

B. K. BOYD.
FOLDING CRATE.
APPLICATION FILED MAR. 30, 1908.

951,902.

Patented Mar. 15, 1910.

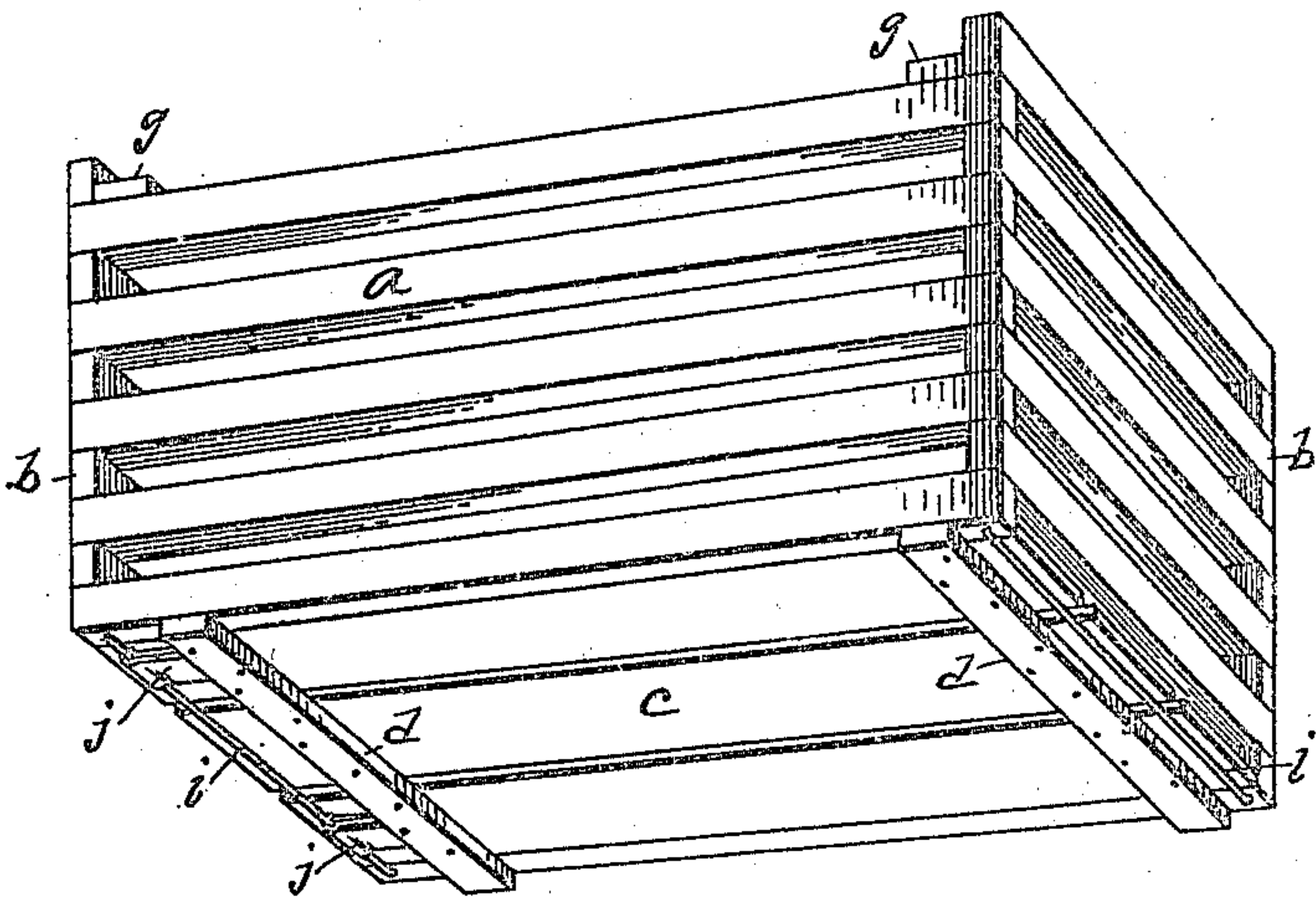


Fig. 1.

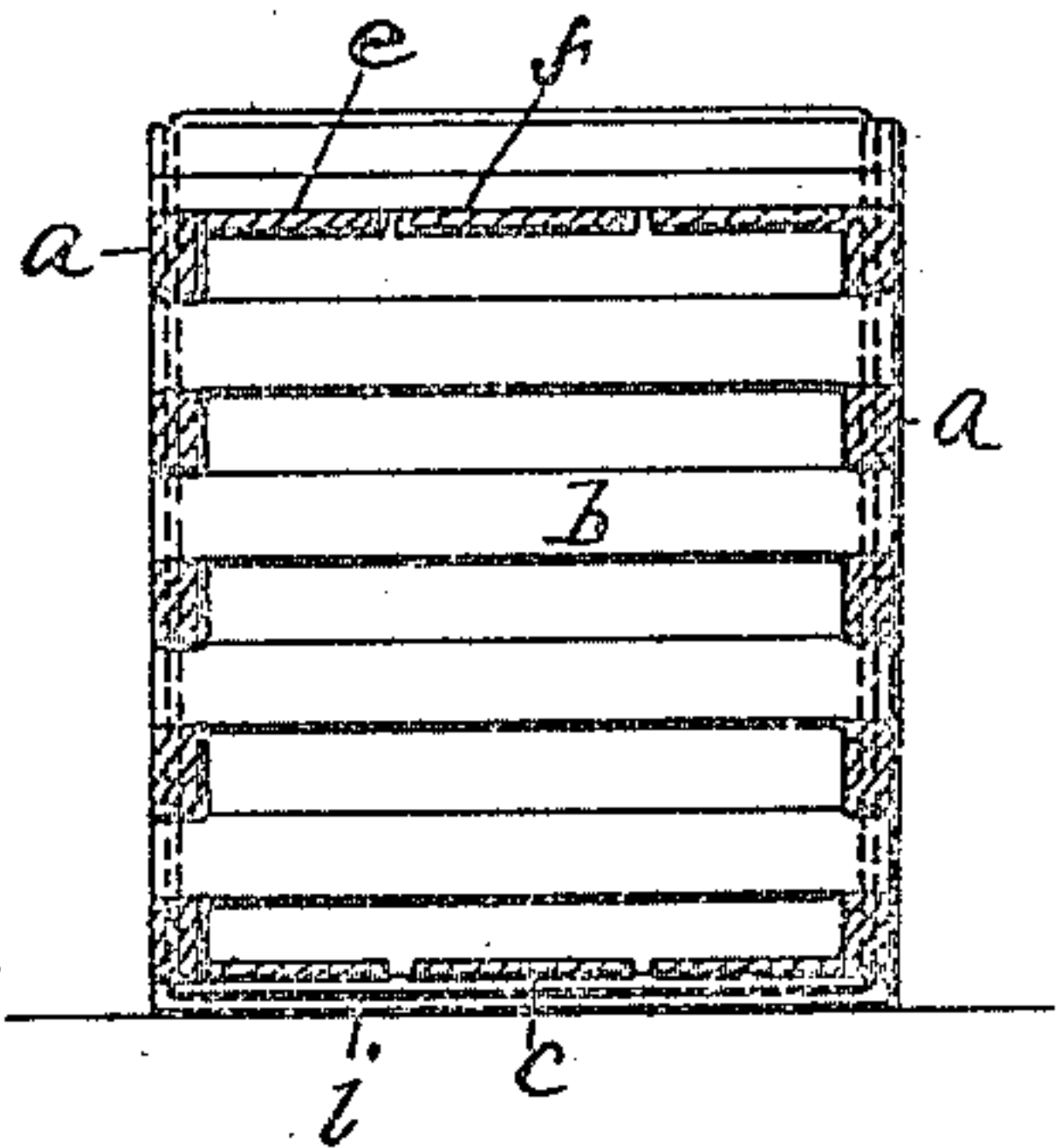


Fig. 6.

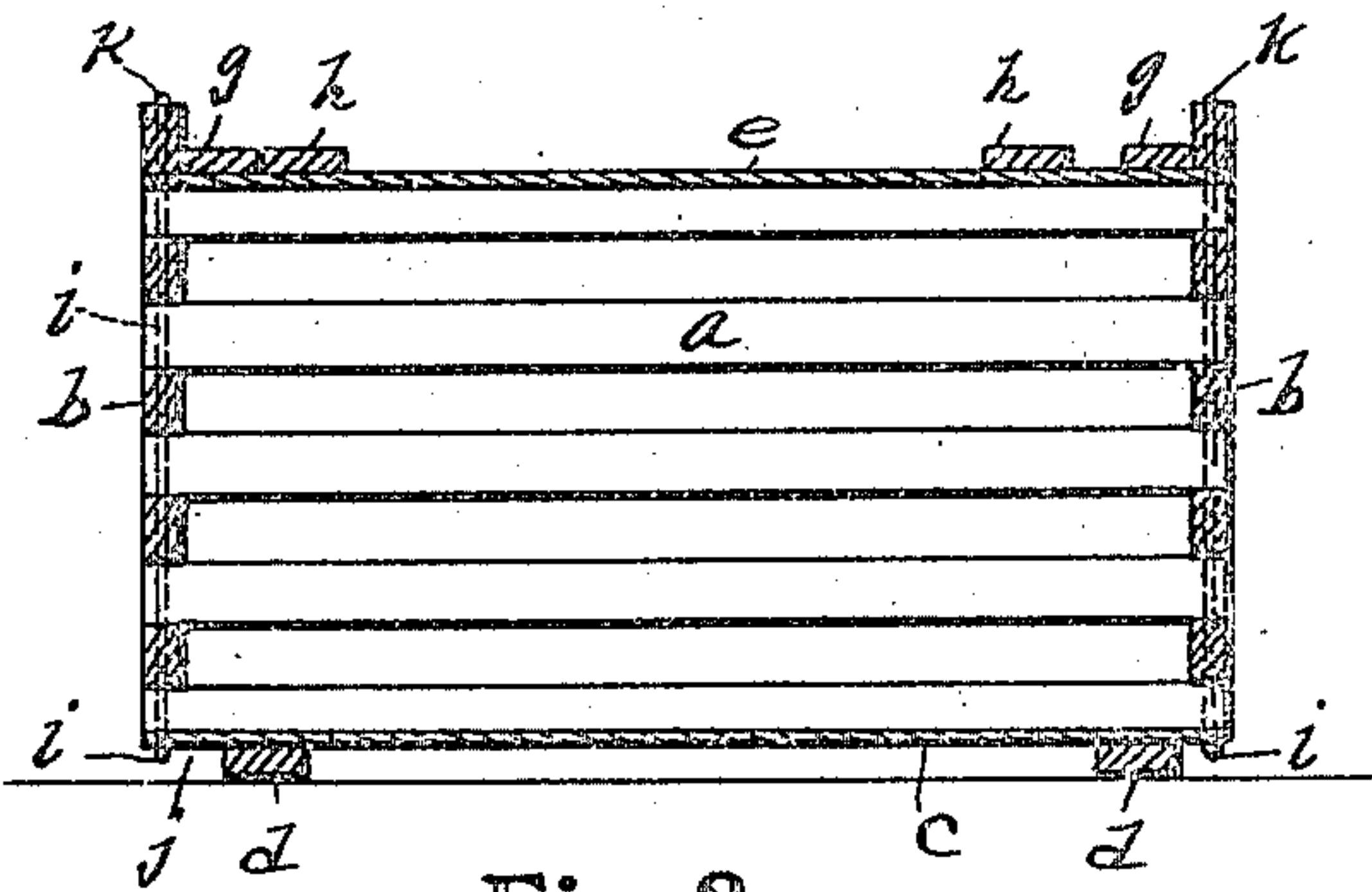


Fig. 2.

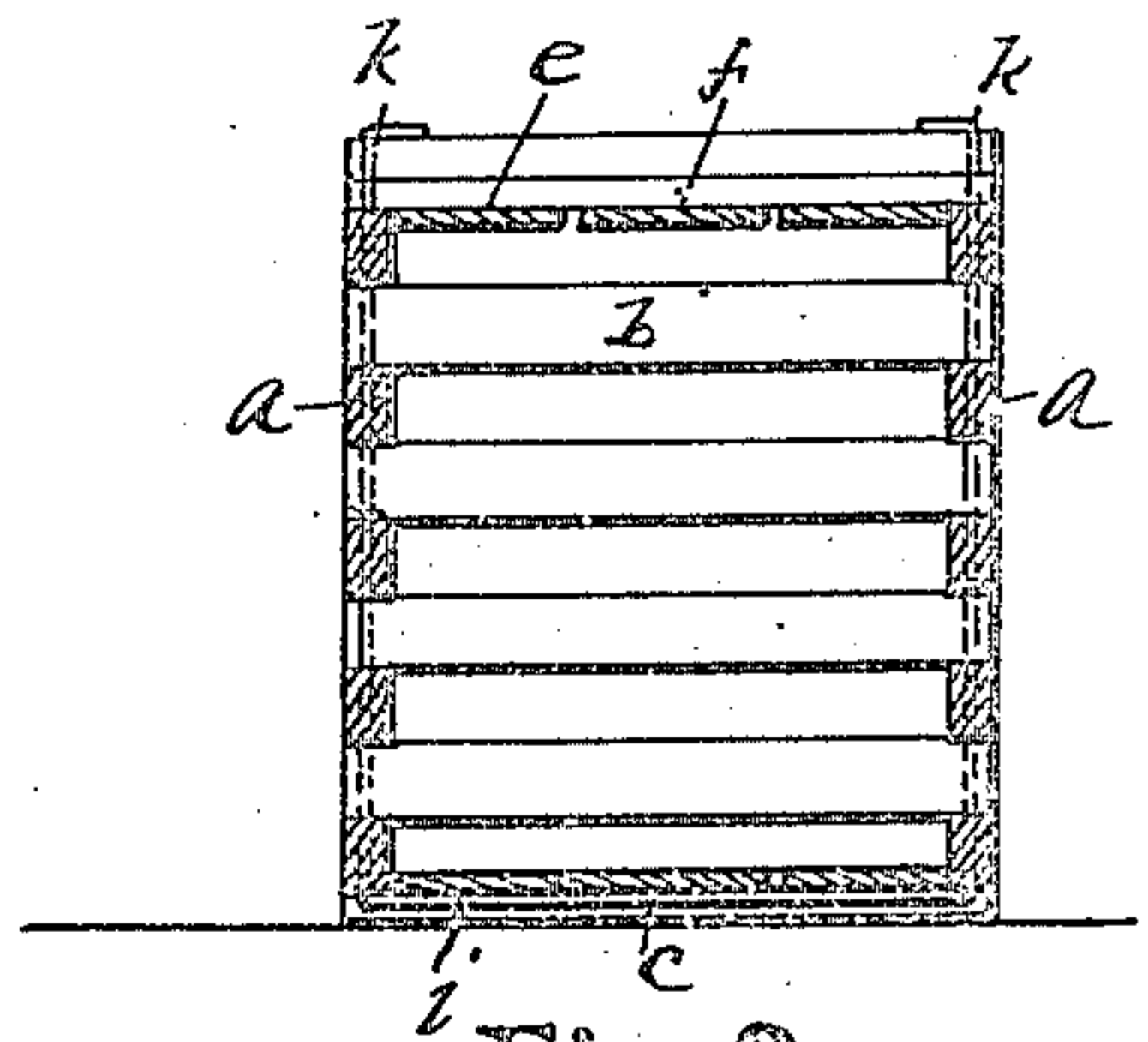


Fig. 3.

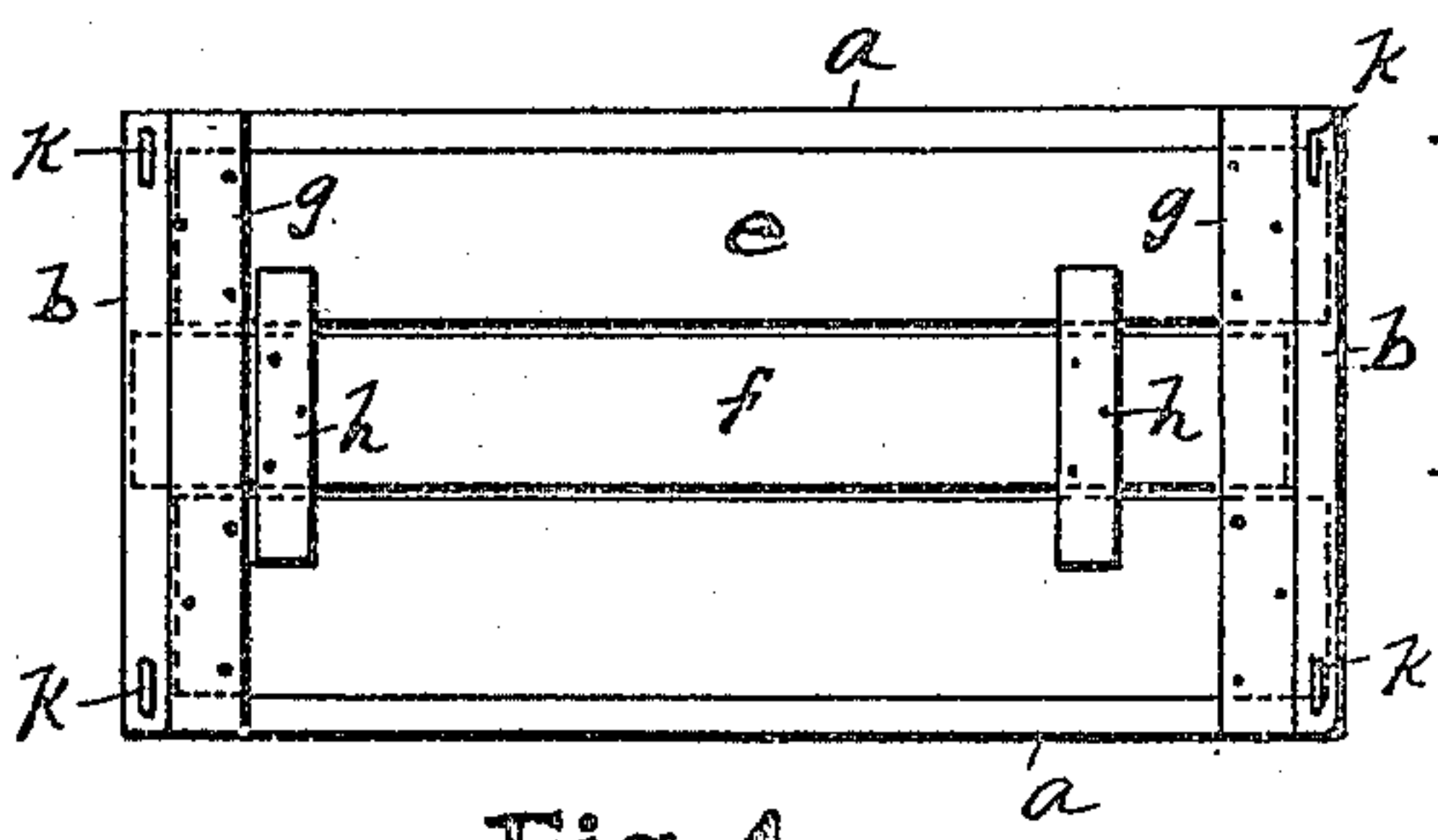


Fig. 4.

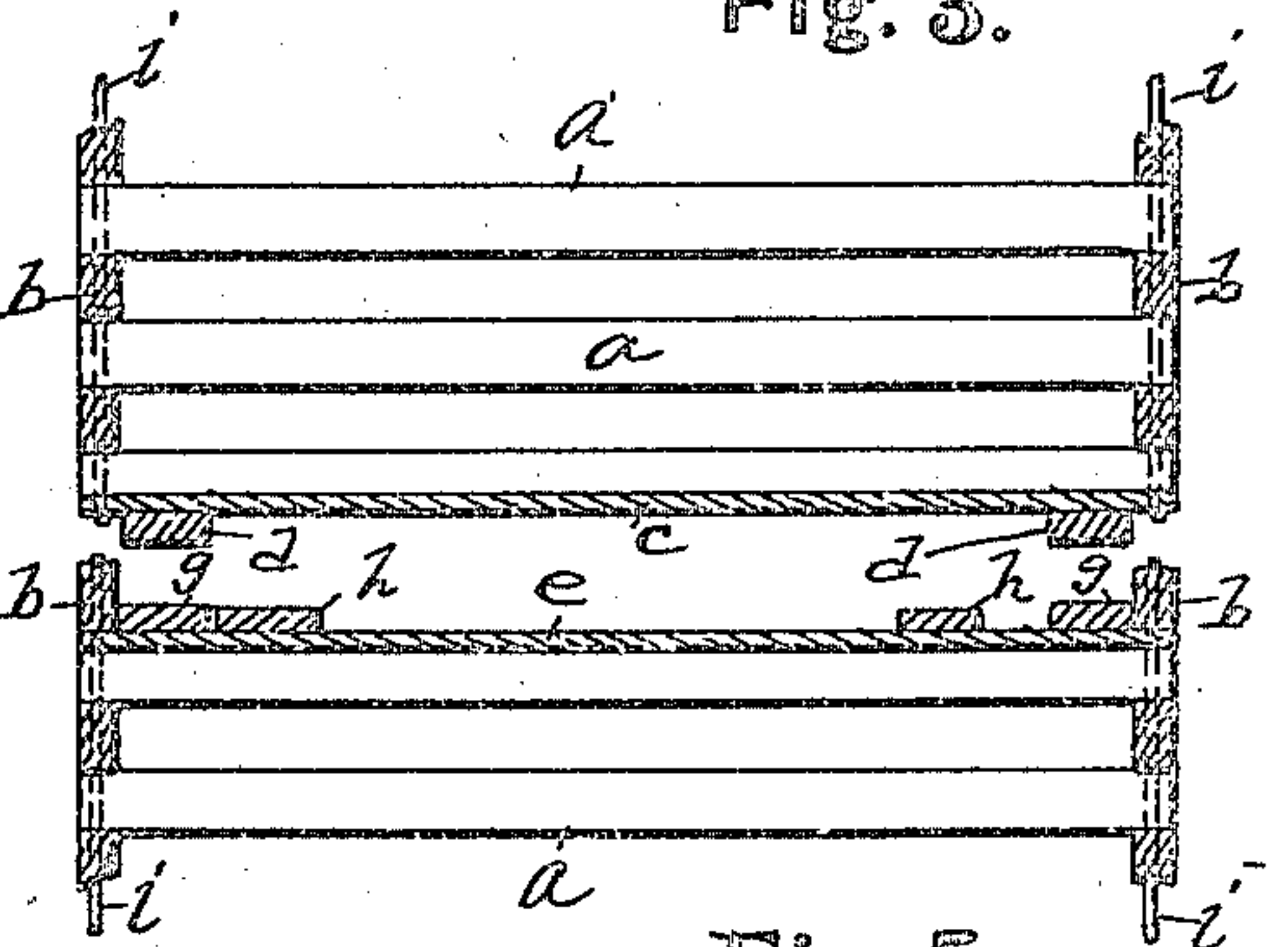


Fig. 5.

Witnesses
O. B. Paenziger,
G. E. M. Gamm

Bertou K. Boyd Inventor
J. P. Newell S. Wright.
Attorney.

UNITED STATES PATENT OFFICE.

BERTRON K. BOYD, OF OWOSSO, MICHIGAN.

FOLDING CRATE.

951,902.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed March 30, 1908. Serial No. 424,029.

To all whom it may concern:

Be it known that I, BERTRON K. BOYD, a citizen of the United States, residing at Owosso, in the county of Shiawassee and State of Michigan, have invented certain new and useful Improvements in Folding Crates, of which the following is a specification.

My invention relates to improvements in folding crates, and its object is to provide an improved structure that can be more readily assembled in the process of manufacture; to provide a strong and durable structure at small expense; to provide improved means for securing the bottom and top closures in place, and to provide the device with various new and useful features, as hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings in which:

Figure 1 is a perspective showing the bottom closure, one side, and one end; Fig. 2 a vertical longitudinal section of the same; Fig. 3 a transverse vertical section of the same; Fig. 4 a plan view showing the top closure; Fig. 5 a detail in vertical section showing the manner in which two crates are superposed; and, Fig. 6 a transverse vertical section of a modified structure.

Like reference letters refer to like parts in all of the figures.

The sides *a* and ends *b* each consists of a series of superposed strips spaced apart, the ends of these side and end strips being superposed alternately and pivotally connected by a small wire *i* extending vertically there-through. At the bottom each wire is also integrally extended horizontally from corner to corner across each end, whereby it forms a support for the bottom closure, and the upper ends of the wire are clenched downward upon the upper end slats *b*, as at *k*, whereby the wire is secured in place.

In assembling this device, the wire is first bent twice at right angles in U-shape, the ends parallel and spaced apart equal to the distance between the holes in the end slats. The middle portion of a wire is then arranged horizontal at each end of the crate, and the end portions vertical at the respective corners of the crate and properly spaced apart to enter the holes in the side and end slats. The first two side slats being placed upon the wires thus arranged, the end portions of the wires will remain vertical and properly spaced apart at the re-

spective corners of the structure. The slats can then be placed thereon, two opposite side slats and two opposite end slats alternately, and so on until the structure is complete, beginning with two side slats and ending with two end slats at the respective sides and ends. It is thus a simple, rapid, and easy process to assemble this structure, and when the ends of the wires are clenched, it is ready for the top and bottom closure.

The bottom closure consists of any convenient number of thin boards *c* connected by transverse cleats *d* secured thereto. These boards are of the same length as the side slats. One of the cleats *d* is placed close to one end of the boards, whereby the cleat serves as a stop to engage the horizontal portion of one of the wires *i* upon which the bottom is supported, and thus prevent further movement in one direction. The cleat at the other end is placed at a greater distance from the other end of the boards, so that when the boards are placed upon the wire *i* at this end and moved to bring this cleat in contact with the said wire, the opposite ends of the boards will pass the wire at the other end of the crate and can be brought to place on the wires by an opposite endwise movement.

To prevent movement and release of the bottom, stops *j* are pivoted on the horizontal portion of the wire *i* at one end of the crate, and when turned up against the bottom closure, will engage the cleat at that end and prevent movement of the same toward the wire on which the stops are mounted, and at the other end the cleat is close to the wire and thus prevents movement of the bottom in the opposite direction. The bottom closure is thus securely held in place until the stops are turned on the wire to release the same. The cleats *d* on the bottom closure also extend outward beyond the same a sufficient distance to engage the under side of the side strips *a*, whereby the cleats retain the bottom closure in contact with the wires, and when the crate is upon the floor, these cleats project below the wires, (being considerably thicker than the same) and thus protect the wires from injury and also extend beneath the side strips and thus support the crate.

The upper closure is also formed of a number of thin boards, preferably three, the side boards *e* being connected and secured to

each other by transverse cleats *g*, which cleats project outward and rest upon the side strips *a*. These boards are all made somewhat shorter than the length of the crate so that when one end of the same is passed under the upper end strip *b* at one end of the crate, the other end of the boards will just clear the opposite side strip *b* and drop to place.

To secure the top in place, the middle board *f* is slidable longitudinally and is not attached to the cleats *g*, but is provided with short transverse cleats *h* secured thereto which overhang and slidably engage the side boards *e*. These strips *h* are spaced apart a less distance than the distance between the strips *g*, whereby a limited longitudinal movement of the middle board *f* is permitted, and the side board is also supported in slidable contact with the side strips *g* and in the plane of the side boards *e*. When this middle board is positioned with its ends in line with the ends of the side boards *e*, it will pass beneath one of the cleats *g* and clear the other cleat the same as the side boards, and when the top is in place, by sliding this middle strip *f* endwise, it will be projected beyond the ends of the said strips *e* and project under the upper end strip, thus serving as a bolt or lock to hold the top closure in place. Obviously a fastening (not shown) may be used to connect the cleats *g* and *h* to secure this locking means in place.

In Fig. 6 I have shown a continuous wire on all four sides of the end. This serves to adapt the device for use of top and bottom closures both, like the bottom closure shown in the other figures. It will also be noted that the cleats *d* are adapted to rest upon the cleats *g*, as illustrated in Fig. 5, and pass downward between the upper edges of the top end strips *b*, thus serving to prevent the upper crate from sliding on the one below when the same are superposed as illustrated in Fig. 5.

What I claim is:—

1. A folding crate, comprising side and end strips alternately superposed at the corners, a U-shaped wire having its ends extending through the ends of the side and end strips and pivotally connecting the same, and having its middle portion extending beneath the end strips and spaced apart therefrom, a bottom closure having cleats extending transversely thereof and unequally spaced from the ends and having their outer edges spaced apart less than the distance between the supporting wires, said bottom closure being inserted between the horizontal portions of the wires and the end strips and supported by said wires.

2. A folding crate, comprising side and end strips alternately superposed at the corners, a U-shaped integral wire having its

ends extending through the superposed ends of the said strips and clenched upon the upper end strip, said wire also having its integral middle portion extending beneath the end strips and parallel therewith, a bottom closure consisting of boards of the same length as the side strips, cleats extending transversely of the boards and attached thereto and also projecting beyond the same to engage and support the side strips of the crate, said cleats being at their outer edges spaced apart unequally from the ends of the boards and at a less distance than the distance between the supporting wires, and stops pivoted to one of said wires and adapted to engage the cleat most remote from the end of the boards.

3. A folding crate, comprising side and end strips alternately superposed at the corners, U-shaped wires having vertical members extending through the superposed ends of said strips and clenched upon the upper strip, the middle portion of said wires extending horizontally beneath the lower end strip and spaced apart therefrom, boards forming a bottom closure and supported upon the horizontal portions of said wires, transverse cleats rigidly attached to said boards and extending outward therefrom beneath the side strips of the crate and arranged with one of said cleats adjacent to one of the supporting wires, and the other cleat arranged at a distance therefrom whereby the bottom closure may be inserted and removed by longitudinal movement of the same, and stops pivoted to one of said wires and adapted to engage one of the cleats and coacting with the other cleat and wire to hold the closure from longitudinal movement.

4. A folding crate, comprising side strips having perforated ends, end strips also having perforated ends, two U-shaped wires bent twice at right angles and each having a middle horizontal portion, and vertical end portions spaced apart a distance equal to the distance to the holes in the end strips and pivotally connecting said side and end strips, and a bottom closure inserted between the end strips and the horizontal parts of the wires and supported by the latter.

5. A folding crate, comprising side strips and end strips alternately superposed at the corners, U-shaped wires having vertical members extending through the perforated ends of the side and end strips and pivotally connecting the same and also having horizontal members extending parallel with the end strips and beneath the same, a bottom closure supported upon the horizontal members of the wires and having transverse cleats projecting below the plane of the wires and spaced apart to permit longitudinal movement of the bottom closure upon the

wires, stops to limit said movement and retain the bottom closure in place, a top closure of less length than the side strips and having a longitudinally movable locking member adapted to project beneath one of the end strips, transverse cleats attached to the side member of the top closure and detached from the movable member, and cleats on the movable member slidably en-

gaging the side members and supporting the same in the plane of the said members. 10

In testimony whereof I have signed this specification in presence of two witnesses.

BERTRON K. BOYD.

Witnesses:

WARREN PIERPONT,
W. E. WARD.