and having a passageway in communication with said throat, means for securing a hose to said neck, and a caster pivotally mounted on the bottom of said tray.

4. A vacuum cleaner converter comprising an apertured tray having a convex outer surface and a concave inner surface, the length of said tray and the length of said inner surface being several times greater than the width of said tray; a hollow neck secured to the outer surface of said tray, said neck having a passageway in communication with the aperture in said tray; a throat formed in said tray, said throat being disposed below the inner concave surface of said tray; a cusp carried by said tray and located midway in said throat, thereby bisecting said throat; a pair of lobed depressions formed in said tray and extending below the inner concave surface of said tray, said lobed depressions being in communication with said throat at locations on opposite sides of said cusp; a pair of surfaces located adjacent to the ends of said tray and said surfaces sloping downwardly toward the bottom of said inner concave surface; means located adjacent to said neck for attaching said tray to the intake opening of a vacuum cleaner; and means for connecting a hose to said neck, said passageway, said aperture, said throat, said cusp, said lobes, and said surfaces acting to direct dirt and air from a hose connected to said neck to both ends of said tray and thus into the intake opening of a vacuum cleaner to which the converter may be attached.

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