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## EUROPEAN PATENT APPLICATION

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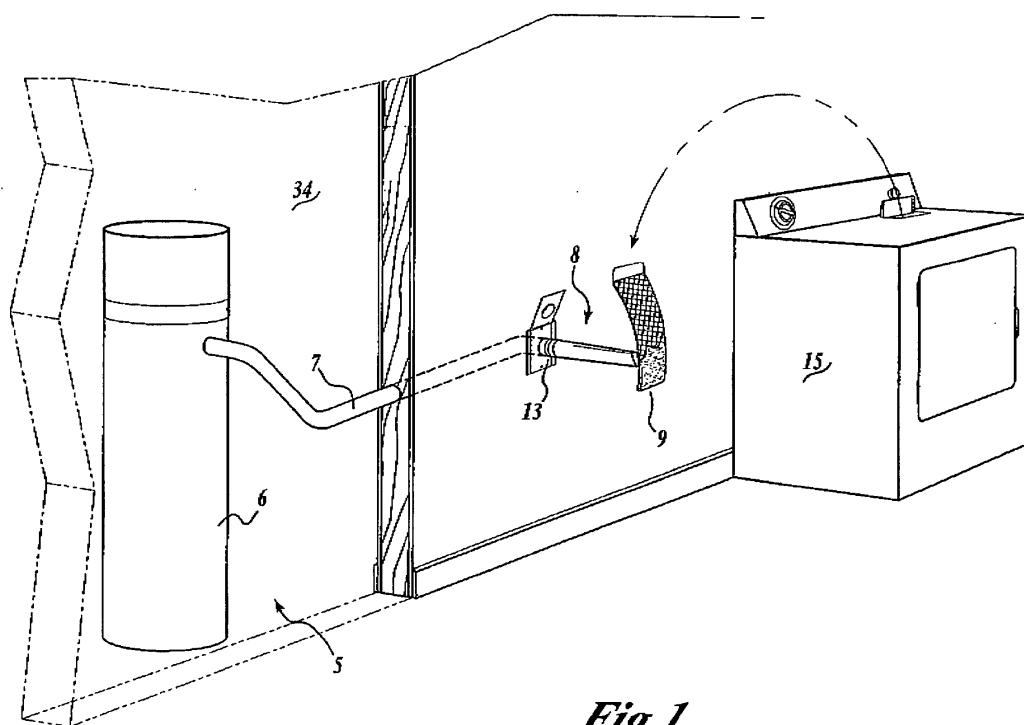
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### (54) Vacuum system attachment for cleaning household items

(57) One embodiment of a vacuum system attachment (8) for cleaning lint filters (9) and other household items, such as furnace filters, dust pans, window screens, mops, brooms, shoe soles, and ash trays formed in accordance with the present invention includes a hollow insertion member (10) having a insertion opening (11). An elongated, hollow nozzle member (12) adjoins the insertion member (10). The nozzle member (12) further

defines a tip end (14) having a tip opening (16). The hollow insertion member (10) is joined with the elongated, hollow nozzle member (12) to cooperatively form a vacuum system attachment (8). The insertion member (10) is then inserted into a vacuum system outlet (13), and a lint filter (9) is passed over the tip end (14) to draw the lint or dirt into the nozzle (12) and then into the vacuum system (5).



*Fig. 1.*

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**Description****FIELD OF THE INVENTION**

**[0001]** The present invention pertains to the cleaning of lint filters used in clothes dryers, and more particularly, to an attachment for built-in home vacuum cleaner system designed to clean the lint filter of clothes dryers. This attachment can also be used to remove dirt and debris from furnace filters, dust pans, window screens, mops, brooms, shoe soles, ash trays, and other household items.

**BACKGROUND OF THE INVENTION**

**[0002]** A clothes dryer produces lint during the drying process, and the lint generally accumulates in the dryer lint filter. To prevent build up and to maintain dryer efficiency, the lint must be periodically removed from the filter. In order to remove the lint, typically an owner will manually scrape the lint from the lint filter and then discard it. This process can be messy and incomplete. When the lint is scraped from the filter, particles of lint may escape the compacted accumulation of lint, leaving a mess beneath the filter. Moreover, by merely scraping the lint with one's fingers or some other device, not all the lint particles may be successfully removed from the filter. Thus, there is a need for a device that may be used to successfully clean lint filters without creating a mess. Such a device is also needed for cleaning other hard-to-clean household items, such as furnace filters, dust pans, window screens, mops, brooms, shoe soles, and ash trays. However, such a device must be convenient to use and inexpensive, such that the benefits of using such a device are not outweighed by cost or inconvenience.

**SUMMARY OF THE INVENTION**

**[0003]** One embodiment of a vacuum system attachment for cleaning lint filters and other household items formed in accordance with the present invention includes a hollow insertion member having an insertion opening. An elongated, hollow nozzle member, which defines a tip end and a tip opening, adjoins the hollow insertion member to cooperatively form a vacuum system attachment. Then, the insertion member is inserted into a vacuum system outlet, and a lint filter or other household item is passed over the tip end to draw the lint or dirt into the nozzle and then into the vacuum system.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0004]** The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same become better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings,

wherein:

FIGURE 1 is perspective view of a vacuum system attachment secured to a wall outlet for a built-in home vacuum system;

FIGURE 2 is a side perspective view of a fully assembled vacuum system attachment as shown in FIGURE 1;

FIGURE 3 is an exploded perspective view of a vacuum system attachment as shown in FIGURE 1; and FIGURE 4 is a perspective view of another embodiment of the present invention.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

**[0005]** Referring to FIGURE 1, the present invention relates to a vacuum system attachment 8 for cleaning clothes dryer lint filters or other household items 9, such as furnace filters, dust pans, window screens, mops, brooms, shoe soles, and ash trays. The attachment 8 may be used in conjunction with a built-in home vacuum system 5, which includes a central vacuum unit 6 and a network of vacuum lines 7 extending from the central unit to outlets 13 mounted in the wall throughout the home. Thus, the attachment 8 may be inserted into a wall outlet 13 near a clothes dryer 15 such that it may be conveniently used to remove lint, dirt, or other items from the lint filter 9 or other household item. After inserting the attachment 8 into the wall outlet 13, the clothes dryer filter 9, for example, may be removed from the clothes dryer 15 and passed over the tip end 14 of the attachment 8. As the filter 9 passes over the tip end 14, the lint from the filter 9 is drawn into the attachment 8 and then into the vacuum system central unit 6.

**[0006]** Referring now to FIGURE 2, the attachment 8 includes a hollow, round insertion member 10. The round insertion member 10 may include a round insertion opening 11. The insertion member 10 may be inserted into a vacuum system wall outlet 13 to activate the vacuum system attachment 8. Therefore, it is preferable that the shape of the insertion member 10 generally conforms to the shape of the wall outlet 13. Assuming that most outlets 13 are round in shape, the insertion member 10 is preferably round. However, other shapes and forms may also be appreciated.

**[0007]** The attachment 8 may also comprise an elongated, flattened nozzle member 12. The flattened nozzle member 12 may be hollow to allow air, lint, dirt, or other debris to pass through the flattened nozzle member 12. The inside surface of the flattened nozzle member 12 may generally conform to the shape of the exterior surface of the flattened nozzle member 12. The flattened nozzle member 12 may be joined with the round insertion member 10 to form a complete attachment 8. Moreover, a metal ring 32 may be disposed between the round insertion member 10 and the flattened nozzle member 12. The metal ring 32 may be used to activate the built-in

home vacuum system 5 when the attachment 8 is mounted into the wall outlet 13.

**[0008]** Referring now to FIGURE 3, the round insertion member 10 may further include an insertion portion 18, an attachment portion 20, and an intermediate portion 22 therebetween. The insertion portion 18 may be greater in diameter than the intermediate portion 22, and the intermediate portion 22 may be greater in diameter than the attachment portion 20. The round attachment portion 20 may additionally include a raised circumferential rim 24 that can be used to secure an attachment device to the round insertion member 10.

**[0009]** The elongated flattened nozzle member 12 may include a flat nozzle end portion 26 and a round nozzle attachment end portion 28. The flat nozzle end portion 26 may transition smoothly from the round nozzle attachment end 28 to cooperatively form the elongated flattened nozzle member 12. The flattened nozzle member 12 may include a tip end 14 defining a tip end opening 16. The tip end 14 may be at an angle relative to the length of the attachment 8, or the tip end 14 may be perpendicular to the length of the attachment 8. The tip end opening 16 may generally conform to the shape of the tip end 14.

**[0010]** The elongated flattened nozzle member 12 may be joined with the round insertion member 10 to form a complete attachment 8. In one embodiment, the round nozzle attachment end 28 portion may contain a circumferential groove 30 on the inside surface of the round nozzle attachment end 28. The groove 30 may generally conform to the size and shape of the raised circumferential rim 24. The round insertion member 10 may then be mated with the flattened nozzle member 12 such that the outside surface of the round attachment portion 20 engages the inside surface of the round nozzle attachment end portion 28. When the round attachment portion 20 engages the round nozzle attachment end portion 28, the rim portion 20 may engage the groove 30 to create a snap fit.

**[0011]** Alternatively, the round nozzle attachment end portion 28 may be formed without a groove 30. Without a groove 30, the round attachment portion 20 may engage the round nozzle attachment end 28 to form a friction fit.

**[0012]** A metal ring 32 may encircle the round intermediate portion 22 of the round insertion member 10. Thus, the ring 32 may be disposed between the round insertion member 10 and the flattened nozzle member 12 when they are joined together. The ring 32 activates the central vacuum system when the attachment 8 is plugged into the wall outlet. It is to be understood that in some uses the metal ring 32 is not necessary.

**[0013]** The attachment 8 may be composed of plastic, metal, or other material. Moreover, the present invention also contemplates not having a flattened portion 12, but having the entire length of the attachment 8 round in cross-section so as to be in the shape of a round tube. Also, the relative lengths of the round insertion member

10 and the flattened nozzle member 12 may vary in length such that the attachment 8 is a preferred distance from the wall 34 when secured in the wall outlet 13. It is contemplated that the attachment 8 be at least six or eight inches long [15 or 20cm] (or longer) so that the tip end 14 is far enough away from the wall 34 at which the vacuum outlet 13 is mounted that the filter 9 to be cleaned can be conveniently passed over the tip end 14 of the attachment 8 without hitting or otherwise interfering with the wall.

**[0014]** Rather than being created separately from the round insertion member 10, the flattened nozzle member 12 may be created in unity with the round insertion member 10 from one piece of material. In other words, the flattened nozzle member 12 may simply extend away from the round insertion member 10 to form one complete vacuum system attachment 8. Moreover, the inside surface of the flattened nozzle member 12 may extend smoothly from the inside surface of the insertion member 10 such that air, lint, dirt, or other debris may pass without obstruction between the flattened nozzle member 12 and the round insertion member 10.

**[0015]** Alternatively, the vacuum system attachment 8 may comprise more than two components. For example, the round insertion member 10 may include a separate insertion portion 18, an attachment portion 20, and an intermediate portion 22 that are engageable with one another to cooperatively form a round insertion member 10. Likewise, the elongated flattened nozzle member 12 may include at least two components that are connectable to form a complete elongated flattened nozzle member 12. The vacuum system attachment 8 may be further divided into even more subcomponents without detracting from the benefits of the invention.

**[0016]** FIGURE 4 illustrates a further embodiment of the present invention incorporated into a length of flexible hose. In this regard, the components of the present invention shown in FIGURE 4 that are the same or similar to the components of the embodiment of the present invention shown in FIGURES 1-3 are designated by corresponding part numbers of the 100 series. For example, the attachment is designated as 108, as opposed to 8.

**[0017]** The attachment 108 includes a hollow insertion member 110 having a circular interior opening 111. The insertion member 110 may be inserted into a vacuum system wall outlet, for example, wall outlet 13 shown in FIGURE 1, to activate the vacuum system attachment 108. Therefore, preferably, the shape of the insertion member 110 generally conforms to the shape of the wall outlet 13.

**[0018]** The insertion member is connected to one end of an elongate flexible hose 100. The hose can be of various constructions, but ideally is flexible as well as durable for extended use. Those hose 110 can be of various lengths, as desired.

**[0019]** As in attachment 8, the attachment 108 includes a metal ring 132 disposed between the end of the insertion member and the adjacent end of the hose 110. The

metal ring may be used to activate the vacuum system 5 when the attachment 108 is inserted into the wall outlet 13.

**[0020]** In addition, the attachment 108 may include an elongate, flattened nozzle member 112 similar to nozzle member 12 discussed above. The flattened nozzle member 12 is built into the adjacent end of hose 100, so as to fixably attach thereto. As in the flattened nozzle 12 discussed above, a nozzle 112 is hollow to allow air, lint, dirt, and other debris to pass through the nozzle member. The inside surface of the flattened nozzle member 112 transitions smoothly from a circular cross section to a flattened cross section such that air, lint, dirt, or other debris may pass without obstruction to the flattened nozzle member 112 and into the hose 100.

**[0021]** As a further alternative, the attachment 118 of FIGURE 4 may be constructed similarly to the insertion member 10 shown in FIGURE 3. To avoid repetition, such description will not be repeated here.

**[0022]** While the preferred embodiment of the invention has been illustrated and described, it will be appreciated that various changes can be made therein without departing from the scope of the invention as defined in the appended claims.

## Claims

1. A vacuum system attachment for cleaning lint filters and other household items, such as furnace filters, dust pans, window screens, mops, brooms, shoe soles, and ash trays, the attachment comprising:

- a. a hollow insertion member having an insertion opening;
- b. an elongated, hollow nozzle member adjoining the insertion member;
- c. said elongated, hollow nozzle member defining a tip end portion and a tip opening;
- d. wherein the hollow insertion member is engageable with the nozzle member to cooperatively form a vacuum system attachment, the insertion member is connectable to a vacuum source, and a lint filter or other household item is passable over the tip end of the nozzle to draw the lint, dirt, or debris into the nozzle and then into the vacuum system.

2. The attachment of Claim 1, wherein the insertion member and/or the nozzle member is round in cross section.

3. The attachment of Claim 1 or claim 2, wherein the tip end portion of the elongated, hollow nozzle member is flattened.

4. The attachment of any of the preceding Claims, wherein the tip end portion is formed from a perpen-

dicular edge of the nozzle member.

5. The attachment of any of the preceding claims, wherein the insertion member and the nozzle member are integrated into a singular unit.

6. The attachment of any of the preceding claims, further comprising an electrically conducting ring engaged over the insertion member.

7. The attachment of any of the preceding claims, wherein the insertion member and/or the nozzle member is defined by more than one component.

8. The attachment of any of the preceding claims, further comprising a length of flexible hose interposed between the insertion member and nozzle.

9. A method of removing lint from a lint filter and other household items, such as furnace filters, dust pans, window screens, mops, brooms, shoe soles, and ash trays, the method comprising the steps of:

a. providing a vacuum system attachment, said attachment comprising:

- i. a hollow insertion member having a insertion opening;
- ii. an elongated, hollow nozzle member, said elongated, hollow nozzle member defining a tip end and a tip opening;

- b. mating the hollow insertion member with the nozzle member to cooperatively form a vacuum system attachment,
- c. inserting the insertion member into a vacuum system outlet; and
- d. passing a lint filter or other household item over the tip end to draw the lint, dirt, or debris into the nozzle and then into the vacuum system.

10. The method of Claim 9, further comprising providing a vacuum system attachment wherein the insertion member and/or the nozzle member is round.

11. The method of Claim 9 or claim 10, further comprising providing a vacuum system attachment wherein the elongated, hollow nozzle member is flattened.

12. The method of any of claims 9-11, further comprising providing a vacuum system attachment wherein the tip end is formed from a perpendicular edge of the nozzle member.

13. The method of any of claims 9-12, further comprising providing a vacuum system attachment wherein the tip end is formed from an edge of the nozzle member that is at an angle relative to the length of the nozzle

member.

14. The method of any of claims 9-13, further comprising providing a vacuum system attachment Where the insertion member and the nozzle member are of unitary construction. 5
15. The method of any of claims 9-14, wherein the insertion member and/or the nozzle member is defined by more than one component. 10
16. The method of any of claims 9-15, further comprising providing a flexible hose between the insertion member and the nozzle member to cooperatively form a vacuum system attachment. 15

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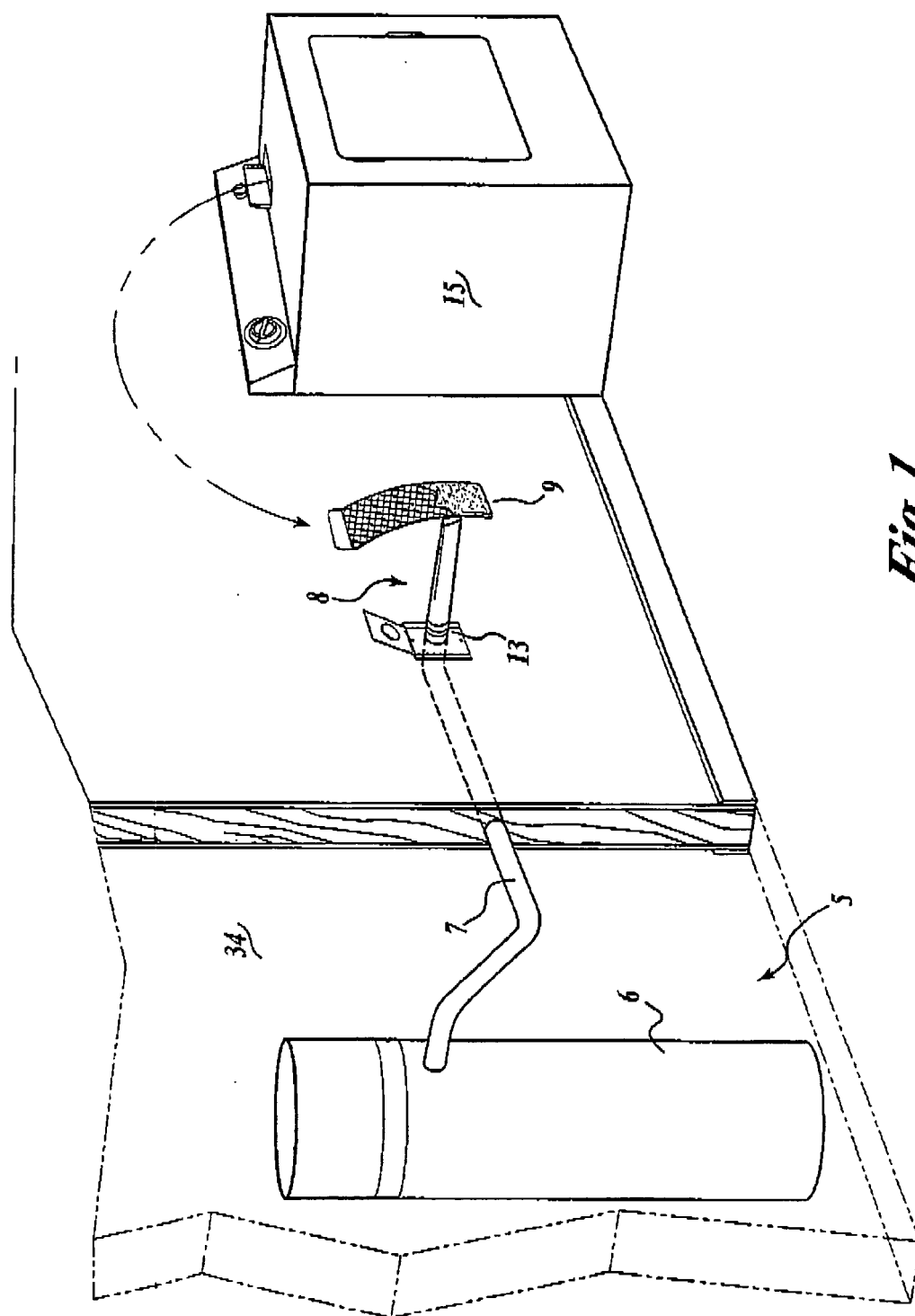
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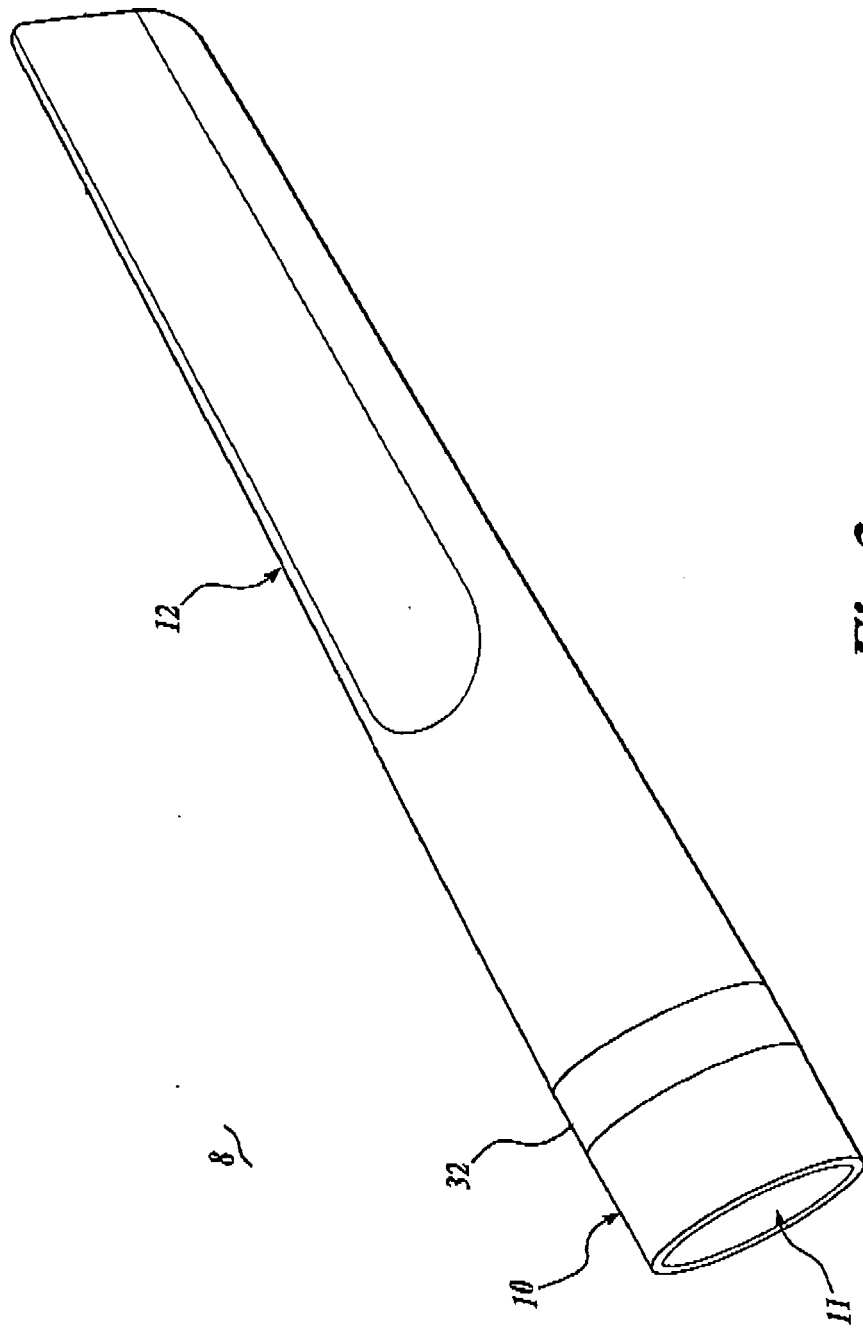
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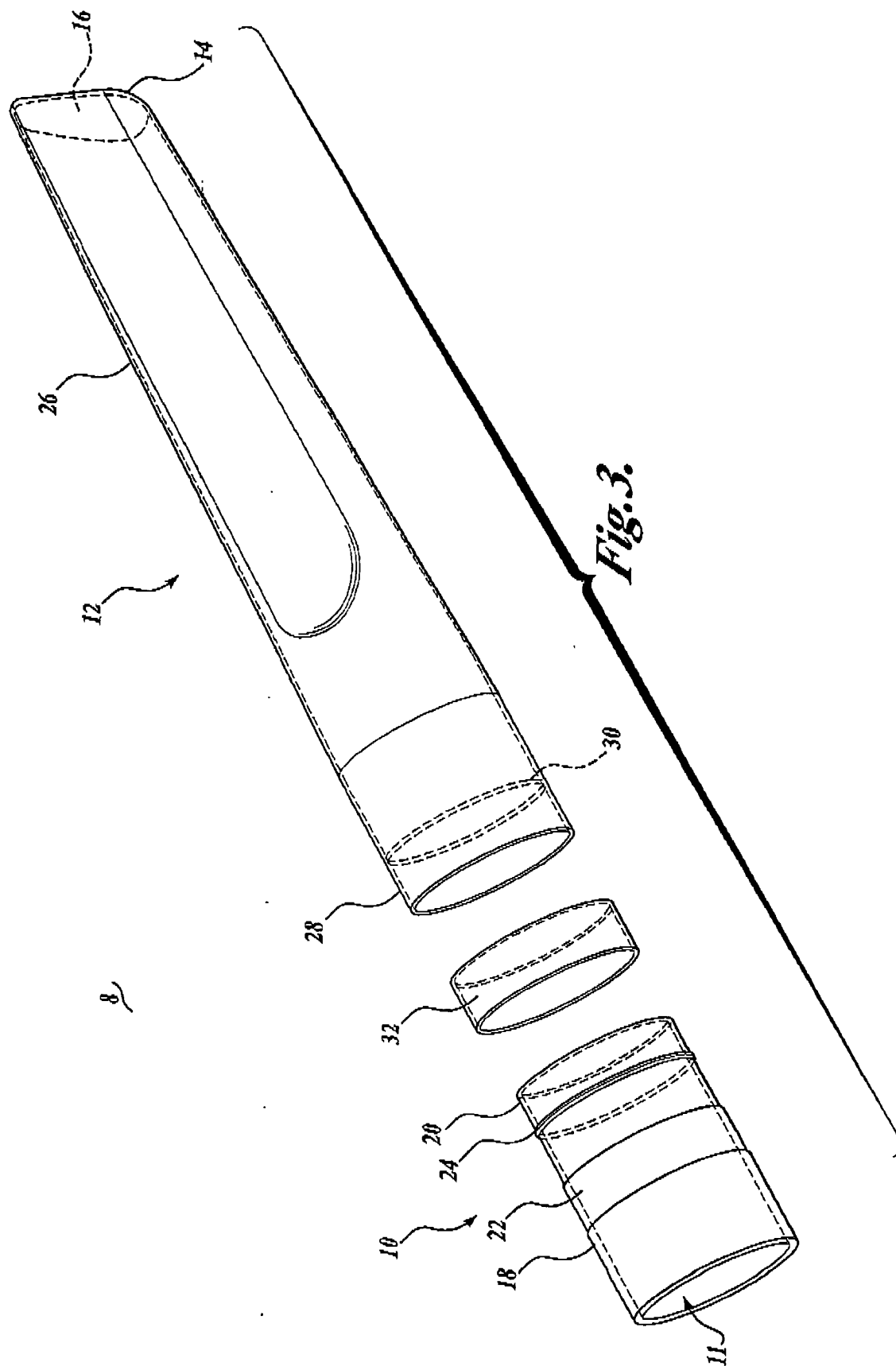
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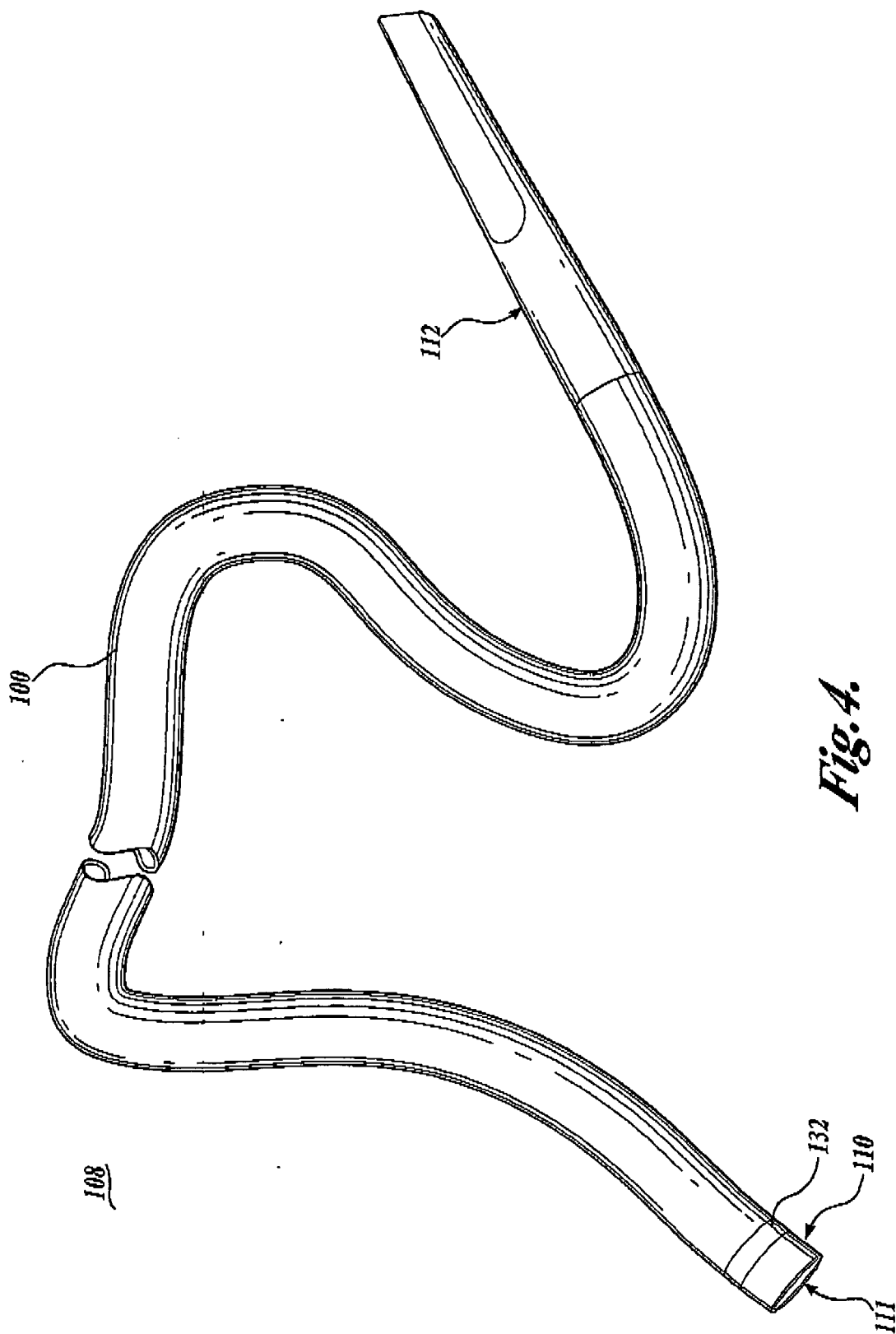
**Fig. 1.**



*Fig. 2.*









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Application Number  
EP 05 25 4135

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<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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