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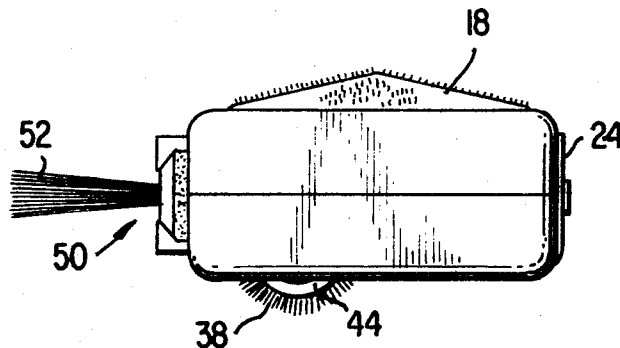
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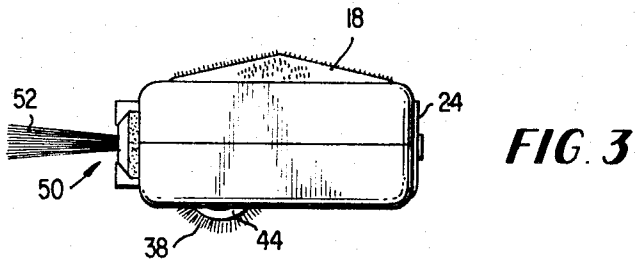
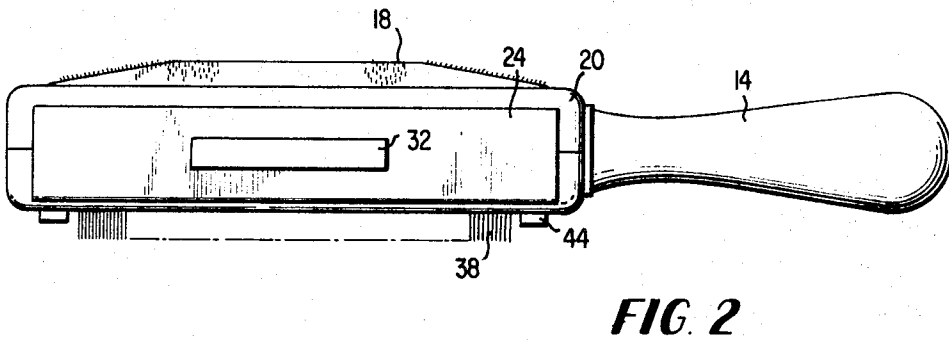
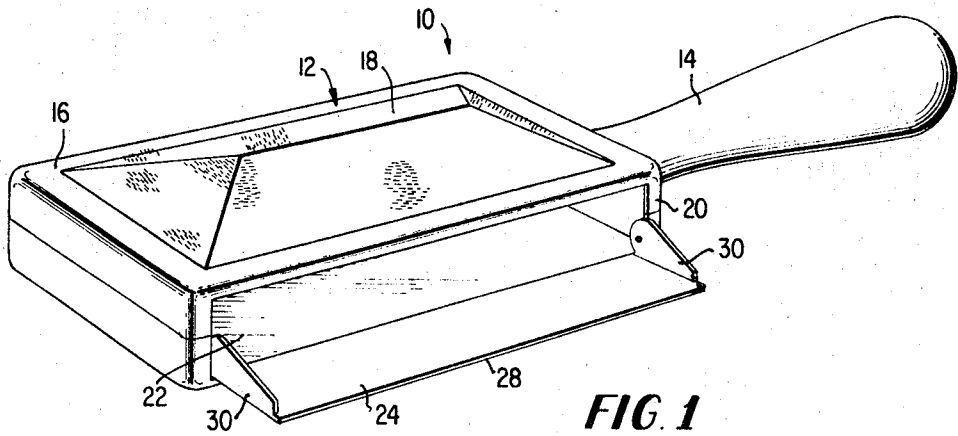
[54] **CLEANING BRUSH DEVICE**  
 5 Claims, 7 Drawing Figs.

[52] U.S. Cl..... 15/4,  
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 [51] Int. Cl..... A47I 11/33  
 [50] Field of Search..... 15/27.41,  
 42, 105, 106, 257.2, 4

[56] **References Cited**  
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**ABSTRACT:** A cleaning brush device having a rectangular housing with a roller brush rotatably mounted on the bottom wall. The rotary brush protrudes through a bottom opening to perform a carpet sweeper type action. The device also has a combined brush and sponge implement removably mounted in a longitudinal recess of a sidewall. Either end of the implement is used to sweep the dust particles into a dustpan which is hingedly mounted over an elongated opening in the other sidewall. The dust particles from both the rotary brush and the dustpan operations are collected in a compartment of the housing.





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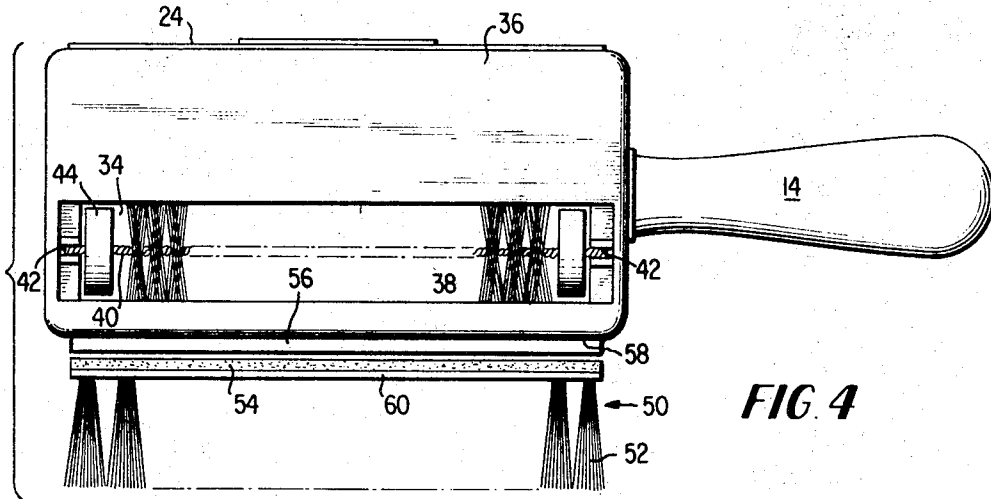


FIG. 4

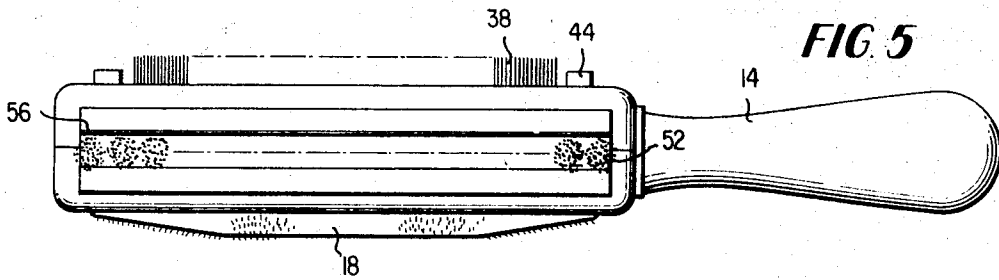


FIG. 5

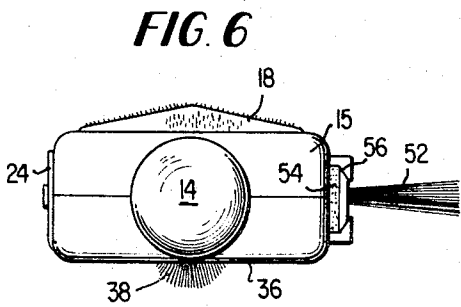


FIG. 6

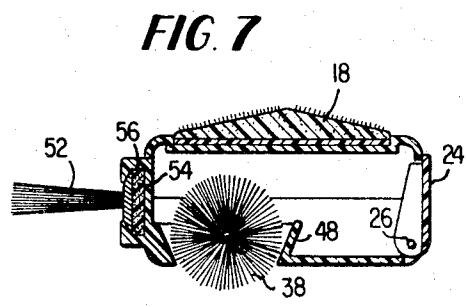


FIG. 7

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## CLEANING BRUSH DEVICE

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to enhancing the removal of dust particles and other dirt matter (hereinafter in this specification the term "dust" is considered to cover dust and dirt particles and the like) from a surface to be cleaned. More particularly, the present invention is directed to a single housing unit which contains a rotatable roller brush, a pivotably mounted dustpan, a detachable elongated brush and sponge implement, and a compartment for the storage of the collected dust. Accordingly, the general objects of the present invention are to provide new and improved apparatus of such character.

#### 2. Description of the Prior Art

The simple difficulty of locating simultaneously the dustpan and a brush implement to sweep the dust into the dustpan, has long been drawn to cleaning personnel. Accordingly, in the prior art, many separate devices designed for the respective sweeping and collecting dust operations have been employed. These prior art devices have, unfortunately, the common deficiency of not always being readily available at the same place at the same time which obviously has impaired cleaning personnel in the performance of their duties.

Perhaps the most serious deficiency of prior art devices involved a reluctance on the part of cleaning personnel to do the particular cleaning chore because of the absence of having the most efficient equipment ready at hand. This reluctance was predicated on the fact that, in transit, around the house, office and the like, the necessity of having numerous separate and effective cleaning implements caused inconvenience, and loss of time, and thus, as pointed out previously, sometimes not doing the particular cleaning chore at all. The foregoing was as a result of the fact that, in many cases, the prior art devices, even if located, would not do an efficient cleaning job. For example, if a level surface of the furniture or floor has dirt particles to be removed, a carpet sweeper type rotary brush device would do an effective job of removing the dirt. However, the carpet sweeper action may be impossible if the area to be cleaned is located in an awkward space where a dustpan operation would be more effective. Thus, the brush unit of the combined implement of the present invention could sweep the dirt particles from the awkward space into the dustpan, and thence into the temporary storage compartment of the device. Further, it may be found that the use of the sponge unit of the combined implement of the present invention will do a more efficient job than the brush unit. Consequently, the particular cleaning chore could be accomplished by the use of the cleaning device of the present invention.

Further, the use of numerous cleaning implements of the prior art also interfered with the proper storage of the implements when not in use.

Prior art cleaning implements, in addition to the disadvantages and deficiencies noted above, were also generally characterized by the obviously high cost because of the greater number of implements involved. The high cost could, in most cases, be attributed to the unnecessary complexity of the structure of the implements.

#### SUMMARY OF THE INVENTION

The present invention overcomes the above-discussed deficiencies and disadvantages of prior art cleaning implement by providing a novel unitary structural arrangement for housing the various cleaning implements involved in the dust removal and storage operations. This novel apparatus comprises a rotatable roller brush which is affixed to the bottom wall, a pivotably mounted dustpan affixed to one longitudinal sidewall of the housing, a movably mounted combined bristle brush and sponge implement temporarily affixed to the other longitudinal sidewall of the housing, and a compartment in the housing for the storage of the dust removed by the rotary brush operation and also by the dustpan operation.

Accordingly, to one aspect of the present invention, there is provided a roller brush rotatably mounted longitudinally to the sidewall of the device adjacent to the dust collection compartment. The rotation of the roller brush over a surface will loosen the dust particles from the surface and will remove same to the dust collecting compartment within the device.

According to another aspect of the present invention, there is provided a dustpan pivotably mounted over an elongated opening in the sidewall of the device. On the other longitudinal sidewall, there is provided a combined brush and sponge implement removably mounted in a recess therein. The dust particles are swept into the dustpan by the sweep of either the brush or the sponge and thence the particles are dumped by the closing of the dustpan wall into the compartment for the temporary storage thereof.

It is therefore, an object of this invention to provide a cleaning device having a rotatable roller brush for a carpet sweeper type operation.

Another object of this invention is to provide a cleaning device having a pivoted dustpan thereon and a readily detachable sweeper consisting of a combined brush and sponge implement for the conventional "sweep action into the dustpan" operation.

Preferably in the roller brush carpet sweeper cleaning operation, in accordance with the present invention, the brush surface is relatively small; for example, a flattop coffee table. Consequently, the instant cleaning device removes perfectly the dust particles on such a surface.

Preferably in the dustpan operation, in accordance with the present invention, the brush surface is located in an area which is awkward for a carpet sweeper device of the instant type to be manipulated; for example, an awkward corner behind a piece of furniture.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become better understood and its numerous advantages will become apparent to those skilled in the art by reference to the accompanying drawings wherein like reference numerals refer to like elements in the various figures and in which:

FIG. 1 is a perspective view of a cleaning device with the dustpan wall in its open position in accordance with this invention;

FIG. 2 is a side elevation view of said device showing the dustpan wall in its closed position;

FIG. 3 is an end elevation view opposite to the handle end of said device;

FIG. 4 is a bottom plan view showing the combined brush and sponge implement detached from said device;

FIG. 5 is an upside down side view showing the roller brush and the sidewall having said implement of said device;

FIG. 6 is an end elevation view showing the end wall having the handle; and

FIG. 7 is a cross-sectional view of the various components of said device.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

While one embodiment of the invention is illustrated in the above-referred-to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances, which may arise, without in any manner departing from the spirit and intention of the device, which is to be limited only in accordance with the appended claims. And while there is stated the primary field of utility of the invention, it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to designate the same parts and elements throughout, and in which the numeral 10 refers to the cleaning brush device of the present invention in its entirety.

Referring particularly to FIGS. 1 and 5, the cleaning brush device 10 comprises a rectangular housing 12 having an elongated handle 14 rigidly affixed to end wall 15. The top wall 16 of the housing 12 has a brush surface 18 on which a plurality of closely implanted short piles are provided thereon similar to the structure as described in detail in U.S. Pat. No. 3,421,171, which issued on Jan. 14, 1969. The brush surface 18 as illustrated in FIG. 1 is shown as being substantially rectangular in shape and said surface 18 is divided into four sections. The piles in each sector are parallel to each other and said piles are positioned at an angle to the base surface. However, the piles in each sector run in a direction different from those of the other sectors.

A rectangular sidewall frame 20 of the housing 12 surrounds an elongated shaped opening 22. A dustpan structure 24 is pivotally mounted on the bottom edge of the sidewall frame 20 in a conventional manner, preferably by means of pins 26 (FIG. 7) and said pins having associated therewith conventional manually operated spring latches (not shown) for effecting a pivotal movement of the dustpan 24. Any suitable hinge construction that is well known in the art may be used whereby the dustpan 24 is retained either in its open position as shown in FIG. 1 or its closed position as shown in FIG. 2.

The dustpan 24 has structure similar to the usual dustpan but without an elongated handle and rear wall. The dustpan 24 having a base configuration substantially similar to the opening 22 fits snugly against the sidewall frame 20 in its closed position as illustrated in FIG. 2. The dustpan 24 is further provided with a straight outer or forward edge 28 capable of resting flatly on a surface or floor to receive sweepings. The dustpan 24 also has upstanding shallow lateral edge portions 30. A handle 32 of the dustpan 24 is mounted to easily manipulate the pivoted dustpan to its two positions.

With particular reference to FIGS. 4 and 7, an elongated opening 34 is provided in bottom wall 36 to receive a roller brush 38. The shaft 40 of the roller brush 38 is formed of two intertwined wires between which the bristles are held. The wires are deformed at their ends so that they form journal members 42. The roller brush 38 is rotatably journaled in the housing 12 and its axis extends in the longitudinal direction as illustrated in FIGS. 2, 4 and 5. Wheels 44 are affixed to the ends of roller brush shaft 40 to rotatably support the device 10. Thus, the wheels 44 travel on the floor or surface that is being swept and transmit rotary motion to the roller brush 38.

In order that roller brush 38, in the typical carpet sweeper manner, will throw the particles from the surface to be cleaned into the interior of the housing 12, it is of advantage to use a roller brush with a small diameter.

The angle of throw (with relation to a flat surface) is increased when the diameter of the roller brush is reduced. As the diameter is reduced, the angle through which the roller brush revolves while the bristles remain in contact with the surface, increases if the bristles protrude below the bottom wall 36 of the housing 12 sufficiently to pick up the dust particles.

In operation of moving the roller brush 38 over a surface, the bristles will pick up particles of dust for deposit into a compartment 46 located within the housing 12 between the dustpan sidewall 24 and the roller brush 38 as shown in FIG. 7. Also, it will be observed from FIG. 7 that the dustpan wall 24 in its closed position together with the sidewall frame 20 form one longitudinal sidewall of the compartment 46. The other longitudinal sidewall, identified by numeral 48, of the compartment 46 consists of a marginal rim portion formed from the bottom wall 36 and said wall 48 is located adjacent to the roller brush 38. This inner wall 48 is slanted away from the roller brush 38 to aid in the retention of the collected dust in the compartment 46.

As illustrated in FIGS. 3 to 7, a longitudinal cleaning implement 50 comprises a brush 52 on one of its sides and a compressible sponge member 54 on its other side. A longitudinally extending recess or groove 56 extends substantially the entire length of a sidewall 58 of the housing 12. The groove 56 is of

sufficient width and depth to retain the slidably mounted implement 50 therein. The recess includes three walls which consist of two longitudinal sidewalls and one end wall. These three walls have inwardly turned flanges to hold the implement 50 firmly in the recess.

One end of the recess 56 is open, and thus, the implement 50 is easily slidable from the recess 56 from this open end in a conventional manner.

It will be evident that the implement 50 can be easily and readily attached or detached from the recess 56 of the sidewall 58. The implement 50 is detached by first depressing on a medial strip 60 which is, in essence, the holder for both the brush 52 and the sponge 54. The inwardly pressure on strip 60 compresses the sponge 54 against the sidewall 58 and then with the sponge depressed, the implement 50 is slid from the longitudinally extending recess 56 through its open end. This construction and arrangement permits the implement 50 to be likewise assembled in a similar manner. The strip 60 also serves as the handle for manipulating the implement 50 during the sweeping operation. Further, as disclosed, the brush 52 is in the nature of a whisk broom.

Having described the construction and arrangement of the cleaning brush device in detail, its methods of operation will now be further explained. In one form of operation, the dustpan 24 is held in its closed position as illustrated in FIG. 2 and by grasping the handle 14 the operator moves the cleaning device 10 back and forth over the cleaning surface. The cleaning device 10 is supported on the wheels 44 and as the latter roll along the cleaning surface, the roller brush 38 which is axially mounted with the wheels 44, will be revolved in one direction or the other with its bristles brushing across the cleaning surface. In this manner, any dust particles on the surface will be swept up across the inclined guard rim 48 of the compartment 46 and deposited therein. By passing the device 10 back and forth across the surface to be cleaned, the dust particles are quickly removed therefrom.

In another form of operation, the dustpan 24 is placed in an open position by the operator grasping the dustpan handle 32 and moving the dustpan to its dust receiving position as illustrated in FIG. 1. The implement 50 is removed from the recess 56, as previously described. With implement 50 detached from the housing 12, the brush 52 or the sponge 54 is used to sweep the dust into the dustpan 24. Upon the closing of the dustpan 24, the collected dust will fall into the storage compartment 46.

The brush 18 of the device 10 may be used to quickly brush dust from one cleaning area to another. For example, a cleaning area where it is difficult to manipulate the entire cleaning device 10 in a carpet sweeper fashion, the brush 18 may quickly sweep the dust to a more accessible area where it may be removed by the carpet sweeper or dustpan operation.

When it is desired to empty the accumulation from the compartment 46, the device 10 is held over a waste receptacle and the dustpan wall 24 opened. The contents in the compartment 46 are allowed to drop downwardly therefrom into the waste receptacle.

It will be observed from the foregoing that the cleaning brush device is functionally satisfactory for all its intended purposes. It will also be observed that the cleaning device is small and compact and of a desirable shape which enables it to be carried easily and conveniently by the cleaning personnel.

While a preferred embodiment has been shown and described, various modifications and substitutions may be made thereto without departing from the spirit and scope of this invention. Also, while a disclosed embodiment has been shown as comprising a particular structural arrangement, it is to be understood that in practice there may well be other similar structural arrangements. Accordingly, it is to be understood that the present invention has been described by way of illustration and not limitation.

What I claim is:

1. A cleaning brush device comprising a housing having top, bottom, end and sidewalls,  
an elongated handle attached to one end wall,

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a rotary brush movably mounted in said device and extending beyond an opening in the bottom wall, a dustpan pivotably mounted to said device and forming one of said sidewall,

a combined brush and sponge implement removably mounted in a recess of the other sidewall, and

a compartment within said device for storing dust received from a collection by said rotary brush or from a collection by said dustpan.

2. A cleaning brush device as set forth in claim 1, wherein said rotary brush is positioned adjacent said sidewall recess.

3. A cleaning brush device as set forth in claim 1, wherein wheels are mounted at each end of the rotary brush for its support thereof.

4. A cleaning brush device as set forth in claim 1, wherein the pivot mount of said dustpan includes a resilient hinge means adjacent said bottom wall to hold said dustpan end wall in either a closed or open position.

5. A cleaning brush device as set forth in claim 1, and further comprises a substantial planar brush having at least two sectors of short piles affixed to said top wall, the piles in each sector aligned parallel to each other in the same direction, different from the direction of the piles of the other sector, for quickly brushing dust from an area not easily accessible to another area more accessible for removal of the dust by a carpet sweeper or dustpan operation.

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