

E. P. WORRALL.

BEE-HIVES.

No. 182,733.

Patented Sept. 26, 1876.

Fig. 1.

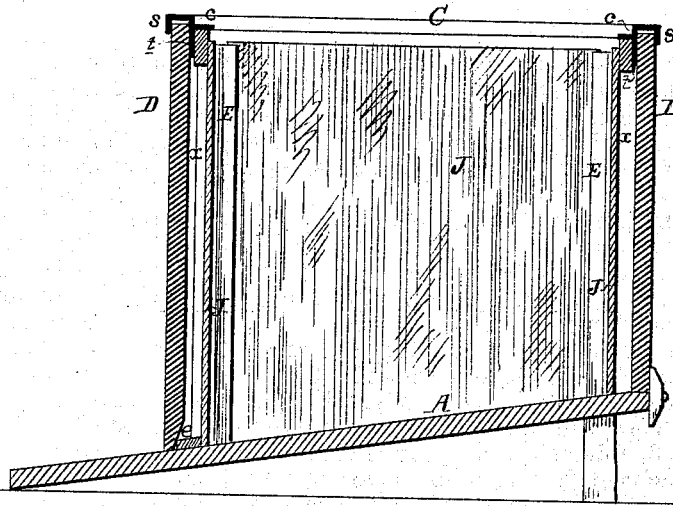


Fig. 3.

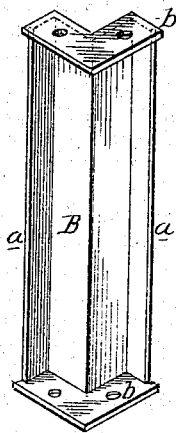
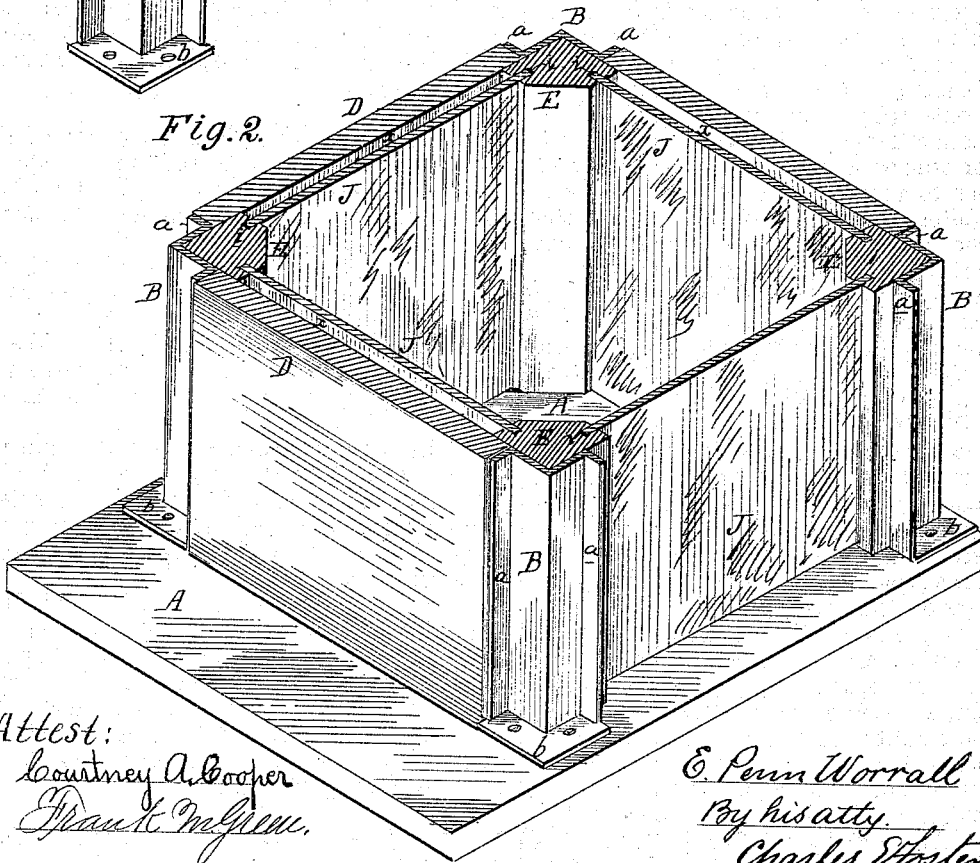


Fig. 2.



Attest:

Louise A. Cooper  
Frank M. Allen.

E. Penn Worrall  
By his atty.  
Charles Foster

# UNITED STATES PATENT OFFICE.

ELWOOD PENN WORRALL, OF WEST CHESTER, PENNSYLVANIA.

## IMPROVEMENT IN BEE-HIVES.

Specification forming part of Letters Patent No. **182,733**, dated September 26, 1876; application filed July 28, 1876.

### *To all whom it may concern:*

Be it known that I, ELWOOD PENN WORRALL, of West Chester, Chester county, Pennsylvania, have invented Improvements in Bee-Hives, of which the following is the specification:

The object of my invention is a bee-hive constructed, as fully described hereafter, to insure strength, durability, warmth in winter, prevent undue heating in summer, and facilitate thorough inspection at all times.

In the accompanying drawing, Figure 1 is a sectional elevation of sufficient of a hive to illustrate my improvements. Fig. 2 is a perspective view, showing a transverse section; and Fig. 3, a detached perspective view.

The inclined floor A of the hive supports four metallic standards, B B B B, which at their upper ends are connected to a rectangular metallic frame, C. Each standard is of the transverse form shown in section at Fig. 2, being L-shaped, with a flange, *a*, projecting outwardly from each edge, and at each end is a flange, *b*, the lower flange being bolted or otherwise secured to the floor, and the upper to the frame C. The frame C has at the outer edges flanges *s*, and below the top at the front and rear are lateral flanges *c* and vertical flanges *t*, and against the latter bear the upper edges of detachable side pieces D, which fit nicely between the flanges *a a* of the standards, the lower edges bearing against ribs *e* on the floor. In this position the flanges *s* prevent the side pieces from falling outward. Within the angle of each standard fits a wood upright, E, in which are grooves *i*, receiving the edges of plates J, of glass, which constitute the sides of the hive, and are supported parallel to the detachable outer side pieces, but at such a distance therefrom as to leave spaces or chambers *x*, for a purpose described hereafter.

The standards and the frame C may be made of either cast or malleable metal, and, owing to their peculiar construction, are light in weight, and of great strength, imparting strength, rigidity, and durability to the hive, which, as ordinarily made with plain wood uprights, is lacking in these qualities.

The metal frame also affords a steady support for the uprights or edge bearings E of the glass plates, which bearings, being free from all weights, cannot become strained and break the glass; and the flanges *c* of the

frame C serve to receive the cross-pieces of the usual detachable comb frames.

It will be noticed that the chambers *x*, between the plates J and side pieces D, are closed at all sides, thus retaining in summer a body of dead air, which I have found, by experiment, will effectually prevent the overheating of the hive. On the other hand, the chambers serve in winter as receptacles for felt, wool, or cotton pads, which keep the hive warm, permitting the latter to be retained on the summer stand during the winter in the coldest climates.

Under all circumstances the sides may be detached, the pads removed, and every part of the hive exposed, not only at the sides, but also at the interior, owing to the free passage of light through the hive, rendering the condition of the colony always apparent, which is very important, as their safety often depends on being able to ascertain the amount of their stock.

I claim—

1. The combination, in a bee-hive, of the floor A, metallic frame C, and metallic standards B connecting the two, and adapted to receive between them detachable side pieces D, substantially as set forth.
2. The hive provided with L-shaped standards B, having flanges *a* and *b*, as and for the purpose specified.
3. The combination of the standards B and uprights E, having grooves *i*, to receive the edges of glass plates J, substantially as set forth.
4. The metallic frame C, having flanges *c*, *s*, and *t*, as and for the purpose set forth.
5. A bee-hive the body of which consists of corner standards B B B B, supporting uprights E, and sides consisting of glass plates J, as set forth.
6. The combination of the standards B B B B, glass plates J, forming the body of the hive, and detachable side pieces D, supported by the standards parallel to, but free from contact with, the glass sides, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

E. PENN WORRALL.

Witnesses:

W. HIBBARD, Jr.,  
WM. P. MARSHALL.