No. 659,851. Patented Oct. 16, 1900.

J. E. KNOBEL.

BOOKCASE.

(Application filed Feb. 26, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

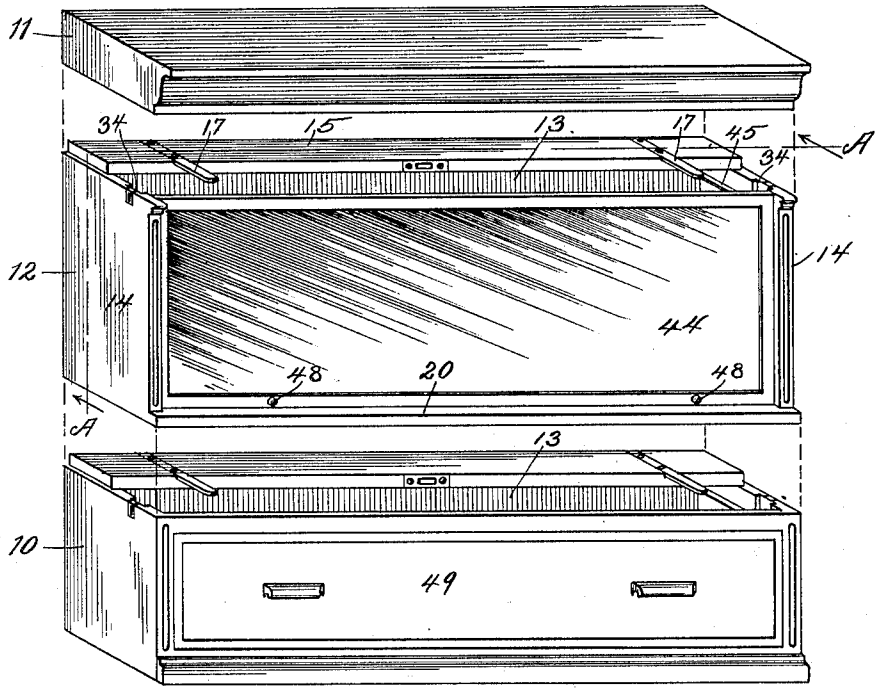
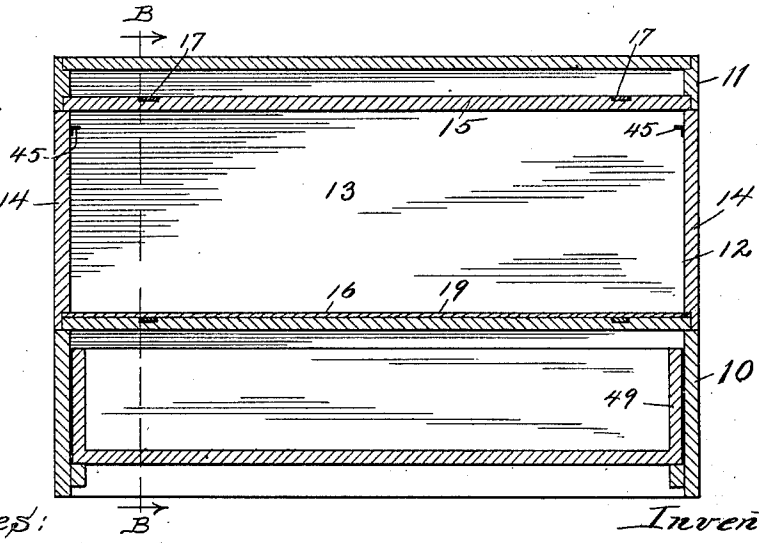


Fig. 2.



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Fig. 3.

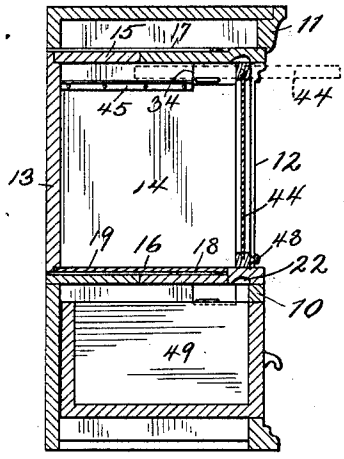


Fig. 4.

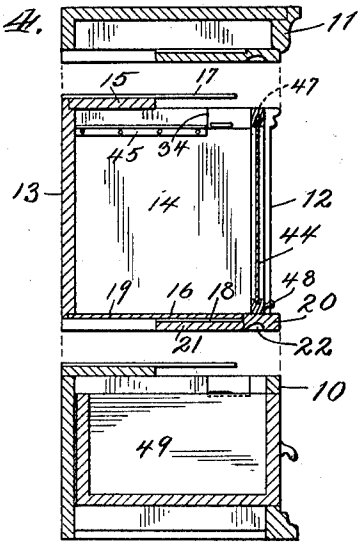


Fig. 5.

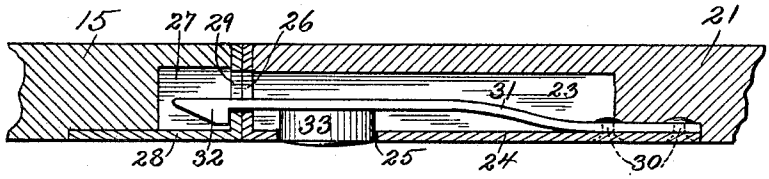


Fig. 6.

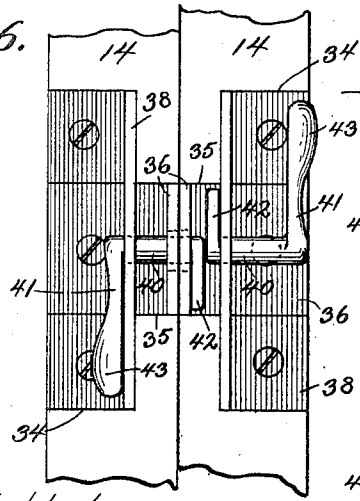


Fig. 8.

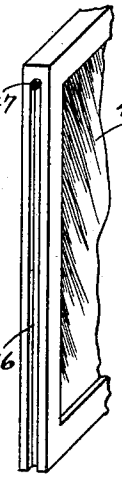
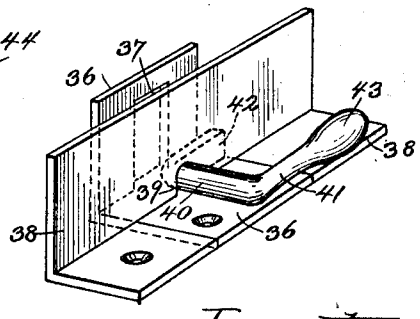


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN E. KNOBEL, OF CHICAGO, ILLINOIS.

BOOKCASE.

SPECIFICATION forming part of Letters Patent No. 659,851, dated October 16, 1900.

Application filed February 26, 1900. Serial No. 6,624. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. KNOBEL, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bookcases, of which the following is a specification.

My invention relates to certain improvements in the construction of bookcases of the adjustable or elastic type, in which certain units are employed which by addition to each other enable the user to increase the size of the case as may be necessary to accommodate the increasing size of his library. As these devices have been hitherto constructed they are open to great objection in that the sections are not fastened either to those above or below them or to those immediately adjacent at their sides with sufficient security; and my invention has for its purpose, among other improvements, to form a construction in which every unit is securely attached to every other unit as well at its ends as above and below it, so that there is no possibility of any unit becoming displaced or of overthrowing any portion of the case without overthrowing the entire structure, while at the same time constructing each section or unit so that it can be quickly and conveniently placed or withdrawn by any person familiar with its construction.

Referring now to the accompanying sheets of drawings, in which the same reference characters are used to designate identical parts in all the views, Figure 1 is a perspective view of a top piece, a base-piece, and one of the unit-sections separated from each other, so as to show more clearly the construction employed. Fig. 2 is a sectional view through the same parts assembled upon the line A A of Fig. 1. Fig. 3 is a sectional view on the line B B of Fig. 2. Fig. 4 is a similar view on the same line, but with the parts separated. Fig. 5 is a central vertical section, on an enlarged scale, through the locking mechanism for locking each unit-section to the sections above and below it. Fig. 6 is a plan view, on an enlarged scale, of the locking mechanism for locking each section to the sections adjacent to its ends. Fig. 7 is a perspective view of one of these locking mechanisms detached; and Fig. 8 is a perspective view of one end of the sliding door, showing the groove thereon which coöperates with the pin on the case to guide the door as it moves inward.

The base 10, as well as the top piece 11, forms no part of my invention and may be of any desired form or construction, except that the top of the base-piece 10 is constructed just the same as the top of each of the sections 12, and similarly the under side of the top 11 is constructed the same as the under side of the unit-section 12, so that any number of sections can be placed one above each other upon the base, and the top piece 11 can then be added. Any number of bases may be employed and locked to each other end to end and the sections placed on the bases and in turn locked end to end, so as to provide a structure which is locked together throughout.

Each section 12 is provided with the back piece 13, the end pieces 14, the fractional top piece 15, and the bottom piece 16, all of which may be fastened together by any desired method of construction employed in cabinet-making. The fractional top piece 15, as will be best seen in Fig. 1, extends over practically the rear half of the section; but its ends do not extend out flush with the end pieces 14, but extend about half-way across each of the end pieces, and the lower inner sides of the end pieces are cut away, so as to take over these shoulders formed by the top pieces 15 and make the end sections continuous, as shown in Fig. 2, when the parts are assembled. These top pieces 15 are provided with the straps 17, which are preferably metallic, being constructed of steel, and which let into the surfaces of the top pieces 15, so as to be flush therewith, and serve to coöperate with the grooves 18, formed in the bottom portion 16 of the section immediately above it. These bottom pieces 16, as best shown in Fig. 4, are preferably constructed of three distinct pieces, although it will be understood that they might be constructed of one single piece, in which case the principle of operation would be the same, although the manufacturing thereof would be more difficult. These three pieces are the uppermost portion 19, which is quite thin and extends from the back nearly to the front of the case, where it is joined to the front piece 20, with whose upper surface

it is flush, so as to form a continuation thereof. This front piece 20 is of a thickness equal to the thickness of the uppermost portion 19, plus the thickness of the top piece 15 or the lower piece 21, which is placed beneath the front part of the piece 19 and when the parts are assembled forms a continuation, as it were, of the top piece 15. The lower piece 21 has the channels 18 formed in its upper surface before the parts are assembled, and the uppermost piece 19, the front piece 20, and the lower piece 21 are firmly secured together in the relations shown in Fig. 4. The under side of the piece 20 is formed with the concave groove 22 therein for the purpose to be subsequently described.

It will be apparent that with the construction of the tops and bottoms of the unit-sections described any section can be slid directly to the top of any other section, the prongs 17 taking into the grooves 18, securely locking the parts together against any vertical lift as well as against any sidewise movement. To prevent any accidental separation by reason of any upper section being drawn off of the lower section, I provide between these sections the locking mechanism best shown in Fig. 5, where it will be seen that I form, preferably in the piece 21, a cavity 23, formed by cutting out a portion of the strip and fastening thereover the angle-shaped strap 24, which is provided with the apertures 25 and 26 in its bottom and side, respectively. Directly opposite it in the piece 15 I form the smaller cavity 27 by cutting out the notch in the piece 15 and covering it with the strap 28, formed in an angle and provided with the aperture 29, directly opposed to the aperture 26 in the strap 24. Secured to the strap 24, preferably by the rivets 30, is the strong leaf-spring 31, of the shape clearly shown and terminating in the hook 32, which when the parts are assembled by means of its beveled end rides up through the aperture 29 until it catches over the shoulder on the inner edge thereof and locks the sections securely together. To conveniently unlock the sections, I provide the button 33, secured to the under side of the spring 31 and projecting down through the aperture 25, where it is readily accessible to anybody understanding the operation of the device and desiring to separate the cases.

To lock the sections end to end and prevent their separation in that direction, I provide the locking mechanism best shown in Figs. 6 and 7, where it will be seen that I cut the wide recesses 34 about two-thirds of the way through the ends 14 on their inner sides and the narrower recesses 35 the rest of the way through. In the recesses 35 I place the angle-pieces 36, which are screwed to the bottoms of the recesses 34 and 35 and which have the elongated rectangular apertures 37 in the vertical portion thereof. In the recesses 34 I secure the angle-pieces 38, which have their horizontal portions screwed to the bottom of the recess 34 and have the central portion thereof cut away to accommodate the horizontal portion of the angle-piece 36, as is clearly shown in Fig. 7. A small recess 39 is centrally located in the bottom of the vertical portion directly opposite the aperture 37, and through this aperture 39 is adapted to pass the portion 40 of the locking-piece 41. This locking-piece 41 is provided with the substantially rectangular elongated lug 42, which is adapted to be passed through the apertures 37 of the adjacent angle-pieces and turned down by the handle 43 to the locking position shown at the left-hand side of Fig. 6. As will be readily understood, it is not absolutely necessary to furnish a locking member 41 with each end of each section, as but one locking member is necessary for each unit-section. The locking member 41 at the right-hand side of Fig. 6 is shown in the position which it would occupy if there were no section immediately adjacent to that end to be locked. It will be readily apparent that in assembling these sections it will be most convenient to place them in a tier at a time, locking the end sections of each tier together before the next tier is put in place.

To protect the books or contents of the case or cabinet from dust, I preferably employ the glass lid 44, which consists of the rectangular framework with the glass therein and adapted when the case is open to be slid backward, as indicated by the dotted lines in Fig. 3, upon the angle-pieces 45, suitably located upon the inner sides of the ends 14. To hold the covers in position, I preferably form the channels 46 in their ends and secure the pins 47, projecting inwardly into said channels at the upper outer corners of the ends 14, so that as the cover is swung out by pulling on the knobs 48, with which it is provided, the cover will first turn about the pin 47 as a pivot, the pivotal and upward movement necessary being permitted by the channel 22, previously mentioned as being formed in the piece 20, after which the cover will be slid in upon the angle-irons 45, as shown in Fig. 3, the channel or groove 46 permitting this movement and by coöperation with the pins 47 serving to direct it and carrying part of the weight of the cover.

As previously stated, the top piece 11 may be of any desired design, as well as the bottom 10, which may be provided with a drawer 49, as shown.

By the construction herein shown it will be seen that I have provided a unit for bookcases or filing-cabinets which is simple in its construction, strong, and durable, and which can be readily assembled and completely locked to all adjacent sections, thereby increasing materially the stability of the entire structure.

While I have shown my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifica-

tions and that I do not desire to be limited in the interpretation of the following claims, except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class described, the combination of a series of interchangeable unit-sections for forming a vertical column, each section having fractional top and bottom pieces which coöperate with the similar bottom and top pieces of the adjacent sections to form the shelves, with locking mechanism wholly inclosed within said fractional top and bottom pieces operating to prevent the accidental separation of sections in the same vertical column by movement in any direction.

2. In a device of the class described, the combination of a series of interchangeable unit-sections, with locking mechanism to prevent the accidental separation of sections in the same vertical column by vertical or horizontal movement thereof, said mechanism comprising the series of tongues rigidly secured on one of said sections coöperating with corresponding grooves formed in the adjacent section and a spring-catch wholly inclosed in the top and bottom pieces constituting the shelves.

3. In a device of the class described, the combination of a series of interchangeable unit-sections, with locking mechanism to prevent the accidental separation of sections in the same vertical column by vertical or horizontal movement thereof, said mechanism comprising the series of tongues rigidly secured on one of said sections coöperating with corresponding grooves formed in the adjacent section, and a spring-lock interposed between said sections consisting of a locking-tongue carried within the bottom of the section and coöperating with a catch within the top of the adjacent section.

4. In a device of the class described, the combination of a series of interchangeable unit-sections, with locking mechanism to prevent the accidental separation of sections in the same vertical column by vertical or horizontal movement thereof, said mechanism comprising a spring locking-tongue carried within the bottom of one of said sections cooperating with a catch within the top of the section beneath it.

5. In a device of the class described, the combination with the section having the top piece 15 extending across the rear portion thereof and provided with the straps 17 on the upper side thereof, of the section having the bottom piece 21 with the channels 18 formed in the upper side thereof.

6. In a device of the class described, the combination with the section having the top piece 15 extending across the rear portion thereof and provided with the straps 17 on the upper side thereof, of the section having the bottom piece 21 with the channels 18 formed in the upper side thereof, and locking mechanism interposed between said top and bottom pieces to prevent their separation.

7. In a device of the class described, the combination with the section having the top piece 15 extending across the rear portion thereof and provided with the straps 17 on the upper side thereof, of the section having the bottom piece 21 with the channels 18 formed in the upper side thereof, and locking mechanism interposed between said top and bottom pieces to prevent their separation, said locking mechanism consisting of a spring locking-tongue carried by the bottom piece 21 to coöperate with a catch carried by the top piece 15.

8. In a device of the class described, the combination with the section having a top piece 15 extending across the rear portion thereof and provided with the recess 27, and the angle-iron 28 covering said recess and having the aperture 29 therein, of the section having the bottom piece 21 with the recess 23 therein, the angle-iron 24 covering said recess 23 and having an aperture 26 therein, the spring-catch 31 extending through said aperture 26 and adapted to pass through and coöperate with the aperture 29, substantially as and for the purpose described.

9. In a device of the class described, the combination with the section having a top piece 15 extending across the rear portion thereof and provided with the recess 27, the angle-iron 28 covering said recess and having the aperture 29 therein, of the section having the bottom piece 21 provided with the recess 23 therein, the angle-piece 24 covering said recess 23 and having the apertures 25 and 26 therein, and the spring-tongue 31 secured in the recess 23 and having the button 33 coöperating with the aperture 25 and the head 32 projecting through the aperture 26 and adapted to coöperate with the aperture 29.

10. In a device of the class described, the combination with the interchangeable unit-sections, of mechanism attached to each of said sections for locking them end to end, said mechanism consisting of a locking-plate flush with the outer surface of the end of the section and having an aperture therein, a recess formed on the inside of each end of each section on which the locking-plate is located, and a catch inclosed in said recesses in all positions and adapted to be passed through the apertures of two adjacent plates to connect them, substantially as and for the purpose described.

11. In a device of the class described, the combination with the interchangeable unit-sections, of mechanism attached to each of said sections for locking them end to end, said mechanism consisting of a locking-plate flush with the outer surface of the end of the section and having an aperture therein, with an inner plate parallel thereto at a slight distance therefrom and provided with a bearing-aperture, and a U-shaped catch passing through said bearing-aperture in the interior

plate and adapted to be turned into position to pass through the aperture of the two adjacent outer plates to connect them.

12. In a device of the class described, the combination with the interchangeable unit-sections, each consisting of a casing having a recess in the end thereof, of mechanism attached to each of said sections for locking them together, said mechanism consisting of an angular locking-plate secured in the recess of the casing and having its surface flush with the outer surface thereof and provided with an elongated aperture, a second angular plate inserted in the longer recess parallel to the first angular plate and having the bearing-aperture through its flange corresponding to the other apertured flange, and a U-shaped hook passing through said bearing-aperture and adapted to be turned from normal position so as to pass through the aperture in adjacent outer plates and then to be turned to normal position to lock said sections from separation.

13. In a device of the class described, the combination with the interchangeable unit-sections, of mechanism attached to each of said sections for locking them together, said mechanism comprising the angular locking-plate 36 having the vertical flange with the elongated aperture 37 therein, with the angular plate 38 having the bearing-aperture 39, and the U-shaped hook 41 having the end 42 adapted to be passed through the apertures 37 of adjacent plates and to be turned so as to engage said plates and prevent their separation.

14. In a device of the class described, the combination of a series of interchangeable unit-sections for forming vertical columns and horizontal rows, each section having fractional top and bottom pieces, which coöperate with the similar bottom and top pieces of the adjacent sections to form the shelves, and the vertical end pieces, with locking mechanism wholly inclosed within said fractional top and bottom pieces operating to prevent the accidental separation of sections in the same vertical column by movement in any direction, and a second locking mechanism located in said end pieces for securing said sections in the horizontal rows from accidental separation by movement in any direction, said second locking mechanism being entirely inclosed within the end pieces of the adjacent sections.

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