United States Patent [19]

Sohmer

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[45] **July 3, 1973**

[54] **LINT SWEEPER**

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[52] **U.S. Cl.** ..... **15/104 A,** 15/143 B

[51] **Int. Cl.** **A47l 13/00**

[58] **Field of Search** ..... 15/104 A, 143 B

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Primary Examiner—Leon G. Machlin

Attorney—Leonard H. King

[57] **ABSTRACT**

A tacky roller flooring cleaning employing disposable tacky material. An elongated handle at right angles to the axis of the roller provides a convenient tool. A protective hanger is provided.

3 Claims, 9 Drawing Figures

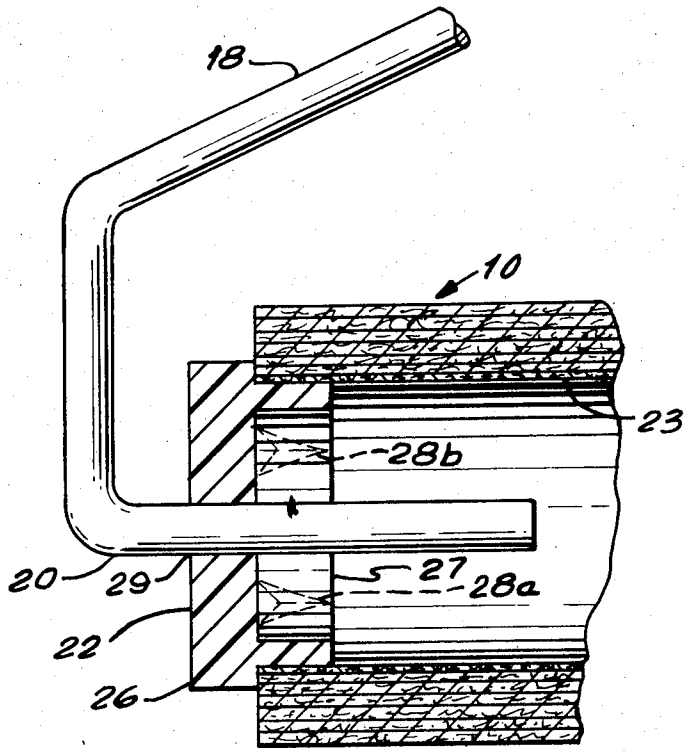


FIG. 1

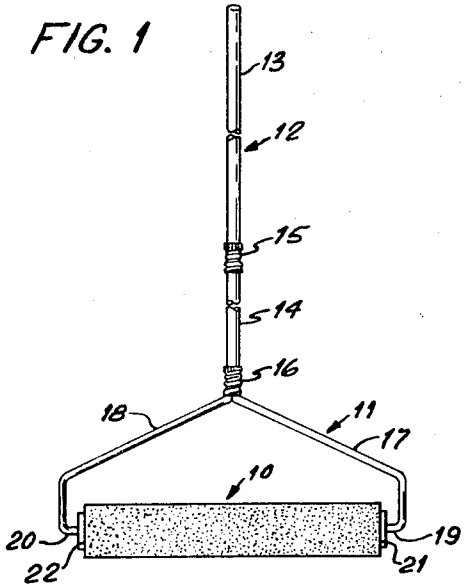


FIG. 2

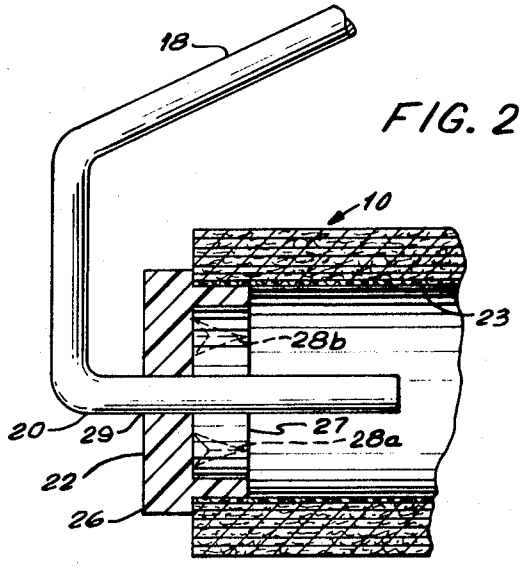
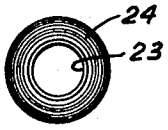


FIG. 3b



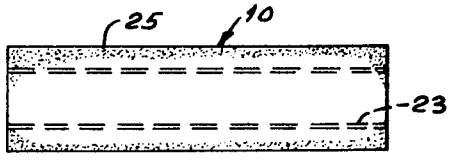


FIG. 3a

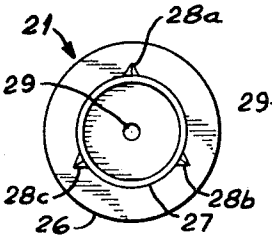


FIG. 4a

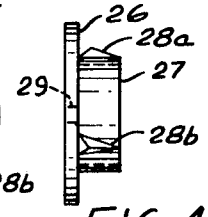


FIG. 4b

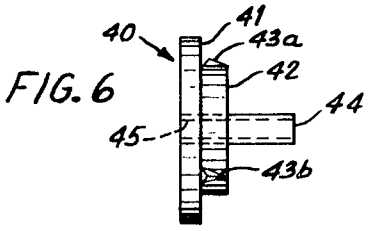
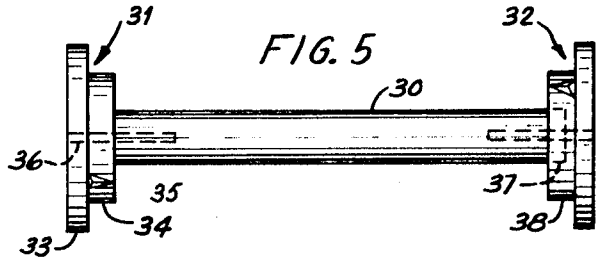


FIG. 6

FIG. 5



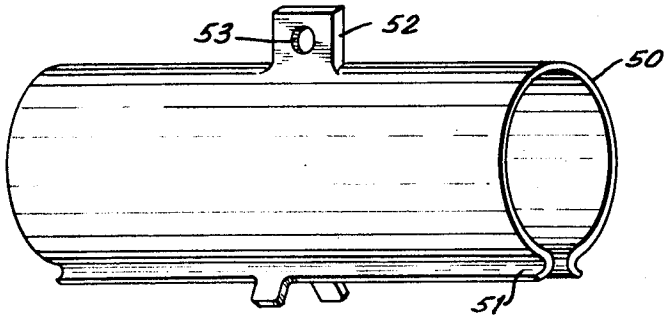


FIG. 7

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LINT SWEEPER

The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

This invention relates to devices for removing lint, dust and the like, and more particularly to a carpet and floor cleaning device, utilizing pressure sensitive adhesive material.

BACKGROUND OF THE INVENTION

Numerous devices are available for removing dust, lint and other forms of loose, unwanted objects from a carpet or floor. Large vacuum cleaning devices are commonly used for this purpose. However, while they are very effective they are generally bulky, and require set-up time and effort in operation. As a result, the use of the vacuum cleaner is relegated to occasional, general cleanup of the area.

For frequent cleaning of carpets and floors, brooms and carpet sweepers are commonly used. These are somewhat effective, but carpet sweepers are inconvenient to use and when using a broom the problem of collecting the lint, dust and other particles, requires great effort and additional equipment. A further problem of these types of devices is that dust, lint and ashes, for example, are not entirely collected by the cleaning device and especially when using a broom, the particles get swept into the air and pollute the area.

Lint removers for clothing and fabrics have been constructed using a sheet of adhesive material to roll along the fabric to be cleaned and remove the foreign particles which adhere to the lint remover. However, none of the available lint removers can feasibly be used for purposes other than for clothing and typical fabric usage.

Accordingly, the principle object of this invention is to provide a cleaning device for floors and carpets using an adhesive sheet material on a roller for removing lint, dust, and other objectionable particles.

A further object of the invention is to provide an improved lint remover for use on carpets and floors which will be inexpensive to manufacture and adapted to be sold at prices which will encourage the use of such devices.

Still a further object of the invention is to provide a cleaning device for use in both home and automobile for removing small particles by means of a roll of adhesive material.

Yet another object of the invention is to provide a floor cleaning device using a roll of adhesive coated material which is held by means of the spring action of the frame of the device.

A further object of the invention is to provide a cover for a floor cleaning device which has a roller of pressure sensitive adhesive material used for cleaning.

These and other objects and features of the invention will become apparent from the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a plan view of a cleaning device in accordance with the invention;

FIG. 2 is a fragmentary, sectional view taken longitudinally through the lower assembly of the cleaning device;

FIGS. 3A and 3B are plan and end views, respectively, of a roller used in conjunction with this invention;

FIGS. 4A and 4B are plan and end views, respectively, of holding caps;

FIG. 5 is a plan view of a holding assembly;

FIG. 6 is an end view of another type of holding cap; and

FIG. 7 is a prospective view of a cover used with the device of this invention.

Referring now to FIG. 1, the cleaning device in accordance with this invention constitutes a roller generally shown by numeral **10** rotatably mounted on a frame shown generally at **11** and having an elongated handle extending therefrom shown generally at **12.** Handle **12** is shown to consist of two parts, an upper section **13** and a lower section **14,** interconnected by means of a plastic brace **15.** The total length of the handle is such that a user can comfortably hold one end thereof while the other end connected to the roller **10** is movable along a floor surface. The sections **13, 14** can be separated from each other by detaching at the brace **15.** Section **14** is of sufficient length that a user can hold one end thereof while the roller **10** at its opposite end is used to clean the floor surface of an automobile. Typically, the total length of the handle **12** is approximately 48 inches, with each section **13, 14** being of approximately 24 inches long. The handle **12** is removably connected to the frame **11** through a plastic brace pocket **16.** Braces **15, 16** are constructed with internal threads and the sections of the handle inserted therein have matching threaded ends which securely connect to the braces. Other connecting means as is generally known in the art can also be used.

Frame11 comprises two arms **17, 18** outwardly extending from brace pocket **16** forming an inverted V shape. Inwardly projecting bearing pins **19** and **20** are respectively connected to the ends of the arms **17, 18.** The bearing pins each fit respectively into end caps **21, 22,** which are inserted into opposite ends of roller **10.** Frame **11** is typically made of metal material which exhibits an inherent spring action, for example, chrome plated spring steel. The spring action is applied to the particular shape of the frame **11.** By having the frame **11** in the form of an inverted V, bearing pins **19** and **20** exhibit a spring holding action therebetween.

Roller **10,** shown in more detail in FIGS. **3A** and **3B,** is comprised of an open ended tube **23** having formed thereon a spiral wound pressure sensitive adhesive tape whose adhesive layer **25** is exposed on its exterior. After the exterior of the exposed portion of the adhesive becomes fully contaminated with lint and the like, the end of the tape can be grasped to pull off the used exposed portion and provide an unused exposed portion for further use. For this purpose, the tape may have transverse perforations spaced at intervals along its length, or may include additional cutting apparatus as is presently known in the art.

The roller **10** is held in place by identical end caps **21** and **22,** one of which is shown in more detail in FIGS. **4A** and **4B.** The end cap comprises a cylindrical flange **26** having a raised cylindrical section of smaller diameter contained on one side thereof **27.** Cylindrical section **27** has at least three protrusions spaced on its outer perimeter **28A, 28B, 28C** forming extending prongs. The end cap has a hole **29** therethrough for receiving the bearing pin from the frame **11.**

The end cap is designed such that cylindrical extending section **27** snugly fits within the open ended tube **23** of the roller **10** and prongs **28A, 28B, 28C** grasp the internal surface of tube **23.** Because the radially extending prongs catch the roller, as pressure is applied on the device during its use for cleaning, the end caps will securely hold the roller in place.

The bearing pin **20** fits loosely into the hole **29** to permit rotation between the end cap and the bearing pin. The bearing extends sufficiently into the roller through the end cap to prevent the roller from falling off the frame **11** during its use.

Referring to FIG. **2** there is shown a section of the cleaning device of FIG. **1,** showing the roller **10** having an inner surface **23** held by end cap **22** into which bearing pin **20** of arm **18** is inserted. Cylindrical section **27** including radially extending prongs **28A** and **28B** is telescoped within the roller **10** while the cylindrical flange **26** abuts the end of the roller to hold it in secured connection. Rotation is had by means of the roller **10** together with the end cap **22** moving around the bearing pin **20** which serves as an axle for rotation.

The roller **10** is replaceable by means of a refill of the type shown in FIGS. **3A, 3B.** When replacing, arms **17, 18** are extended apart separating bearing pins **19, 20** from each other and permitting removal of the bearing pins from the holes in the end caps **21, 22.** The roller and end caps are then removed from the frame **11.** The end caps are taken out from the roller by applying a pulling force on them. The end caps are then inserted into the refill roller and the bearing pins **19, 20** are reinserted into the holes of the end caps **21, 22.** The inherent spring effect of the frame **11** provides sufficient pressure to secure the new roller in its position.

Referring now to FIG. **5,** there is shown an alternate embodiment of a holding assembly for the roller **10.** A sleeve **30** is shown having end caps **31, 32,** each of which is similar to that shown in FIGS. **4A, 4B.** The end caps include a cylindrical flange **33** with a protruding cylindrical boss **34** having radially extending prongs **35** spaced along the perimeter of the cylindrical boss **34.** A hole **36** extending through the end caps and partially through the sleeve **30** is adapted to receive the bearing pins extending from frame **11.** One end cap **31** is securely connected to the sleeve **30.** The other end cap **32** is removably connected to sleeve **30.** As shown in FIG. **5,** cylindrical boss **38** is made of solid material having a groove **37** into which the end of sleeve **30** snugly fits. Alternately, the groove **37** could be internally threaded and the end of sleeve **30** could be externally threaded to screw the end cap on to the sleeve **30.**

The sleeve **30** is designed to snugly fit within the refill roller shown in FIGS. **3A** and **3B.** In replacing a roller using the embodiment of FIG. **5,** the bearing pins at the end of the frame **11** are removed from the end caps **31, 32** and removable end cap **32** is then removed from sleeve **30.** The used roller is pulled off sleeve **30** and a new roller is securely placed on sleeve **30.** End cap **32** is then reconnected on to sleeve **30** and the bearing pins at the end of frame **11** are reinserted into the holes available in the end caps.

Referring to FIG. **6,** there is shown a further embodiment of an end cap for use with the cleaning device of this invention. End cap **40** includes a cylindrical flange **41** and a raised cylindrical boss **42** having prongs **43A, 43B,** radially extending outward from the boss and spaced around the perimeter thereof. Bushing **44** is inserted within hole **45** and extends axially from the end cap. The end cap **40** operates similar to the end caps previously described. However, the bearing pins at the end of the frame **11** fit into the bushing **44** which provides a brace for the bearing pins thereby providing easier rotation of the end cap and roller around the bearing pins.

Typically, the roller **10** is made of a cylinder of at least 1 foot length by approximately 8 inches in circumference. The steel wire forming the frame **11** is chrome plated spring steel of one-fourth inch stock. The end caps are constructed of plastic and are of about 1 inch in diameter. The handle is typically constructed of two sections of 24 inches each and the braces for connecting the sections of handle as well as connecting the handle to the frame are of plastic material.

FIG. **7** shows a cover useful in connection with the cleaning device shown in FIG. **1.** The cover is a thin cylinder whose length equals that of the roller and has a slit **51** splitting the cylinder across its length. On the side opposite the slit, a flange portion **52** extends outward from the cylindrical shape and in which a hole **53** is formed. The cover is constructed of thin pliable plastic material and when not in use can be hung up by means of hole **53.** To cover the roller, the roller is pushed between the slot **51** until it is inserted within the cover **50** and the sections abutting the slot encircle the roller.

There has been disclosed heretofore the best embodiment of the invention presently contemplated. However, it is to be understood that various changes and modifications may be used by those skilled in the art without departing from the spirit of the invention.

What I claim as new and desire to secure by Letters Patent is:

1. A device for removing foreign particles of lint, dust, and the like from floor and floor covering surfaces comprising:

a. a tube-like roller having a length of pressure sensitive adhesive material wound around the periphery of the roller;

b. removable disc shaped end members enclosing the ends of the roller, each end member having a sleeve fitting into an end of the roller and a plurality of prongs extending radially outward from the surface of said sleeve for engaging the internal surface of the roller, each end member having a central aperture therethrough;

c. an inverted V-shaped holder having inwardly protruding pins extending from the ends of the legs thereof, said pins rotatably fitting into the end member apertures, said holder providing a spring force bowing said legs inwardly;

d. a handle extending perpendicular to the longitudinal axis of the roller and connected to the apex of said inverted V-shaped holder; and

e. covering means for said roller, said covering means comprised of a hollow, cylindrical member fitting over said roller and having a longitudinal slot there across for facilitating removal from said roller.

2. A device as in claim **1** wherein said covering means further includes a flange portion extending from one part of said cylindrical member, said flange portion including a hole therein.

3. A device as in claim **1** wherein said cylindrical member is constructed of pliable thin plastic material.

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