

J. L. KENDALL.

Improvement in the Manufacture of Mattresses, Sofas,
&c., from Paper-Pulp, Sponge, &c.

No. 130,222.

Patented Aug. 6, 1872.

FIG. 1.

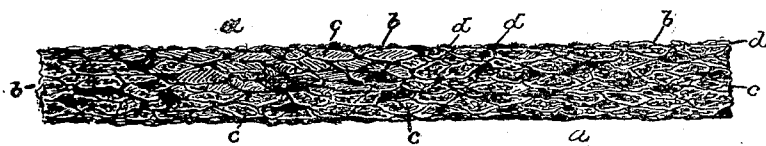
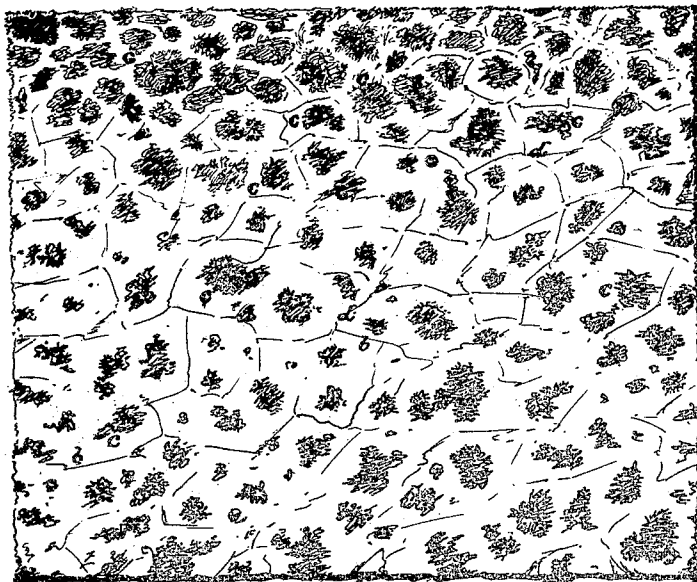


FIG. 2.



WITNESSES.
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UNITED STATES PATENT OFFICE.

JOHN L. KENDALL, OF FOXBOROUGH, MASSACHUSETTS.

IMPROVEMENT IN THE MANUFACTURE OF MATTRESSES, SOFAS, &c., FROM PAPER-PULP, SPONGE, &c.

Specification forming part of Letters Patent No. 130,222, dated August 6, 1872.

To all persons to whom these presents shall come:

Be it known that I, JOHN L. KENDALL, of Foxborough, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improved Manufacture from Paper-Pulp and Sponges, &c.; and that the following description, taken in connection with the accompanying plate of drawing hereinafter referred to, is a full, clear, and exact description of my invention.

This invention relates to a new article of manufacture from paper-pulp and sponge, &c., more especially intended for mattresses, sofas, chair-seats, &c., and an under lining to carpets, although it is susceptible of other uses; and by this invention, in connection with any of the ordinary modes of manufacturing articles from paper-pulp, an article of manufacture is produced having at more or less points in its thickness, length, and breadth, flexible and elastic cushions surrounded and incased by the fibers of the pulp or paper sheet, which otherwise is substantially continuous and coherent throughout. The invention consists in adding to paper-pulp before manufacturing it into a paper sheet or other form comparatively small pieces of sponge, or of India rubber, or of cork, or of other material or materials indissoluble in the liquid of the pulp, and elastic and buoyant, so that in the then deposition of the pulp containing them upon a wire screen, the fibers of the pulp, in lieu of becoming of a continuous coherent thickness, will have embedded or embraced within their thickness the pieces of sponge, &c., previously added to the pulp, producing thereby from the pulp a sheet having within it cavities or cells filled with pieces of sponge, &c., but otherwise substantially coherent and continuous, these pieces of sponge, &c., giving elasticity to the body of the sheet.

In the accompanying plate of drawing the present invention is illustrated.

Figure 1 is a cross-section through the thickness of a sheet having elastic cushions within it, and Fig. 2 a section in a plane parallel to and between the two side faces of the sheet.

In the drawing, *a* represents a sheet having cells or cavities *b*, within each of which is a piece of sponge, *c*. The several cells *b* are interlaced or joined, one with another, as shown at *d*. The sheet *a* is produced as follows:

To paper-pulp of the proper consistency for the manufacture of paper, it being preferably of a long fiber, add comparatively small pieces of sponge—that is, pieces of sponge of about the size shown in the drawing—in the proportion, or thereabout, of one pound of sponge to four ounces of pulpy fibers. Now place the pulp, with the pieces of sponge added to it within the pulp-vat of a paper-machine, and, thoroughly agitating the mass, run it out upon the wire screen of the machine, as in ordinary paper-making, except in a greater quantity in a given time, and from thence to the pressure-rolls, and so on to the drying-cylinders, completing the manufacture. The pulp and sponge pass together upon the wire screen of the paper-machine, and, as deposited thereon, the fibers of the pulp settle around or about the pieces of sponge, incasing them as it were within cells of pulp fibers, the several fibrous cells interlacing one with another, giving continuity to the sheet, and sufficient coherence to preserve it intact under ordinary wear and tear.

The sheet material made substantially as above described is to be used as a filling for mattresses or sofas, &c., or as an underlining for carpets, or as a wadding for quilts, &c., the pieces of sponge giving greater elasticity to the sheet through its thickness, and otherwise rendering the sheet particularly desirable and useful for purposes substantially as recited. In lieu of sponge other elastic materials in comparatively small pieces, such as India rubber or cork, may be employed, and a manufacture substantially the same produced; but sponge is preferable, for, while it is bulky, it is extremely light and elastic. It is necessary that the elastic material or materials employed should be of sufficient buoyancy to float in the pulp, at least when it is agitated, and that they should not be liable to dissolution in the liquid of the pulp. The size of the pieces of sponge, &c., may be varied according to the thickness which it is desired the sheet shall have when made; but for all thicknesses of sheet small and thin pieces of sponge, &c., may be used, while large or thick pieces can be only employed when the thickness of sheet is to be comparatively large. The proportion of sponge, &c., to paper-pulp may be more or less increased or decreased from that herein-

before given; but the proportion herein given is found to be most satisfactory, for, while the holding together in a sheet form of the pieces of sponge is secured, the fiber is not sufficient in quantity to impart great stiffness and hardness to the sheet. If, however, greater hardness or stiffness is desired, and less elasticity, it is only necessary to increase the quantity of pulpy fiber and decrease the quantity of sponge, &c., or both the proportions of sponge, &c., and fiber more or less, depending upon the use to which the sheet material is to be applied. In lieu of forming the paper-pulp with the addition to it of sponge, &c., into a sheet within a paper-machine, (a Fourdrinier machine being the best,) it may be made into a sheet, or even into other forms, in the apparatus described in the Letters Patent dated April 16, 1872, and numbered 125,740, issued to John L. Kendall and Richard H. Trested, for improvements in apparatus for molding articles from paper-pulp.

The means of forming the pulp and sponge, &c., into a sheet or other form constitutes no part of the present invention, and the invention is in no manner to be limited to any particular apparatus or means of accomplishing

it, for ordinary paper-machines are sufficient therefor.

As a filling for mattresses, the material produced under this invention may be employed either in several layers or in one equal to the thickness of the mattress. As a carpet-lining, the material, if desired, may be perforated through its thickness, and either used alone or in connection with a sheet or sheets of paper covering one or both of its sides.

I do not claim combining divided or disintegrated sponge with cotton, wool, or other such fibrous material spread in layers upon or between sheets of paper, for such is not new; but

What I claim as my invention is—

1. The new manufacture above described and shown.

2. The process of manufacturing the same, consisting in mixing paper-pulp and sponge, &c., and forming the mixture into sheets or otherwise, substantially as above described.

JOHN L. KENDALL.

Witnesses:

ALBERT W. BROWN,
EDWIN W. BROWN.