W. E. FRANK.

FOLDING DAVENPORT.

APPLICATION FILED MAR. 25, 1916.

1,306,475.

Patented June 10, 1919.

2 SHEETS—SHEET 1.

Fig. 1.

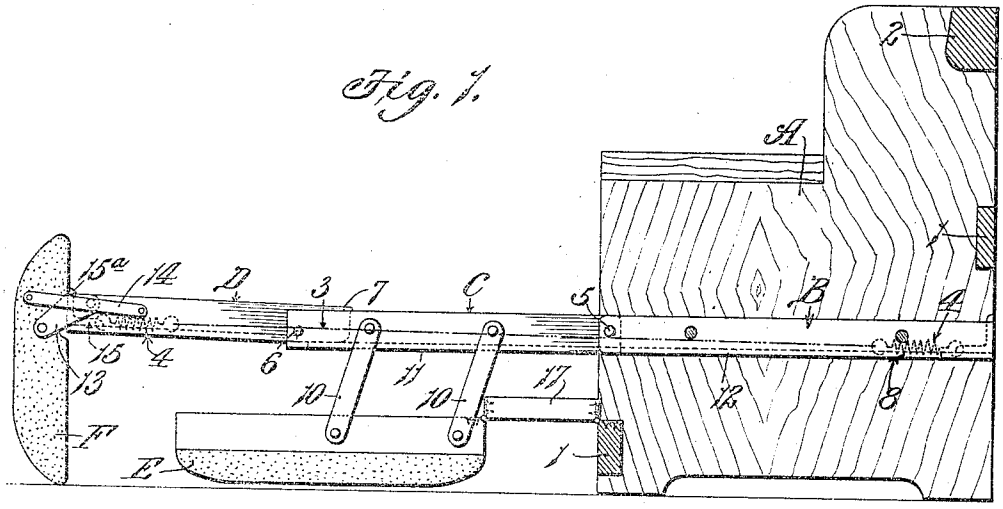
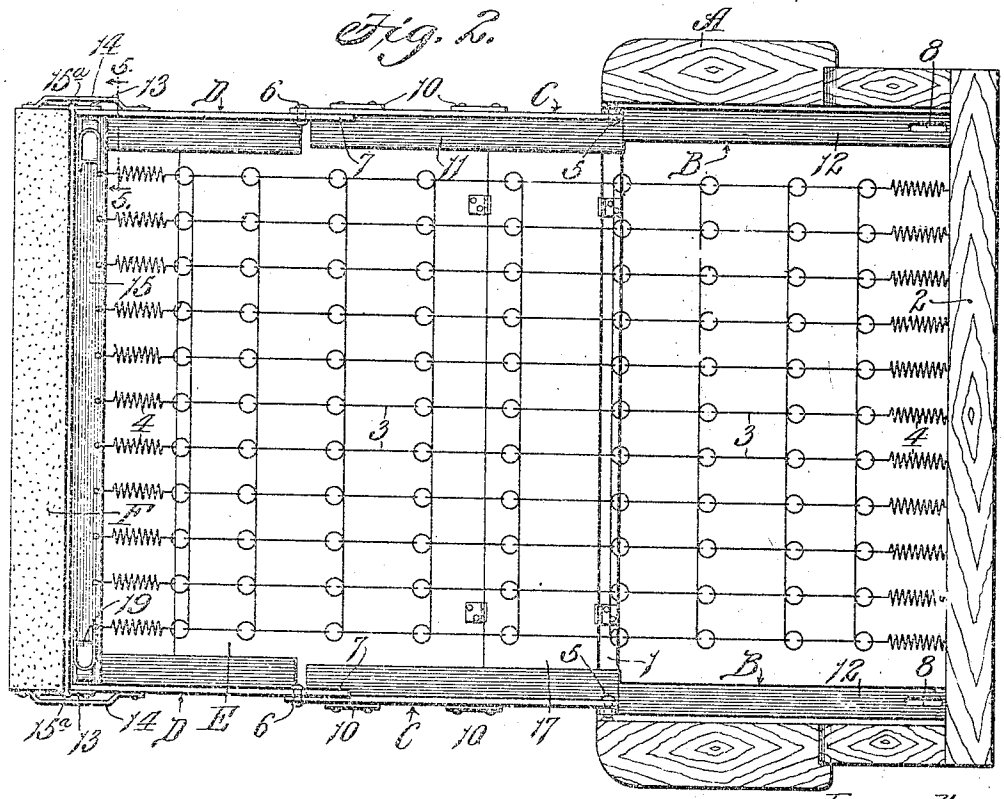


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

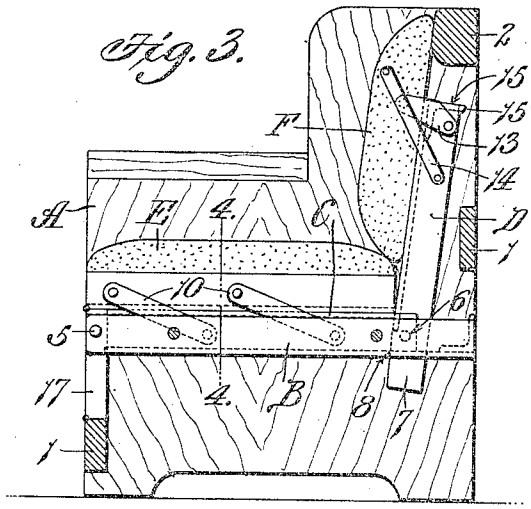


Fig. 4.

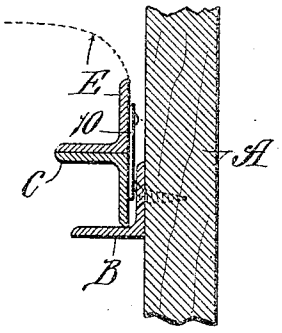


Fig. 5.

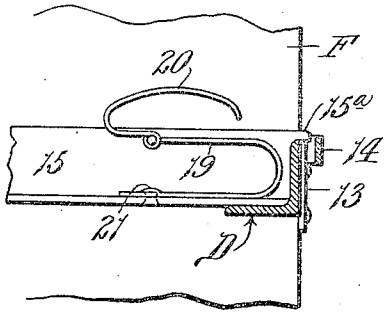
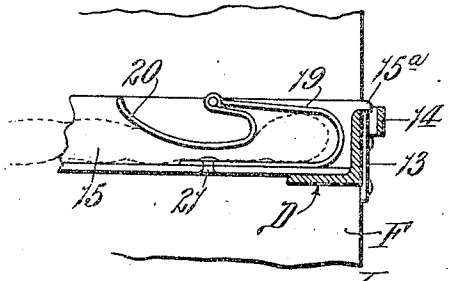


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM E. FRANK, OF ST. LOUIS, MISSOURI, ASSIGNOR TO FOSTER BROS. MFG. CO., OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

FOLDING DAVENPORT.

1,306,475. Specification of Letters Patent. Patented June 10, 1919.

Application filed March 25, 1916. Serial No. 86,773.

To all whom it may concern:

Be it known that I, WILLIAM E. FRANK, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Folding Davenports, 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 davenports, couches and similar articles, and has for its main object to provide an article of the character mentioned that is easy to open and close; that is not liable to get out of order and which can be manufactured at a low cost.

Another object is to provide a folding davenport, couch or similar article of novel construction in which the back serves as a footboard for the bed and also as a support for the front end of the mattress frame when the article is open.

Another object is to provide an article of the character mentioned, in which the mattress frame serves to stiffen the end frame of the article.

Another object is to provide a folding davenport, couch or similar article in which the extensible mattress frame is held securely in its open position by means of the mattress-supporting fabric which is placed under tension or drawn taut during the operation of opening the article or converting it into a bed.

And still another object is to provide a mattress-supporting frame for couches and similar articles that is light and strong and which is composed of only a few rugged parts of simple construction that can be manufactured cheaply and installed easily.

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

Figure 1 of the drawings is a side elevational view of a folding davenport constructed in accordance with my invention arranged in its open position and with one of the end frames removed.

Fig. 2 is a top plan view of said davenport.

Fig. 3 is a view similar to Fig. 1, showing the davenport in its closed position.

Fig. 4 is a vertical transverse-sectional view, taken on the line 4—4 of Fig. 3.

Fig. 5 is a vertical sectional view, taken on the line 5—5 of Fig. 2, illustrating one of the mattress clips in its inoperative position; and

Fig. 6 is a view similar to Fig. 5, illustrating the mattress clip in its operative position.

Briefly described, my invention consists in a folding davenport, couch or similar article that comprises end frames, a mattress-supporting means carried by said end frames and comprising a sectional frame whose parts are hinged or pivotally connected together, a seat carried by one section of said mattress frame and a back carried by another section of said mattress frame and joined to it in such a manner that it acts as a supporting leg for the front end of the mattress frame and also serves as a footboard for the bed when the davenport is arranged in its open position, the seat being preferably connected to the section of the mattress frame that carries same in such a manner that said seat will move into such a position when the davenport is opened that the mattress will not strike against the seat when the mattress sags under a heavy load.

Referring to the drawings, which illustrate the preferred form of my invention, A designates the end frames of a folding davenport, which end frames are preferably connected together by a number of cross members 1 and by a cross member 2 that serves as an auxiliary stop or support for the upper edge of the back of the davenport when it is in its closed position. The end frames A carry a foldable mattress-supporting means that comprises a jointed mattress frame composed of a plurality of sections and a mattress-supporting structure formed either of woven fabric or links 3 that are connected together and combined with coiled springs 4 which are secured to the end members of the mattress frame, as shown in Fig. 1. The jointed mattress frame above referred to comprises a rear portion or section B arranged between the end frames A and securely connected to same, an intermediate portion or section C which is hinged or pivotally connected to the rear section B in such a manner that it will lie above same when the davenport is in its closed position, as shown in Fig. 3, and which is adapted to be swung forwardly into a position in front of the rear section B when the davenport is opened, as shown in Fig. 1, and a front portion or section D which is hinged or pivot-

ally connected to the intermediate section C. In the embodiment of my invention herein illustrated the sectional mattress frame above referred to is formed from pieces of angle iron, the rear and front sections B and D, respectively, being substantially U-shaped in outline and the intermediate section C consisting of two parallel side members that form continuations of the side pieces of the end sections B and D and join the same together when the davenport is in its open position, as shown in Figs. 1 and 2.

The intermediate section C is pivotally connected to the rear section B of the mattress frame by pivots 5, and the side pieces of the front section D of the mattress frame are pivotally connected at 6 to the intermediate section C. Said side pieces are provided with extensions 7 that lap over the side pieces of the intermediate section C and bear upon the horizontal flanges 11 on said intermediate section C when the mattress frame is extended, as shown in Fig. 1, the pivotal connections 6 between said parts being so located that the end section D is inclined upwardly slightly with relation to the intermediate section C when the mattress frame is extended. During the operation of opening the davenport the woven wire fabric or linked structure on which the mattress rests is placed under tension, and thereafter, while the mattress frame is extended, the resilient structure on which the mattress rests exerts a sufficient pull on the cross piece of the front section D of the mattress frame to hold the extensions 7 at the rear end of said section tightly against the flanges 11 on the intermediate section C. When the davenport is closed, as shown in Fig. 3, the extensions 7 on the front section D of the mattress frame project downwardly through slots 8 in the horizontal flanges 12 of the rear section B, as shown in Figs. 2 and 3, and thus hold said section D in such a position that it cannot tilt forwardly or backwardly. The back F of the davenport is carried by the front section D of the mattress frame and is joined to said front section in such a manner that the back F can either be arranged in front of the section D of the frame in parallel relation to same, when the davenport is closed, as shown in Fig. 3, or arranged at right angles to the section D of the mattress frame, when the davenport is open, as shown in Fig. 1, so as to form a footboard for the bed and also act as a support or front leg for the front end of the mattress frame. One convenient way of joining the back F to the front section D of the mattress frame consists in mounting the back F on two pairs of crossed links 13 and 14 which are pivotally connected to the back F at the ends of same and to the side pieces of the end section D, as shown in Figs. 1, 2 and 3 This form of connection permits the back F to lie parallel to the front section D of the mattress frame when the davenport is closed and permits the back to move bodily into a position at right angles to the section D when the mattress frame is moved into its open position. The cross piece 15 of the front section D is provided with stops 15^a, shown in Figs. 1, 5 and 6, that strike against the links 13 when the back F is moved into the position shown in Fig. 1, and thus limit the movement of the back with relation to the section D of the mattress frame, said stops coöperating with the links 13 to transmit the load on the mattress frame directly to the back F whose lower edge rests upon the floor. The links 14 operate to hold the back F in an upright or vertical position and prevent the upper edge of same from tilting forwardly when the mattress frame is extended. When the davenport is closed, as shown in Fig. 3, the cross member 2 that is connected to the end frames A acts as an auxiliary stop against which the back F strikes, the back F being prevented from tilting forwardly by means of the crossed links 13 and 14 which connect it to the end section D of the mattress frame, and said end section D being prevented from tilting forwardly or rearwardly by means of the extensions 7 thereon that project through the slots 8 in the flanges 12 of the rear section of the mattress frame.

To close the davenport it is only necessary to lift the front end of the mattress frame and swing the back F downwardly, so that it lies parallel with the front section D of the frame, then swing the end section D into a position at right angles to the intermediate section C, and thereafter swing said intermediate section C upwardly and rearwardly, so that it lies parallel to the section B of the frame. To open the davenport the user grasps the upper edge of the back F and pushes it forwardly, thereby causing the intermediate section C of the mattress frame to swing upwardly and forwardly on its pivots 5, the back F and the front section D of the mattress frame still remaining in a position at right angles to the intermediate section C. Before the intermediate section C reaches a horizontal position the user pulls the back F upwardly so that it will be positioned at right angles to the front section D, and thereafter said front section D is swung upwardly so as to turn it on its pivots 6 and arrange said section in front of the intermediate section C substantially level with same, the operation of swinging the section D upwardly causing the mattress-supporting fabric or structure to be placed under tension. The two sections C and D of the mattress frame are held substantially rigid or are prevented from moving relatively to each other by the tension of the

mattress-supporting structure, and consequently, said sections can be swung downwardly as one unit, so as to cause the lower edge of the back F to rest upon the floor, as shown in Fig. 1. In order that the seat E will be arranged the proper distance above the floor, when the davenport is closed and still not interfere with the downward movement of the mattress when the davenport is open and the mattress is subjected to a heavy load, which causes it to sag, I have connected the seat E to the intermediate section C of the mattress frame by means of links 10 that permit said seat to move downwardly some distance below the mattress frame, when said frame is extended, as shown in Fig. 1. In this position it is impossible for even a very heavy person to cause the mattress to sag sufficiently to strike the seat. When the davenport is moved into its closed position, the links 10 cause the seat E to move into engagement with the intermediate section of the mattress frame on which it rests when the davenport is closed, as shown in Fig. 3. By forming the davenport in this manner I eliminate the possibility of the seat interfering with the free movement of the mattress and the fabric on which the mattress rests. I am able to use a shallow seat and I can arrange the seat at the usual height above the floor.

When the davenport is in its closed position the space between the seat E and the bottom cross member 1 that joins the end frames together is closed by a rigid member 17 that is hinged to the member 1 and to the front edge of the seat, said member 17 swinging downwardly into a horizontal position when the davenport is opened. Any suitable type of mattress clip may be used for holding the mattress in position, but I prefer to provide the front section D of the mattress frame with two mattress clips of the form shown in Figs. 5 and 6. Each of said clips comprises a horizontally-disposed, U-shaped member 19 that receives one edge of the mattress and a clamping device 20 pivotally connected to the top arm of said member and adapted to be turned over from the position shown in Fig. 5 into the position shown in Fig. 6, so as to securely clamp the mattress, the U-shaped member 19 of the clip being preferably formed from metal that has more or less resiliency, and the bottom arm of said member being connected to the mattress frame by a rivet 21, or in any other suitable manner.

From the foregoing it will be seen that it is a very simple matter to open or close a davenport of the construction above described, as there are no sliding parts which are apt to jam or get out of order. The back F not only serves as a substantial support for the front end of the mattress frame and as a footboard for the bed, but it also greatly improves the appearance of the davenport when it is open. The mattress-supporting means of the davenport comprises only a few parts of simple design; it is light and it can be manufactured at a low cost. Furthermore, the rear section B of the mattress frame serves to stiffen the end frames A of the davenport and tie them together securely, and the seat is connected to the intermediate section C of the mattress frame in such a manner that it cannot possibly be hit by the mattress, even when the mattress is subjected to an abnormal load. Another desirable feature of such a davenport is that there is only one portion of the mattress that is doubled or completely folded over when the davenport is closed, as shown in Fig. 3. In addition to the desirable features above mentioned, the mattress frame of the davenport is very rigid when it is extended, and the mattress-supporting structure is connected to said frame in such a manner that it is stretched or drawn taut simultaneously with the operation of opening the davenport.

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

1. A folding davenport, couch or similar article provided with a foldable mattress frame that comprises two sections which are arranged at substantially right angles to each other when the article is closed, a seat carried by one of said sections, and a back joined to the other section by means of links which permit the back to be moved relatively to said section so as to form a support for the front end of the mattress frame when said frame is extended.

2. A folding davenport, couch or similar article provided with a foldable mattress frame that comprises two sections which are arranged at substantially right angles to each other when the article is closed, a seat carried by one of said sections, a back, and links joined to said back at the ends thereof and connected to the other section of said frame in such a manner that the back can be arranged in parallel relation to said section when the article is closed and at substantially right angles thereto when the article is open.

3. A folding davenport, couch or similar article provided with a mattress frame that can be opened and closed, a back that is adapted to act as a footboard for the bed and as a support for the front end of the mattress frame when the article is open, links that connect said back to said frame and hold said back in a position at substantially right angles to the mattress frame when the article is open, and means for transmitting the load on said frame to said back.

4. A folding davenport, couch or similar

article provided with an extensible mattress frame, an upholstered seat that swings into an inoperative position beneath said frame when the article is opened, and an upholstered back connected to said frame by means of links that permit said back to be arranged in front of said frame at right angles thereto so that the rear side of the back will serve as a footboard for the bed when the article is open.

5. In a folding davenport, couch or similar article, end frames, an extensible mattress frame carried by said end frames, a back that is adapted to serve as a support for the front end of said mattress frame when the article is open, and two pairs of links pivotally connected to said frame and said back in such a manner that they securely hold the back in a position at right angles to said frame when the article is open.

6. A folding davenport, couch or similar article provided with a mattress frame that comprises a stationary rear section, a shiftable front section that is arranged at substantially right angles to the rear section when the article is closed, side members that pivotally connect said sections together, and a shiftable back joined to said front section by means of crossed links and adapted to act as a support for the front end of the mattress frame when the article is open.

7. A folding davenport, couch or similar article provided with end frames, a mattress frame comprising a shiftable front section and a stationary rear section that is rigidly connected to said end frames, side members that pivotally connect said sections together, a seat carried by said side members, and a back connected to the front section by means of crossed links which permit said back to be moved forwardly into a position in advance of said front section so that it will serve as a support for the front end of the mattress frame when the article is open.

8. An extensible mattress frame of the character described, comprising a rear section and an intermediate section pivotally connected to same in such a manner that it lies above said rear section when the frame is folded, a front section pivotally connected to said intermediate section and arranged at right angles thereto when the frame is folded, and extensions on said front section which coöperate with said rear section to hold said front section in a substantially upright position when said frame is folded.

9. An extensible mattress frame of the character described, comprising a rear section and an intermediate section pivotally connected to same in such a manner that it lies above said rear section when the frame is folded, a front section pivotally connected to said intermediate section and arranged at right angles thereto when the frame is folded, extensions on said front section that coöperate with portions on said rear section when the frame is folded to hold the front section in an upright position, means on the intermediate section that coöperates with said extensions to prevent the front section from moving relatively to the intermediate section in one direction, and means for preventing the front section from dropping downwardly when the frame is extended.

In testimony whereof I hereunder affix my signature in the presence of two witnesses, this twenty-second day of March, 1916.

WILLIAM E. FRANK.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.