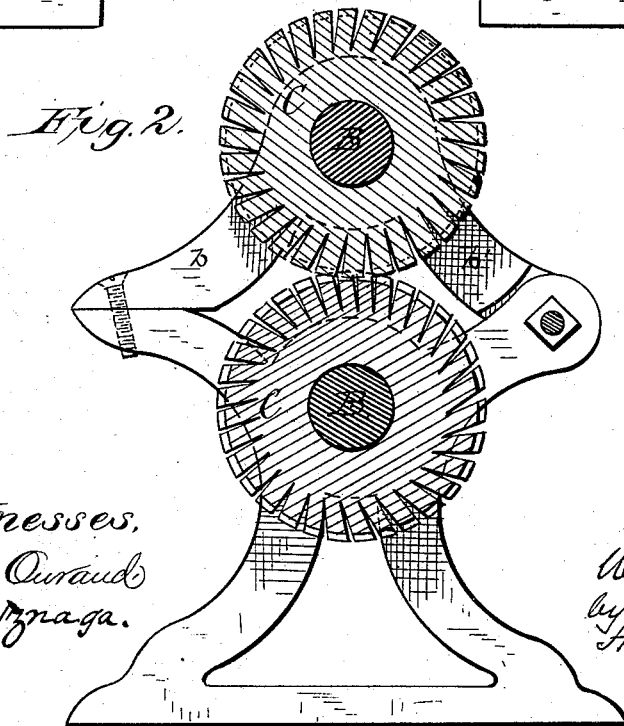
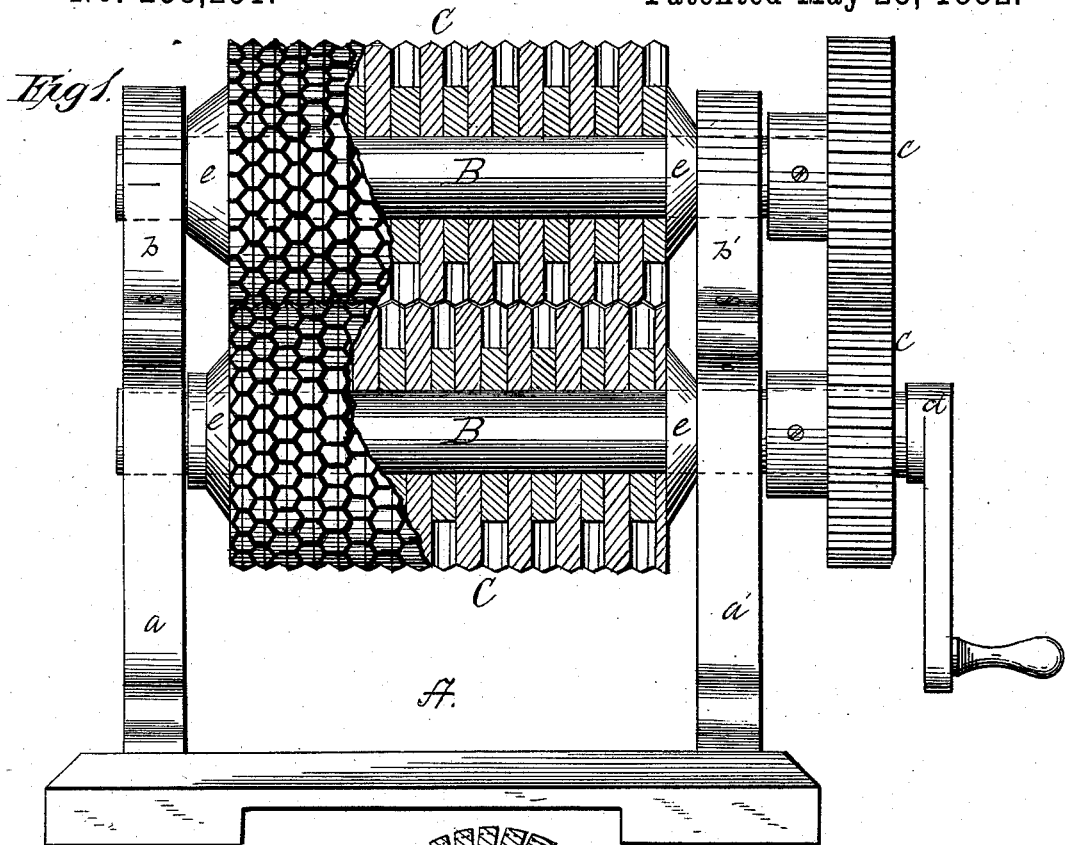


W. C. PELHAM.

MACHINE FOR MANUFACTURING HONEY COMB FOUNDATIONS.

No. 258,251.

Patented May 23, 1882.



*Witnesses,*  
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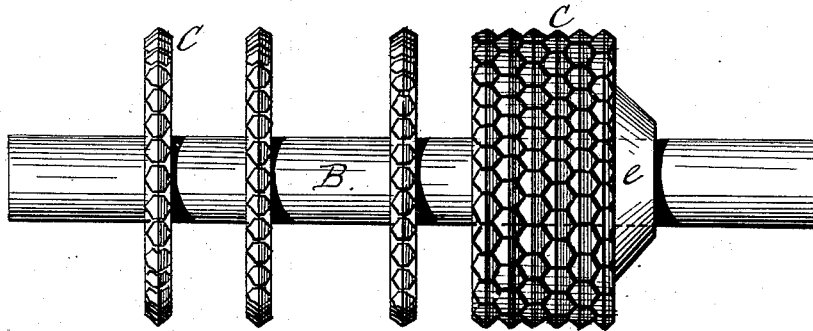
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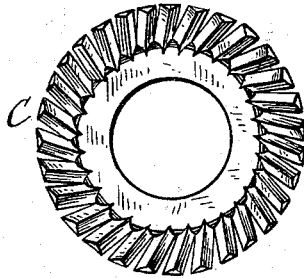
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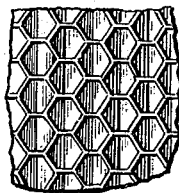
*Fig. 3.*



*Fig. 4.*



*Fig. 6.*



*Fig. 5.*

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# UNITED STATES PATENT OFFICE.

WILLIAM C. PELHAM, OF MAYSVILLE, ASSIGNOR TO V. C. PELHAM, OF  
MASON COUNTY, KENTUCKY.

## MACHINE FOR MANUFACTURING HONEY-COMB FOUNDATIONS.

SPECIFICATION forming part of Letters Patent No. 258,251, dated May 23, 1882.

Application filed January 21, 1882. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM C. PELHAM, a citizen of the United States of America, residing at Maysville, in the county of Mason and State of Kentucky, have invented certain new and useful Improvements in Machines for Manufacturing Honey-Comb Foundations; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention has relation to improvements in means for manufacturing artificial honey-comb foundations.

It is a known fact that in pressing wax foundations with "high" side walls on ordinary machines for manufacturing artificial honey-comb foundations the wax adheres to the rolls and remains on the roll until pulled off by hand, which often injures the shape of the cells, and also that comb-foundations with high side walls (one-tenth of an inch, or thereabout) are more valuable in the market than the shallow walls of one-twentieth of an inch. To obviate the former defect and accomplish the last result are among some of the objects of my improvements.

My invention consists in metallic rolls formed of sectional pieces and each section formed of a series of dies for forming the cell-foundation, and each die in its direction departing from the radius of the roll.

My invention further consists in metallic rolls formed of sectional pieces of a common periphery, and central hole to suit a common shaft, each section formed of a series of dies having their faces shaped in double inclines for the purpose of forming artificial honey-comb foundations.

My invention also consists in the novel construction and combination of parts, as will be hereinafter more fully set forth and specifically claimed.

In the accompanying drawings, Figure 1 is a front view of a machine showing my improvements, with a portion of the rolls in section.

Fig. 2 is a transverse sectional view, showing the bearings of the dies and the relative arrangement of the die-rollers. Fig. 3 is a front view of a series of dies, showing the method of fitting them on the shaft. Fig. 4 is a view of a single section of the dies, and Figs. 5 and 6 are views of the product of the improvements.

In the drawings, the letter A represents the frame of the machine, composed of a substantial base-plate, on which are secured the standards *a a'* to receive the journals of the shaft of the lower roll of dies. To the extensions of the standards *a a'*, above the journal-bearings of the lower dies, are hinged the frames *b b'*, forming the journal-bearings of the upper roll of dies, substantially as seen in Figs. 1 and 2 of the drawings.

The letter B represents the shafts on which are fitted the sections of dies, as hereinafter stated. These shafts or journals rest in the journal boxes or bearings of the frame, and on one end have secured the gear-wheels *c* and the crank *d*, as seen in Fig. 1 of the drawings.

The letters C represent the pair of die-rolls arranged in the same vertical plane, or nearly so, for formulating the honey-comb foundation. These die-rolls are composed of sections, each section being formed of a single cylindrical row of dies set or cast in an annular base, so that each die is inclined relatively to the radius of the roller—that is, they are not set with the line of diameter of the axes, but each leans forward and beyond that line, and the face of each die is formed by the means hereinafter stated, so that its impression in the wax may be that corresponding to the form of the natural foundation built by the bee, as near as the same can be finished in a lathe or other mechanical means. The central part of each section of dies is cut circular and exactly fits over the shaft on which it is to be set or run. The form and special structure of one of these sections of dies are shown in Fig. 4 of the drawings. A sufficient number of these sections to make a roll of the length desired are run on the central shaft or spindle, B, and then clamped together firmly by the collars *e*. The roll is then put in a lathe and the dies faced, by which operation the roll is also turned to a true circle. The rolls are now removed and

set in the frame, substantially as described, so that their surfaces run near together, the dies on the near contact leaning the same way, and they are ready for forming the wax foundations, which is accomplished by running the wax through the rolls.

I prefer to make my dies out of the type-metal, as that seems well adapted to the purpose; but any hard material that will retain its shape in use and be readily formed into the sections will answer the purpose. Neither do I desire to confine myself to circular sections, as it is obvious they may consist of a single row of dies running longitudinally and formed with a wedge-shaped back, and be clamped on a spindle by a collar at each end.

The object of leaning or inclining the dies from a perpendicular is that they may more readily draw out of the wax impressions and leave perfect high side walls of one-tenth ( $\frac{1}{10}$ ) of an inch or more.

Various modifications of the mode of fastening the sections to the spindle can be employed. They may be clamped around a rod, leaving an annular opening between the inner edge of the section and the central rod, which opening may be filled with metal melted and run in, or suitable cement used to bind the sections together and to the spindle.

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

1. A die-section for the manufacture of honey-comb foundations, consisting of a series of independent and separate dies, inclined relatively to the radius of the axis of the roller which carries said section, substantially as shown and described.

2. A die-roll for manufacturing honey-comb foundations, composed of a series of die-sections mounted on a spindle or shaft, the dies of these sections being independent and separate, and inclined relatively to the radius of the roller, substantially as shown and described.

3. In a machine for manufacturing artificial honey-comb foundations, the combination of a pair of matching die-rollers arranged in the same vertical plane, or nearly so, said die-rollers being formed of dies inclined relatively to the radius of the rollers, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM C. PELHAM.

Witnesses:

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POLK HICKS.