

G. M. MacDONALD.
 ARTIFICIAL HONEYCOMB.
 APPLICATION FILED JUNE 14, 1916.

1,224,479.

Patented May 1, 1917.

Fig. 1

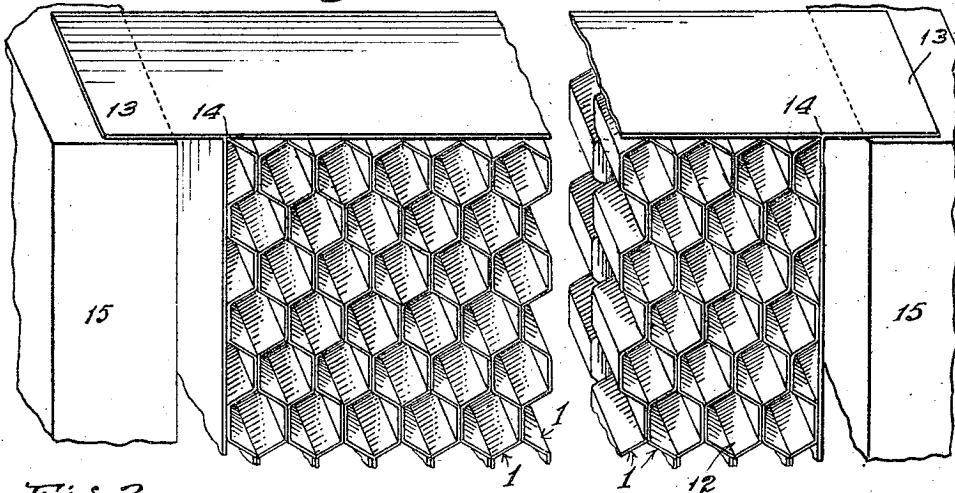


Fig. 3

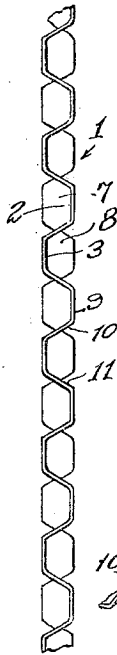


Fig. 2

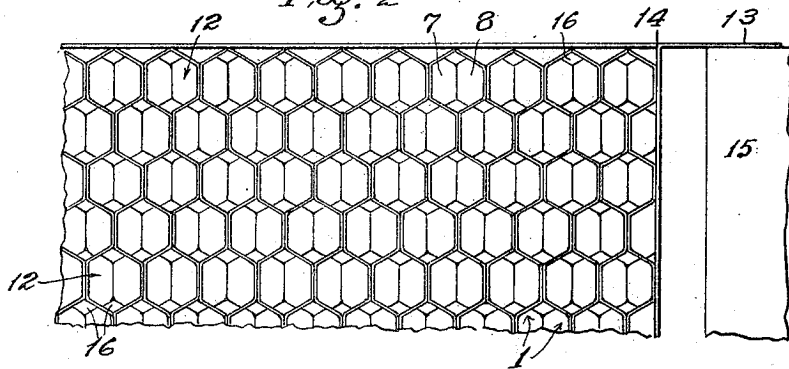
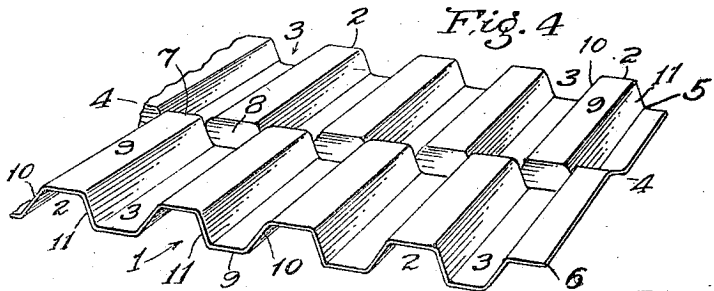


Fig. 4



Witness
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 his atty.

UNITED STATES PATENT OFFICE.

GEORGE M. MACDONALD, OF SAN BERNARDINO, CALIFORNIA.

ARTIFICIAL HONEYCOMB.

1,224,479.

Specification of Letters Patent.

Patented May 1, 1917.

Application filed June 14, 1916. Serial No. 103,692.

To all whom it may concern:

Be it known that I, GEORGE M. MACDONALD, a citizen of the United States, residing at San Bernardino, in the county of San Bernardino and State of California, have invented a new and useful Artificial Honeycomb, of which the following is a specification.

An object of this invention is to provide a simple and practical artificial honeycomb adapted to eliminate the use of embossed foundations. That is to say, where embossed foundations for honeycombs are employed, great expense arises whenever the comb becomes infested with foul brood or other diseases, because the diseased portion of the honeycomb must be cut away and the wax foundation must be refined by melting the wax and purifying the same, and then forming it into sheets and embossing as before, after which it is necessary for the bees to build up the cells. This cell building requires a large amount of time and wax; and during the period of cell construction the bees are not only unable to store honey, but become consumers of honey already stored, it being calculated that from 12 to 22 pounds of honey are consumed by the bees while producing one pound of beeswax.

An object of this invention is to provide a cheap, simple, light, indestructible artificial honeycomb that can be readily and thoroughly cleansed and sterilized, and from which the honey can be extracted by centrifugal extracting means with the same facility as with other honeycombs.

This invention is regarded as broadly new and basic in that the honeycomb is constructed of crimped strips of sheet material united together, and each provided with crimps forming grooves open ended at one edge of the strip and practically closed at the other end of the crimps so that when the strips are secured together side by side with grooves of two adjoining strips registering with each other, there will be formed cells open at the edge of the strips and practically closed at the other end of the cell.

Preferably the strip is wide enough to ac-

commodate two rows of crimps arranged end to end cross-wise of the strip on opposite sides of its longitudinal medial line, and said strip is provided with complementary crimps forming half-cells closed at their abutting ends; a number of said strips being fastened together and thus constituting entire cells.

The strips may be of any suitable sheet material, and I at present contemplate using thin sheet material, such as line tin or sheet tin graded at 6/1000ths of an inch, more or less, the purpose being to provide as light and thin material as possible with requisite strength; but it is understood that other sheet material may be used to accommodate the facilities and conveniences of the manufacturer.

Further objects, advantages and features of novelty may appear from the accompanying drawings, the subjoined detail description and the appended claims.

The accompanying drawings illustrate the invention.

Figure 1 is an enlarged fragmental perspective view of an artificial honeycomb constructed in accordance with this invention and hung in a hive, a fragment of which is shown.

Fig. 2 is a side elevation of the honeycomb shown in Fig. 1.

Fig. 3 is an enlarged edge view of a strip of sheet metal crimped in accordance with this invention preparatory to constructing the artificial comb.

Fig. 4 is an enlarged perspective view of a fragment of the strip.

The crimped strip 1 is provided with two rows of crimps in parallelism forming reversely-arranged complementary grooves 2, 3, normal to the medial line 4, 4, of the strip open at the edges 5, 6, of the strip, and partitions formed by intermediate end walls 7, 8 practically closing the grooves at the medial line of the strip and forming semi-cells. Each of said grooves is formed with a central side wall 9 and two lateral side walls 10, 11 arranged at angles of about 60°, so that when the strips are placed side to side with

their grooves in register with each other as shown in Figs. 1 and 2, complete hexagonal cells 12 are formed by the adjoining grooves and end walls. The end walls 7, 8 of said grooves form the bottoms or inner ends of said cells. The end wall of any groove on one side of the strip forms the end wall of a groove on the other side of the strip so that each of the end walls 7 or 8 constitutes a part of the bottom of two semi-cells. The frame of artificial comb thus formed is provided with complete cells open at one end and practically closed by the walls 7, 8 at the other.

The strips may be fastened together side by side by any suitable means, and in the case of a metallic comb they may be metallically fastened by sweating, by soldering, or by electric-welding. For this purpose there may be employed a spot welding machine, not shown, provided with electrodes to engage the assembled strips and pass the current therethrough to effect the welding in a way readily understood by those skilled in the art.

It is understood that the method of construction is not confined to welding as the strips may be sweated together or united by means of any well-known process adapted therefor.

When the honeycomb has thus been constructed, lugs 13 will be secured to corners 14 at one side of the comb to stand and rest on the top of the hive box 15.

Before inserting the artificial comb into the hive it will be dipped in the usual way into hot melted beeswax or into any other paraffin base which would be acceptable to the bees, thus coating the metal with a thin coating of beeswax.

In the form of construction shown, the end walls 7, 8 do not quite close the inner or adjoining ends of the cells. The slight openings 16 thus formed when the strips are fastened together will be filled with the wax coating or will be closed by the bees when they get to work.

When the honeycombs have been filled with honey and capped by the bees they may be withdrawn and the caps cut off, and the combs placed in the extractors and the honey extracted in the usual manner. Thereupon if the combs are clean and free from disease they may be immediately returned to the hive for refilling.

In the case of foul brood or other disease, the combs may be quickly sterilized and freed from disease by simply immersing them in a pan of scalding hot water, thus melting off the wax coating and accumulations without destroying the working capacity of the frame formed by the united crimped strips.

Thereupon the artificial comb may be re-

stored by recoating with wax as before and is thus made ready to be returned to the hive.

I claim:—

1. An artificial honeycomb consisting of strips crimped to form troughs on opposite sides of said strips open at one end and having end walls at the other end formed by bends of the strips, said troughs forming semi-cells, and said strips being fastened together side by side with the end-walls of the semi-cells in register with each other to form closures for the inner ends of complete cells.

2. An artificial honeycomb comprising crimped strips fastened together side by side, the crimps of the adjoining strips registering with each other to form cells open at one end and practically closed at the other end by portions of the crimped strips.

3. A honeycomb comprising strips crimped to form complementary grooves extending in parallelism with each other from opposite sides of the medial line of said strips, the grooves being open at the edges of the strips and closed by end walls formed by portions of the strips at the medial line of the strips, the grooves of adjoining strips registering with each other to constitute cells open at the edges of the strips and practically closed at the medial line by said portions of the strips.

4. An artificial honeycomb composed of strips crimped and forming grooves and end walls, the end wall of a groove on one side of the strip forming the end wall of a groove on the other side of the strip.

5. The artificial honeycomb composed of crimped strips fastened together to form cells open at opposite edges of the strips, and practically partitioned from each other endwise by intermediate bends in the strips.

6. The artificial honeycomb composed of crimped metal strips metallically fastened together to form cells open at opposite edges of the strips, and practically partitioned from each other endwise by intermediate bends in the strips.

7. An artificial honeycomb constructed of crimped strips formed with bends intermediate the edges of the strips to form end and side walls of semi-cells; said strips being fastened together and forming cells closed at one end and adapted to be coated with wax.

8. An artificial honeycomb comprising crimped strips fastened together side by side to form a body, the crimps of the adjoining strips registering with each other to form cells open at one end and practically closed at the other end and a plate fastened to one edge of the body and projecting therefrom at its ends.

9. An artificial honeycomb consisting of

strips crimped to form troughs on opposite
sides of said strips; the conformation of the
strips being such that the troughs are open
at one end and have an end wall at the other
5 end, said troughs forming semi-cells; and
said strips being fastened together side by
side to form a body with the semi-cells in
register with each other to form complete
cells, and a plate fastened to the sides of the

troughs at one edge of the body and project- 10
ing therefrom at its ends.

In testimony whereof, I have hereunto set
my hand at San Bernardino, California,
this 2d day of June, 1916.

GEO. M. MACDONALD.

Witness:

JAMES R. TOWNSEND.