Nov. 30, 1948. E. B. MORGAN ET AL 2,455,262

SPRING PIVOT CHAIR STRUCTURE

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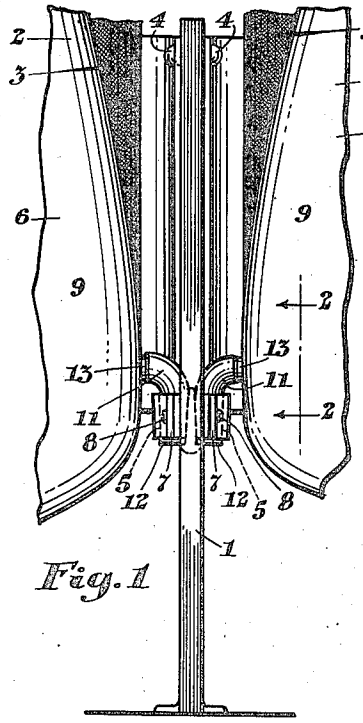


Fig. 1

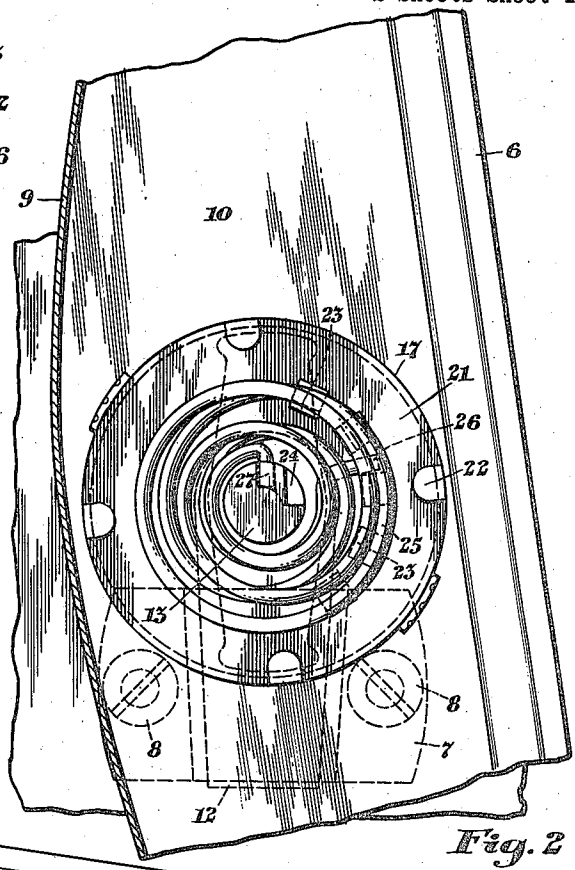


Fig. 2

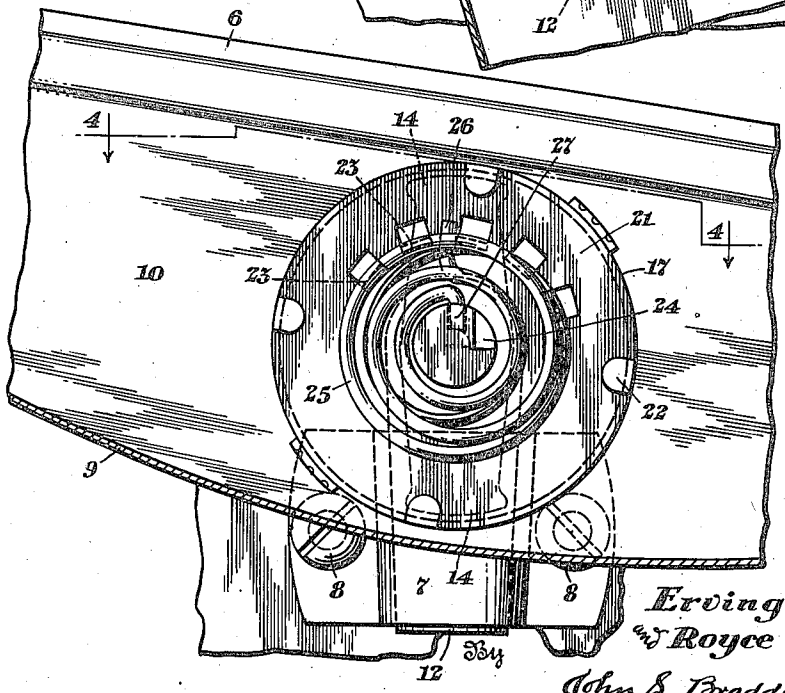


Fig. 3

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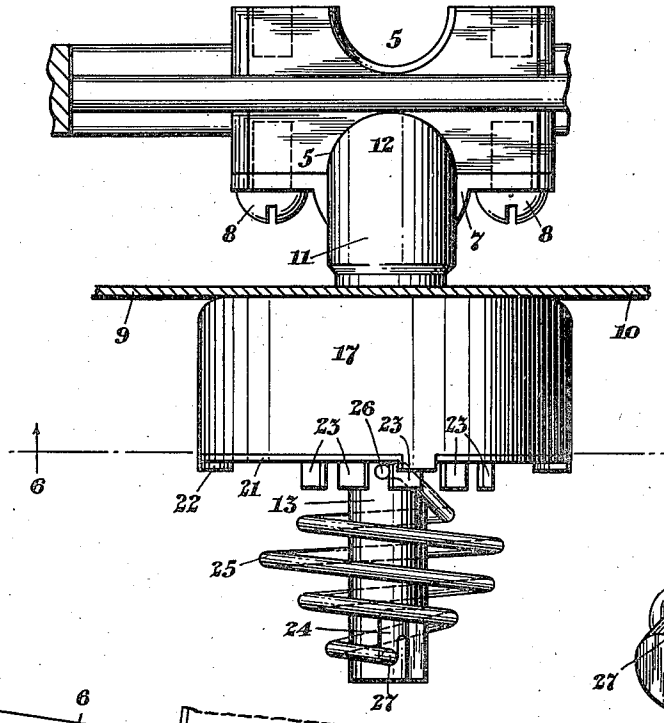


Fig. 4

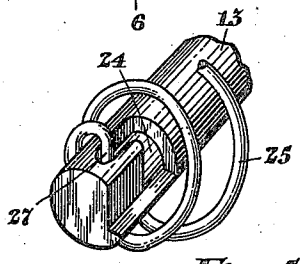


Fig. 5

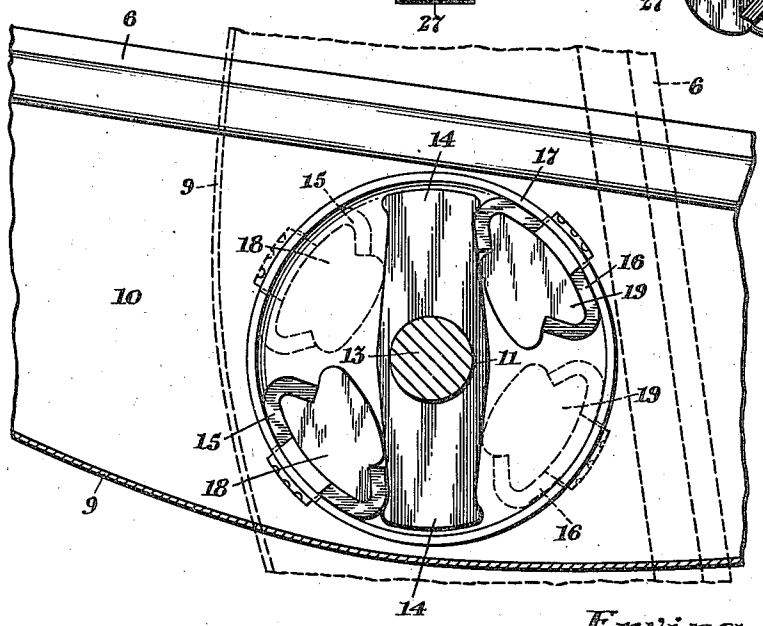


Fig. 6

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UNITED STATES PATENT OFFICE

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SPRING PIVOT CHAIR STRUCTURE

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4 Claims. (Cl. 155—85)

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The present invention relates to chair structures and more particularly to chair structures of a type installed in theaters, auditoriums and the like wherein the chair seat is pivotally mounted on and between spaced, upright supports or standards.

The primary objects of the invention are to provide a chair structure having improved seat mountings of the type shown in Patent No. 2,272,298 issued February 10, 1942, to Walter M. Hanson and by him assigned to our assignee; to provide such seat mountings which perform all of the functions of the seat mountings disclosed in the above identified patent, equally well but with fewer and smaller parts; to provide such seat mountings which may be more quickly and easily assembled than those shown in the said patent; and in general to provide a chair structure which is sturdy in construction, efficient in use and reasonably economical in manufacture.

The invention is illustrated in one embodiment by the chair structure shown in the accompanying drawings, wherein:

Figure 1 is a fragmentary front elevational view of theater type chairs installed side-by-side on a common supporting standard, the seats of the chairs being shown turned to raised position;

Figure 2 is an enlarged fragmentary sectional view of one of the seats shown in Figure 1 taken on line 2—2 of said figure, the standard and the seat mounting mechanism being shown in inside elevation and the seat being indicated in a raised position of non-use;

Figure 3 is a view like Figure 2 except that the seat is indicated in a lowered position of use or occupancy;

Figure 4 is a horizontal sectional view of the same taken on line 4—4 of Figure 3;

Figure 5 is a fragmentary, perspective view of a seat mounting spindle and attached spring;

Figure 6 is a vertical sectional view taken on line 6—6 of Figure 4, the seating being indicated in its lowered position by full lines and in its raised position by dotted lines.

Referring now in detail to these drawings, the standard 1 supports adjacent sides of chairs 2 disposed side by side in a row of such chairs installed in a theater or the like. Chair backs 3 are secured to the standard as by means of rivets 4, and each side of the standard is provided with a vertical, downwardly tapering socket 5 for the reception of the mounting means for the adjacent side of a seat 6. The sockets 5 are partially cast in the standard and partially formed by plates 7 secured to the standard by means of machine screws 8.

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The seats 6 are of generally conventional type, each seat consisting of a stamped sheet metal seat foundation 9 on which is mounted an upholstered cushion (not shown), and each seat foundation being provided with aligned lateral openings in its opposite side walls 10. A seat pivot member 11 is provided for mounting each side of a seat 6 on its adjacent standard 1, which seat pivot member comprises a depending, downwardly tapered arm 12 received in the socket 5 of the standard and a horizontal spindle 13 which extends inwardly through the lateral opening in the seat foundation 9. The seat 6 is mounted for turning movement to raised and lowered position on the horizontal spindles at the opposite sides thereof, and is also laterally shiftable with respect to said spindles so that the seat may be centered between its supporting standards notwithstanding slight variations in the distances between pairs of standards.

As best seen in Figure 6, means are provided for limiting the raising and lowering movements of the seat to positions of non-use and of occupancy. These means comprise radial extensions or arms 14 on the spindles 13 within the seat foundation 9, which arms 14 are contacted by stops 15, 16 secured within a cylindrical casing 17 welded to the inner side wall of the seat foundation, all as disclosed in Patent No. 2,272,298 above referred to. Rubber cushioning elements 18, 19 are desirably associated with the stops 15, 16 for cushioning and silencing the movements of the seat to its raised and lowered positions.

A cover plate 21 is secured to the inner end of the cylindrical casing 17 by means of bent-over lugs 22 on the casing, and the cover plate has a central opening through which passes the spindle 13 and around said opening is a series of radially arranged, inwardly stamped, spring-retaining fingers 23. The inner end of each horizontal spindle 13 is provided with a spring-retaining bayonet slot 24 extending from the inner end of said spindle outwardly, then circumferentially, and then inwardly, terminating short of the inner end of the spindle to form a stop surface (see Figure 5). A helical spring 25 surrounds the spindle 13 and has its outer end 26 outwardly bent and engaged behind one of the figures 23, and its inner end 27 inwardly bent and inserted in the bayonet slot 24. When this spring 25 is installed it is compressed both longitudinally and circumferentially. It will be seen that the longitudinal expanding force of the

spring retains its outer end in engagement with a finger 23 and retains its inner end in the inwardly extending portion of the bayonet slot 24. Thus no other fastening menas for the spring is required since it is held in position by its own expanding force, and the spring is easily and quickly installed in position by hand, no tools being necessary to this operation.

It will also be seen that the longitudinal expanding forces of the two springs 25 at opposite sides of the chair seat serve to center the seat between the standards, while the circumferential expanding forces of the two springs serve to normally urge the seat in a turning direction toward its raised position of non-use. Each spring 25 is of longitudinally helical formation and circumferentially spiral formation so that the spring's middle turns are of greater radii than its end turns. By employing this construction, the inwardly extending horizontal spindle 13 may be shortened to conserve material and reduce the weight of the chair, while the length of the spring wire and its resultant effectiveness are the same as if the spring were of greater overall length and had no spiral.

It will thus be seen that the present invention provides a simple, economical, and readily-assembled seat pivot unit for a chair of the theater type, and while but one specific embodiment of the invention has been herein shown and described, it will be understood that the invention is susceptible of numerous modifications all falling within the scope of the following claims.

We claim:

1. A chair structure comprising, in combination: a standard; a seat having a lateral opening; a seat pivot member secured to the standard and having a spindle extending horizontally inwardly through said opening and said spindle having a spring-retaining bayonet slot extending from its inner extremity outwardly, then circumferentially, and then inwardly, terminating short of the inner end of the spindle to form a stop surface; and a helical spring surrounding the spindle and having its outer end connected to said seat and its inner end inserted in said bayonet slot.

2. A chair structure comprising, in combination: a standard; a seat having a lateral opening; a seat pivot member secured to the standard and having a spindle extending horizontally inwardly through said opening and said spindle having a spring-retaining bayonet slot extending from its inner extremity outwardly, then circumferentially, and then inwardly, terminating short of the inner end of the spindle to form a stop surface; and a longitudinally compressed helical spring surrounding the spindle and having its outer end connected to said seat and its inner end inserted in said bayonet slot and retained in abutment with said stop surface by the expanding force of the spring.

3. A chair structure comprising, in combination: a standard; a seat having a lateral opening; a seat pivot member secured to the standard and having a spindle extending horizontally inwardly through said opening and said spindle having a spring-retaining bayonet slot extending from its inner extremity outwardly, then circumferentially, and then inwardly, terminating short of the inner end of the spindle to form a stop surface; and a longitudinally and circumferentially compressed spring surrounding the spindle spacedly therefrom and having its outer end connected to said seat and its inner end inserted in said bayonet slot and retained in abutment with stop surface by the longitudinal expanding force of the spring, said seat being normally urged toward its raised position by the circumferential expanding force of the spring.

4. A chair structure comprising, in combination: a pair of standards; a seat having lateral openings in its opposite sides; a pair of seat pivot members secured to the standards respectively and having spindles extending horizontally inwardly through the seat openings along which spindles the seat is movable laterally and about which spindles the seat is turnable to raised and lowered positions, said seat pivot members each having a spring-retaining bayonet slot extending from its inner extremity outwardly, then circumferentially, and then inwardly, terminating short of the inner end of the spindle to form a stop surface; and a pair of helical springs surrounding the spindles respectively and having their outer ends connected to said seat and their inner ends inserted in said bayonet slots, said springs being circumferentially compressed for normally urging the seat toward its raised position and being longitudinally compressed for retaining their inner ends in abutment with the stop surfaces of said bayonet slots and for centering the seat between the standards.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,272,298	Hanson	Feb. 10, 1942

FOREIGN PATENTS

Number	Country	Date
197,529	Great Britain	May 17, 1923

OTHER REFERENCES

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