(No Model.) 2 Sheets—Sheet 1.

F. DANZENBAKER.

BEEHIVE.

No. 521,876. Patented June 26, 1894.

Fig. 1.

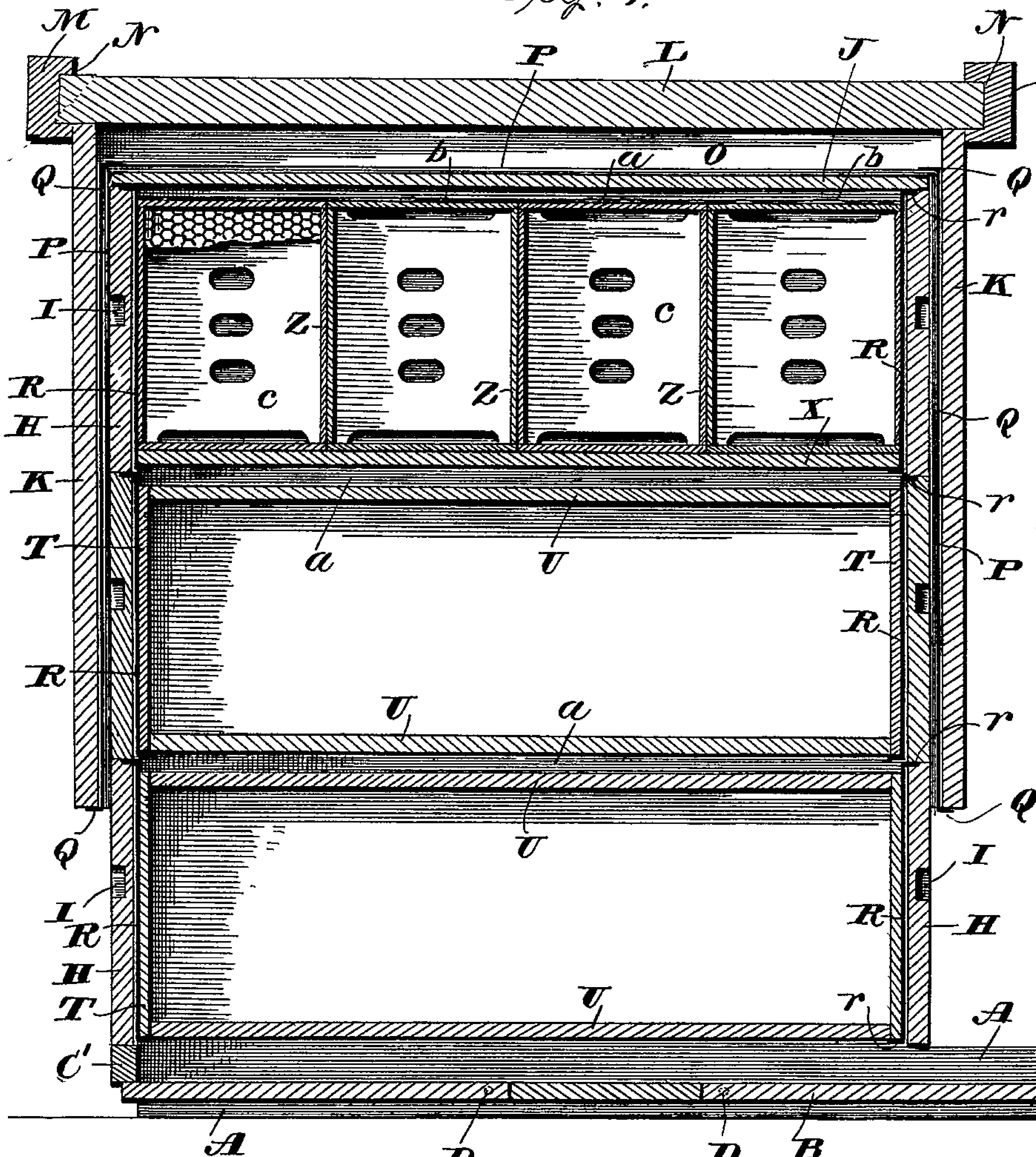


Fig. 2ª

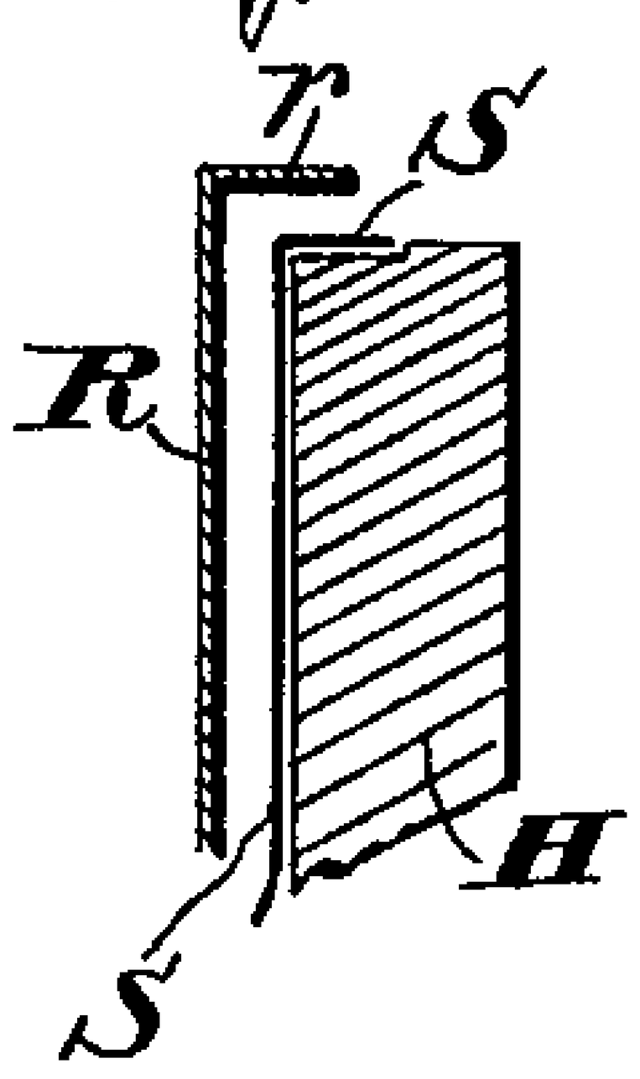
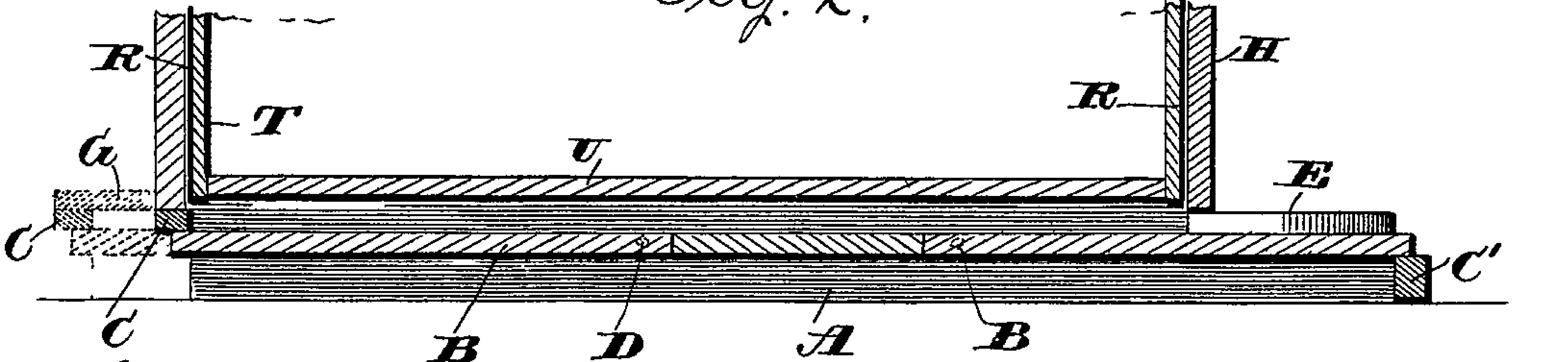


Fig. 2.



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(No Model.)

2 Sheets—Sheet 2.

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BEEHIVE.

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Fig. 3.

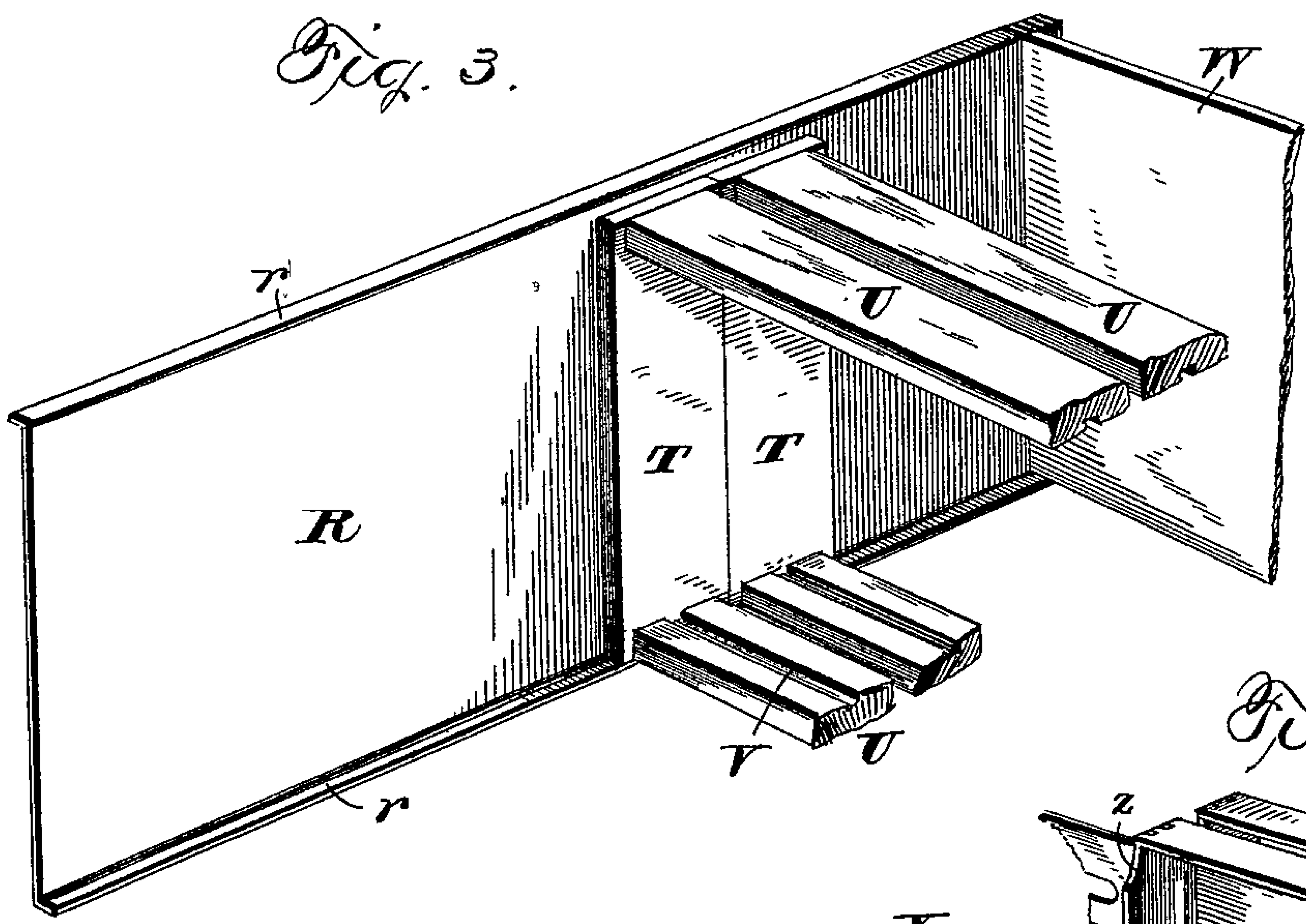


Fig. 5.

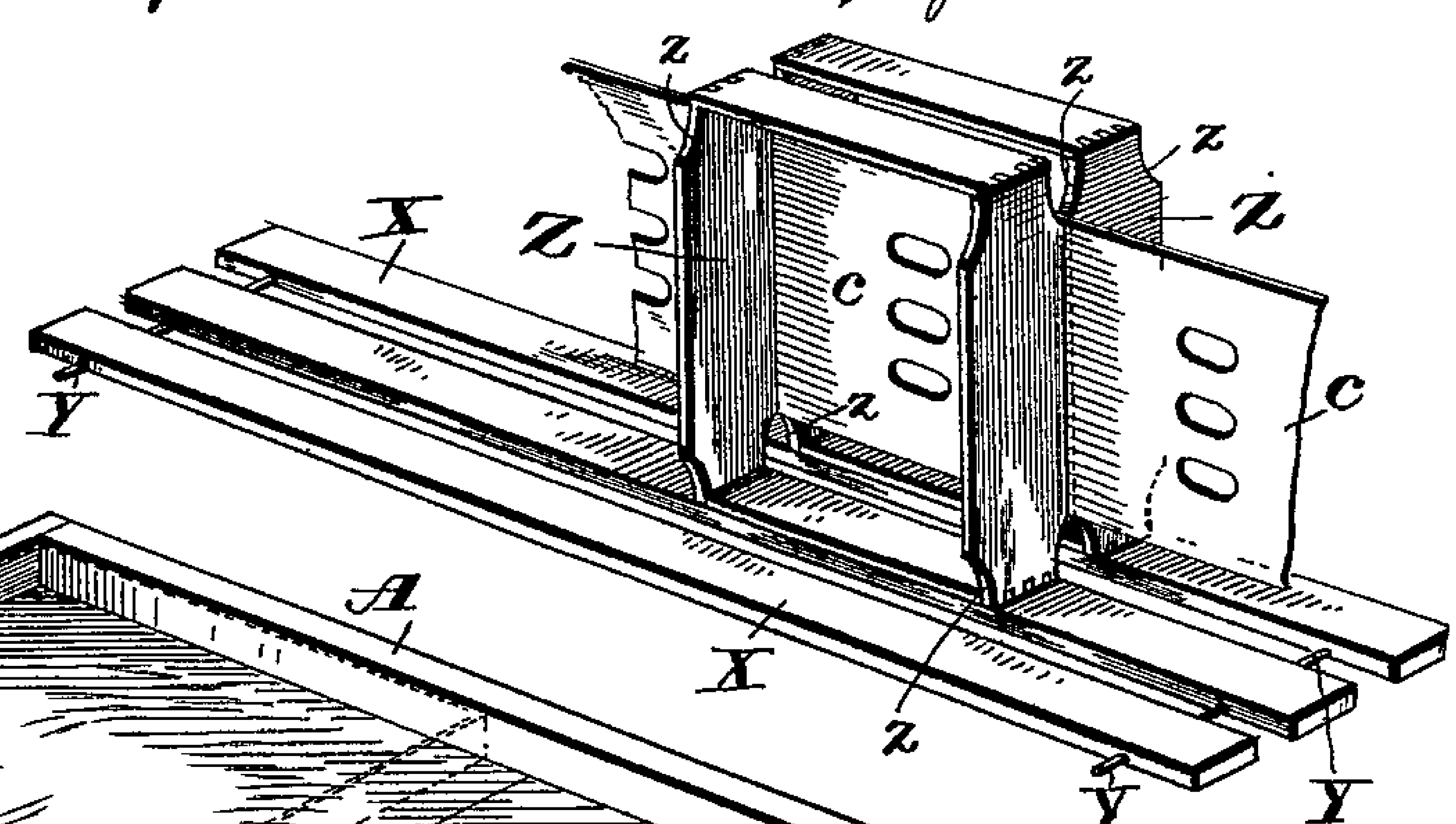
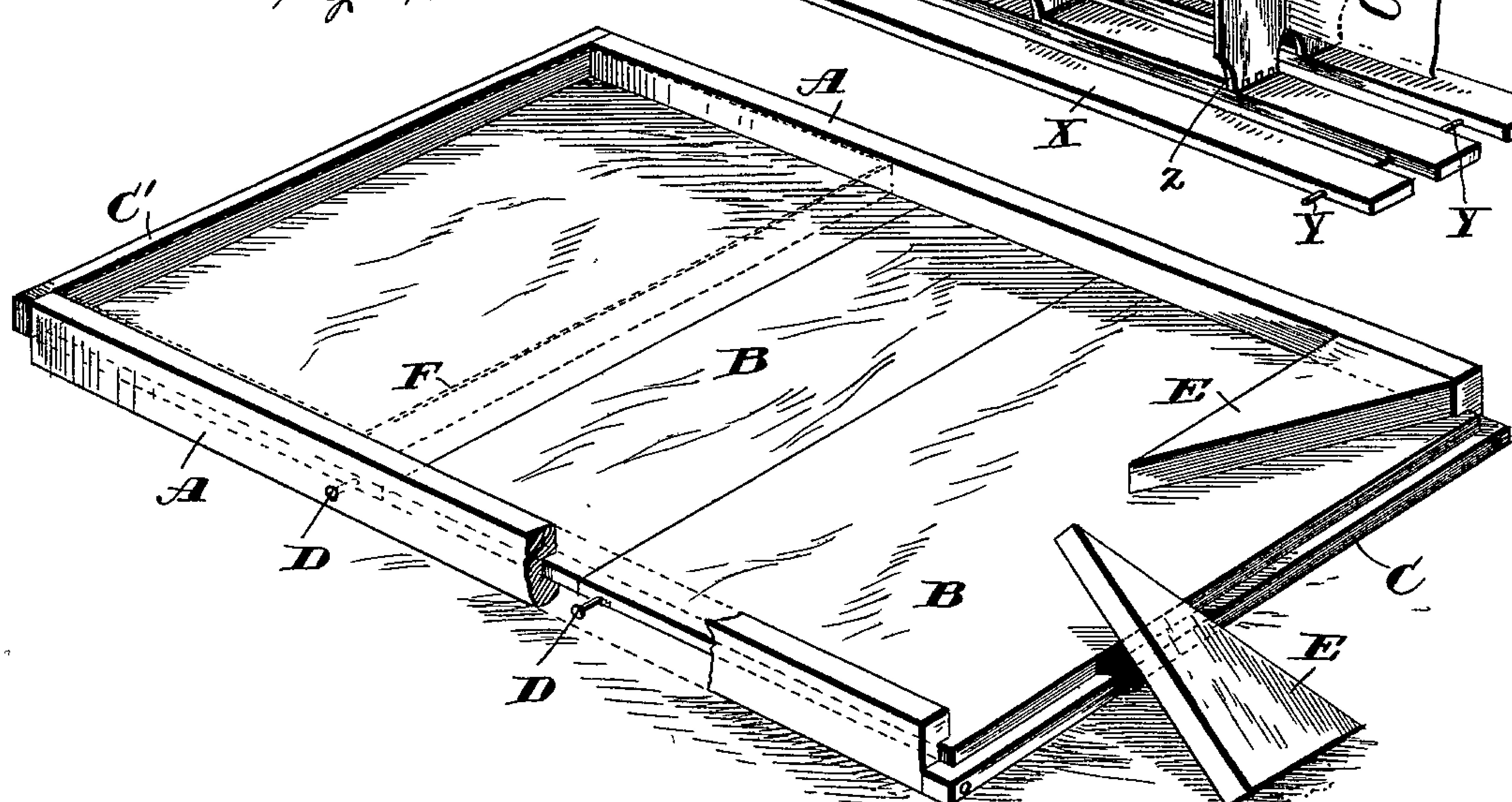


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANCIS DANZENBAKER, OF WASHINGTON, DISTRICT OF COLUMBIA.

BEEHIVE.

SPECIFICATION forming part of Letters Patent No. 521,876, dated June 26, 1894.

Application filed February 24, 1894. Serial No 501,446. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS DANZENBAKER, a citizen of the United States, and a resident of the city of Washington, District of Columbia, have invented certain new and useful Improvements in Beehives, of which the following is a clear and concise description, which will enable others skilled in the art to which it belongs to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a longitudinal, vertical, sectional view of my improved bee-hive. Fig. 2 is a longitudinal, sectional view of my improved hive bottom, reversed, shallow side up. Fig. 2ª is a sectional detail of the hive-case, and sheet metal support. Fig. 3 is a perspective view of one of the removable sheet metal supporters, for the brood frames and sections. Fig. 4 is a perspective view of the reversible rectangular framed hive-bottom, corresponding to the outside dimensions of the hive. Fig. 5 is a perspective view showing my improved section with separator, and adjustable spacing section bars.

The design of my invention is to render more easy and convenient than heretofore the manipulation of bee hives, and to avoid the gumming or daubing of the same with propolis, thus saving the waste of bee energy in collecting it and increasing their capacity for producing honey, and to these ends, my invention consists in the construction of the parts of a bee hive, substantially as and for the purpose hereinafter specified and claimed.

The same letters refer to like parts in all the figures.

In the drawings hereto annexed A designates the thick grooved side-bars of the hive bottom, having grooves so arranged as to form a deep or shallow bee-entrance, and space under the brood frames by reversal of the framed hive-bottom, as occasion may require. The thin boards, B, of the hive-bottom are preferably made of three pieces; the center one three to four inches wide, and the others of sufficient width to lap onto the cleats C, which support their edges, and hold the side-bars, A, together. The central narrow piece, B is held in place by pressing the wider ones against it, and securing them by nails, D, through the side-bars in their inner edges, leaving them to expand or contract freely in the grooves, that the bottom may not bulge or check in using. This bottom is longer than the hive cases resting upon it, to provide space for the bees alighting at the front. By shifting the hive slightly forward when using the deeper side up, it being provided with a shallow pan or partition strip, F, at the rear end, it forms a secure and safe feeder convenient for filling, and protected from robbers by removable strip G, and entrance blocks E.

The cases, H, consist of plain, uniform, rectangular frames of suitable dimensions, having straight, square edges fitting tightly together for storifying—either end about or either side up, which is the important feature of the alternating functions of the hive. These cases may be of any depth to suit the style of brood frame used; preferably less than six inches for reasons to be stated in connection with brood-frames. Each case is adapted by use of wedging boards, W, to form a complete double walled hive within itself at trifling cost.

J is the thin inside cover (honey board) fitting alike all the cases. It is protected with folded metal cleats on the ends, secured at the center to prevent warping. The outer case, K is a plain open frame alike on both edges, of proper dimensions to telescope over the supers and brood cases for maintaining uniformity of temperature in the same, and its chief function is to provide a double wall with air spaces sufficient for inclosing the brood cases wrapped smoothly with several thicknesses of paper for retaining the warmth of the bees in outdoor wintering.

The outside top cover of the hive and cases consists of a flat board provided with cleats, M, having grooves, N, to clamp over its ends, securely fastened with nails near the center of the board, leaving its edges free to avoid checking by shrinkage—while preventing its warping. These cleats serve to keep the cover in place on the hive, and afford support for rough shade-boards, having an air circulating space between them.

O is the space under the cover for ventilation or extra packing materials, as may be required.

P shows position of paper packing folded

smoothly around and over the supers and cases in the air-space between them and the outer case.

Q indicates the sheet metal support having an upper and a lower flange that project in opposite directions with the lower edge of the outer case resting upon the lower flange, while its upper end hangs upon the thin cover, J of the super case holding it firmly in position.

In Fig. 3, R represents one of my removable sheet metal brood-frame supports provided with turned edges or flanges *r* on alternate sides to hang upon the top edges of the cases with ends T, of brood-frames or section-bars X, resting upon its lower edge,—having such bee-space that will not be contracted by shrinkage above brood frames and sections as may be determined by the width of the sheet metal, and the depth of the case. These supports are adapted to other styles of hives, using deep or shallow, close-fitting end-barred brood-frames, thus dispensing with the use of the vexatious extension top bars of hanging brood-frames. This arrangement gives increased capacity and facility of manipulation, as these removable supports cannot be glued fast to the hive by the bees; and are easily removed with the brood frames or sections by reversing the case, with wedges removed when the case may be lifted off: or they can be passed down over a follower without reversing, leaving sections and frames free for inspection or removal.

In Fig 2ª, S shows paper placed on the case, forming a cushion back of the supports R, if desirable to afford flexibility in filling, and facility of removal. Tarred builders' paper may be used to repel ants where they are inclined to intrude.

The brood frames consist of end pieces T, with top and bottom bars U, forming frames that neatly fit in the cases, resting upon the lower flange *r*, of the removable sheet metal supports R. They lack a bee-space, *a* of reaching the top of the supports and case, permitting the bees to pass freely over the bars of frames between the stories or under the cover without sealing them fast. The bars have saw-cuts V, for securely placing foundation, being of proper width and thickness to form the spaces, *a*, that restrict the building of brace combs. The end pieces, T, are thinner than the bars, and of sufficient width to clamp tight together by a plain wedging board W, forming a close smooth surface on the inside; preventing their being glued together, or to the metal support by the bees.

The removable section slats X, for super bottoms, rest upon the flanges *r*, of the metal supports, provided with adjustable spacing brads Y to suit varying thickness of separators or width of sections. They correspond in width with the sections used to prevent them being soiled by the bees.

For securing surplus honey the oblong one-pound sections, shown in Figs. 1 and 5 are preferable; as such proportion conveys the correct impression of full weight, and twenty per cent. more of them than with what is known as the standard section can be placed on a given hive surface. Having space for a deeper cluster, the bees enter them more readily, and filling them out better at the sides they are more attractive in appearance, safer for transportation, and such honey sells from five to ten per cent. more in market, than honey made in other styles of sections. The top and bottom pieces of these sections correspond for bee-space with the bars X. Their capacity is determined by the width of their sides, Z, which are scored out at the corners *z*, providing lateral openings for free circulation of air and passage of bees between the rows of sections. When these open-cornered sections are made of one or two pieces, the scores for bee-spaces at the top and bottom are lengthened sufficiently past the V cuts of the folded corners to form the said openings *z*. While this style of section secures better ventilation with shorter cuts for the bees between the rows of sections, it, also, saves the irksome labor of scraping propolis from the corners of sections, as bees do not daub or glue openings they can pass through freely. The remaining edges are entirely covered and protected from propolizing by the straight edged separator *c*, shown in Fig. 5, when put up close and tight with the wedging-board, and end-fillings of paper, they will be clean, and easily removed from the supers.

The entire case of sections is covered at the top with a layer of paraffine paper, *b*, combined with layers of other paper as seen in Fig. 1. In my experience this combined paper covering has proven superior to enameled sheets or other material, forming an airtight covering in itself. The bees do not cut it away nor daub it with propolis; it is easily removed, and may be used repeatedly.

Experience has taught that bees require plenty of ventilation at all times; and it is best to have a full width opening across the front of the hive, which can be regulated to suit the seasons and conditions of the colony—to restrain the swarming impulse, and keep the bees from camping on the outside of their hives, which they must do to escape the stifling conditions caused by insufficient ventilation. When two or more stories are used, a greater space for ventilation is required than with a single one. These conditions can all be supplied at a single stroke—by simply reversing the framed bottom and shifting the hive forward, thus, giving full and direct ventilation at the front, and rear if desired.

The bees instinctively store their honey at the top and rear of their combs, where it is secure from robbing bees; filling the lower and front part of the hive with brood and pollen. By turning the brood-hive around, to bring the end filled with honey to the light at the front, the bees will remove it to a safer position in the surplus sections.

The supports, R, are designed to be used indiscriminately for either frames or sections.

The shallow frames are safer from the sagging of the top bars, or stretching and breaking down of combs, and are adapted to dividing or doubling the capacity of the brood chamber most easily, as they can be instantly removed with their inclosing case to diminish the capacity of the brood chamber, and as quickly replaced to add to its capacity. The handling of the frames separately is unnecessary.

When two stories are used as a brood chamber their capacity is sufficient for a full colony, and no excluder is needed to keep the queen out of the sections when separators are used. By alternating the two stories of the double brood chamber at proper intervals the excess of honey will be removed to the supers above for safety from robbers, and its place filled with brood, thus keeping up the full strength of the colony.

Having thus described my invention, what I claim as my improvement, and desire to secure by Letters Patent of the United States Patent Office, is—

1. As an improvement in bee hives, in combination with the casing and the frame or part to be supported therefrom, a removable support, or hanger, comprising a vertical portion and oppositely extending horizontal portions at the upper and lower extremities, respectively of the latter, the upper of which engages said casing and the lower the frame or other part to be supported, substantially as described.

2. As an improvement in bee hives, a reversible bottom therefor, consisting of side rails, a bottom having its edges secured to said rails, the projecting portions of the rails being deeper on one side than on the other, and the transverse rails C C′ connecting the side rails at opposite ends and arranged on opposite sides of the bottom boards, substantially as described.

3. As an improvement in bee hives, a reversible bottom therefor, consisting of side rails having their inner sides grooved, the portions on each side of the grooves being of different depths a bottom having the ends of its board or boards resting in said grooves, means for securing the bottom to the rails at or near the middle of the same, whereby the outer, free edges of the bottom are free to expand and contract, and rails or bars C C′ connecting the side rails at their ends, substantially as described.

4. A section for comb honey having its sides notched or cut away at their corners, substantially as and for the purpose set forth.

5. As an improvement in bee hives a mat or covering consisting of paraffine paper, substantially as and for the purpose set forth.

6. As an improvement in bee hives, in combination with the casing and the honey sections, a mat for the latter consisting of paraffine paper placed next to the same, and a backing, as paper, placed over the paraffine paper, substantially as and for the purpose set forth.

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

FRANCIS DANZENBAKER.

Witnesses:

JAS. M. CHADSEY,

ROBINSON WHITE.