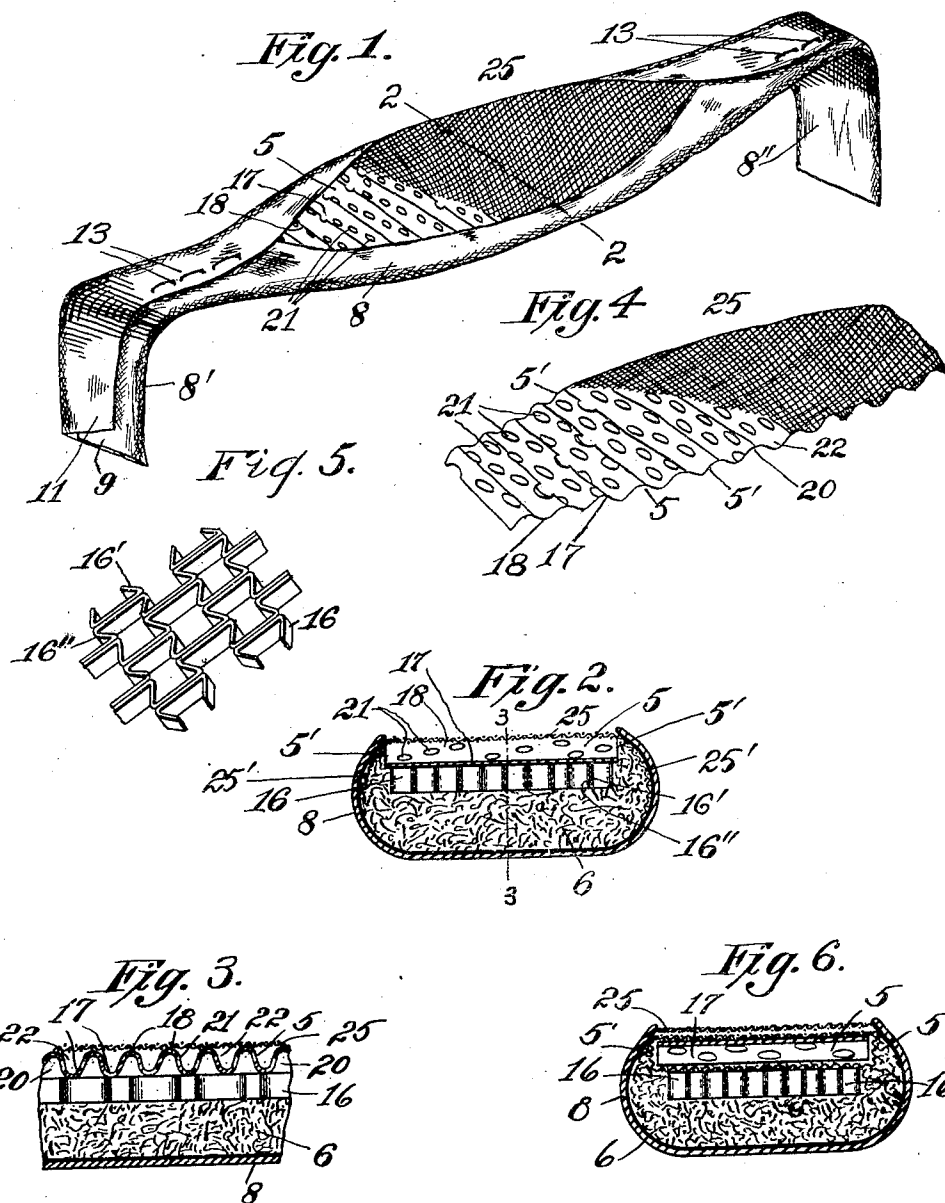


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W. R. GREEN.
ABSORBENT BANDAGE.
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ABSORBENT BANDAGE.

No. 810,119.

Specification of Letters Patent.

Patented Jan. 16, 1906.

Application filed June 10, 1904. Serial No. 211,923.

To all whom it may concern:

Be it known that I, WILLARD R. GREEN, a citizen of the United States, residing in Muscatine, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Absorbent Bandages, of which the following is a specification.

My present invention relates to that class of articles commonly known as "absorbent bandages," and has for its object to provide an article of this class of an improved construction whereby advantages of efficiency and mode of operation may be obtained in an article of low cost to manufacture.

In the drawings accompanying and forming a part of this specification, Figure 1 is a perspective view representing a bandage made in accordance with my present improvements. Fig. 2 is a cross-sectional view in line 2 2, Fig. 1. Fig. 3 is a longitudinal sectional view of a portion of the bandage, this view being taken in line 3 3, Fig. 2. Fig. 4 is a perspective view of a preferred form of one of the members of the article. Fig. 5 is a similar view in perspective of one of the members of the construction shown in Figs. 2, 3, and 6. Fig. 6 is a view similar to Fig. 2, illustrating certain details.

Similar characters of reference designate corresponding parts in all the figures.

In absorbent bandages designed for taking up relatively thick fluids or semifluids there is often a tendency for the thicker portions to form a close layer on the surface portion of the absorbent body or mass, and so check the flowage and proper distribution of the fluids in the mass. To provide for this, I furnish the bandage with an upper member, as 5, having an open-work or chambered construction, adapted for permitting a relatively free descent through said upper member of the fluid or semifluid substance into the retaining mass, as 6, of absorptive material. In the drawings the absorbent mass 6 is shown carried in some suitable cover-sheet, which is indicated in a general way by 8. This covering or holder may consist of a suitable fabric, preferably waterproofed, of light weight, which may, if desired, be specially woven for the purpose. The ends of the sheet are shown folded to form attaching portions 8' and 8'' for the bandage. In practice this fold may be made as indicated, for instance, in Fig. 1, the edges 9 and 11 being folded one

over the other and held in place by stitching or a metallic or other suitable connecting means, as indicated, for instance, at 13.

As a suitable material of which to make up the absorbent mass 6 I prefer to use wood in the form of small and narrow shavings or strands, these being preferably substantially flat in section when mingled together in miscellaneous directions in a mass suitably compressed or compacted to the proper density, thereby acquire a character and develop qualities that make them peculiarly adapted for use in this class of absorbent articles. This woody mass has its meshes or internal spaces brought, some of them, within the form and dimensions required for producing a capillary retention capacity for liquids, such as blood, or those having a serum or watery component combined with a coagulative component, while other portions of the space will thus be left in a form and dimension constituting ramified distribution-spaces. It will be understood, however, that in some cases the entire mass 6 may be formed of ordinary "vegetable fiber," so called—such, for instance, as cotton or linen or of combinations of the same.

The upper member 5 is shown in the form (which I deem preferable) of a perforated sheet material folded or shaped on numerous transverse lines into undulations or corrugations, as 17 and 18, of which 17 are the lower and 18 the upper transverse ribs or transverse members of the series comprised in the member 5. These transverse members, as 17 and 18, serve to render the member 5 relatively non-compressible and inelastic in a direction laterally of the bandage, while freely permitting the same to bend flatwise of itself. The member 5 is preferably non-fibrous—that is, non-absorptive—as compared with the member 6, although some kinds of paper, especially if in sheet form and suitably treated or prepared, may be employed for making said side-bracing member.

The receiving member 5 has numerous small chambers or cell-like spaces, as 20 22, these being also arranged in lower and upper series or tiers 20 and 22, respectively, which are connected with each other by suitable openings, as 21. In practice other well-known forms of folding and of cell construction may be employed in the member 5 in

lieu of the simple form of corrugation shown in this case. Said chambers or cells being located at the receiving-surface of the bandage constitute transmission-conduits downwardly to the mass below, also by reason of their arrangement and especially by their being connected together serve as means of ventilation for the interior of the bandage while in use. The member 5 constitutes, in effect, a combined receiving and resistance member.

In Figs. 2 and 6 the fiber mass 6 is shown brought up over the edges at 5' of the member 5, thus serving to close the open ends of the chamber-spaces, as 20 22, while serving also to cushion the bandage along the edges thereof, and, furthermore, forming a direct absorption means for immediately taking up the more fluid or serum-like portions of the materials to be absorbed, while the thicker portions pass gradually down through the chamber-space of said receiving member into another portion or member 16 of the bandage. Preferably this portion 16 is of an open cellular character, and a preferred form of such a cellular construction is illustrated in Fig. 5.

For closing in or partially doing so the chambers or cells, as 22, of the member 5 I prefer to provide this member with a surface sheet, as 25, preferably of fabric and this of relatively open mesh. In some cases this surface sheet may be attached directly to the upper folds of the member 5, as indicated in Figs. 2, 3, and 4. This attachment may be made by using a waterproof cement or by stitching or otherwise. In some cases the edges of the sheet 25 may be so far extended down between the mass 6 and its containing cover-sheet, as indicated at 25', Fig. 2, as to be preferably held in place thereby. When arranged in this latter manner, the meshes of the surface sheet operate in combination with the surface or upper portion of the member 5 by a sliding movement thereon in a manner analogous to that which occurs between the upper and lower surface-sheets when two of these are employed. There is also, as will be evident, a corresponding interaction between the member 5 and the lower member 16 and also between the lower edges of the member 16 and the fiber mass 6. When the fiber or strands of the portion 16 of mass 6 are made of the woody material and are mingled together and suitably compacted to the proper density to form the desired capillary retension-spaces with relatively large conducting-spaces ramifying throughout the absorbent mass, the upper edges of such strands then operate (especially in the bending of the bandage) to clear away by a scraping or abrasive action matter that would otherwise adhere to the under side of said member 16. This particular coaction of the woody strands with the chambers or cells of

said intermediate cellular member is in some cases of importance, since it tends also to increase the receptivity of the absorbent mass below, especially when it is required that this mass shall rapidly take up a relatively large amount of semifluid material.

The receiving member 5, besides providing for the series of cells or chambers, also constitutes a side brace, which in the present instance is located at or near the top of the bandage and while flexible constitutes in combination with the other members of the bandage a resistance device or brace for preventing the undue collapse of the bandage laterally by reason of side pressure thereon, and in this manner serves also to prevent accidental discharge or expulsion of any fluids contained within the bandage. The cell-spaces or chamber-space serve as a receptacle for quickly taking up a considerable quantity of fluid and for retaining the same while being gradually absorbed into the absorptive material or mass 6, and thus finally disposed of. In this action or process the two cellular or chambered members 5 and 16 operate together, the lower member 16 being in some respects in the nature of a downward extension of the member 5. Said cellular spaces, both of the member 5 and of the member 16, also at a later time serve as permanent receptacles for such thicker portions of the fluid as may have become segregated from the serum-like portions during such process of absorption. In this way the member 16 assists in receiving and retaining such thicker components of the fluids, especially while coagulation is proceeding.

The intermediate member 16 being located just below the side-bracing receiving member 5 when the chambers or spaces in said member 5 are elongated, as shown in the present instance, and are located transversely of the bandage, the chambers therein are in the nature of troughs or channels, which, as will be seen in Figs. 2 and 6, extend across a number of the cellular spaces in the member 16, thereby affording means of distribution. While the member 16 may be of any desired specific character, as a cellular or chambered receiving and transmitting member, I prefer to so construct the same that it will be flexible to some extent in all directions, thereby securing its perfect coöperation with the fibrous mass 6. For this purpose I prefer to employ in said member 16 a considerable number of narrow strips 16' and 16'', (see Fig. 5,) which are formed or bent into a kind of zig-zag shape, preferably in about the manner indicated in said figure. When a number of these folded or bent strips are placed together and attached, as by gluing or the like, or assembled in place without being attached together, the cellular sheet or member so built up becomes highly flexible and elastic, notwithstanding the paper or analogous stock of

which the component strips may be made shall be of a relatively firm character. This construction has the advantage of providing not only flexibility in three directions, but
 5 compressibility laterally of the bandage, so that when this as a whole is subjected to much pressure on the edges thereof the mobility of the absorptive material will extend also to this intermediate cellular member.
 10 When the walls and divisions of this member are formed of strips set edgewise, as herein illustrated, such a compressive action as described tends to cause a distinct lateral scraping movement between said intermediate
 15 member and the members immediately above and below the same, thereby accentuating and making more effective the clearing action by which the fluids, especially semifluid materials, will be more readily disposed of.
 20 In connection with the perforated and chambered member 5 said intermediate member 16 also coöperates for the purpose of increasing the ventilation, especially prior to the time when the bandage shall have become
 25 nearly filled.
 The member 5 with its transversely-disposed cells or spaces operates as a means to receive and distribute the absorptive material entering the bandage, and the laterally-
 30 compressible cellular member 16 interposed between said member 5 and the absorptive mass 6 operates to scrape the under edges of the member 5 and also to receive the non-absorptive portions of the material entering the
 35 bandage. These two members together with the absorptive mass 6 being supported and largely inclosed by the cover-sheet, it is desirable that this sheet in the major portion thereof be made relatively impervious to
 40 water, while that portion of the fabric or fabrics which may extend over the receiving-surface should be pervious for the purpose of readily taking up the fluids or semifluids to be absorbed.
 45 One of the objects and advantages sought to be obtained by means of the present improvement is to provide for the manufacture of the bandages at a low cost and for the use in such manufacture of materials of a low
 50 cost and employed in a minimum quantity. For this purpose and also to provide for a high degree of receptivity and distributive capacity, but especially to reduce the amount of absorptive material which would other-

wise be required in a bandage of a given and
 55 proper bulk or size, I employ such a construction of the component members of the bandage as will secure a considerable proportionate amount of open space in the nature of
 60 chamber-space or cell-space, these spaces serving in part as receptacles for the quick reception of a considerable amount of fluid or semifluid material and also serving as distributive means for transmitting the same more
 65 gradually to the absorptive portions of the bandage. Also such space or spaces will in general serve to finally receive and retain considerable quantities of material which would otherwise have to be taken up by the absorptive or fibrous portions of the bandage.
 70

I do not claim herein, broadly, a cellular construction, as this constitutes in part the subject-matter of my copending application, Serial No. 212,276, filed June 13, 1904, nor do I claim broadly herein the side-bracing or
 75 corrugated bracing member, as this constitutes in part the subject-matter of my copending application, Serial No. 211,926, filed June 10, 1904, and the feature of an open-mesh fabric entirely surrounding a cellular
 80 structure is claimed in my copending application, Serial No. 211,930, filed June 10, 1904.

Having thus described my invention, I claim—

1. In an absorbent bandage, the combination with a mass of absorptive material, of a receiving member having therein a series of chambers, and a cellular intermediate member having its cells running all in the same direction, located directly below the said receiving
 85 chambered member and between it and the said mass of absorptive material and in engagement one with the other.
 90

2. A bandage comprising a cover-sheet, an absorptive mass therein, a cellular body having its cells running all in the same direction and directly imposed upon such mass and movable relative thereto to scrape the coagulated portions one from the other, a corrugated, perforated body directly imposed upon
 95 said cellular body, and an open-mesh fabric upon such corrugated body.
 100

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 7th day of June, 1904.

WILLARD R. GREEN.

Witnesses:

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 JOHN O. SEIFERT.