No. 736,226. PATENTED AUG. 11, 1903.

F. DANZENBAKER.

BEEHIVE.

APPLICATION FILED NOV. 26, 1902.

NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

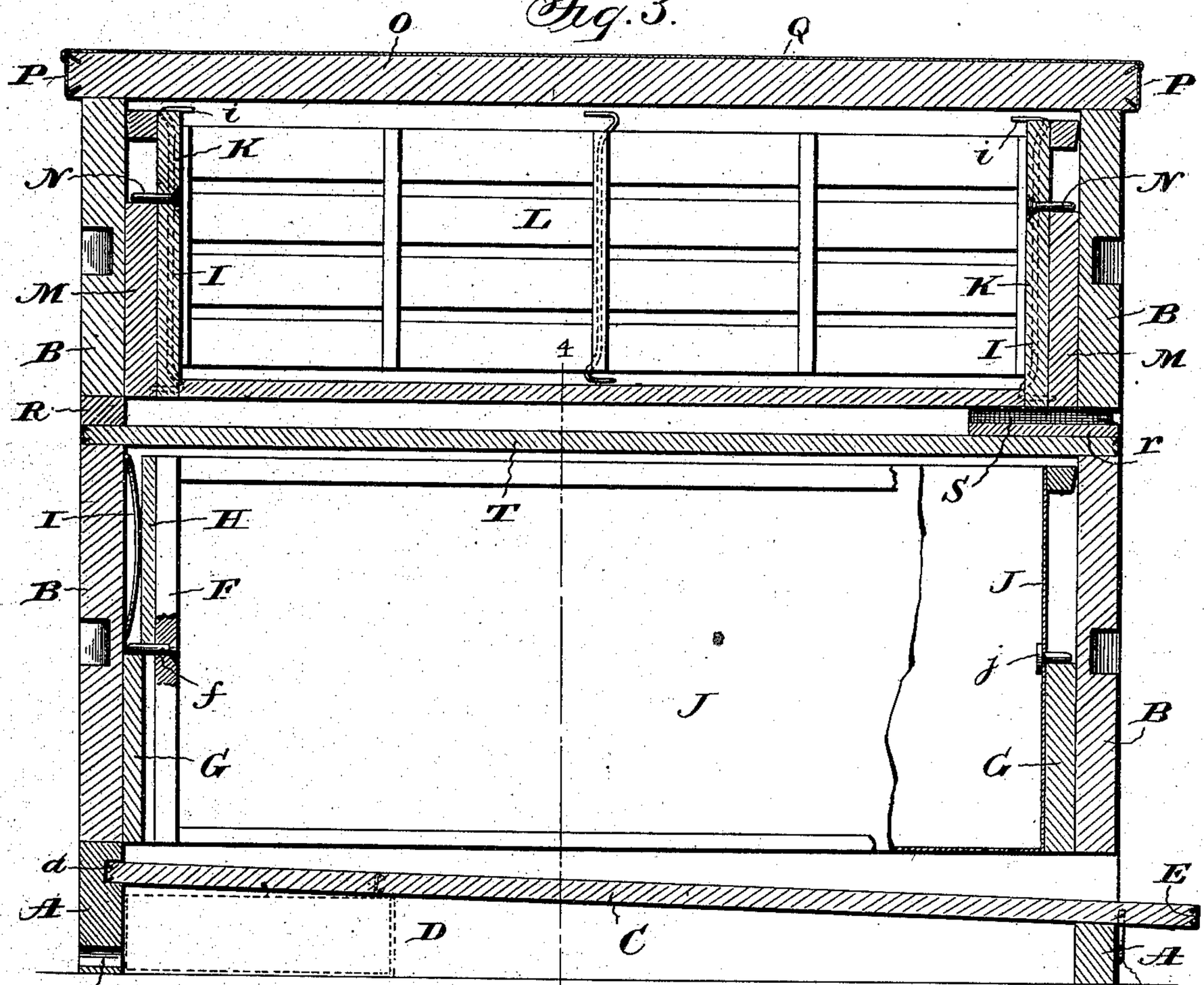
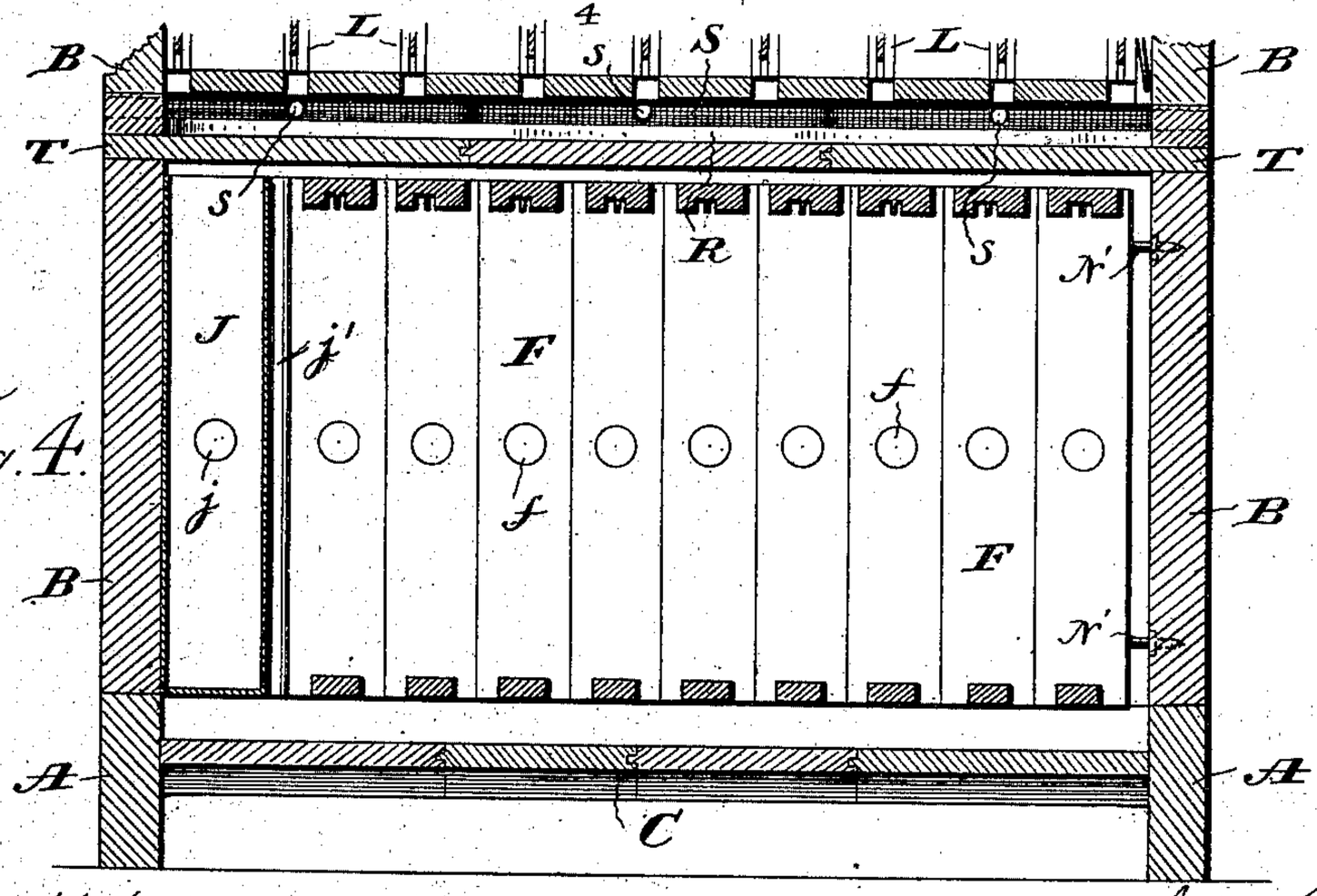


Fig. 4.



Witnesses:
Jas. E. Hutchinson,
Mrs. B. Prindle

Inventor.
Francis Danzenbaker,
by Edwin J. Prindle, his atty.

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NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

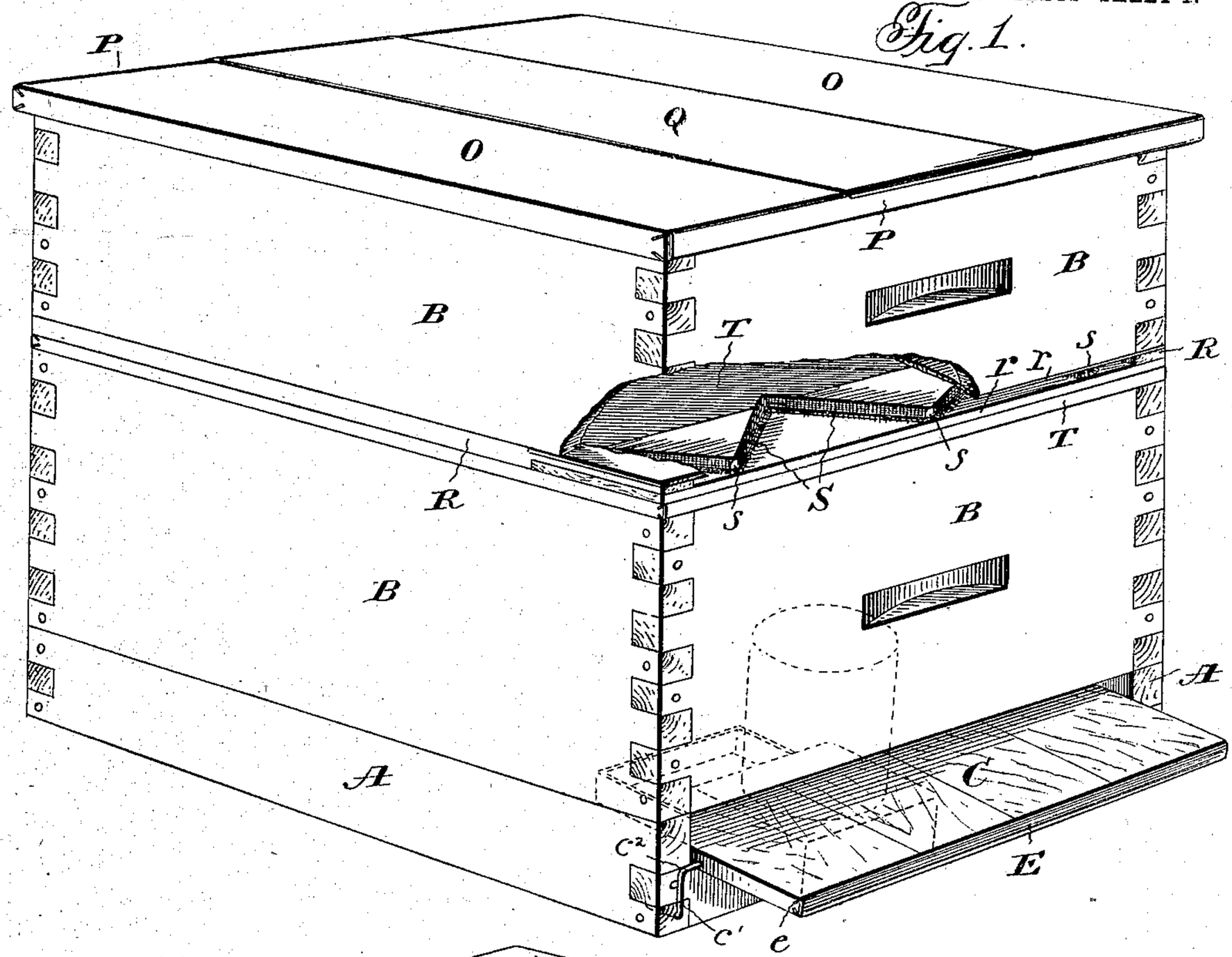
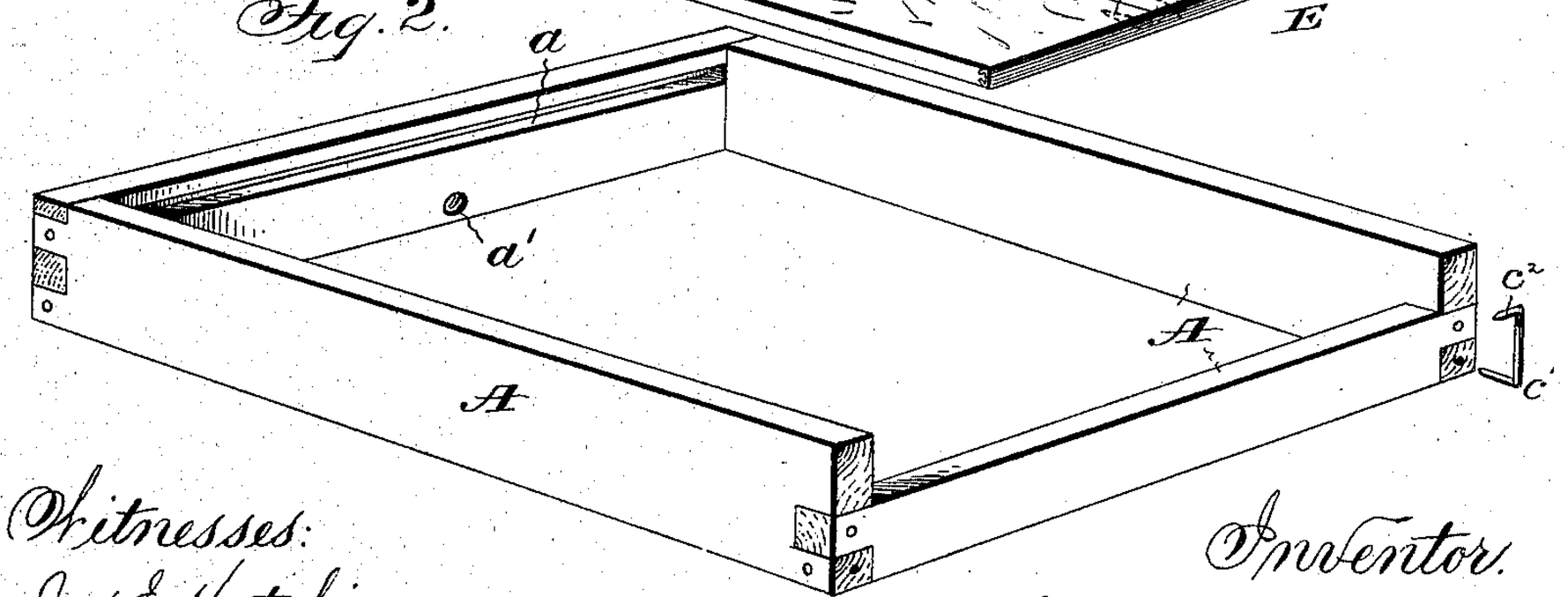


Fig. 2.



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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

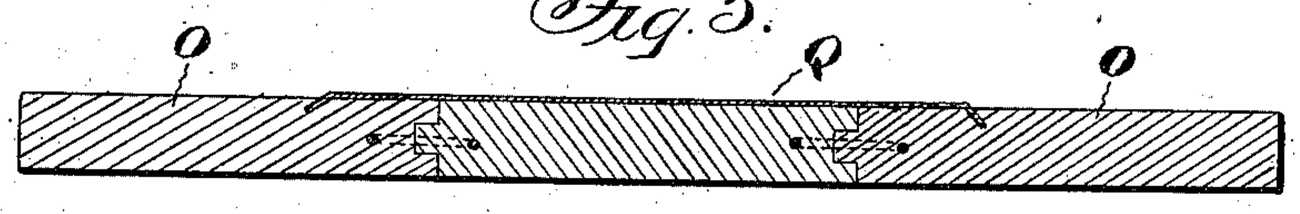

Fig. 6.

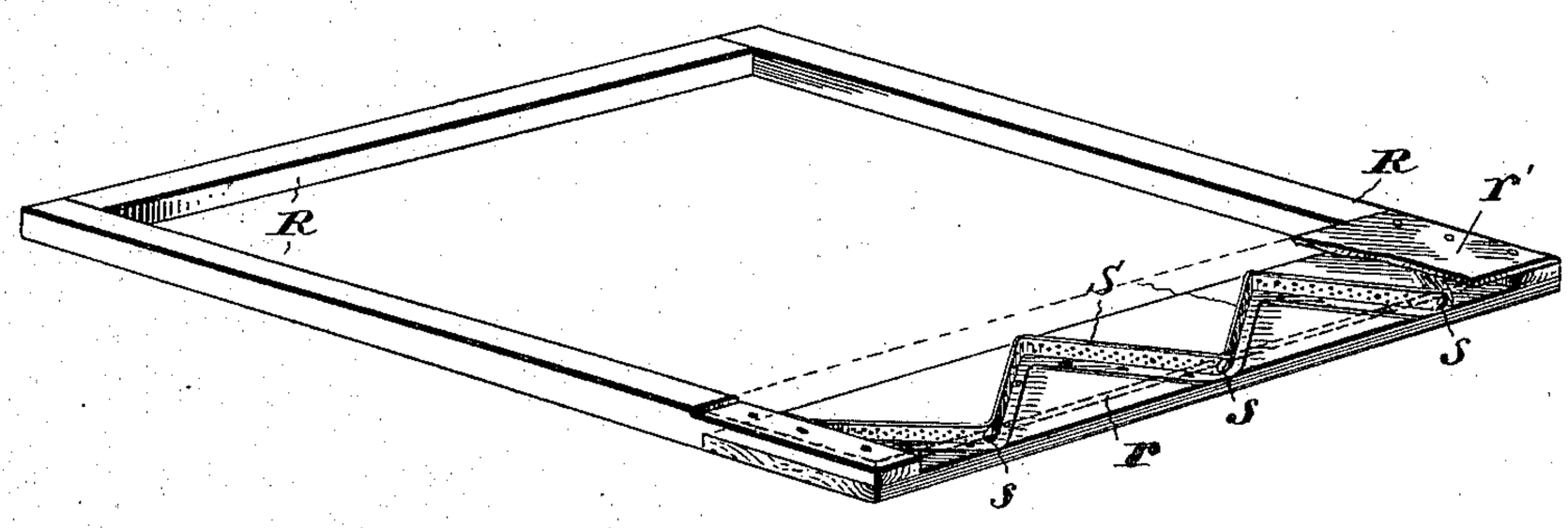

Fig. 7.

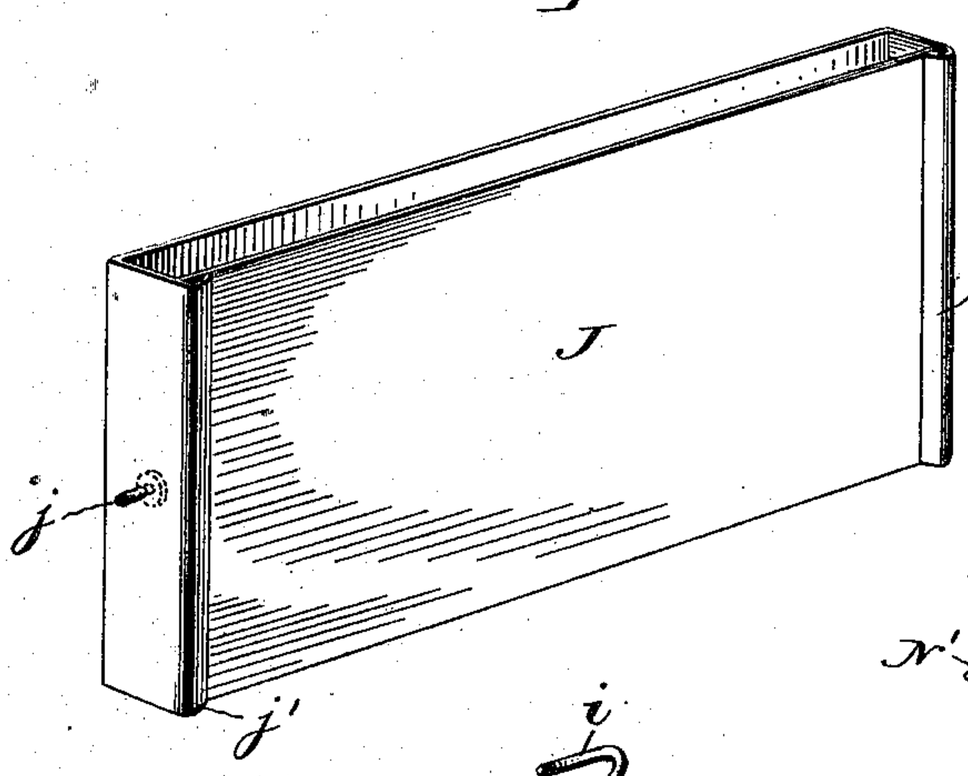

Fig. 8.

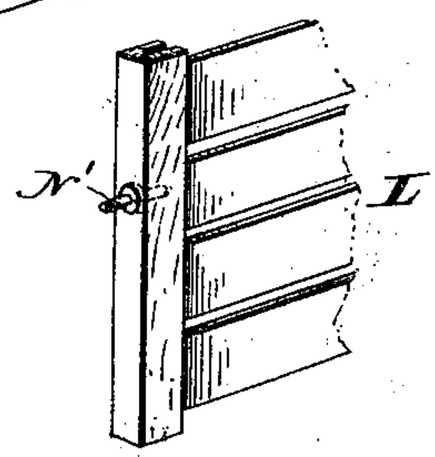

Fig. 9.

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Inventor.
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No. 736,226. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

FRANCIS DANZENBAKER, OF WASHINGTON, DISTRICT OF COLUMBIA.

BEEHIVE.

SPECIFICATION forming part of Letters Patent No. 736,226, dated August 11, 1903.

Application filed November 26, 1902. Serial No. 132,879. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS DANZENBAKER, of Washington, District of Columbia, have invented a certain new and useful Improvement in Beehives; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a beehive embodying my invention, a portion of the super being broken away to show the bee-escape. Fig. 2 is a perspective view of the floor and frame which constitute the bottom separated from each other. Fig. 3 is a vertical longitudinal section of the hive. Fig. 4 is a cross-section on the line 4 4 of Fig. 3. Fig. 5 is a cross-section of the top cover. Fig. 6 is a perspective view of the bee-escape. Fig. 7 is a perspective view of the feeder that I use in the brood-chamber. Fig. 8 is a like view of a portion of one of the fence-form separators, and Fig. 9 is a view in perspective of one of the springs.

The object of my invention is to improve beehives, whereby they may be rendered simpler in construction, more convenient for handling or manipulation, and of greater efficiency and increased usefulness; and to these ends my invention consists in the hive having the features of construction substantially as hereinafter specified.

My hive, as illustrated in the drawings, comprises a bottom, two cases of like length and width, and a top cover, being in these general particulars like the hive of my Patent No. 640,636, dated January 2, 1900. The bottom consists of a rectangular frame A, preferably of the same dimensions as to length and width as the two cases B and B, and a loose floor C. Three sides of the frame A are of uniform height; but the fourth side, which in the ordinary use of the hive is at the front, is not so deep, and the floor C has such length that it extends from the rear bar of the frame, which has a shallow groove *a* to receive and support the rear edge of the floor, over and beyond the front bar thereof, being supported thereby and projecting sufficiently beyond the same to form a good lighting-board. Instead of the groove *a* in the rear bar of the frame a cleat on said bar can be used or cleats upon the side bars can be used for supporting the floor C. I prefer the groove, however, because it engages the floor on both upper and lower sides and thereby restrains it from warping and because it involves no projections within the frame, the absence of projections therein being desirable in packing the parts of the hive for shipment, certain parts for this purpose being placed within the frame, which cannot be done so advantageously if there are any projections on its inner sides. The floor inclines from rear to front, and to hold it from sliding out of place any preferred device may be employed. The holder I use consists of a cranked wire c^2 at each side of the frame, with one end driven into the bottom and the other end c^3, which is pointed, impinging against the side of the floor. By rocking the wire it can be moved into or out of engagement with the floor. These can be easily removed when necessary.

My construction of bottom presents the following advantages: The floor, being a loose unattached piece, can be removed and the hive used for the transportation or shipment of the bees. When this is to be done, one of the frames A, covered on the bottom and front with stout wire cloth or netting, is substituted for the frame in use with the hive and reversed in position, so that the rear bar of the frame, which has a small bee-opening a', is placed at the front of the hive for the ingress of bees. After the cover bottom has been put in place the hive is cleated ready for shipment, and when the bees are all within the hive the small hole a' is closed by a cork or plug or otherwise. For shipping hives the crating is nailed to the bottoms of the frames A, and two of the latter are placed, respectively, at the top and bottom of the package, and such crating is connected by corner-cleats that are nailed to the cases. The nailing of crating to the hive is thus avoided. The crating nailed to the frames A is left there when the hives are put into use and serves as a solid bottom for the frame when in use. The floor C, being free to be rocked on its rear edge in the groove *a* or other support, can be raised either to partially or wholly close the entrance to the hive when for any reason, such as for protection from robbing or from mice, this may be desired. The holders c' can be shifted to suit the position of the floor.

Should it be desired to employ an outside feeder, such as is illustrated in dotted lines in Fig. 1, a support for it can be provided simply by drawing the floor out from the hive as far as may be required for the purpose, the inner end of the floor within the hive being suitably supported. When desirable, as shown in dotted lines in Fig. 3, a suitable pan D can be placed at the back end of the frame A and the floor C drawn forward to rest at its rear end upon the pan for feeding below the frames. The frame A with the floor removed affords abundant space beneath the brood-frames for the bees to cluster during shipment and also in cellar-wintering for any dead bees that fall, so that they can be easily removed.

The floor C as preferably made consists of several (three or four) pieces of wood, with the grain running lengthwise of the hive, tongued and grooved together and at their ends joined by staples *c*, driven into them on opposite sides of the tongue-and-grooved joints. Each end of the floor has a covering or binding that consists of a metallic rail or strip E, which extends from side to side thereof and has on its upper and lower edges, respectively, two converging flanges *e*, that engage converging slits in the floor that extend from the corner inward and downward. Said rail or strip strengthens or stiffens the wooden floor, and at the same time completely protects the ends thereof from cracking or splitting. By my mode of attaching the strips to the floor the strips are most securely held in place, and the flanges and surrounding portions of the wood mutually support each other. The flanges are wholly embedded in the floor, and the surface of the latter is therefore free from such projections as would exist were the flanges on the outside thereof. The rails or strips are slid endwise into place, and as a precaution their flanges are slightly bent at the ends last to enter the slits to bind or jam therein.

The lower case B contains the brood-frames F, which are supported therein by round pins *f* in their ends that rest upon shoulders on the inside of the front and rear walls of the case formed by hanger-cleats G, that are fastened to such walls, the construction being similar to that shown in my hereinbefore-mentioned patent. Should room be desired for a bee-space for free manipulation of the frames, one of the cleats G can be thinner by the width of a bee-space than the space between the wall and the ends of the brood-frames, and in such case in the space above the cleat a strip H, similar to the thin cleat below, is used that closes the space between said cleat and the frames at the top thereof and is pressed against the ends of the frames by springs I, placed between the case-wall and said strip. The springs I are each in the form of a simple piece of wire, which at each end is bent obliquely and then at right angles, so as to place the end portion *i*, that is at a right angle, substantially equally on both sides of the main portion to give a balanced bearing. The main portion of the wire is bowed to give the required elasticity. The springs are so simple in form that they can be most cheaply made by automatic machinery, and they can be most easily applied to and removed from position for use. The hook form of their ends facilitates their removal, for a spring not in use can be inserted into engagement by its hooked end with the hooked end of the one in use and the latter readily withdrawn.

In the brood-chamber I place a feeder J, consisting of a tank of either sheet metal or wood, having sides, ends, and bottom, but no top, which is supported by pins *j* at its ends resting on the cleats G, just as are the brood-frames. To provide a bee-space between the feeder and the next brood-frame, the ends of the feeder on the side next the brood-frame have vertical projections or flanges *j'*, that abut against the ends of the next frame. The feeder J takes up the space occupied by a brood-frame, the brood-frame follower, and springs precisely like the springs I, hereinbefore described, and when it is removed it is replaced by these parts. The springs that are employed, being removable, permit the use of the feeder as described. By reason of the open top of the feeder the sides thereof are extended clear to the top, so that it has great holding capacity and the interior can be readily inspected. Access of bees to the feeder being from the top of the case, it is at the farthest possible point from outside bees, and it is thus free from any possibility of robbing, it being impossible for robber bees to make their way through the hive to the feeder.

The upper case B contains the section-holders K and fence-form separators L, which have the construction shown in my patent heretofore referred to and which are supported on shoulders on the front and rear walls of the case formed by cleats M, fastened to such walls, the holders and separators having pins N at their ends that rest upon said shoulders.

The top cover O is constructed in a similar manner to the floor, it being made up of several pieces or strips that are tongued and grooved, but with the joints leaded, however, to make them water-tight, staples that connect such pieces, and metal rails or strips P at the ends of the pieces, which have each converging flanges that enter converging slits in the pieces. In addition, however, the top cover has on its upper side and extending from end to end at its central portion a metal sheet Q, that is soldered to the two rails P and has at its two side edges downwardly-turned lips or flanges that enter slits in the upper side of the top cover. The width of the sheet Q is sufficient for it to cover the central piece and to overlap the joints between it and the other

pieces. The manner of making the top cover is such that without the metal sheet Q it is practically water-tight, but when the sheet is used it is absolutely waterproof and is prevented from warping. It is to be observed that in neither the cover nor the floor C are nails used, and yet each of these parts is strongly and durably put together.

The pins for supporting the brood-frames, section-holders, fences, &c., may be simply headed ones driven through the parts, with the heads embedded therein, or, like the pins N′, (shown in Figs. 4 and 8,) they may have heads intermediate their ends, the portion on one side of the head being driven into the part and the head embedded therein and the other portion projecting free. The heads intermediate their ends fix the extent to which the pins are driven and absolutely insure that all of the pins shall project equally.

For a bee-escape I employ a light open shallow frame R, that in length and width conforms to the like dimensions of the cases B, between which it is placed, the front side *r* of which frame is thinner and wider than the other three, and to the upper side of it is attached a reticulated or open-work strip S, which may be wire-cloth or, preferably and as shown in Fig. 6, of perforated metal, which is carried back and forth in zigzag fashion from one side bar of the frame to the other, forming a series of V shapes. In the apex of each of the V's, on the outer edge of the front side *r*, is a hole *s* large enough to permit the passage of a bee, but there are no holes elsewhere in the strip large enough for a bee to pass through. Bees within the hive, attracted by the light and air from the outside, will readily make their exit through the holes *s*; but bees from without, finding the wide spaces of the V's, whose inner ends have no bee-passage, will enter such V's, overlooking or missing the holes *s*.

In using the bee-escape communication between the super and the brood-chamber is cut off by means of a honey-board T, or the top cover of the hive can be used, the latter being feasible by reason of the employment on the super of the customary mats. If the strip S is carried so far back as to come beneath the spaces between the section-holder slots, a thin cover *r′* is placed over it to prevent bees passing into the super, or the super can be slid back far enough to cover the inner portions of the strip and then a loose piece laid upon the portions projecting in front of the super.

My bee-escape is extremely simple in construction and is most efficient in emptying the hive and preventing the entrance of bees.

As the dimensions of the cases and bottom as to length and width are identical, these parts pack solidly without the waste of any room, such as would be caused if the bottom were longer than the cases and projected beyond the same, and the top-cover floor and honey-board being perfectly flat they can be compactly packed and placed on end within the cases and the bottom frames. By my construction of cover and bottom floor with the metal binding strips or rails these parts can be made up ready for use and packed for shipping, occupying no more space than in the flat or not put up, so that the user is saved the labor of making up.

Having thus described my invention, what I claim is—

1. A beehive-bottom composed of an open rectangular frame separate from the hive-case and a removable floor within and supported by said frame.

2. A beehive-bottom composed of an open rectangular frame separate from the hive-case and reversible with relation to the latter, and a removable floor within and supported by said frame.

3. A beehive-bottom composed of a frame having a space in one side that forms a bee-passage, and a floor supported by the frame and extending into said space and vertically movable in said space, whereby the bee-passage formed thereby may be varied in size and closed.

4. A beehive-bottom composed of a frame having a space in one of its sides that forms a bee-passage, and a floor within the frame and extending into said space, supported at one end by the same, so that it may be moved vertically, whereby its part within such space may vary the size thereof and close it.

5. A beehive-bottom composed of a frame having a wall with a groove in it, and an opposite wall above which is a space for the passage of bees, and a floor within the frame having an edge that enters the groove and extends through said space, said floor being vertically movable, whereby the size of said space may be varied and closed.

6. A beehive-bottom composed of a frame having a grooved rear wall and a front wall lower than the grooved wall, and a floor having an edge that enters the groove, and rests on the front wall.

7. A beehive-bottom, composed of a frame separate from the hive-case and reversible with relation thereto, and having bee-passages of different size for alternate use, the frame being reversible to place one passage or another in position for use, and a removable floor.

8. A beehive-bottom composed of a frame having its front wall lower than the others to provide a bee-passage, and having a bee-passage in its rear wall, and a removable floor.

9. In a beehive, the combination of a case and a bottom comprising a frame and a flat removable floor, whose length is greater than that of the frame, whereby it projects therefrom at the bee-entrance, the frame and case being of the same length and width.

10. A floor, top cover, or other part for a beehive, composed of a plurality of pieces of wood, means joining adjacent pieces of wood, and metal rails or strips at the ends of the

pieces having converging flanges that enter slits therein.

11. A floor, top cover, or other part for a beehive composed of a plurality of pieces of wood tongued and grooved together, staples joining said pieces, and metal rails or strips at the ends of the pieces having converging flanges that enter slits therein.

12. A top cover for a beehive composed of a plurality of pieces of wood, metal rails or strips at opposite ends thereof, and a metal sheet on the cover, lying over the joints between the pieces of wood, and united to the rails or strips at the ends.

13. A top cover for a beehive composed of a plurality of pieces of wood with leaded joints, metal rails or strips at opposite ends thereof having converging flanges embedded in slits in the wood, and a metal sheet on the cover, lying over the joints between the pieces of wood and having flanges that project into the same, and united to the rails or strips at the ends.

14. A bee-escape, consisting of a horizontal frame having the horizontal dimensions of the hive-case and whose sides are formed of bars, one of which is thinner than the others, and a barrier on the thinner bar composed of converging walls of perforated material having a bee-passage.

15. A feeder for beehives consisting of a tank having a closed bottom, sides and ends and an open top, and having supports at its ends and projections on its sides to form a bee-space.

16. In a beehive, the combination of a case, removable parts therein, and a spring to hold the latter in position consisting of a piece of bowed wire with transversely-extending bearing ends that lie parallel with, but do not enter, the surfaces against which they bear.

17. In a beehive, the combination of a case, removable parts therein, and a spring to hold the latter in position, consisting of a piece of bowed wire with transversely-extending bearing ends that are connected with the body of the spring by oblique portions.

In testimony that I claim the foregoing I have hereunto set my hand.

FRANCIS DANZENBAKER.

Witnesses:
W. E. WRIGHT,
CHAS. J. WILLIAMSON.