

May 4, 1926.

1,583,605

H. H. ROOT

COMB FOUNDATION

Filed Sept. 11, 1922

Fig. 1.

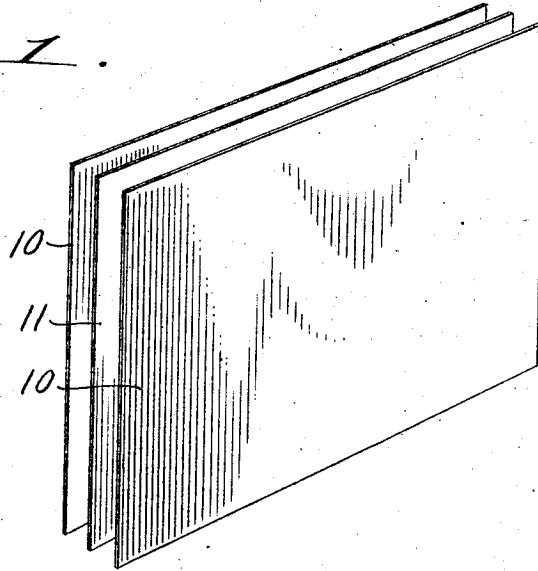
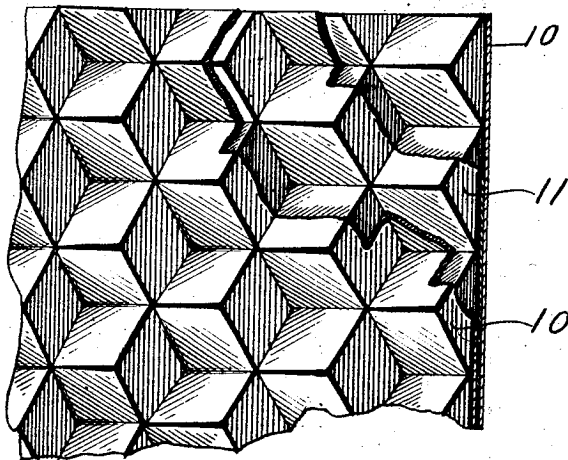


Fig. 2.



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UNITED STATES PATENT OFFICE.

HUBER H. ROOT, OF MEDINA, OHIO, ASSIGNOR TO THE A. I. ROOT COMPANY, OF
MEDINA, OHIO, A CORPORATION.

COMB FOUNDATION.

Application filed September 11, 1922. Serial No. 587,393.

To all whom it may concern:

Be it known that I, HUBER H. ROOT, residing at Medina, Ohio, a citizen of the United States, have invented certain new and useful Improvements in Comb Foundations, of which the following is a specification.

My invention relates to comb foundation for use in bee hives. Such foundation ordinarily consists of a sheet of bees wax which by the use of dies, or an embossing operation, is formed on opposite sides with beginnings with greater or less degree of the cells. Honey comb made by the bees from such ordinary foundation will sag in the hive, with the result that the cells of the upper part will be distorted and comb cells in which the queen should lay worker eggs will not be used at all for brood or the queen will lay undesirable drone eggs therein. The worker or brood area or capacity of the comb is thus restricted and may result in serious reduction in the strength of the colony. Various attempts have been made to solve the problem which this tendency of ordinary beeswax foundation has to stretch and sag. All of such attempts known to me have been objectionable for one reason or another. Thus wires have been embedded in the foundation extending in various directions, these being objectionable because they are expensive and when intersecting wires are employed the bees often construct irregular cells at the point of intersection of the wires. Wood and other materials have been proposed but because of mechanical difficulties and objection thereto by the bees for one reason or another it has not been an acceptable or satisfactory solution of the problem. The elements or factors entering into the problem are thus economy of manufacture avoidance of mechanical difficulties either in manufacture or occurring in the use of the foundation in the hive, and acceptability by the bees. By my invention I have produced a foundation which fulfills the requirements just mentioned and my invention consists in whatever is described by or included within the meaning or scope of the appended claims.

In the annexed drawings:

Fig. 1 is a perspective view of portions of the inner and outer sheets of material which, in what I now consider the best embodiment of my invention, are used in production of

comb foundation, the sheets being shown separated and before being favosed;

Fig. 2 is a perspective view of a portion of comb foundation when made of the sheets of material shown in Fig. 1 with portions of one of the outer and of the inner layers or lamina broken away.

Describing the foundation illustrated in the drawings exemplifying what I now deem the best embodiment of my invention, it consists of a laminated structure of three layers or sheets, the two outer layers, 10, being of pure bees-wax and the inner layer, 11, of a blend of some vegetable wax or mineral wax and bees-wax, the blending resulting in the production of a composition that is tougher and harder than normal bees wax, and which resists the tendency to stretch which characterizes normal bees wax so that when the three layers or sheets are united into a unitary or composite sheet (which will be accomplished by either natural tendency to stick together or to adhere and interlocking by the favosed condition), the foundation thus produced will successfully resist deformation of the cells under conditions which foundation of ordinary bees wax could not withstand. Although made of three thicknesses the total thickness of the combined three may be made no greater than the thickness of foundation made of ordinary bees wax and thus the distance between the bases of cells on opposite sides of the foundation may be that which is acceptable to the bees and which cannot be secured with other material such as wood veneer as an inner layer. As pure bees-wax is on the exposed surface of each side, the foundation is as acceptable to the bees and may be worked as quickly by the bees as if the foundation were wholly made of pure bees-wax.

In practice a satisfactory vegetable wax that may be used in carnauba wax and a satisfactory mixture or portion is thirty percent carnauba wax and seventy percent pure bees wax.

If desired the foundation may be made wholly of blended vegetable or mineral wax and bees wax. Bees will work up cells from such a foundation but as the blended wax is harder than pure bees wax, the bees do not work it so readily as pure bees wax, and it is to be understood that unless the appended claims restrict to the composite of

layers of blended vegetable and pure beeswax, as some of them do, the scope of my invention is to be regarded as including foundation made of blended wax only. But what appears now to be the ideal is the laminated foundation of sheets of pure bees wax on opposite sides of a sheet of blended vegetable or mineral and bees wax in that it has all of the characteristics of pure bees wax which appeal to the bees, and hardness or toughness or nonstretching properties that prevent deformation or distortion of cells. Considered as laminated structure it will be seen that my invention is composed of layers or sheets of wax of different nature or properties as to the matter of stretching, the inner layer having a greater tensile strength than pure bees wax, and to a degree which will resist those forces which will stretch pure beeswax or cause the same to be stretched.

While I prefer the use of three sheets as described, I do not wish to be limited to this construction. For instance some blends of waxes are quite strong and still are acceptable to the bees. While I do not consider that all the advantages can be secured by the single ply sheet of blended wax I do not wish to be confined to the three ply construction. Nor do I wish to be confined, when the plural ply embodiment of my invention is employed, to making the same by the procedure which consists in first forming each ply as a separate sheet nor confined to the product of such procedure because it will

be within the scope of my invention to provide the pure bees wax surface by running a sheet of the blended or composite wax through a bath of melted pure beeswax, and thereby apply the coating or exterior covering of pure beeswax on opposite sides of the sheet of blended or composite wax.

It may be desirable for some reasons to embed wires in the foundation but when wiring is used it need consist only of horizontal wires, any wires extending in other and intersecting directions not being necessary.

What I claim is:

1. Comb foundation comprising blended vegetable wax and beeswax, the composite being acceptable to the bees.

2. Comb foundation comprising a sheet that is a composite of beeswax and vegetable wax, the composite being acceptable to the bees and having ability to resist stretching under hive conditions which beeswax lacks.

3. Comb foundation composed of three layers, the inner layer being a composite of vegetable wax and beeswax, the composite being acceptable to the bees, and each outer layer being beeswax.

4. Comb foundation comprising a layer of blended beeswax and vegetable wax of greater tensile strength than beeswax and which is acceptable to the bees, between layers of pure beeswax.

In testimony whereof I hereunto affix my signature.

HUBER H. ROOT.