Sept. 24, 1929. J. A. RICHARDS 1,729,401

BOOKCASE

Filed March 24, 1924 4 Sheets-Sheet 1

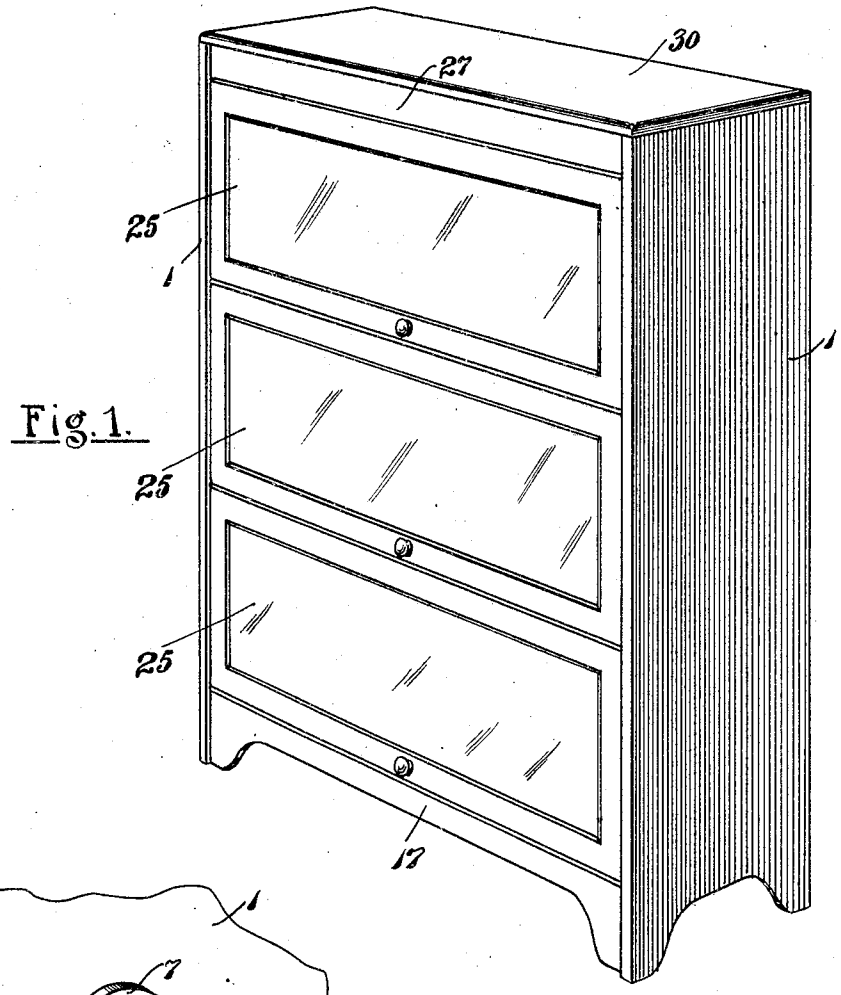


Fig. 1.

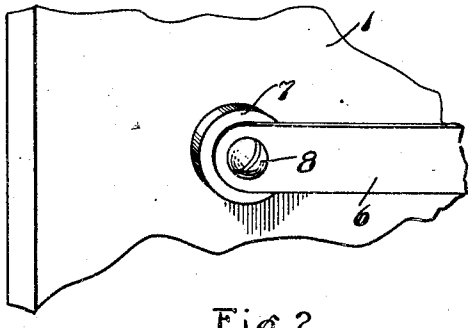


Fig. 2.

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BOOKCASE

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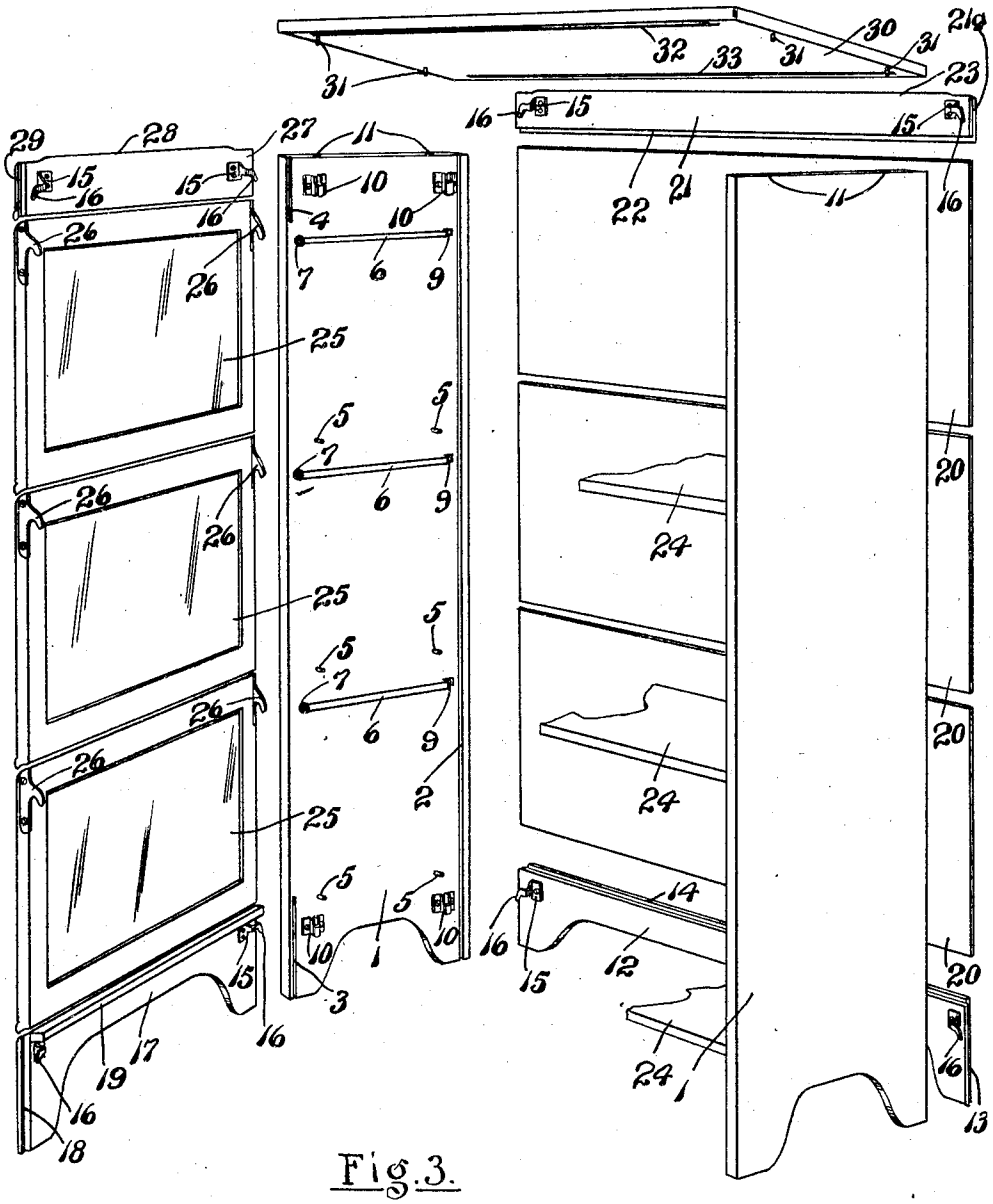


Fig. 3.

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BOOKCASE

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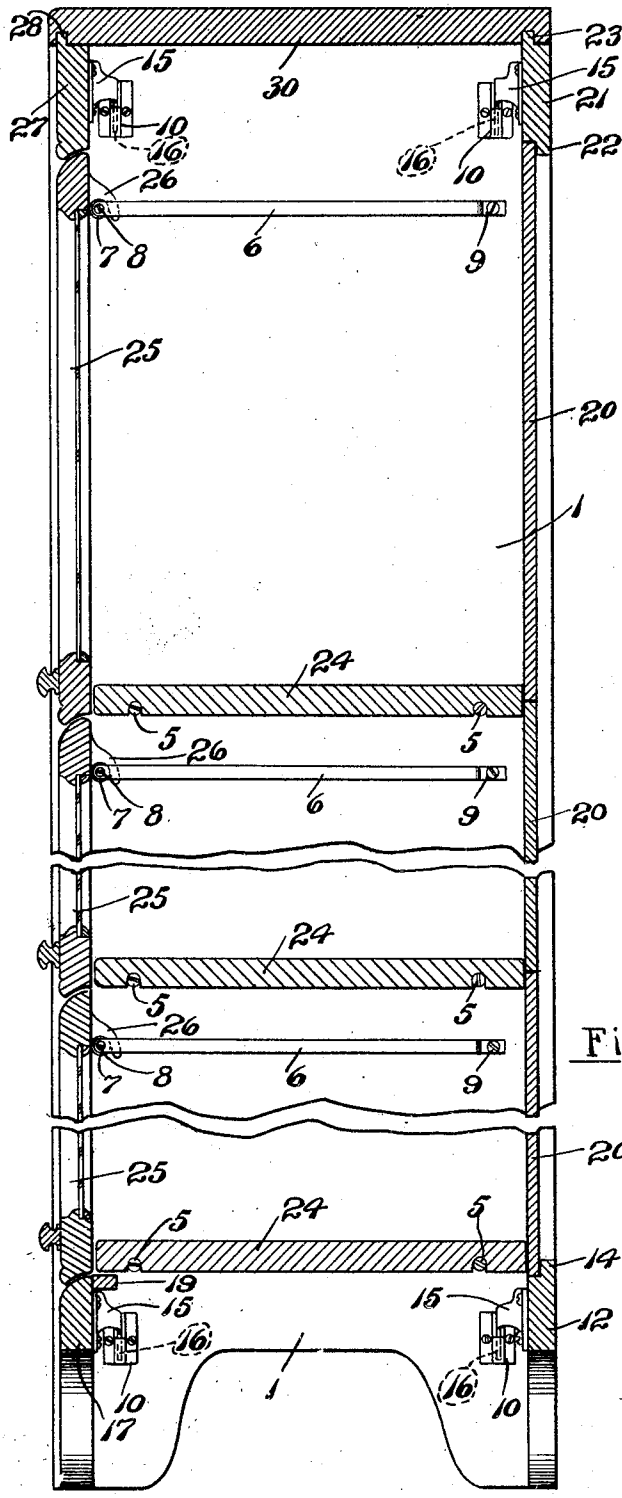


Fig. 4.

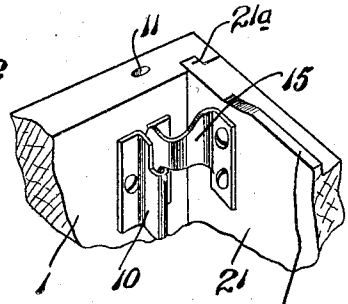


Fig. 5.

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Sept. 24, 1929. J. A. RICHARDS 1,729,401

BOOKCASE

Filed March 24, 1924 4 Sheets-Sheet 4

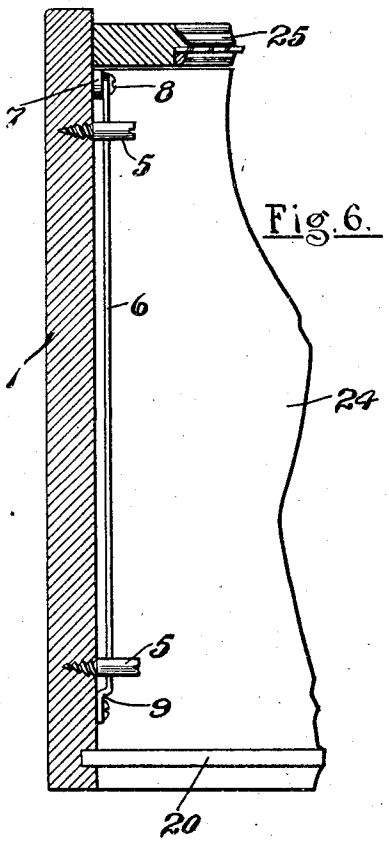


Fig. 6.

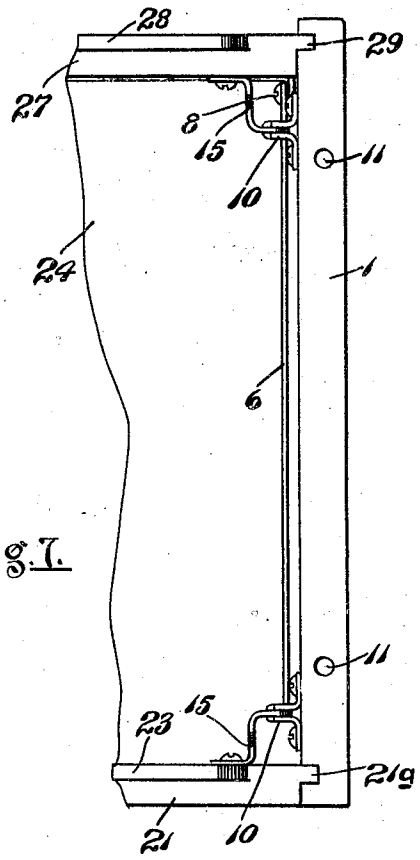


Fig. 7.

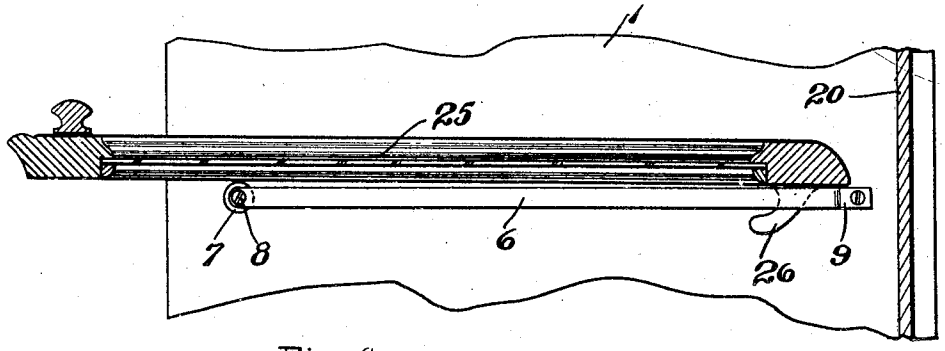


Fig. 8.

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UNITED STATES PATENT OFFICE

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BOOKCASE

Application filed March 24, 1924. Serial No. 701,331.

This invention relates to a book case construction. It is a primary object and purpose of the present invention to make a book case of separable parts which can be very quickly and easily assembled without use of tools or without employment of skilled labor, so that the same may be shipped in a collapsed state and assembled at its point of destination, and at the same time make a particularly sturdy construction and one which can be very economically produced, all of the different parts of the structure being simple and easy to make. In addition, the space required for storage in a factory is greatly reduced.

The construction by means of which these ends, as well as others not at this time enumerated, are attained is illustrated in the accompanying drawings, in which,

Fig. 1 is a perspective view of the assembled book case.

Fig. 2 is a fragmentary elevation and perspective of one of the door hangers for the case.

Fig. 3 is a perspective view of the several parts of the book case in detached relation to each other, the shelves being broken away at one end for a better disclosure of the several parts of the case.

Fig. 4 is an enlarged transverse vertical section through the assembled book case.

Fig. 5 is a perspective view of a fragmentary detail of construction illustrating the detachable connection between the ends of the case and the upper and lower tying cross members.

Fig. 6 is an enlarged fragmentary horizontal section through one end and adjacent portions of the book case.

Fig. 7 is a fragmentary plan view of one end portion of the book case with the top removed, and

Fig. 8 is a fragmentary vertical transverse section through the book case showing the door mountings used.

Like reference characters refer to like parts in the different figures of the drawings.

In the construction of the book case ends 1 of a height substantially equal to the height of the completed case are provided, each on its inner side and near its rear edge being formed with a groove 2 extending the full length of the said end member. Each end member 1 near its front edge and at its lower end is provided with a groove 3 extending from the lower end of the member 1 for a short distance upwardly. Similarly at the upper end and on the inner side of each end member 1 another groove 4 is cut which extends from the upper edge of the member 1 downwardly for a short distance.

Pins 5 are attached to each end member on the inner side thereof in pairs located in horizontal planes in spaced apart relation. As shown there are three pairs of said pins which are carried by the end members. Bars 6 are also attached in horizontal position in spaced apart relation on the inner sides of the end members 1. These bars are spaced a short distance from the adjacent inner sides of the members 1, a spacing collar 7 being interposed between the front end of each bar and the member 1 with an attaching screw 8 passing through the bar and collar, while at the rear end each bar is bent inwardly to engage with the inner side of the member 1 and then turned to lie alongside thereof, with a screw used for permanent attachment, as shown at 9.

Adjacent the upper and lower corners of each end member 1 and on the inner sides thereof, socket members 10 are permanently secured, each being formed from a piece of sheet metal with attaching flanges and a projecting socket portion between the flanges, the upper portion of which is cut away, as shown best in Fig. 5. In the upper edge of each end member two spaced apart holes 11 are bored downwardly, for a purpose which will appear later.

A rear cross and spacing rail 12 is adapted to be located between the two end members 1 at the lower ends and near the rear edges thereof, the same being formed at its ends with projecting tongues which fit in the grooves 2 and at its upper edge being rabbeted so as to leave an upwardly extending flange 14 at the back side of the rail, as shown. Said rail at its ends and on its inner side has engaging members 15 secured

thereto, each being made from metal with a base to be secured to the rail from which a section is bent to extend away from the rail a short distance and then at right angles terminating in a downwardly extending prong 16 which is adapted to be detachably received in an adjacent socket member 10. This secures the rail and end members 1 together at the back and at their lower ends, with the rail capable of detachable connection to said end members.

A front rail 17, corresponding to the back rail 12 is located between the ends 1 at the front and at the lower ends of said end members 1, having tongues 18 at its ends received in the grooves 3. At the upper edge of the front lower rail 17 a bar 19 is attached to the rear side of the front rail extending the full length thereof. Engaging members 15, like those on the back lower rail 12 are attached at the ends and on the rear side of the front lower rail 17 to detachably connect with the socket members 10 at the front and at the lower portions of the end members 1.

After the end members and the lower rails 12 and 17 are connected together, a back is made for the book case by inserting a number of thin boards 20 into the grooves 2 which serve as guides for the same in placing them in position. The lower edge of the lowermost part 20 comes in front of the flange 14 of the lower rear rail 12 as shown in Fig. 4. An upper rear rail 21 having tongues 21^a at its ends is then guided into and located between the grooves 2 in the ends 1, being provided with a lower flange 22 which lies back of the upper edge of the uppermost part 20, and at its upper edge being formed with an upwardly projecting tongue 23 which extends nearly the full length of the upper rail terminating, however, a distance short of the ends of said rail 21.

Shelves 24 may now be placed between the ends 1 to rest on the pins 5, said shelves at each end and on the lower sides thereof having grooves formed therein to receive the pins. In the construction shown, there being three pairs of the pins, three shelves may be put in place, but it is evident that the number of shelves may be varied with a varying of the height of the end members 1.

The doors 25 are of the ordinary construction used with sectional book cases, having hook members 26 at each end and near the upper edge of each shelf to engage over the collars 7 between the ends 1 and bars 6 attached thereto. There are three of these doors, one for each division of the case and the doors mounted as shown and described close the front side of the case when in closed position, any door being adapted to be elevated and pushed back in the case for access to any division or compartment of the case above a shelf 24.

After the doors are in place, an upper front rail 27 is placed between the ends 1 above the upper door, having tongues 29 at its ends which are guided into the grooves 4. This rail at its upper edge also is formed with an upwardly projecting tongue 28 similar in practically all respects with the tongue 23 on the back upper bar 21. Engaging members 15 to detachably connect with the front upper sockets 10 are connected to the rail 27 near each end thereof, as shown.

The book case is completed by a top 30 of rectangular form which has pins 31 depending therefrom to enter the holes 11 in the ends 1 and also has grooves 32 and 33 cut in its under sides for the reception of the tongues 28 and 23 on the front and rear upper cross and connecting rails 27 and 21, respectively, making a secure and tight yet readily detachable connection.

From the foregoing it is apparent that a book case is made of readily separable and as readily assembled parts, all of which parts may be entirely completed in the factory and assembled without the use of any tools whatever, while the assembly may be done by anyone, skilled labor not being needed in any respect. The saving of space for storage in the factory and for transportation is apparent. It is also evident that the cost of manufacture is low, the various elements of the construction being very simple to manufacture with substantially all operations thereon done by machines and with no hand or cabinet work required. And when the structure is assembled it is fully as strong and rigid as though built by permanently connecting the different elements making up the construction. The invention is defined in the appended claims and is to be considered as comprehensive of all forms of structure coming within their scope.

I claim:

1. A book case comprising two unitary end members, upper and lower front and rear cross connecting rails disposed between and detachably connected to the said end members, a back detachably located between the end members between the upper and lower rear connecting rails, a plurality of shelves removably positioned in spaced vertical relation in front of the back and between the end members, a plurality of doors mounted one over the other at the front of the book case and detachably connected thereto, and a top covering the case and removably connected thereto, substantially as described.

2. A book case comprising two vertical spaced apart unitary ends each having a vertical groove therein on its inner side near its rear edge and vertical short grooves therein on its inner side adjacent its upper and lower ends and near its front edge, upper and lower front and rear cross connecting rails having tongues at their ends to be received in said

grooves located between the end members and detachably connected thereto, a back slidably received in the rear vertical grooves in said end members and held between the upper and lower rear cross connecting rails, shelves and doors detachably mounted in and at the front of the case, and a top detachably connected to said end members and upper connecting rails.

3. A book case comprising two vertical spaced apart unitary end members, upper and lower front and rear cross connecting members located between the end members, sockets on each end member on its inner side adjacent each upper and lower corner thereof, engaging members secured adjacent the ends of each of the cross connecting members to detachably connect with said sockets, a back located between the upper and lower rear connecting members, said end members being vertically grooved to receive the vertical edges of said back, shelves detachably mounted on and located between the end members, doors mounted at the front of the case one over the other and above the shelves, and a top detachably connected to the end members and the upper cross connecting members.

4. A book case comprising two vertical spaced apart unitary end members having grooves on their inner sides adjacent their front and rear edges, cross connecting rails between said end members at their upper and lower ends and adjacent the front and rear edges thereof, said rails having tongues received in said grooves, means for detachably connecting the rails at their ends to said end members, a back located between the upper and lower rear rails having its ends located in the rear grooves in said end members, shelves detachably carried by and between the end members, doors at the front of the case, a top for the case having longitudinal grooves in its under side, said upper connecting rails being provided with upwardly projecting tongues to seat in said grooves in the top.

5. A book case comprising two vertical spaced apart unitary end members, shelf holding and door mounting devices attached to said end members at their inner sides, upper and lower front and rear cross connecting rails located horizontally between the end members, means detachably connecting the rails and end members together, a back between the upper and lower rear rails, shelves carried detachably on the shelf holding devices, doors mounted on said door mounting devices, and positioned at the front of the case, and a flat top detachably connected to the case at the upper open end thereof, said end members, rails, back, shelves, doors and top being readily separable and as readily put together, substantially as and for the purposes described.

In testimony whereof I affix my signature.

JAMES A. RICHARDS.