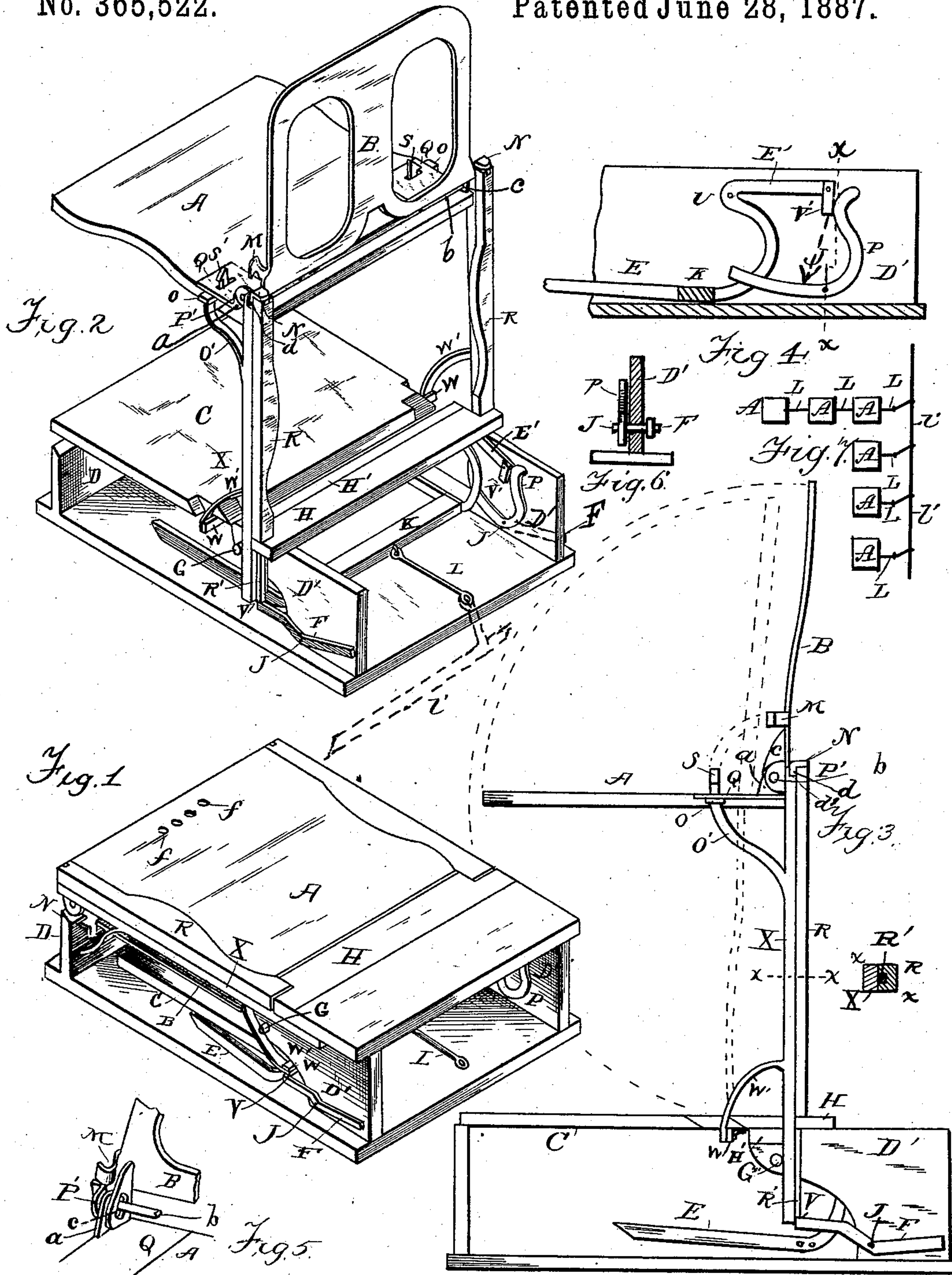


(No Model.)

J. JACKSON.  
FOLDING OPERA CHAIR.

No. 365,522.

Patented June 28, 1887.



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# UNITED STATES PATENT OFFICE.

JOHN JACKSON, OF CLINTON, IOWA.

## FOLDING OPERA-CHAIR.

SPECIFICATION forming part of Letters Patent No. 365,522, dated June 28, 1887.

Application filed July 8, 1884. Serial No. 137,132. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN JACKSON, a citizen of the United States of America, residing at Clinton, in the county of Clinton and State of Iowa, have invented certain new and useful Improvements in Folding Opera-Chairs, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to folding opera-chairs, adapted for use in halls, churches, theaters, opera-houses, and other buildings, and in railroad-coaches.

My improved chair is constructed to form part of the floor when the chair is opened or closed, and it is not fastened by hinges or otherwise to the floor, but may be readily removed in case of fire, or for other purposes. These chairs are adapted to be raised and folded singly by hand, or in sections by mechanism placed under the floor, but not attached to the chairs; and the invention consists of the construction and combinations of the different parts of the chair and the devices for raising and folding it, as hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a perspective of the chair folded into a recess in the floor. Fig. 2 is a perspective of the chair raised and opened in position to be occupied as a seat. Fig. 3 is a side elevation and a section on the line *x* of the chair raised and unfolded. Fig. 4 is a partial sectional view showing devices employed for raising the chair. Fig. 5 illustrates in perspective the hinge-connection of the back and seat of the chair. Fig. 6 is a vertical section on the line *X X* of Fig. 4, showing the levers *P* and *F* rigidly mounted on a single shaft or pivot, *J*. Fig. 7 is a diagram of several seats linked together by the rods *L*, and to arms on a rock-shaft, *I'*, for simultaneous operation, as hereinafter described.

*A* designates the chair seat, provided with a plate, *Q*, having lugs *a*, by means of which the seat is hinged to lugs *P'* on the standard *X* by a rod, *b*, extended through the lugs.

*B* is the chair-back, provided with slotted lugs *c*, through which the rod *b* is extended, by means of which slotted lugs and the rod the back has its hinged connection with the seat and with the standards.

*C* is a floor-piece, filling the recess in the floor when the chair is raised and unfolded, as shown in Figs. 2 and 3 of the drawings. The rear end of this floor-piece is hinged to a cross-bar, *W*, the ends of which bar are fastened to the lower ends of the curved arms *W'*, attached to or formed on the chair-standards *X*. When the chair is raised and opened, the front end of the floor-piece rests on a riser or joist, *D*, which may be made to extend across the room.

*E* designates levers pivoted at *U* to the risers *D'*. These levers are connected by a cross-bar, *K*, so as to be jointly operated by a rod, *L*, connected with the cross-bar *K*, and so that when a single rod is connected with several cross-bars of several seats they may be simultaneously operated by such single rod, as hereinafter described. (See Fig. 7.) The rear portions of these levers are curved upward and are extended backward from their pivots *U*, forming the levers *E'*, to the ends of which are loosely pivoted short arms *V'*. *F* and *P* designate levers jointly pivoted at *J* to the risers *D'*, so that when one is moved it moves the other. The lever *F* is arranged on the outside and the lever *P* on the inside of the risers, and the levers *P* are curved and extended upward in the rear of the levers *E'*, as shown.

*G* designates standard-bearings attached to the risers *D'* in position for the fronts of the standards to rest against them when the chair is raised.

*H* is a cross-piece, the upper surface of which forms part of the floor, and the front edges of its ends form bearings for the backs of the standards when in an upright position.

*L* designates a rod connected with the cross-bar *K*, for the purpose of raising and lowering the chair by mechanism under the floor, as hereinafter fully described.

*M* designates catches attached to or formed on the lower portion of the chair-back, in position to engage the spring-catches *S*, provided with any ordinary spring-bolts, *O*, attached to the rear portion of the seat *A*.

*O'* are curved braces formed on or attached to the upper portions of the standards. These braces are extended forward and upward in position to engage the bolts *O* to support the seat in the open position, as shown in Figs. 2



and 3. These catches M and S are constructed so that by the weight of the back falling forward the bolts O are sprung inward and disengaged from the supporting-braces O', allowing the seat and back to drop down. The bolts O extend outside of the edge of the seat and support the same by resting upon the bracket O'; and in raising and unfolding the seat and the back the catches are readily disengaged, allowing the seat to take its true position.

R designates housings for the rods R', placed loosely in grooves in the housings, which are attached to the rear of the standards and form part of the floor when the chair is folded down, as shown in Fig. 1. When the chair is raised, the lower ends of the rods R' rest upon the forward portions, V, of the levers F, and the upper ends of these rods impinge against lugs N on the lower portions of the chair-back, which lugs are constructed to extend over the upper ends of the housings R, as shown. The lower portion of the chair-back is provided with lugs d, extending downward into recesses d' in the upper ends of the standards, to aid in holding the back in an upright position.

These chairs may be raised, unfolded, folded up, and lowered into the recesses in the floor singly by hand, or in sections by the mechanism under the floor.

To raise a chair by hand, the fingers are inserted through the holes at f in the seat, which is raised, like a trap-door, till the standards X are in an upright position, and they drop down vertically, placing their lower portions between their bearings G, H, and V, in which position the lower ends of the housings R rest on the cross-piece H and the lower ends of the rods R' rest on the ends V of the levers F. The chair back and seat are then raised and the floor-piece C assumes its position in the recess of the floor, and the chair is ready to be occupied, as shown in Figs. 2 and 3 of the drawings.

To lower a chair by hand, the back is raised so as to disengage the lugs d from their recesses, and the back is allowed to fall forward, its upper end moving in the direction indicated by the curved upper dotted line in Fig. 4, upon the seat, and the catch M strikes the catch S, throwing back the spring-bolts O, releasing them from their supporting-braces O', allowing the seat and back to drop into a vertical position, the bottom of the seat fitting neatly between and being flush with the housings R. Then by raising the standards till their lower ends are freed from the ends V of the levers F the standards are allowed to fall forward, the floor-piece C being moved downward and backward by the curved arms W', and the seat rests on the risers D and D', its under surface forming the floor-surface, as shown in Fig. 1 of the drawings.

To operate chairs in sections, the mechanism under the floor provided for each chair is employed, as herein set forth. The rod L may be extended the whole length of a row of chairs, and may be properly connected with

each of the cross-bars K of the levers E, which rod may be operated by a lever (not shown) extended upward through the floor, either at the front or rear of the tier or row of chairs; or a rock-shaft or rod (see dotted lines, Fig. 2) may be extended transversely in the rear of several tiers of chairs and suitably connected with the rods L.

The operation of these devices is as follows: The chairs being in position shown in Fig. 1, as the rods L are moved forward, the levers E are raised against the floor-piece C, which raises the standards and folded seat and back to a vertical position, the standards dropping downward between their bearings, as before described. The rods L are then drawn backward, allowing the levers E to return to their former position, and the floor-piece C drops to its position in the recess in the floor. In this manner a whole section or tier of chairs may be raised at once to the vertical position, and then by hand each seat may be readily raised to the required position for use.

To lower a section or tier of chairs, the rods L are moved forward, the same as when the chairs are to be raised. This forward movement of the rods causes the levers E' to impinge against the upper portion of lever P, which raises the forward ends, V, of levers F, thus raising the rods R', which impinge against the lugs N and raise the chair-back, disengaging the lugs d, and allowing the back to drop forward upon the seat, which is released from its supports and drops down, as before described; and as the rod L continues to move forward, the arms V', by their own weight, drop into position to impinge upon the levers P in front of their pivots, (see dotted lines, Fig. 4,) which, being at an opposite side of said pivots from that at which the lever E' V' first operates upon the lever P, results in and causes the lowering the ends V of levers F and disengaging them from their bearings against the lower ends of the standards X, allowing them with the folded chair to fall forward upon the floor-piece C, when the rod L is drawn back, lowering the levers E and allowing the chair to assume the position shown in Fig. 1. The lever E' is pivoted at U to the riser D', and carries at its end a hanging or swinging lever, V'. When the rod L is pushed forward against the bar K, the end E of the lever E' is swung upwardly and the end E' downwardly, the whole moving on the pivot U, and in its downward movement the latch or end E' abuts against the curved end of the lever P, mounted on the pivot J, thus causing said curved end to move backward; and it being rigidly fixed to the pivot J, which carries the lever F, said movement throws the other end, V, in rear of the housings X, so as to prevent the same and the chair from falling forward and down. A continuation of the downward movement of the lever E' causes its end or latch V' to take the course indicated by the dotted arrow in Fig. 4, so as to come into contact with the le-



ver P at a point in front of its pivot J, thus throwing down its front end, so as to disengage the front end, V, of the lever F from the housing X.

5 These devices for raising and folding the chairs in sections are not fastened to the chairs, and they are so constructed and connected with the chairs as to allow any chair in a section or tier to be raised or lowered by hand without  
10 disturbing the mechanism for raising and folding the other chairs of the section by the devices as described.

In operating simultaneously a tier or row of chairs, a single rod L connects all the cross-  
15 bars K in the tier, and when a rock-shaft is used it is arranged at the back or front of a number of tiers and connected to the rods L thereof.

It will be observed that in folding the chair  
20 the position of the seat is reversed, so that its lower surface is turned upward, forming a part of the floor, as seen in Fig. 1.

These chairs, constructed as set forth, are readily placed in a compact form for trans-  
25 portation and storage, and they may be placed in old floors, the risers D' forming the joists between the rows of seats.

These chairs are adapted especially for use in rooms where seats are sometimes wanted  
30 and sometimes dispensed with. When folded down, they form a level floor, which may be used for dancing, promenading, and other purposes.

In case of fire, the chairs may be readily  
35 folded so as to be out of the way, and, being detached from the floor, they may be readily removed for the purpose of repairing them or their operating mechanism, or the floor, or to save them from destruction by fire.

40 When the chairs are folded together in their places in the floor or removed for storage or transportation, all their surfaces which are exposed to contact when the seats are occupied are folded inward and are protected from  
45 being soiled by exposure to dust or otherwise. The ends V of the levers F prevent a backward movement of the lower ends of the seat-supporting standards X, while the lugs G prevent a forward movement of said ends of said  
50 standards, and no part of the floor is of metal, which is objectionable in dancing-floors and produces uneven wear thereof.

I have herein used the term "detached" when speaking of seat-supporting standards,  
55 and I mean by the term any seat-supporting standards which are not positively connected with either the floor or the seat-raising mechanism, whereby a chair or any number of chairs may be quickly and easily separated  
60 from their raising and lowering mechanism and carried bodily by the user or users, in case of an emergency, out of the room, thus facilitating the escape of the audience.

So far as I understand the art, I am the first to  
65 construct a portable foldable opera-chair, one which is capable of being bodily separated

from the mechanism for opening and closing the same; and the detachable connection of a chair with the floor and with the chair raising and lowering mechanism is one of the principal features of my invention. 70

What I claim as new, and desire to secure by Letters Patent, is—

1. In a chair of the class described, the combination of seat-supporting removable stand-  
75 ards, a floor apertured to receive and support the same, and a separate disconnected lug or bearing arranged below the floor and in front of the standards for preventing a forward movement of their lower ends, substantially  
80 as specified.

2. In a chair of the class described, the combination of seat supporting removable stand-  
ards, a floor apertured to receive and support  
85 the same, a lug or bearing arranged below the floor and in front of the standards, and movable devices arranged below the floor and in rear of the standards, the latter for preventing a backward movement of the standards, sub-  
90 stantially as specified.

3. In a chair of the class described, detached seat-supporting removable standards, in combination with a floor apertured to receive and support the same, and with a lug or projection  
95 arranged to bear upon one side of the standards, and a separate movable lug or projection arranged to bear against the opposite side of the standards, as described, for preventing forward and backward movements of the lower ends of the standards, substantially as specified. 100

4. In a chair of the class described, the combination, with a floor comprising risers and joists, of detached seat-supporting removable standards having arms connected by a cross-  
105 bar, and a movable floor-piece pivoted to the cross-bar, whereby when the standards are erected the opening in the floor is automatically closed, substantially as specified.

5. The combination, with a floor, of seat-supporting removable standards, a floor-piece  
110 pivotally connected with said standards, and a seat pivoted to the standards, and means, substantially as described, for temporarily maintaining the standards in an upright position, substantially as specified. 115

6. The combination, with detached seat-supporting standards, of levers, as F P, jointly pivoted, so that the latter shall move the former, and of levers, as E E', connected by a cross-  
120 bar, and of a rod secured to said cross-bar for jointly operating the levers F P, substantially as specified.

7. The combination of seat-standards, a pivotally-connected seat, and a loosely-pivoted seat-back having lugs extended over the stand-  
125 ards, rods arranged for movements within the standards, and levers for raising the rods, substantially as specified.

8. The combination, with seat-standards, of wooden housings secured thereto, a seat and  
130 seat-back pivotally mounted thereon, the former being capable of swinging into the



same plane with the housings, and the whole adapted to be arranged in a common plane with the floor, substantially as specified, whereby the floor-surface is entirely of wood.

5 9. In a chair of the class described, a seat-back provided with a lug, in combination with a seat provided with a spring-bolt and catch, whereby when the back is lowered upon the seat the two are automatically secured to each  
10 other, substantially as specified.

10 10. The combination, with standards having seat-supporting brackets, of a seat having laterally-sliding spring-bolts constructed to be projected over the brackets, whereby the seat  
15 is supported by contact of the bolts with the brackets, substantially as specified.

11. The combination, with seat-supporting standards having brackets projecting forward at opposite edges of the seat, and a seat hinged  
20 to the standards and provided with spring-bolts projecting beyond the edges of the seat, of a seat-back provided with spring-bolt-retracting lugs, substantially as specified.

12. The combination, with seat-supporting  
25 standards having brackets projecting forward at opposite edges of the seat, a pivotally-attached seat provided with spring-bolts projecting beyond the edges of the seat, a pivotally-connected seat-back having lugs entering  
30 notches in the standards, and spring-bolt-oper-

ating lugs, of rods for raising the seat back, and levers for raising the rods, substantially as specified, whereby when the rods are elevated the back is folded upon the seat and automatically causes the seat to fold upon its  
35 pivots.

13. The combination of the standards X, detached from the floor and provided with supporting-arms O', projecting forward and at opposite edges of the seat, and lug-recesses  
40 d', the seat A, hinged to the standards and provided with a spring-bolt, O, projecting beyond the edges of the seat, and catches S, the chair-back B, loosely hinged to the standards and provided with lugs d, and the catches  
45 M, adapted to engage and operate the spring-bolts and catches on the seat, substantially as and for the purpose specified.

14. The combination of the seat A, having bolts O and catches S, with the standards X,  
50 having brackets O', back B, having lugs N, rods R, levers F P, and levers E E', cross-bar K, and rod L, substantially as specified.

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

JOHN JACKSON.

Witnesses:

A. H. PADDOCK,  
F. P. WILCOX.