

UNITED STATES PATENT OFFICE

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CORK-FILLED FABRIC AND PROCESS OF MAKING SAME

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This invention relates to an improved cork fabric and the process of producing the same and has for its main object to provide a fabric that may be utilized for garments which fabric will serve as an excellent insulator against heat or cold and is practically wrinkleless.

The fabric is such that it may be made into a garment or utilized as a lining for a garment.

The main idea embraced by the invention involves the use of plural plies of fabric secured together to form a series of separate and independent compartments throughout the fabric structure and each compartment having a filling of granular or shredded cork that will form an insulating means against heat or cold together with the steps employed in producing the fabric.

The invention is illustrated in the accompanying drawing in which,—

Fig. 1, shows the first step in producing the fabric.

Fig. 2, illustrates a sectional detail through the same,—the section being taken on the line 2—2 of Fig. 1.

Fig. 3 shows a sectional elevation through a mechanism and also a portion of the prepared fabric into the compartments of which the filler is being introduced.

Fig. 4, illustrates an edge view of the fabric with several of its compartments filled with the filler.

Fig. 5, shows a rolling step which I employ to compress the filled compartments, and

Fig. 6, illustrates a fragment of a completed fabric in which the compartments are arranged in horizontal and vertical rows.

Referring to the drawing the numerals 10 and 11 designate two layers of fabric which may be of any desired material such as a woven material or leather or both.

These two fabric layers are stitched together on a series of vertical lines 12 and on a horizontal line by a row of stitches such as 13. This arrangement of vertical and horizontal stitching produces a plural ply structure with a series of passages or compartment

14 there between,—the passages being permanently separated one from the other.

It will therefore be noted that the laminated strip or sheet of material is stitched together along its vertical edge 15 and also along its lower horizontal edge 16 but it is left open along the top edge 17,—the passages or compartments thus being closed along their sides and across the lower ends.

The laminated strip is then presented to a filling machine as shown in Fig. 3 of the drawing, which is merely shown diagrammatically and will now be briefly explained.

The filling mechanism includes a hopper 18 with a nozzle 19 at the bottom thereof and a tube 20 fits into the said nozzle and depends therefrom. The tube 20 is of a diameter to fit or enter the passages 14 and is of sufficient length to extend from the open end 17 of the passages to the closed end of the latter.

In the hopper I provide a short vertical shaft 21, with a socket 22 on the lower end thereof and to this head I attach the upper end of a spirally-twisted blade 23 which blade depends through the nozzle and also extends down through the tube 20.

To the shaft 21 I attach a sleeve 28 having an arm 24 in such manner that the shaft may revolve within the sleeve and by reciprocating the arm and sleeve vertically a short vertical reciprocating movement will be imparted to the shaft and also to the spiral blade 23 in the depending tube.

The reciprocating motion to the arm 24, sleeve 28, and the shaft 21 is produced by two cams 25 and 26,—the former being on the end of the arm 24 and the latter on the end of a horizontal drive-shaft 27.

Pulleys 29 and 30 guide an endless belt 31, which latter drives the short vertical shaft 21 but permits said shaft to move vertically and the shaft 27 is driven in any suitable manner.

The granulated or shredded cork filler 32 is fed from the hopper 18 through the tube 20 by means of the revolving and reciprocating spiral blade 23.

In practice I insert the lower end of tube 20 into the open end 17 of the passages 14 until the tube is nearly at the lower end of

the passage to be filled. The shaft 21 is then rotated and reciprocated vertically and thus forces the cork filler down through the tube into the bottom of the passage in the laminated fabric. As the filler is fed through the tube the friction of the ingoing filler will be on the wall of the tube and not on the wall of the passage and as the passages fill with the filler the fabric is gradually pushed from the lower end of the tube until the passage is completely filled.

After the successive passages have been filled I close the filling end thereof by running a row of stitches 33 across that end.

When the passages have been filled and closed I pass the fabric between two compression rolls 34 and 35 as indicated in Fig. 5 which compresses the filler and makes the exterior size of the several passages more uniform in appearance.

I then pass the entire fabric structure through a sewing machine and form a series of uniformly spaced horizontal rows of stitches 36 which latter cross the passage 14 and produce a quilted condition in the fabric by producing a series of smaller compartments each entirely bounded by rows of stitching.

By thus stitching the fabric in a direction crosswise of the tubular passages and forming a series of smaller compartments, the granular or shredded cork is retained in each of those compartments in a packed condition, —the very stitching of the two opposed fabrics together serving to effect this packing so that the filler cannot be displaced.

The fabric may be readily cut into any desired shape to suit the purpose for which it is intended and when cut, the filler in the cut compartments only will be freed while the fabric plies at those cut compartments will be utilized in the formation of seams or may be bound with braid or tape to give it a finish.

The thickness of the cork fabric may be readily varied by simply varying the width between the parallel lines that form the passages or compartments 14. In other words, by varying the width of the passages 14, I may vary the thickness of the fabric because the narrower passages will contain less cork filler and thus reduce the thickness.

Obviously, the wider the passages the more cork filler can be placed therein and the thicker will the complete fabric be.

Having described my invention, I claim:—
1. The process for producing an insulated cork-filled fabric consisting in stitching plural plies of fabric together to form a series of parallel passages closed at the bottom, then feeding granular cork into the passages from the closed bottom up while keeping the ingoing cork free from frictional contact with the fabric wall of the passage being filled, so as to pack the cork in the passage from the

lower closed end up and as the passage fills, utilize the incoming cork to advance the fabric in a direction away from that in which the cork comes in to effect a uniform packing of the cork in the passage.

2. The process of producing an insulated cork-filled fabric consisting in stitching plural plies of fabric together to form a series of parallel passages closed at the bottom but open at the top, then slipping the plural ply fabric over the lower end of a tube until the tube-end terminates adjacent to the lower closed end of one of the parallel passages, feeding granular cork through the tube to the lower closed-end of the passage to prevent frictional contact between the ingoing cork and the passage wall and causing the feeding of the cork into the passage to force the fabric from the tube as the filling of the passage progresses to effect uniform filling, then stitching across the filling ends of the parallel passages to close the latter and finally stitching the filled passages in a crosswise direction to confine the cork in cells.

In testimony whereof I affix my signature.
HUGO LEIBE.