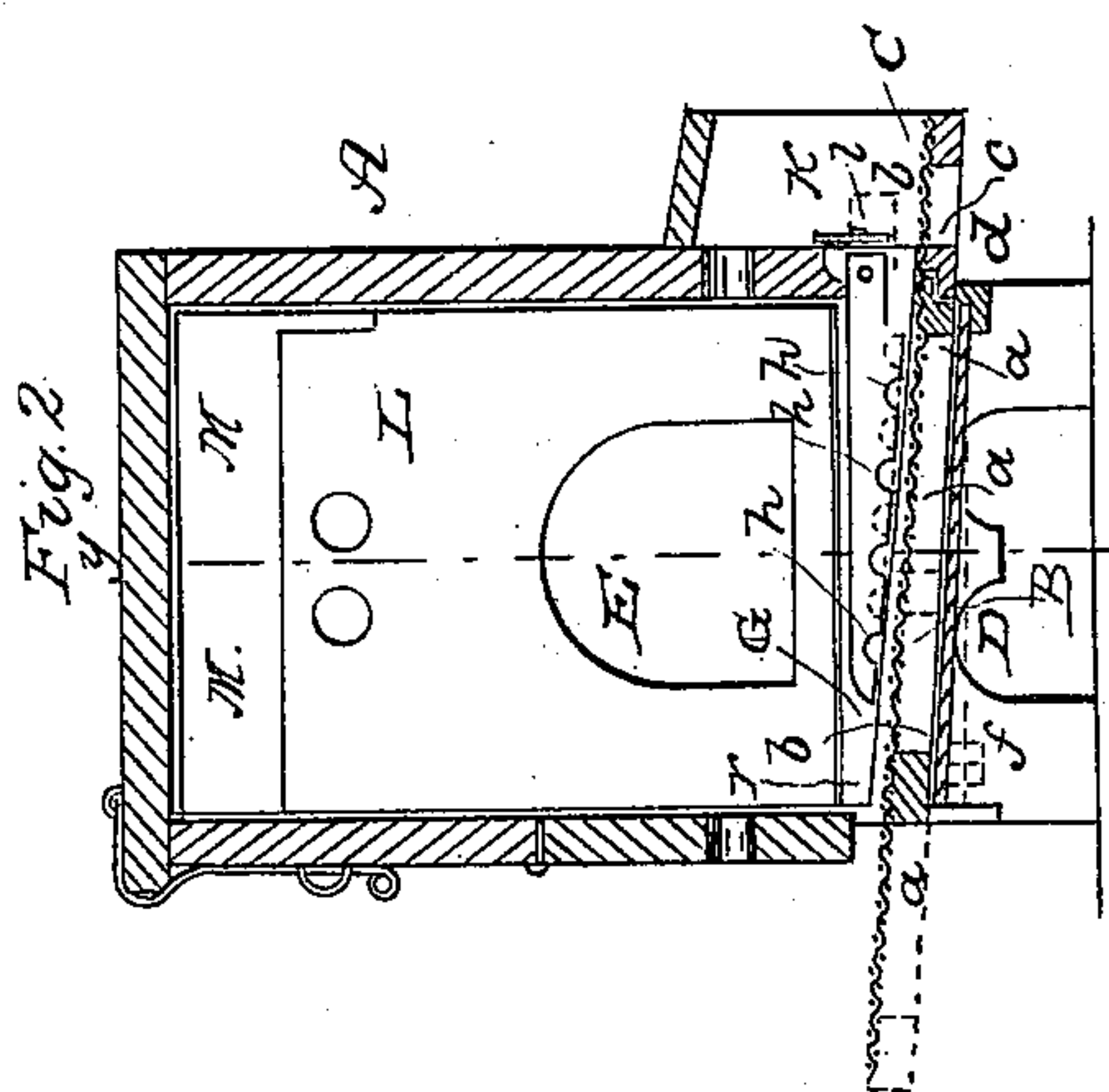
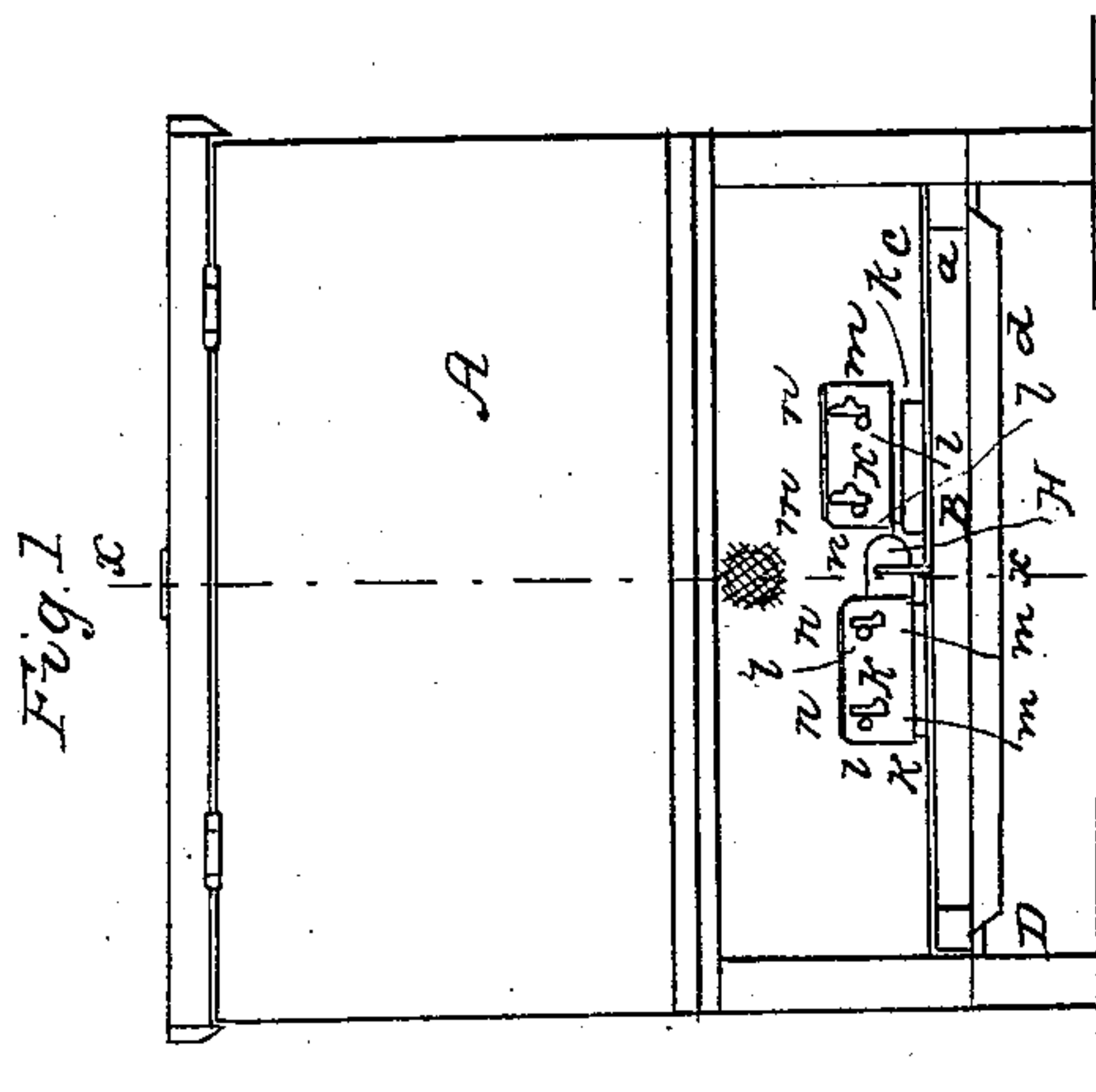
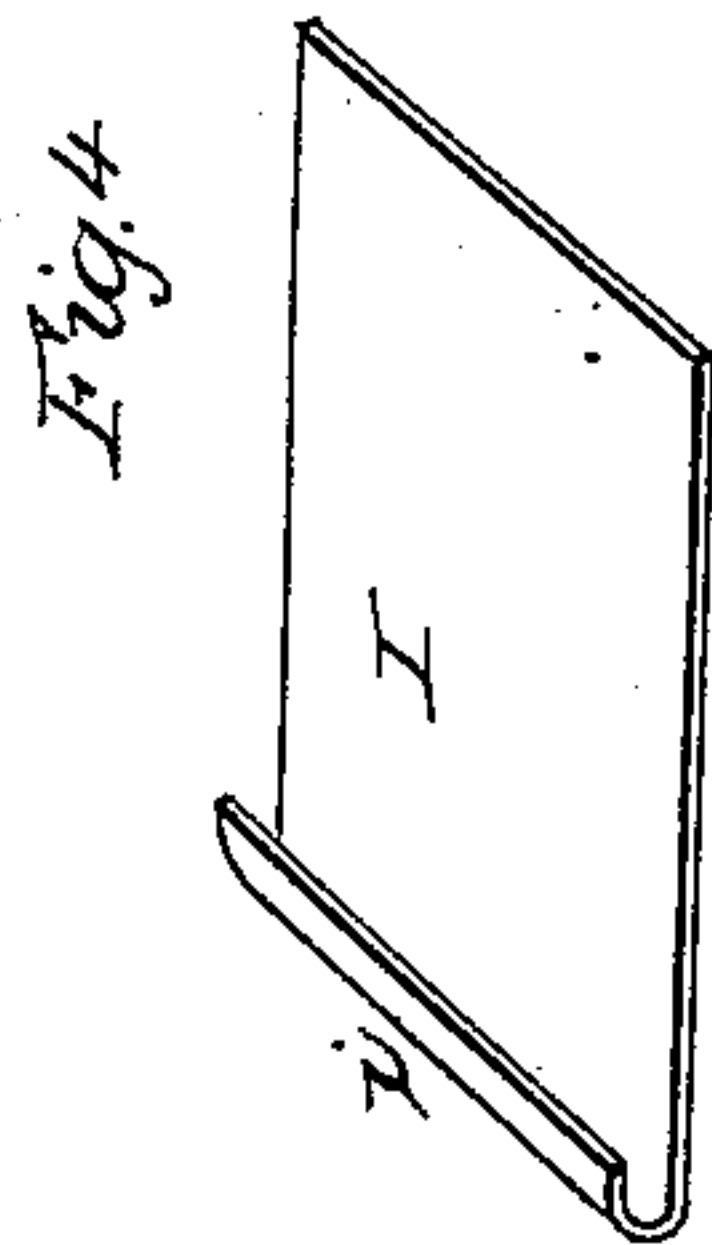
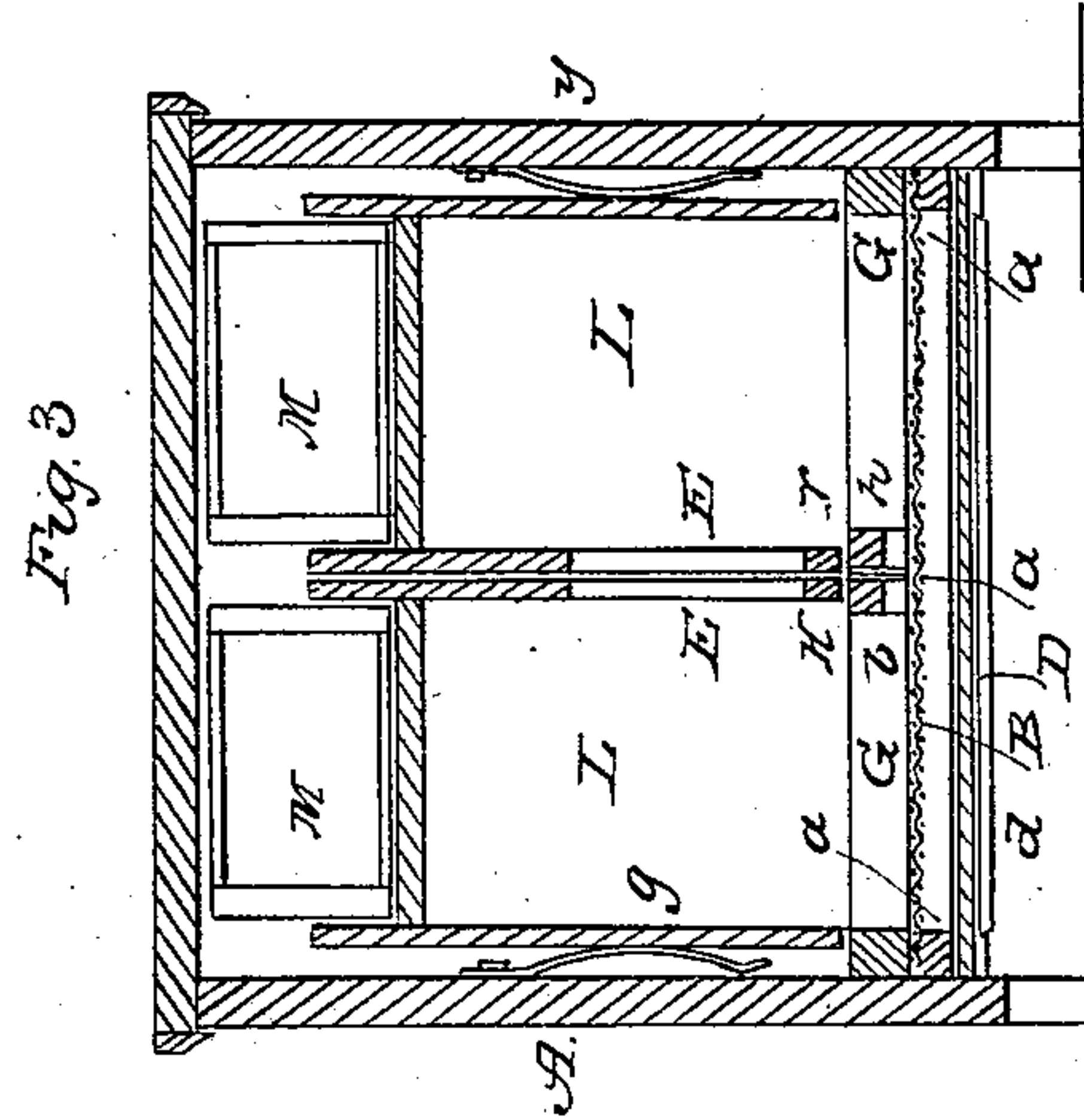


J. H. GRAVES.

Bee Hive.

No. 37,622.

Patented Feb. 10, 1863.



witnesses
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UNITED STATES PATENT OFFICE.

JOHN H. GRAVES, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN BEE-HIVES.

Specification forming part of Letters Patent No. 37,622, dated February 10, 1863.

To all whom it may concern:

Be it known that I, JOHN H. GRAVES, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Bee-Hives; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a front elevation of my improved bee-hive; Fig. 2, a transverse vertical section thereof in the plane indicated by the lines *x x*, Fig. 1; Fig. 3, a longitudinal vertical section thereof in the plane indicated by the line *y y*, Fig. 2; Fig. 4, a perspective view of the division-plate used in separating the sections of the hive.

Like letters designate corresponding parts in all the figures.

The outer case or box, A, in which the sections are placed, may be made of any usual or desirable form, being represented in the drawings as rectangular, and having a hinged top and back, by which it is conveniently opened for inserting, taking out, or adjusting the sections. Instead of having the bottom of this case closed by a thick and tight floor, in the usual manner, I cover its entire space by a perforated or open bottom, B, composed of frame-pieces *a a* at the sides, and wire meshes *b*, or equivalent, (such as light, fine rods extending from side to side,) and this perforated bottom is slid closely under the hive in suitable ways at the sides, so as to be easily removable at pleasure.

In the front of the hive, extending from side to side, and projecting a suitable distance outward, is a platform, C, constructed similarly to the perforated bottom, having meshes or perforations *b*, but secured rigidly to the hive. The perforated bottom abuts with the platform when in place, and the former is conveniently supported by the latter by its tongue resting in a corresponding notch, as represented at *c*, Fig. 2. The platform furnishes a place for the bees to alight on, and the meshes therein serve as a preventive of the moths entering the hive by their passing down through on the outside under the bottom of the case.

Directly under and in contact with the frame of the perforated bottom B, and covering its whole surface, is an auxiliary bottom,

D, made of thin wood or of sheet metal, and likewise removable, its forward end resting conveniently in the notch of a cross-piece or cleat, *d*, and its rear end supported by a turning button *f*, that catches into notches in the side of the case, by which it is not only held in place, but is also adjusted up and down, as represented by red lines in Fig. 2, for the purpose of admitting air to ventilate the hive when desirable.

There are several distinct advantages resulting from the use of the perforated and auxiliary bottoms, as described. It furnishes a complete protection from the moths, which, as they enter from either side at the bottom of the hive, find no resting-place except through the meshes on the auxiliary bottom, away from the bees, from which auxiliary bottom they are easily removed by the attendant. The meshes, by covering the whole space of the hive, furnish no lodgment for the insects, which naturally pass down rather than up among the bees. The filth and offal that fall from the hive above, and which is usually in dry particles, passes through the meshes onto the auxiliary bottom, so that it is easily removed. In ordinary hives, the bees are obliged to carry the offal out, and it frequently becomes so hardened and mildewed on the floor of the hive that they cannot remove it, and it is thus a source of disease, as well as a refuge for the moth. By the vertical adjustability of the auxiliary bottom, the hive is freely ventilated, or it is tightly closed when necessary, as in winter. The moths and impurities that collect on the auxiliary bottom are easily removed by taking it from its place, which cannot be accomplished in ordinary hives. The perforated bottom is also easily removed for cleaning, or for removing the comb, which frequently breaks down in the hive.

The interior of the case is filled by two similar sections or boxes, L L, usually, though, if desirable, more may be used. These sections are of the usual size and shape, the sides inclosing a square or rectangular space, in which the bees reside and deposit their products. The sections are pressed together and kept in contact by means of elliptical springs, *g g*, secured to the sides of the case, as represented in Fig. 3. The bottoms of the sections are made entirely open over the perforated bottom, so that no moths can collect there, and also

so that the impurities from above shall be allowed to pass freely through, as well also to allow the bees a free communication from the bottom to the top of the hive. Through the contiguous sides of the sections, correspondingly, are made arched passages *E E*, of suitable size for the purpose designed—viz., to allow the bees to build their brood-comb directly through from one section to the other without interruption, and also to allow the queen bee a free and unimpeded circulation through the whole hive, so that she may deposit her eggs in all the sections. This is necessary to accomplish the purpose I have in view, which is to arrange the hive in such a manner that one of the sections may be removed from the case at pleasure to another case, and thus form the foundation of a new hive or family of bees otherwise than by the ordinary act of "swarming."

It is a well-known fact that a family of bees will not long survive without a queen or the larvæ for producing one, and therefore it is necessary that the eggs be deposited in all the sections.

In the sections of ordinary hives the passages connecting them are made very narrow, being only sufficient to allow the "workers" to pass, and not sufficient for the comb to be built through connectedly. The queen, from her size and indolent habits, seldom passes through these narrow openings, and thus deposits her eggs only in a single section.

By my arrangement I can divide the sections with the certainty that a portion of the brood is in each, and therefore with safety, while at the same time the comb connecting the two sections is not of such size as to prevent their being easily detached in the manner presently described.

The bottoms of the sections rest on an open skeleton frame, *G*, for supporting them a little elevated above the perforated bottom, of the same shape in plan as the sections. This frame is separated in the middle transversely by a center piece, *r*, having a small space extending from front to rear, in which space rests a cut-off slide, *H*, operated from the front, as represented. Holes *h h* for the passage of the bees are made correspondingly through the sides of the center-piece and through the cut-off slide, Figs. 2 and 3, thereby connecting the lower portions of the hive and giving the bees a free and unimpeded action therein, and making the different sections in effect but a common apartment. These passages are closed at any time by moving the cut-off slide forward, as indicated by red lines in Fig. 2. This arrangement is very convenient and necessary in connection with open-bottomed sections for the accommodation of the bees, saving them the trouble of passing upward in a roundabout way to reach the openings *E E*; and it is also very necessary in connection with other parts for dividing the sections for removal, as will presently be described.

In the narrow passages through the sides of the sections of ordinary hives, corresponding in position with the openings *E E*, the cut-off is effected by means of a pivoted plate having corresponding openings, which are moved over or away from the said passages and operated from above or at the side. In such cases the pivoted plates cannot have sufficient lateral motion to uncover a large opening similar to *E* of sufficient size to allow the comb to be built through connectedly. In such cases, also, the sides of the sections must be situated at some distance apart, thereby admitting cold air between and preventing the bees from sticking the sections together around the passages, as they desire to do, and also presenting a chasm which it is inconvenient for them to cross. I avoid those difficulties by allowing the sides of the sections to come in contact, as shown in Fig. 3, and when dividing the sections or shutting them apart, in using division-plates *I I*, Fig. 4, of thin sheet metal of sufficient length and width to cover the passages *E E* when in position. These plates are conveniently provided with bent ends *i i* for catching and holding on the top of the sections and thus gaging their depth.

When the sections are to be separated for the removal of one to form a new family, or for the purpose of shutting the bees in to work in one section alone, (as in case of a very small swarm,) the cut-off slide *H* at the bottom of the hive is drawn out so as to close the passages, and the division-plates—one to each section—are forced down in their place, cutting the brood-comb and closing the openings, and thus effectually dividing the two parts of the hive. Either part can then be removed at pleasure and an empty section substituted therefor.

The ingress and egress of the bees to and from the hive are effected through the ordinary passages, *k k*—one to each section—at the bottom of the hive. I close these passages by means of covers or slides *K K*, having two adjustments vertically—one to entirely uncover the passage, as shown at the right hand, and the other to uncover just sufficient of it to allow the passage of the workers, but not of the drones, as shown at the left hand, Fig. 1. This adjustment is accomplished by means of vertical slots *n n* in the opposite ends of each cover, working over pins *l l* therein, and having right-angled notches *m m*, usually on opposite sides of the slot, corresponding with the pins in position at the proper adjustments. In hot weather, when the drones go out of the hives, this arrangement is very convenient by adjusting the slides to the lower adjustment, so as to exclude them by their size, while the workers, which are smaller, are allowed to pass.

The usual honey-boxes, *M M*, may be placed on the top of the sections, as represented, with suitable passages therein.

I am aware that the bottoms of bee-hives have before been used having an open space

therein, covered by wire meshes, for the purpose of ventilation, but such I do not claim.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the removable perforated bottom B, covering the entire space of the hive, with the auxiliary bottom D, separately removable and adjustable to or from said bottom B, arranged and operating substantially as and for the purposes herein set forth.

2. The combination of the cut-off slide H, skeleton-frame G, provided with the center-piece *r*, having the passages *h h* and open-

bottomed sections L L, arranged substantially as herein set forth.

3. The perforated alighting-platform C, in combination with the perforated bottom B, substantially in the manner and for the purpose herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

J. H. GRAVES.

Witnesses:

J. FRASER,

R. F. OSGOOD.