W. E. COCHRAN.

COTTON BAT.

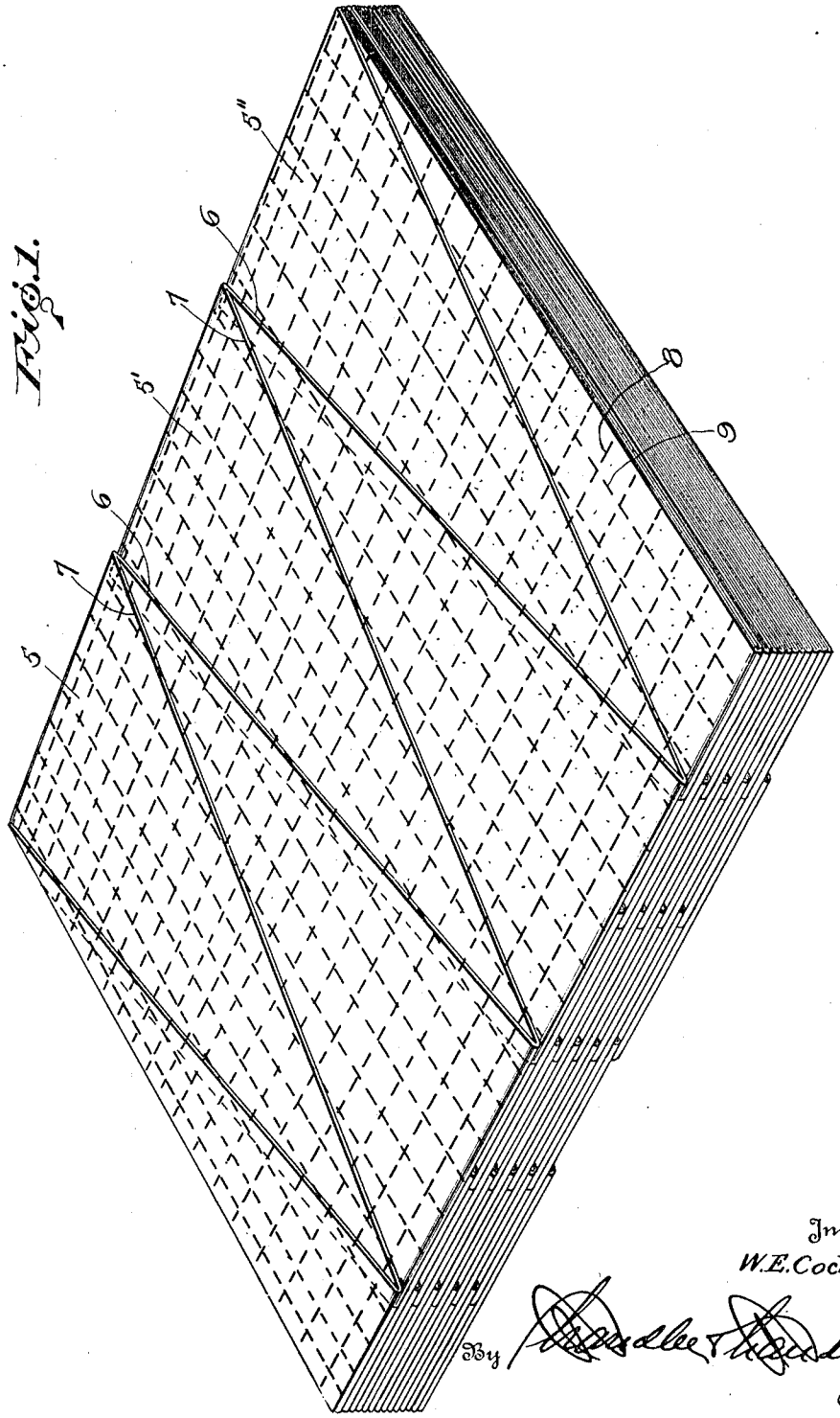
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1,405,185.

Patented Jan. 31, 1922.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

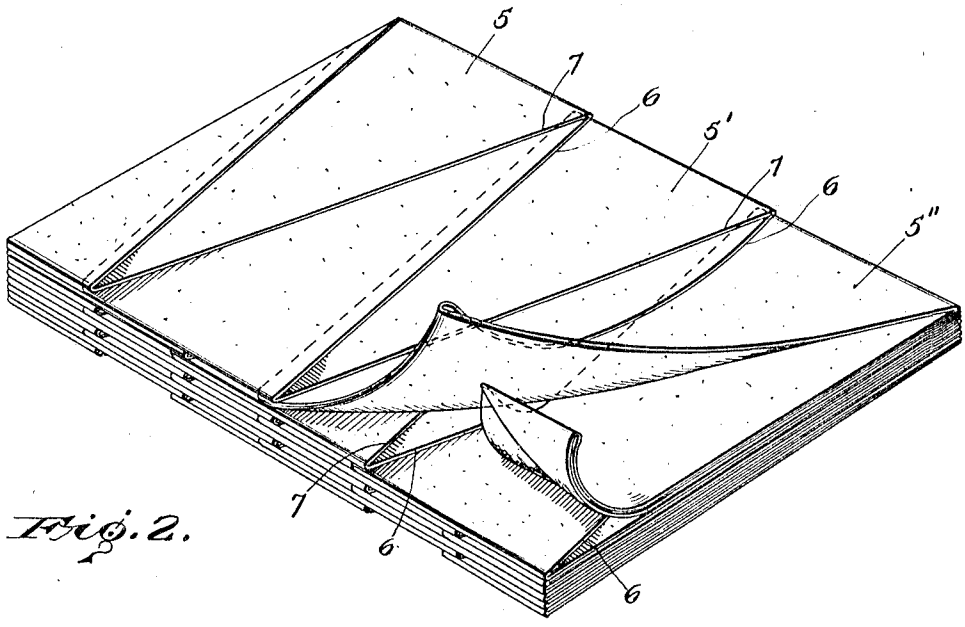


Fig. 2.

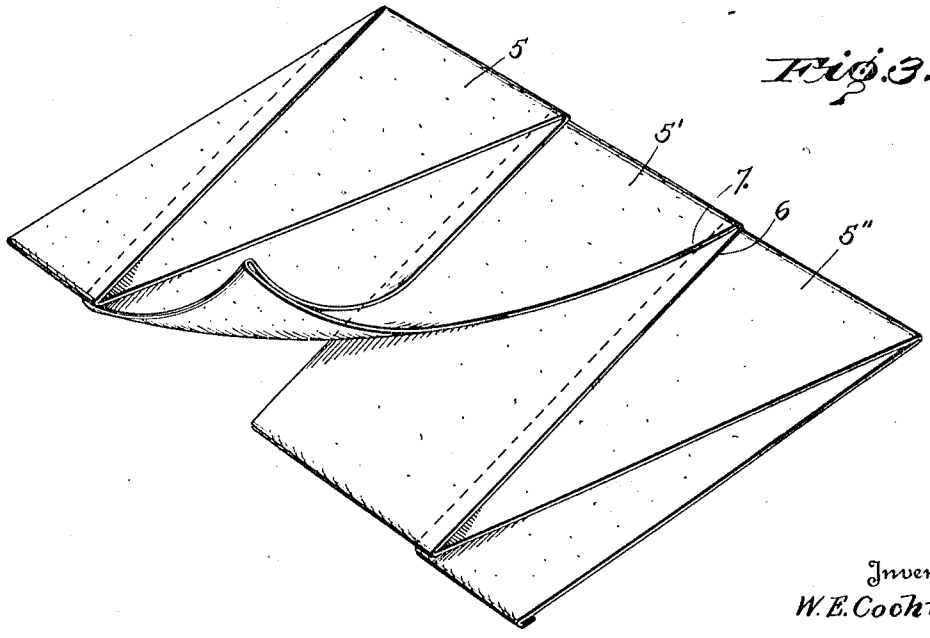


Fig. 3.

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3 SHEETS—SHEET 3.

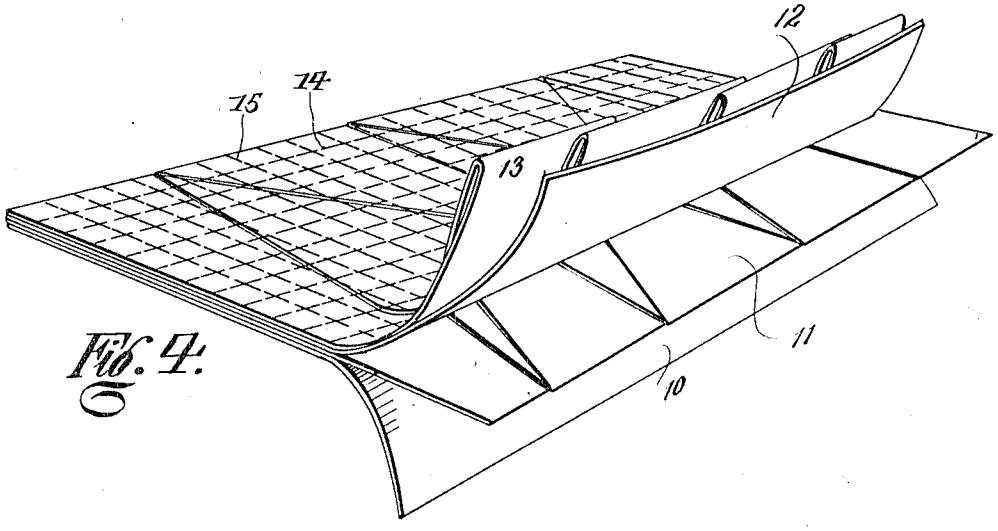


Fig. 4.

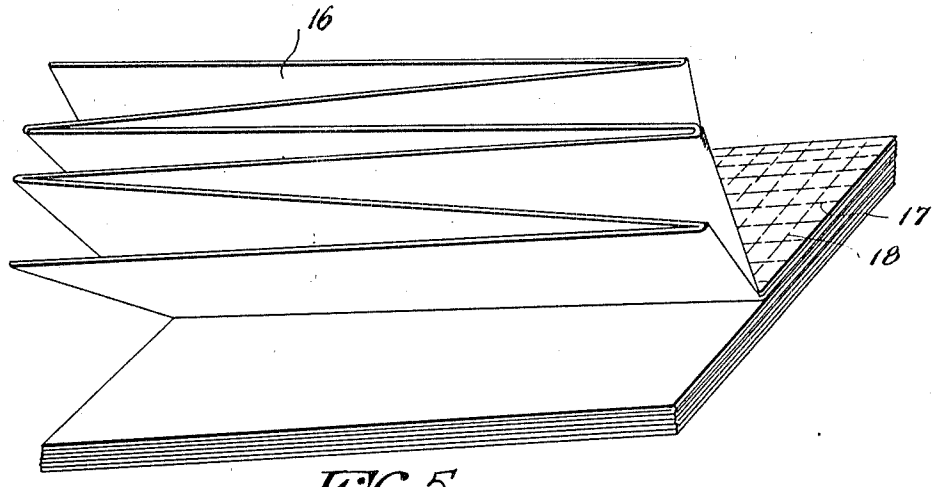


Fig. 5.

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UNITED STATES PATENT OFFICE.

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COTTON BAT.

1,405,185. Specification of Letters Patent. Patented Jan. 31, 1922.

Application filed September 14, 1920. Serial No. 410,345.

To all whom it may concern:

Be it known that I, WALTER E. COCHRAN, a citizen of the United States, residing at Lockport, in the county of Niagara, State of New York, have invented certain new and useful Improvements in Cotton Bats; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cotton bats such as are used as fillings for quilts or comforts, and to the method of forming such bats, it being understood that when completed the bat may be used for any purpose for which it is adapted.

In the usual manufacture of bats of this character, the successive layers or laminæ of cotton are fed to a carrier, with the laminæ in overlapping relation, the resultant laminated sheet being cut into suitable lengths, each to constitute a bat. In ordinary practice the laminæ are held together by lines of stitching extending longitudinally of the sheet, the stitching being applied either before or after the cutting off operation, as may be desired.

The bats made as described, are usually cut off from the sheet so that their longer dimensions are longitudinal to the sheet although they may have their longer dimensions transverse thereto. A completed quilt is somewhat longer than it is wide and the stitching running longitudinally of its filling bat, reinforces it to withstand the longitudinal strains to which it is subjected when in use. There is, however, no provision to withstand transverse strains to which the bat is at times subjected, both during the handling of the bat prior to its introduction as a filling, and after it is in place and in use in a quilt.

In forming a bat to embody the present invention, the laminæ may be laid and then stitched both longitudinally and transversely, with such an arrangement that both directions of the lines of stitching are at angles to the trend of the fibers of the laminæ. The result is that not only is the bat reinforced by the two series of lines of stitching to withstand strains longitudinally of either series, but strains in other directions are opposed by the resultant resistance of the corresponding lines of stitching and cotton fibers of laminæ. In this form of bat each lamina is laid back and forth or folded onto the carrier apron or the next lamina therebelow as the case may be, so that a flight of a lamina in one direction across the bat is at an angle to the return flight so that the trends of the fibers in the two flights, cross each other and are themselves crossed at intervals by the two series of lines of stitching that are at right angles to each other.

Instead of laying the laminæ as described, one or more of them may be fed so as to lie longitudinally of the sheet and one or more fed so as to lie in zig zag position with respect to the sheet, as just described. Or a bat may be formed of a plurality of laminæ all extending longitudinally of the sheet or it may be formed of a single lamina that is folded back and forth upon itself. In each instance, however, the final commercial bat, for whatever use it may be put, is stitched with a series of longitudinal lines of stitching and is stitched with a series of transverse lines of stitching.

In the drawings:

Figure 1 is a perspective view showing a bat embodying the present invention.

Figure 2 is a perspective view showing the bat with several of the successive laminæ lifted at one corner so as to show how the edges of the flights or back and forth folds of each laminæ are spaced inwardly from the corresponding edges of the folds or flights of the laminæ both above and below it, so that they "break joints."

Figure 3 is a perspective view showing one lamina with its folds or flights at one end portion raised to illustrate the arrangement of the flights or folds with respect to one another.

Figure 4 is a view similar to Figure 2, showing a bat in which one lamina extends longitudinally of the sheet while the next lamina is zig zag to the sheet.

Figure 5 is a view similar to Figure 2 in which the several laminæ extend all longitudinally of the sheet.

Referring now to Figures 1, 2 and 3 of the drawings, there is shown a bat consisting of any desired number of raw cotton laminæ, each of which is a product of what in the art is known as a carding machine, and these

laminæ are disposed one upon another, in number sufficient to give the desired thickness to the bat.

It will be noted upon reference to the drawings that a lamina 5 is folded back and forth upon itself with the mutually adjacent side edges 6 and 7 of superimposed folds in divergent relation transversely of the bat. While the angle of divergence illustrated is an acute angle, it will of course be understood that it may be increased to a right angle or even an obtuse angle if desired, whether or not an upper fold or flight lies upon an adjacent fold or flight of that lamina throughout the length or extent of the fold or flight transversely of the bat. With the arrangement shown, however, in which each fold lies upon an adjacent fold of that lamina throughout the width of the bat, a somewhat stronger bat results and its thickness is more nearly homogeneous.

The laminæ which are disposed one upon another as the folds are formed, from a battery of carding machines disposed side by side and feeding to a common conveyor belt or apron, are arranged as illustrated, so that the side edges of each flight or fold of each lamina, are between the corresponding side edges of the next adjacent lamina. It will also be noticed that each side edge 7 of the fold or flight of a lamina, not only overlaps the next flight or fold $5'$ of a lamina but, furthermore, overlaps the second succeeding flight or fold 5^2 of the lamina.

Now it will be understood that the fibers of the cotton tend longitudinally of each flight or fold and that with the arrangement illustrated, this tendency must, therefore, be diagonal to the completed bat and the trend of the fibers in each flight or fold of each lamina must, therefore, cross that of the next flight or fold.

In the actual assembly of the several laminæ in the correlation above described, they constitute initially a sheet which from the battery of carding machines passes through a stitcher of any desired kind that provides it with a longitudinal series of stitches 8 that are preferably equally spaced, the sheet being cut off in suitable lengths beyond the stitching machine to constitute separate bats. It will, of course, be understood that a carding machine from which each lamina is supplied, as above stated, is what is known in the particular art of treating cotton fiber, as the machine that converts the raw cotton into a single thin sheet for such subsequent use as it may be put to, while the term "bat" as applied to the article of manufacture constituting the present invention, refers to the completed and laminated structure to constitute a filling for a quilt particularly or for whatever use to which it may be desired to put it.

After a bat length is cut from the longitudinally stitched portion of the laminated sheet, it is provided with a transverse series of stitches 9 which it will be noted are at right angles to the stitching 8.

Now as the trends of the fibers of the several laminæ are all diagonal to the sheet and hence to the bat length, both the longitudinal series of stitches and the transverse series of stitches must cross the trends of the correspondingly positioned fibers so that literally a trussed structure results, in which the truss is formed by the diagonally disposed fibers and the longitudinal and transverse lines of stitching. This trussed structure that includes the longitudinal and transverse series of stitches in combination with the fibers having their trends diagonal to both series, effectually resists strains in all directions that are incident to the handling of the bat prior to its installation as a filling or to other use, as well as those strains to which the filling is subjected as a part of a quilt. It is found in practice that a quilt provided with the present filling bat effectually resists strains in all directions, whether longitudinally, transversely, diagonally or at an angle to the general plane of the filling, so that it does not become thin in places nor bunch, but maintains its proper homogeneous structure indefinitely.

Referring now to Figure 4 of the drawings, there is illustrated a bat in which the bottom lamina 10 is laid flat instead of being folded back and forth as in the embodiment of the invention just described while the next lamina 11 is folded back and forth with a zig zag arrangement to constitute separate folds or flights, as are all of the laminæ in the structure first illustrated. The next lamina 12 is laid flat and coincides with the lamina 10 while the next lamina 13 again is folded with a zig zag arrangement, it being understood that this alternation is continued to the desired thickness of the bat.

As in the structure first described, the bat is provided with a series of longitudinally extending lines of stitching 14 that are applied preferably in the sheet, while after the bat is cut from the sheet, in the well known manner, it is provided with a series of transverse lines of stitching 15. In this specific form of bat, the lines of stitching of one series, extend in the direction of the general trend of the fibers.

In this embodiment of the invention, the longitudinal lines of stitching extend in the direction of the general trend of the fibers of alternate laminæ, while they cross the trends of the fibers in the remaining laminæ which are the ones that are folded with the zig zag arrangement. The remaining lines of stitching are transverse to the general trends of the fibers of all of the laminæ.

In the arrangement shown in Figure 5 of the drawings, whether the laminæ are supplied from separate carding machines and laid one upon another or whether they are formed by folding the product of one carding machine back and forth upon itself, the two series of lines of stitching are so disposed that the lines of one series are in the direction of the trend of the fibers while the other lines are transverse to such trend. In the structure shown in Figure 5, the homogeneously arranged laminæ are indicated at 16 while the series of lines of stitching are shown at 17 and 18 respectively.

What is claimed is:

1. A bat of the character described consisting of a fibrous sheet laid in overlapping folds at angles to each other and with the trend of the fibers longitudinally of the folds and having a transverse series of stitches and a longitudinal series of stitches both of which are at angles to the trends of the fibers.

2. A bat of the class described including a lamina that is folded upon itself with the successive folds at angles to each other and separate series of stitching at angles to each other and to the extensions of the folds engaged through the bat and providing with the folds, a trussed structure.

3. A bat of the character described comprising fibrous material in which the fibre has a definite direction of trend, the material having separate series of lines of stitching through it intersecting at such angles to each other and disposed at such angles to the trend of the fibres of the material as to constitute therewith a trussed structure.

4. An article of the class described comprising a plurality of folds and separate series of lines of stitching passed through the folds and with respect to both of which series the folds are slantingly arranged to constitute in connection with the lines of stitching, a structure trussed in the direction of the length of the bat.

5. A bat of the class described comprising a plurality of laminæ secured one upon another, each lamina comprising folds that overlap and progress both transversely and longitudinally of the bat, the ends of each line of fold of each lamina being between the ends of the lines of fold of adjacent laminæ, the bat having a transverse series of stitches and a longitudinal series of stitches, both of which are at angles to the directions of the folds.

6. A bat of the class described comprising a plurality of laminæ disposed one upon another, each lamina comprising folds that overlap and progress in the plane of the bat, the ends of each line of fold of each lamina being between the ends of the lines of fold of adjacent laminæ, the several laminæ being secured together by transverse lines of stitching and by longitudinal lines of stitching, whereby to provide a structure trussed in the plane of the bat.

7. A bat of the class described comprising a plurality of superimposed laminæ having longitudinal and transverse lines of stitching, each lamina being disposed to constitute in connection with the lines of stitching a truss extending in the plane of the bat, each lamina being offset with respect to the lamina next below with corresponding truss elements of the different laminæ out of alinement.

8. A bat comprising superimposed layers of carded fibrous material having separate intersecting series of lines of stitching passing through all layers, the lines of one series being at angles to the lines of another series and the trends of the lines of stitching of the different series having different angular relations to the general trend of the fibre of the material.

9. A bat consisting of superimposed laminæ of carded fibrous material having separate intersecting series of lines of stitching passing through all laminæ, the lines of one series being at right angles to the lines of the other series and the trends of the line of stitching of the different series having different angular relations to the general trend of the fibre of the material.

10. A bat comprising superimposed laminæ of carded fibrous material stitched together with separate series of lines of stitching passing through all laminæ, the lines of one series being longitudinal to the bat and the lines of the other series being transverse to the bat, the general trend of the fibre of the material being across both series of lines of stitching.

In testimony whereof, I affix my signature, in the presence of two witnesses.

WALTER E. COCHRAN.

Witnesses:
F. G. CULVER,
A. ROBERTSON.