

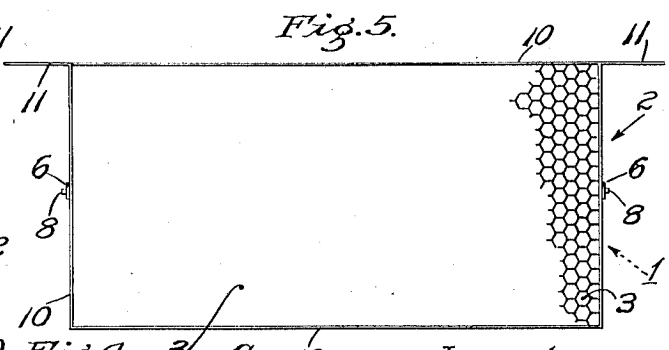
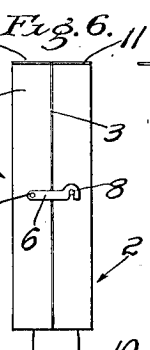
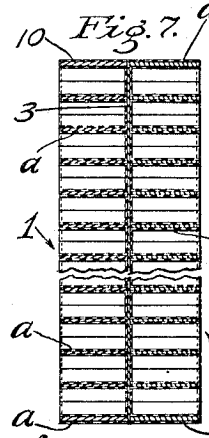
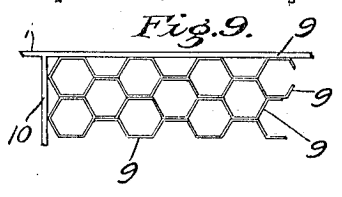
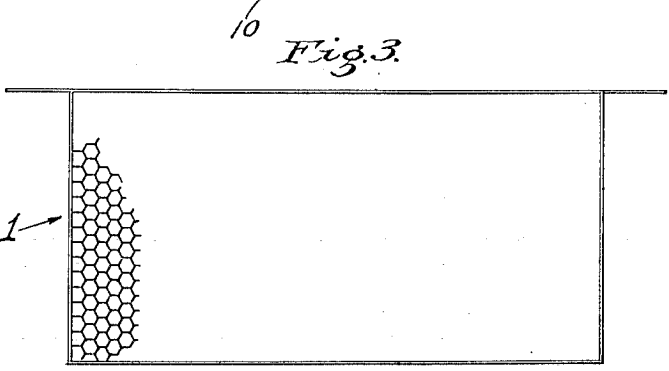
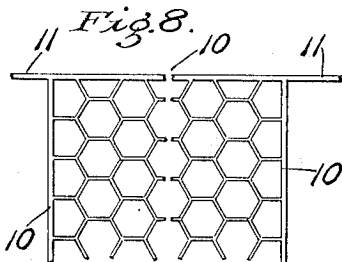
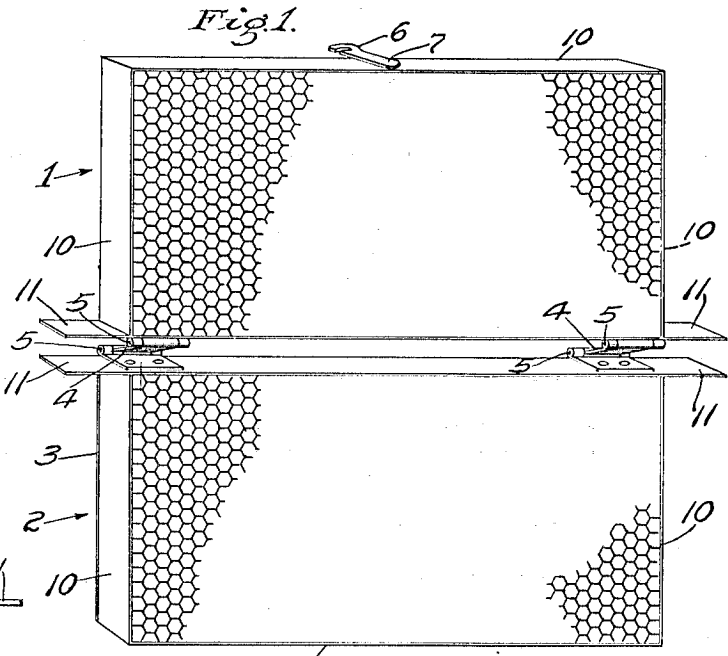
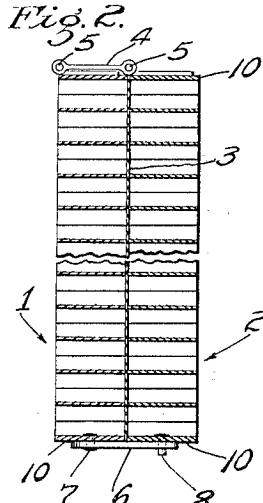
A. C. CALKINS & G. M. MACDONALD.

ARTIFICIAL HONEYCOMB.

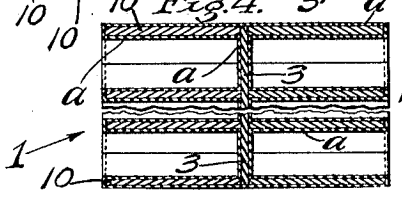
APPLICATION FILED APR. 25, 1912.

1,051,830.

Patented Jan. 28, 1913.



Witnesses:
H. N. Fiskby
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UNITED STATES PATENT OFFICE.

ALBERT C. CALKINS, OF ALTADENA, AND GEORGE M. MACDONALD, OF SAN BERNARDINO, CALIFORNIA.

ARTIFICIAL HONEYCOMB.

1,051,830.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed April 25, 1912. Serial No. 693,251.

To all whom it may concern:

Be it known that we, ALBERT C. CALKINS and GEORGE M. MACDONALD, both citizens of the United States, the former residing at Altadena, in the county of Los Angeles and State of California, and the latter residing at San Bernardino, in the county of San Bernardino and State of California, have invented new and useful Improvements in Artificial Honeycombs, of which the following is a specification.

This invention relates to artificial honeycombs made of metal or other material adapted to be coated with wax, so that bees may store their honey without the labor of building the comb and from which material the wax may be recovered by melting, by solution or otherwise.

An object of the invention is to provide a honeycomb of this character which will be cheap and easy to manufacture, that can be easily and completely cleaned and sterilized with minimum expense of time, labor and material and from which the honey can be separated with superior ease and convenience and without changing the physical or chemical properties or character of the honey, and with minimum change of the comb, until it is desired to renew the coating; and which will be capable of indefinite re-use.

The invention may be carried out in various ways.

The accompanying drawings illustrate the invention in some of the forms in which we contemplate embodying the same.

Figure 1 is a view of an artificial honeycomb constructed in accordance with this invention as applied with a double axis hinge. The parts are shown open and separated from each other. Fig. 2 is a fragmental cross-section of the closed comb before coating. Fig. 3 is a side elevation of one cellular leaf. Fig. 4 is a fragmental exaggerated cross-section of a honeycomb constructed in accordance with this invention and ready for use. Fig. 5 is an elevation of an artificial honeycomb comprising two leaves fastened together at their ends by latches. Fig. 6 is an elevation of one end of such comb latched previously to coating. Fig. 7 is a fragmental cross-section of a comb in which the separable leaves are provided with a mid-rib fixed to the ends of

one of the cells. Fig. 8 is a fragmental exaggerated elevation illustrating the cast form of construction of the honeycomb. Fig. 9 is a fragmental exaggerated elevation of a honeycomb built up of bent strips fastened together.

In Figs. 1, 3 and 5 portions of the cellular structure are omitted for convenience of the draftsman.

The artificial honeycomb comprises two cellular leaves 1, 2 that are duplicates of each other and that may be separably fastened to each other by any suitable means. A detachable partition 3 between said leaves serves as the mid-rib of the comb.

In Fig. 1 the two leaves are hinged together at one edge by a double hinge comprising an intermediate hinge leaf 4 and the pins 5; and are latched together at the other edge by a latch 6 pivoted at 7 to one leaf and engaging a pin 8 on the other leaf. The cellular leaves may be variously constructed. In some instances they may be formed of metal or other suitable material molded into the proper cellular structure. Or they may be made of thin metal strips 9 that are corrugated to form the sides of the cells and are brought together at their corrugations and joined in such a manner as to form the cellular structure having the cells transversely arranged. Said comb may be also provided with a border 10 formed of a thin strip of suitable material. The supporting lugs 11 may be formed of the same material as the borders. The cells of the cellular leaves thus formed are preferably open at both ends and when it is desired to use the comb, two cellular leaves are applied against the opposite sides of the partition or mid-rib and the three members are then secured together by any suitable means as the hinge and latch shown. Then the comb is dipped in hot wax or other suitable material to give the skeleton frame a coating *a* that will be acceptable to the bees, and also to fill and seal all the interstices, thus providing a structure corresponding to an empty honeycomb, the ends of the cells on opposite sides of the comb being open and the inner ends of said cells being closed. Then the comb may be placed in the hive and when filled and capped by the bees may be removed to recover the honey. Then, instead of uncapping the cells by a knife, a torch or other

usual means, all that is necessary is to unlatch the leaves and remove the central partition, thus opening the inner end of the cells. The leaves may then be placed in the usual centrifugal separator and the honey extracted in the usual way, excepting, however, that since the leaves are each only provided with one set of cells, all of which are open at one side of the leaf the leaves may be so placed in the extractor that one operation will remove all the honey, through the open cell ends.

In Fig. 1 the two leaves hinged together are shown as swung into open position, with the openings of all the cells on the same side of the comb.

When the extraction has been effected the former outside caps may be removed by any suitable means as an alcohol torch, a knife or a decapping machine, and then the mid-rib may be again applied and the parts again fastened together as before. If desired the leaves may be reversed without decapping the outer ends of the cells and said caps may be used as the mid-rib of the new comb, the leaves being fastened together as before.

When it is desired to get rid of foul brood or other contagious diseases it will be desirable to melt off the coating, thus removing all diseased matter and the artificial skeleton comb may then be thoroughly sterilized by immersion in hot water or by other antiseptic treatment.

We claim:—

1. A honeycomb composed of two leaves provided with transverse cells open at both ends, means for fastening said leaves together with their sides adjacent each other, and means for closing the inner ends of the cells. 35
2. A honeycomb composed of two separable leaves each provided with cells transversely arranged, and means for separably holding said leaves together. 40
3. A honeycomb comprising separate cellular leaves separably secured together side by side. 45
4. A honeycomb comprising two cellular leaves hinged together at one edge, and means to fasten the other edges of the leaves together. 50
5. A honeycomb comprising two cellular leaves, an intermediate leaf, a hinge hinging the cellular leaves together, and means to temporarily fasten the other edges of the leaves together. 55
6. A honeycomb comprising cellular leaves separably secured together. 60

In testimony whereof, we have hereunto set our hands at Los Angeles, California, this 16th day of April, 1912.

ALBERT C. CALKINS.
GEO. M. MACDONALD.

In presence of—

JAMES R. TOWNSEND,
L. BELLE RICE.