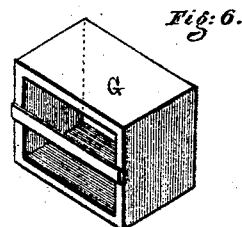
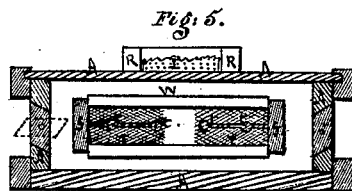
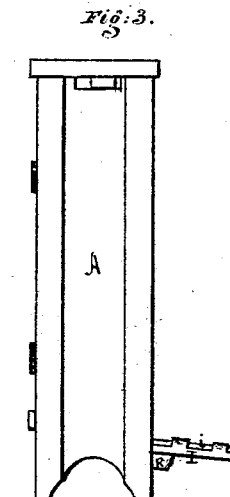
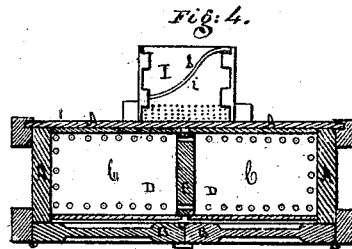
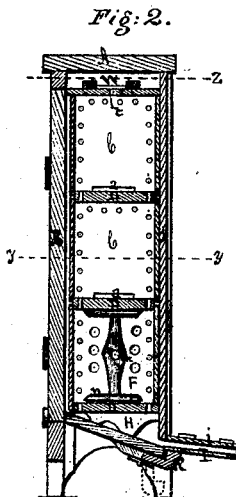
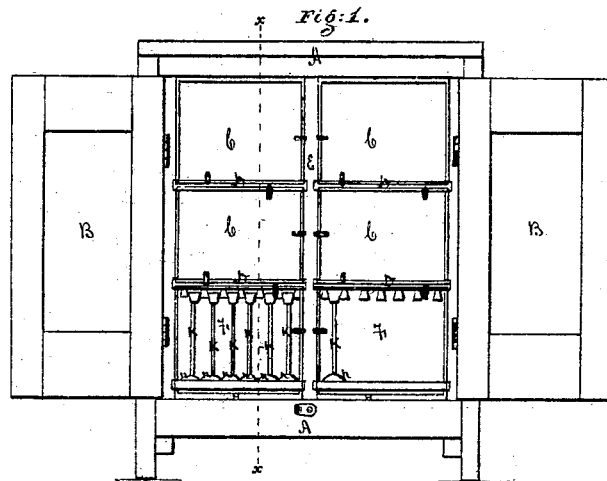


*L. L. Goodwin,*

*Bee Hive.*

*No. 109201.*

*Patented Nov. 15. 1870.*



Witnesses  
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# United States Patent Office.

LAWSON L. GOODWIN, OF TORONTO, INDIANA.

Letters Patent No. 109,201, dated November 15, 1870.

## IMPROVEMENT IN BEE-HIVES.

The Schedule referred to in these Letters Patent and making part of the same.

I, LAWSON L. GOODWIN, of Toronto, in the county of Vermillion and State of Indiana, have invented certain Improvements in the construction of Bee-Hives, of which the following is a specification.

My invention relates to a new and simple manner of constructing a moth-proof bee-hive, in which provision is made for such direct and complete ventilation as that the bees will never "lay out," such freedom of access to every part of the cells as that the bees will have full space for work without crowding each other, and such an arrangement of the brood-cells as that the clusters will not be separated in winter, the brood-combs be so supported as not to break or "slump," but admit of being readily removed singly without interfering with those which are left, and in which, because of its construction, the strength of the swarm will be better preserved and a larger yield of honey obtained than in ordinary hives.

It relates also, specially, in the first place, to the combination of a glass-covered conducting-board, with the entrance to a bee-hive and with a cool-air chamber in the bottom of the hive; the object of this part of my invention being to illuminate the cool-air chamber under the cells, so that the bees shall blow or fan themselves upon the sloping bottom of said chamber, instead of going out for the purpose, and thus assist in promoting a circulation of air through the hive; and this end is further facilitated by means of a series of perforations in the bottom of the conducting-board, near the entrance to the hive, which admits a free current of air into the hive.

In the second place, to the combination of upright, centrally-perforated slides with the brood-cells of the hives, these supporting slides being centrally perforated to allow the nurse-bees to pass through the brood-combs; the object of this part of my invention being to support the brood-combs upon a detachable support in such manner as that the keeper may remove any one of them at pleasure, while the comb shall at all times be perfectly firm and solid.

In the third place, to the use of a metallic case, open front and rear, and made to fit and slide closely within the honey-cells, for the purpose of removing the honey-combs therefrom without breaking them.

In the accompanying drawing—

Figure 1 is a front elevation of my improved "Palace Bee-hive," with its doors open.

Figure 2, a vertical transverse section, in the line *x x* of fig. 1.

Figure 3 is a side elevation thereof.

Figure 4, a horizontal section in line *y y* of fig. 1.

Figure 5, a horizontal section in line *z z* of fig. 1.

Figure 6, a perspective view of the comb-detacher. A is the outer casing of the hive.

B B, its doors.

C C, the honey-cells, separated by horizontal shelves D D and a vertical partition, E.

F F, the brood-cells, separated by a vertical partition.

H, the cool-air space or chamber under the brood-cells. (See fig. 2.)

I, the outer conducting-board, covered by a glass plate, *i*, through which the bees pass into the cool-air chamber and thence up into the hive.

My improved hive is so constructed as that the cells shall all be of an extended rectangular form, their length greatly exceeding their width, and so arranged as that the longest side may be opened for inspection and for the removal of the honey. In the accompanying drawing it is represented as divided into two tiers of cells by central vertical partitions.

The cells C C C C and F F are formed by means of longitudinal shelves D D sliding into grooves formed in the vertical partitions E and G, and secured by screws, and are made of a width equal to four-fifths of their height. They are lined at the back, and covered in front by plates of glass, the joints between the glass plates being covered by the edges of the shelves.

Both the shelves and partitions are pierced with a series of apertures along their front and rear edges and ends, (see figs. 2 and 4,) each large enough to permit the passage of the bees through them, while extended apertures *a a*, fig. 2, are also formed through the top and bottom of the partitions in the line of the shelves. Thus free, open passage-ways are provided for the bees up and down from the top to the bottom of the hive, both in the front and rear, as well as in the ends thereof, and also horizontally from cell to cell at the top, bottom, and sides of each, leaving the entire central space of each cell to be filled with the combs, accessible from every side. The oblong form of the cells will lead the bees to build the combs from front to rear, or *vice versa*.

The lower cells F F of the hive, which are first entered by the bees, become the brood-cells. These are fitted with a series of sliding supporting plates, K K K, fig. 2, consisting of strips of wood, say one-eighth of an inch thick, widened centrally, but averaging about two to three inches in width, with their edges reduced to an extreme thinness. These strips K K are pierced with an enlarged aperture, *m*, fig. 2, in their widest part, to admit of the passage of the nurse-bees centrally through the comb for the purpose of facilitating their labors in rearing the brood, and to prevent their separation into different clusters in the winter-season.

The supporting-strips are arranged vertically, their lower ends being secured centrally in foot-pieces *n n*, made wide enough so that when laid together side by

side proper intervals shall be left between the strips, and their upper ends in transverse pieces made to fit and slide into dovetail grooves formed in the top of the cells by means of cleats nailed therefo. (See fig. 1.) The bees will build around and upon these supporting-strips and upon their foot-pieces, covering the same entirely with the comb, leaving, however, as usual, the central transverse passage, and by means of the support thus obtained the loss often occasioned in ordinary hives in hot weather, and in the midst of the honey season, by the falling and crumbling of the heavy brood-combs, is prevented, while at the same time the brood-combs are all made movable, so that they may be readily removed to make artificial swarms or for other purposes. The partition between the brood-cells is wholly perforated with enlarged apertures, so that the bees may have free passage from cell to cell as well as from comb to comb in their winter clusters.

As the back of both the honey and brood-cells is lined with glass the combs will not adhere thereto.

The honey-combs are readily removed by means of a case, G, fig. 6, of tin or other metal, open at front and rear, made to fit and slide closely within the cell. A bar across the rear of the cutter thus formed furnishes a handle therefor. In using this "comb-extractor" the front glass of the cell is removed, and the extractor pushed in far enough to cover the front row of holes. The bees are then driven from the cell by a slight smoking, and then the case is forced into the cell from front to rear, detaching the comb from the sides, top, and bottom thereof as it advances, so that when it is withdrawn the comb is brought out with it whole and unbroken, at the same time as all the apertures are closed. Thereby the operator is protected from the bees.

A space or chamber, H, is formed under the brood-cells, having a bottom formed of three pieces sloping from the front and from each side to a central slit or elongated aperture on the rear side, constituting the entrance to the hive, and to the outside of which is secured a sloping board, or, by preference, a metallic plate, I, over which the bees pass to enter the hive. This conducting-board or plate is covered with a plate of glass, *i*, a passage-way being left between the glass cover and the board. Thus the board or plate is not only entirely exposed to the light, but the entrance to the hive, while perfectly protected by the glass, is also fully illuminated, the rays of light penetrating through the entrance-way into the cool-air chamber, expelling all darkness therefrom.

The sides of the conducting-board between the glass cover and the plate beneath are closed, and a metallic strip, *s*, fastened upon one side, or a centrally-pivoted wooden strip serves to close the opening to the board at pleasure.

For the purpose of increasing the summer ventilation of the hive the conducting-board or plate is pierced with a number of minute apertures near to the entrance of the hive, (see fig. 4,) through which a current of air is admitted directly into the entrance-way to pass into the cool-air chamber H and thence up through the hive. This upward ventilation is facilitated by the bees themselves, who, with this improved construction of hive, in which the cool-air chamber is illuminated, will "blow" or fan their wings therein, instead of passing out for the purpose. The sloping

bottom of the chamber facilitates the cleansing thereof, and enables the bees to thrust out readily any foreign body, and, by radiating from the entrance-way, leaves no dark corners which the rays of light therefrom will not reach.

In winter the ventilating apertures at the entrance to the hive are closed by means of a door or valve, R, (see fig. 2,) of leather or other suitable material, made to shut against and cover the same closely, as illustrated in fig. 2.

A narrow interval is left between the lower shelf of the hive and the bottom of the cool-air chamber in front, by means whereof it can be inspected from the front.

A ventilating space or "hot-air chamber," W, figs. 2 and 3, is also formed between the top of the upper cells and the roof of the hive.

The covers of the upper cells are provided with apertures *t t*, which are covered over with fine wire-gauze *r*, to prevent the bees from passing up through them, and which permits, nevertheless, a free passage for air-currents.

To prevent the bees from sealing or gluing up these air-passages in the top of the cells, the hot-air chamber above is darkened by means of transverse strips *f f* placed in front of the outer openings in the chamber. These outer openings for the escape of the foul and heated air are closed at pleasure by means of suitable valves or doors. This upper hot-air chamber not only greatly increases the free circulation of air up through the hive in summer, but is especially useful in the winter-season, when the lower ventilators are closed in carrying off the vapors from the swarms in the hive.

I claim as my invention—

1. My improved bee-hive, constructed, substantially as herein set forth, of the illuminated chamber H provided with a glass-covered conducting-board, I, the superimposed brood and honey-cells C and F having marginal perforations, as described, and the upper darkened ventilating chamber W, the whole being arranged and combined to afford perfect ventilation throughout and facility of access to every part, as specified.

2. The combination and arrangement of an upper glass cover with the sloping conducting-board I, extending from the entrance of the hive, and with the ventilating chamber H formed under its brood and honey-cells to decoy moths from the entrance, and at the same time illuminate the ventilating chamber, all substantially in the manner and for the purpose herein set forth.

3. Thin, centrally-perforated, detachable supports K K, constructed substantially as herein described, for the purpose of supporting the brood-combs, as herein set forth.

4. The within-described metallic comb-extractor G, made rectangular in form, to fit closely within the honey-cells, for the purpose of cutting out and removing the honey-comb therefrom, substantially as herein set forth.

Witness my hand to this specification.

LAWSON L. GOODWIN.

Witnesses:

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G. B. TILLOTSON.