(No Model.) 2 Sheets—Sheet 1.

B. E. KIPP.

DESK LID SUPPORT.

No. 588,228. Patented Aug. 17, 1897.

Fig. 3.

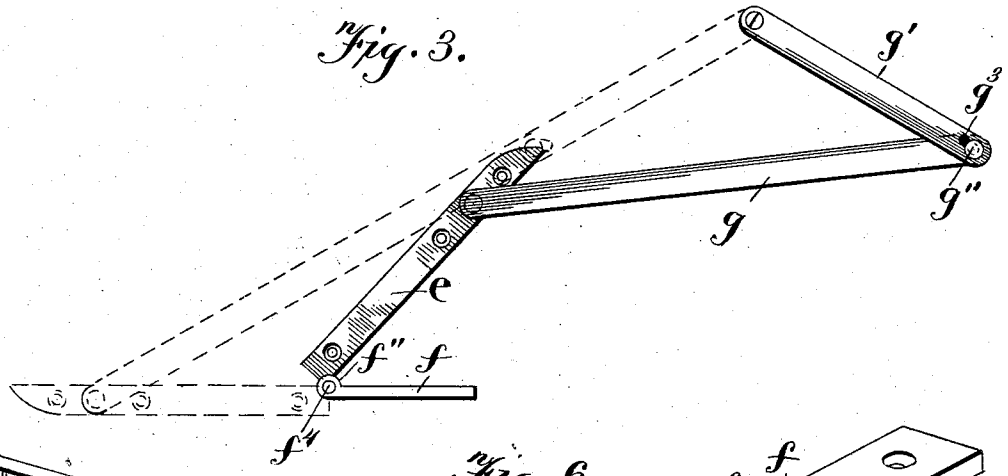


Fig. 6.

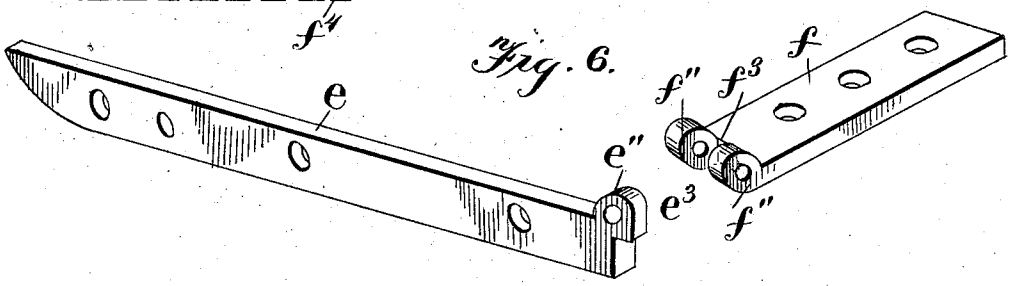


Fig. 7.

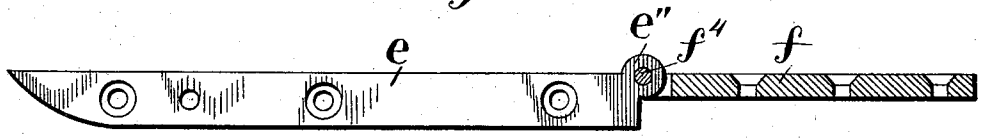
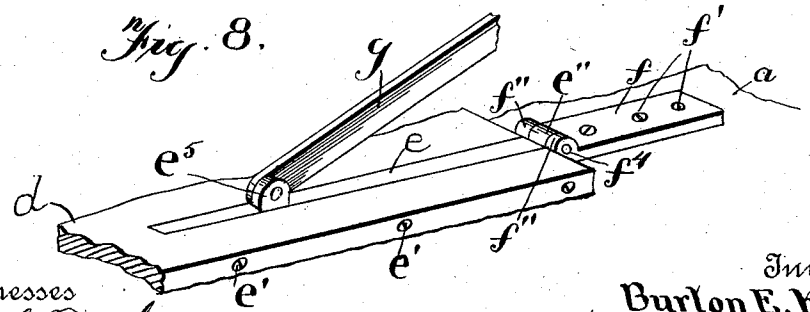


Fig. 8.



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

(No Model.) 2 Sheets—Sheet 2.

B. E. KIPP.

DESK LID SUPPORT.

No. 588,228. Patented Aug. 17, 1897.

Fig. 1.

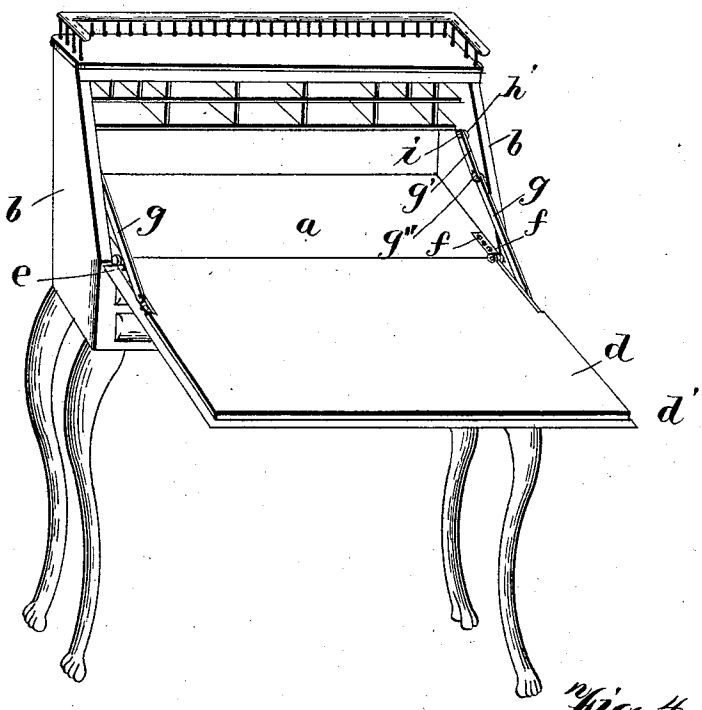


Fig. 4

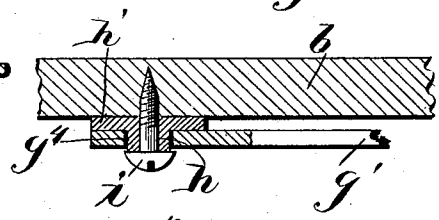


Fig. 2.

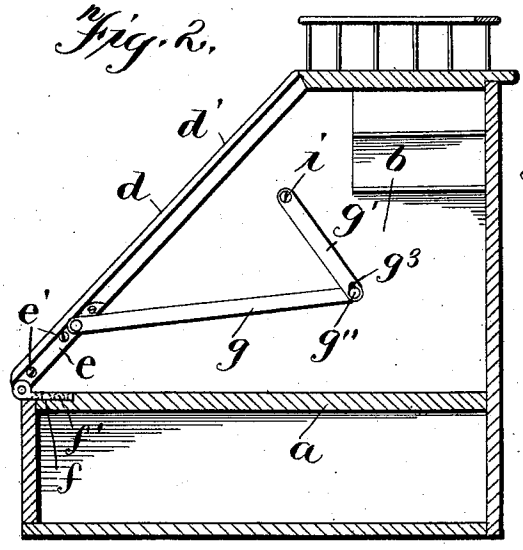
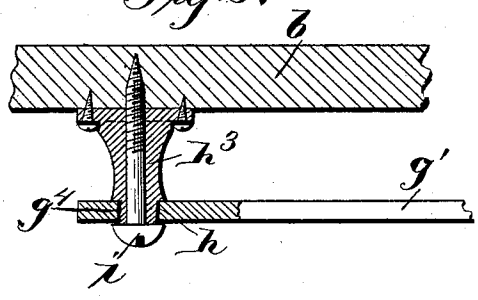


Fig. 5.



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UNITED STATES PATENT OFFICE.

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DESK-LID SUPPORT.

SPECIFICATION forming part of Letters Patent No. 588,228, dated August 17, 1897.

Application filed June 30, 1896. Serial No. 597,607. (No model.)

To all whom it may concern:

Be it known that I, BURTON E. KIPP, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Desk-Lid Supports; 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.

This invention relates to certain improvements in desk-lid supports.

An object of the invention is to provide certain improvements in desk-lid supports and hinges therefor exceedingly strong, simple, and durable in construction and effective in operation and action and which can be easily applied to drop-lid desks without changing the construction thereof and without disfiguring or marring the appearance thereof.

The invention consists in certain novel features of construction and in combinations and in arrangements of parts, as more fully and particularly pointed out and described hereinafter.

Referring to the accompanying drawings, Figure 1 is a perspective view of a portion of a drop-lid desk, showing the lid lowered and the devices of my present invention applied thereto. Fig. 2 is a sectional view taken vertically through a portion of the desk shown, illustrating the positions assumed by the parts when the lid is raised and closed. Fig. 3 is a detail view of a hinge with a lid-support attached thereto, the parts being shown in the position they assume when the lid is raised, dotted lines showing the positions of the parts when the lid is lowered. Fig. 4 is a detail sectional view through a portion of a desk end and the upper link of the support and the bearing-washer, illustrating in detail the manner of connecting the upper end of the support to the sustaining-pivot. Fig. 5 is a corresponding view of a modification. Fig. 6 is a detail perspective showing the members of a hinge separated. Fig. 7 is a detail sectional view of a hinge somewhat differently formed from that shown in Fig. 6. Fig. 8 is a detail perspective showing a different manner of attaching the hinge to the lid and a link to the hinge-lid member.

In the drawings, *a* is the desk-shelf, of any construction of drop-lid desk, having the vertical ends *b* and the drop-lid *d* hinged to the front edge of the shelf and arranged to swing from the horizontal position, as shown in Fig. 1, to the closed position shown in Fig. 2.

The edges of the lid can be recessed or rabbeted, if desired, to form the projecting edge or flange *d'* to rest against the front edges of the desk ends when the lid is closed.

The lids of drop-lid desks of this class are subjected to great strain when the lids are down, and it is a difficult matter to make the hinges strong enough to resist this strain without providing auxiliary supports for the lid which will relieve the hinges of strain and aid in sustaining the lid.

With these ends in view in carrying out my invention hinges are preferably provided at opposite edges of the lid, securing the same to the opposite ends of the desk-shelf. Each hinge comprises an elongated metal plate or bar *e*, arranged vertically or on edge longitudinally of the edge of the lid and set into a recess cut therein, so that the upper edge of said lid member of the hinge is approximately flush with the face of the lid, while the lower edge of the member rests on the edge flange of the lid, and the outer face of the member is approximately flush with the outer edge of the lid. The member is formed with transverse holes, through which fastening-screws *e'* are passed horizontally into the lid to firmly and rigidly secure the hinge member thereto. The inner end of said lid member extends to and is approximately flush with the inner edge of the lid and is usually cut off square to form a straight edge. At the upper corner of its inner end said lid member is formed with a single inwardly and upwardly projecting eye *e''*, extending above the plane of the upper edge of the lid member and inwardly beyond the plane of the inner end thereof. This eye is transversely perforated. The inner edge of the eye is preferably squared to form a shoulder or stop e^3. The shelf member of the hinge is formed of a horizontally-arranged elongated flat metal plate *f*, secured in a socket cut in the upper face of the desk-shelf

against the desk end and extending inwardly from the front edge of the shelf with its upper face approximately flush with the top face of the desk-shelf. This shelf member is formed with vertical holes, through which securing-screws f' are passed down into the shelf. The outer end of the shelf member is deflected upwardly and formed into two eyes f'' f'', projecting forwardly beyond the front edge of the shelf and upwardly above the plane of the shelf. The front end of the plate is notched so that the two eyes are formed a proper distance apart to snugly receive the eye e'' of the lid-hinge member, so that the hinge-pivot f^4 is passed through said three eyes, which are concentrically arranged. Between the eyes f'' the front edge of the shelf member is formed straight or at right angles to its longitudinal axis to make a shoulder or stop f^3 to correspond with and engage the shoulder e^3 of the lid member when the lid is lowered and thereby brace the hinge. However, as shown in Fig. 7, the hinge members can be formed without these abutting shoulders beneath the pivot, if so desired.

Material advantages are attained by arranging and securing the hinges of a desk-lid as just described, with one member arranged flat and horizontally in the shelf and the other elongated member on edge or vertically against the edge of the lid, as great strength and durability are secured and the hinges can be most advantageously located without altering or rearranging the construction of the desk.

The lid-supports are arranged, preferably, at both ends of the lid with their lower ends pivotally joined to the hinges and their upper ends joined to the inner faces of the desk ends.

Each support is shown formed of a long straight link g and an upper shorter straight link g'. The two links overlap at their meeting ends, and the upper end of the lower link g is provided with a lateral rigid-headed pivot g'', while the lower end of the upper short link has a slot g^3 formed therein and inclined at an angle to the length or longitudinal axes of the links. The said pivot passes loosely through this slot and is confined movably therein by its head. The slot is shown inclined from its lower end upwardly and toward the bottom edge of its link. The lower end of the lower link is pivoted securely to an intermediate portion of the length of the lid member of a hinge, preferably so that the pivot thereof lies between two securing-screws near the outer end of and at the outer face of the lid member of the hinge. The upper end of the upper link is formed with an enlarged bearing-hole g^4, (see Fig. 4,) which fits and turns loosely on the cylindrical bearing h, projecting from the outer face of a washer h' of greater diameter than said bearing and arranged between the desk end and the link. The washer and its bearing have a central perforation through which the sustaining-screw i is passed into the desk end. The said bearing portion h of the washer is of greater length than the thickness of the link, so that the screw can be tightened up as much as possible, with its head against the outer end of the bearing portion firmly holding the washer against the desk end, yet permitting the link to have a free and easy movement on the washer without rubbing against the wood of the desk. The parts are so arranged that when the lid is lowered the supporting-links extend in a straight line downwardly and outwardly from their sustaining-screws in the desk ends to the lid members of the hinges and a distance above the plane of the shelf and the lid and without engaging the same and so that the three pivots—the two end and the center pivots—are in the same line. When the lid is raised, the lower long link is moved longitudinally, so that its pivot g'' moves in the inclined slot and engaging the inclined edge thereof deflects the adjoining ends of the links inwardly automatically, and as the lid is closed said links swing inwardly together a distance above the desk-shelf.

If desired, an elongated support or washer h^3 can be provided with a base provided with secured screws and the central perforation for the sustaining-screw and the outer bearing for the link, as shown in Fig. 5. Such a construction is sometimes necessary where it is desired to throw the links a distance inwardly from the inner face of the desk end because of some peculiar formation of the desk.

In Fig. 8 is shown a means for attaching the hinge-lid members where the lids overlap and project beyond the ends of the desk. A groove is cut in the lid at the desired point, and the hinge-lid member is inserted therein with its upper edge flush with the face of the lid. Holes are bored from the edge of the lid horizontally inwardly to coincide with the holes in the hinge-lid member, so that the securing-screws can be inserted and the outer ends of the holes properly plugged, if so desired. The hinge-lid member in this form has the upwardly-projecting eye e^5 from its upper edge, to which the long link g of the support is pivoted.

Material advantages are attained by employing the long link g and the upper short link g', so that when the lid is lowered the joint between the links will be located within the desk inwardly beyond the hinge-joints and the plane of the front edges of the desk ends. Also the sustaining-pivot does not have to be arranged so high and the parts do not have such an extended rearward swing as would be the case if the upper link equaled the lower link in length. Also material advantages are attained in action by providing the long link with the pivot g'' on its side opposite to the desk end at which the support is located, as the head of the pivot and the short link are held away from the desk end, and also the links respond more quickly and satisfactorily

when the lid is started on its upward movement.

In relation to the hinges herein disclosed it should be noted that when the lid is lowered the upper faces of both hinge members are approximately in the same horizontal plane.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a lid-desk, the combination of the desk ends, the shelf, the vertically-swinging lid hinged to the shelf, a long straight link at its lower end pivotally joined to the lid and arranged to extend upwardly therefrom and at its upper end having the headed pivot extending from its side away from the desk end, the short straight upper link at its lower end lapping the upper end of the long link and having an inclined slot in which said pivot is confined, a washer resting against the inner face of the desk and having the reduced journal at its outer end of greater length than the thickness of the upper link and on which the upper end of said link turns, and a screw passing through said washer into the desk end with its head clamping against the outer end of the washer and projecting beyond the same to confine the link, substantially as described.

2. In a lid-desk, the combination of the desk ends, the desk-shelf, the vertically-swinging lid hinged to the shelf, washers at their inner ends resting against the inner faces of the desk ends a distance above the shelf, each washer having the central hole completely therethrough and at its outer end the circumferentially-reduced journal, and a headed securing-screw passing through said hole into the desk end with the head of the screw bearing against the outer end of the washer, and the two pairs of jointed-link lid-supports, each pair at the outer end pivotally joined to the lid and at the upper inner end having a bearing on said journal of the washer and loosely confined thereon by the head of the securing-screw, substantially as described.

3. In a lid-desk, the combination of the desk ends, the desk-shelf, the vertically-swinging lid, the hinges uniting the lid and shelf, each hinge comprising the elongated flat metal plate horizontally secured on the desk-shelf and the elongated flat metal plate secured on edge at an end of the lid with its upper edge in about the same horizontal plane (when the lid is lowered) with the flat upper face of the shelf-plate, the lid-plate at the upper corner of its inner end pivoted to the front end of the shelf-plate, a washer at the inner face of a desk end having the reduced bearing at its outer end, the securing-screw passing through the washer into the desk end with its head bearing against the outer end of the washer, and the jointed-link support at its outer end pivotally joined to the lid-plate of a hinge and at its upper end loosely confined on said journal by the screw-head, substantially as described.

4. In a lid-desk, the combination of the desk ends, the desk-shelf, the vertically-swinging desk-lid, hinges uniting the lid and shelf, the lid having a vertical groove a distance in from its edge, each hinge composed of a flat plate secured horizontally on, with its under flat face against the shelf, and the flat plate arranged at right angles to said first-mentioned plate and vertically on edge in said groove with its upper edge flush with the surface of the lid and having the eye projecting up from an intermediate portion of its upper edge, securing-screws extending from the outer edge of the lid through the lid to and through said vertical plate, the meeting ends of said plates pivoted together, and a jointed desk-lid support confined to the desk and at its outer end pivoted to said eye, substantially as described.

5. In a lid-desk, the combination of desk ends, the desk-shelf, the vertically-swinging lid, hinges uniting the lid and shelf, each hinge composed of the two plates arranged at right angles to each other, one elongated flat metal plate having its front end centrally notched with the eyes on both sides of the notch, said plate secured by vertical screws horizontally on, with its under flat side against, the desk-shelf and its upper flat side approximately flush with the surface of said shelf, and the corresponding elongated flat metal plate having a projecting eye at the upper corner of its inner end in said notch and pivoted to the eyes of the other plate, said plate arranged vertically on edge and secured to the lid by horizontal screws with its upper narrow edge flush with the surface of the lid, and a jointed lid-support confined to the desk and at its outer end directly pivoted to said lid-hinge plate, substantially as described.

6. In a lid-desk, the combination of the desk ends, the desk-shelf, the vertically-swinging lid, hinges uniting the lid and shelf, each hinge composed of the two plates arranged at right angles to each other, one flat metal plate secured horizontally on, with its under flat face against, the shelf and having its outer end notched with eyes on both sides of the notch, the end of the plate between the eyes and at the notch formed to constitute a stop-shoulder, and the flat metal plate secured vertically on edge to the lid and having the projecting eye at its upper inner corner in said notch and pivoted to said eyes of the shelf-plate, the outer edge of said projecting eye formed to constitute a shoulder coacting with said shoulder of the shelf-plate, and a lid-support confined to the desk, and at its outer end pivoted to said lid-hinge plate, substantially as described.

7. In a lid-desk, the combination of a shelf, a lid, and hinges uniting the shelf and lid, each hinge composed of a flat plate arranged on edge and secured to the lid and having the inwardly-projecting single eye at the upper corner of its inner end, the inner edge of the

eye formed to constitute a stop, such as e^3, and the flat metal plate secured horizontally on, with its flat face against, the shelf and having its front edge centrally notched inwardly to receive said eye of the lid-plate and formed with the two eyes on opposite sides of the notch to which the lid-plate eye is pivoted, said shelf-plate between the eyes formed with the straight portion constituting a stop, such as f^3, coöperating with the said stop of the lid member, substantially as described.

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

BURTON E. KIPP.

Witnesses:
C. L. RHEINER,
CHARLES H. MINTZER.