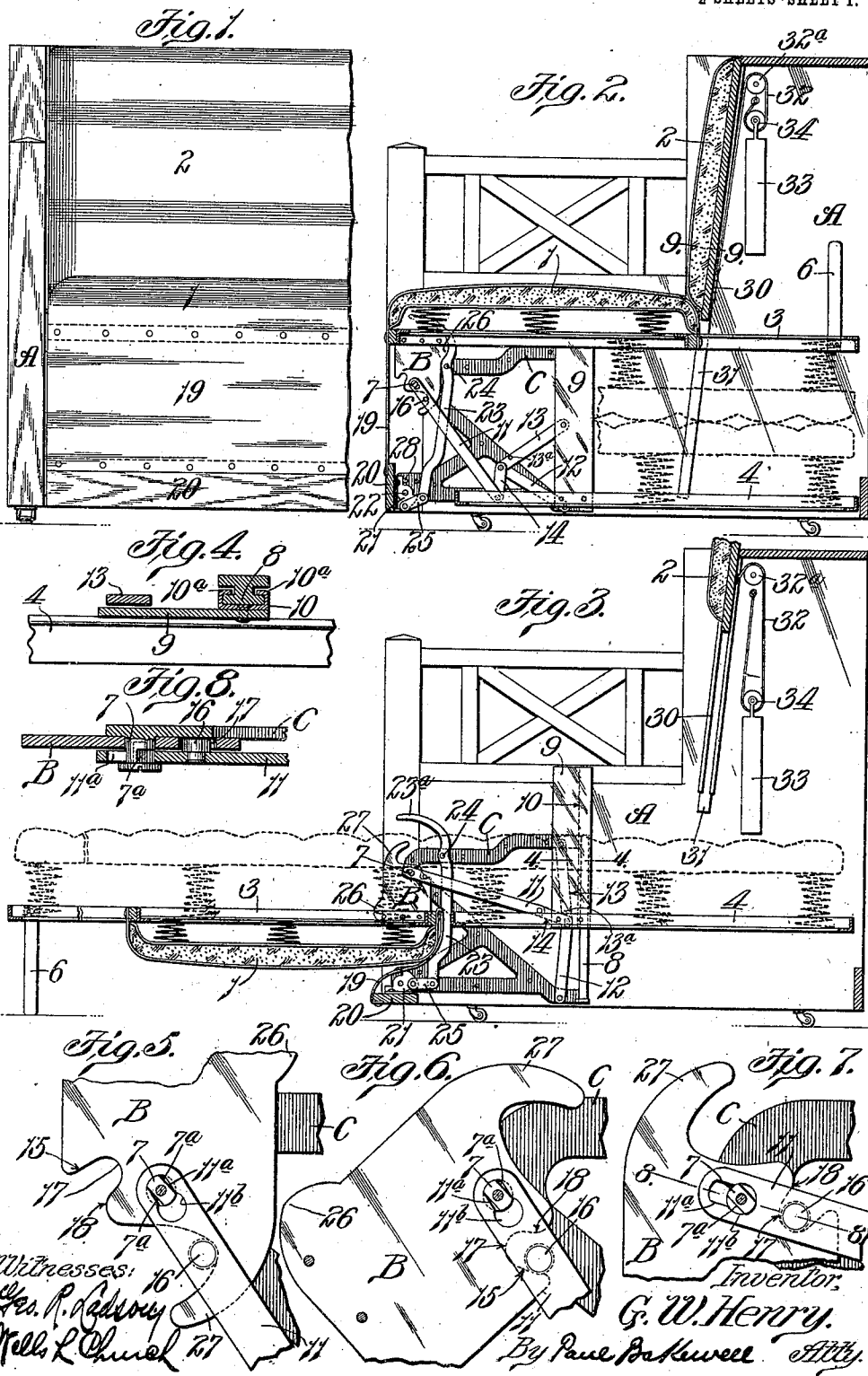


996,243.

Patented June 27, 1911.

2 SHEETS—SHEET 1.

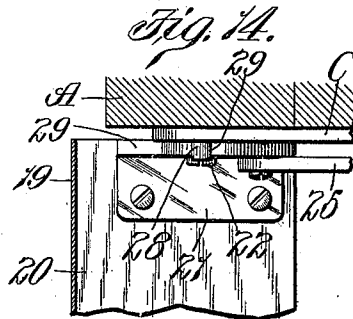
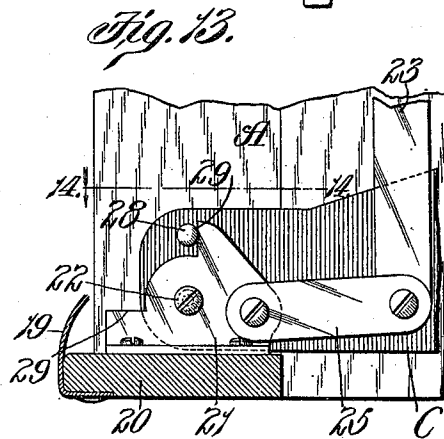
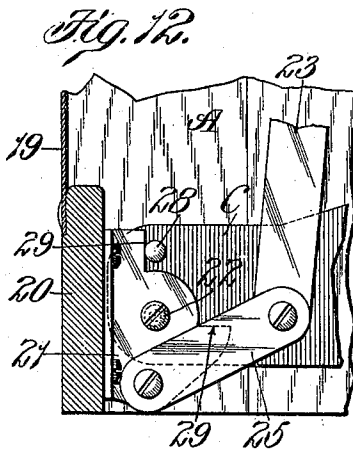
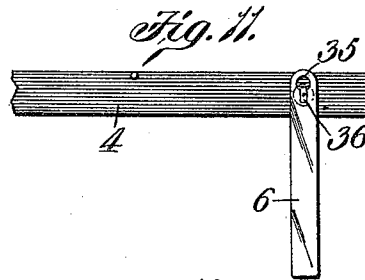
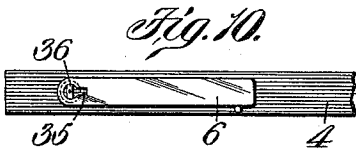
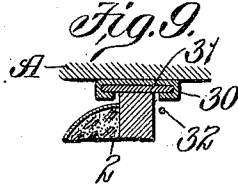


G. W. HENRY.
FOLDING DAVENPORT.
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996,243.

Patented June 27, 1911.

2 SHEETS—SHEET 2.



Witnesses:
Geo. R. Redson
Wells L. Church.

Inventor:
G. W. Henry.
By Paul Bakewell Atty.

UNITED STATES PATENT OFFICE.

GUILFORD W. HENRY, OF ST. LOUIS, MISSOURI.

FOLDING DAVENPORT.

996,243.

Specification of Letters Patent. Patented June 27, 1911.

Application filed January 24, 1911. Serial No. 604,353.

To all whom it may concern:

Be it known that I, GUILFORD W. HENRY, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Folding Davenport, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to folding davenport, couches, and other articles of furniture that comprise a member or part which is adapted to be shifted into an inoperative position where it is concealed from view.

One object of my invention is to provide mechanism of novel construction for operating the shiftable part or element of a piece of furniture of the character described.

Another object is to provide a folding davenport or couch which is so designed that there is no liability of the mattress support dropping or becoming accidentally displaced. And still another object is to provide a folding davenport which is so designed that the curtain or piece of material which extends across the front of the davenport below the seat is prevented from wrinkling when the davenport is unfolded or being used as a bed.

Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 is a front elevational view of a portion of a folding davenport constructed in accordance with my invention; Fig. 2 is a vertical transverse sectional view of same; Fig. 3 is a similar view showing the davenport unfolded; Fig. 4 is an enlarged horizontal sectional view taken on the line 4—4 of Fig. 3; Fig. 5 is an enlarged side elevational view of one of the cam plates on the seat frame and the toggle-operating lever which coöperates with said plate; Figs. 6 and 7 are similar views showing said cam plate and lever arranged in different positions; Fig. 8 is a sectional view taken on the line 8—8 of Fig. 7; Fig. 9 is a detail sectional view taken on the line 9—9 of Fig. 2; Figs. 10 and 11 are detail views showing a slight modification that can be made in the legs which support part of the mattress frame; Figs. 12 and 13 are enlarged detail views of part of the mechanism that automatically turns the lower cross-piece at the front of a davenport to which the curtain is connected; and Fig. 14 is a sectional view on the line 14—14 of Fig. 13.

Referring to the drawings which illustrate the preferred form of my invention, A designates the end frames of the davenport which may be of any preferred design and construction, 1 designates the seat, and 2 designates the back.

The mattress support consists of two sections or frames 3 and 4 arranged in such a manner that they lie close together in the same horizontal plane when the davenport is unfolded, as shown in Fig. 3. Said frames are preferably constructed from commercially rolled angle iron, and the frame 3 supports the seat 1 when the davenport is closed or in its folded position, as shown in Fig. 2, the seat 1 being securely connected to the frame 3, and the ends A of the davenport being provided with two castings C on which the frame 3 rests. The frame 3 is provided with two cam plates B which are pivotally connected to the end frames A of the davenport so that said frame 3 can be swung upwardly and outwardly into the position shown in Fig. 3, the frame being supported in this position by means of legs 6 connected to the free end of the frame. The frame 4 which forms the other half of the mattress-supporting means lies under the frame 3 when the davenport is closed or folded, as shown in Fig. 2, but when the davenport is opened, namely, when the seat 1 and frame 3 are turned over, the under frame 4 moves upwardly automatically into the same horizontal plane as the frame 3.

Two castings C which are connected to the inner sides of the end frames A are provided with studs 7 that pass through holes in the cam plates B and thus pivotally connect the frame 3 to the end frames A, and said castings are also provided with vertically disposed guides 8 that coöperate with guide plates 9 on the under frame 4. The guide plates 9 project upwardly from the side pieces of the frame 4 and each guide plate is provided with a substantially channel-shaped vertically disposed member 10 whose legs are provided with inwardly projecting flanges 10^a that fit in grooves in the guides 8, said guides 8 being substantially T-shape in cross section, as shown in Fig. 4.

The means for automatically moving the frame 4 upwardly when the frame 3 is turned over, consists of levers 11 fulcrumed on the studs 7 which support the cam plates B, a toggle coöperating with each of said

levers and consisting of a link 12 pivotally connected at its lower end to the casting C and a link 13 pivotally connected at its upper end to the guide plate 9, and a short link 14 that connects both of the toggle links 12 and 13 to the inner end of the lever 11, said link 13 having a stop 13^a that limits the movement of the link 14. The opening in the lever 11, through which the stud 7 or fulcrum for the lever passes, is substantially key-hole-shaped, as shown in Fig. 5, and the portion of the stud 7 which lies in said opening has two flat faces or sides 7^a. When the davenport is closed, as shown in Fig. 2, the studs 7 lie in the straight contracted portions 11^a of the openings in the levers 11 and thus lock said levers and the parts controlled by same owing to the fact that the flat faces 7^a on the studs fit snugly against the straight edges of the contracted portions 11^a of the stud openings in the levers, as shown in Fig. 5. When the seat-supporting frame 3 is raised and moved outwardly, cam faces 15 on the cam plates B strike against pins 16 on the levers 11, as shown in Fig. 6, when said frame reaches a certain position, and shift the levers 11 relatively to the cam plates so as to arrange the studs 7 in the enlarged portions 11^b of the stud openings in the levers, thereby releasing the levers 11. Further movement of the cam plates in this direction causes the levers 11 to swing upwardly and straighten the toggle links 12 and 13 which elevate the frame 4, the pins 16 on the levers moving into the notches 17 in the cam plates B when said cam plates and levers reach the position shown in Fig. 7. In view of the fact that the pins 16 lie in the notches 17 in the cam plates, the levers 11 and toggle links 12 and 13 are securely locked in position when the seat 1 and frame 3 are turned over, as shown in Fig. 3. Consequently, it will be impossible for the frame 4, which forms part of the mattress-supporting means, to drop or move downwardly out of horizontal alignment with the frame 3 when the davenport is unfolded or open. Furthermore, said frame 4 is locked even when the frame 3 is tilted upwardly slightly from the position shown in Fig. 3 because the notches 17 in the cam plates are so proportioned that the pins 16 do not pass completely out of same until after the frame 3 has been raised quite a distance. This is a very desirable feature of a folding davenport for it is often necessary to raise the front frame 3 slightly when the davenport is open either to clear objects or to reach under said frame. When the frame 3 is raised and moved inwardly, back to its closed position, the levers 11 swing downwardly and thus close the toggles which support the frame 4 in its elevated position, the levers 11 being

shifted relatively to the fulcrum studs 7 so as to arrange said studs in the contracted portions 7^a of the stud openings in the levers by means of cam faces 18 on the cam plates B that engage the pins 16 on the levers after said cam plates have moved a certain distance.

From the foregoing it will be seen that the mattress-supporting means of my improved davenport is securely locked in adjusted position when the davenport is open so that it is impossible for one portion of said supporting means to drop or move out of the horizontal plane in which the other portion of said means lies. The mechanism which operates and guides the frame 4 is strong, efficient and inexpensive to manufacture, and while I have herein shown said mechanism used for operating one portion of the mattress-supporting means of a folding davenport, I wish it to be understood that it is not limited to this use for it could be used equally well in various other articles of folding furniture that comprise a part or element which is hidden from view when the furniture is closed.

A curtain or piece of fabric 19 which is arranged at the front of the davenport is connected to the front edge of the seat-frame 3 and to the lower front cross-piece 20 of the frame of the davenport, and means is provided for preventing said curtain from tearing or becoming wrinkled when the davenport is opened, said means consisting of pivots for the ends of the cross-piece 20 and means for automatically turning said cross-piece from a vertical position, as shown in Fig. 1, into a horizontal position, as shown in Fig. 3, so as to take up the slack in the curtain 19 when the davenport is opened. Brackets 21 which are connected to the inner side of the cross-piece 20, are pivotally connected at 22 to the castings C on the end frames of the davenport, and levers 23 which are pivotally connected at 24 to said end castings, are pivotally connected by means of short links 25 to the brackets 21, each of said levers coöperating with one of the cam plates B and being moved by same. The upper end of each lever 23 is provided with a forwardly projecting curved extension 23^a, and the cam plates B are provided with curved portions or lugs 26 that fit in said curved extensions when the davenport is closed and thus securely lock the levers 23 and the lower cross-piece 20 which said levers actuate. When the davenport is being opened cam faces 27 on the cam plates B engage the levers 23 just below the fulcrums of said levers and move the lower ends of said levers inwardly, thereby causing the lower cross-piece 20 to turn into a horizontal position and thus automatically taking up the slack in the curtain 19. When the davenport is being closed said cam plates move

said levers 23 in the opposite direction back to normal position, the movement of the cross-piece 20 being limited by means of stops 28 on the end casting C that cooperate with shoulders 29 on the brackets 21.

The back 2 is slidably mounted in guideways on the end frames A, and a counterbalancing mechanism is connected to said back so as to assist the operator in moving same upwardly when it is desired to open the davenport. The end frames A are provided with substantially channel-shaped guideways 30, as shown in Fig. 9, which receive end plates 31 on the back 2, and flexible members 32, such, for example, as pieces of rope or cable, are connected to said back and to the end frames. These ropes pass over pulleys 32^a on the end frames A, and counterbalancing weights 33 are hung on loops in said ropes so as to counterbalance the weight of the back 2, each weight being provided with a pulley 34 through which the rope passes.

Instead of rigidly connecting the legs 6 to the free end of the frame 3, as shown in Fig. 2, said legs can be provided with substantially key-hole-shaped slots 35 through which pins 36 on the frame pass, as shown in Figs. 10 and 11, said slots being so disposed that the legs 6 will lie parallel with the side pieces of the frame 3 when the davenport is folded and at right angles to said side pieces when the davenport is open, the pins lying in the contracted portions of the slots 35 and thus securely locking the legs in their open position, as shown in Fig. 11.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a folding davenport or other article of furniture, a pivotally mounted element that is adapted to be turned over, a vertically movable element that lies under said pivotally mounted element when the article is closed, a mechanism for raising said vertically movable element, devices rigidly connected to said pivotally mounted element for imparting movement to said mechanism when the pivotally mounted element is turned over, and cooperating means on said devices and on said mechanism for locking said vertically movable element in its elevated position.

2. In a folding structure or article, a pivotally mounted frame, a vertically movable frame that lies under said pivotally mounted frame when the article is closed, cam plates on said pivotally mounted frame, toggle mechanism for raising and lowering said vertically movable frame, levers operated by said cam plates for actuating said toggle mechanism, and cooperating means on said levers and cam plates for locking said toggle mechanism.

3. In a folding davenport or other article

of furniture, a pivotally mounted frame that is adapted to be turned over, a vertically movable frame that lies under same when the davenport is closed, toggle mechanism for raising and lowering said vertically movable frame, cam plates on said pivotally mounted frame, levers connected to said toggle mechanism and provided with substantially key-hole-shaped slots, fulcrum studs for said levers having non-circular-shaped parts that lie in said slots, and means for shifting said levers relatively to said studs when said pivotally mounted frame is actuated.

4. In a folding davenport or other article of furniture, a pivotally mounted frame that is adapted to be turned over, a vertically movable frame that lies under same when the davenport is closed, toggle mechanism for raising and lowering said vertically movable frame, cam plates on said pivotally mounted frame, levers connected to said toggle mechanism and provided with substantially key-hole-shaped slots, fulcrum studs for said levers having non-circular-shaped parts that lie in said slots, and cam faces on said cam plates that cooperate with pins on said levers to shift said levers relatively to their fulcrum studs and lock said levers and the mechanism controlled by same.

5. In a folding davenport or similar device, end frames, castings on said end frames, a pivotally mounted frame provided with cam plates that are journaled on studs on said castings, a vertically movable frame that lies under said pivotally mounted frame when the davenport is closed, a vertically disposed guide on said casting, members on said vertically movable frame that embrace said guides, a toggle mechanism connected to said vertically movable frame and to said end castings, levers shiftably mounted on the studs on which said cam plates are journaled for actuating said toggle mechanism, pins on said levers, and notches and cam faces on said cam plates that cooperate with said pins.

6. In a folding davenport or similar article, a pivotally mounted seat frame, a flexible curtain arranged below said seat frame at the front of the davenport and connected to said seat frame, and means for taking up the slack in said curtain when said seat frame is turned over.

7. In a folding davenport or similar article, a pivotally mounted seat frame, a lower cross-piece at the front of the davenport, a flexible curtain connected at its upper edge to said seat frame and at its lower edge to said cross-piece, and means for automatically turning said cross-piece into such a position that the curtain will not wrinkle when the seat frame is turned over.

8. In a folding davenport or similar article, a pivotally mounted seat frame, a

lower cross-piece at the front of the davenport, a flexible curtain connected at its upper edge to said seat frame and at its lower edge to said cross-piece, means for automatically turning said cross-piece into such a position that the curtain will not wrinkle when the seat frame is turned over, and means for holding the curtain taut or stretched when the davenport is closed.

10 9. In a folding davenport or similar article, a pivotally mounted seat frame, a pivotally mounted lower cross-piece at the front of the davenport, a flexible curtain connected at its upper edge to said seat frame and at its lower edge to said cross-piece, 15 levers for oscillating said cross-piece when the seat frame is turned over, and means on the seat frame for actuating said levers and holding them locked in position when the davenport is closed.

20 10. A davenport or similar article comprising end frames, a vertically movable back arranged in guideways on said end frames, a counterbalancing device that tends to move said back upwardly, a pivotally 25 mounted seat frame, a vertically movable frame that lies under said seat frame when

the davenport is closed, and means controlled by the movement of said seat frame for raising and lowering said vertically movable frame. 30

11. A davenport or similar article comprising end frames, a vertically movable back arranged in guideways on said end frames, a counterbalancing device that tends to move said back upwardly, a pivotally 35 mounted seat frame, a vertically movable frame that lies under said seat frame when the davenport is closed, means controlled by the movement of said seat frame for raising and lowering said vertically movable frame, 40 an oscillating lower cross-piece at the front of the davenport, a flexible curtain connected to said cross-piece and to the seat frame, and means for actuating said cross-piece in such a manner that said curtain will 45 not wrinkle when the davenport is open.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twentieth day of January, 1911.

GUILFORD W. HENRY.

Witnesses:

WELLS L. CHURCH,
GEORGE BAKEWELL.