May 2, 1939. S. M. SMITH, JR 2,156,549

ABSORBENT AND ABRASIVE FABRIC

Filed Nov. 7, 1936

Fig. 1

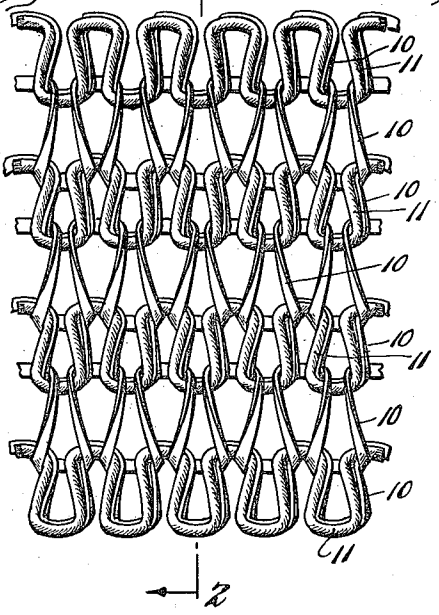


Fig. 2

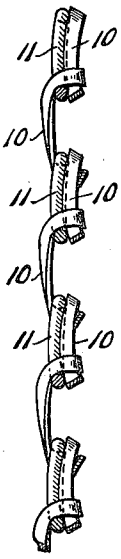


Fig. 3

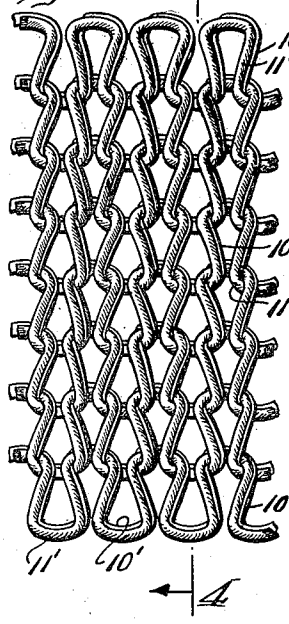


Fig. 4



Fig. 5

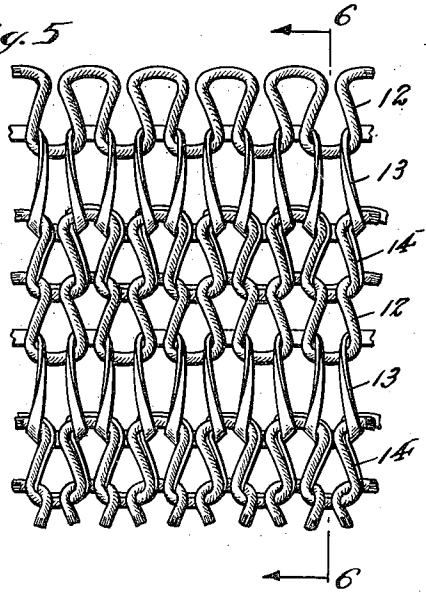
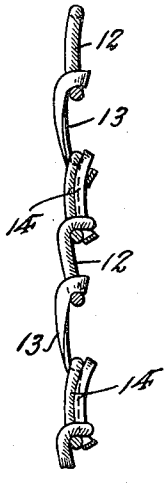


Fig. 6



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UNITED STATES PATENT OFFICE

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ABSORBENT AND ABRASIVE FABRIC

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Application November 7, 1936, Serial No. 109,648

1 Claim. (Cl. 66—202)

This invention relates to an improved absorbent and abrasive fabric adapted to be employed in the making of cleaning and scouring devices, such e. g. as dish-cloths and mops, pot cleaners and scrubbers, and similar implements; and the invention has reference, more particularly, to a novel composite fabric whereby, when incorporated in devices of the kind mentioned, the efficiency of the latter in use is increased by reason of the novel association of the absorbent and cushioning material with the abrasive material.

The invention has for its principal object to provide a composite fabric composed of abrasive metallic material and absorbent vegetable yarn arranged together in novel intimately combined relations, whereby a desired degree of abrasive effect may be attained by the abrasive material in association with the solvent carrying effect of the absorbent material as intimately combined therewith, so that a rapid loosening of adhering dirt, encrustations and like soil accumulations upon a surface to be cleaned, involving both abrasive and solvent actions, is efficiently obtained; and wherein, at the same time, a cushioning of the abrasive material by the absorbent material is also provided, which is not only of advantage to the combined functions of the material as a whole, but also renders the fabric less harsh upon and less uncomfortable to the hand of the user of the device composed thereof.

The invention has for a further object to provide a fabric of the kind above mentioned which is produced by knitting together strands of ribbon-like wire as the abrasive material and strands of vegetable yarn as the absorbent material; and wherein the vegetable yarn and metallic wire are, at least in some of the courses or rows of knitted stitches, knitted together so that such courses or rows contain both materials in closely associated relation; it being within the scope of the invention to include with such courses or rows, comprising the thus intimately associated or combined materials, other or alternate knitted rows of the respective materials alone.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

Illustrative embodiments of the present invention are shown in the accompanying drawing, in which:

Fig. 1 is a fragmentary face view of one form of the novel fabric according to this invention, and Fig. 2 is a sectional view through the same, taken on line 2—2 in Fig. 1.

Fig. 3 is a fragmentary face view of another form of the fabric embodying this invention, and Fig. 4 is a sectional view thereof, taken on line 4—4 in Fig. 3.

Fig. 5 is a fragmentary face view of still another modified form of the fabric according to this invention, and Fig. 6 is a sectional view thereof, taken on line 6—6 in Fig. 5.

Similar characters of reference are employed in the said drawing, to indicate corresponding parts.

In the form of the novel fabric shown in Figs. 1 and 2, the novel fabric is produced by knitting a strand of metallic material or wire, preferably of ribbon-like form to thereby provide successive rows of interlinked loops 10 of such metallic material. As the knitting proceeds a strand of vegetable fibre is supplied to be incorporated in the fabric by running the same parallel with the metallic strand as supplied for the formation of the alternate loop rows of the latter, thereby forming accompanying loops 11 of absorbent material intimately associated and combined with the loops 10 of metallic material forming said alternate rows. The fabric body thus formed comprises loop rows solely of composite or combined abrasive and metallic material and absorbent fibrous material. The fabric thus formed is adapted to attain, in use, a maximum of abrasive effect with a lesser degree of cushioning effect afforded by the absorbent material, while, at the same time, providing a degree of solvent carrying effect due to the presence of the associated absorbent vegetable fibre loops 11 as combined with alternate rows of loops 10 of the abrasive metallic material. The fabric, in such form, is strong in its mechanical abrasive effect, since the scraping edges provided by the loops 10 of metallic material are distributed throughout the area of the fabric, alternate rows thereof being free of the cushioning effect of the soft absobent fibrous loops 11, and yet the latter loops are present in sufficient quantity to yield a considerable solvent carrying and exuding effect.

In the form of the fabric of this invention as shown in Figs. 3 and 4 of the drawing, the same is formed by successive rows of interlinked knitted loops comprising the associated abrasive metallic material 10' and the absorbent fibrous material 11' running and knitted together to form composite loops thereof in successive rows. The fabric body thus formed is adapted to attain, in use, a milder abrasive effect due to the combination with all of the loops of abrasive metallic material of accompanying cushioning loops of

fibrous material, while at the same time a maximum solvent carrying and exuding effect is provided by reason of the presence of a greater proportional quantity of loops of the soft absorbent fibrous material.

In the form of the fabric according to this invention as shown in Figs. 5 and 6 of the drawing, the same is formed by successive rows of interlinked knitted loops comprising a row of loops 12 consisting solely of the absorbent fibrous material, an adjoining row of loops 13 consisting solely of abrasive metallic material, and adjoined to the latter a third row of loops 14 consisting of the combined absorbent fibrous material and accompanying abrasive metallic material. The fabric body thus formed is adapted to attain, in use, a medium abrasive effect with a substantial solvent carrying and exuding effect.

It will be understood that the above described fabric structures are illustrative of some specific forms thereof adapted to serve the purposes for which the same is desired to be used, but it will be obvious that other specific variations in the relation of rows of the composite loops of both abrasive and absorbent material with rows of loops solely of either abrasive or absorbent material may be made within the broad aspects of the invention.

Cotton yarn is preferably employed as the fibre strand or thread in forming the absorbent loop elements of the fabric, since cotton possesses the desirable physical characteristics of high absorptive efficiency and softness, while at the same time being durable and wear resistant. It will be obvious, however, that strands of yarns of other specific kinds of absorbent fibrous material may be employed if desired.

The material from which the abrasive loops are formed preferably comprises a wire of relatively non-corrosive metal such as copper, zinc, aluminum, or the like, although other metals may be used if desired. Preferably the wire strand is of flat ribbon-like form, so that, when formed into loop bends, a multiplicity of sharp abrading or scraping edges are presented at the surface of the fabric in which said loops are incorporated. These abrading edges are presented in many directions and consequently easily effect the desired abrading or scraping effects upon any surface over which the fabric is rubbed, regardless of the direction of movement imparted to the fabric during such rubbing operations.

The fabric lends itself conveniently to the production of flat pot-cloths, as well as to the production of pads, balls or other shapes of bodies desired for use as a cleaning or scouring device or implement.

Having now described the invention, I claim:

An absorbent and abrasive knitted fabric formed by rows of interlinked loops including rows of composite loops composed of a strand of absorbent fibrous material and a strand of abrasive metallic material in linearly parallel relation, whereby the soft strand is closely contiguous to the hard strand and forms a cushioning support therefor throughout the entire extent of the latter, and also including rows of loops formed solely from the strand of abrasive metallic material alternated with said rows of composite loops.

STANTON M. SMITH, JR.