

(No Model.)

E. B. WEED.

METHOD OF AND APPARATUS FOR MAKING SHEETED WAX AND
ARTIFICIAL HONEYCOMB FOUNDATIONS.

No. 572,588.

Patented Dec. 8, 1896.

Fig. 1.

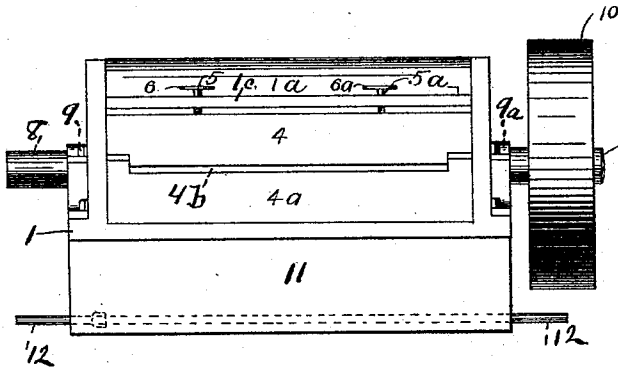


Fig. 2.

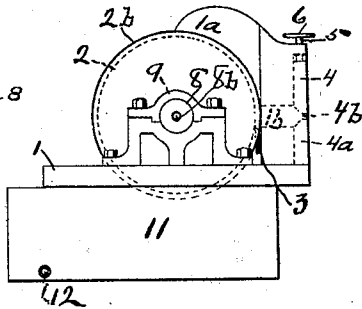


Fig. 3.

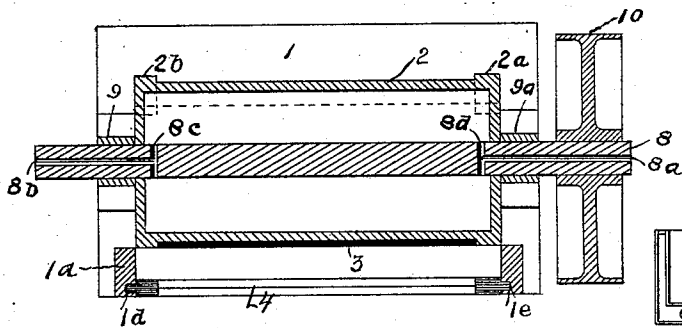


Fig. 4.

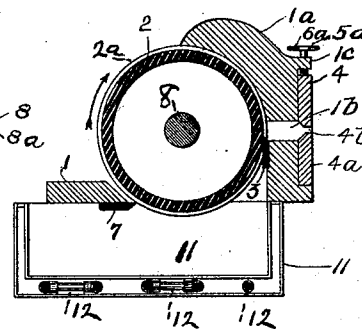
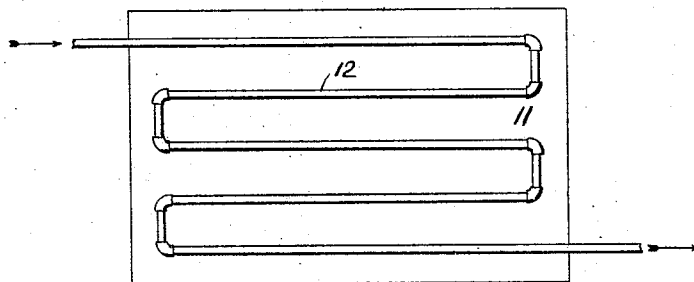


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR MAKING SHEETED WAX AND ARTIFICIAL HONEYCOMB FOUNDATIONS.

SPECIFICATION forming part of Letters Patent No. 572,588, dated December 8, 1896.

Application filed November 25, 1895. Serial No. 570,093. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. WEED, a citizen of the United States, residing at Medina, in the county of Medina, in the State of Ohio, have invented a certain new and Improved Method of and Means for Making Sheeted Wax and Artificial Honeycomb Foundations, of which the following is a full, clear, and exact specification.

My invention relates to the art of making what are known among apiarists as "sheeted wax" and "artificial comb foundation," and also to machines for use in said art.

By all the methods heretofore practiced in the art of making sheeted wax and artificial honeycomb foundation and by the means heretofore used in said art the sheets of wax and the honeycomb foundation made thereby are brittle, granular, opaque, and of a dull or lusterless appearance.

The objects of my invention are these: first, a sheeted wax and a honeycomb foundation that is flexible and highly cohesive under all conditions, that is free of granulations, that is transparent, and that has a brilliant luster; second, improvement in the art of making sheeted wax and honeycomb foundation, and, third, a simple and an effective machine for practicing said art.

My invention consists, first, in the process and in the subprocesses in the art of making sheeted wax and artificial comb foundation defined in the claims, and, second, in the construction and combination of parts of the machine hereinafter described for use in the art of making said sheets and foundations.

In the drawings, Figure 1 is a front elevation of a machine embodying my invention in means that may be used in practicing the art herein described. Fig. 2 is an end view of the same. Fig. 3 is a section taken on a horizontal plane through the axis of the roller. Fig. 4 is a vertical cross-section of the machine, and Fig. 5 is a plan illustrating the arrangement of the heating-pipes.

My discovery and invention in the art of making sheet-wax and honeycomb foundation consists in reducing the material to a condition of plasticity and then subjecting the same to a high pressure and forcing the wax between the walls of an opening.

In the practice of my improvement in the art of making sheet-wax and honeycomb foundation the preferred method consists in heating beeswax or other suitable material to a temperature of about 150° Fahrenheit, at which temperature the material is reduced to a liquid state, and then cooling the same to such an extent that it becomes plastic (about 110° Fahrenheit) and then subjecting the same to a high pressure and forcing it between the walls of an opening. The same thing can be accomplished by taking cold material in the solid state and warming it to the requisite degree of plasticity and then subjecting it to a high pressure.

Sheet-wax and honeycomb foundation made by this process is a product materially different from anything heretofore known as sheet-wax or as honeycomb foundation. This product is flexible and highly cohesive under all conditions, not granular, is transparent and brilliant in appearance, and will not become dry and hard.

I will now describe the means which I consider the best adapted to use in the art hereinbefore described for making new and improved sheet-wax.

1 is a rectangular open frame which constitutes the bed of the machine, at the front side of which is an upward extension 1^a, that overhangs the hollow roller 2 and fits closely on the flanges 2^a and 2^b of the roller, and acts as a retaining-plate to keep wax carried by the roller from being forced therefrom before reaching the pressure-chamber. The pressure-chamber 1^b consists of a rectangular opening through the front 1^a of the frame. Below the pressure-chamber, to the inner side of the front of the frame, is a scraper 3, the upper edge of which bears against the face of the roller 2 between the flanges 2^a and 2^b and forms a guide to deflect wax from the face of the roller to the pressure-chamber. To the front of the frame are attached two die-plates 4 and 4^a, separated to form a slot 4^b, that serves as an outlet from the pressure-chamber. The slot formed by the die-plates is of a width equal to the thickness of the sheets of wax that it is desired to make.

To adapt the machine to making sheets of various thicknesses, the upper die is made

adjustable to and from the other by means of adjusting-screws 5 5^a, that pass through the flange or lug 1^c and screw into threaded openings in the upper edge of said die-plate. Hand-wheels 6 6^a serve to turn the adjusting-screws. The adjustable die-plate slides in vertical ways 1^d and 1^e in the vertical part of the upright part of the frame. Under the back side of the frame is a scraper 7, that regulates the amount of wax that is carried from the pan by the roller. The ends of the scraper 7 rest against the annular flanges 2^a and 2^b, leaving a space the depth of said flanges between the edge of said scraper and the roller. The roller 2 is rotated by a shaft 8, that rotates in the journal-boxes 9 9^a above the ends of the bed-plate. Said shaft has bores 8^a and 8^b axially thereof from the ends to a point within the hollow roller 2, which bores open into the roller through the cross-bores 8^c 8^d. The ends of the shaft 8 are connected by any suitable means (not shown) with pipes, whereby a current of cold water is carried continuously into and out of the hollow roller to keep it cool. The shaft and roller are driven by the pulley 10, fixed on the shaft.

A metal pan 11 is attached to the under side of the frame 1, in which wax is melted. Wax placed in the pan is melted and kept in a molten state by means of heating-pipes 12 or otherwise. The pan is illustrated as made with outer and inner walls, with the pipe between the walls of the bottom of the pan.

The operation of my machine is as follows: The wax in the pan is kept heated to a temperature of about 150° Fahrenheit by means of the heating-pipes that are coiled in the bottom of the wax-pan, and the roller is driven in the direction of the arrow in Fig. 4 by means of a belt on the driving-pulley fixed to the shaft of the roller. The pan is kept filled with wax to a height which will partially submerge the roller. The roller is kept cool by passing cold water therethrough, as described. The heated wax adheres to the face of the roller and is cooled thereon to a plastic state, the amount of wax adhering thereto being gaged by the scraper below the back side of the bed, which limits the amount of wax carried by the roller to the amount adhering to the face of the roller between and to the depth of its end flanges. The wax that passes under the said scraper is carried by the roller around under the overhanging projection of the frame, and the scraper attached on the inside of the front of the frame diverts the wax into the chamber formed by the opening through the front elevation of the frame. After such chamber shall have become filled the wax therein will be subjected to a high pressure, and as additional wax is carried to said chamber the wax therein will be forced out between the walls of the opening or the slot formed by the dies attached to the front of the frame. As the wax is forced through said slot it comes out in a

smooth sheet of even thickness, not granular, and highly cohesive.

The sheets coming from this machine are smooth and form what is known as "sheet-wax." Comb foundation is sheet-wax favored or honeycombed by suitable dies.

As the honeycombing or favoring of the sheets of wax forms no part of the present invention, the means by which it is done is not described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The herein-described process of making sheet-wax consisting of first making the wax plastic, second, in subjecting the plastic wax to pressure, and, third, in forming the wax into sheets, substantially as described.

2. The herein-described improvement in the art of making wax consisting in making the wax plastic and subjecting the plastic wax to pressure, substantially as described.

3. The herein-described improvement in the art of making sheet-wax, consisting in forcing the wax while in a plastic state through an opening between dies, substantially as described.

4. The herein-described improvement in the art of making sheet-wax consisting in making the wax plastic and then forcing it by pressure between the walls of an opening whereby the wax is made highly cohesive, substantially as described.

5. A machine for making sheet-wax, consisting of a pan, a roller adapted to be partially submerged in wax in the pan, a scraper to regulate the amount of wax carried from the pan by the roller, a chamber into which wax is diverted from the roller, and an opening from the chamber through which wax is forced out of the chamber, substantially as described.

6. A machine, for making sheet-wax, consisting of a pan, a roller adapted to be partially submerged in wax in the pan, a scraper to regulate the amount of wax carried from the pan by the roller, a chamber into which wax is diverted from the roller, a guide to divert wax from the roller into the chamber, and an opening through which wax is forced from the chamber, substantially as described.

7. The combination, in a machine for making sheet-wax, of a roller, a chamber in front of the roller, a scraper for diverting wax from the roller into the chamber, a retaining-plate above the chamber, and an outlet from the chamber, substantially as described.

8. In a machine for making sheet-wax, the combination of a pan, a hollow roller adapted to be partially submerged in wax in the pan, connections to the roller whereby a current of water may be caused to flow through the roller, a chamber into which wax may be diverted from the face of the roller, said chamber being provided with an opening through which wax may be forced from the chamber, substantially as described.

9. In a machine for making sheet-wax, the combination of a pan, means for heating the pan, a hollow roller adapted to be partially submerged in wax in the pan, connections to the roller whereby a current of water may be caused to flow through the roller, and a chamber into which wax is diverted from the face of the roller, substantially as described.

10. In a machine for making sheet-wax, the combination of a frame, a roller, a pan below the roller, means for keeping wax warm in the pan, and a slotted opening through the

frame through which wax is forced from the roller, substantially as described.

11. In a machine for making sheet-wax, a chamber, an outlet from the chamber, means for adjusting the size of the said outlet, and means for subjecting wax in the chamber to pressure and forcing wax through the outlet, substantially as described.

EDWARD B. WEED.

In presence of—

FRANK SPELLMAN,
W. P. ROOT.