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SOFA DAVENPORT.

APPLICATION FILED NOV. 25, 1910.

992,674. Patented May 16, 1911.

4 SHEETS—SHEET 1.

Fig. 1.

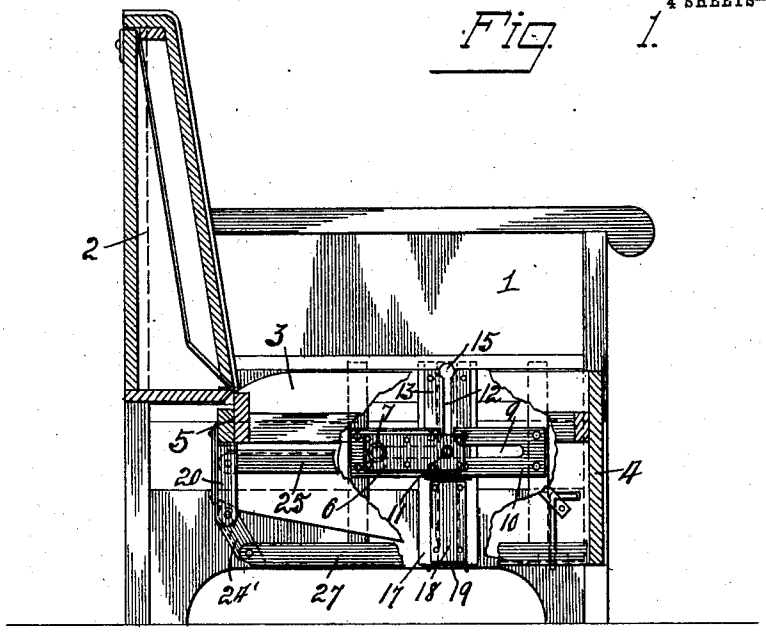
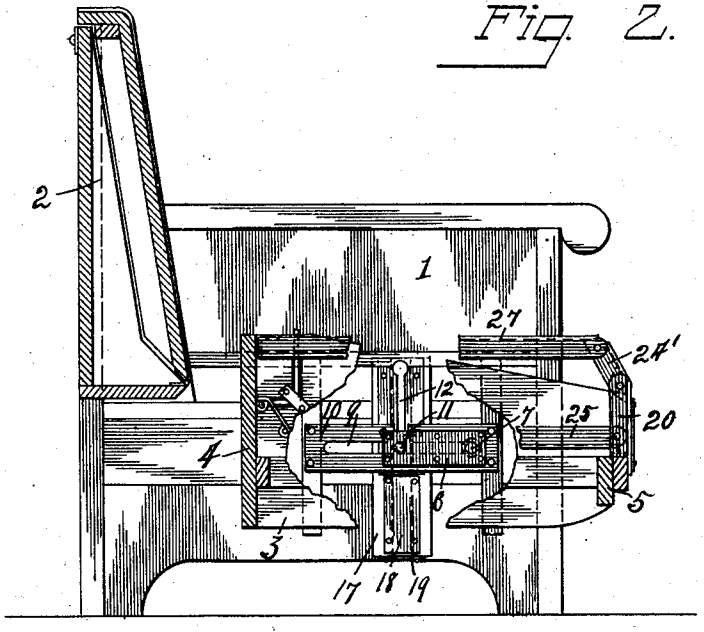


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

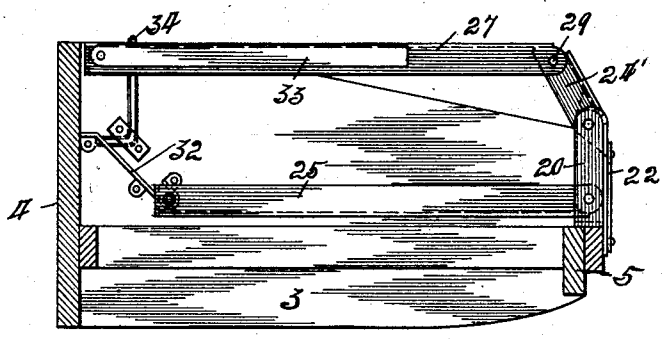


Fig. 4.

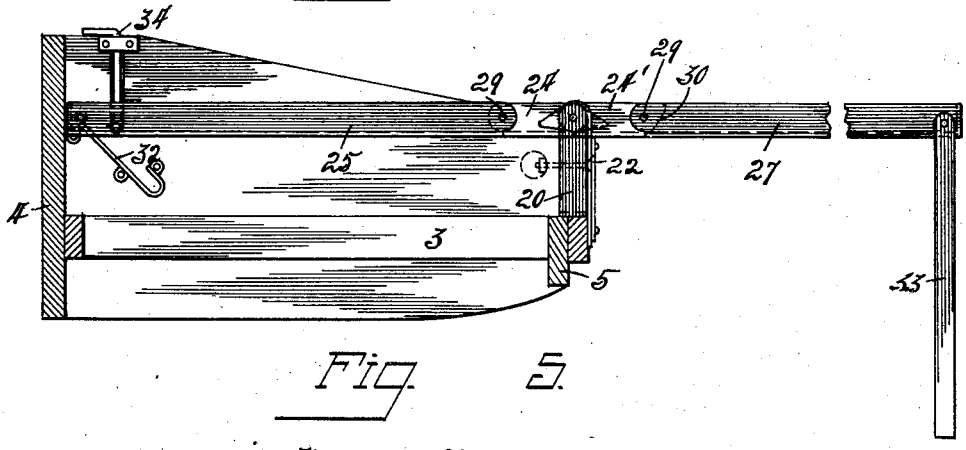
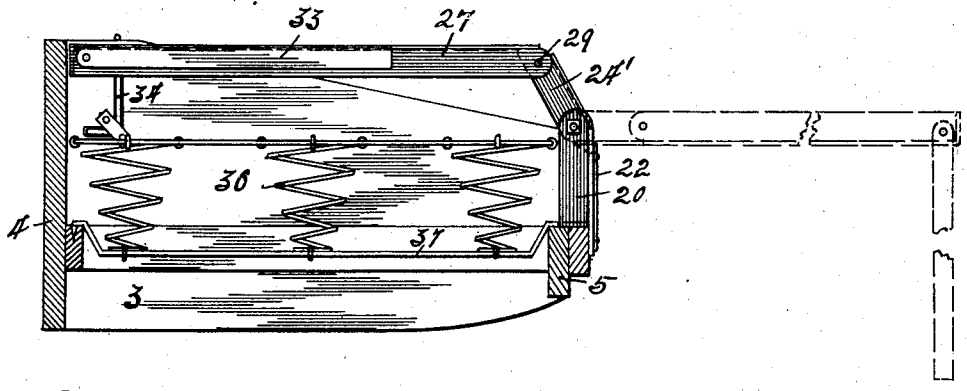


Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

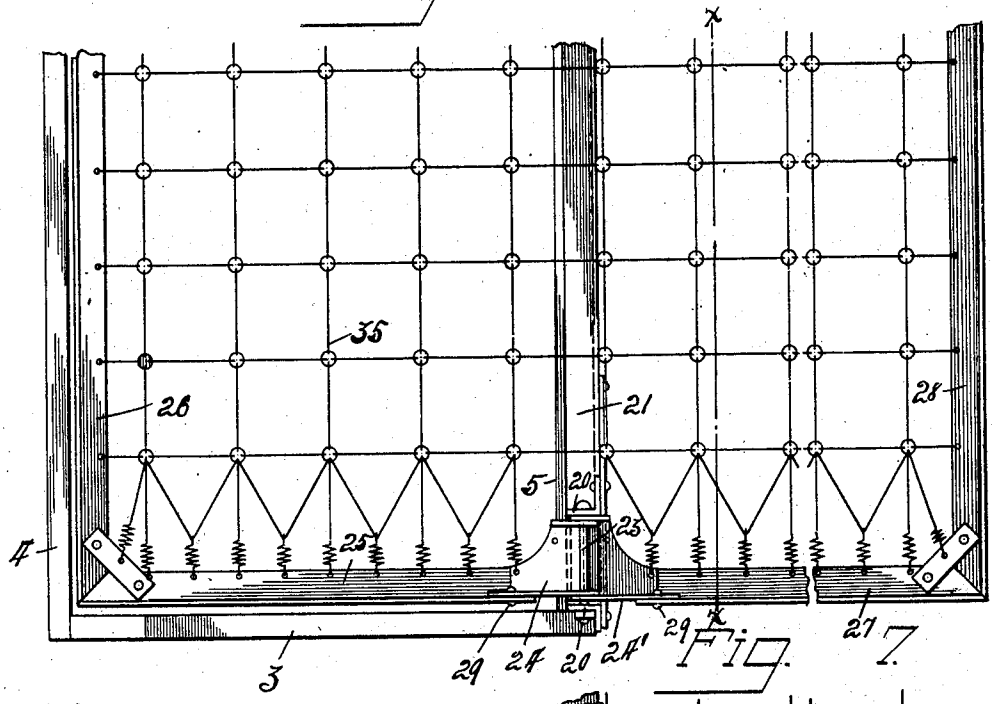
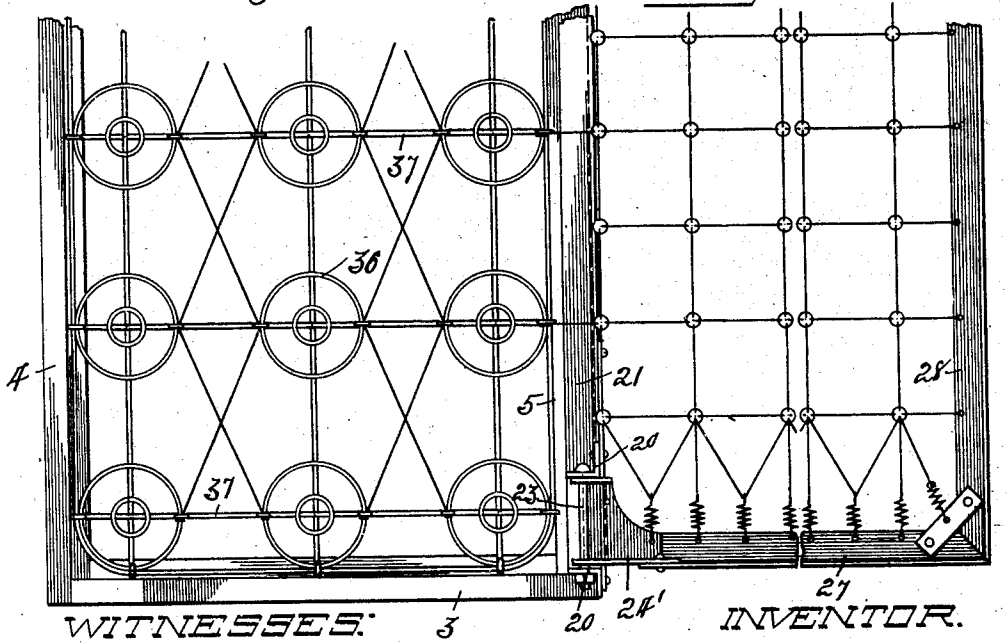


Fig. 7.



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992,674. **Patented May 16, 1911.**

4 SHEETS—SHEET 4.

Fig. 8.

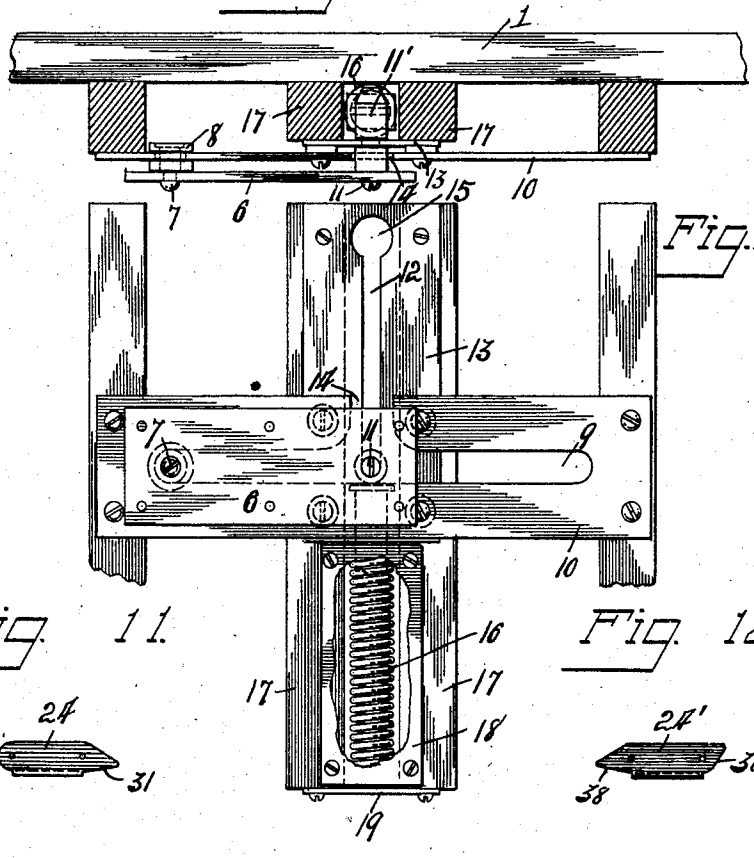
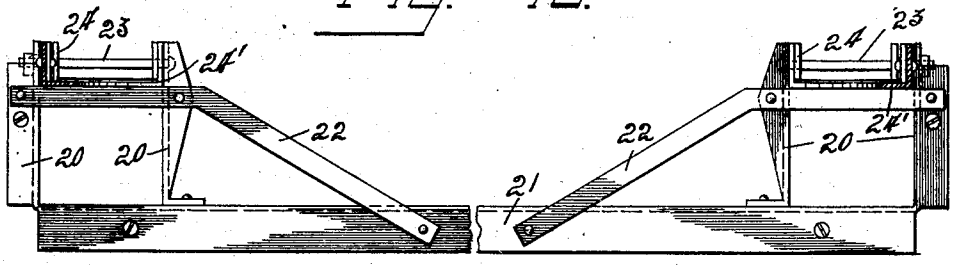


Fig. 9.

Fig. 11.

Fig. 12.

Fig. 10.



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UNITED STATES PATENT OFFICE.

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SOFA-DAVENPORT.

992,674. Specification of Letters Patent. Patented May 16, 1911.

Application filed November 25, 1910. Serial No. 594,238.

To all whom it may concern:

Be it known that I, ADOLPH C. KLOPPING, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Sofa-Davenport; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to sofa or bed-davenports of the reversible seat type and has reference in part at least to improvements upon the forms of davenports of this character described and claimed in my former applications for United States Letters Patent Serial Nos. 572,233 and 587,331, filed July 16, 1910, and October 15, 1910, respectively.

The object of my invention is to improve upon the construction and operation of the apparatus described in my said former applications whereby to enhance the practicability and commercial value thereof, and also to provide a construction of foldable bed frame, which has an inner frame section carrying a fabric bed bottom and capable of removal from the remainder of the bed frame without destroying the efficiency thereof to permit the substitution therefor of a coiled spring section.

A further object of my invention is the provision of simple and efficient means for acting on the seats of apparatus of this class to assist a manual turning of the same, thereby lessening or minimizing the labor incident to a turning of such seats.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figures 1 and 2 are vertical transverse sections of a davenport frame with the bed-frame folded therein and a portion of the seat frame of each broken away with the latter inverted. Figs. 3 and 4 are cross-sections of the seat-frame in inverted position, with the bed-frame thereof in folded and unfolded positions, respectively. Fig. 5 is a similar section of the seat frame, with the bed-frame folded therein, the inner section thereof removed, and a set of coiled springs substituted for such section and its fabric. Fig. 6 is a plan of an end portion of a seat-frame and bed-frame, with the latter in unfolded position. Fig. 7 is a similar view thereof with the inner section of the bed-frame removed and a set of coiled springs substituted therefor. Figs. 8 and 9 are different enlarged details of the pivotal seat supporting parts. Fig. 10 is an enlarged section on the line x x in Fig. 6, and Figs. 11 and 12 are details of the intermediate bed-frame sections.

Referring to the drawings, 1 designates the ends of a davenport, and 2 the back thereof, which parts may be of any suitable construction. The usual seat frame, having the end pieces 3, 3, and the front and rear side pieces 4 and 5, respectively, is mounted between the ends 1, 1, of the davenport frame in a suitable manner to permit it to be turned or inverted as is common in davenports of this class.

While the seat frame may be pivoted in any suitable manner within the davenport frame, a preferable manner of mounting the same for such purpose is as follows: Plates 6 are secured to the outer sides of the seat frame ends 3, and each of such plates has a pivot stud 7 projecting therefrom and shown in the present instance as being provided with a peripherally grooved anti-friction roller 8 for working in a horizontal slot or race 9 provided in a plate 10, which plate is secured to the adjacent sides of the davenport frame ends 1. The plate 6 is also provided with a stud 11, which projects outwardly therefrom and works in a vertical slot or race 12 provided in a plate 13, which is secured to the associated end piece 1 of the davenport frame. The stud 11 is so disposed relative to the stud 7 that when the associated seat frame is in normal or closed position, as shown in Fig. 1, the stud 11 is positioned in advance of the stud 7 in substantially a horizontal plane therewith, and when the seat is inverted the two studs still stand in a horizontal plane with the stud 11 to the rear of the stud 7, as shown in Fig. 2. Upon swinging the seat frame from normal to inverted position, the operator raises the front side thereof, thus causing the stud

11 to rise in its guide slot 12 and the pivot stud 7 to move to a vertical plane with the stud 11. Upon a continued turning of the seat frame the stud 7 continues its forward movement and the stud 11 moves downward in its slot until the two studs assume the position shown in Fig. 2. To permit a raising of the stud 11 from normal position the plate 10 is provided in its upper portion with a centrally disposed opening 14 leading to the race 9. The upper end of the guide slot or race 12 is enlarged, as at 15, above the normal limit of raising movement of the stud 11 whereby upon a bodily raising of the plate 6 a slight distance when in upright position, the flange of the roller 8 is disengaged from the lower coacting edge of the plate 10 and the enlarged inner end of the stud 11 stands in register with the opening 15, thus permitting a disengagement of the plate 6 and its studs from the coöperating guide plates 10 and 13.

To facilitate a raising of the stud 11 and the associated end of the plate 6 from reclining position, a coiled compression spring 16 is mounted beneath the enlarged end 11′ of such stud with its upper end thrust thereagainst, as best indicated in Figs. 8 and 9. The spring 16 is disposed in the lower portion of the space provided between the two uprights or posts 17, which are secured to the inner sides of the associated davenport frame ends 1 and have the plates 10 and 13 secured thereto. A plate 18 is secured to the uprights 17 to close the open side of said space without the spring 16, and a plate 19 is secured to the lower ends of the uprights 17 to support and receive the lower end thrust of said spring. The springs 16 are not of themselves of sufficient power to alone raise the studs 11 and the weight of the associated portion of the seat frame to which such studs are subjected, but are intended to assist very materially in such raising operation, as it is only necessary, with the use of such springs, to exert a very slight raising pressure on the forward edge 4 of the seat frame when in normal position, as shown in Fig. 1, to invert such seat, or to exert a very slight lowering pressure on the rear edge 5 of the seat frame when in inverted position, as shown in Fig. 2, to return the seat frame to its normal closed position, for in either case the springs exert a raising pressure upon the studs 11. While it is preferable to employ the springs 16, to assist in turning the seat-frame, they may be eliminated from the construction without effecting the operation thereof other than to render a turning of the seat frame more difficult.

Rising from the upper edge of the rear piece 5 of the seat frame, when in inverted position, adjacent each end thereof, are the spaced standards 20, 20, the outer ones of which standards are shown in the present instance as being bent upwardly from the ends of an angle-iron bar 21, which is secured to the seat frame piece 5, while the inner ones of such standards fixedly rise from said bar but are not integral therewith. A brace 22 is attached to the bar 21 and to each of the uprights 20 of a set to brace said uprights and bar against relative movements. A pivot bolt 23 is shown as connecting the upper ends of the uprights 20 of each set, and pivoted at their inner ends to each of these bars are two substantially duplicate bed-frame parts or sections 24 which are of broadened channel form with their flanges disposed upwardly and the inner or contiguous ends thereof projected beyond the bodies of the respective parts and lapping each other to receive the pivot bolt 23, with the flange ends of the part 24 preferably projected within the other. When the parts 24, 24′ are in longitudinal register their contiguous body ends abut and stand in a common plane. To the outer or free ends of the inwardly projecting parts or sections 24 are pivoted the side bars 25 of the inner section of the bed-frame, which bars are connected at their inner ends by the cross bar 26, while the outer or free ends of the parts or sections 24′ are pivoted to the inner ends of the side bars 27 of the outer bed frame section, said side bars 27 being connected at their outer ends by a cross-bar 28. The bars of the inner and outer bed-frame sections are preferably, but not necessarily, of angle-iron form with their outer flanges projecting upwardly and those of the side bars 25 and 27 pivoted, as at 29, to the outer flanges of the respective frame parts 24, 24′. The purpose of axially broadening the pivotal bearings or inner ends of the parts 24, 24′ is to resist an inward collapsing of their outer ends due to strain exerted thereon, or on the inner ends of the attached bars 25, 27, by the bed-bottom fabric.

The bed frame parts 24, 24′, have the outer ends of their outer vertical flanges lapping the inner sides of the vertical flanges of the respective bars 25 and 27 with the outer ends of their bodies or horizontal flanges positioned to abut against the respective horizontal flanges of the bars 25 and 27 when the bed-frame is in horizontal or unfolded position, as shown in Fig. 4, thus serving to limit the unfolding movements of the frame sections. The outwardly projecting sets of sections 24′ of the bed-frame have the outer ends of their outer vertical flanges cut on a bevel, as indicated at 30, Figs. 4 and 12, to adapt them to coact with the horizontal flanges of the attached bars to limit the relative folding movements of such bars, as shown in Figs. 3 and 5.

In order that the relative pivotal move-

ments of the intermediate bed-frame sections 24, 24′, may be limited, the inwardly projecting ones thereof have the inner or pivotal ends of their vertical flanges beveled, as indicated at 31 in Fig. 11, so that when the sections 24′, upon a folding of the bed-frame, have turned a predetermined distance relative to the sections 24, their bodies or horizontal portions will coact with the beveled ends 31 of the sections 24 to cause such latter sections to turn therewith during the remainder of their folding or pivotal movements. When the sections 24, 24′ have turned sufficiently to place the inner ones thereof in vertical position, such inner sections coact with the associated braces 22 to limit their movements, while the outer ones of such sections are tilted inwardly toward the opposite or front side 4 of the seat frame, as shown in Figs. 2, 3 and 5.

Upon a folding of the bed-frame the inner section 25—26 thereof lowers within the seat frame due to its pivoted end being carried downward by the folding action of the frame sections 24 and its free or outer end traveling down the incline tracks 32, as described in my former application, Serial No. 572,233, filed July 16, 1910. The outer bed-frame section 27—28 has supporting legs 33 pivoted to the outer end portions thereof, which legs fold up with said sections in substantial parallelism with the inner bed-frame section 25—26 upon a folding of the bed-frame, as indicated in Figs. 3 and 5.

34 designates an angled locking member, which may be carried at one or both ends of the seat frame and coacts with the outer bed-frame section 27—28, when folded, to retain it in such position, as shown in Fig. 3. This locking means is fully described in the application above referred to.

The bed-frame is provided with a suitable fabric or netting 35 which is attached to the horizontal flanges of the bed-frame bars in any suitable manner, as is apparent. In the use of beds of this character it is frequently desirable to substitute a set of coiled springs for the portion of the bed-frame and fabric 35 disposed over the seat-frame, as the fabric is apt to sag, especially when subjected to heavy weight, to such an extent as to strike the subjacent frame parts.

With the construction of bed-frame above described, the bed-frame sections 24 and attached sections 25—26, with the attached fabric, can be removed for the purpose of substituting a set of coiled springs 36, therefor, by simply disengaging the sections 24 from the pivot 23 and separating the fabric 35 along its central longitudinal portion. This being done the frame parts 24 and 25—26 with the attached portion of the fabric 35, are removed and a set of coiled springs 36 mounted in a suitable manner within the seat frame, as upon cross-bars 37 secured thereto, as shown in Figs. 5 and 7. It is thus apparent that it is possible with my improved bed-frame to either use an entire fabric bed-bottom or to easily and quickly remove a portion of the bed-frame and fabric and substitute therefor a set of coiled springs, so as to provide a combination coiled spring and fabric bed-bottom. When the inner bed-frame sections 24 and 25—26 are removed the inward tilting of the sections 24′ when the bed-frame is folded, as shown in Fig. 5, is limited by reason of the beveled edges 38 of the inner ends of their flanges striking the braces 22.

It is apparent with my improved davenport-bed that to invert the seat to permit an unfolding of the bed-frame it is only necessary to exert a slight raising pressure upon the front side 4 of the seat frame so as to cooperate with the raising springs 16 to raise the seat frame to vertical position, and that when the seat frame has been turned past such vertical position a sufficient downward pressure must be exerted on the front side 4 thereof to coöperate with the weight of such side to lower the frame to horizontal position against the tension of the raising springs 16. The seat having been inverted, the bed-frame is easily unfolded by grasping the section 27—28 thereof and lifting it upwardly and outwardly. When the outer section 27—28 and intermediate sections 24, 24′, upon an opening of the frame, move into longitudinal alining position, such sections, upon a continued opening movement of the bed-frame, act on the inner section 25—26 to raise it to its normal position in a horizontal plane with the other bed sections. It is also apparent that the broadening of the inner ends of the sections 24, 24′, gives them a broad bearing surface longitudinally of the frame upon the pivots 23 so as to brace such sections against inward collapsing movements due to an inward pressure being exerted on their outer ends by the attaching of the fabric 35 to such sections and to the frame bars 25, 27.

I wish it understood that my invention is not limited to any specific construction or arrangement of the parts except in so far as such limitations are specified in the claims.

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

1. In an article of the class described, the combination of a stationary frame, a seat frame mounted for turning movements therein and having pivot and guide lugs projecting from its ends, means secured to the ends of the stationary frame and forming a horizontal race in which the pivot lugs work and a vertical race which extends upwardly from the central portion of the horizontal race in communication therewith for

the guide lugs to work in, and spring means acting on the guide lugs to influence a raising thereof.

2. In an article of the class described, the combination of a davenport frame, a seat frame mounted for turning movements therein and having pivot and guide lugs projecting from its ends, means secured to the ends of the davenport frame and forming horizontal race-ways for the pivot lugs to work in and vertical race-ways projecting upwardly from the central portions of the horizontal race-ways for the guide lugs to work in, said race-ways communicating to permit the guide lugs when in lowered position to stand within the horizontal race-ways, said means coöperating with the ends of the davenport frame to provide vertical spring sockets which are longer than the vertical race-ways and in which parts of the guide lugs work, and springs mounted within the lower ends of said sockets and acting on the guide lugs to influence raising movements thereof.

3. In a sofa-davenport, an invertible seat frame, standards rising from an edge of said frame, a pivotally jointed four section bed frame mounted on such standards, and means coöperating with such standards to support the bed-frame in unfolded position.

4. In a sofa-davenport, an invertible seat frame, bed frame supporting means carried by a portion of such frame, a pivotally jointed four section bed frame pivotally mounted on said supporting means and capable of being unfolded to place said sections in longitudinal register and of being folded in compact form within the seat frame, and means coöperating with said supporting means to support the bed-frame.

5. In a sofa-davenport, an invertible seat frame, bed frame supporting means carried by said frame, a multiple section foldable bed frame pivotally carried by said supporting means, a portion of such sections being removable without effecting the operation of the remaining sections.

6. In a sofa-davenport, an invertible seat frame, bed frame means rising from an edge of the seat frame, two sets of intermediate frame sections pivotally carried by said securing means and being capable of limited relative pivotal movements, and outer bed frame sections pivotally attached to each of said intermediate sections and capable of folding therewith into compact form under the seat when in closed position and of being unfolded to place the several sections thereof in longitudinal register.

7. In a sofa-davenport, an invertible seat frame, standards rising from the rear edge of the frame when in an inverted position, a foldable bed frame pivoted to said standards and comprising at least four pivotally connected sections, two of which attach for relative pivotal movements to said standards.

8. In a sofa-davenport, an invertible seat frame, standards rising from the rear edge of said frame when in inverted position, and a multiple section foldable bed frame pivotally supported by said standards and having intermediate sections provided with broadened bearings to prevent an inward collapsing of their outer ends, a part of said bed frame sections being removable without effecting the remaining sections.

9. In a sofa-davenport, an invertible seat frame, standards rising from a part of such frame when in inverted position, two sets of intermediate bed frame sections pivoted to said standards for limited relative pivotal movements, the pivotal bearings of said sections being axially broadened, outer bed frame sections attached to the outer ends of said intermediate sections one at least of said outer sections being permitted limited pivotal movements relative to its intermediate section, a fabric bed frame bottom attached to said bed frame, the portion of the bed frame and fabric which, when unfolded, are disposed over the seat frame, being capable of removal without effecting the remaining bed frame sections.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

ADOLPH C. KLOPPING.

Witnesses:
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M. G. Gaskell.