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CA 2684820 A1 2011/05/06

(21) 2 684 820

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2009/11/06

(41) Mise à la disp. pub./Open to Public Insp.: 2011/05/06

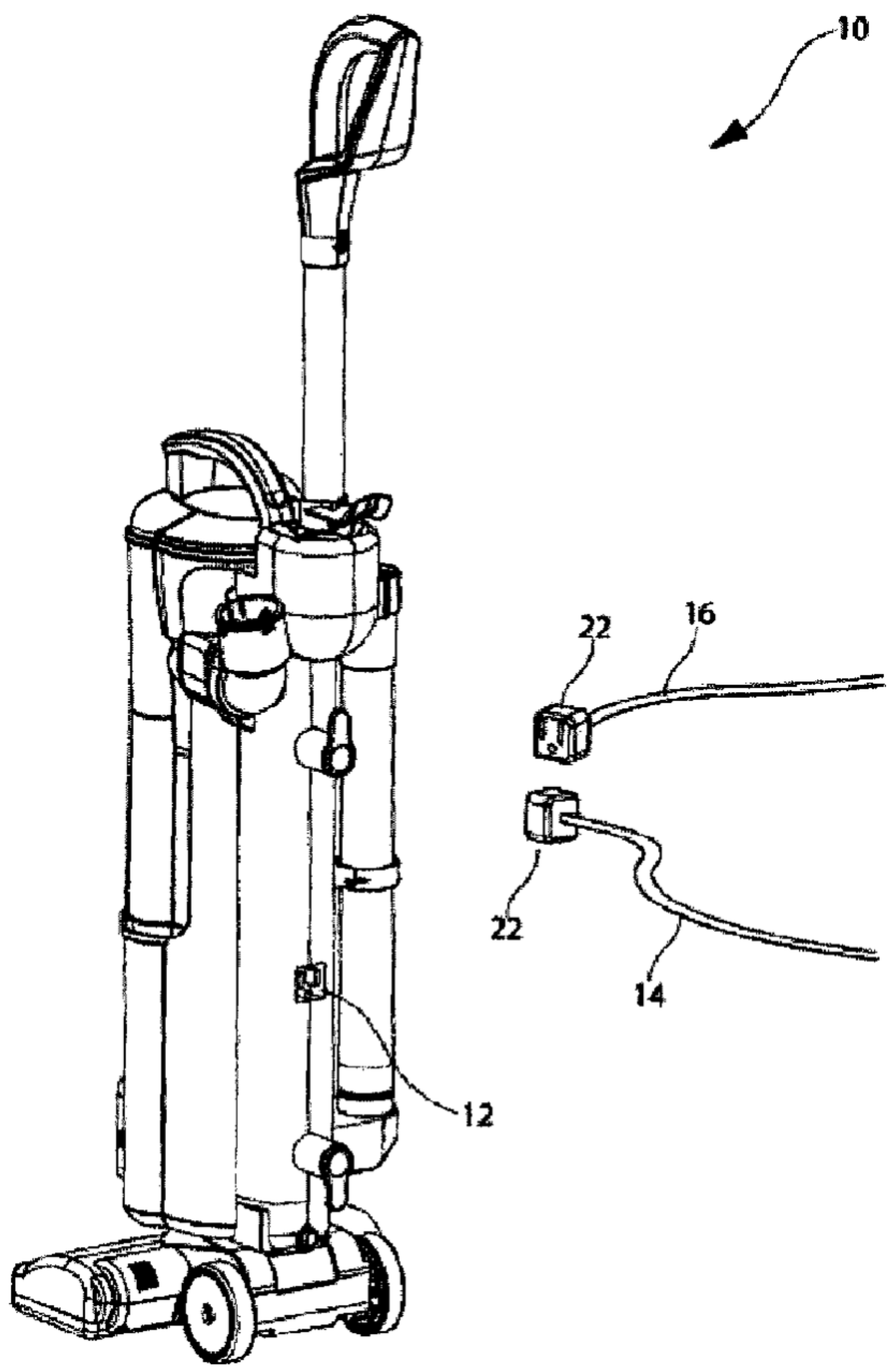
(51) Cl.Int./Int.Cl. *H01R 13/64* (2006.01),
H01R 13/717 (2006.01)

(71) Demandeur/Applicant:
CONRAD, WAYNE ERNEST, CA

(72) Inventeur/Inventor:
CONRAD, WAYNE ERNEST, CA

(74) Agent: BERESKIN & PARR LLP/S.E.N.C.R.L.,S.R.L.

(54) Titre : CORDON ELECTRIQUE ET APPAREIL Y FAISANT APPEL
(54) Title: ELECTRICAL CORD AND APPARATUS USING SAME



(57) Abrégé/Abstract:
An electricity conducting cord has first and second ends, one of the ends comprising an electrical connection member engageable with a power connection member of an apparatus having an apparatus power rating, at least one of the power connection member and the electrical connection member comprising electrical connectors and a physical cord identification member, the physical cord identification member is configured to inhibit the electricity conducting cord being electrically connected to the power connection member if the electricity conducting cord has a power rating lower than the apparatus power rating.

ABSTRACT

An electricity conducting cord has first and second ends, one of the ends comprising an electrical connection member engageable with a power connection member of an apparatus having an apparatus power rating, at least one of the power connection member and the electrical connection member comprising electrical connectors and a physical cord identification member, the physical cord identification member is configured to inhibit the electricity conducting cord being electrically connected to the power connection member if the electricity conducting cord has a power rating lower than the apparatus power rating.

TITLE: ELECTRICAL CORD AND APPARATUS USING SAME

INVENTOR: CONRAD, Wayne Ernest

FIELD

This invention relates to power cords, also referred to as electricity conducting cords, such as those that may be used with household appliances and a household appliance that is operated with a power cord.

INTRODUCTION

Household appliances such as surface cleaning apparatus (e.g. a vacuum cleaner, carpet extractor and the like), power tools, kitchen appliances, personal care products (e.g. hair driers, electric toothbrushes and the like) and lawn or garden tools typically are operated using household electric current. Accordingly, each appliance is sold with a power cord. Typically, the power cord is non-removably affixed to the appliance. When the appliance reaches the end of its life, the power cord is thrown away with the rest of the appliance. Typically, the appliance is disposed of (e.g., sent to landfill) as it has reached the end of its life as opposed to the electrical cord requiring replacement. Further, a significant percentage of small appliances are destroyed in the field by retailers when returned by customers as opposed to being sent back to the manufacturer or marketer for refurbishment.

It is known to provide some electronic devises, such as computers and electric kettles, with a removable power cord. However, a specific power cord may be designed for each appliance. Accordingly, while the power cord may be kept when the appliance is disposed of, the power cord may not be designed to mate with a replacement appliance (i.e. the plug of the power cord may not fit into a socket of the replacement appliance).

Extension cords for household use are commonly available. Extension cords typically have a standard single plug for insertion into a household electrical socket and one or more sockets into which the standard plug of an appliance may be inserted. Accordingly, the extension cords are generic and may be used with any appliance. For example, an appliance plug with a three-prong connector may be inserted into any extension cord having a three-prong socket. Similarly, an appliance having a two-prong connector may be inserted into any extension cord having two mating recesses for the prongs.

SUMMARY

In accordance with this invention, a reusable electricity conducting cord is provided. The electricity conducting cord is designed so that it may not be utilized with an appliance having a higher power rating (e.g. amperage rating) then that of the electricity conducting cord. Accordingly, either the appliance or the electricity conducting cord, and preferably both, are provided with a cord identification member. The cord identification member inhibits a cord from being plugged into an appliance if the cord is underrated for the appliance. Accordingly, one advantage of this design is that reusable cords may be provided. For example, a series of cords having various power ratings may be provided. These cords may be kept by a consumer and utilized with an appliance having a compatible (the same or lower) power rating. Therefore, when an appliance is disposed of, the electricity conducting cord may be kept and re-used for an appliance having a compatible power rating.

In an optional embodiment, a series of electricity conducting cords having different power ratings may be available (e.g., provided with a product or sold separately). The electricity conducting cords may have different cord identification members based on the power rating of the electricity conducting cord. The cord identification member inhibits an electricity conducting cord being electrically connected to an appliance and/or another electricity conducting cord,

if the electricity conducting cord has a power rating that is lower than the power rating of the appliance.

For example, an appliance may be sold by itself and the manufacturer or a third party may provide a series of electricity conducting cords, which may be sold separately or supplied with an appliance. Accordingly, if a user already has an electricity conducting cord, it is not necessary for the manufacturer to supply an electricity conducting cord with the appliance. The consumer may use an electricity conducting cord that the consumer already has. Alternately, if the consumer does not have a suitable electricity conducting cord, they may purchase one separately. Electricity conducting cords use a relatively large amount of copper. By providing a re-usable electricity conducting cord, the amount of copper which is utilized in the manufacture of an appliance, and which is eventually disposed of at the end of life of the appliance is reduced. By permitting the user to keep the electricity conducting cord, the amount of copper that is utilized is therefore reduced. Further, by providing the cord identification member, a user may not use an underrated cord on an appliance.

In another mode of operation, a user may have a number of the identical electricity conducting cords (i.e. an electricity conducting cord with the same electrical rating). The user may therefore keep the electricity conducting cord in various locations. When the appliance is to be used, the user need not move the electricity conducting cord with the appliance. Instead, the appliance may be moved to the required location and the electricity conducting cord at that location may be utilized. For example, a vacuum cleaner may be provided with an electricity conducting cord of about 25 feet. The electricity conducting cord may represent a significant amount of weight of the vacuum cleaner, particularly if the vacuum cleaner is a stick type vacuum cleaner. This added weight may increase the difficulty for an elderly or disabled person to carry the vacuum cleaner to another location. Accordingly, a consumer may have a first electricity conducting cord in one room or a first floor of a house and the same power rated

electricity conducting cord in another room or another floor of the house. Accordingly, when the vacuum cleaner is moved to the second location, an electricity conducting cord is available for use and the consumer has not had to carry the additional weight of the electricity conducting cord. Further, the vacuum cleaner may be easier to store without the cord attached.

It will be appreciated that the power rating of an electricity conducting cord is based upon the amount of electricity that the cord can provide. This will be based, *inter alia,* upon the gauge of the wire as well as the length of the cord.

Accordingly, in accordance with a first embodiment of the invention, there is provided an appliance having an appliance power rating the appliance comprising

(a) an electrically operated member;

(b) an electrical connection member; and,

(c) an electricity conducting cord having a first end connectable in electric communication with the electrical connection member and a second end connectable with a source of electricity

wherein at least one of the electrical connection member and the first end of the electricity conducting cord have at least one cord identification member configured and/or to prevent the first end of an electricity conducting cord having a power rating lower than the appliance power rating being electrically connected to the electrical connection member.

In some embodiments, the electrical connection member may have a first cord identification member and the first end of the electricity conducting cord may have a second cord identification member. Preferably, one of the first and second cord identification members comprises a male member and the other of the first and second cord identification members comprises a female member. Preferably,

the male member and the female member are sized, positioned and/or shaped, and/or the number of male members that are provided on the end having the male members, is based on the power rating of the respective part on which the male member and the female member is provided.

In some embodiments, the appliance may further comprise a plurality of electricity conducting cords of varying gauges and the male member provided on the end having the male member may increase in size as the gauge of the electricity conducting cord increases.

In some embodiments, the appliance may further comprise a plurality of electricity conducting cords of varying gauges and the female member provided on the end having the female member may decrease in size as the gauge of the electricity conducting cord increases.

In some embodiments, the first and second cord identification members may be inter-engageable only if the electricity conducting cord has a power rating the same as or higher than the appliance power rating.

In some embodiments, one of the first and second cord identification members may be a male engagement member and the other of the first and second cord identification members may be a female engagement member and the male engagement member may be positioned and configured to be engageable with a female engagement member only if the electricity conducting cord has a power rating the same as or higher than the appliance power rating.

In some embodiments, the appliance may have an appliance electric cord having a length of up to one foot. Preferably, the appliance electric cord has a length of up to 6 inches.

In some embodiments, the electricity conducting cord may have a length of at least 6 feet, preferably 6 - 300 feet and more preferably 25 - 50 feet.

In some embodiments, the cord identification member of the electrical connection member may be positioned or configured based on the power rating of the appliance and the cord identification member of the electricity conducting cord may have a power rating based on the length and gauge of the electricity conducting cord.

In some embodiments, the cord identification member of the electricity conducting cord may be positioned or configured based on the length and gauge of the electricity conducting cord.

In some embodiments, the electrical connection member may be a plug and the first end of an electricity conducting cord may be a socket.

In some embodiments, the electrical connection member may be a socket and the first end of an electricity conducting cord may be a plug.

In some embodiments, at least one of the electricity conducting cord and the electrical connection member may include a fuse. Preferably, the fuse is provided in at least one of the electrical connection member and the first end of the electricity conducting cord. More preferably, the appliance further comprises a visual signaling member indicative of the fuse being in operating condition or an audio signaling member indicative of the fuse being blown.

In some embodiments, the appliance may further comprise a visual signaling member indicative of the amount of power flowing through the electricity conducting cord. Preferably, the visual signaling member comprises at least one of a plurality of different coloured lights, a light having a variable colour, a light having a variable intensity or a meter.

In some embodiments, the fuse may comprise a fuse link member, the fuse link member is visible when the fuse is installed and the visual signaling member comprises the fuse link member.

In some embodiments, the fuse may be resettable and the position of a fuse reset member comprises the visual signaling member.

In some embodiments, the visual signaling member may comprise an illumination member that is illuminated when current flows through the electricity conducting cord.

In some embodiments, the appliance may further comprise an illumination member that is illuminated when current flows through the electricity conducting cord.

In some embodiments, the appliance may be selected from the group consisting of a surface cleaning apparatus, a power tool, a kitchen appliance, a kitchen appliance, a lawn or garden appliance and a personal care product.

In accordance with another embodiment of the invention, there is provided an electricity conducting cord having first and second ends, one of the ends comprising an electrical connection member engageable with a power connection member of an apparatus having an apparatus power rating, at least one of the power connection member and the electrical connection member comprising electrical connectors and a physical cord identification member, the physical cord identification member configured to inhibit the electricity conducting cord being electrically connected to the power connection member if the electricity conducting cord has a power rating lower than the apparatus power rating.

In accordance with another embodiment of the invention, there is provided an apparatus comprising an electrically powered unit having a first electrical connection member, the first electrical connection member comprising electrical connectors and a physical identifying member, the physical identifying member configured to permit a second electrical connection member to only engage the

first electrical connection member if the second electrical connection member has a power rating compatible with the apparatus.

The electricity conducting cord and the apparatus may use any one or more of the features of the alternate embodiments of the appliance.

DRAWINGS

These and other advantages will be more fully and clearly understood in connection with the following description of the preferred embodiments, which are shown in the following drawings:

Figure 1 is a perspective view of an appliance according to one embodiment of this invention;

Figure 2 is a perspective view of the appliance of Figure 1 in accordance with another embodiment of this invention;

Figure 3 is a perspective view of the appliance of Figure 1 in accordance with a further embodiment of this invention;

Figure 4 is a perspective view of the appliance of Figure 1 in accordance with a further embodiment of this invention;

Figure 5 is a perspective view of another appliance in accordance with an embodiment of this invention;

Figure 6 is a perspective view of an electricity conducting cord according to one embodiment of this invention showing a plurality of optional sockets and a plurality of optional plugs that may be utilized.

Figure 7 is a perspective view of two electricity conducting cords according to another embodiment of this invention showing alternate sockets and alternate plugs that may be utilized; and,

Figure 8 is a perspective view of a further electricity conducting cord according to another embodiment of this invention showing an alternate series of sockets and plugs that may be utilized.

DESCRIPTION OF VARIOUS EMBODIMENTS

Various apparatuses or methods will be described below to provide an example of each claimed invention. No example described below limits any claimed invention and any claimed invention may cover processes or apparatuses that are not described below. The claimed inventions are not limited to apparatuses or processes having all the features of any one apparatus or process described below or to features common to multiple or all of the apparatuses described below. It is possible that an apparatus or process described below is not an embodiment of any claimed invention.

In accordance with this invention, an electrically operated appliance 10 is utilized. The appliance, or apparatus, may be any apparatus, which requires an electricity conducting cord. Preferably, the appliance may be a vacuum cleaner or other surface cleaning apparatus (e.g. an extractor, carpet cleaner etc.), a power tool (such as a drill, skill saw, sander or the like), a kitchen appliance (such as an electric kettle, a toaster, a juicer or the like), a lawn or garden appliance (such as a lawn mower, hedge trimmers, or the like), or a personal care product (such as a hair dryer, electric tooth brush or the like). For example, as exemplified in Figures 1 – 4, appliance 10 is a vacuum cleaner. As exemplified in Figure 5, appliance 10 is a toaster. Each appliance has an electrically operated member. For example, in the case of a vacuum cleaner, the electrically operated member may be the suction motor, and, optionally, a light, a brush motor or the like. In the case of a toaster, the electrically operated member may be the heating elements provided in the toaster. Accordingly, the electrically operated member may be a member having a moving part or no moving part.

As exemplified in Figures 1 – 5, appliance 10 is provided with an electrical connection member 12. Electrical connection member may be provided

in the housing of appliance 10 itself (as exemplified in Figures 1 – 4) or may be provided at the end of a short electricity conducting cord, e.g. a pigtail cord, as exemplified in Figure 5. The pigtail cord may have a length of up to one foot and, preferably, up to only about six inches. If such a cord is provided, it may have an advantage of facilitating a user plugging an electricity conducting cord 14, 16, 18, 20, into first electrical connection member 12.

First electrical connection member 12 is a plug which may be recessed in a housing of appliance 10. In particular, a shown in Figure 5, first electrical connection number 12 has three electrical connectors, one of which is a ground, and a first cord identification member 26. In an alternate embodiment, it will be appreciated that electrical connection member 12 may only have two electrical connectors (i.e., a ground may not be required). In an alternate embodiment, it will be appreciated that electrical connection member 12 may be a socket as opposed to a plug. Further, the electrical connection member may be provided at any location that is desired on the appliance.

As shown in Figures 1 – 3 and 5, one or more electrical connection members 12, 14, 16 and 18 may be provided with appliance 10 or usable with appliance 10. For example, referring to Figure 1, appliance 10 may be provided with two electricity conducting cords 14 and 16. Cords 14 and 16 may be of varying lengths. Each cord is provided with a first end 22, which is insertable or mate able with first electrical connection member 12. Accordingly, as exemplified in Figure 5, first end 22 is a socket having a plurality of recesses 32 sized to receive electrical connectors 30. It will be appreciated that in an alternate embodiment, first electrical connection member 12 may be a socket and first end 22 may be a plug.

It will be appreciated that, in order to provide a required power level to appliance 10, the electricity conducting cord should be approved (e.g. by UL) to supply that particular level of power. Therefore, the gauge of the wire that is utilized for the electricity conducting cord may vary depending upon several

factors including the gauge of the wire and the length of the wire. For example, if a longer wire is utilized, then to supply the same power requirement, a heavier gauge (larger gauge) wire is utilized. For example, while a 16 gauge wire may be rated for 10 amps, if a longer electricity conducting cord is utilized, then an 18 gauge wire (which is typically rated 8 amps) may be required.

As exemplified in Figure 2, appliance 10 is provided with or is usable with an electricity conducting cord 18, which is a relatively long cord. For example, the cord may be at least 6 feet long, optionally from 6 to 300 feet long, and preferably from 25 to 50 feet long. Accordingly, due to the length of the cord, a heavier gauge wire may be utilized to provide the requisite power to appliance 10. As shown in Figure 3, appliance 10 is usable with an electricity conducting cord 20. Electricity conducting cord 20 is shorter and may accordingly be of a lighter gauge wire and still be rated to supply the power requirements of appliance 10.

As shown in Figures 2 and 3, electricity conducting cord 18, 20 has a second end 24. Second end 24 is preferably configured to plug into, for example, a household electrical outlet. Accordingly, second end 24 may be a standard plug (e.g. a two prong or a three prong plug depending whether the electricity conducting cord includes a ground pin). It will be appreciated that the configuration of first and second ends 22 and 24 may vary depending upon the standard prong configuration that is utilized in different countries.

The cord identification member is configured and/or positioned to prevent first end 22 of an electricity conducting cord having a power rating lower than the power rating of appliance 10 being electrically connected to first electrical connection member 12. In a preferred embodiment, it is preferred that each of electrical connection member 12 and first end 22 are provided with a cord identification member. Accordingly, as exemplified in Figure 5, electrical connection member 12 is provided with a first cord identification member 26 and first end 22 is provided with a second cord identification member 28. First and

second cord identification members 26, 28 are configured and/or positioned to permit first end 22 to be plugged into electrical connection member 12 if electricity conducting cord 14 has a power rating that is the same as or higher than that of appliance 10 and will prevent first end 22 plugging into electrical connection member 12 if electricity conducting cord 14 has a power rating lower than the power rating of appliance 10. Therefore, by varying, for example, one or more of the size, shape and position of one or both of the cord identification members 26, 28, a plurality of different first ends 22 and first electrical connection members 12 may be provided.

It will be appreciated that a cord which has a UL approval for a particular power rating (e.g. a 10 amp rating) may be used to supply power to an appliance having a power rating of 10 amps. Further, the same cord may be used to supply power to an appliance having a lower power rating (e.g. 8 amps or even 6 amps). However, the same cord should not be used to provide power to an appliance having a higher power rating (e.g. 14 amps). In such a case, the electricity passing through the electricity conducting cord may result in the cord, for example, overheating and failing. Accordingly, in one embodiment, the cord identification members may be configured to permit only an electricity conducting cord having the power rating identical to the power rating appliance being connected to the appliance. More preferably, the cord identification member or members are configured such that only electricity conducting cords having a power rating having the same as or higher than the power rating of the appliance may be connected to the appliance.

In accordance with another embodiment, the electricity conducting member may be an extension cord. An example of such an embodiment is shown in Figure 6. As shown therein, electricity conducting cord 34 is a heavy gauge ground wire having a first end comprising a socket 22 and a second end 24 comprising a plug. Figure 6 exemplifies a plurality of possible first ends 22a, 22b, 22c and 22d and a plurality of possible second ends 24a, 24b and 24c. In

each of these embodiments, the first cord identification member 26 is a male member and is exemplified as a protrusion having a constant diameter. It will be appreciated that the diameter may vary. In each of these embodiments, the second cord identification member 28 is a female member and is exemplified as a recess or opening having a constant diameter. It will be appreciated that the diameter may vary. In particular, first end 22a has a large round recess 28a to the bottom left for receiving a cord identification member 26. First end 22b is not provided with a cord identification member. First end 22c is provided with a small round recess 28c provided in the lower right hand corner. First end 22d is provided with a larger round recess 28d in the lower right hand corner. Similarly, second end 24a is not provided with a cord identification member. Second end 24b is provided with a small round protrusion 26b in the lower right hand corner and first end 24c is provided with a larger round protrusion 26c in the lower right hand corner.

It will be understood that the different configurations for first end 24 may be utilized as first electrical connection member 12 provided on appliance 10. Accordingly, proceeding on that basis, an exemplary method of using these differently shaped recesses and protrusions will now be described. Electrical connection member 12 may be configured the same as second end 24c. In such a case, a large round first cord identification member 26c is provided. In this case, only a cord having a recess 28 which is of at least the same diameter, if not larger, than first cord identification member 26c will permit a first end 22 to be inserted into first connection member 12. Accordingly, for example, appliance 10 may have a power rating of 15 amps. If electricity conducting cord 34 is provided with first end 22a, then electricity conducting cord 34 may be plugged into the appliance to provide power to the appliance. Accordingly, electricity conducting cord 34 is designed with a power rating of at least 15 amps.

In an alternate example, appliance 10 may be provided with a first electrical connection member 12, which is configured the same as second end

24b. In such a case, the appliance may have a lower power rating (e.g. 8 amps). In such a case, an electricity conducting cord 34 having a first end 22a and a power rating of, e.g. 15 amps, may be plugged into the appliance. In such a case, the cord is over rated but usable. Alternately, a cord having a lower power rating (e.g. 8 amps) may be provided with a first end 22c. Second cord identification member 28c is positioned and configured to receive first cord identification member 26b. Accordingly, first end 22 may be plugged into appliance 10 to supply power to appliance 10.

In another embodiment, an appliance may be provided with a first electrical connection member 12 configured the same as first end 24a. In such a case, no cord identification member is provided. In this example, appliance 10 may have the highest power rating for a series of electricity conducting cords. Accordingly, only a cord with no cord identification member on first end 22 may be inserted into the appliance (e.g. a cord with first end 22b). Any electricity conducting cord with a cord identification member (e.g. a protrusion 26) would not be able to plug into the appliance. Accordingly, if a series of electricity conducting cords are provided, then no cord identification member may be provided on the highest rated cord since it may be used with any appliance in the series.

In an alternate embodiment, it will be appreciated that a cord 34 may be provided with a first end 22d. In this case, first end 22d has a recess 28d which is of the same size as first cord identification member 26c. However, recess 28d is located in a different location (the bottom right corner as opposed to the bottom left corner). Accordingly, a first end 22d could not be plugged into appliance 10. Accordingly, it will be appreciated that a change in position may be used to prevent a lower rated cord being electrically connected to an appliance 10.

Figures 7 and 8 exemplify additional alternate embodiments. Figure 7 exemplifies two electricity conducting cords 36a and 36b, which have a square

or oval electricity conducting cord. Figure 8 exemplifies an electricity conducting cord 38 having a lower gauge round wire. A plurality of different configurations for first end 22 and second end 24 are provided. These exemplify different options for the position, configuration and number of cord identification members, which may be provided. As will be appreciated from first ends 22a – 22l and second ends 24a – 24g, a large variety of different combinations of position and configurations of the cord identification members 26, 28 may be provided. Further, these figures exemplify the use of cord identification members having a different cross-sectional shape.

In one embodiment, the electricity conducting member may be designed to plug into a household electrical outlet. Accordingly, second end 24 may be a standard electrical plug. In an alternate embodiment, electricity conducting member, such as electricity conducting members 34, 36a, 36b and 38 may be designed as extension cords to be connected to an appliance or another electricity conducting cord 12, 14, 16, 18, 20. In such a case, the cords may be designed so that two electricity conducting cords may only be electrically connected together if they have compatible power ratings.

In accordance with another embodiment, a fuse 40 may be provided as part of the electrical circuit. The purpose of the fuse is to prevent an underrated cord being mistakenly used if, for example, one of the cord identification members is damaged (e.g. protrusion 26 is broken off). If an underrated cord is mistakenly used, then the fuse will preferably blow to open the electrical circuit and prevent electricity flowing through the underrated cord to the appliance. Preferably, the fuse is provided in at lease one of electrical connection member 12 and first end 22 of the electricity conducting cord. Preferably, the fuse is located in the electricity conducting cord, such as first end 22 or second end 24 (as exemplified in Figures 6 – 8).

Preferably, the fuse 40 provides a visual signal to a user that the cord is operational. For example, the fuse 40 may have a fuse link member 40a,

which is designed to break if too much electricity flows through the cord. The fuse link member may accordingly be visible (positioned such that it may be seen when inserted into e.g. first or second ends 22, 24). Accordingly, when the fuse link member breaks, it provides a visual signal to a user that the cord is no longer operational. Alternately, the fuse may be re-settable (e.g. a circuit breaker or a GFI). In such a case, the position of the fuse reset member may provide a visual signaling member advising a user that the cord is no longer operational.

It will also be appreciated that the visual signaling member may be a light, e.g. LED 44 that illuminates when electricity flows through the cord. For example, it may a light as is used in a GFI. Accordingly, the visual signaling member may comprise an illumination member that is illuminated when current flows through the electricity conducting cord and/or when power is supplied to a cord or appliance having the light.

It will also be appreciated that the visual signaling member may advise a user of the amount of power which is flowing through a cord or to an appliance 10. For example, the cord may be provided with a series of lights, which may be differently coloured. The number of lights, which are illuminated, and/or the colour that is emitted, could be indicative of the amount of power, which is flowing through the cord. Alternately, or in addition, the intensity of a light may vary as the power flowing through a cord varies. Alternately, or in addition, the cord may be provided with a meter, which indicates the amount of electricity flowing through the cord. For example, the meter could be an analog meter or a digital meter (e.g. an LCD screen with a plurality of bars which are illuminated as more power flows through the cord).

All of the forgoing are examples of the visual signaling member that is indicative of a cord being in operating condition. It will be appreciated that in addition thereto or in lieu thereof, an audio signaling member may be provided , which preferably advises a user if a power is not supplied to an appliance 10.

Preferably, the audio signaling member emits a sound if the fuse is blown and requires replacement.

It will be appreciated that the cord identification members may accordingly be used with an electricity conducting member 14, 16, 18, 20, which is intended to be plugged into a standard household electrical outlet. In such a case, first end 22 of the electricity conducting cord may be provided with a first cord identification member. The second end 24 of the cord need not be provided with a second cord identification member.

In another embodiment as exemplified in Figures 6 – 8 an electricity conducting cord 34, 36a, 36b, 38 is provided with first and second ends 22, 24 each of which utilize a cord identification member. Accordingly, the electricity conducting cord may be utilized with an extension cord. For example, first end 22 of the electricity conducting cord 34, 36a, 36b and 38 may have cord identification member and may be usable with an appliance 10 (i.e., electrically contactable to first electrical connection member 12). The second end 24 is a second electrical connection member and is provided with a cord identification member, which controls the extension cord that may be plugged into second end 24. Accordingly, a further extension cord having a second end 24 comprising a standard plug may be plugged into the second end of the cord that is plugged into appliance 10.

It will be appreciated that an appliance or an electricity conducting cord may utilize one or more of the features disclosed herein. Further, what has been described above has been intended to be illustrative of the invention and not limiting and it will be understood by a person skilled in the art that other variants and modifications may be made without departing from the scope of the invention as defined in the claims appended hereto.

CLAIMS:

1. An appliance having an appliance power rating the appliance comprising

(a) an electrically operated member;

(b) an electrical connection member; and,

(c) an electricity conducting cord having a first end connectable in electric communication with the electrical connection member and a second end connectable with a source of electricity

wherein at least one of the electrical connection member and the first end of the electricity conducting cord have at least one cord identification member configured and/or to prevent the first end of an electricity conducting cord having a power rating lower than the appliance power rating being electrically connected to the electrical connection member.

2. The appliance of claim 1 wherein the electrical connection member has a first cord identification member and the first end of the electricity conducting cord has a second cord identification member.

3. The appliance of claim 2 wherein one of the first and second cord identification members comprises a male member and the other of the first and second cord identification members comprises a female member.

4. The appliance of claim 3 wherein the male member and the female member are sized, positioned, and/or shaped, and/or the number of male members that are provided on the end having the male members, is based on the power rating of the respective part on which the male member and the female member is provided.

5. The appliance of any of claims 2 - 3 further comprising a plurality of electricity conducting cords of varying gauges and the male member provided on

the end having the male member increases in size as the gauge of the electricity conducting cord increases.

6. The appliance of any of claims 2 - 3 further comprising a plurality of electricity conducting cords of varying gauges and the female member provided on the end having the female member decreases in size as the gauge of the electricity conducting cord increases.

7. The appliance of any of claims 2 - 6 wherein the first and second cord identification members are inter-engageable only if the electricity conducting cord has a power rating the same as or higher than the appliance power rating.

8. The appliance of claim 2 wherein one of the first and second cord identification members is a male engagement member and the other of the first and second cord identification members is a female engagement member and the male engagement member is positioned and configured to be engageable with a female engagement member only if the electricity conducting cord has a power rating the same as or higher than the appliance power rating.

9. The appliance of any of claims 1 - 8 wherein the appliance has an appliance electric cord having a length of up to one foot.

10. The appliance of claim 9 wherein the appliance electric cord has a length of up to 6 inches.

11. The appliance of any of claims 1 - 10 wherein the electricity conducting cord has a length of at least 6 feet.

12. The appliance of any of claims 1 - 10 wherein the electricity conducting cord has a length of 6 - 300 feet.

13. The appliance of any of claims 1 - 10 wherein the electricity conducting cord has a length of 25 - 50 feet.

14. The appliance of any of claims 2 - 13 wherein the cord identification member of the electrical connection member is positioned or configured based on the power rating of the appliance and the cord identification member of the electricity conducting cord has a power rating based on the length and gauge of the electricity conducting cord.

15. The appliance of any of claims 1 - 13 wherein the cord identification member of the electricity conducting cord is positioned or configured based on the length and gauge of the electricity conducting cord.

16. The appliance of any of claims 1 - 15 wherein the electrical connection member is a plug and the first end of an electricity conducting cord is a socket.

17. The appliance of any of claims 1 - 15 wherein the electrical connection member is a socket and the first end of an electricity conducting cord is a plug.

18. The appliance of any of claims 1 - 17 wherein at least one of the electricity conducting cord and the electrical connection member includes a fuse.

19. The appliance of claim 18 wherein the fuse is provided in at least one of the electrical connection member and the first end of the electricity conducting cord.

20. The appliance of claim 19 further comprising a visual signaling member indicative of the fuse being in operating condition or an audio signaling member indicative of the fuse being blown.

21. The appliance of any of claims 1 - 17 further comprising a visual signaling member indicative of the amount of power flowing through the electricity conducting cord.

22. The appliance of claim 21 wherein the visual signaling member comprises at least one of a plurality of different coloured lights, a light having a variable colour, a light having a variable intensity or a meter.

23. The appliance of claim 20 wherein the fuse comprises a fuse link member, the fuse link member is visible when the fuse is installed and the visual signaling member comprises the fuse link member.

24. The appliance of claim 20 wherein the fuse is resettable and the position of a fuse reset member comprises the visual signaling member.

25. The appliance of claim 21 wherein the visual signaling member comprises an illumination member that is illuminated when current flows through the electricity conducting cord.

26. The appliance of any of claims 1 - 17 further comprising an illumination member that is illuminated when current flows through the electricity conducting cord.

27. The appliance of any of claims 1 - 26 wherein the appliance is selected from the group consisting of a surface cleaning apparatus, a power tool, a kitchen appliance, a kitchen appliance, a lawn or garden appliance and a personal care product.

28. An electricity conducting cord having first and second ends, one of the ends comprising an electrical connection member engageable with a power connection member of an apparatus having an apparatus power rating, at least one of the power connection member and the electrical connection member comprising electrical connectors and a physical cord identification member, the physical cord identification member is configured to inhibit the electricity conducting cord being electrically connected to the power connection member if

the electricity conducting cord has a power rating lower than the apparatus power rating.

29. The electricity conducting cord of claim 28 wherein the electrical connection member has a first cord identification member adapted to mate with a second cord identification member provided on the power connection member if the electricity conducting cord has a power rating lower than the apparatus power rating.

30. The electricity conducting cord of claim 29 wherein one of the first and second cord identification members comprises a male member and the other of the first and second cord identification members comprises a female member.

31. The electricity conducting cord of claim 30 wherein each of the male member and the female member is sized, positioned and/or shaped, or the number of male members is based on the power rating of the respective part on which the protrusion and the recess is provided.

32. The electricity conducting cord of any of claims 30 - 31 further comprising a plurality of electricity conducting cords of varying gauges and the male member increases in size as the gauge of the electricity conducting cord increases.

33. The electricity conducting cord of any of claims 30 - 31 further comprising a plurality of electricity conducting cords of varying gauges and the female member decreases in size as the gauge of the electricity conducting cord increases.

34. The electricity conducting cord of any of claims 29 - 33 wherein the first and second cord identification members are inter-engageable only if the electricity conducting cord has a power rating the same as or higher than the apparatus power rating.

35. The electricity conducting cord of claim 29 wherein one of the first and second cord identification members is a male engagement member and the other of the first and second cord identification members is a female engagement member and the male engagement member is positioned and configured to be engageable with a female engagement member only if the electricity conducting cord has a power rating the same as or higher than the apparatus power rating.

36. The electricity conducting cord of claim 29 wherein the cord identification member of the electrical connection member is positioned or configured based on the power rating of the apparatus and the cord identification member of the electricity conducting cord has a power rating based on the length and gauge of the electricity conducting cord.

37. The electricity conducting cord of any of claims 28 - 36 wherein the cord identification member of the electricity conducting cord is positioned or configured based on the length and gauge of the electricity conducting cord.

38. The electricity conducting cord of any of claims 28 - 37 wherein the electrical connection member is a plug.

39. The electricity conducting cord of any of claims 28 - 37 wherein the electrical connection member is a socket.

40. The electricity conducting cord of any of claims 28 - 39 wherein the electricity conducting cord includes a fuse.

41. The electricity conducting cord of claim 40 wherein the fuse is provided in the electrical connection member.

42. The electricity conducting cord of claim 41 further comprising a visual signaling member indicative of the fuse being in operating condition or an audio signaling member indicative of the fuse being blown.

43. The electricity conducting cord of any of claims 28 - 41 further comprising a visual signaling member indicative of the amount of power flowing through the electricity conducting cord.

44. The electricity conducting cord of claim 43 wherein the visual signaling member comprises at least one of a plurality of different coloured lights, a light having a variable colour, a light having a variable intensity or a meter

45. The electricity conducting cord of claim 40 wherein the fuse comprises a fuse link member, the fuse link member is visible when the fuse is installed and the visual signaling member comprises the fuse link member.

46. The electricity conducting cord of claim 40 wherein the fuse is resettable and the position of a fuse reset member comprises the visual signaling member.

47. The electricity conducting cord of claim 42 wherein the visual signaling member comprises an illumination member that is illuminated when current flows through the electricity conducting cord.

48. The electricity conducting cord of any of claims 28 - 41 further comprising an illumination member that is illuminated when current flows through the electricity conducting cord.

49. The electricity conducting cord of any of claims 28 - 48 wherein the apparatus is selected from the group consisting of a surface cleaning apparatus, a power tool, a kitchen appliance, a kitchen appliance, a lawn or garden appliance and a personal care product.

50. An apparatus comprising an electrically powered unit having a first electrical connection member, the first electrical connection member comprising electrical connectors and a physical identifying member, the physical identifying member configured to permit a second electrical connection member to only

engage the first electrical connection member if the second electrical connection member has a power rating compatible with the apparatus.

51. The apparatus of claim 50 wherein the first electrical connection member has a first cord identification member and the second electrical connection member has a second cord identification member.

52. The apparatus of claim 51 wherein one of the first and second cord identification members comprises a male member and the other of the first and second cord identification members comprises a female member.

53. The apparatus of claim 52 wherein each of the male member and the female member is sized, positioned and/or shaped, or the number of male members is based on the power rating of the respective part on which the male member and the female member is provided.

54. The apparatus of any of claims 52 – 53 wherein the second electrical connection member is provided on an electricity conducting member and a plurality of electricity conducting cords of varying gauges are available and the male member increases in size as the gauge of the electricity conducting cord increases.

55. The apparatus of any of claims 52 – 53 wherein the second electrical connection member is provided on an electricity conducting member and a plurality of electricity conducting cords of varying gauges are available and the female member decreases in size as the gauge of the electricity conducting cord increases.

56. The apparatus of any of claims 51 - 55 wherein the first and second cord identification members are inter-engageable only if the second electrical connection member has a power rating the same as or higher than the apparatus power rating.

57. The apparatus of claim 51 wherein one of the first and second cord identification members is a male engagement member and the other of the first and second cord identification members is a female engagement member and the male engagement member is positioned and configured to be engageable with a female engagement member only if the second electrical connection member has a power rating the same as or higher than the apparatus power rating.

58. The apparatus of any of claims 51 - 57 wherein the second electrical connection member is provided on an electricity conducting cord and the cord identification member of the first electrical connection member is positioned or configured based on the power rating of the apparatus and the cord identification member of the second electrical connection member has a power rating based on the length and gauge of the electricity conducting cord.

59. The apparatus of any of claims 50 - 58 wherein at least one of the first and second electrical connection members includes a fuse.

60. The apparatus of claim 59 further comprising a visual signaling member indicative of the fuse being in operating condition or an audio signaling member indicative of the fuse being blown.

61. The apparatus of any of claims 50 - 60 further comprising a visual signaling member indicative of the amount of power flowing through the first electrical connection member.

62. The apparatus of claim 61 wherein the visual signaling member comprises at least one of a plurality of different coloured lights, a light having a variable colour, a light having a variable intensity or a meter

63. The apparatus of claim 59 wherein the fuse comprises a fuse link member, the fuse link member is visible when the fuse is installed and the visual signaling member comprises the fuse link member.

64. The apparatus of claim 59 wherein the fuse is resettable and the position of a fuse reset member comprises the visual signaling member.

65. The apparatus of claim 61 wherein the visual signaling member comprises an illumination member that is illuminated when current flows through the first electrical connection member.

66. The apparatus of any of claims 50 - 65 further comprising an illumination member that is illuminated when current flows through the first electrical connection member.

67. The apparatus of any of claims 50 - 66 wherein the apparatus is selected from the group consisting of a surface cleaning apparatus, a power tool, a kitchen appliance, a kitchen appliance, a lawn or garden appliance and a personal care product.

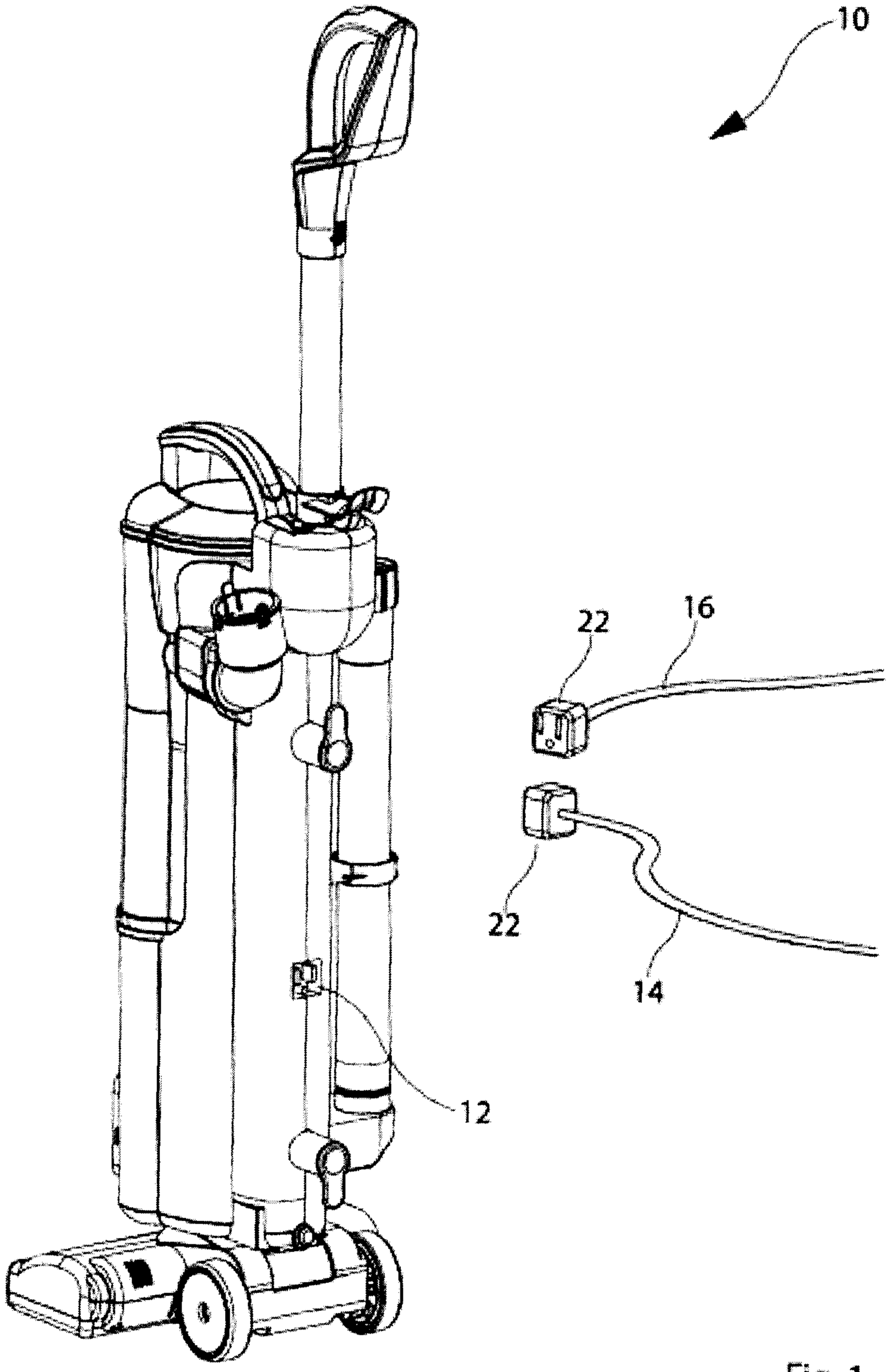


Fig. 1

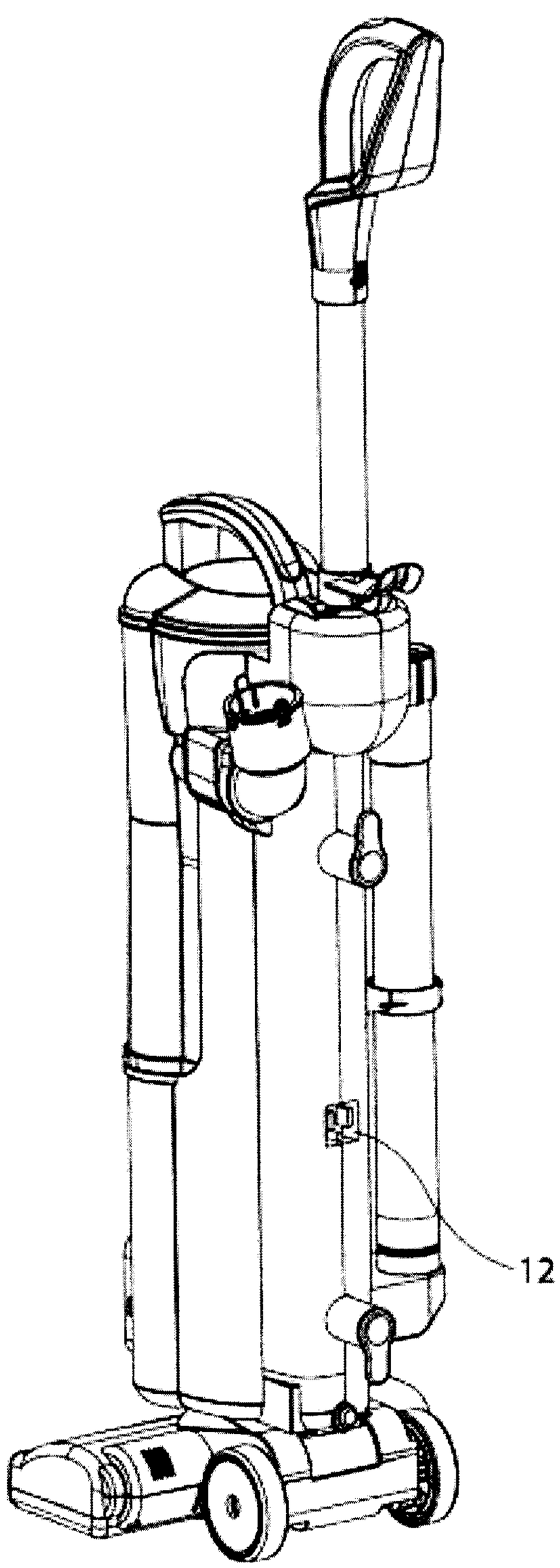


Fig. 2

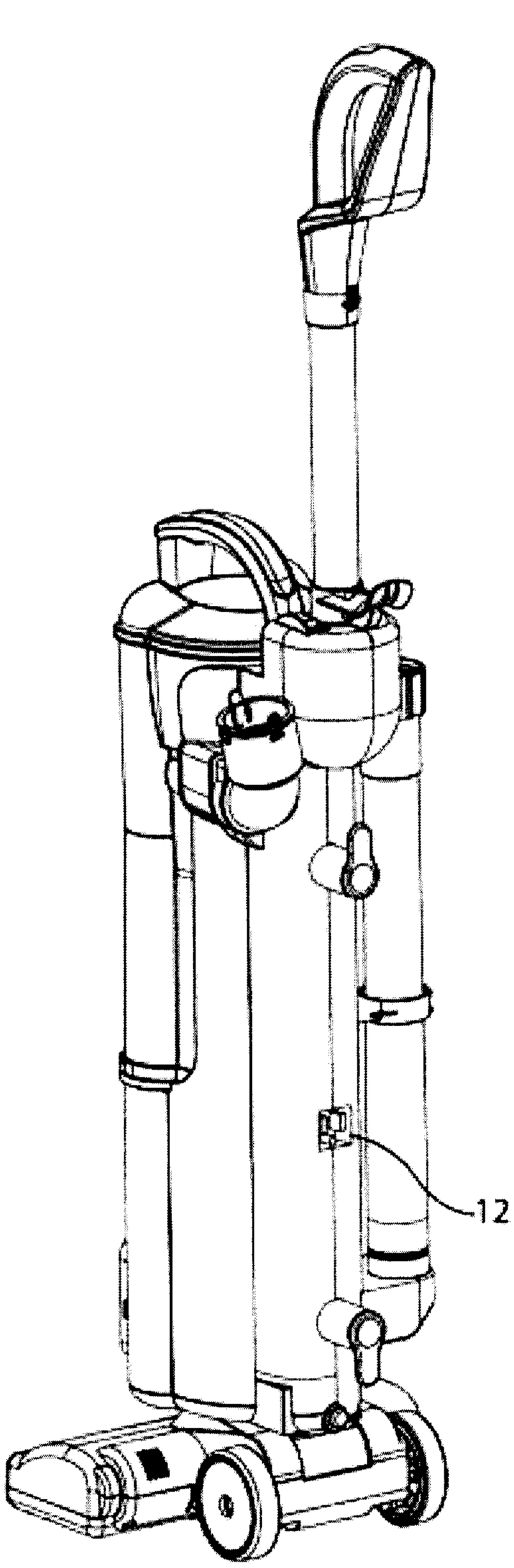


Fig. 3

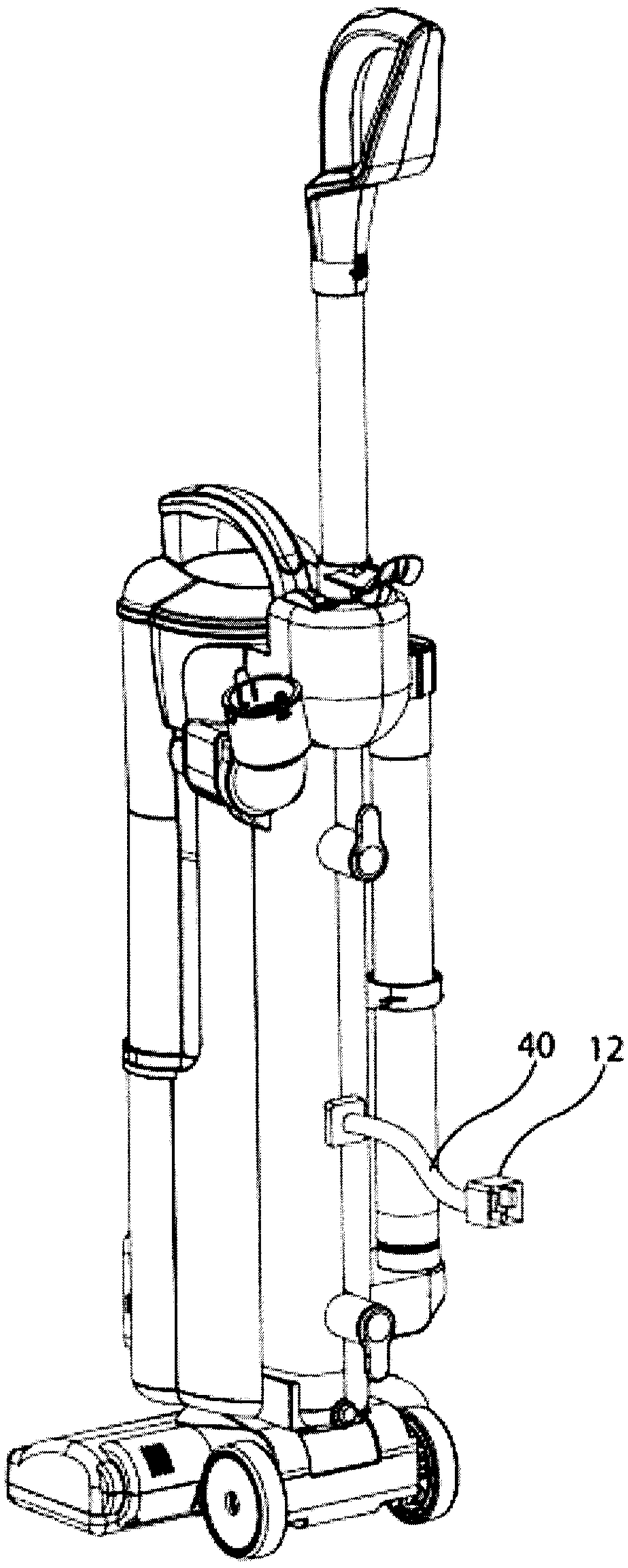


Fig. 4

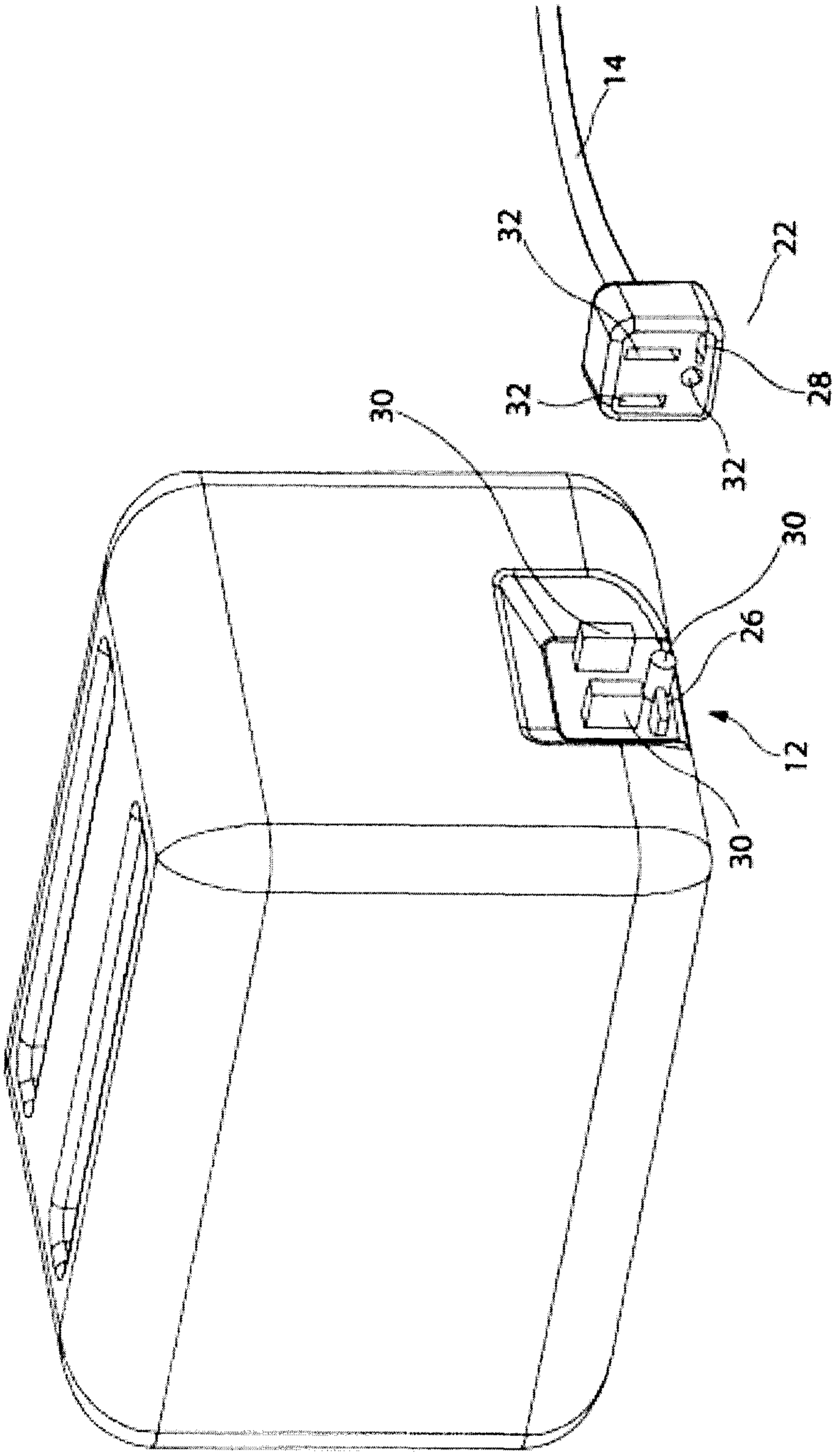


Fig. 5

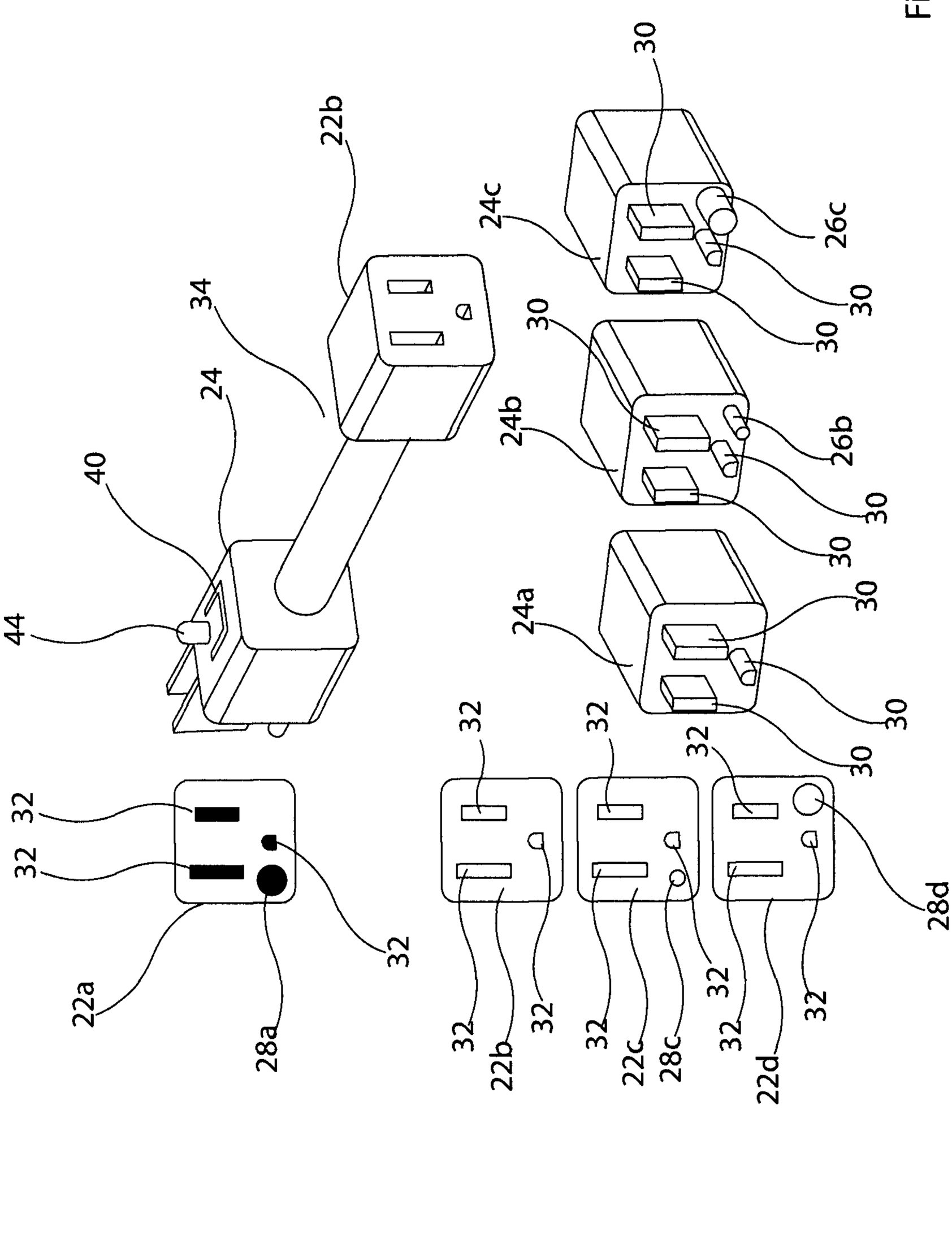

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Fig. 6

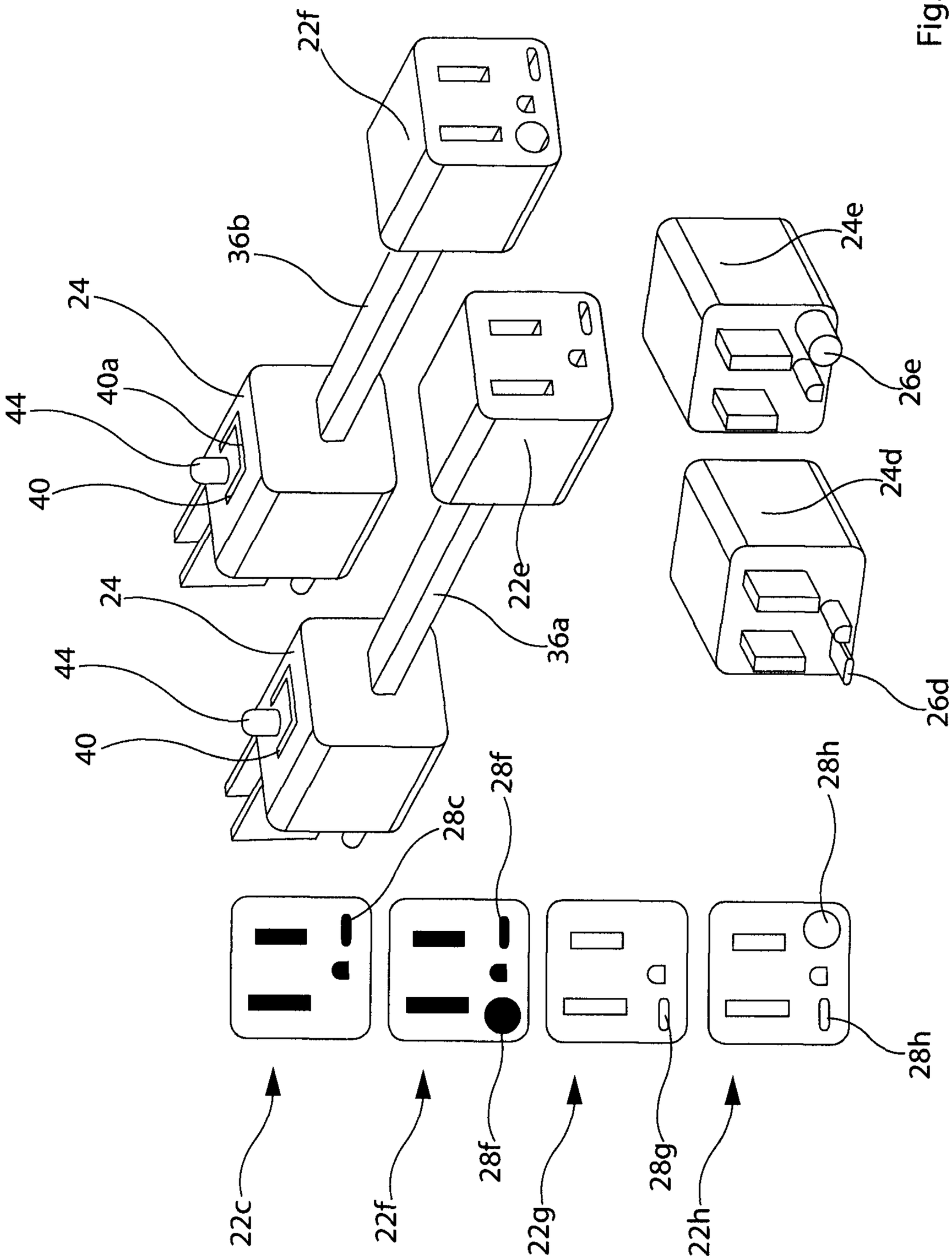
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Fig. 7

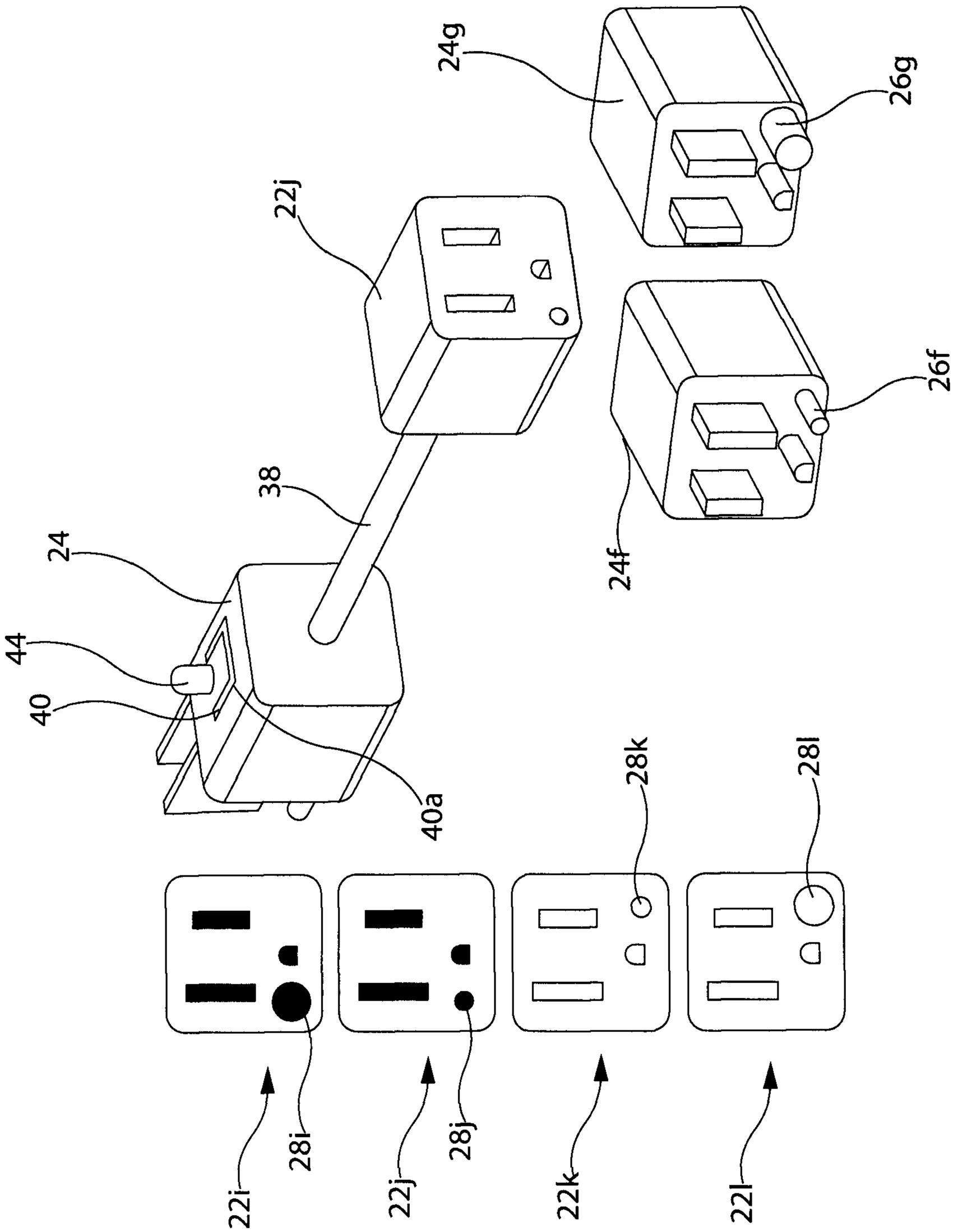
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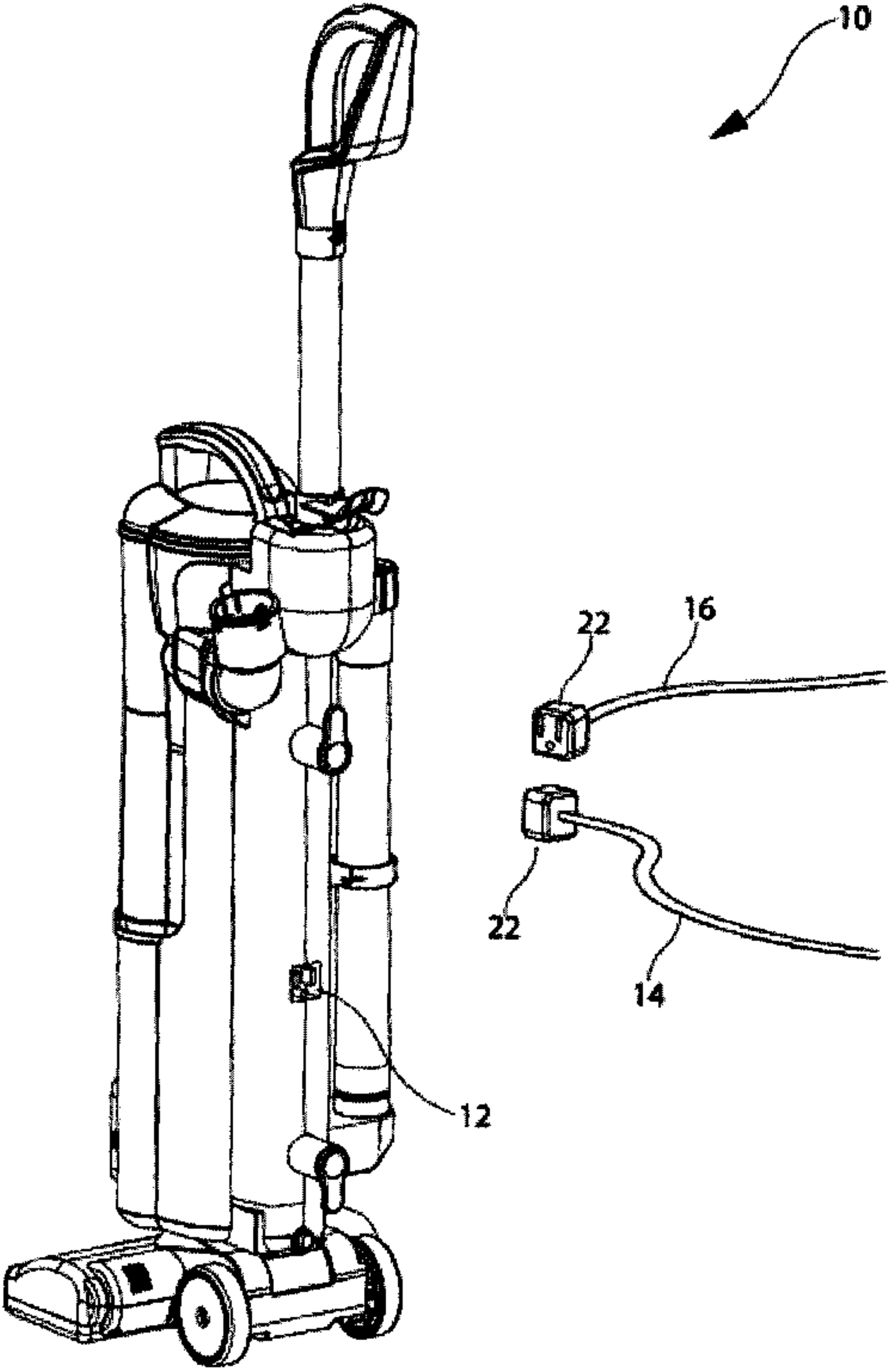
Fig. 8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