UNITED STATES PATENT OFFICE.

JAMES E. LAPPEN, OF LE ROY, MINNESOTA, ASSIGNOR OF ONE-THIRD TO FREDERICK M. CATLIN AND ONE-THIRD TO LORENZO L. C. BROOKS, BOTH OF ST. PAUL, MINNESOTA.

FLAX FELT.

No. 908,681. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed August 28, 1907. Serial No. 390,547.

To all whom it may concern:

Be it known that I, JAMES E. LAPPEN, a citizen of the United States, residing at Le Roy, in the county of Mower and State of Minnesota, have invented certain new and useful Improvements in Flax Felt; 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.

My present invention has for its object to provide, as a new article of manufacture or product, a matted and more or less flexible flax board or felt. This so-called flax felt or flexible flax board is made from long flax fibers that are intertangled and matted together so that they constitute a porous or more or less flexible, coherent and self sustaining body having considerable tensile strength.

The flax fiber from which the body of material is made should be partly degummed so as to separate the shive from the fiber. This degumming of the fiber may be done in any one of the many well known ways. Usually it will be accomplished chemically by treatment in an alkali process.

To render the felt or flexible flax board more porous than it would be if entirely freed from shive or woody particles, about fifty per cent., more or less, of the shive or woody substance partly separated from the fiber is commingled with the intertangled flax fiber. This also, of course, very greatly reduces the cost of the manufactured material.

The long flax fibers are assembled together to form the improved product preferably by the process disclosed and claimed in my co-pending application S. N. 330,274, filed August 12, 1906, entitled "Process of producing flax felt". The process disclosed and claimed in said application is substantially as follows: The long flax fibers, and preferably a considerable portion of the shive, are submerged in water and are thoroughly agitated to produce a commingling and intertangling of the long fibrous material; second, the fibrous stock is collected upon a screen or reticulate body which is moved approximately to the surface of the water, and the fiber is evenly spread and distributed over the reticulate plate, while still submerged; and third, the collected and distributed fiber, together with the reticulate plate, are removed from the water and the formed flax felt is dried.

This improved flax felt or board may be made in any desired thickness and I myself have made the same as much as two inches thick in a single layer or interwoven approximately homogeneous body. The necessity for making the felt or board of several plies or layers is, therefore, eliminated. The multiplicity of air cells contained within the body of felt or board, as well as the character of the flax itself, produce a felt or board that is an excellent insulation against the passage of heat, and at the same time the material is comparatively light and has sufficient flexibility to permit it to be formed into various desired shapes. The long intertangled and matted flax fibers give very considerable tensile strength to the material, and render the same self sustaining in its structure. Material of this kind is very desirable for use in lining refrigerators and refrigerator cars and it is an ideal material for use in buildings wherever it is desired to insulate or to prevent the passage of heat. It also makes an excellent covering for steam pipes.

A machine especially designed for making this improved product is disclosed and claimed in my co-pending application S. N. 416,165, filed February 17, 1908, entitled "Flax felt machine."

What I claim is:

1. As a new article of manufacture, a flax felt, composed of long flax fibers intertangled and matted together and constituting a porous flexible coherent and self sustaining body.

2. As a new article of manufacture, a flax felt, composed of long, partly degummed flax fibers, and shive or woody particles, intertangled and matted together and constituting a porous flexible coherent and self sustaining body.

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

JAMES E. LAPPEN.

Witnesses:
H. D. KILGORE,
F. D. MERCHANT.