United States Patent

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[72] Inventor Don S. Strauss
Denver, Colo.

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[73] Assignee Majestic Wax Company
Denver, Colo.

[54] **DISPOSABLE HEAD FOR A SWEEPING MOP**
7 Claims, 8 Drawing Figs.

[52] U.S. Cl. 15/229
[51] Int. Cl. A47l 13/20
[50] Field of Search ..... 15/147 A, 226, 228, 229 AC, 229 AP, 229 B, 229 BC, 229 BP; 300/21

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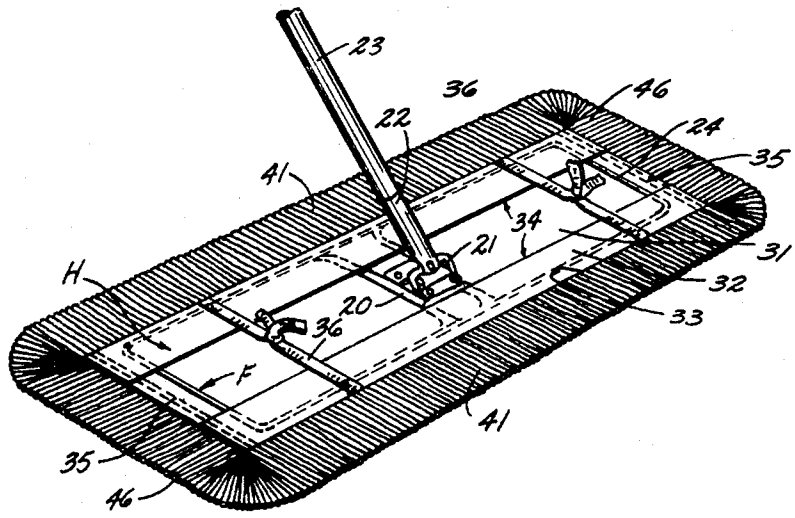
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Primary Examiner—Daniel Blum
Attorney—Van Valkenburgh and Lowe

ABSTRACT: A disposable mophead for a sweeping mop having a paper-plastic backing to which the strands are sewn as a fringe on each side of the backing, at the flat undersurface of the backing, to lie flatly upon a floor when the mop is in use.



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SHEET 1 OF 2

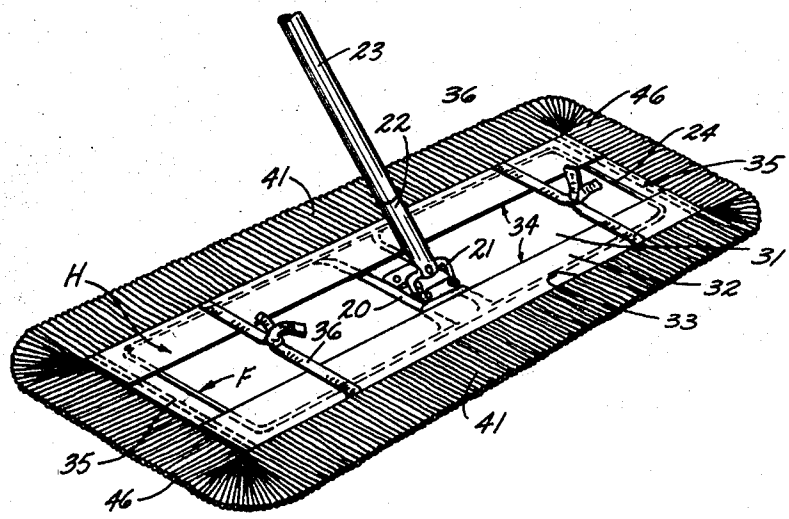


Fig. 1

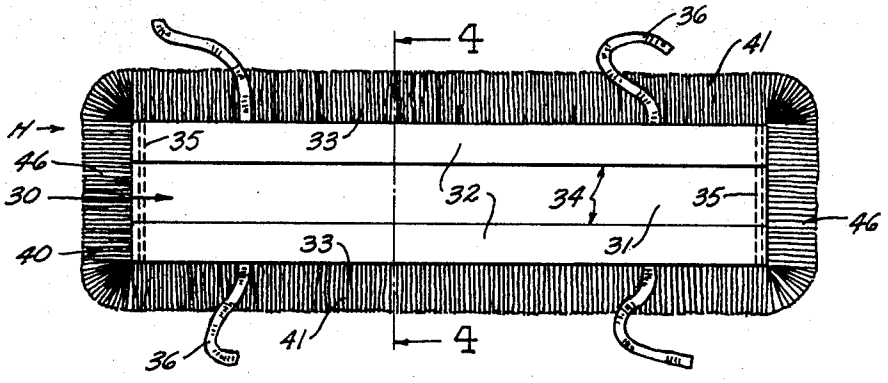


Fig. 2

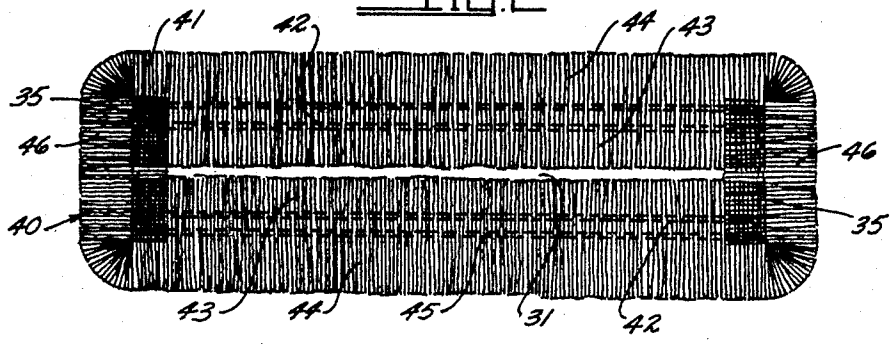


Fig. 3

INVENTOR.
Don S. Strauss
BY Van Valkenburgh & Lowe
ATTORNEYS

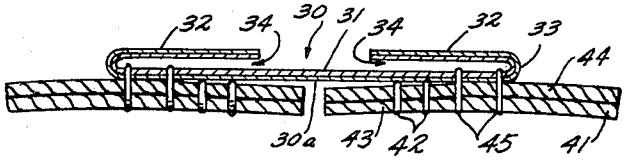


Fig. 4

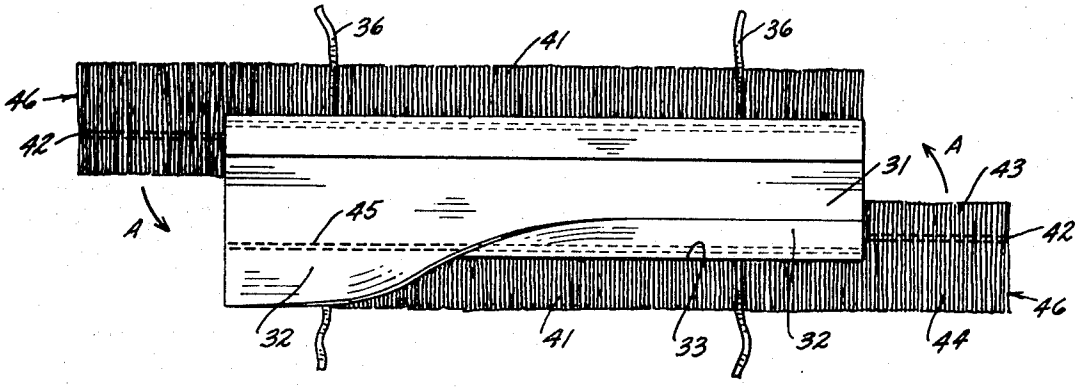


Fig. 5

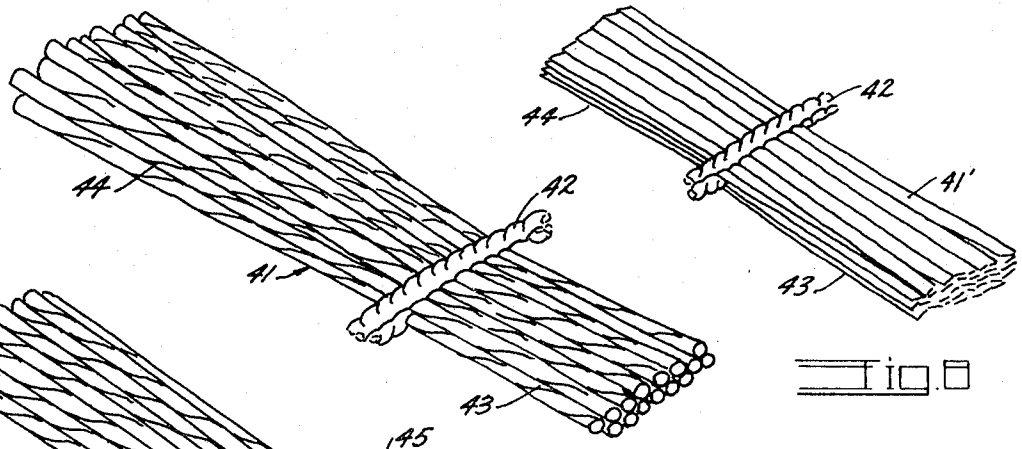


Fig. 8

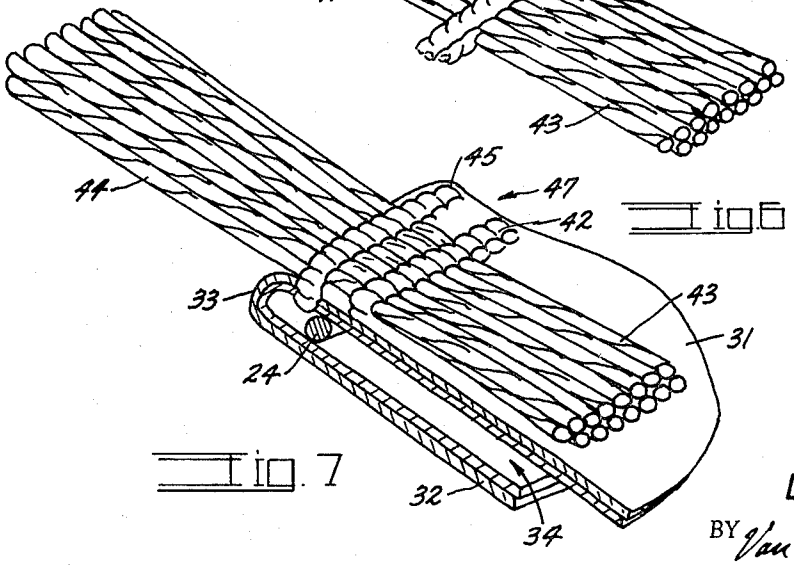


Fig. 6

Fig. 7

INVENTOR.
Don S. Strauss
BY Van Valkenburgh & Four
ATTORNEYS

DISPOSABLE HEAD FOR A SWEEPING MOP

The present invention relates to sweeping mops and more particularly to improved constructions of disposable mopheads or fillers for sweeping mops. As such, the invention will be hereinafter called "a disposable mophead."

Where a comparatively large, finished floor surface is to be kept clean, a sweeping mop is generally preferred to any other type of broom or mop because a sweeping mop can rapidly clean a floor area of particles and lint without stirring up any dust. The general construction of a sweeping mop includes a handle, a frame attached to the end of the handle and a mophead secured to the frame. The mophead of an ordinary sweeping mop consists of a bundle of stringlike strands which are usually moistened with oil or a similar oil-wax treatment and such treatments are available as commercial preparations. These treated strands are capable of picking up and holding lint, dirt and dust particles and at the same time, the treatment will polish the floor. After the mop is charged with dirt, it is quickly unloaded by shaking it and dirt, lint and dust will fall away from the mop as into a container provided for the purpose.

Sweeping mops, though preferred over other types of brooms and mops, still have certain disadvantages and limitations. For one thing, a mop cannot remove dirt particles actually sticking to the floor. Another problem resides in difficulties in applying a liquid treatment to the mop. Usually the liquid is poured directly onto the mop and upon the exposed ends of the strands; however, after a mop has been used for awhile, these exposed strand ends become filled with wax and dirt accumulations to the point where they will no longer receive and absorb the treatment.

A further problem in mop construction and use resides in the fact that in use, the strands of the mophead tangle and form a comparatively thick head which reduces the effective surface area of the mop. Although the thick mophead may then appear to have a large dirt-retaining capacity, actually the capacity is reduced. This is easily demonstrated by separating the tangle of strands after the mop has been used for a period of time. The strands are stained only at their exposed ends where they pick up dirt. The portions of the strands which are within the mop and which are concealed are clean. This indicates that these interior portions of the strands are performing no function other than possibly retaining some treatment liquid and contributing to the bulk of the mop. A comparison of effective cleaning and holding surfaces of the strands of a mophead with the total available surfaces would suggest that a conventional mop is quite inefficient.

The need to improve the efficiency of a mophead has become quite significant where replaceable mopheads are used in large quantities for commercial purposes. Two types of replaceable mopheads are available, a washable type and a disposable type. In either type, the mophead includes a strong cloth backing to carry the strands and in the washable type, tightly woven strings or strands are preferred so the strands will not unravel when the head is washed in an automatic washer. Such a mophead may be difficult to charge with a treatment liquid and is not completely effective in picking up dirt particles. On the other hand, disposable, throwaway types of mopheads may be made with selected types of softer strands which will receive treatment and are more effective in picking up dirt. However, a mophead made of such strands cannot be washed. Disposable mopheads are thus comparatively more expensive than the washable types and in the past, the disposable mopheads have generally not been competitive with washable mopheads.

The present invention was conceived and developed with the above considerations in view and comprises, in essence, a disposable mophead having selected soft strands sewn to a backing of a paper-plastic laminate instead of cloth, and, in a modified arrangement, a mophead wherein the strands are of shredded, paperlike material. Both arrangements provide for economical and functionally effective mopheads.

An object of the invention is to provide a novel and improved, disposable mophead which is a low-cost article that is fully competitive with washable types of mopheads and which can be advantageously thrown away and replaced when it is no longer serviceable.

Another object of the invention is to provide a novel and improved, disposable mophead having a substantially rigid backing formed by a paper-plastic laminate, and which can be easily fitted to and securely held on a conventional mop frame.

Another object of the invention is to provide a novel and improved, disposable mophead wherein the strands are secured to the undersurface of the backing in a simple arrangement which effectively exposes the entire reach of each strand when the mop is in use, and at the same time, minimizes the tendency for the strands to tangle and produces a maximum pickup power for the number of strands on the mophead.

Another object of the invention is to provide a novel and improved mophead having the strands firmly affixed to the undersurface of the backing in an arrangement which permits each strand to receive a treatment of oil and/or wax throughout its entire reach.

Another object of the invention is to provide a novel and improved mophead which has a firm, unyielding section of strands secured to the backing surface which may be pressed against the floor surface to remove dirt sticking to the floor and to rub out stains such as heel marks.

Another object of the invention is to provide, in a novel and improved mophead, a simplified structure wherein the strands are of a shredded, paperlike material.

Another object of the invention is to provide, in a novel and improved mophead, a unique array of paperlike strips forming strands having enhanced pickup properties.

Other objects of the invention are to provide a novel and improved, disposable mophead which is a neat-appearing, rugged and durable unit and which may be manufactured with ordinary, easily available machinery at a minimum cost.

With the foregoing and other objects in view, my present invention comprises certain constructions, combinations and arrangements of parts and elements as hereinafter described, defined in the appended claims, and illustrated in preferred embodiment, in the accompanying drawings in which:

FIG. 1 is a perspective view of the lower end of a conventional sweeping mop showing the improved head mounted upon the frame in an ordinary manner, the view depicting the head as in its usual position when lying flatly upon a floor.

FIG. 2 is a plan view of the upper surface of the mophead per se.

FIG. 3 is a plan view of the undersurface of the mophead per se.

FIG. 4 is a transverse sectional view as taken from the indicated line 4–4 at FIG. 2, but on an enlarged scale and illustrating the mophead structure in a diagrammatic manner.

FIG. 5 is a plan view similar to FIG. 3, but showing the head as being incomplete with portions pulled out of position to better depict the manner in which it is manufactured.

FIG. 6 is an isometric view of a fragment of a fringe of strands used in the improved mophead.

FIG. 7 is an isometric view of the underside of a fragment of a mophead showing the fringe of strands illustrated at FIG. 6, a fragment of the backing sheet whereto the fringe is sewn and an end of a mophead frame wire in its normal position.

FIG. 8 is an isometric view similar to FIG. 6, but showing a fragment of a fringe of paperlike strands for use in a modified construction of the mophead.

Referring more particularly to the drawing, FIG. 1 shows the lower end of a sweeping mop consisting of a conventional, rectangular, elongated frame F and the improved mophead H mounted upon the frame. This frame F includes a central base 20 which holds a swiveled connector 21 which, in turn, supports the ferrule 22 of a mop handle 23. The mop frame F is shown as a heavy wire 24, but it may also be a flat, narrow board or plate.

The size of these frames vary, but they are generally standardized. The frames are available in widths from 3 to 6 inches and may be from 1 to 6 feet long. Because they are standardized, the mopheads furnished by one company can fit upon frames supplied by competitive companies. Thus, it is contemplated that the improved mophead described herein can be manufactured in several varying sizes for use with any of several different types of frames available on the market.

The mophead H includes a backing **30** and a strand base **40** secured to the bottom surface of the backing. The mophead backing **30**, in conventional arrangements, is a heavy, sturdy, canvaslike cloth having pockets at its upper face to hold it upon the frame. The strand base **40**, in conventional arrangements, is formed of an array of comparatively short lengths of stringlike fibers of cotton or rayon affixed to the underside of the backing in various ways as by tufting.

The improved mophead H uses a backing **30** of a paper-plastic laminate such as that formed by combining an olefin, such as polypropylene, with a paper backing. For example, one type is a laminate of spun-bonded olefin and 70-pound kraft paper. It was found that not only was this comparatively lightweight laminate sufficiently strong and tear resistant to function as a backing for a mophead, but also that it had substantial rigidity which facilitates holding it upon a mop frame while in use. In using a paper-plastic laminate for a mop backing **30**, it was found desirable to orient the sheet with the plastic surface **30***a* at the underside, adjacent to the strand base **40**, as indicated at FIG. **4**.

The backing **30** is formed as a rectangular web having its longitudinal edges paralleling the longitudinal edges of a mop frame F upon which it is mounted and a rectangular, central portion **31** of this web is sized to correspond with such a frame. A longitudinal edge strip or flap **32** is provided at each side of this central portion **31** and each flap **32** is folded at the side edges **33** of the central portion **31** to overlie the central portion and to provide elongated, longitudinally disposed pockets **34** which receive the sides of the frame F. Each end of each pocket is closed by two closely spaced rows of stitching **35** extending transversely across the end of the backing. The backing is thus tightly held on the mop frame with each side of the frame fitting into the pockets **34** as illustrated at FIG. **1**. To more effectively secure the backing upon the mop frame, tie ribbons **36** are spaced as opposing pairs along the edges **33** of the backing and are stitched in place as hereinafter described. The ends of the ribbons are tied together as illustrated at FIG. **1**.

In the construction shown at FIGS. **1** to **6**, the strand base **40** is made of a fringe of individual fiber strands **41**. This fringe is secured to the underside of the backing **30** by stitching as will be described. One preferred material for the individual strands **41** of this base is a loosely woven, natural or synthetic yarn capable of absorbing liquid mop treatment such as wax-carrying petroleum distillates and thus be capable of effectively picking up particles of dirt and lint. In the construction shown at FIG. **8**, another preferred material for the strands **41'** is shredded strips of a paperlike material as hereinafter described. Because it is to be a disposable-type mophead, the fiber strands can be very loosely spun together and of a type very effective in picking up dirt, but which cannot be laundered. An excellent, commercially available fiber strand material for a disposable mop is known as No. 1, four-ply, lightweight, spun rayon mop yarn. This yarn, forming strands **41**, is approximately three-sixteenths inch in diameter when in a loose weave or lay.

The strands are sewn together in a side-by-side array by a continuous, longitudinal stitching **42** to form a fringe which is approximately two strands thick. Preferably the stitching is a double row and is best illustrated at FIG. **6**. The length of the strands is roughly, approximately the width of the backing **30** and the stitching **42** is at an approximate one-third point to divide the strand base fringe into shorter, inner tufts **43** and longer, outer tufts **44**.

A reach of fringe forming a portion of strand base **40** is affixed to the undersurface of the backing **30**, along each longitudinal side of the backing, with the center of the fringe being at the side edge **33** of the backing. The inner tufts **43** of the two opposing reaches of fringe thus terminate at the approximate longitudinal centerline of the backing and approximately one-half of the outer tufts **44** of each reach of the fringe projects from each side of the base as illustrated. The outer tufts **44** of each reach of fringe are then sewn to the underside of the central portion **31** of the backing by a double row of stitching **45** paralleling the adjacent stitching row **42** and having its outward stitches at the longitudinal edge **33**. To accomplish this sewing operation, the flaps **32** are in an unfolded, out-of-the-way position, as suggested at FIG. **5** and hereinafter described.

Each end of the mop includes a transverse reach of fringe strands **46** to finish off the strand base **40**. The end fringe strands **46** are provided by turning a projecting portion of the fringe at either side of the backing as illustrated and as indicated by arrows A at FIG. **5**. These projecting fringe ends are stitched in place by the transverse stitching **35** heretofore described.

It is to be noted that the double stitching rows **42** and **45**, in their side-by-side arrangement, will materially firm the portion of the strands between them and form a substantially flat, padded section **47** of strands as best illustrated at FIG. **7**. This padded section is directly underneath the frame wire **24** and accordingly, it may be pressed against a floor surface. This permits the mop to be used for rubbing or scouring when necessary to loosen dirt sticking to the floor or remove a stain such as a heel mark.

It is also to be noted that the strands **41** are efficiently arranged to normally lie in the plane of the backing and thus a major portion of each strand will lie flatly upon the floor when the mop is in use. Accordingly, a minimum number of strands will cover a maximum floor surface and pick up a maximum amount of dirt. Moreover, the strands **41**, being comparatively few, will not tangle and mat to any substantial extent.

A further advantage of the improved, disposable mophead resides in the manner in which treatment may be applied to the strands. The treatment, which may be an oil or a mixture of oil and waxes, is ordinarily applied as a liquid to soak into the strand fibers. It was found that by placing the mophead in an upside-down position such as illustrated at FIG. **3** and at FIG. **7** to expose the padded section **47**, the treatment could be poured directly upon this padded section and the treatment liquid would then soak through the fibers of the strands **41** in either direction to effectively saturate these strands.

This improved mophead can be manufactured with simple, easily available machinery at a very moderate cost. To set up a production line, one or two fringing machines may be used to sew the strands **41** together as a fringe heretofore described, by the offset stitching row **42** as illustrated at FIG. **6**. Next, the fringing is sewn to a web of a selected paper-plastic laminate which may be provided as a continuous roll having a width suitable for the purpose at hand. As this web is payed from its roll, it is cut to the proper lengths and two strips of fringing are sewn into place along each side of the web as by stitching **45**. The length of each fringe strip is greater than that of the web section to provide transverse fringe ends **46** and the final steps are to fold over the longitudinal edges of the web to form pockets **34** and then to turn the ends of the fringe strips to sew them in place, by stitching **35**. It is to be noted that the ribbons **36** may be positioned near each end of the web and sewn into place as the fringes are sewn to the web by stitching **45**.

Should rapid manufacturing operations for these mopheads be desired, two fringing machines may continuously form the fringing for each side of the mophead which is moved in position with respect to a roll of webbing so that the stitching **45** onto the webbing is continuous with ribbons **36** being positioned at selected spacings along the reach of the web. This continuous reach may then be rerolled for storage, if desired, or cut into selected lengths and thereafter, the transverse

fringe ends **46** may be separate pieces to be sewn in position by stitching **35**.

FIG. **8** shows a short reach of fringe of an alternate material wherein the strands **41'** are formed of shredded paper sewn together by a stitching row **42**. The strands are of a width of approximately one-eighth inch. The shredded paper strands, narrow, elongate strips of paper, are necessarily tough and absorbent. The preferred material for these paperlike strands is generally known as nonwoven cloth. Such a product is formed by comparatively long fibers secured together by a suitable resin. One such product is, for example, Webril, manufactured by Kimberly Clark of Waukesha, Wisconsin. The desirable properties of this paperlike, nonwoven cloth resides in the fact that it is tough and strong with a substantial wet strength and it also has a short, knapped surface and is capable of absorbing a floor treatment material. The commercial material Webril, is characterized by a surprising degree of strength for a paperlike product in one direction which may be referred to as a longitudinal direction, and only moderate strength in a direction transverse thereto. Accordingly, when the strands are cut from this paper, they are oriented with respect to the aforesaid longitudinal direction so that the strands will resist breaking even through they may be torn apart into narrower strands through rough usage.

This fringe of flat, paper strips of improved strand material is especially suitable for attachment to a paper backing, with the stitching row **42** being at an approximate third point of the strands to divide the strand base into inner tufts **43** and outer tufts **44**, precisely in the manner heretofore described, to provide a final product substantially the same as that heretofore described. Moreover, the nonwoven cloth material proves to be exceptionally effective in holding a treatment liquid and in picking up dirt during a mopping operation.

I have now described my invention in considerable detail. However, it is obvious that others skilled in the art can build and devise alternate and equivalent constructions which are nevertheless within the spirit and scope of my invention.

I claim:

1. A disposable mophead for a sweeping mop adapted to be mounted upon a flat, rectangular mop frame and comprising, in combination:

a. an elongated paper-plastic laminate backing member formed as a rectangular sheet, having a central portion sized to underlie the mop frame and having longitudinal edge portions overfolding the sides of the central portion to form longitudinally disposed pockets adapted to receive the edges of the mop frame;

b. a fringe of strands having the general characteristics of mop yarn at the underside, and at each side of the backing member, the length of the strands in each fringe approximating the width of the backing member and with each fringe being sewn to the central portion of the backing member by a longitudinal stitching with approximately one-half of each strand laterally projecting from the longitudinal edge of the backing member; and

c. a transverse stitching at each end of the backing member adapted to secure the overlying edge portions of the backing member to form the ends of the aforesaid pockets.

2. In the mophead defined in claim **1**, including a transversely disposed reach of fringe strands at each end of the backing member secured thereto by the aforesaid transverse stitching.

3. In the mophead defined in claim **1**, wherein each fringe of strands is sewn to the undersurface of the central portion of the backing member adjacent to the longitudinal edge thereof.

4. In the mophead defined in claim **1**, wherein each fringe of strands is sewn together by a longitudinal stitching at an approximate one-third point of the fringe at the inward portion underlying the backing member and wherein said fringe is sewn to the undersurface of the backing member by stitching at the approximate center of the fringe and adjacent to the aforesaid sides of the central portion whereby to provide a compacted portion of the fringe of strands between the stitching forming the strands and the stitching at the edge of the backing member.

5. In the mophead defined in claim **1**, wherein said fringe of strands is formed as a yarn of a nylonlike fiber.

6. In the mophead defined in claim **1**, wherein the fringe of strands is formed as strips of a paperlike material.

7. In the mophead defined in claim **6**, wherein the flat, paperlike, fringe strands are formed of a nonwoven cloth.