

UNITED STATES PATENT OFFICE.

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MANUFACTURE OF FABRICS FOR SURGICAL AND MEDICAL DRESSING.

SPECIFICATION forming part of Letters Patent No. 282,624, dated August 7, 1883.

Application filed June 30, 1883. (No specimens.)

To all whom it may concern:

Be it known that I, SAMPSON GAMGEE, a
subject of the Queen of Great Britain, resid-
ing at 22 Broad Street, Birmingham, in the
5 county of Warwick, England, have invented
certain new and useful Improvements in the
Manufacture of Fabrics for Surgical and Medi-
cal Dressings, and the Manufacture of Surgi-
cal Splints and Supports; and I do hereby de-
10 clare that the following is a full, clear, and
exact description of the invention, which will
enable others skilled in the art to which it ap-
pertains to make and use the same.

This invention has for its object improve-
15 ments in the manufacture of fabrics for surgi-
cal and medical dressings, and in the manu-
facture of surgical splints and supports.

I produce a fabric for surgical and medical
dressings from thoroughly-bleached cotton. I
20 inclose a sheet of this fiber between two mus-
lin fabrics. These fabrics are of an open na-
ture, thoroughly bleached, and freed from dress-
ing, and the fiber is compressed between them.
The compound fabric may conveniently be
25 made of different thicknesses—say thin, me-
dium, and thick—and varying from four ounces
in weight to ten ounces in weight to the square
yard. This absorbent cotton-wool tissue is cal-
culated to prove of very great service in medi-
30 cal and surgical practice. The perfect smooth-
ness and elasticity specially fit it for applica-
tion to inflamed parts, while its perfectly even
surface specially adapts it to be a medium for
equable pressure. It never becomes knotty
35 or lumpy, like ordinary cotton-wool, and its
powerful absorbing and antiseptic properties
prevent the retention and decomposition of
skin and wound secretions.

Another part of the invention relates to
40 splints and surgical supports.

I have ascertained that the absorbent wool-
tissue above described becomes immediately
impregnated with a liquid mixture of plaster-
of-paris on being dipped into it. I apply this
45 fact to the manufacture of splints and sup-
ports as follows: I surround a form to which
the splint or support is to be molded, or it may
be an actual hand or limb, with a layer of ab-
sorbent wool tissue, and outside this I mold
50 another layer of the same tissue, previously

soaked in plaster-of-paris cream. This cream
is made by sprinkling in water perfectly fresh
and powdered plaster-of-paris. I stir with a
metal spoon, and continue sprinkling the pow-
der until the liquid acquires the consistence 55
of rich cream or thin batter. The tissue, on
being pressed into the liquid, very quickly be-
comes completely saturated. It requires to be
lightly squeezed to expel redundant cream,
and is then fit to be smoothly applied over the 60
layer of dry tissue with which the part has
previously been covered. Bandaging with a
white, soft, absorbent roller, the plaster cover-
ing is molded accurately and without constrict-
tion. It rapidly dries and hardens; but this 65
process may be hastened by unrolling the
bandage, carefully removing the mold, and
holding it for a few minutes before the fire. It
can then be reapplied, and it will be found
that while the outer shell is hard the inner 70
lining retains all the softness and elasticity
of the original tissue. The splints may be
cut to any shape, adapted to any surfaces, and
almost instantly solidified. Given a case of
fracture of the pelvis, spine, or ribs, a layer of 75
the dry absorbent tissue having been rolled
round the patient, one or two more layers
bandaged outside it, after having been pre-
viously soaked in plaster cream, result in the
construction of a solid shell, with which frag- 80
ments are held motionless and harmless. By
cutting strips of the tissue and soaking them
in plaster-cream, any joint may be immobilized
by a plaster-and-bandage brace, or lattice-
work. If desired, gum-arabic, starch, or dex- 85
trine may be added to the plaster-cream.

Skill in making the molds may be readily
acquired by anyone cutting pieces of the tissue,
soaking them in plaster-cream, and molding
them with the hands upon a form. However un- 90
equal the surface, a perfect mold can be taken.
It quickly solidifies, and can be readily taken
off. One effect resulting from impregnation
of the gauze and cotton fiber with plaster is
that the resulting mold is not brittle, but on 95
the contrary so tough that it is almost impos-
sible to break or tear it. Since the molds and
splints can be made and removed in sections,
the usual difficulty in opening and removing
a plaster-of-paris case is entirely obviated. 100

An excellent result is obtained when a mixture of dextrine and plaster-of-paris is employed—say in the proportion of three parts of dextrine to eight parts of plaster and twelve parts of water. The mixture is made as already described, except that the solution of dextrine is employed in the place of water. The tissue, having been dipped in the compound and applied in the manner explained above, rapidly sets, and so very light, strong, and flexible splints and supports may be produced. These splints and supports can be afterward softened, if desired, by immersing them in hot water. They can then be bent to another form, which they will retain on cooling. Gum-arabic or starch can be used in place of dextrine, but less advantageously, and other like materials may be employed as a substitute for plaster-of-paris.

My compound fabric or tissue may also very advantageously be used in combination with paraffine in the manufacture of splints and supports. The fabric or tissue is dipped in melted paraffine, removed and slightly pressed to remove excess, and applied to the form or part. Cold water may be poured over to hasten the hardening. The splints and supports may also be made from paraffine-saturated fabric previously prepared, and again softened by heat when required for use. Strips of thin deal-veneer, in parallel lines or intersecting lattice-work fashion between two layers of paraffined absorbent tissue, make an exceedingly strong splintage. This material may be cut to any size with an ordinary pair of scissors, molded to any shape after exposure to slight heat, and rapidly solidified on being sponged with cold water. Incorporated, as the paraffine is, with the cotton and gauze, the resulting tissue is not in the least brittle; nor, indeed, are the molds made with the plaster-of-paris cream.

The paraffine and plaster splintage may be perforated to facilitate drainage, and that made with paraffine has the further advantage of being especially well adapted for the application of pressure. Besides its well-known intrinsic antiseptic properties, paraffine readily takes up borax and other anti-putrescent agents.

Having thus described the nature of my said invention and the manner of performing the same, I would have it understood that I claim—

1. My improved compound fabric, consisting of thoroughly-bleached absorbent cotton compressed between two thoroughly-bleached muslin fabrics free from stiffening, substantially as described.

2. The means for producing my compound fabric by accumulating the fleeces from a series of carding-engines and passing and compressing the same between fabrics drawn continuously from rollers, substantially as described.

3. The manufacture of surgical splints and supports from my compound fabric saturated with plaster-of-paris or other material, and molded on a form upon which it sets and hardens, substantially as described.

4. My compound fabric saturated with glucose, gum-arabic, or starch, (mixed preferably with plaster-of-paris,) and the manufacture of surgical splints or supports therefrom, substantially as described.

5. My compound fabric saturated with paraffine, and the manufacture of surgical splints or supports therefrom, substantially as described.

SAMPSON GAMGEE.

Witnesses:

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