

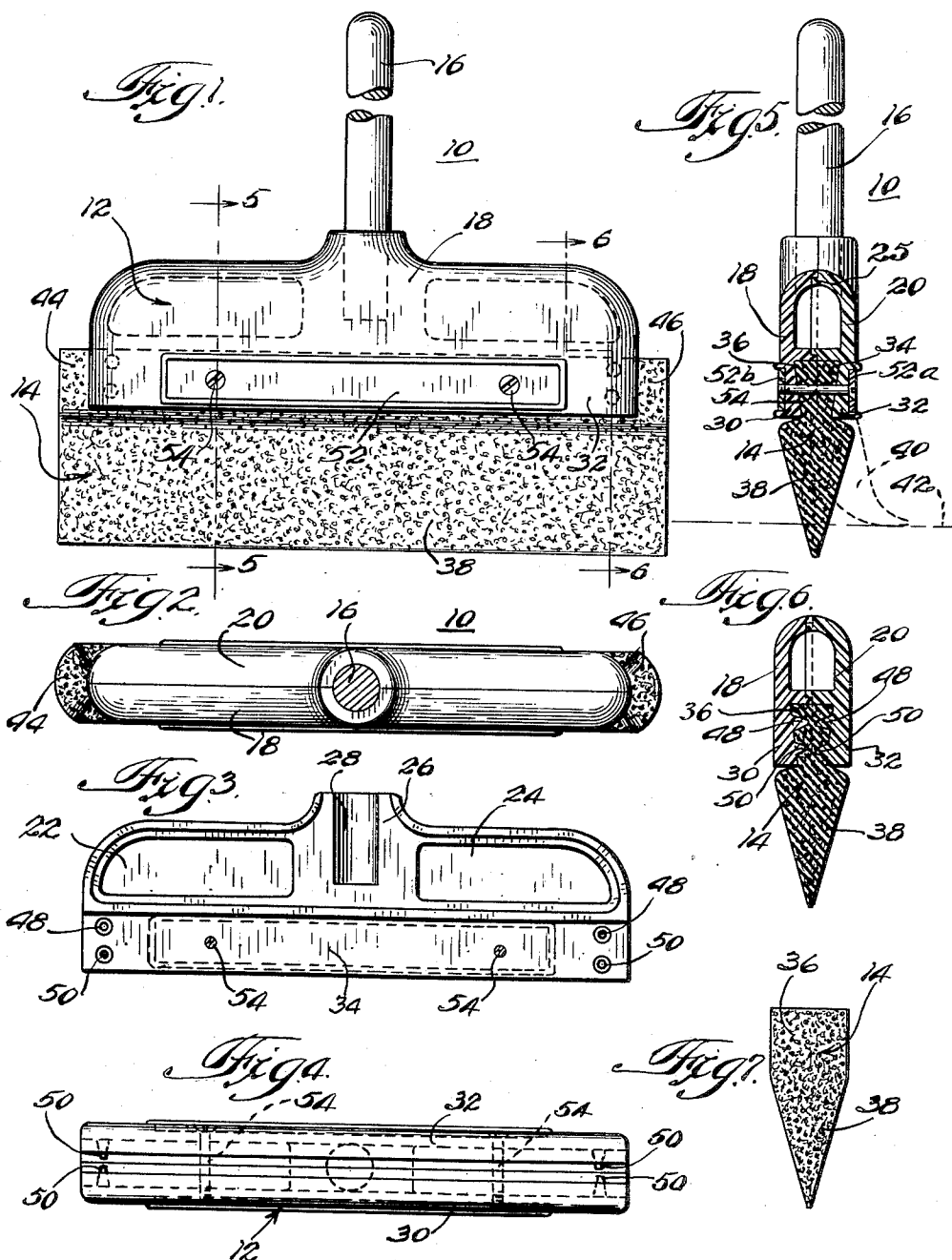
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FLOOR CLEANING IMPLEMENTS IN THE NATURE OF BROOMS

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FLOOR CLEANING IMPLEMENTS IN THE NATURE OF BROOMS

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This invention relates to an improved cleaning implement and more particularly to a device adapted to function in an improved manner for the removal of surface dirt, dust, lint and the like from floors and similar surfaces.

It is a principal object of this invention to provide an improved cleaning implement which will remove any fluid or comminuted matter from surfaces. The most common and familiar means for floor cleaning is the household broom generally formed of a plurality of hairs or straws secured into a single base and adapted for sweeping motion over the surface of a floor or the like. Such brooms have been known for many years and little has been done to improve their functionality or to eliminate certain inherent features which are considered undesirable. Such brooms have little or no ability to retain the dirt with which they come into engagement, but on the contrary generally recirculate the dirt about the room or at best accumulate the dirt and dust in one particular area of the overall surface. In addition to this very important detriment the individual filaments of the conventional broom, either straws or hairs, will break or pull away from the body of the broom and thus be deposited about the room or floor area to defeat, at least in part, the efforts of the user to remove all such debris from the area. Hair and straw brooms are also subject to rapid wear, especially if used on coarse surfaces. Brooms heretofore known have also functioned very poorly in collecting fluid matter from floor surfaces and it has generally been considered necessary to have a mop available for use in conjunction therewith.

It is therefore a further object of this invention to provide an improved cleaning implement capable of retaining the dust and dirt encountered in use until said dirt is intentionally removed by the user.

It is another object of this invention to provide an improved cleaning implement which will pick up and accumulate the dirt and debris from the surface to be cleaned rather than to merely recirculate said debris as has been characteristic of brooms heretofore known.

It is still another object of this invention to provide a cleaning implement having a long useful life which can be renovated, as by washing, whereby the accumulated dirt may be removed and the implement reconditioned for use.

It is another object of this invention to provide a cleaning implement primarily designed for the accumulation of dirt and debris from the floor surface which also functions in the nature of a mop to remove small accumulations of fluids from said floor surface.

It is still another object of this invention to provide a durable, attractive cleaning implement having fender or bumper means integrally formed therewith to avoid marring or damaging the furniture or walls which are associated with the floor to be cleaned.

It is another object of this invention to provide a cleaning implement having a resilient, foraminous sponge-like blade clamped in an improved manner to

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reduce excess strain and shear forces and to support a detachable handle in spaced relationship thereto.

Further and additional objects of this invention will become obvious from a consideration of this specification, the accompanying drawing and the appended claims.

In one form of this invention a sponge-like blade having a tapered floor engaging portion is secured in a body member in an improved manner to provide fenders or bumpers at the ends thereof and to avoid excess shear forces thereon. An elongated handle is detachably secured in said body whereby the blade and body may be used as a hand implement, with the handle removed, for small and detailed work or may be used in a manner similar to the conventional broom, with the handle in place, for operation on large floor areas.

For a more complete understanding of this invention reference will now be made to the accompanying drawings wherein:

Fig. 1 is a front elevational view of one embodiment of this invention;

Fig. 2 is a top plan view of the embodiment of Fig. 1;

Fig. 3 is a plan view showing the inside portion of one-half of the body member of the embodiment of Fig. 1;

Fig. 4 is a bottom plan view of the embodiment of Fig. 1 with the sponge-like blade removed;

Fig. 5 is a transverse sectional view of the embodiment of Fig. 1 taken on the line 5-5 thereof;

Fig. 6 is a transverse sectional view of the embodiment of Fig. 1 taken on the line 6-6 thereof; and

Fig. 7 is an end view of the sponge-like blade of the embodiment of Fig. 1 prior to clamping in the body portion.

Referring now to the drawing and more particularly to Figs. 1 and 2, a cleaning implement 10 is provided having a body member 12 from which a tapered resilient, foraminous, or sponge-like blade 14 extends and to which an elongated handle 16 is detachably secured. The body member 12 may be formed of any convenient material, although in one particular embodiment of this invention a molded thermoplastic synthetic material is employed. The body 12 is made up of two symmetrical halves 18 and 20 having smooth outer surfaces and being hollowed out in the areas 22 and 24, both to reduce the weight of the cleaning implement and to conserve material. The parts may be notched as at 25 to insure accurate matching of the parts in assembly. The central portion 26 of each half is molded of solid material having a semi-cylindrical aperture 28 formed therein. It is believed obvious that the two semi-cylindrical apertures 28 will form a cavity to receive the handle 16 when the two body halves 18 and 20 are assembled together.

As shown best in Figs. 5 and 6 the body halves 18 and 20 include leg portions 30 and 32 respectively which depend downwardly therefrom along one face thereof to form an offset in such a manner that a space is defined between the legs when the body portions are assembled together. The space 34 thus defined has its maximum dimension at the top thereof and converges generally to the lowermost edge where the space has a minimum transverse dimension. The blade 14 has an upper rectangular portion 36 which is engaged between the legs 30 and 32 and thus is compressed and constricted to form a taper within the converging space 34. The blade 14 has a lower tapered portion 38 which extends downwardly from the legs 30 and 32 and defines the floor engaging portion of this implement. As shown in dotted line 40 in Fig. 5 the small lower edge of the tapered blade portion 38 folds over when in engagement with a floor surface 42, thus providing a flexible floor engaging member of substantial area transverse to the normal plane of the blade 14. As the blade

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14 is formed of foam or sponge material and preferably of a durable grade of sponge rubber, dirt, dust, lint and even moisture will be picked up and retained in the various interstices of the blade structure. This material may readily be removed by rinsing or flushing, or in the case of dirt, dust and lint, merely by agitation of the blade. The blade exhibits an amazing affinity for all the familiar forms of dirt and may even be used to great advantage on carpeted floor surfaces which may not be treated with the conventional broom types. While any sponge-like material may be employed, it is preferred that the material remain soft and pliable whether the blade is wet or dry. The material must also have substantial tensile strength to avoid tearing and crumbling.

A unique mounting structure for the blade 14 produces additional advantages not heretofore known. The blade 14 has an overall length substantially greater than the length of the body 12 and thus the rectangular portion 36 of blade 14 extends outwardly beyond the legs 30 and 32 to form bumpers 44 and 46. These bumpers prevent damage to household furnishings and also provide a gradual transition within the sponge-like blade between the compressed and free portions thereof. Thus the tendency to shear the sponge material, producing rapid failure of the cleaning implement, is greatly reduced. At each end of the leg portions 30 and 32 a pair of extending pins 48 and 50 extend inwardly into the space 34. The pins have a length as shown most clearly in Fig. 6 whereby in normal assembly they will be in close proximity but not abutting. In one particular embodiment of this invention an implement of unusual strength and durability was constructed in which the maximum transverse dimension of the space 34 was $\frac{5}{8}$ " and the minimum dimension $\frac{1}{8}$ ". In this embodiment the optimum spacing between the innermost ends of the pins 48 and 50 was found to be $\frac{1}{8}$ ". Using these dimensions the pins rigidly clamp the two body portions 18 and 20 in spaced relationship and also absolutely position the blade 14 with respect thereto. The blade is not torn or punctured in the area between the pins 48 and 50 but is compressed to the fullest reasonable extent. As a result of the unique mounting system provided hereby, the sponge-like material is reinforced at the line of compression, rather than weakened, as might be expected. The shear stresses are minimized while the compression of the material gives the blade additional body and strength.

While not specifically illustrated and described herein, it is within the contemplation of this invention to modify the implement to receive an angularly disposed handle whereby the implement may function as a push broom.

The entire assembly is secured together by two elongated metal plates 52, only one of which is visible in Fig. 1. These plates are set into recesses in the body portions 18 and 20 and have apertures therein to receive clamping members, such as machine screws 54. In this embodiment one of the elongated plates 52a has counter-sunk apertures therein to receive the heads of the screws 54 while the other plate 52b has threaded apertures to receive the threaded ends of machine screws 54. While in this embodiment the handle 16 frictionally engages the body 12, it will be understood that a threaded engagement or bayonet type lock may be employed between the handle and the body portions. Other variations of the basic structure shown in this disclosure will occur to those skilled in the art, but it is contemplated that all modifications which contemplate the basic teachings of the disclosure are within the spirit and scope of this invention.

Without further elaboration, the foregoing will so fully explain the character of my invention that others may, by applying current knowledge, readily adapt the same for use under varying conditions of service, while retaining certain features which may properly be said to constitute the essential items of novelty involved, which

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items are intended to be defined and secured to me by the following claims.

I claim:

1. A broom-like cleaning implement comprising a flexible blade of resilient foraminous material, said blade having generally rectilinear surfaces and at least two substantially parallel edges, the surfaces of said blade being tapered toward one of said edges, the taper of said blade being gradual whereby the tapered edge of said blade is deformable to a position transverse to the plane of said blade, a body member having two spaced, elongated leg portions engaging a portion of said blade adjacent the other of said edges, the outer ends of said leg portions being shaped to produce a diminishing space therebetween toward said one edge, and pins extending inwardly into said space from said leg portions to engage said blade in spaced relationship, said body member extending over less than the entire length of the other of said edges whereby the end portions thereof form bumpers of resilient material.

2. A broom-like cleaning implement comprising a flexible blade of resilient foraminous material, said blade having generally rectilinear surfaces and at least two substantially parallel edges, the surfaces of said blade being tapered toward one of said edges, the taper of said blade being gradual, whereby the tapered edge of said blade is deformable to a position transverse to the plane of said blade, a body member having two spaced, elongated leg portions engaging a portion of said blade adjacent the other of said edges, said blade member being compressed between said leg portions to be rigidly positioned therebetween, the outer ends of said leg portions being shaped to produce a diminishing space therebetween toward said one edge, and pins extending inwardly into said space from said leg portions to engage said blade in spaced relationship, said body member extending over less than the entire length of the other of said edges whereby the end portions thereof form bumpers of resilient material.

3. A broom-like cleaning implement comprising a flexible blade of resilient foraminous material, said blade having generally rectilinear surfaces and at least two substantially parallel edges, the surfaces of said blade being tapered toward one of said edges, the taper of said blade being gradual whereby the tapered edge of said blade is deformable to a position transverse to the plane of said blade, a body member having two spaced, elongated leg portions engaging a portion of said blade adjacent the other of said edges, said blade member being compressed between said leg portions to be rigidly positioned therebetween, the outer ends of said leg portions being shaped to produce a linearly diminishing space therebetween toward said one edge, elongated handle means, said body portion being apertured to receive said handle means, and pins extending inwardly into said space from said leg portions to engage said blade in spaced relationship, said body member extending over less than the entire length of the other of said edges whereby the end portions thereof form expanded bumpers of resilient material.

4. A broom-like cleaning implement comprising a flexible blade of resilient foraminous material, said blade having generally rectilinear surfaces and at least two substantially parallel edges, the surfaces of said blade being tapered toward one of said edges, the taper of said blade being gradual whereby the tapered edge of said blade is deformable to a position transverse to the plane of said blade, a body member having two spaced, elongated leg portions engaging a portion of said blade adjacent the other of said edges, said blade member being compressed between said leg portions to be rigidly positioned therebetween, the outer ends of said leg portions being shaped to produce a linearly diminishing space therebetween toward said one edge, elongated handle means, each of said body parts having a cooperating semicylindrical aperture therein whereby said handle is engaged therebetween, and pins extending inwardly into said space from said

leg portions to engage said blade in spaced relationship, said body member extending over less than the entire length of the other of said edges whereby the end portions thereof form expanded bumpers of resilient material.

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