(No Model.) 2 Sheets—Sheet 1.

A. S. HELD.

BOOK HOLDER.

No. 451,430. Patented Apr. 28, 1891.

Fig. 1.

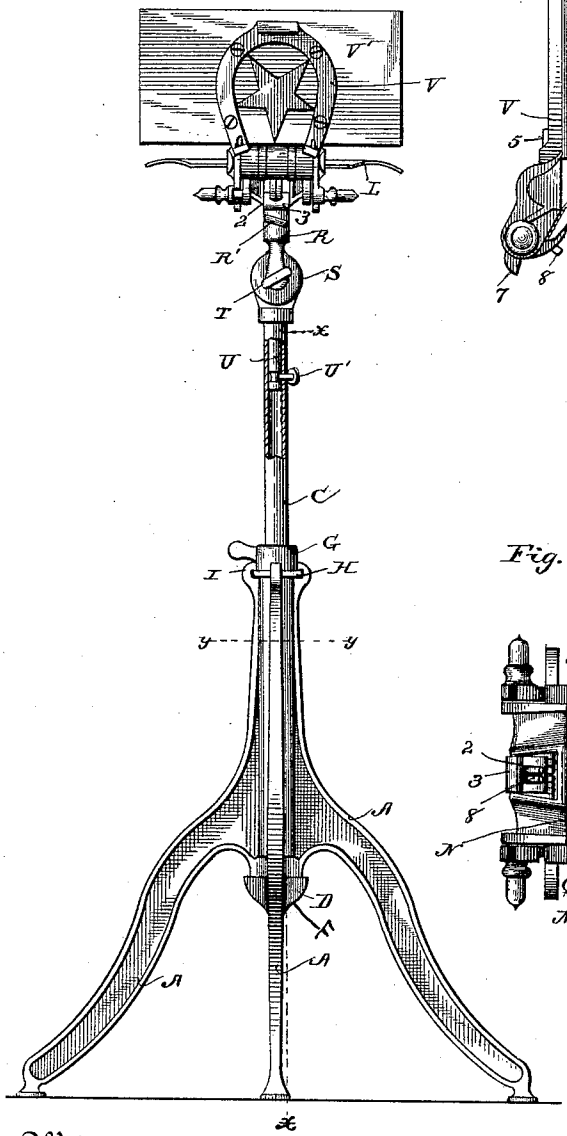


Fig. 4.

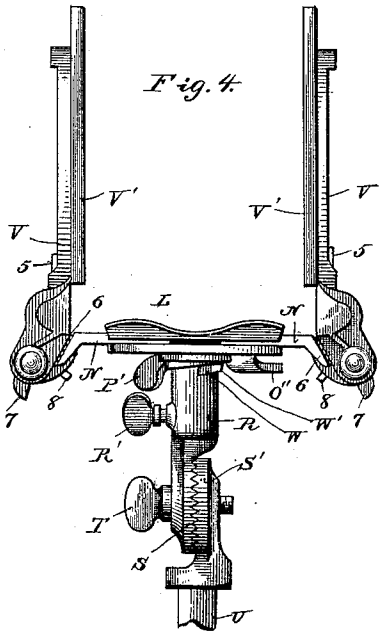
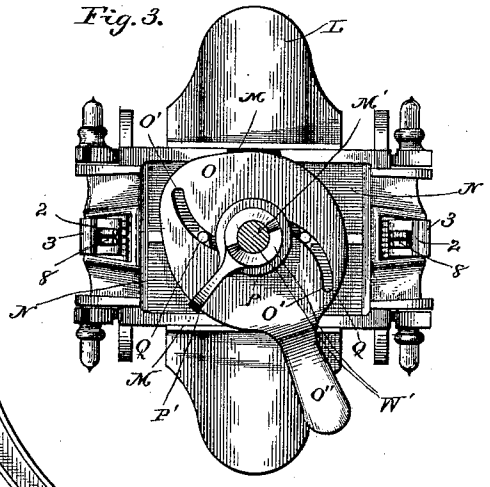


Fig. 3.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

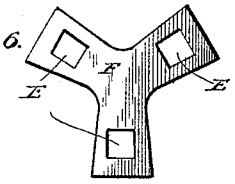


Fig. 7.

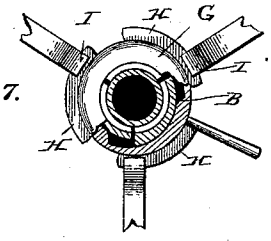


Fig. 2.

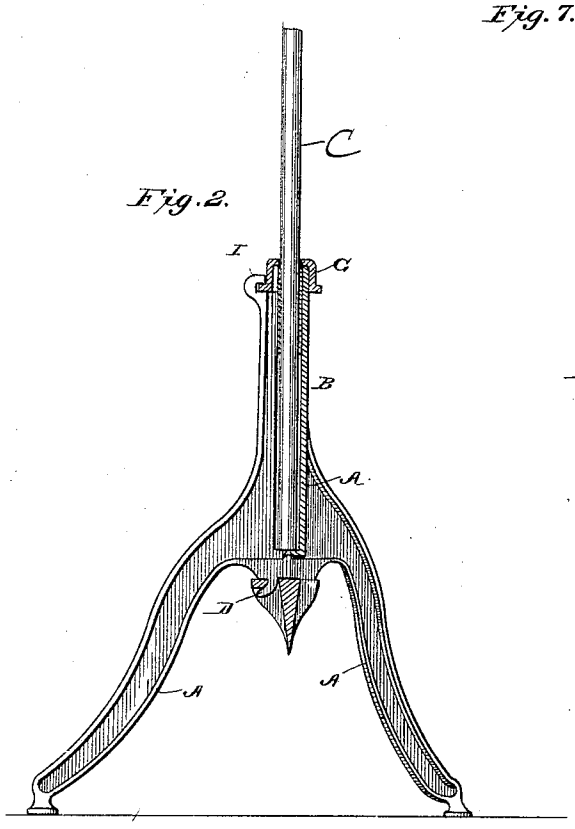
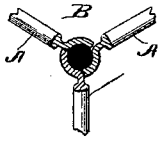


Fig. 5.



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UNITED STATES PATENT OFFICE.

AUGUST S. HELD, OF FREEPORT, ILLINOIS.

BOOK-HOLDER.

SPECIFICATION forming part of Letters Patent No. 451,430, dated April 28, 1891.

Application filed March 18, 1890. Serial No. 344,340. (No model.)

To all whom it may concern:

Be it known that I, AUGUST S. HELD, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Book-Holders; 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 pertains to make and use the same.

This invention is in book-holders adapted to rest upon the floor and support a single large book. It involves a tripod of peculiar construction, a vertical standard sliding therein, a plate supported by said standard and forming a rest for the back of the book, spring-actuated wings having a hinge connection with the plate and supporting the sides of the book, means for adjusting the distance between these wings, means for securing the plate at any angle, and means for locking the standard to keep the book at any desired height.

In the drawings, Figure 1 is a side elevation of the entire apparatus. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a bottom plan of the book-supporting plate, with wing-adjusting and locking devices in place. Fig. 4 is a side view of the locking device. Fig. 5 is a section at *y y*, Fig. 1. Fig. 6 is a top view of the tip for binding together at their lower union the parts of the tripod. Fig. 7 is a plan of the cap for securing the tops of said parts and clamping the vertical standard.

Wherever the letters appear in the drawings, A A are legs, which when properly united have their feet in the same plane, and form a tripod having in its axis a three-part vertical tube B for the reception of a tubular standard C. At the lower end of the tube each leg is provided with a hook D to pass through one of the apertures E in an ornamental tip F. To insert the hooks the three legs are inclined slightly outward at the top and then brought back to a vertical position. This produces an outward strain upon the tip—a strain which the weight of the devices increases—thus making the union at the bottom rigid. The legs are identical in form, each having upon one side only a curved flange, which forms a part of the tube and rests against the plane side of the adjacent leg, where the joint is hardly apparent. The upper ends of the parts forming the tube are bound together by a cap G, that passes over them. The cap is centrally perforated for the passage of the standard C, and is provided near its lower edge with slightly-separated lugs H, whose upper surfaces are upwardly inclined, and which, when the cap is rotated, pass under hooks I upon the several parts and draw the cap down closely upon the end of the tube. The external surfaces of the three parts within the cap are eccentric with reference to the axis of the standard and tripod, and the internal surface of the cap is made up of correspondingly eccentric surfaces. It follows that rotation of the cap presses the three parts of the tube inward with great power at the same time that the action of the lugs draws it downward, and thus the standard is firmly clamped and the whole lower part of the structure made perfectly rigid. Although the standard may thus be securely held at any height, it is of such length that when its lower end rests upon the tip F the book supported is at a convenient height for use by one in a sitting position.

The standard, by intermediate devices to be described, supports a slightly-curved plate L, intended for the support of the back of the book, and having upon its lower side two ribs M and a central dependent gudgeon M′. The ribs form guides for two plates N, sliding between them upon opposite sides of the gudgeon, and provided with short studs Q upon their lower surfaces. The studs lie in spiral slots O′ in a plate O, which is centrally perforated to pass over the gudgeon and against the plates N, and which is provided with a handle O″, by means of which it may be rotated, forcing the pins and plates N equally and gradually outward. A perforated disk P, provided with a handle P′, is passed over the gudgeon in a like manner to rest against the plate O. The gudgeon projects through the disk into a tubular socket R, where it is rigidly fastened by a set-screw R′. The upper end of the socket has spiral faces W, and upon these rest corresponding faces W′ of projections upon the disk P. Now if the disk be so turned that it is at its lowest

point, if the gudgeon be pressed down and secured by the set-screw, and if the disk be then rotated in the proper direction the spiral faces act like those of a screw, raising the disk and firmly clamping the plates O N between it and the plate L in any position in which they may be at the time. A contrary movement of the disk releases them, and the plates N may be thrown in or out by the rotation of the plate O. Below the socket is an integrally-formed radially-toothed disk S, centrally perforated for the passage of a screw T, whose threaded end works in a corresponding disk S′, whose teeth are thus caused to engage those of the former. By loosening the screw the disks may be slipped upon each other through the angular space of one or more teeth, and the plate L be thereby fixed at any desired angle with the axis of the apparatus. Below the disk S′ is a rod U, formed integrally therewith and extending into the tubular standard, where it is circumferentially grooved and secured by a set-screw U′, which prevents its withdrawal but not its free rotation. A shoulder upon the rod rests upon the end of the standard and receives the weight of the parts above it. Each plate N is practically one leaf of a spring-hinge, whose other leaf is at right angles to it and forms a wing for supporting one side of the book. The hinge is so constructed that it reverses when opened ninety degrees and then has no tendency to close, and for lightness and convenience this metal wing V is supplemented by a thin board V′, secured upon its inner face. The hinge has at each end a pair of ears connected by short pintles. The inner ear of each pair is integral with the plate N, and the two are connected by an integral bent rod 2, which has at its middle a short swinging hooked link 3. Springs 4 are coiled about an arbor mounted in the other leaf, with their ends 5 in engagement therewith, and their inner ends 8 bent into hooks and engaged with the free end of the link 3. The parts are so placed that when the boards are vertical the line of the strain exerted by the springs falls within the pintle-line of the hinge and the boards are pressed against the book. Too great motion in this direction is prevented by projections 6 upon the two leaves. When the boards are swung outward to a horizontal position, the line of strain intersects or passes a little beyond the pintle-line, and the tendency is to throw the hinge still farther open—a motion prevented by lugs 7 upon the respective leaves. It follows that the book when opened remains open and when closed is held firmly closed.

In practical use the book is placed between the boards, which are then adjusted by means of the plate O to clasp it firmly. The parts are then locked by rotation of the disk P, the desired angle is given to the book by means of the disks S S′ and the connecting-screw, and the standard is fixed at the proper height by rotating the cap G, when the whole is ready for use.

Since the wing-plates move toward and from each other without in any sense overlapping, they do not require separate ways, nor, although in practically the same way formed by the plates L O, do they move one upon the other, as is usual in devices of this class. In consequence the construction is simpler, the plates N occupy less vertical space, (which is an advantage in appearance.) they are lighter, and still more important, they work with smoothness and precision without planing or fitting, and they are more firmly secured than they would be if piled one upon the other. The construction takes advantage of the fact that the device is never used for thin books, and therefore needs no adjustment for them. It is evident that the advantages of this construction do not depend at all upon the devices for moving the wing-plates and for clamping them, although the particular devices coact advantageously, it being essential only that there be ways for the wing-plates, that they do not overlap or rest one upon the other, and that they lie upon opposite sides of the axis.

It being evident that changes can be made in my construction without passing the limits of my invention—as, for example, in changing the number of legs or the number and form of the slots and pins or studs for adjusting the wings—I do not wish to limit myself to the exact construction shown.

What I claim is—

1. The combination, with a book-supporting plate, of two non-overlapping wing-bearing plates sliding beneath the same upon opposite sides of the vertical axis, a suitable support beneath the wing-plates and forming with the book-supporting plates a way for the same, and means for locking the wing-plates in any desired position, substantially as set forth.

2. The combination, with the plates L O, forming a way for the wing-plates, of the non-overlapping wing-plates N sliding between them, means for sliding the wing-plates simultaneously in opposite directions, and means for lessening the distance between the plates L O to clamp the wing-plates, substantially as set forth.

3. The combination of the book-supporting plate having the central gudgeon, the wing-bearing plates sliding beneath it, lever-actuated devices for throwing the wing-bearing plates simultaneously in and out, and the cam-faced lever-actuated disk rotating about the axis of the gudgeon to clamp the parts between itself and the book-supporting plate above it.

4. The combination of a book-supporting plate, itself supported by a vertical standard, the vertically-divided tube clasping said standard and having at its upper end the eccentric external faces and the hooks I, and the cap fitting about the standard and provided with the eccentric internal faces and with the external lugs adapted to pass beneath the lugs

I, whereby the upper ends of the divided tube may be concealed and clamped upon the standard by the cap.

5. The combination, with the legs having, respectively, lateral flanges adapted to form a standard-receiving tube, and the integral hooks at the bottom of the tube of the tip closing the lower end of the tube and provided with apertures to receive said hooks and bind together the tube-segments, and means for binding together the upper ends of the segments, whereby the standard at its usual height has an end bearing or positive support and yet may, if desired, be clamped in the usual or in higher positions.

6. In a book-holder, the combination, with the book-supporting plate having the downwardly-extending central gudgeon, of a second plate revolubly mounted upon the gudgeon and provided with the slots upon the opposite sides thereof, and the two wing-bearing plates sliding between the plates before-named and provided with studs entering, respectively, the slots in the second plate, substantially as and for the purpose set forth.

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

AUGUST S. HELD.

Witnesses:
GEORGE L. MUNN,
JAMES I. NEFF.