

(Model.)

4 Sheets—Sheet 1.

G. L. TINKER & W. S. KLINE.
BEE HIVE.

No. 400,517.

Patented Apr. 2, 1889.

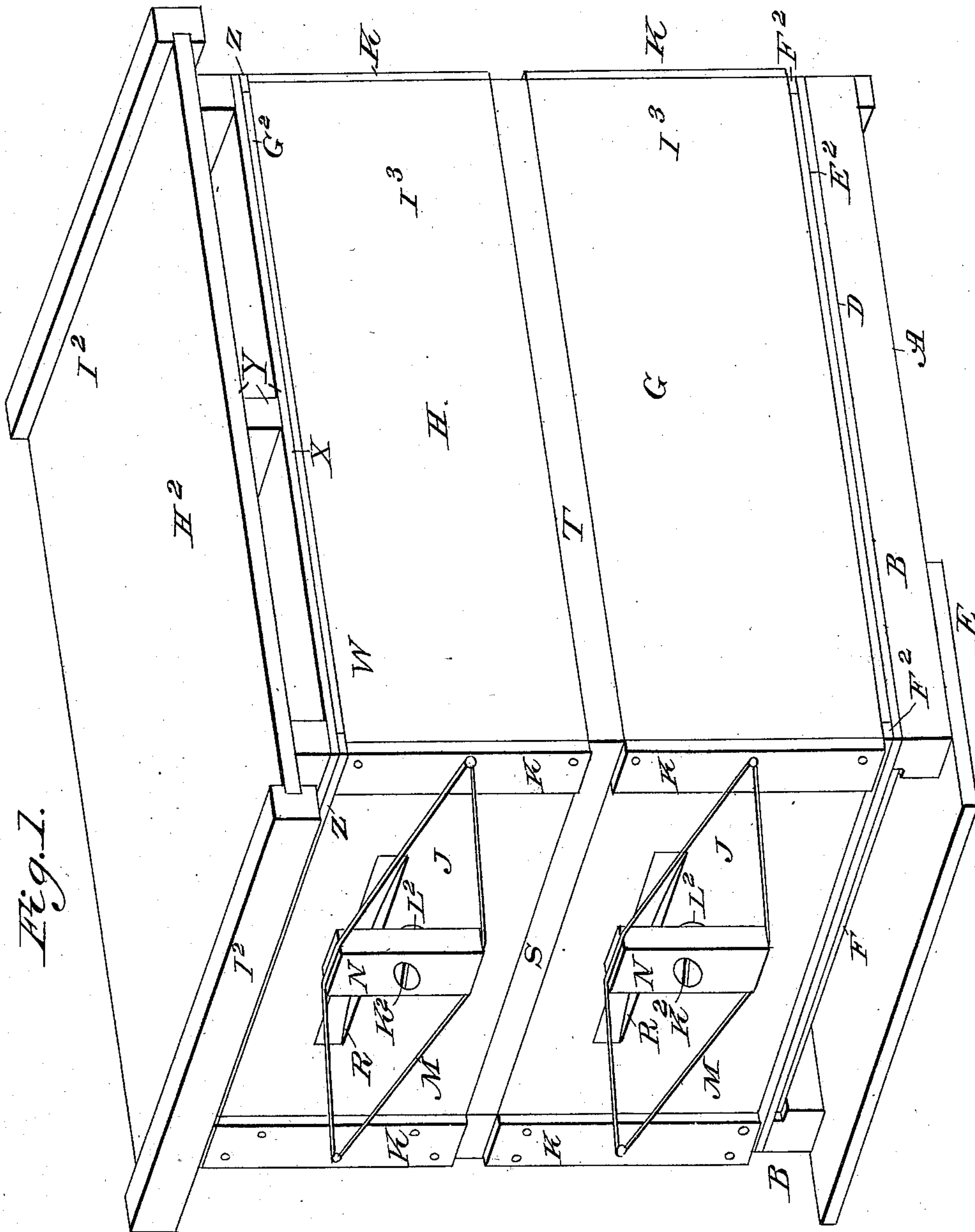


Fig. 1.

Witnesses:

John Hance,
E. J. Wengert

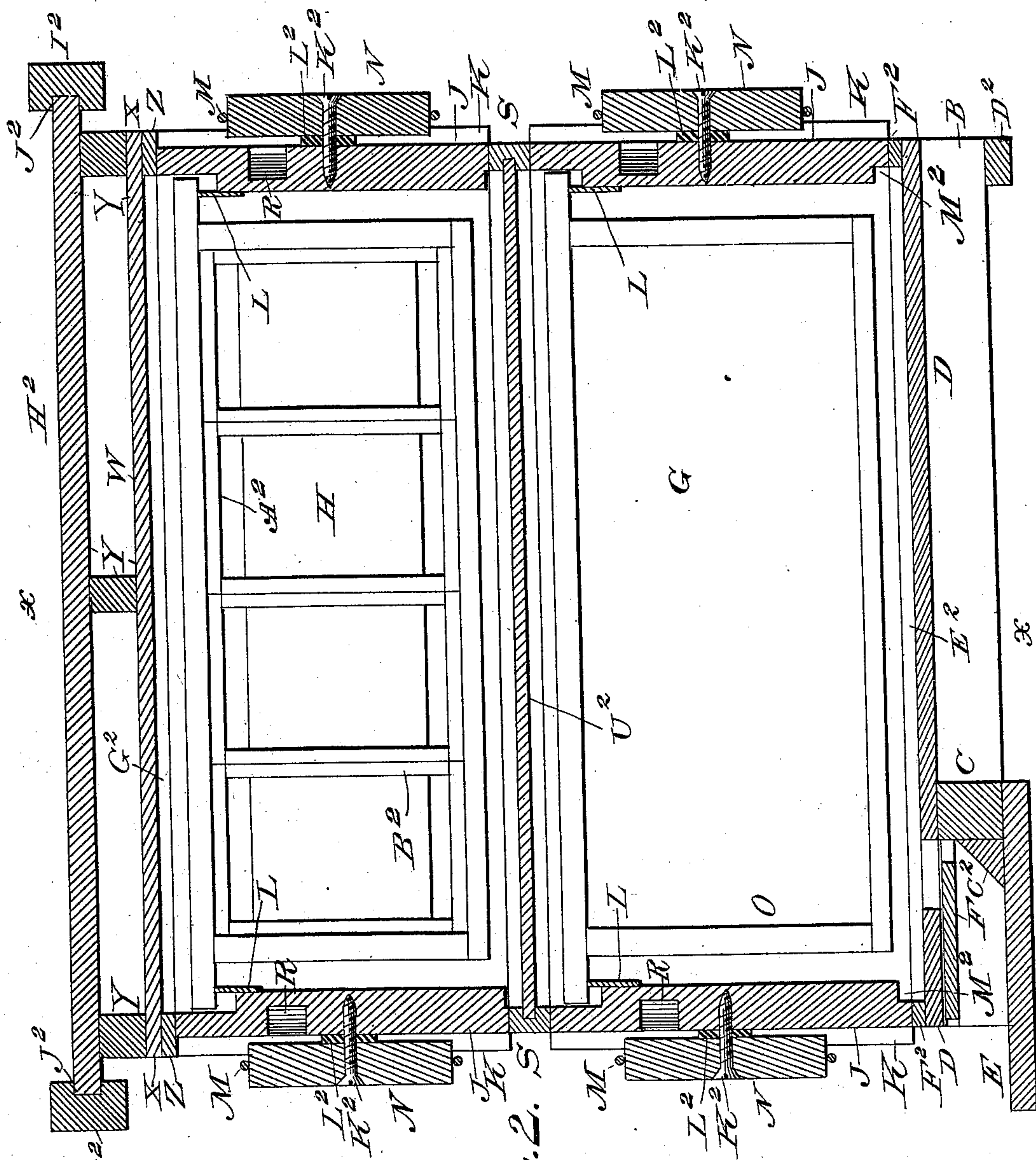
Inventors

George Lyman Tinker
Winfield Samuel Kline

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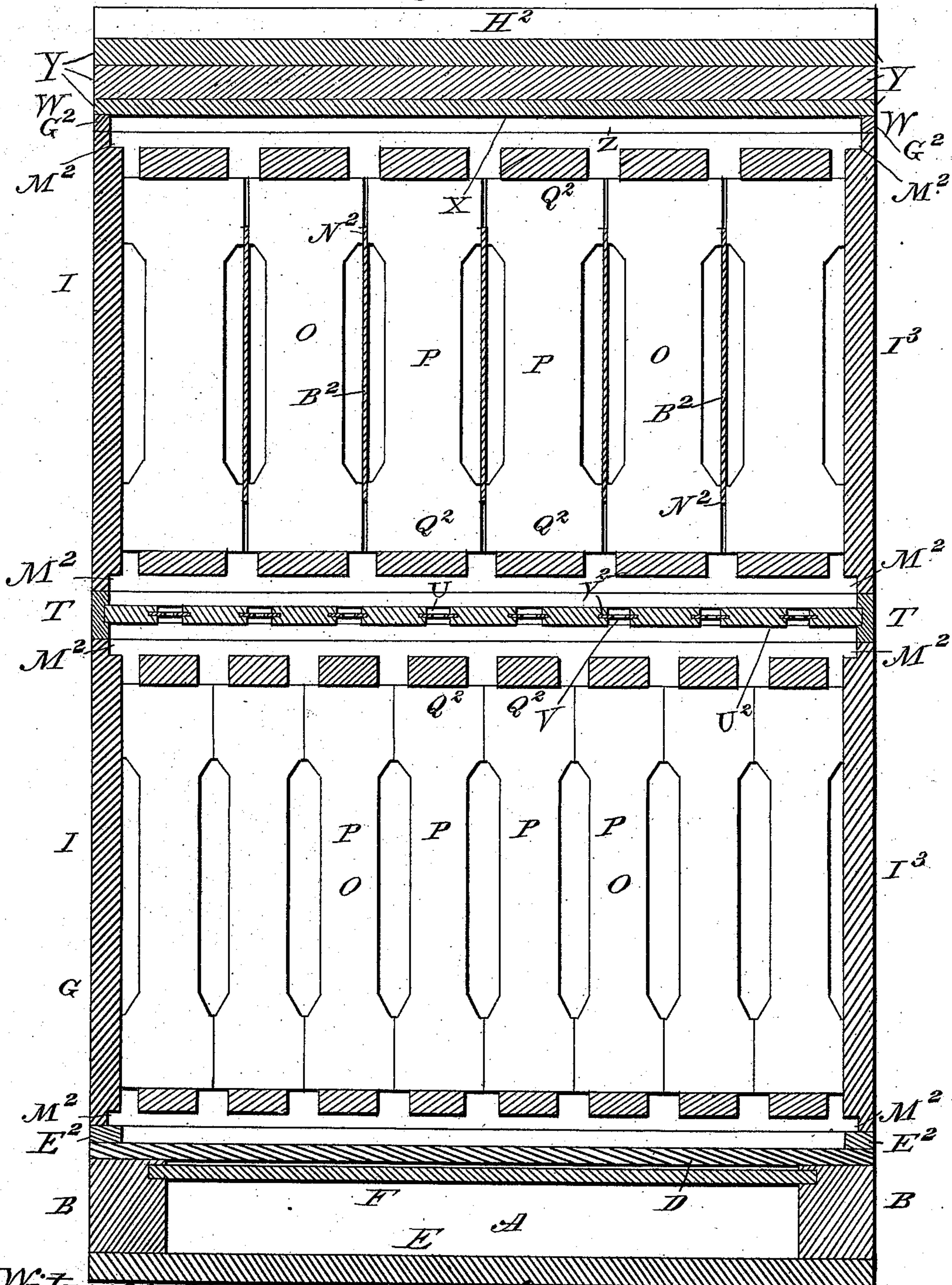


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Fig. 3.

Patented Apr. 2, 1889.



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(Model.)

4 Sheets—Sheet 4.

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Fig. 4.

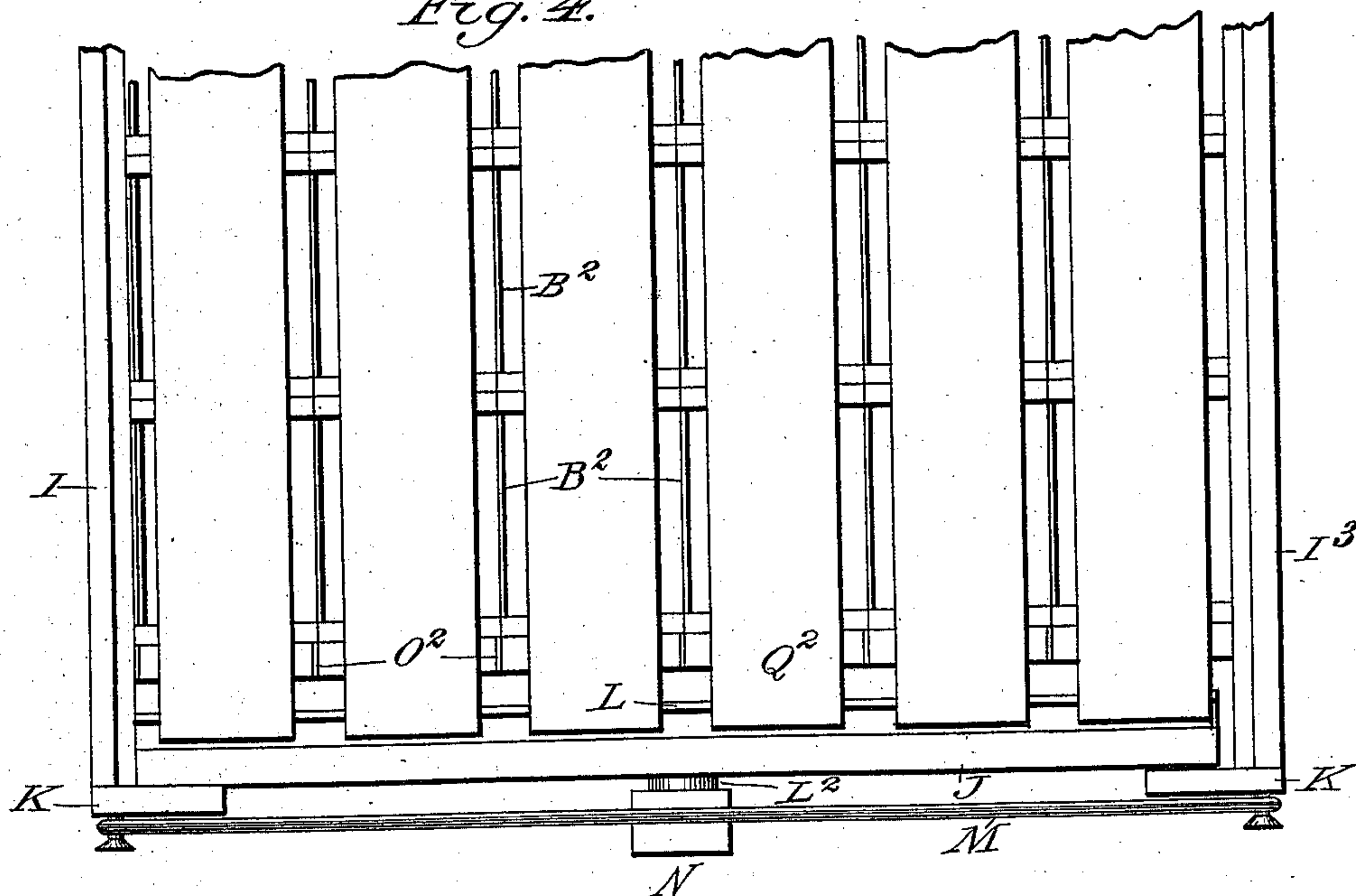


Fig. 5.

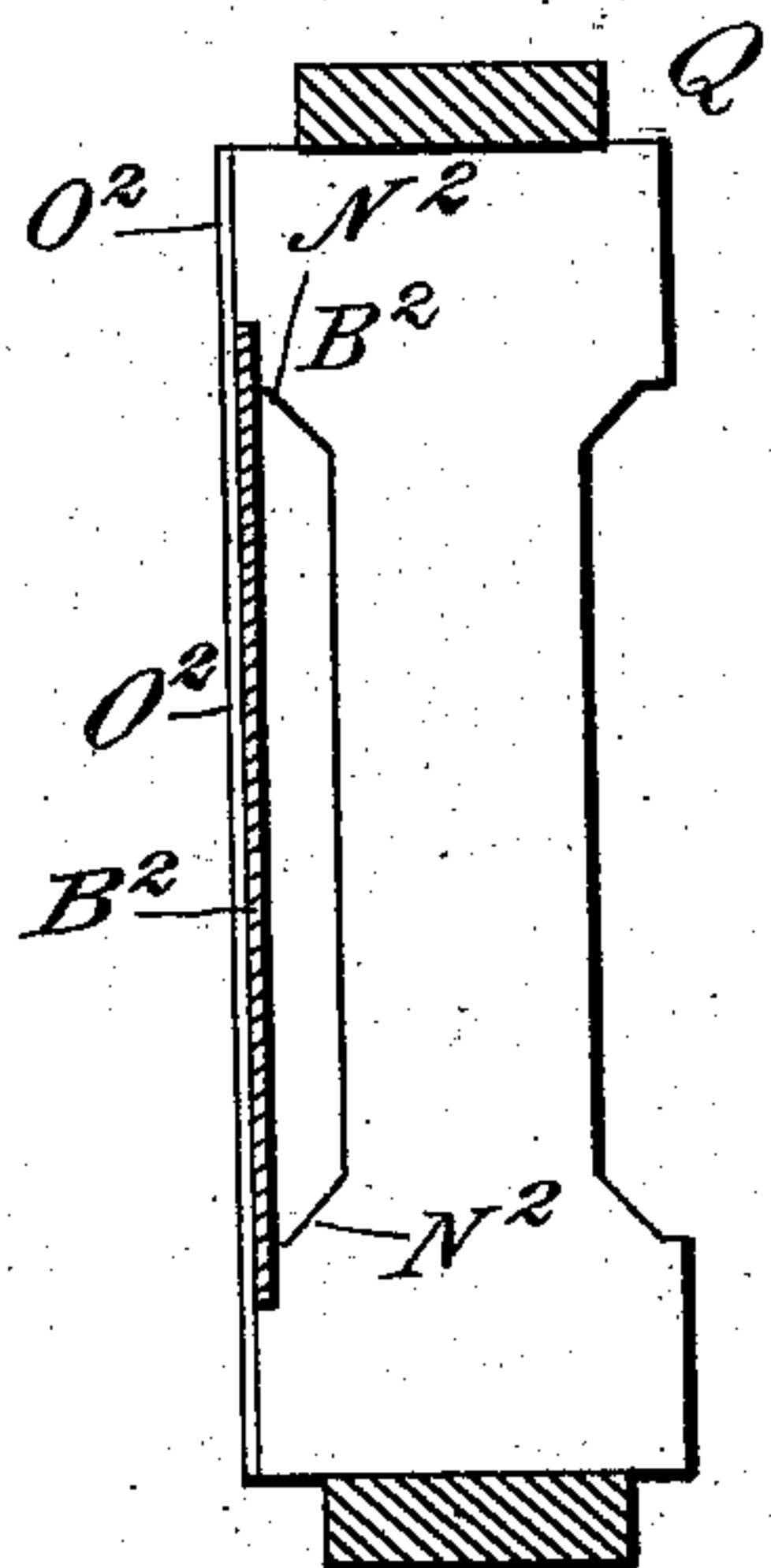
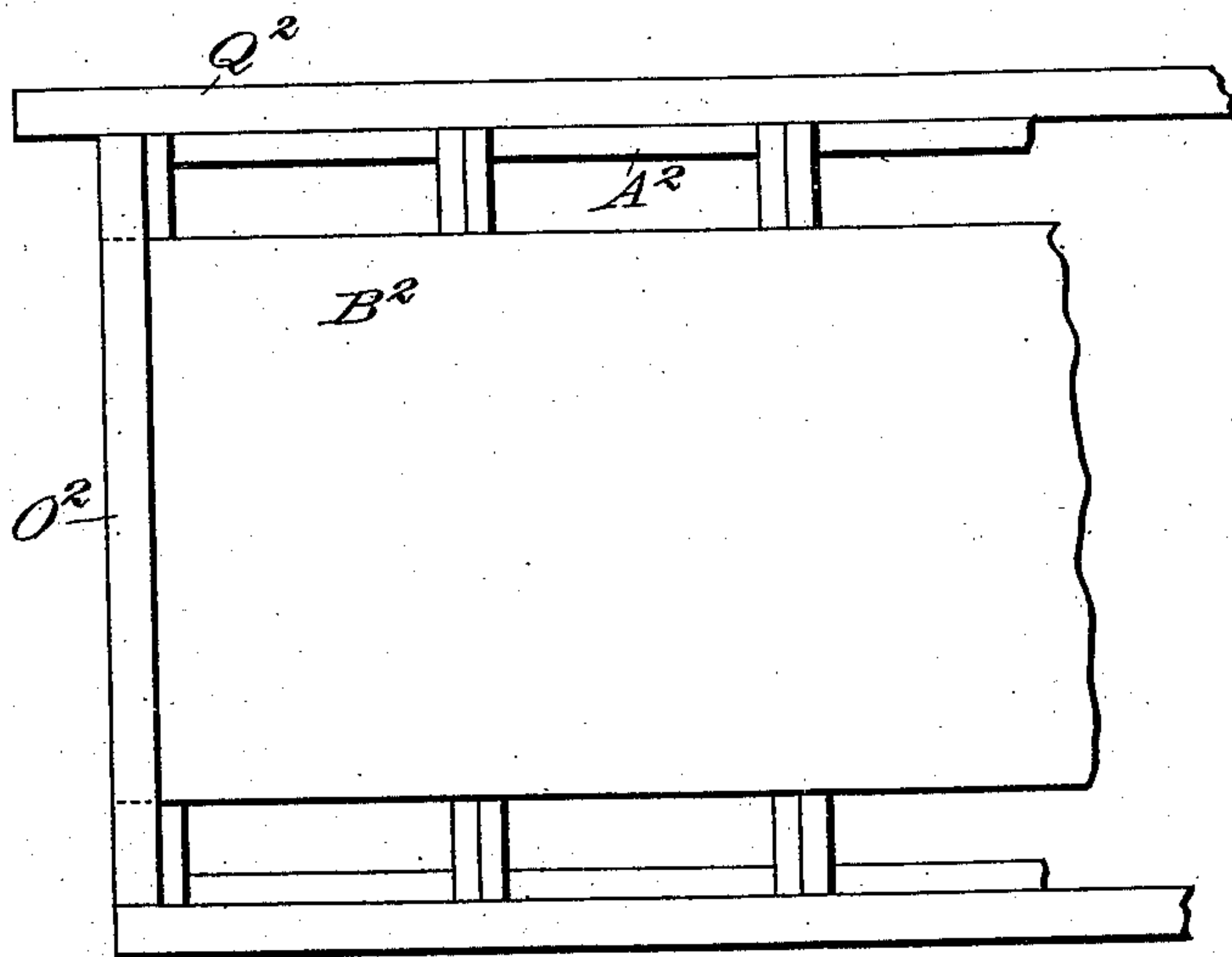


Fig. 6.



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Inventor:

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UNITED STATES PATENT OFFICE.

GEORGE LYMAN TINKER, OF NEW PHILADELPHIA, AND WINFIELD SAMUEL KLINE, OF BOLIVAR, OHIO.

BEE-HIVE.

SPECIFICATION forming part of Letters Patent No. 400,517, dated April 2, 1889.

Application filed August 27, 1887. Serial No. 248,088. (Model.)

To all whom it may concern:

Be it known that we, GEORGE LYMAN TINKER, a citizen of the United States, and a resident of New Philadelphia, in the county of Tuscarawas and State of Ohio, and WINFIELD SAMUEL KLINE, a citizen of the United States, and a resident of Bolivar, in the county of Tuscarawas and State of Ohio, have invented certain new and useful Improvements in Bee-Hives; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a perspective view of our improved bee-hive. Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a transverse sectional view taken on the line *xx* in Fig. 2. Fig. 4 is a detached view of the surplus-honey chamber, showing the surplus-honey frames in position and clamped together by the removable side board. Fig. 5 is an end view of one of the surplus-honey frames, showing the separator in position. Fig. 6 is a detached view of the same, showing the separator and the means for holding it to the frame, and also the surplus-honey sections in position.

The same letters refer to the same parts in each of the figures.

This invention relates to bee-hives, and has for its object the economical production of honey.

The invention consists in the construction, arrangement, and combination of parts, as will be hereinafter described and claimed.

In the drawings hereunto annexed, A designates the removable bottom, in which is constructed the entrance. It consists of the side pieces, B B, and the cross-piece C, which is placed far enough back to admit the bees through a suitable opening in the bottom board beneath the brood-frames. To the upper surface of the said side pieces is attached the bottom board, D, and to the lower surface the alighting-board E and the cross-piece D². The upper and inner edges of the side pieces,

B, are rabbeted out as far inward as the cross-piece C, to receive the piece F, which is used to enlarge or diminish the size of the opening through the bottom board.

Abutting against the cross-piece C and attached to the upper side of the alighting-board is a triangular piece, C², extending between the side pieces, B, to assist the bees in passing up through the opening in the bottom board. The said bottom board is provided on its upper surface near the outer edges with cleats F² F² and E² E², for the purpose of making a suitable bee-space beneath the brood-frames.

The brood-chamber G and the surplus-chamber H are of similar construction. Each consists of a frame of suitable dimensions having one side removable, and is constructed of the side boards, I I³, the end boards, J J, and the cleats K K. The upper and inner edges of the ends J are rabbeted out to receive the ends of the brood-frames O, which rest by the projecting ends of their top bars on strips of sheet metal L L, which are attached to the inner edges of the ends J at a point below the rabbets, and extend upward far enough so that the bees can pass in the rabbets under the ends of the top bars. The lower and inner edges of the end boards, J J, and the upper, lower, and inner edges of the side boards, I I³, are rabbeted, as shown at M² M², the object being to lessen the points of contact of the several parts, so that in handling them the chances of killing bees are diminished and the work facilitated. The end boards, J J, are made a little shorter than the total width of all of the end bars, P P, of the brood-frames O, (see Fig. 4,) so that when the side boards, I I³, are clamped together by the tension of the copper wires M M they will press against the end bars of the said frames in such a manner that the chambers may be inverted and the contained frames be held securely in place. The cleats K are attached to the ends of the side boards, I I³, and are made sufficiently wide on the removable side I³ to hold it from being displaced endwise. The buttons N N are to give tension to the wires M M, which are looped about flat-

headed nails driven into the center of the ends of said side boards through the cleats K, and left to project far enough for the purpose. The said buttons are attached to the end boards by means of the screws K² K², so as to turn easily, and are kept from rubbing against the hive by means of iron washers L² L². The end boards are recessed, as shown at R R, for hand-holes, so that the chambers may be easily handled.

The brood-frames O O are composed of the end bars, P P, and the top and bottom bars, Q² Q², the former of which are so much wider than the latter that when the frames are placed in the chambers a proper bee-space will be left for passage-ways between said top bars and said bottom bars. The sides of the end bars, P, are made with insets (termed by bee-keepers "open sides") in the central portions of said sides in such manner and of such depth that the upper and lower portions of the end bars come in contact, leaving a space between the adjacent end bars, through which the bees may pass into the bee-space provided between the ends of the frames and the end boards of the chambers, the object being to lessen the line of contact of the end bars and thereby limit the extent of propolis so as to facilitate the handling of the frames. The said frames are suspended from the rabbets by the projecting ends of the top bars, so as to leave a half bee-space both above and below said frames in each of the chambers, so that either one may be inverted over the other and not alter the depth of the space between them.

The queen-excluding honey-board U consists of a rectangular frame of the same outside dimensions as the outside of the hive, and is composed of the side pieces T T and the end pieces S S each having grooves or recesses in their sides to receive the slats U². The perforated sheet-metal strips V are fitted into saw-kerfs V² in the edges of the wood slats in such manner that the said metal strips may be supported between them, the object being to secure the said metal strips in a honey-board in a way that they cannot sag or get out of place. The perforations are made in rows extending the whole length of the strips, which are made of the same length as the wood slats. The said perforations are made so small that the queen bee cannot pass through them, thus preventing the liability of brood being reared in the surplus combs, but the said perforations are sufficiently large to permit the worker-bees to pass freely.

The surplus-honey frames Q of the surplus-chamber are made to contain a certain number of the surplus-honey sections A², (usually four,) to hold each one pound of honey. The said surplus-honey sections are dovetailed at each of the four corners, and are made of a size to neatly fill the surplus-honey frames, which are constructed the same as the brood-frames, with the exception of the supports at

the sides for the separators. The surplus-honey sections are made with insets in their sides to correspond with the insets in the end bars of the surplus-honey frames. The said insets or openings facilitate the work of the bees by enabling them to pass freely from one part of the hive to another. They also lessen the line of contact of the separators with the sides of the surplus-honey sections, thus limiting the amount of propolis and facilitating the use of the said separators. The separators B² B² are supported by shallow insets in the sides of the end bars of the surplus-honey frames, as shown at N² N², and are retained in place by narrow strips of sheet metal, O² O², attached to the upper and lower sides of the said end bars. This construction of parts permits the easy removal of the separators in taking the surplus honey, so that the bees may be readily shaken from the combs.

W is the under cover, which is used to cover the surplus or brood chamber, and consists of a thin board, X, having on its upper surface three cleats, Y, one at each end and one in the middle, serving to prevent the board from warping, and also to give an air-space beneath the cover proper as a protection from cold rains or snow in spring, or the sun's heat in summer. On the under surface of the under cover, near the outer edges, are cleats Z Z and G² G², of such thickness as to make a bee-space beneath.

H² is the top or cover of the hive, and consists of a flat board of suitable size provided with cleats I² I², having grooves or recesses J² J² to receive the ends of said boards.

The construction of the hive is adapted to rapid manipulation in the practical working of a colony of bees, enabling a bee-keeper to manage a large number of colonies. It is essentially a labor-saving and economical beehive, and is adapted to any of the modern systems of the management of bees.

We are aware that half bee-spaces have been constructed by others above and below the brood and surplus-honey frames in brood and surplus chambers; also, that a honey-board not queen-excluding has been constructed, having a rectangular frame for the support of spaced slats, and to such construction herein shown and described we desire to make no claim.

We are aware that brood and surplus-honey frames have been clamped together by various devices; also, that the said frames have been spaced at fixed distances by means of pins or nails driven into one of the sides of the end bars, and we desire to make no claim on any such devices.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

In a bee-hive, a brood or surplus-honey chamber composed of the side board, I, at-

tached to the short end boards, J, the removable side board I³, the cleats K, and the frames O, clamped between the side boards by suitable clamp devices, the said frames
5 having end bars of a total width exceeding the length of the end boards, the parts being combined for the purposes set forth.

In testimony that we claim the foregoing as

our own, we have hereunto affixed our signatures in the presence of two witnesses.

GEORGE LYMAN TINKER.
WINFIELD SAMUEL KLINE.

Witnesses:

S. MOORE,
F. S. ROMIG.