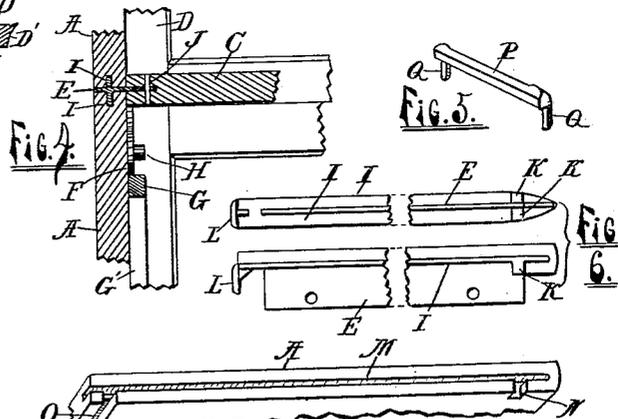
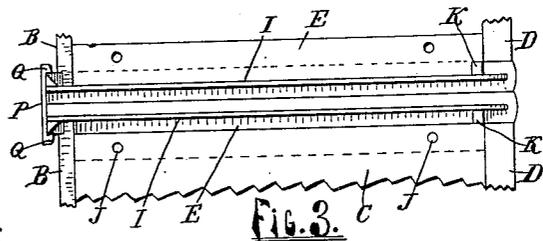
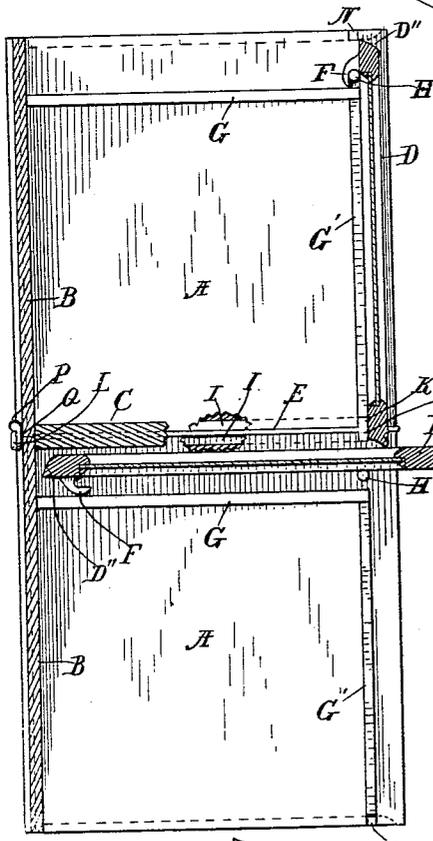
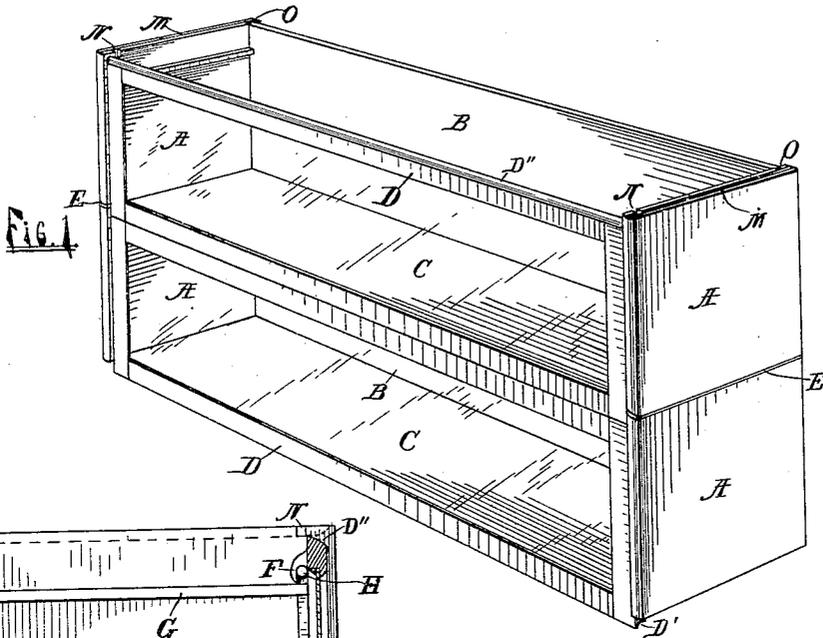


No. 664,864.

Patented Jan. 1, 1901.

J. HOULT.  
KNOCKDOWN FURNITURE.  
(Application filed June 9, 1900.)

(No Model.)



WITNESSES:  
**FIG. 2.**  
*Palmer A. Jones.*  
*Miles T. Carterby.*

**FIG. 7.** *John Hoult*  
By *Luther V. Moulton*  
Attorney

# UNITED STATES PATENT OFFICE.

JOHN HOULT, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO THE GUNN FURNITURE COMPANY, OF SAME PLACE.

## KNOCKDOWN FURNITURE.

SPECIFICATION forming part of Letters Patent No. 664,864, dated January 1, 1901.

Application filed June 9, 1900. Serial No. 19,659. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HOULT, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Knockdown Furniture; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same:

My invention relates to improvements in knockdown furniture, and more particularly to bookcases; and its object is to provide a bookcase or other article of furniture that may be readily assembled or taken apart and reduced to a quantity of separate flat parts without the use of tools of any kind, to provide a cheap, convenient, and stable structure, and to provide the same with certain new and useful features 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 of two sections of a bookcase embodying my invention; Fig. 2, an enlarged vertical section of the same; Fig. 3, a detail in plan view showing the arrangement of the coupling-irons in series; Fig. 4, a detail in vertical section; Fig. 5, a perspective of a bar for attaching the sections end to end; Fig. 6, details of the coupling-plates for connecting the vertical series of sections, and Fig. 7 a perspective detail of one end of an end piece.

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

A represents the ends, B the backs, C the bottoms, and D the fronts, of the respective sections of the case. The ends, backs, and bottoms when assembled are securely and detachably held in place by means of the coupling-plates illustrated most fully in Fig. 6. Each coupling-plate consists of a thin plate E, of suitable material, preferably cast or malleable iron, arranged horizontally between the respective sections of the ends and provided with oppositely-projecting ribs I I to engage grooves M in the adjacent ends of the ends A, and also provided with lugs K at its

respective upper and lower sides to engage recesses N in the ends A. These plates are thus made cruciform in cross-section, as shown in Fig. 4, and the inner edge of each plate is inserted in a horizontal groove in the end of a shelf C and secured therein by suitable pins or fastenings J. Each plate at the rear end is also provided with a hook L, and when placed end to end the sections are coupled together by the coupling-bars P, adapted to rest on the top of two adjacent hooks L and having depending spurs Q, set off inward to pass behind the hooks and engage the same. The backs are provided with transverse tongues at each end, which tongues engage vertical grooves O in the ends A to secure the backs in place. The coupling-plates thus serve to attach the ends A to each other, the ribs I alining the same in one direction and the lugs K alining them in the other direction, and also serve as supports for the shelves, which shelves also serve to connect the ends to each other, while at the same time each end, the back, and each shelf may be readily detached without the use of tools or the formation of any small detached parts to become misplaced.

The front to each section consists of a suitable sash D, having a glass panel therein, and is detachably mounted to turn from the vertical and closed position to a horizontal position and to run back into the top of the respective section by means of hooks F, projecting inward from the upper part of the sash at each side and adapted to engage pins H, fixed in the ends A, and strips G, on which the hooks slide. These hooks and pins serve as pivots on which the front turns, and each front can be readily detached by lifting the same upward and outward. Each sash is extended downward to abut against the upper edge of the sash below, and thus I am able to detach any front in the series without taking down the structure by merely opening the one above it. To form a tight joint between the respective fronts and permit free opening and closing of the same, I form the upper edge of each sash convex on a radius struck about the axis of the pins H, as at D'', and the lower edge with a concave form to

correspond, as at D'. The hooks F run back on the strips G and support the upper part of the fronts, the lower part of the same being supported by the pins H and sliding freely thereon. G' represents other strips arranged vertically near the front of the ends A to engage the fronts when closed.

The device is herein shown embodied in bookcase-sections; but it is evidently adapted for use in any article consisting of a series of sections or compartments, such as a bureau, cupboard, store-shelving, and various other structures. I do not therefore limit myself to the particular structure shown.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of end sections, a shelf, and coupling-plates attached to the shelf and extending between the end sections, and provided with means for detachably securing the end sections to the coupling-plates, substantially as described.

2. The combination of end sections having grooves in their adjacent ends, and coupling-plates interposed between the end sections and projecting inward to support a shelf and also having oppositely-projecting ribs engaging the grooves, substantially as described.

3. The combination of end sections having grooves and recesses in their adjacent ends, and coupling-plates interposed between the sections, and having oppositely-projecting ribs engaging the grooves, and oppositely-

projecting lugs engaging the recesses, substantially as described.

4. The combination of superposed end sections having grooves in their adjacent ends, a shelf at right angles to the ends and having a groove in its end, and a coupling-plate inserted in the groove of the shelf and interposed between the end sections, and also having oppositely-projecting ribs engaging the grooves in the end sections, substantially as described.

5. The combination of end sections having grooves and recesses in their ends, a shelf having grooves in its ends, coupling-plates having ribs and lugs to engage the grooves and recesses, and provided with hooks, and a coupling-bar having spurs to engage the hooks, substantially as described.

6. The combination of end sections having grooves and recesses in their adjacent ends and vertical grooves in their adjacent sides, a shelf having grooves in its ends, coupling-plates secured in the grooves in the shelf and having ribs to engage the grooves in the ends, lugs to engage the recesses in the ends, and hooks to engage the coupling-bars, and coupling-bars having offset spurs, substantially as described.

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

JOHN HOULT.

Witnesses:

LUTHER V. MOULTON,  
MILES V. EASTERBY.