

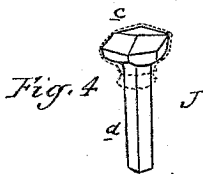
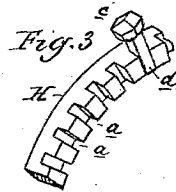
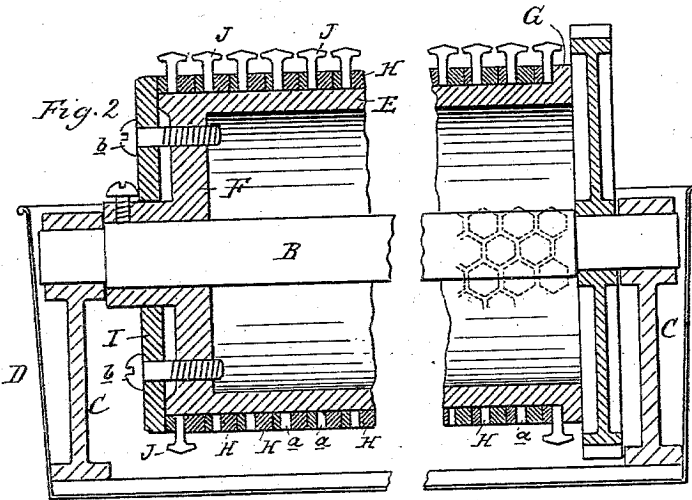
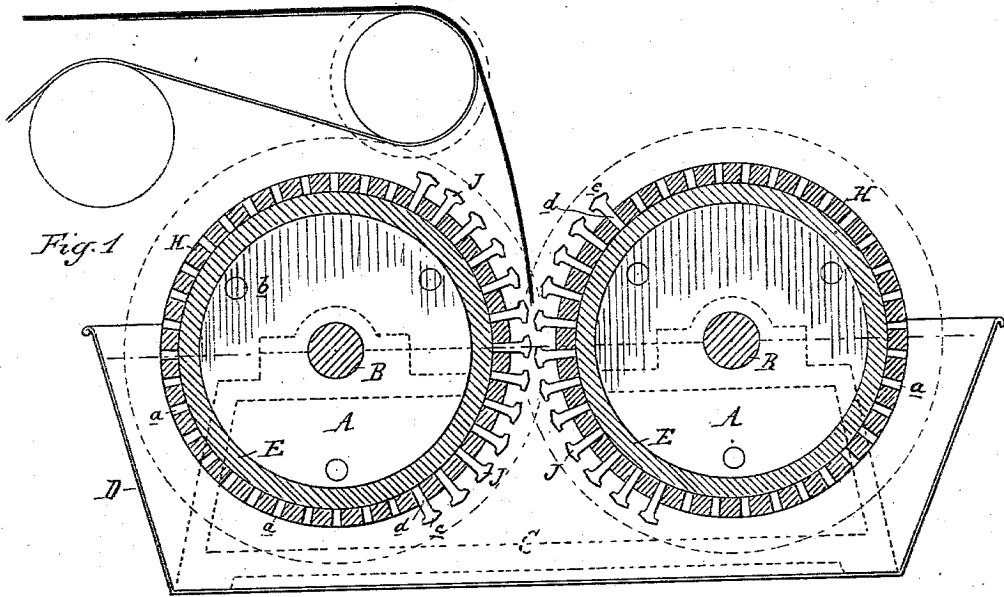
(No Model.)

E. B. WEED.

HONEY COMB FOUNDATION MACHINE.

No. 283,442.

Patented Aug. 21, 1883.



Witnesses:  
*E. J. Scully.*  
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 att'y

# UNITED STATES PATENT OFFICE.

E. BEVERLY WEED, OF DETROIT, MICHIGAN.

## HONEY-COMB-FOUNDATION MACHINE.

SPECIFICATION forming part of Letters Patent No. 283,442, dated August 1, 1883.

Application filed December 29, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, E. BEVERLY WEED, of Detroit, county of Wayne, State of Michigan, have invented an Improvement in Machines for  
5 Making Honey-Comb Foundation, of which the following is a specification.

The object of my improvement is to construct a machine which will be capable of molding the sheet-wax into comb-foundation  
10 with high walls—that is to say, with the cells completed as high, or nearly so, as in the completed natural formation by the bees themselves.

Experience has demonstrated that bees will  
15 readily use such perfect artificial cell-formations if the wax is soft; but owing to practical difficulties such perfected artificial cell-formations could not be obtained by any of the present foundation-machines, which are only capable  
20 of producing what is termed "comb-foundation," and wherein the cell-base is the only perfect part, leaving the cell-walls quite low and incomplete. In all such foundation-machines  
25 a sheet of wax is passed in a plastic state through die-rolls, which give it the desired impression; but owing to the difficulty of extricating the impressed wax from the die-rolls the cell-walls could only be formed very low and rudimentary.

By a peculiar construction and arrangement  
30 of my die-rolls I have overcome the aforementioned difficulty, and my machine is capable of producing a comb-foundation with the walls in any desired state of perfection; and  
35 my invention consists, first, in constructing my die-rolls with undercut cell-formers; second, in covering them with a substance adhesive to water, which prevents the wax from sticking  
40 to the dies; the substance I use is what is called "dental rubber;" third, in arranging the die-rolls so as to have them both partially immersed in water.

In the drawings, which form a part of this  
45 specification, Figure 1 is a vertical section of my machine taken at right angles to the axis of the die-rolls. Fig. 2 is a longitudinal vertical section of one of the die-rolls. Fig. 3 is a detached perspective of a portion of one of the rings. Fig. 4 is a detached perspective of  
50 one of the cell-dies.

A represents two die-rolls precisely alike, and each mounted upon shafts B, which rest upon their ends in suitable bearings in a frame, C.

D represents a pan into which the whole  
55 device is set.

The construction of the die-rolls is as follows:

E is the body of the roll. It is provided at one end with a head, F, cast integral therewith, and upon the opposite end with an  
60 annular-flange, G. H are a number of like rings fitting snugly over the roll E, and each of them is provided upon one side with a series of radial grooves, *a*.

I is a loose head fitting against the head F  
65 of the roll, to which it is secured by the screws *b*, thereby forming the means for keeping the rings H and dies J securely in place upon the rolls.

J are a number of individual metal dies or  
70 cell-formers, each consisting of the head *c* and shank *d*, the latter of which is of proper size to fit into the grooves *a*. The head *c* is upon its outer face of the well-known shape and size required for the formation of the cell-base.  
75 The sides of the head are pyramidally inclined or contracted and then cut away to the thickness of the shank, leaving no more metal on the head than is required to make it substantial enough for practical purposes, a considerable  
80 undercut portion intervening between the head proper and the face of the roll. Each of these cell-dies is covered with a thin sheet or coating of what is called "dental rubber,"  
85 which has the property of being adhesive to water.

A thin sheet of such rubber may be simply stretched over each head of the cell-dies and tied fast under it with a string or wire, or an adhesive coating of it may be formed over the  
90 head of the dies.

The rings H are so arranged upon the rolls that the grooves *a* of one alternate with the ones next to it, so that the die-formers stuck into these grooves will form a die-roll showing  
95 the well-known honey-comb foundation, leaving the necessary interstices around the sides of the die-heads to allow the wax to enter and form cell-walls. The dies are firmly held from displacement by pressing the rings H together,  
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