

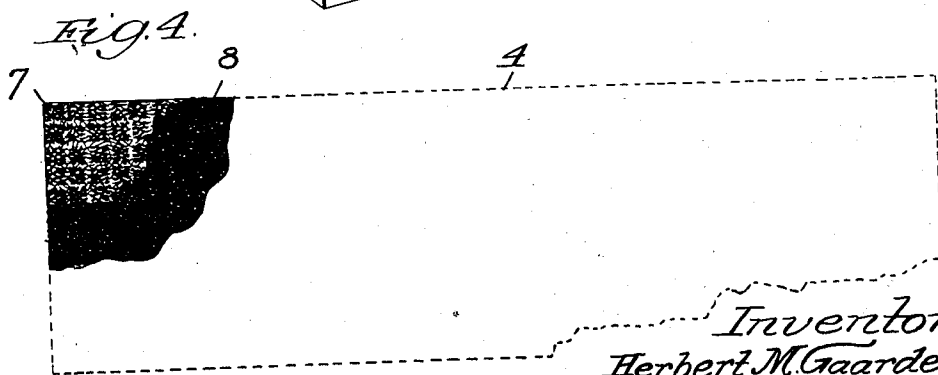
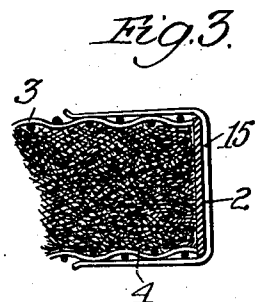
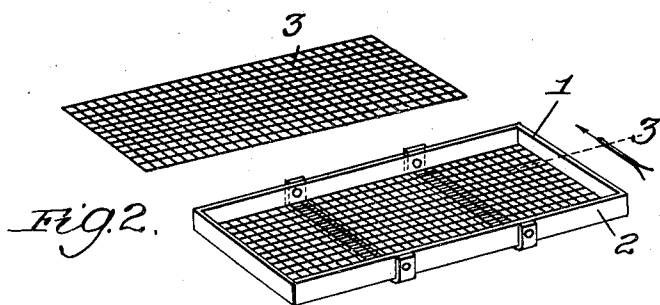
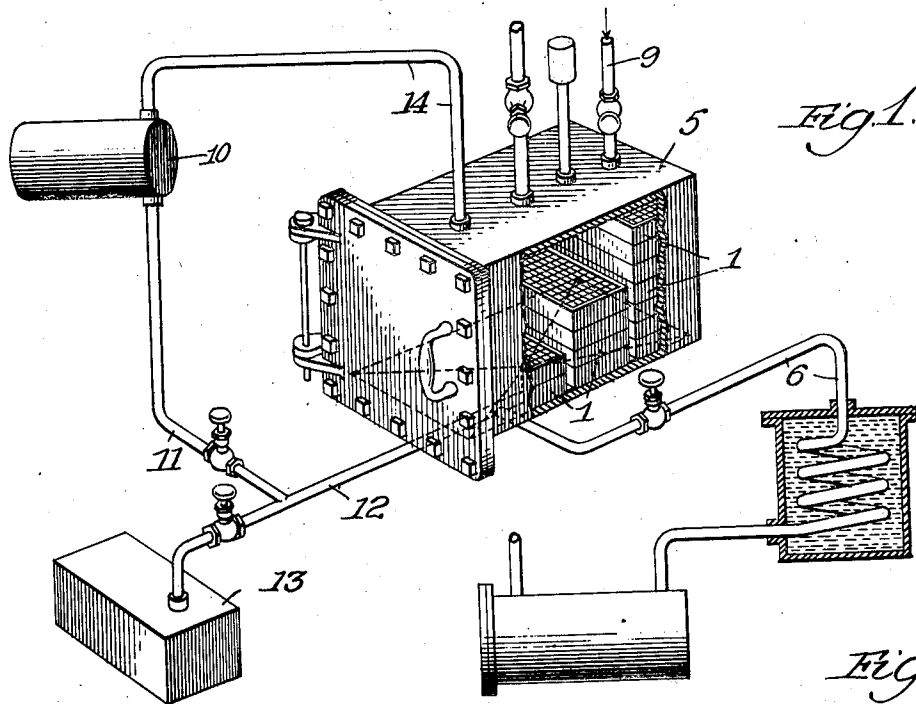
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1,996,043

METHOD OF PRODUCING INSULATING MATERIAL

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UNITED STATES PATENT OFFICE

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METHOD OF PRODUCING INSULATING MATERIAL

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Application March 15, 1933, Serial No. 660,973

2 Claims. (Cl. 18—48)

This invention consists in a method of producing an insulating material and the product thereof.

This method is designed for the manufacture of the product described and claimed in the copending application of Charles W. Becker, Serial No. 660,974, filed March 15, 1933, and results in a noticeable improvement of the product therein claimed.

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

Figure 1 represents a diagrammatic view, partially in perspective and partially in broken section, of the dipping and molding apparatus; Fig. 2 is a perspective view of the molds; Fig. 3 is a sectional view taken along the line 3 of Fig. 2; and Fig. 4 is a broken view of the top of the completed insulating block.

The insulating material is mainly hog's hair. The individual hairs run from $\frac{3}{4}$ " to 3" long and are quite stiff. In forming the insulation, the hair is washed, deodorized and then is thoroughly interlaced by known machinery and formed into loose blocks of sizes usually employed in insulation, i. e., 1'x3' and from 1" to 6" or 8" thick. The hair is used in an amount varying from 4 to 10 ounces per board foot, the optimum for insulating purposes being about 7 ounces.

The material is held in or compressed into reticulated metal boxes or molds 1 which comprise the sides 2 and are fitted at top and bottom with wire screens 3. These molds determine the final shape of the block 4, which is shown in Fig. 4. Clips 15 hold the molds together.

The insulating blocks having been thus formed and shaped are then dipped in a solution of about 20% asphalt and 80% solvent. Carbon tetrachloride is preferred as the solvent because of its non-inflammability. This dipping may be carried out in the container 5 in which the molds containing the hairs are stacked and into which the solution is flowed until the molds are submerged. The solution is then withdrawn and the blocks drained until the excess solvent has all been removed. It is preferred to carry out the draining in a closed container in order to prevent substantial evaporation of the solvent. Following the draining, the solvent is then evaporated by steam. This operation is carried out by introducing steam into the container 5. The commingled steam and solvent are removed through the condenser 6 in order to recover the solvent. By carrying out the evaporation of the solvent with steam, the strain or compression of the confined hair is relaxed and the individual hairs acquire a permanent set in the position occupied by them. The steaming is carried on co-

piously, until the entire mass has been well steamed. The block of insulating material may then be released from the mold and retains the shape of the receptacle, even to the extent of clearly showing the marks of the wire 3. This effect is indicated in Fig. 4 by the depressions 7.

The steam is preferably introduced from the top as through the pipe 9, the effect being when so introduced that a large proportion of the solvent is displaced by the steam without permanent evaporation and flows out the bottom of the molds.

In the illustration, 10 is the solution storage tank from which the solution flows into the chamber 5 through the line 11, and may be removed through the line 12 to the receiver 13. The line 14 is an overflow line for the solution.

When the operation is completed, the insulating slab contains about 15% of asphalt and 85% hair by weight. The block is quite rigid, has no tendency to spall off or break up under any ordinary conditions including violent change of temperature, has very little affinity for moisture, and has an insulating value substantially equal to the best cork. It is very much lighter than other insulators, is very little attacked by rats, and affords an outlet for the hitherto largely useless product of the meat packing industry.

Commercial blocks are made as described and shipped without the need for any other coating or protection. When they are about to be used, they are ordinarily dipped in melted asphalt. Such is the density and structure of the block that the melted asphalt penetrates only about one-sixteenth of an inch, thus forming outer thoroughly impermeable coatings 8 as illustrated in the drawing, without any change in the interior body of the block.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is:

1. The method of preparing an insulating block which comprises interlacing hog hair, shaping said hair to form a block, immersing said block in a solution of an asphalt binder, draining off excess solution, and steaming the block to remove remaining solvent and set the hairs.

2. The method set forth in claim 1, in which the solution of the binder comprises 20% asphalt and 80% carbon tetrachloride.

HERBERT M. GAARDER.