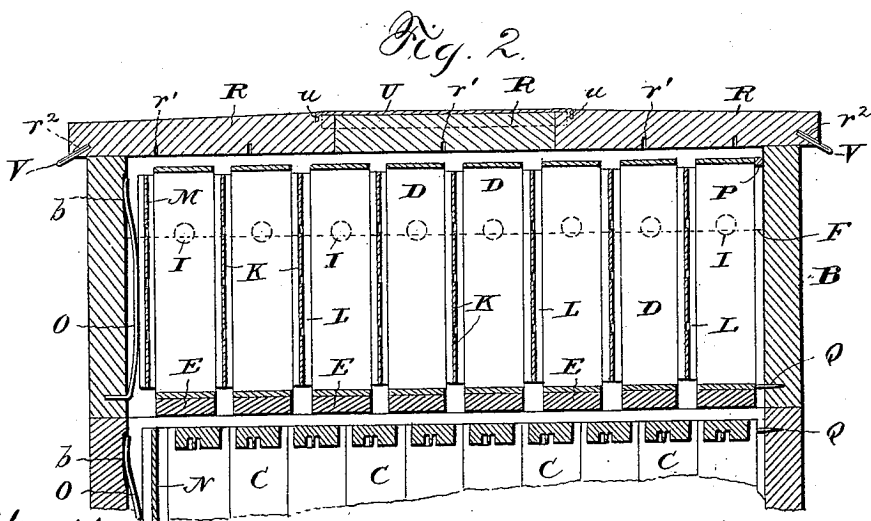
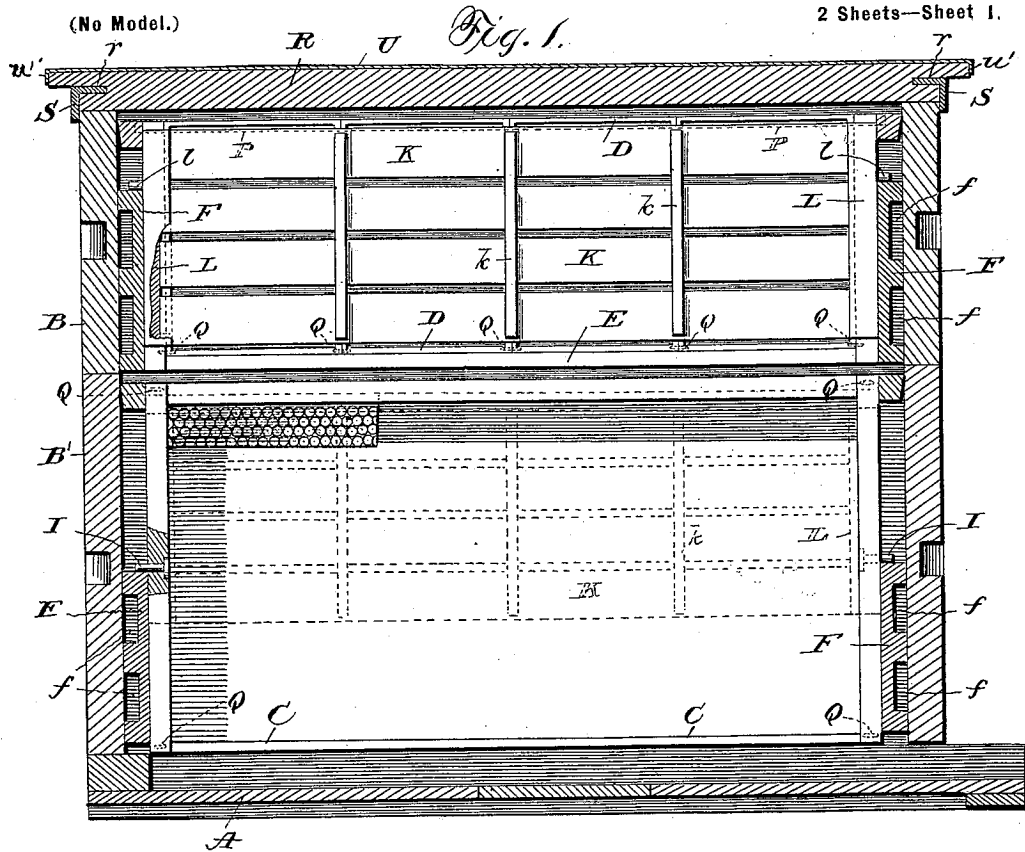


F. DANZENBAKER.

BEEHIVE.

(Application filed Jan. 21, 1898.)

2 Sheets—Sheet 1.



Witnesses
L. J. Williamson
S. A. Williamson

Inventor
Francis Danzenbaker

No. 640,636.

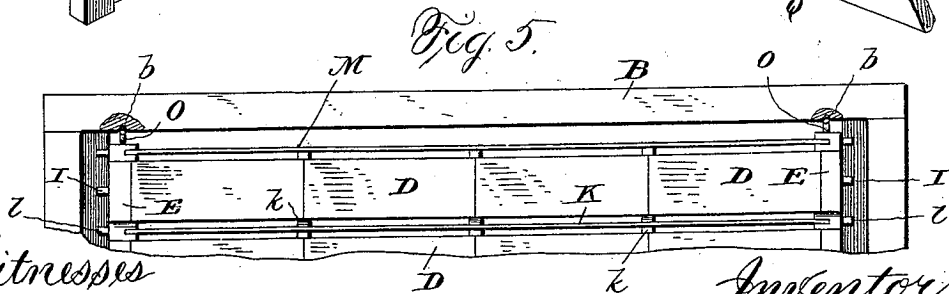
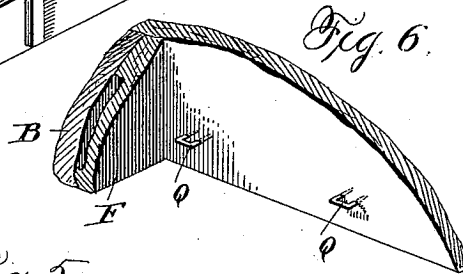
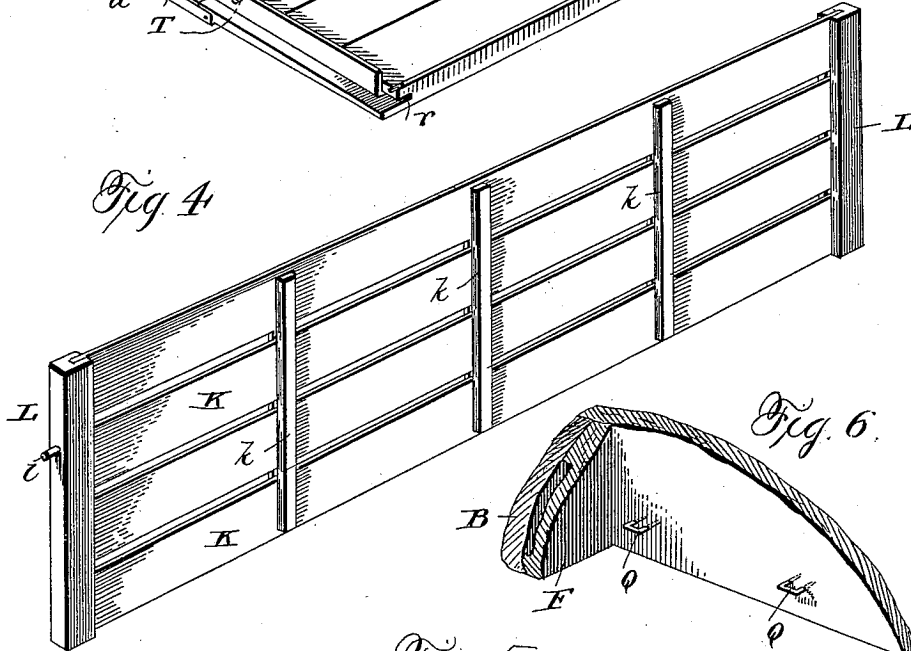
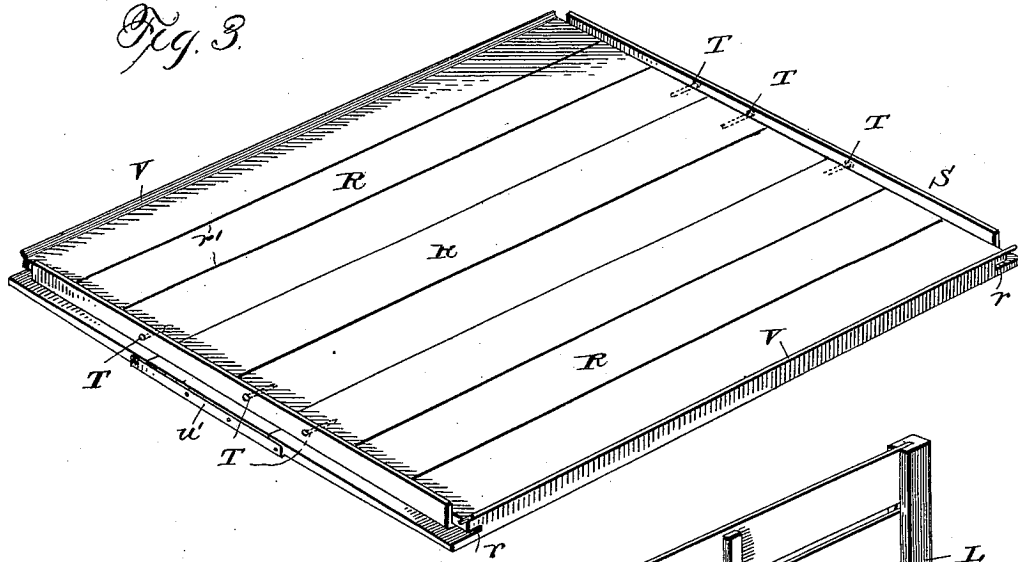
Patented Jan. 2, 1900.

F. DANZENBAKER.
BEEHIVE.

(Application filed Jan. 21, 1898.)

(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

FRANCIS DANZENBAKER, OF WASHINGTON, DISTRICT OF COLUMBIA.

BEEHIVE.

SPECIFICATION forming part of Letters Patent No. 640,636, dated January 2, 1900.

Application filed January 21, 1898. Serial No. 667,457. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS DANZENBAKER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Beehives; 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.

Figure 1 is a longitudinal vertical section from front to rear of my hive. Fig. 2 is a cross-section through the top and super and the upper part of the brood-chamber; Fig. 3, a perspective view of the top cover inverted; Fig. 4, a perspective view of a separator; Fig. 5, a top plan view of a portion of the super; Fig. 6, a detail perspective view of a portion of the lower part of the super.

The design of my invention is to improve the construction of beehives in respect to the separators, the means employed for supporting the brood and honey-section frames, the means for securing said frames and sections in the hives, and the hive top cover; and with these objects in view my invention consists in the construction and combination of parts, substantially as and for the purpose hereinafter specified and claimed.

In the carrying of my invention into practice any approved form of hive may be employed; but I prefer and illustrate one of similar construction to that shown in my Patent No. 547,164, issued October 1, 1895, which comprises a bottom A, two rectangular cases B and B', superimposed one upon the other, and a top cover whose construction will be fully described hereinafter. The two cases B and B' are of like dimensions horizontally; but the lower case or brood-chamber B', which contains the brood-frames C, of usual construction, is preferably deeper than the upper case or super, which contains the honey-sections D, placed in frames E.

On the inside of the front and rear of each case B and B', in the lower part thereof, I fasten, by nails or otherwise, a bar or cleat F, which extends horizontally from side to side of the case, as in the patent before referred to. For the sake of lightness and to provide dead-air spaces each of said cleats on its

side next the case side is provided with channels or cavities *f* and *f*.

Projecting from the outer side of the end pieces of the brood and honey-section frames are lugs or pins I, one for each end piece, that rest upon the upper edges of the bars F and F'. The pins I are preferably round, with flat heads driven through the vertical bars of the frames from the inside, with their heads countersunk. Said pins are thus firmly attached to the frames and constitute strong and reliable supports.

The pins I of the brood-frames are located at the vertical center thereof to enable the frames to be inverted without disturbing the bee-space above them, when for insuring the fastening of the comb all around the frame inversion may be found necessary, and also to diminish the effect on the bee-space of the natural shrinkage of the wood. Where the point of support of the frames is at the extreme top or bottom, it is obvious that the bee-space must be affected by an amount equal to the entire shrinkage; but where the point of support is central the amount of change of the bee-space is just one-half the entire shrinkage, since the shrinkage affecting the bee-space is only that on the side of the support between the support and the bee-space.

The pins I are round, as heretofore described, because of the slight surface contact such form has on the supporting-bar, thus obviating any trouble from the presence of dirt and as well the possible destruction of bees by catching or pinching, which might occur with an extended bearing-surface.

As it is not necessary in the case of the section-frames to have the pins I at the vertical center thereof, I preferably locate them the same distance from the bottom of the frames that the pins I of the brood-frames are from the tops of the latter for convenience in boring the holes for the reception of the said pins, the same adjustment of the boring-machine thus being made to answer for both brood and section frames. This, however, brings said pins I well below the tops of the section-frames.

The honey-sections D and D, as shown, have no projections or offsets on either side to form bee-spaces, and I therefore use sepa-

rators having cleats or bars on both sides to abut against the edges of the vertical sides of the honey-sections to provide the required bee-spaces. Said separators consist each of several thin parallel horizontal strips or slats K and K, fastened at each end to vertical bars L and L, that are grooved in one side for the reception of the ends of said strips and so as to project the required distance on each side thereof, and vertical bars *k* and *k* on both sides of the strips at points to abut against the honey-sections. Preferably the bars and strips are fastened together by gluing. Projecting from each end bar L is a lug in the form of a round pin *l*, which pins are adapted to rest on the bars F and F, and thereby support the separators. The separators, by reason of the location given their pins and the location of the pins of the brood-frames and honey-section frames, are also adapted to be placed between the brood-frames when it is desired to prevent the bees from bulging the comb or filling across from the upper part of one frame to the other and to compel them to build straight combs. To thus use the separators, it is required that their position be reversed from that when used with the honey-sections, so as to cover the upper part of the brood-frames, as is clearly shown by the dotted lines in Fig. 2.

I use a follower M in the super that is precisely like the separators, excepting that there are no bars *k* and *k* on the side next to the super side. The follower N of the brood-chamber differs from the follower M in lacking the intermediate bars *k* and having no openings, such as are formed by the separation of the strips or slats K and K.

The means heretofore commonly used to cooperate with the followers to tighten the frames and associated parts in super and brood chambers have been wooden wedges. These are objectionable because they are loose separate pieces requiring care to prevent loss and handling to apply them. They are also objectionable, especially in changeable climates, because they cannot adapt themselves to changes produced by expansion and shrinkage of the wood of the hives. I have therefore discarded them and have obviated the objectionable features of the wedge by employing two springs O and O for each follower that preferably have the form shown, consisting of a piece of round wire that is attached at one end to the hive-case by being forced into the side thereof and is bent or bowed in a simple curve from end to end, engaging the end bar of the follower by its convex portion and having its upper end unattached to the hive-case, but seated in a slight cavity *b* therein to confine it from lateral motion. The round form of the spring in cross-section has but little surface contact with the follower, which is an important consideration, as it obviates propolizing by the bees.

To prevent contact of the honey-section

frame farthest from the follower and the honey-sections on said frame with the adjacent side of the super, so as to obviate propolizing, I attach to the side of the super a horizontal bar P at a point where it will be engaged by the edges of the top with the sections and at a point where the edges of the bottoms of the sections will abut against them a series of small projections. The latter, as shown, are in the form of small staples Q, driven partially into the super side, and are located so that one will engage each end bar of the frame and the adjacent honey-section side and one will engage the edges of the sections where they touch each other. (See Fig. 1.) Instead of the staples pins or other devices can be used. I prefer the staples or pins, however, as they do not interfere with the free passage of the bees and diminish the surfaces in contact. I also use staples Q in the brood-chamber to engage the end frame at top and bottom for the same purpose.

My improved top cover is made of three pieces of wood R, R, and R, placed side by side, as clearly shown in Fig. 2, to which is secured at each end an iron angle-bar S, the fastening means being a nail T, driven through an opening in the bar into each piece of wood, the nails being at the central part of the bar. The end edges of the pieces of wood are provided with a groove *r*, into which one member of the angle-bar projects horizontally, and the other vertical member projects down a little below the top of the super and fixes the cover in position on the hive. The angle-bars obviously add great stiffness to the top cover and prevent it from warping out of shape, yet by reason of the position of the nails and as the bars are at right angles to the grain of the wood the two outer pieces of wood are free to expand and contract. To counteract warping, longitudinal cuts or kerfs *r* and *r* are made in the under side of each piece of wood. Completely covering the middle piece of wood and extending over the joint between it and the side pieces is a piece of sheet metal U, preferably galvanized iron, its side edges *u* and *u* being bent downward and seated, respectively, in slits cut in the top sides of the two side pieces. The two ends *u'* and *u'* of said piece U are bent over and fastened, respectively, to the ends of the cover, as clearly shown in Figs. 1 and 3. By thus covering the joints between the pieces of wood I render the top cover waterproof, and yet but a portion of the surface thereof is metal. The bending down of the sides at *u* and *u* and seating them into the slits avoids the presence of any edges that might catch into objects, stiffens the piece U, and avoids the necessity for fastening-nails except at the ends *u'* and *u'*. The ends of the top cover project sufficiently beyond the angle-bars to prevent water either dripping onto them or the rain beating in on them.

From the sides of the sheet-metal piece U the top surfaces of the cover incline downward

to the sides, and in the lower corner of each of said sides there is cut an upwardly and inwardly extending slit r^2 , in which is placed a portion of a strip of sheet metal V, that is folded or doubled on itself and has its two free edges within the slit. The strip V thus inclines downward and outward and projects from the side of the top cover, and thus effectually carries off water running over the side of the top cover and prevents it from passing inward along the under side thereof. Owing to the inclination of the slit r^2 water will not seep or work up therein. It will be noted that the strips V and V project below the top of the super, and thus serve to confine the top cover in position on the super, as they will engage the respective sides of the super if said top cover be moved laterally.

What I claim is—

1. In a beehive, the combination of the hive-case, a supporting-bar on each side of the case, and frames supported by said bars each of which has at each end a lug resting on the upper side of the adjacent supporting-bar, that consists each of a headed pin inserted through the end bar of the frame the head of the pin being embedded in the inner side of the bar and the body of the pin being extended beyond the outer side of the end bar and being the part in contact with the upper side of the supporting-bar.

2. In a beehive the combination of the hive-case, a supporting-bar on each side of the case, frames having at each end lugs resting on the supporting-bars, and separators or the like, composed of end bars having pins resting on said supporting-bars and a slat or slats between said end bars whose ends are secured in slots in such end bars.

3. In a beehive the combination of the super, honey-section-supporting frames therein, side by side in a row, a bar on the side of the super that engages the sections at the top, and a series of projections on the super side that engage the sections on the bottom, said sections thus engaged being the ones in the end frame of the row, a space being thus provided between said sections and the hive-case side.

4. A top cover for beehives comprising several pieces of wood of substantially equal length and placed side by side and a covering-piece which lies over the joints formed by the abutting sides of said pieces and has on each edge a downwardly-projecting flange that enters a recess in one of said pieces.

5. A top cover for beehives comprising two sides and a central piece of substantially equal length placed side by side and a covering-piece reaching to each side of the central piece, over the joints between it and the two side pieces, and having a downwardly-projecting flange that enters a recess in each side piece.

6. A top cover for beehives formed of several pieces of wood of substantially like length, with opposite ends grooved and undercut, and a cross-bar at each end in the undercut and having a member in the groove of such end.

7. A top cover for beehives having at each side a metal strip a portion of which is placed in an upwardly-inclined slit in the top cover and the remainder projects therefrom.

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

FRANCIS DANZENBAKER.

Witnesses:

C. J. WILLIAMSON,
S. A. WILLIAMSON.