

Dec. 7, 1965

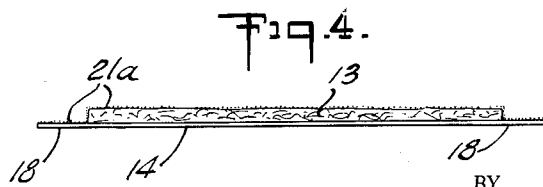
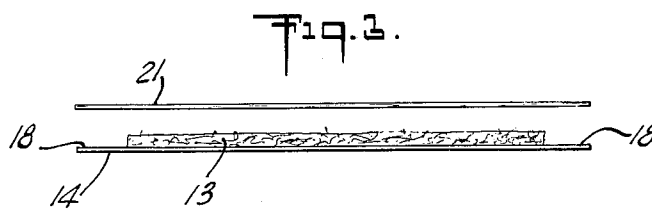
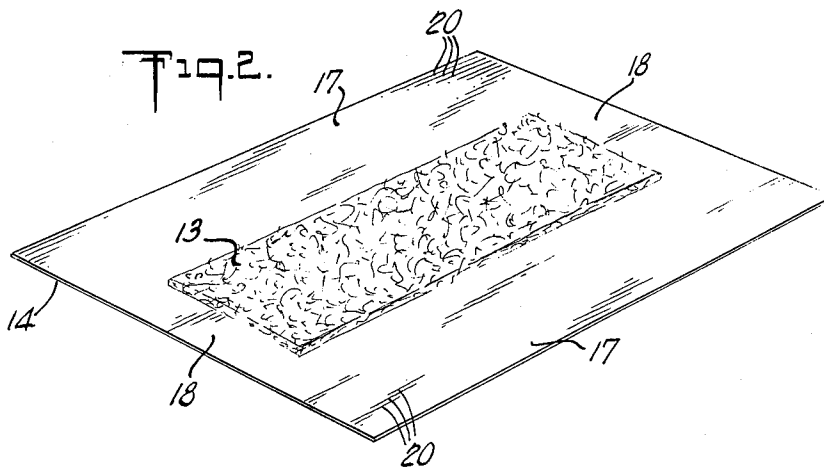
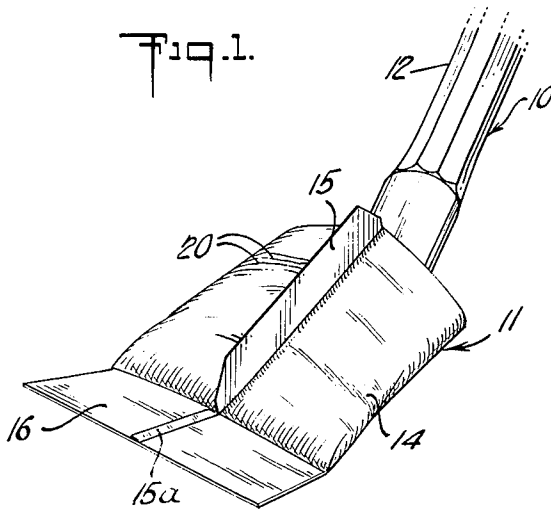
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3,221,356

DISPOSABLE CLEANING SWAB

Filed Feb. 5, 1963

3 Sheets-Sheet 1



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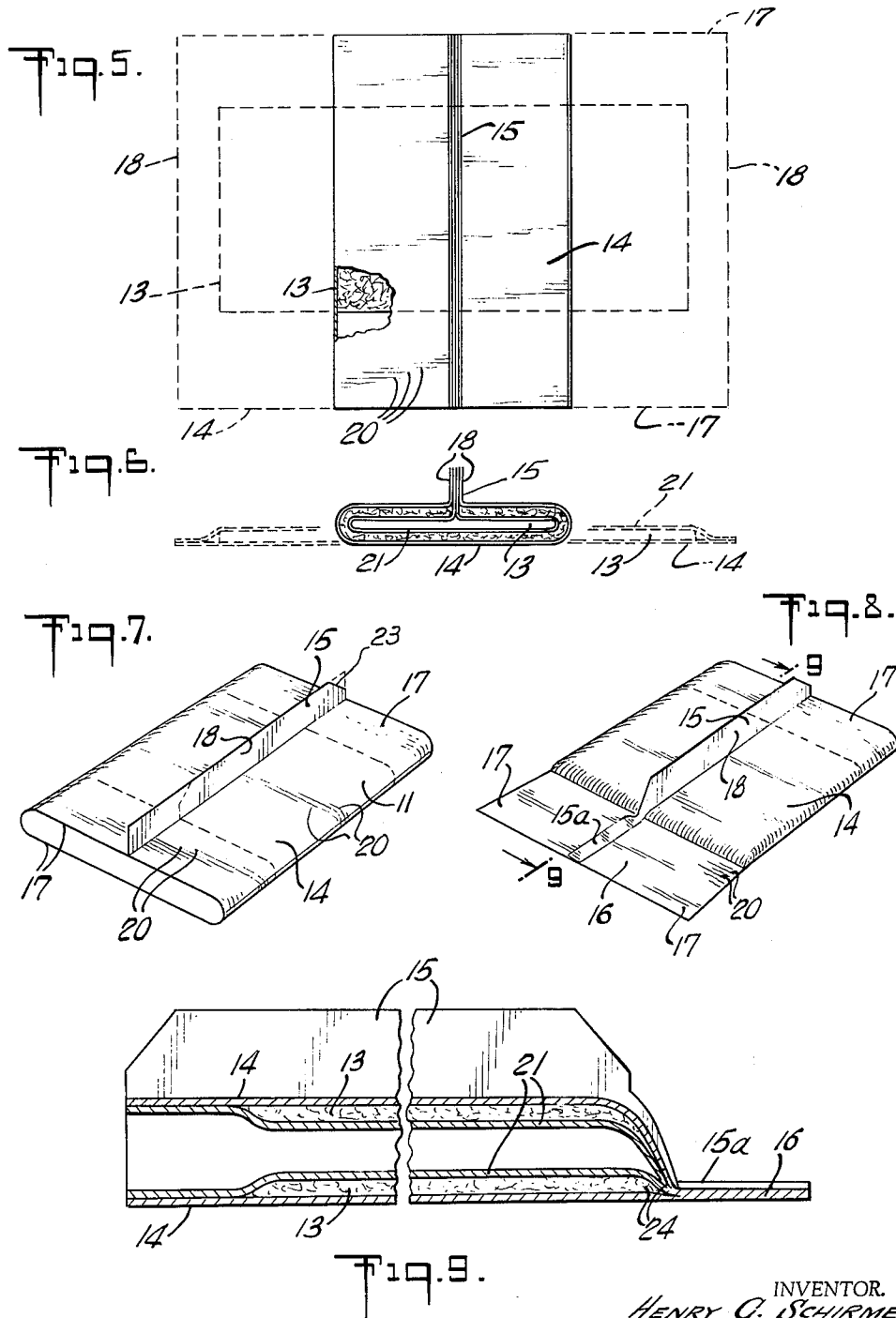
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DISPOSABLE CLEANING SWAB

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3 Sheets-Sheet 2



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DISPOSABLE CLEANING SWAB

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3 Sheets-Sheet 3

Fig. 10.

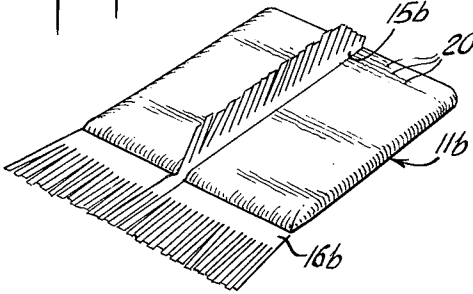


Fig. 11.

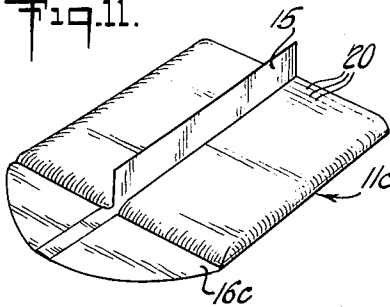


Fig. 13.

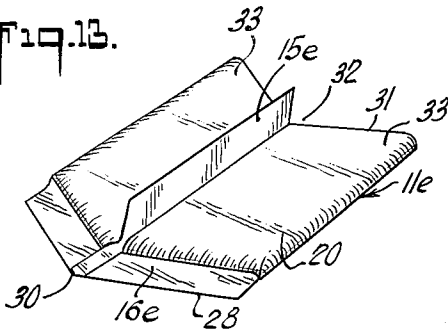


Fig. 12.

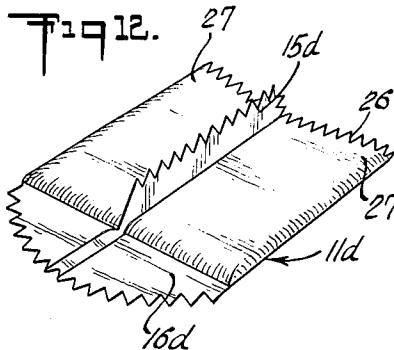


Fig. 14

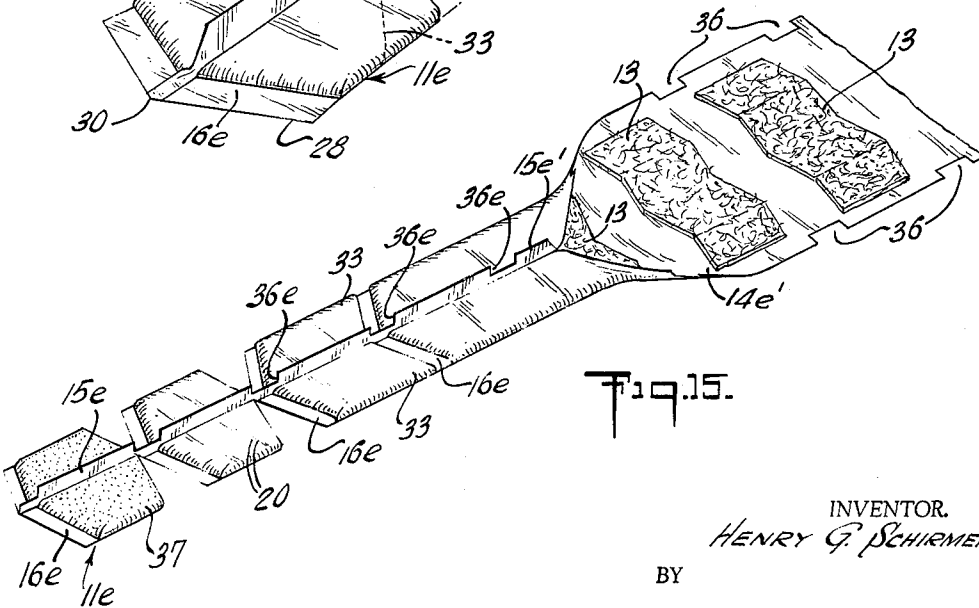
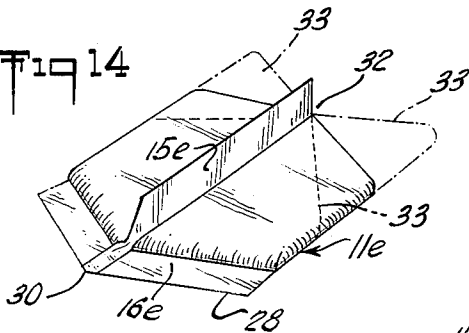


Fig. 15.

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3,221,356

DISPOSABLE CLEANING SWAB

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Filed Feb. 5, 1963, Ser. No. 256,372

11 Claims. (Cl. 15—210)

The present invention relates to a disposable cleaning swab suitable for removable attachment to a holder for cleaning toilet bowls, bath tubs and the like.

Among the objects of the present invention are to provide a new and improved cleaning swab, which can be firmly attached to a holder for use in cleaning toilet bowls, bath tubs and the like and easily removed from the holder, which is made of a material capable of effectively retaining abrasive material and assist in trapping dirt therein, which is designed to clean close regions, such as recesses, corners and angular surfaces, which can be manufactured into various shapes and sizes with the same basic design, and which lends itself to manufacture on a mass production scale.

In accordance with certain features of the present invention, a filler material and a wrapper sheet therefor are folded together and joined at edges to produce a swab in a form of a bag or pouch with seams projecting from the swab and located in position to adapt them for entry into close recesses and corners of surfaces to be cleaned.

Various other objects and features of the invention are apparent from the following description and from the accompanying drawings, in which

FIG. 1 is a perspective showing a swab constituting one embodiment of the present invention, and shows said swab held on a holder in preparation for cleaning use;

FIG. 2 is a perspective showing a filler mat and a wrapper therefor during an initial stage of assembling and producing the swab shown in FIG. 1;

FIG. 3 is a side elevation showing the assembly of FIG. 2 being subjected to an additional step of adding a wadding thereto for bonding purposes at a subsequent stage in the assembly and production of the swab of FIG. 1;

FIG. 4 is a side elevation showing the assembly of FIG. 2 being subjected to an additional step of applying adhesive thereto in place of the wadding shown in FIG. 3 in the assembly and production of a swab constituting another embodiment of the present invention;

FIG. 5 is a face view of the assembly of FIG. 3 shown during a subsequent stage of manufacture in which said assembly is folded into a tube, the assembly being shown in dash lines before folding and in full lines after folding;

FIG. 6 is an end view of the tube shown in FIG. 5, the dash lines indicating the assembly before folding and the full lines representing the assembly after folding;

FIG. 7 is a perspective of the tube of FIGS. 5 and 6, but after a rear corner of the seam formed by the folding has been diagonally trimmed;

FIG. 8 is a perspective of the tube of FIG. 7 after being subjected to a subsequent step of trimming a front end section of the seam and of closing one end to form the swab of FIG. 1 in the form of a flat bag or pouch;

FIG. 9 is a section of the swab taken on lines 9—9 of FIG. 8, but on a larger scale;

FIGS. 10, 11 and 12 show perspectives of different forms of swabs embodying the present invention;

FIG. 13 shows the perspective of still another form of swab embodying the present invention, but designed with rear wing extensions adapted to be folded inwardly to form tucks inside the swab;

FIG. 14 is a perspective showing the swab of FIG. 13 with its rearward wing extensions folded inwardly to form tucks, and

FIG. 15 is a perspective showing diagrammatically a production line in the manufacture of the swab of FIG. 14.

U.S. Patents 2,816,311 and 2,816,313 disclose a disposable cleaning swab and holder therefor. The swab of the present invention is of the general type designed to be employed in connection with holders of the type shown in said patents. Referring to FIG. 1 of the drawings herein, the holder 10 is in the general form of a spoon or spatula and comprises a head (not shown) adapted to be hooded or covered by a swab 11 constituting one embodiment of the present invention, and a handle or shank 12 therefor terminating in a grip portion (not shown).

The swab 11 shown in FIGS. 1, 8 and 9, comprises a filler 13, which is in the form of a flat mat of material soft and flexible enough to yield into conformance with irregularities in the surface being cleaned, and which serves as a padding for the swab and an outside wrapper 14 folded around the filler to serve as a scrub sheet and sealed to form with the filler a swab 11 in the form of a bag or pouch with a pocket to receive the holder head and with upper and lower scrubbing faces. The swab 11 has a seam 15 in a form of a fin, ridge or tab extending along the top of the swab where the ends of the wrapper have been brought and secured together to form a tube and laterally of the upper face of the swab 11 and a seam 16 in the form of a ridge or tab extending across the end of the tube to close the forward end of the tube. The seams 15 and 16 constituting laminated constructions, have sufficient rigidity to permit them to be inserted into close corners and recesses with sufficient stiffness to clean said corners and recesses effectively.

FIGS. 2 to 9 show different steps in the manufacture of the swab 11 of FIG. 1, and also show the structure of the swab and although the steps, to simplify the description of this structure, are described and shown in connection with the process of making a single swab, as for example, by hand, actually the swab would most likely be manufactured for commercial purposes by mass production methods involving continuous line operations, as for example, in the manner shown in FIG. 15, later to be described more fully.

FIG. 2 of the drawings shows an initial stage in the manufacture of the swab 11. In this initial stage, the filler 13 in the form of a flat mat is laid against the wrapper 14. The filler mat 13 is desirably made of a material, which is readily flushable in a toilet bowl, so that it will not clog the plumbing and which is desirably easily disintegrable when wet. For that purpose, the filler mat 13 is desirably made of fluffy material, which may be essentially macerated cellulose, such as disintegrated wood pulp, molded or pressed in flat form, and which may be impregnated with a detergent and a sanitizer. In a specific form, this filler mat 13 may be about 2 7/8" x 6 3/4" x 1/4".

In order to retain the particles of the filler mat 13 against rapid disintegration or separation during manufacture, storage, transportation or use, a sheet of very thin paper, which is at least flushable and which is desirably water-disintegrable, envelops the flat body of pulp with its longitudinal margins overlapping to form the fluffy filler mat 13. This envelope may constitute a very thin sheet of tissue, self-disintegrable when wet and having a length coextensive with the length of the body of pulp, so that its ends are flush with the ends of the body of pulp. An alternate envelope may constitute two sheets of very thin tissue sandwiching the body of filler pulp therebetween or as another alternative, the body of filler pulp may be held together merely by a compression pattern in the form of a grid, in which case, the envelope sheet or sheets may be dispensed with. As a further alternative, the filler mat 13 may consist entirely of a number of

thin facial tissues arranged in a stack to form the padding mat 13 for the swab.

The outside wrapper 14, serving also as a scrub-sheet, is a thin flexible paper flushable in a toilet bowl but nevertheless immune to water disintegration during normal period of use of the swab and sufficiently wear-resistant and tear-resistant when wet to maintain its integrity during such period. In the specific form shown, the outside wrapper 14 is a crepe-paper, such as towelling paper, impregnated with a heat-sealable resin and having a length and a width greater than the length and width of the filler mat 13 to define end extensions 17 and side extensions 18 beyond said mat. The wrapper 14, in a specific embodiment of the invention, may be $4\frac{1}{2}$ " x 8" and the impregnating heat-sealable resin therefor, may, for example, be a vinyl resin, such as that sold under the trademark Resin 2507 by National Starch Products, Inc.

During the assembling, the filler mat 13 is placed centrally on the crepe paper wrapper 14 in face to face contact therewith with the crepe 20 on said wrapper extending across the wrapper between the ends thereof. Over this assembly is placed a wadding 21 of the same size and shape as the wrapper 14, as shown in FIG. 3. This wadding 21 is heatsealable and is used mainly for bonding purposes. To that end, it may consist essentially of a sheet of thermoplastic fibers, such as vinylidene chloride fibers, sold under the trademark Saran by Dow Chemical Company.

Instead of employing a separate bonding wadding 21 as shown in the embodiment of FIG. 3, this wadding can be replaced by a suitable adhesive coating 21a over the filler mat 13 and over the extension parts 17 and 18 of the wrapper 14 projecting beyond the filler mat 14, as shown in FIG. 4. This adhesive coating 21a may be sprayed on, and desirably constitutes a thermoplastic resin, such as a polyvinyl acetate emulsion, as for example, that commercially sold under the trademark Shawinnigan TS-71. If the wrapper 14 is impregnated with a heat-sealable resin, then the adhesive coating 21a should also be of the heat-sealable type. However, if the wrapper 14 is not impregnated with a heat-sealable resin, then the adhesive coating 21a need not be a thermoplastic one, but may, for example, be a thermosetting one, or one of any other suitable type.

Whether the construction of FIG. 3 with a wadding 21 is employed or whether the construction of FIG. 4 with a coating 21a of adhesive is employed, the subsequent steps of manufacture to be described will be the same.

Once the components 13, 14 and 21 are placed together as shown in FIG. 3, the wadding 21 is sealed to the wrapper 14, so as to encapsulate completely the filler mat 13. The assembly is then folded from the flat condition shown in dash lines in FIGS. 5 and 6 into condition shown in full lines in said figures, to bring the side projecting extensions 18 of the wrapper 14 together face to face, and these projecting wrapper extensions are heat-sealed together to form the top seam 15 and to close the three assembled components 13, 14 and 21 into a tubular configuration, as shown in FIGS. 5, 6 and 7. The seam 15 is in the form of a fin, ridge or tab extending along the length of the tube.

The tube shown in FIGS. 5, 6, and 7, is then subjected to heat-sealing at one end to bring opposite portions of the projecting extension 17 of the wrapper at said end integrally together and to form thereby the end seam 16. This seam 16 closes the end of the tube and converts said tube into a flat bag or pouch to form the swab 11, as shown in FIGS. 8 and 9. The end seam 16 forms a tab at the front end of the swab 11. Just before or after the seam 16 is formed, the end section of the top seam 15 extending across the region where the seam 16 is to be formed, or has been formed, is trimmed, so that the section 15a of said top seam 15 extending across the seam 16 is of reduced height. If desired, the section of the seam 15 extending across the seam 16 may be trimmed

off entirely. Also, if desired, the rear corner of the top seam 15 may also be trimmed to form a bevel 23.

The end section of the tube shown in FIGS. 5, 6 and 7 forming the end seam 16 is sufficiently long to bring the ends 24 of the filler mat 13 almost together, as shown in FIG. 9, so that the forward end of the cavity of the swab 11 formed is padded by the filler mat.

The outside of the swab 11 shown in FIGS. 8 and 9 is then covered with a coating of abrasive, which may comprise a pumice applied in a liquid polyvinyl acetate emulsion carrier by brush or roller operation.

The crepe 20 in the wrapper 14 will extend across the swab from side to side transverse to the longitudinal direction of the holder handle 12, and since in the manipulation of the holder 10 and the swab 11, during actual use, the holder is usually reciprocated mostly endwise of the handle in a direction at right angles to the crepe, it is seen that the crepe extending in this transverse direction is most effective in scouring the surfaces being cleaned. Also, the crepe 20 extending in this transverse direction assists in trapping dirt. Furthermore, the grooves between the crepe 20 in the wrapper 14 retain abrasive therein more effectively while the swab 11 is being manipulated in the manner described during cleaning.

The shape of the swab 11 is such, as to make it an easy matter to completely coat its outside surface with abrasive in the manner described.

The front end seam 16 constituting, at least two layers of the wrapper 14, heat-sealed together into an integral tab, has substantial rigidity, permitting it to be inserted into close corners, angular surfaces and recesses with sufficient stiffness, to permit effective cleaning of these usually inaccessible regions. The top seam 15 also comprising two layers of wrapper 14 heat-sealed together into an integral tab or fin, is also rigid enough to permit cleaning of restricted regions, and may serve as a handle by which the swab 11 may be conveniently slipped over the head of the holder 10.

One advantage of the basic feature of the swab of the present invention is that it can be varied in numerous ways to provide new or different product designs without major machine changes, as for example, by a simple die cut change, producing a different design function.

FIG. 10 shows a modification 11b of the swab embodying the basic features of the present invention. In this modified swab 11b, the front end seam 16b corresponding to the front end seam 16 in the embodiment of FIGS. 1, 8 and 9 has been cut into strips to form a fringe on the seam so that said seam 16b acts as a brush to effectively clean not only regular surfaces, but also restricted regions having complicated contours. The top seam 15b corresponding to the top seam 15 in the embodiment of FIGS. 1, 8 and 9 is similarly fringed to enhance its cleaning effectiveness.

FIG. 11 shows a modified swab 11c in which the front end seam 16c corresponding to the front end seam 16 in the embodiment of FIGS. 1, 8 and 9 has been rounded and streamlined to taper the sides of the seam forwardly, thereby making it easier for said seam 16c to enter restricted corners and recesses and at the same time imparting to the swab an attractive design.

FIG. 12 shows a further modified swab 11d in which the front end seam 16d, corresponding to the front end seam 16 in the construction of FIGS. 1, 8 and 9 has been rounded off as in the modification of FIG. 11, but in addition, has been serrated or pinked to present a toothed edge, so that the seam 16 is more effective in cleaning any areas and in entering areas of close complicated contours. The top seam 15d corresponding to the top seam 15 in the construction of FIGS. 1, 8 and 9 may be similarly serrated, and if desired, the rear edges 26 of the swab 11 may be similarly serrated to enhance the effectiveness of these rear edges for cleaning and at the same time, to impart to the swab an attractive design. Also, in the modified swab 11d, the rear edge 26 is recessed with a

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bevel or concave cut to form rear side wing extensions 27. These extensions 27, tapering towards a sharper angle than do the square rear corners of the swab 11 in the construction of FIGS. 1, 8 and 9, can enter regions of greater closeness and restrictions, and also impart to the swab an attractive appearance.

FIG. 13 shows a swab 11e having a different design while retaining the basic features of the invention described. In the swab 11e, the top seam 15e is similar to the seam 15 in the construction of FIGS. 1, 8 and 9 and the forward end seam 16e is V-shaped to present a V-shaped forward edge 28 tapering towards a sharp point 30, permitting easy entry in regions of restricted and close contours. Also, in this modification of FIG. 13, the rear edge 31 is formed with a corresponding V-recess 32 to form rear side wing extensions 33. These rear side wing extensions 33 may be left as such in the final product, or may be tucked into the swab, as shown in FIG. 14. When tucked into the swab 11e, these rear side wing extensions 33 will be folded over the rear side edges of the filler mat 13 and between the two opposed layers of the filler mat. In this position, the tucked-in wing extensions 33 serve not only to retain the filler mat 13 in position in the swab, but also serve as catches for engagement with the sides of the head of the holder 10. For that purpose, the sides of the holder head has hooks, spurs or flukes, as shown in the aforesaid patents, for catch engagement with the tucked-in side wing extensions 33 of the swab when the swab is slipped over the head. Each of the other pad embodiments illustrated and described herein may also be provided with tucked-in side wing extensions similar to 33 in FIG. 14, or with tucked in flaps as disclosed in the pads in the said patents.

Although the top seams 16 to 16e in the different embodiments of the invention are shown generally of uniform height throughout substantially their full lengths, they may taper, as for example, forwardly, and the rear ends of the seams may be of any suitable design, and may, for example, have a rear edge extending obliquely rearwardly from the rear edge of the swab.

FIG. 15 shows diagrammatically a production line as specifically applied to the manufacture of swab 11e of FIG. 14 to show the adaptability of the swab to manufacture by mass production methods, but in its basic aspects, it can be applied to the production of any one of the other swabs 11 to 11d shown in the drawings. As specifically shown in FIG. 15, while a continuous wrapper 14e' is being advanced either continuously or step by step, the filler mats 13 are placed thereon in proper spaced relationship, and an adhesive coating similar to that applied in the embodiment of FIG. 4 is applied by spraying or by any other way. A bonding wadding (not shown), such as the wadding 21 employed in the embodiment of FIG. 3, may be applied in continuous form over the wrapper 14e' and over the filler mats 13, or a coating of adhesive similar to the adhesive coating 21a applied in the embodiment of FIG. 4 may be employed.

Since the part of the top seam 15e extending across the front end seam 16e of the swab 11e to be produced is of reduced height, the sides of the continuous wrapper 14e' have a series of notches 36 where these reduced parts of the top seam 15e are to be formed.

As the wrapper 14e' with the filler mats 13 thereon is advanced, the sides thereof are progressively brought together and heat-sealed or otherwise adhesively secured together, to form a continuous top seam 15e' therealong with spaced notches 36e and the resulting continuous tube is heat-sealed at spaced sections therealong to form the seams 16e. The continuous assembly described is cut along the V-shaped seams 16e without completely severing the seams to maintain the continuity of the assembly and the side wing extensions 33 are tucked into the embryo swabs. The severance of the swabs along

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the V-shaped seams 16e is completed to produce the final swabs 11e and these severed swabs are coated with abrasive 37 of the type described.

While the invention has been described with particular reference to specific embodiments, it is to be understood that it is not to be limited thereto but is to be construed broadly and restricted solely by the scope of the appended claims.

What is claimed is:

1. A disposable cleaning swab comprising an outside scrub sheet of a flexible material flushable in a toilet bowl but nevertheless immune to water disintegration during normal period of use of the swab, and sufficiently wear-resistant and tear-resistant when wet to maintain its integrity during said period of use, said sheet being folded to define a pocket for receiving a holder, and defining two substantially flat opposing scrub faces, said sheet having its opposed marginal sections secured together face to face along one of said scrub faces in a region intermediate the sides of the swab to form a lamination along the latter scrub face constituting a seam and outstanding from the latter scrub face transversely of the general plane thereof, said seam having sufficient rigidity to permit the seam to be inserted into close corners and recesses with sufficient stiffness to clean said corners and recesses effectively.

2. A disposable cleaning swab as described in claim 1, said scrub sheet being of crepe paper having its crepe extending across the swab between the sides of the swab.

3. A disposable cleaning swab comprising an outside scrub sheet in one piece made of a flexible material flushable in a toilet bowl but nevertheless immune to water disintegration during normal period of use of the swab, and sufficiently wear-resistant and tear-resistant when wet to maintain its integrity during said period of use, said sheet being folded with its opposed marginal sides secured together to form a tube open at the rear end of the sheet for the entry of a holder into the tube, the opposed sections of the sheet at the front end of the sheet being secured together face to face to close the front of the tube and to form a lamination across the front of the swab constituting a seam and outstanding from the front end of the swab, said seam having sufficient rigidity to permit the seam to be inserted into close corners and recesses with sufficient stiffness to clean said corners and recesses effectively.

4. A disposable cleaning swab as described in claim 3, said scrub sheet being of crepe paper having its crepe extending across the swab between the sides of the swab.

5. A disposable cleaning swab as described in claim 3, wherein said seam is rectangular.

6. A disposable cleaning swab as described in claim 3, wherein the forward edge of said seam tapers forwardly to an apex.

7. A disposable cleaning swab as described in claim 3, wherein said seam is V-shaped to present a forward edge tapering forward toward an apex.

8. A disposable cleaning swab as described in claim 3, wherein said seam is serrated at its outer edge to form projections in the form of teeth therealong.

9. A disposable cleaning swab as described in claim 3, wherein said seam is in the form of a fringe to form projections along said seam.

10. A disposable cleaning swab comprising an outside flexible scrub sheet and an inner soft filler mat in face-to-face contact with said scrub sheet to form a composite unit therewith, said scrub sheet being larger in area than said filler mat and having side extensions beyond the sides of the mat and an end extension beyond one end of the filler mat, said unit being folded into a substantially flat tube with said filler mat inside and said scrub sheet outside and defining two substantially flat opposing scrub faces, said side extensions being secured together face to face to form a seam along the tube and along one of said scrub faces in a region intermediate the sides

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of the tube to form a lamination along the latter scrub face constituting said seam and outstanding from the latter scrub face transversely of the general plane thereof, the opposite sections of said end extension being secured together face to face to produce a seam in the form of a tab across one end of the swab and to shape said swab in the form of a bag or pouch with a holder entry opening at its opposite end, said scrub sheet being of such material as to be flushable in a toilet bowl but nevertheless immune to water disintegration during normal period of use of the swab, and as to be sufficiently wear-resistant and tear-resistant when wet to maintain its integrity during said period of use, said material being flexible enough to fold but rigid enough so that said seams have sufficient rigidity to permit said seams to be inserted into close corners and recesses with sufficient stiffness to clean said corners and recesses effectively.

11. A disposable cleaning swab comprising an outside flexible scrub sheet and an inner soft filler mat in face-to-face contact with said scrub sheet to form a composite unit therewith, said scrub sheet being larger in area than said filler mat and having side extensions beyond the sides of the mat, and end extensions beyond the ends of the filler mat, said unit being folded into a substantially flat tube with said filler mat inside and said scrub sheet outside and defining two substantially flat opposing scrub faces, said side extensions being secured together face to face to form a seam along the tube and along one of said scrub faces in a region intermediate the sides of the tube to form a lamination along the latter scrub face constituting said seam and outstanding from the latter scrub face transversely of the general plane thereof, the opposite sections of one of said end extensions being secured to-

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gether face to face to produce a seam in the form of a tab across one end of the swab and to shape said swab in the form of a bag or swab with a holder entry opening at its opposite end, the other end extension at said opposite end forming wing extensions folded inwardly over the end of said filler mat near said opening, said scrub sheet being of much material as to be flushable in a toilet bowl but nevertheless immune to water disintegration during normal period of use of the swab, and as to be sufficiently wear-resistant and tear-resistant when wet to maintain its integrity during said period of use, said material being flexible enough to fold but rigid enough so that said seams have sufficient rigidity to permit said seams to be inserted into close corners and recesses with sufficient stiffness to clean said corners and recesses effectively.

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