

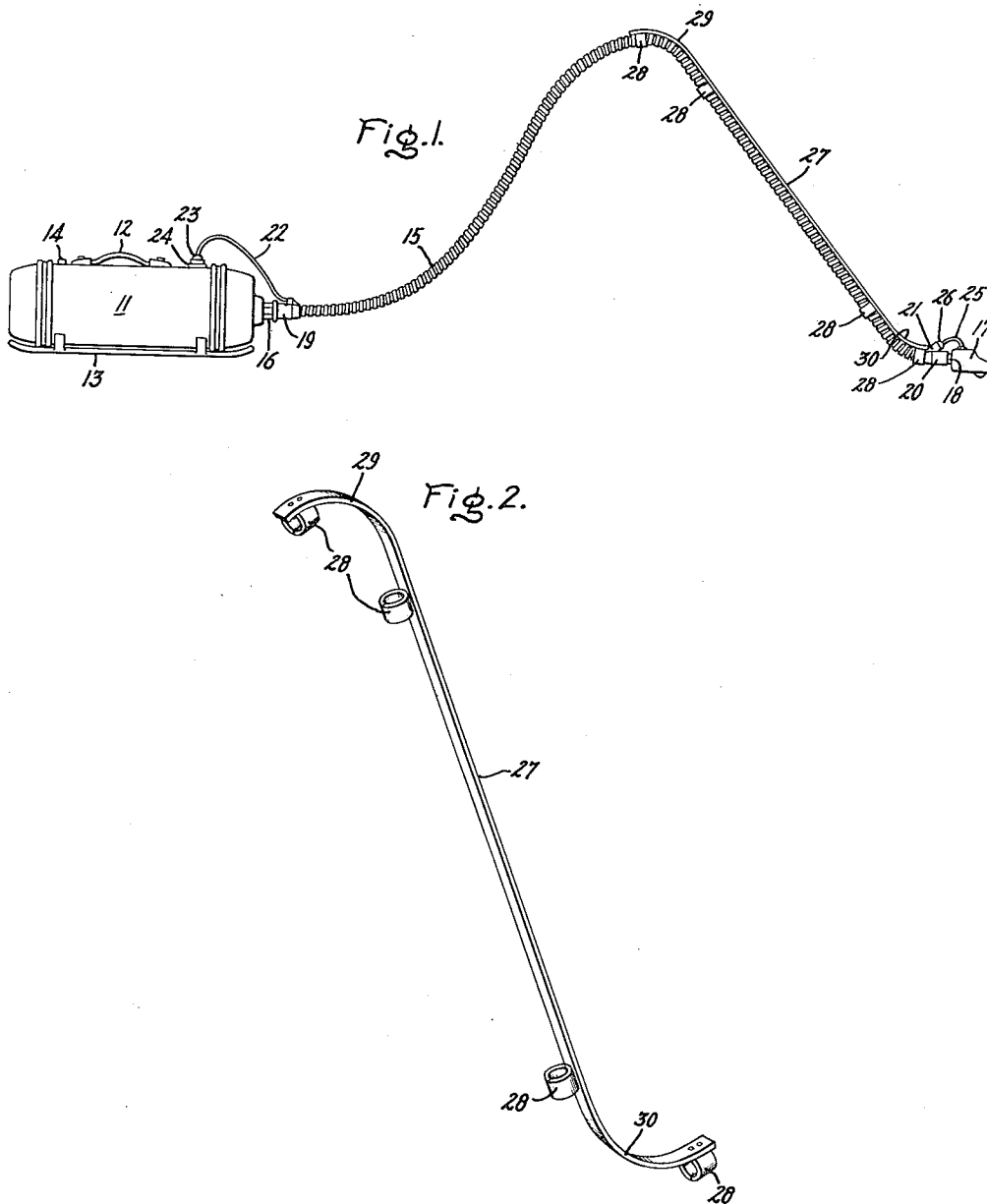
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SUCTION CLEANER HOSE AND HANDLE ARRANGEMENT

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SUCTION CLEANER HOSE AND HANDLE ARRANGEMENT

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This invention relates to cleaners of the air flow type generally called vacuum or suction cleaners. More particularly, this invention is concerned with flexible air-conducting hoses used with such suction cleaners.

Among the objects of my invention are, improved manipulation of the hose and tool, improved operation of the cleaner, and inexpensiveness of design.

In its preferred form, the invention is applied to an air hose for a suction cleaner, the hose also carrying electrical conductors along its length. When used with such an electrified hose, my invention has the additional advantages of providing a practical method of conducting electricity to a tool or attachment at the end of the hose, even though the parts are swivelly connected; and of reducing the number of electrical connections over those usually required in devices of this sort.

According to my invention, the length of flexible hose to be used is increased over the standard length previously used, and a stiffening member or means is applied to that end of the hose nearest the cleaning tool, the stiffening member rendering rigid a part of the longer hose in place of the added rigid wands or tubes customarily used at the end of a hose.

Other objects and further details of that which I believe to be novel and my invention will be clear from the following description and claims taken with the accompanying drawing in which is illustrated an example of suction cleaner embodying the present invention and incorporating an increased length of hose with a stiffening member.

In the drawing:

Fig. 1 is a side view of an exemplary suction cleaner with hose and tool attached thereto; and

Fig. 2 is a perspective view on a somewhat larger scale of one form of stiffening member which may be applied to the hose of the cleaner of Fig. 1.

An air flow or suction cleaner usually comprises as its main element a relatively stationary source of air flow which may be called an air flow producing body. This source or body may be a suction cleaner of any type, including, but not limited to, an upright floor cleaner, or a tank type cleaner such as the horizontal tank 11 of the drawing. The cleaner body may have the usual handle 12, supporting skids 13, and switch button 14 for controlling a motor driven fan unit. The motor-fan unit is not shown because it is inside the body and may be of any usual construction. Dirt filtering and collecting arrangements are also commonly used in these cleaners and, therefore, need not be shown. The motor is powered by electricity, connected through the usual flexible cord set to an electrical power source. These structures, and similar structures in other types of cleaners, are all well known.

It is also customary to have a flexible air hose 15 mechanically connected as at 16 to the cleaner body for sucking or blowing operations in ways that are readily apparent. Preferably the mechanical coupling between the cleaner body and the hose will be of the quick de-

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tachable type and may be of any desired design. The other end of the flexible hose is mechanically connected to a rug cleaning nozzle or other tool 17 in the usual way, preferably by a detachable coupling 18.

In addition to a hose mechanically connected between the cleaner body and a cleaning tool to provide an air passageway between the tool and the body as described above, I prefer to use a hose which also provides electrical connection and a conducting path between the cleaner body and the tool. Such a hose is shown in Patent 2,524,522 which was issued October 3, 1950, to A. W. Gilmore et al. and is assigned to the same assignee as the present invention. As disclosed in that patent, the flexible hose has a self-contained reinforcing and electrical conducting wire extending from end to end of the hose. At the ends of the hose are molded-on sleeves 19 and 20. On the sleeve 20 an electrical connection socket 21 is provided which is electrically connected, by means of the conducting wires in the hose, to a flexible electrical cord 22 which extends from the opposite sleeve 19. At the free end of the electrical cord 22 is a connector plug 23. Plug 23 may be suitably connected to a source of power, for instance by means of an electrical connection socket 24 located on the body of the cleaner and supplied with power from the circuit in the cleaner body which is connected to the usual motor in the body. In order to connect an electric motor or a light or other electrical device in the tool 17 with the power which is brought along the hose to the socket 21 on the end of the hose, a length of flexible electrical cord 25 is connected to the electrical device in the tool and has on its end a plug 26 which can cooperate with the socket 21 on the hose.

It is customary for joints or couplings at the ends of the hose to be of the swivel type. Therefore, if the coupling 16 between the hose and the cleaner body is of a swivel type, the flexible wire 22 permits the swivel action to take place to some extent, without interrupting the electrical connection. The same is true regarding the coupling 18 between the end of the hose and the tool. In this case, the flexible wire 25 maintains electrical connection between the parts while they rotate with respect to each other. These flexible wire connections are generally preferred over slip-ring connections which might also be used. However, where cost and manufacturing ease are not important, any suitable slip-ring connection may be used.

It is customary in cleaners in general use today to use an air hose which is about seven or eight feet long, and extension tubes or wands at the end of the hose which have a total added length of about three and one-half to four feet. These extension wands serve as an elongated handle for the tools or attachments which are fastened to their end. Instead of that arrangement the present invention uses a hose which is at a minimum about twelve or thirteen feet long, and no extension tubes or wands are used, the end of this hose being connected directly to the tool or other attachment.

In order to provide a suitable handle and stiffening means so that the tool may be manipulated easily from a distance, this invention uses a handle member 27 formed of metal or other stiff, comparatively rigid material. This is clamped or otherwise secured to the hose and extends along the hose for approximately three and one-half to four feet at the attachment end of the hose. This renders that portion of the normally flexible hose rigid, to provide an elongated handle in place of the usual extension wands or tubes. This arrangement also provides a convenient way of carrying electrical power from the cleaner body to electrified tools to be used with the cleaner when the hose is also electrified. The tool is thereby easily electrified for illumination of the tool, or for a motor on the

tool to drive the tool or to drive a rug agitator, or for similar purposes. Compared to a conventional hose with extension wands, the single long hose with added stiffener cuts down the number of removable connections required between the cleaner body and the tool, which connections might serve as a source of air leakage and possible obstruction to air flow.

If the hose is electrified, the number of electrical connections is also kept to a minimum by the present invention, there being only one connection required at each end of the hose compared to four or six connections which would be required if one or two wand sections were used in addition to the hose. Thus, the present arrangement avoids difficulties attendant upon the electrification of the hose and tool.

For certain cleaning operations, the longer hose, by itself, would be very convenient. For instance, when cleaning in close quarters or in a confined space, the longer hose could be much more easily manipulated without placing the body of the cleaner in the space being cleaned. In such cases, the stiffening member or means is not used.

Therefore, the handle or stiffening member 27 is preferably removably secured on the outside of the hose, and for this purpose it may carry a number of spring clips shown in the form of split rings 28 made of metal, plastic or other suitable resilient material. These may be welded, riveted, or otherwise suitably secured to the handle member 27, and are designed to grip the outside of the hose quite firmly. The handle member may be applied to the end of the hose by sliding the hose through the spring clips until it occupies the proper position. If desired, one end of the handle may be curved as at 29 to serve as a convenient gripping portion, or an additional hand grip may be secured to that end of the handle to assist in manipulating the tool. This hand grip is located approximately at the level of the hands of an average size person using the tool to clean a floor. The lower end of the handle may also be curved as at 30 if the coupling 18 on the tool is at a horizontal position as shown. On the other hand, with an angular coupling from the tool, the bottom end of the handle stiffener may be straight.

Obviously, other forms of stiffening members, internal as well as external, may be readily designed with the above noted requirements in mind. It is also obvious that electrified hoses of other forms might be used with my invention.

As will be evident from the foregoing description, certain aspects of this invention are not limited to the particular details of construction of the example illustrated, and it is contemplated that various and other modifications and applications of the invention will occur to those skilled in the art. It is, therefore, intended that the appended claims shall cover such modifications and applications as do not depart from the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A suction cleaner comprising a suction producing body, a first electrical socket in said body, an elongated flexible electrically conducting air hose swivelly connected at one end to said body, a first flexible conductor disposed externally of said hose, extending from said one hose end to said socket and having a connection plug for seating in said socket, a second electrical socket at the other end of said hose, a cleaning tool swivelly connected to said other end of the hose, a second flexible conductor extending from said tool to said second socket, disposed externally of said hose and having a connection plug for seating in said second socket, and a rigid unitary elongated handle member for stiffening a portion of the length of said hose and for manipulating said tool, said member being curved at the end remote from said tool end to form a gripping portion and said member being secured to said hose solely by a plurality of resilient hose gripping clips rigidly secured to said member, one of said clips being at each end of said member and the remainder of said clips being intermediate the ends, with one clip of said remainder being at a point approximately at the end of the curvature of said gripping portion.

2. In a suction cleaner having an air flow producing body, an elongated flexible air hose connected to said body, a cleaning tool attached to the end of said hose remote from said body, and a detachable handle for manipulating said tool and rendering substantially rigid a portion of said hose near the end adjacent said tool, said handle including a rigid elongated unitary member extending from the tool connected end of said hose to a point remote therefrom and located approximately at the hand position of the user, said member being curved at its upper end to form a gripping portion and curved in the reverse direction at its lower end, said member being secured to said hose by at least four spring clips, at least one of said clips being rigidly secured at each end of said member and the remainder of said clips being rigidly secured to the central portion of said member and with at least one of said clips of said remainder fixed at a point near the inner end of the curvature of each of said curved portions.

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