

(No Model.)

3 Sheets—Sheet 1

J. S. JOHNSTON.
SEAT.

No. 542,412.

Patented July 9, 1895.

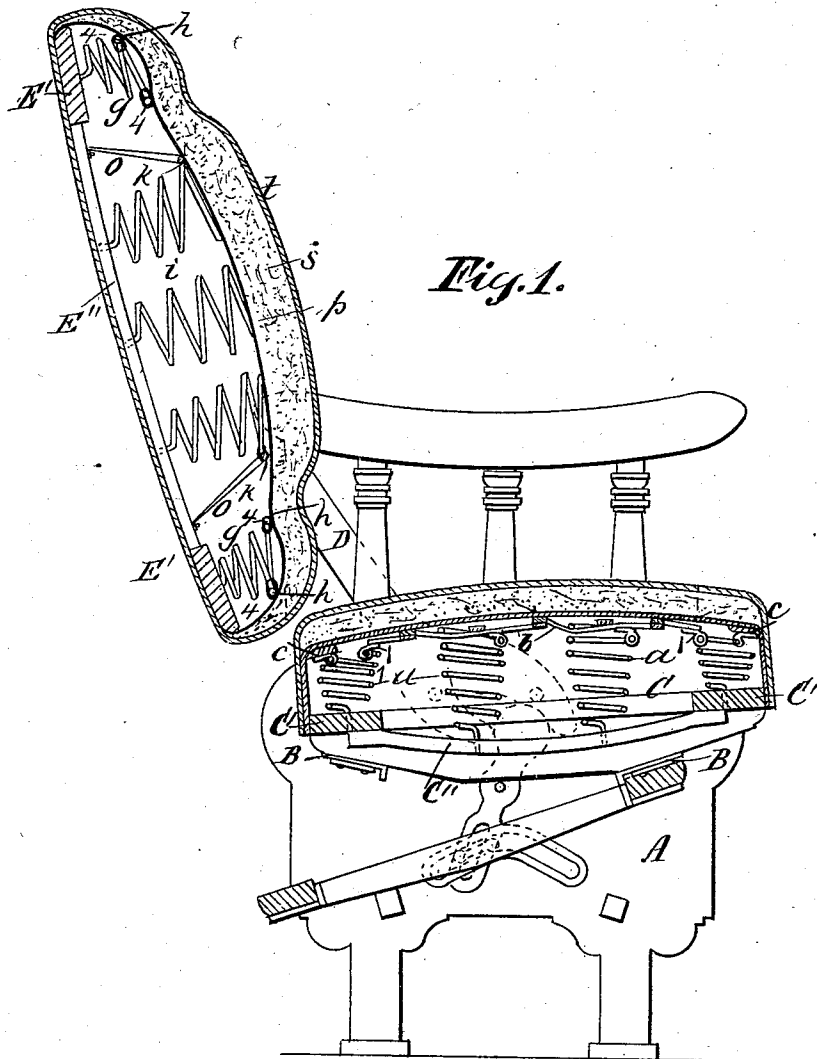
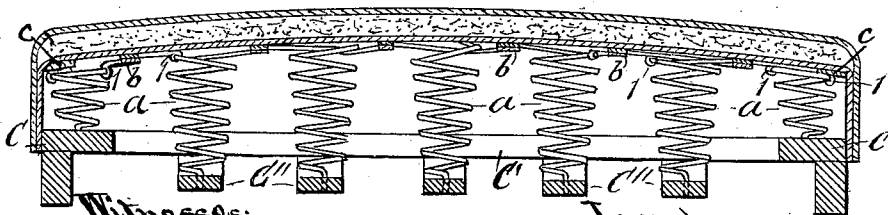


Fig. 2.



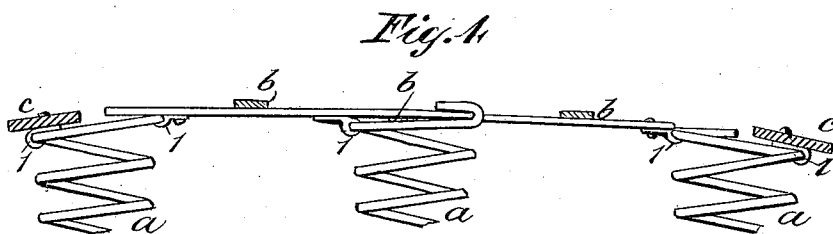
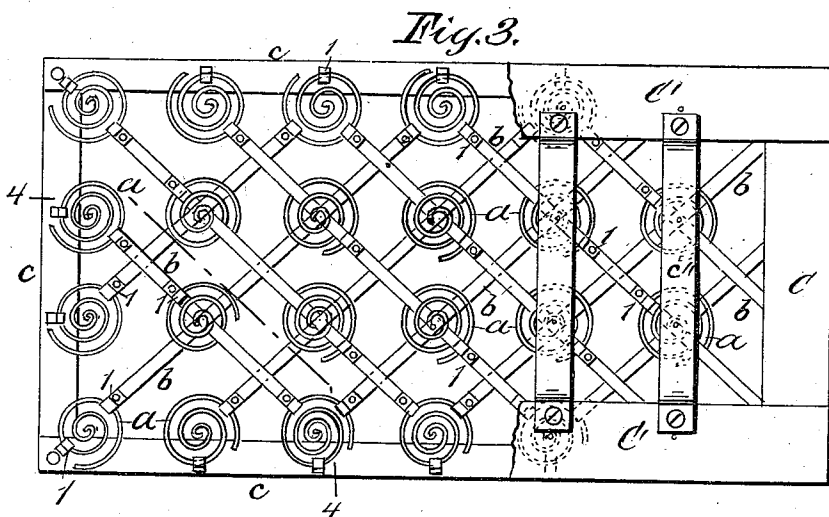
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Atty's

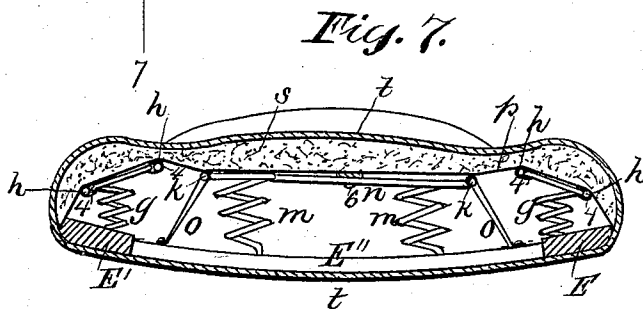
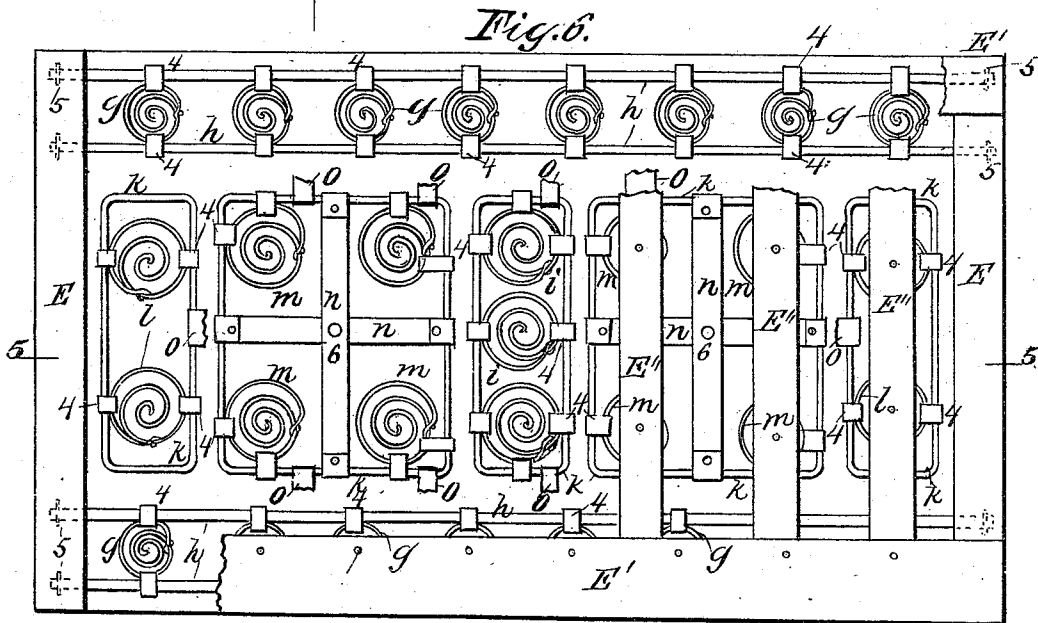
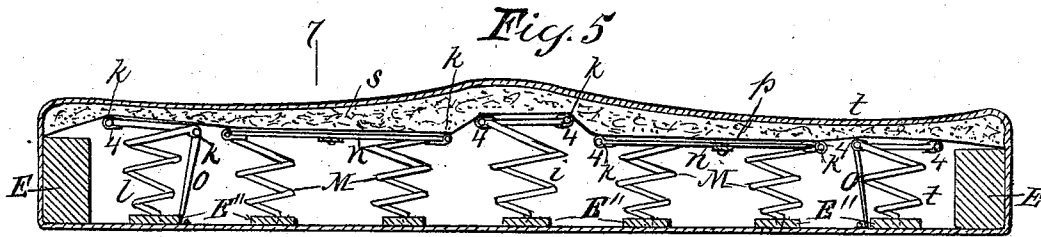
(No Model.)

3 Sheets—Sheet 3.

J. S. JOHNSTON.
SEAT.

No. 542,412.

Patented July 9, 1895.



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UNITED STATES PATENT OFFICE.

JOHN S. JOHNSTON, OF NEW YORK, N. Y., ASSIGNOR TO THE POTTIER & STYMUS COMPANY, OF SAME PLACE.

SEAT.

SPECIFICATION forming part of Letters Patent No. 542,412, dated July 9, 1895.

Application filed May 31, 1895. Serial No. 551,058. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. JOHNSTON, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Seats, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The especial object of the present invention is to provide an improved construction of seat and back cushion for car-seats and similar constructions in which the seat is reversed for facing in opposite directions. While, however, the invention consists in part of a seat-cushion and seat-back especially adapted for such constructions, the invention is of general application in seat-cushions and seat-backs, and the invention includes also certain features of spring construction which are of still more general application.

15 For a full understanding of the invention a detailed description of a reversible car-seat embodying all the features of the invention in their preferred form will now be given, in connection with the accompanying drawings, forming a part of this specification, and the features forming the invention will then be specifically pointed out in the claims.

20 In the drawings, Figure 1 is a central vertical section of a car-seat of the preferred form embodying the invention. Fig. 2 is a central longitudinal section of the seat-cushion. Fig. 3 is a bottom plan view of the same with the frame partially broken away. Fig. 4 is a section of the seat-cushion on the line 4 of Fig. 3. Fig. 5 is a central horizontal section of the seat-back on the line 5 of Fig. 6. Fig. 6 is a rear view of the seat-back without the cover and with the frame partially broken away. Fig. 7 is a cross-section of the back on the line 7 of Figs. 5 and 6.

25 Referring to said drawings, A is the frame, upon which is supported the seat proper or cushion by sills B and on which the back is reversibly mounted by reversing-arms D, the seat being provided with the usual inclined rockers moving on the sills B for the purpose of raising the front edge of the seat and lowering the rear edge as the seat is shifted with the back in reversing, as usual in such con-

structions, any suitable form of connection between the arms D and seat being used.

The invention is shown as applied to a seat embodying certain features of construction 55 claimed in another application and which forms no part of the previous invention, and it will be understood that the seat and back cushions embodying the invention may be used in seats of other general construction 60 than that shown.

Referring now to the specific construction of the seat-cushion shown in detail in Figs. 2 to 4, C C are the opposite end bars and C' C' the opposite side bars of the seat-cushion 65 frame, a series of cross-bars or supports C'', preferably curved downward, to increase the capacity of the frame, as shown, connecting the side bars C' C' between the end bars C C. Upon each of the end bars C C and each of 70 the cross-bars C'' is mounted a row of vertical coiled springs *a*, having their smaller ends next the seat-frame and connected to the side bars and cross-bars so as to be readily removable therefrom, preferably in the manner 75 shown, by having their straight ends inserted into holes in the bars, the downward pressure on the springs being sufficient to retain them in place without clinching the ends. The top coils of the springs *a* are connected by means 80 of spring-plates *b*, so as to hold the springs together to form an integral spring-body and to fill the spaces between the springs, so that the spring-body will form a practically continuous support for upholstering mounted on a textile covering placed directly upon the spring-body. These spring-plates are preferably arranged in two sets, as shown, to extend diagonally across the spring-frame at right angles to each other and connected to the edge 85 springs by loops 1 on the ends of the plates encircling the top coils of the springs. The two series of spring-plates *b* cross each other centrally of the inside springs and the springs at these intersections of the plates are secured to one of the plates by a loop 1, formed 95 on or attached to the plate and by the outside coil of the spring lying over the same plate, while the other plate is held in position by passing between the plate having the loop 1 and the top of the spring. The outside springs *a* all around the seat are secured to

spring-plates *c*, preferably of metal, which are secured together at the corners, but supported solely by the edge springs, so as to form a complete spring edge, these plates being of metal and of such thickness and width as to be rigid edgewise while flexible longitudinally, the spring-body thus formed resisting strongly pressure tending to move the body edgewise, while the spring-body, including the edge, is of such elasticity at all points as to readily adapt itself to different conditions of use, such as a single occupant at any point of a seat adapted for two or more occupants, or two or more persons of different weights occupying the same seat. The edge springs *a* are connected to the plates *c* by means of loops *l*, similar to the loops on the spring-plates *b*. One especial object of the use of the loops *l* and the detachable connection of the lower ends of the springs to the frame and of the arrangement of the spring-plates *b*, as shown, is to make all the springs and plates readily removable, so that a new spring or plate may readily be substituted for a broken or bent one. Any of the springs may readily be removed by turning it around, so as to unscrew the top coil from the loops *l*, through which it passes, and then raising the spring so as to draw the smaller end out of the base-frame, and it will be seen that by thus unscrewing all the springs to which a spring-plate *b* is connected such plate may be removed without removing the springs and a new one substituted. It will be found that this construction provides a very efficient, comfortable, and durable spring-edge cushion very strong against pressure tending to move the cushion edgewise, while at the same time insuring the desired elasticity at all points and in all directions and providing an extended supporting-surface for the upholstering.

Referring now to the back-cushion shown in detail in Figs. 5 to 7, *E E* are the end bars, *E' E'* the top and bottom bars, and *E''* a series of vertical cross-bars, seven being shown, connecting the bars *E'* between the end bars *E E'* and forming supports for the springs. Upon each of the top and bottom bars *E' E'* is supported a series of springs, eight being shown in the present case, arranged longitudinally of the back, these springs securing the spring edge required at both horizontal edges of the cushion in order that a spring edge may be presented at the top in either position of the reversible back. These coiled springs *g* are preferably mounted upon the bars *E' E'* by ends inserted into holes in the bars, as previously described in connection with the springs *a* of the seat-cushion, and are held in place next the upholstery by metal clips *4* at opposite sides, securing the top coil to metal rods *h* extending longitudinally of the back on opposite sides of the row of springs and having their ends passed through eyes formed, preferably, by staples *5* in the end bars *E E*, so as to have a limited amount of play in the latter, although

the elasticity of these rods *h* may be such that their ends may be rigidly secured on the end bars.

The central horizontal portion of the back is fitted with springs as follows, the object being to provide a comfortable back divided into sections such that each section shall form a comfortable seat-back for one occupant, approximating the upholstered back of a single chair.

In the longitudinal center of the back and supported upon the middle cross-bar *E''* is a vertical row of springs *i*, three being shown, having their top ends secured by clips *4* at opposite sides to a spring-rod *k*, forming a rectangle about the springs, this spring-section dividing the back into two chair-sections. At opposite ends inside the end bars *E E* is a vertical row of two springs *l*, although more than two may be used, if desired, these springs *l* being secured by metal clips *4* at opposite sides to spring-rods *k*, as in the case of the springs *i*, and these spring-sections forming spring-edges of the backs of the two chair-sections. The sections between the center and end springs *i l*, which are the back-sections, are occupied by two vertical rows of springs *m*, each row being shown as consisting of two springs, these springs being secured by clips *4* to spring-rods *k*, forming rectangles inclosing the four springs of each series, and these sections are preferably stiffened by spring-plates *n*, connecting the opposite sides of the rectangle formed by the rods *k* and connected together in the center by rivets *6*, as shown.

The desired relative tensions of the springs in the longitudinal center of the back and the desired relative elevations of the different portions of the back, substantially as shown in Figs. 5 and 6, or varied, as desired, are preferably secured by putting the springs *l m* under the desired relative tensions by means of strips of canvas or similar material *o* looped about the bars *k* at proper points on opposite sides of the rectangles formed by these bars and having their ends secured to the cross-bars *E''*. By this means the relative heights of the springs may be adjusted and the bars, put under such relative tensions as to secure, in connection with a proper upholstering, the desired result—that is, a form approximating that of two spring edge chair-backs with projecting portions or spring edges at the top and bottom, these projecting portions being secured by the rows of springs *g*, which are independent of the other springs. Over the spring-body thus formed is the canvas covering *p*, secured to the end and top and bottom bars outside this the filling *s*, and over the filling the plush or other covering *t*, which, as shown, preferably extends over both sides of the back, as usual in such constructions.

It will be understood that modifications may be made in the construction of both the seat and back cushion without departing from

the invention, and I am not to be limited to the exact form or arrangement of the parts shown.

What is claimed is—

1. The combination with a cushion frame, of series of coil springs having one end detachably connected to the frame, and spring plates connecting two edge springs on opposite sides of the cushion and crossing the inside springs between said edge springs, said plates being provided with loops in which the top coils of the springs are detachably held, substantially as described.

2. The combination with a cushion frame, of series of coil springs having one end detachably connected to the frame and two sets of diagonal spring plates extending at right angles to each other and connecting two edge springs on opposite sides of the cushion and crossing the inside springs between said edge springs, said plates being provided with loops in which the top coils of the springs are detachably held, substantially as described.

3. The combination with a cushion frame, of coil springs having one end detachably connected to the frame, edge spring plates detachably secured to and supported by the outside springs and secured together at the corners to form a frame extending about the cushion, and spring plates connecting the tops of the springs together to form a single spring body and detachably secured to the springs, substantially as described.

4. The combination with a cushion frame, of coil springs arranged in rows longitudinally of and transversely to the frame and having one end detachably connected to the frame, edge spring plates detachably secured to and supported by the outside springs and secured together at the corners to form a frame extending about the cushion, and diagonal spring plates connecting the tops of the springs together and detachably secured to the springs and crossing centrally of sets of four springs, substantially as described.

5. The combination with a cushion frame, of coil springs having one end straight and entering openings in the frame, edge spring plates secured to and supported by the outside springs and secured together at the corners to form a frame extending about the cushion, loops on the edge plates in which the coils of the springs are detachably held, and spring plates connecting the tops of the springs together to form a single spring body and provided with loops in which the coils of the springs are detachably held, substantially as described.

6. The combination with a cushion frame, of coil springs arranged in rows longitudinally of and transversely to the frame and having one end straight and entering openings in the frame, edge spring plates secured to and supported by the outside springs and secured together at the corners to form a frame extending about the cushion, loops in the edge plates in which the coils of the springs are de-

tachably held, and diagonal spring plates connecting the tops of the springs together and crossing centrally of sets of four springs and provided with loops in which the coils of the springs are detachably held, substantially as described.

7. The combination with a cushion frame, of springs *a* detachably mounted on the frame, edge spring plates *c* having loops *l* receiving the top coils of the edge springs, and two sets of diagonal spring plates *b* extending at right angles to each other and connecting two edge springs on opposite sides of the cushion and having loops *l* receiving the top coils of the springs, substantially as described.

8. The combination with a cushion frame, of springs *a* having straight ends entering openings in the frame, edge spring plates *c* having loops *l* receiving the top coils of the edge springs, and two sets of diagonal spring plates *b* extending at right angles to each other and connecting two edge springs on opposite sides of the cushion and having loops *l* receiving the top coils of the springs, substantially as described.

9. A cushion having a spring edge formed by a row of coiled springs in combination with spring rods on opposite sides of the springs to which the top coils of the springs are connected at opposite sides, said spring rods extending longitudinally of the cushion and having their ends supported directly on the frame and held in place thereon by means permitting the rods to move longitudinally, substantially as described.

10. A seat back having independent spring sections arranged longitudinally of the back and forming respectively a raised vertical portion dividing the seat into separate chair sections, and backs for the separate chair sections, and having a top spring edge formed by a row of coil springs having their top coils connected at opposite sides to spring rods extending longitudinally of the back and having their ends supported on the frame, substantially as described.

11. A seat back having independent spring sections arranged longitudinally of the back and forming respectively a raised vertical portion dividing the seat into separate chair sections, and backs for the separate chair sections, and having top and bottom spring edges formed by rows of coil springs having their top coils connected at opposite sides to spring rods extending longitudinally of the back and having their ends supported on the frame, substantially as described.

12. A seat back having independent spring sections arranged longitudinally of the back and forming respectively a raised vertical portion dividing the seat into separate chair sections, and backs for the separate chair sections, and having a top spring edge formed by a row of coil springs having their top coils connected at opposite sides to spring rods extending longitudinally of the back and hav-

ing their ends supported on the frame, textile material covering the spring body thus formed and having its edges secured to the frame, and upholstering supported on the textile material, substantially as described.

13. A seat back having independent spring sections arranged longitudinally of the back and forming respectively a raised vertical portion dividing the seat into separate chair sections, and backs for the separate chair sections, and having top and bottom spring edges formed by rows of coil springs having their top coils connected at opposite sides to spring rods extending longitudinally of the back and having their ends supported on the frame, textile material covering the spring body thus formed and having its edges secured to the frame, and upholstering supported on the textile material, substantially as described.

14. The combination with the bars E, E, of the edge row of coil springs *g*, spring rods *h* on opposite sides of the springs extending from bar to bar and having a sliding connection to the bars at their opposite ends, and clips 4 connecting the opposite sides of the springs to the rods, substantially as described.

15. The combination with the side and end bars of a seat back, of edge rows of springs *g* at top and bottom of the back, spring rods *h* on opposite sides of the springs extending between the end bars and having their ends supported thereon, clips 4 connecting the opposite sides of the springs to the rods, and a spring body between the edge springs, substantially as described.

16. The combination with a seat back frame, of a transverse row of springs *i* forming a raised spring section dividing the seat back, springs *m* forming independent back sections on opposite sides of the dividing section, rows of springs *l* outside the back sections forming spring side edges for the back sections, spring rods *k* inclosing each of said spring sections, and clips 4 connecting the springs to the rods, substantially as described.

17. The combination with a seat back frame, of a transverse row of springs *i* forming a raised spring section dividing the seat back, springs *m* forming independent back sections on opposite sides of the dividing section, rows of springs *l* outside the back sections forming spring side edges for the back sections, spring rods *k* inclosing each of said spring sections, clips 4 connecting the springs to the rods, and spring plates *n* in each back section connecting the opposite sides of the section and secured together at their intersection, substantially as described.

18. The combination with a seat back frame, of a transverse row of springs *i* forming a raised spring section dividing the seat back, springs *m* forming independent back sections on opposite sides of the dividing section, rows of springs *l* outside the back sections forming

spring side edges for the back sections, spring rods *k* inclosing each of said spring sections, clips 4 connecting the springs to the rods, and strips *o* connecting the rods to the frame and holding the sections under tension, substantially as described.

19. The combination with a seat back frame, of a transverse row of springs *i* forming a raised spring section dividing the seat back, springs *m* forming independent back sections on opposite sides of the dividing section, rows of springs *l* outside the back sections forming spring side edges for the back sections, a longitudinal row of springs forming an independent top spring edge, and a covering of flexible material extending over the spring sections and edge and secured to the frame, substantially as described.

20. The combination with a seat back frame, of a transverse row of springs *i* forming a raised spring section dividing the seat back, springs *m* forming independent back sections on opposite sides of the dividing section, rows of springs *l* outside the back sections forming spring side edges for the back sections, longitudinal rows of springs forming independent top and bottom spring edges, and a covering of flexible material extending over the spring sections and edges and secured to the frame, substantially as described.

21. The combination with a seat back frame, of a transverse row of springs *i* forming a raised spring section dividing the seat back, springs *m* forming independent back sections on opposite sides of the dividing section, rows of springs *l* outside the back sections forming spring side edges for the back sections, longitudinal rows of springs *g* at top and bottom of the back, forming spring edges, rods *h* extending between the end bars of the frame and having their ends supported thereon, and clips 4 connecting the springs *g* to the rods, substantially as described.

22. The combination with a seat back frame, of a transverse row of springs *i* forming a raised spring section dividing the seat back, springs *m* forming independent back sections on opposite sides of the dividing section, rows of springs *l* outside the back sections forming spring side edges for the back sections, spring rods *k* inclosing each of said spring sections, clips 4 connecting the springs to the rods, longitudinal rows of springs *g* at top and bottom of the back forming spring edges, rods *h* extending between the end bars of the frame and having their ends supported thereon, and clips 4 connecting the springs *g* to the rods, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN S. JOHNSTON.

Witnesses:

PETER X. PAAR,
FRANK FRIEDLEBEN.