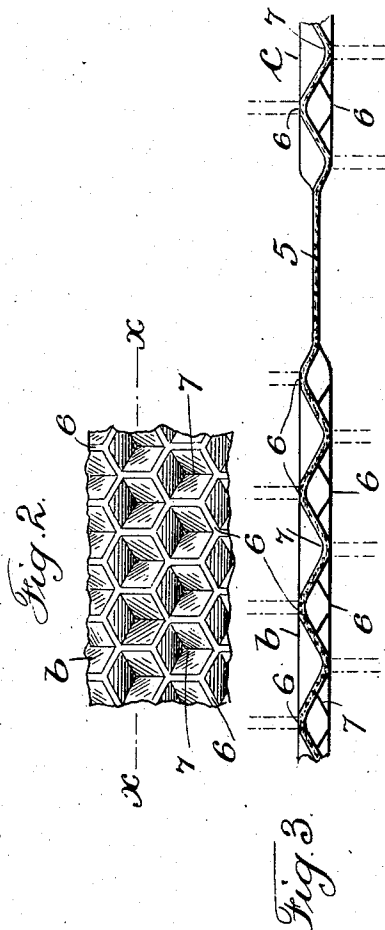
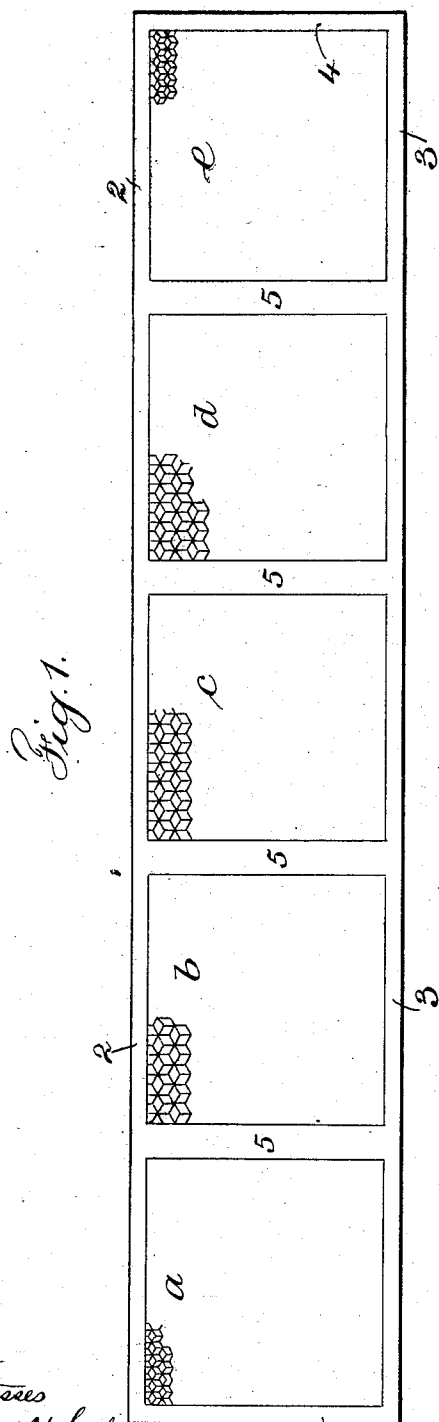


L. A. ASPINWALL.
 COMB FOUNDATION AND SECTION HONEY BOX THEREFOR.
 APPLICATION FILED APR. 3, 1911.

994,559.

Patented June 6, 1911.

2 SHEETS—SHEET 1.



Witnesses
 Charles M. ...
 A. ...

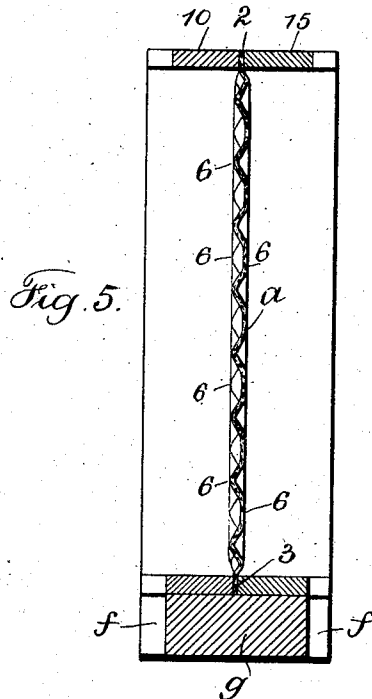
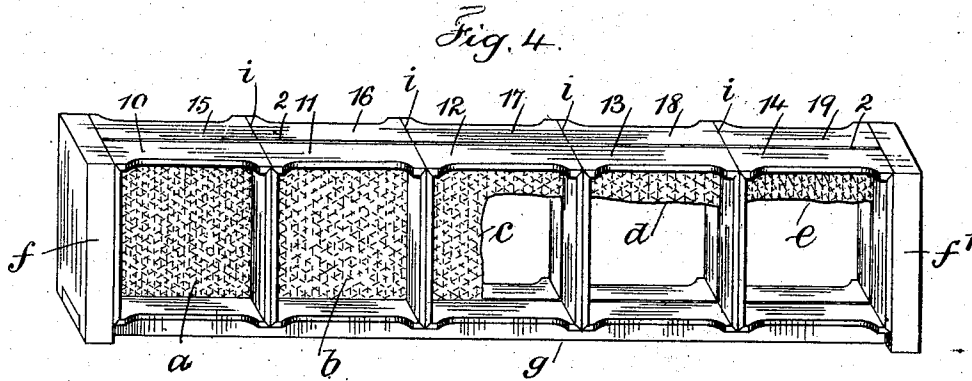
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 Lewis A. Aspinwall
 by Harold Terrell
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

LEWIS AUGUSTUS ASPINWALL, OF JACKSON, MICHIGAN.

COMB FOUNDATION AND SECTION HONEY-BOX THEREFOR.

994,559.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed April 3, 1911. Serial No. 618,564.

To all whom it may concern:

Be it known that I, LEWIS AUGUSTUS ASPINWALL, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented an Improvement in Comb Foundations and Section Honey-Boxes Therefor, of which the following is a specification.

Comb foundation for use in honey sections or boxes as supers, has heretofore been employed,—this foundation being secured in the honey sections either by melted wax or by melting the edge of the comb foundation after the same has been cut the size to fit the section or box. The foundation sheets are frequently cut to fit such section or box and to fit a section or box having one or more short kerfs or slots in the section or box through which the foundation is passed. These methods or operations are slow and tedious and withal very unsatisfactory in the matter of finish, completeness and time consumed. Furthermore, in these sheets of wax the rudimentary cells are pressed in continuous lines and when the same are cut up it is difficult to fit them in the boxes and make a good finish and firm hold to the wood, all of which it is the object of my invention to overcome.

My invention relates to the rolling or pressing of comb foundations having rudimentary cells in sheets adapted to my divided sections or honey boxes to be used in supers arranged for the storage of honey in beehives, and I refer to Letters Patent granted to me June 23, 1908, No. 891,585, for the construction of hive proper with supers employed in connection therewith, and in which patent Figs. 1 and 2 show five honey sections or boxes as supers placed above the hive proper and in a continuous line.

In carrying out my invention the sheets of wax are rolled or pressed into series of superposed rudimentary cells in alined groups with opposite sides or faces alike between or intermediate of which and at the boundary edges are flat plain margins. These plain flat and intermediate marginal surfaces come between the meeting or adjacent edges of my light wood frames or sections in which the honey cells are made by the bees building onto the opposite faces of the rudimentary cells the hexagonal cellular structures which they fill with honey and which extend in opposite directions and are held

together in the frames or sections by the cells which as built are attached to the inner surfaces of said frames or sections. These series and frames after the honey has been made are individualized or separated one from the other as marketable products of honey, each unit comprising a two-part group of honey cells and frame parts, all of which is hereinafter more fully described.

In the drawing Figure 1 is an elevation of a sheet of wax formed according to my invention and diagrammatically showing part of the cell formation. Fig. 2 in exaggerated size represents a portion of one of a series of superposed rudimentary cells. Fig. 3 is a sectional plan upon the line *x, x* of Fig. 2, but in larger size, showing parts of two series of superposed rudimentary cells with the flat plain margin between. Fig. 4 is a perspective view representing the holder and the frames or sections therein with the sheet of wax having superposed rudimentary cells, part of which has been broken off for a better understanding of the figure, and Fig. 5 in large size is a vertical section through the base of the holder and through the companion frames or sections and the superposed rudimentary cells.

In Fig. 3 I have shown by dotted lines the walls of the honey cells partly built out from the opposite flat faces of the superposed rudimentary cells.

Referring to Figs. 1, 2 and 3, *a b c d* and *e* represent groups of superposed rudimentary cells following one another in line in a single sheet of wax. It is rolled or pressed with these groups or series and in which 2 and 3 are the top and bottom plain margins, 4 the plain end margins and 5 the plain intermediate margins or surfaces. In Fig. 1 the groups *a* and *e* at the respective ends of the sheet represent worker size cells and *b c* and *d* intermediate thereof drone size cells which are larger than the worker size cells.

I do not limit my invention to the sizes and arrangement of cells, as the groups may be of worker size cells or of drone size cells, but I have shown them in the manner just described because such construction is advantageous to employ mainly for the reason that pollen is invariably stored in worker cells and bees naturally require or build combs having two kinds or sizes of cells, storing the pollen in the worker cells when in the brood apartment, and the honey in the drone cells; both sizes or kinds being

exactly suited to the requirements of the bees and resulting in the storage of much more honey when used in the supers. Notwithstanding the preference to store pollen in worker cells, the bees limit such storage to those sections placed directly above the brood combs which is convenient and accessible to the nurse bees. The outer or end sections being located over the slatted ends of my brood frames are beyond the limit of pollen storage, hence are filled with honey exclusively, while the placing of drone cell foundation in the three intervening or central sections eliminates the storage of pollen.

By reference to my patent hereinbefore named, the form of hive preferred will be appreciated and the arrangement of the supers above the brood area and in the supers the arrangement of the worker cells with the drone cells; said arrangement making it possible to improve the quality of the honey obtained by such an arrangement and the said forms of cells.

By reference to Figs. 2 and 3, 6 represents flat faces of hexagonal configuration which join up and fit in with one another as a continuous series of hexagonal figures across the entire face of the series of rudimentary cells. It will also be apparent from Figs. 2 and 3, that there are depressions within these figures having three faces whose meeting edges are the lines 7 all within the boundary of the hexagonal faces and which come to a center at the centers of the hexagonal figures and by reversing the faces of the series of rudimentary cells used it will be found that these converging lines on one side come beneath the flat faces 6 which form the hexagonal surfaces on the other side, so that the hexagonal figures of one face are intermediate or staggered in relation to similar faces on the other side. This wax structure forms a foundation for the bees to build the honey cells upon because they start out by depositing the wax upon the hexagonal faces which determine for their work the size of the cells, whether they be worker cells or drone cells, and with the bee instinct, honey is deposited in the smaller cells when arranged at the ends, while the larger cells centrally located, eliminate the storage of pollen, and the bee culturist in marketing his product is assisted and does not have to do any determining or guesswork with his product.

Referring particularly to Figs. 4 and 5, f f^1 represent the ends and g the bottom bar of a holder, the length of which forms a super frame which is adapted to be received upon the top of the hive. The inner surfaces of the ends f f^1 are apart a distance sufficient to receive between them a predetermined number of wood frames or sections. In the device of my improvement instead of making these wood

frames or sections of one piece to fit between the ends f f^1 and cutting up the sheet of wax and fastening the same at the center of said wood boxes as has heretofore been accomplished, I make these wooden frames or sections in complementary halves, that is to say, 10 11 12 13 and 14 represent halves that are alike and in line, while 15 16 17 18 and 19 represent other similar and complementary halves in line and that are also alike; the halves being back to back, as it were, because it will be noticed that the bottom bar g is just equal in width to the narrowest part of the section and that the widest part of the sections is equal to the width of the end pieces f f^1 , so that when the supers are placed upon the hive the narrowest part affords a passage-way as generally made for the bees thereto rising from the hive; the greatest width representing a margin against which another and similar super-frame rests. Therefore the bees have the usual independent entrance to each one of the frames or sections and a second tier of supers or sections may be placed upon the top of the collective members shown in Fig. 4, without in any sense altering the space that is provided as a passage-way for the bees.

It will be noticed from Figs. 4 and 5 that the series or sections on one side are slightly separated from the series or sections on the other side so that the sheet of wax having the cells as shown in Fig. 1, can be placed between said parts; the plain surface forming the top, bottom, end and intermediate margins coming between the juxtaposed inner edges of the sections of the complementary halves which form the sections or honey boxes, and of course it is apparent that with the pressing together of these sections intimate contact is produced with the plain surfaces of the wax, and when the bees build up from the flat hexagonal faces 6 in opposite directions into the respective complementary halves, the cells are attached to the inner surfaces of the sections or boxes so that the complementary halves of the same are held in a permanent relation to one another. It is therefore not a difficult matter to remove all of the sections in line from the frame composed of the ends f f^1 and bottom bar g and to separate them one from another along the line i of separation, after which another series of complementary halves or frames or sections can be placed in the holder with the sheet of wax having rudimentary cells, as per Fig. 1, inserted in the hive for the bees to build upon. It thus appears that in filling the supers and holder containing the five double sections which are slightly separated, the foundation of wax is introduced between the sections and the parts brought together, thus securing the foundation in position and the refilling of the frames or the supers may

be accomplished very rapidly and by one not skilled in the art and by the exercise of much less skill and ingenuity than is required to melt the edges of the cut sheets or to join the same in the wooden frame by melting wax, as has heretofore been the practice.

I claim as my invention:

1. A comb foundation for section honey boxes, comprising a sheet of wax formed into a series of rudimentary cells in alined groups with marginal and intermediate flat plain surfaces.

2. A comb foundation for section honey boxes, comprising a sheet of wax formed into a strip of five series of rudimentary cells in alined groups with marginal and intermediate flat plain surfaces.

3. A comb foundation for section honey boxes, comprising a sheet of wax formed into series of rudimentary cells in alined groups of worker and drone cells with marginal and intermediate flat plain surfaces.

4. A comb foundation for section honey boxes, comprising a sheet of wax formed into a strip of five series of rudimentary cells in alined worker and drone cell groups with marginal and intermediate flat plain surfaces and in which the worker cells are at the ends of the sheet and the drone cells intermediate thereof.

5. A comb foundation for section honey boxes, comprising a sheet of wax formed into series of superposed cells in alined groups with marginal and intermediate flat plain surfaces, whereby the opposite faces are substantially duplicates of one another.

6. A comb foundation for section honey boxes, comprising a sheet of wax formed into a strip of five series of superposed cells in alined groups with marginal and intermediate flat plain surfaces whereby the opposite faces are substantially duplicates of one another.

7. A comb foundation for section honey boxes, comprising a sheet of wax formed into series of superposed cells in alined worker and drone cell groups with mar-

ginal and intermediate flat plain surfaces, whereby the opposite faces are substantially duplicates of one another.

8. A comb foundation for section honey boxes, comprising a sheet of wax formed into a strip of five series of superposed cells in alined worker and drone cell groups, with marginal and intermediate flat plain surfaces, whereby the opposite faces are substantially duplicates of one another and in which the hexagonal surfaces upon one side are intermediate of or staggered, with similar surfaces on the other side.

9. A comb foundation for section honey boxes, comprising a sheet of wax formed into a series of rudimentary cells in alined groups with marginal and intermediate flat plain surfaces and complementary series of frames or sections between which the said comb foundation is received with the adjacent edges of said frames contacting with the plain flat surfaces of the foundation, and a holder for said complementary series of frames or sections.

10. A comb foundation for section honey boxes, comprising a sheet of wax formed into a series of rudimentary cells in alined groups with marginal and intermediate flat plain surfaces and complementary series of frames or sections and a holder composed of end and a longitudinal bar as a support for said frames or sections and in which the frames or sections at their central portions are of a width agreeing with the bar of said holder and at their ends agreeing in width with the end members of said holder and between which series of frames or sections the comb foundation is received with the adjacent edges of said frames contacting with the plain flat surfaces of the foundation.

Signed by me this 25th. day of March 1911.

LEWIS AUGUSTUS ASPINWALL.

Witnesses:

C. G. ROWLEY,
GEO. N. WHITNEY.