

No. 709,286.

Patented Sept. 16, 1902.

J. A. WILKINSON.
ROTARY AND FOLDING CHAIR.

(Application filed Mar. 12, 1902.)

(No Model.)

3 Sheets—Sheet 1.

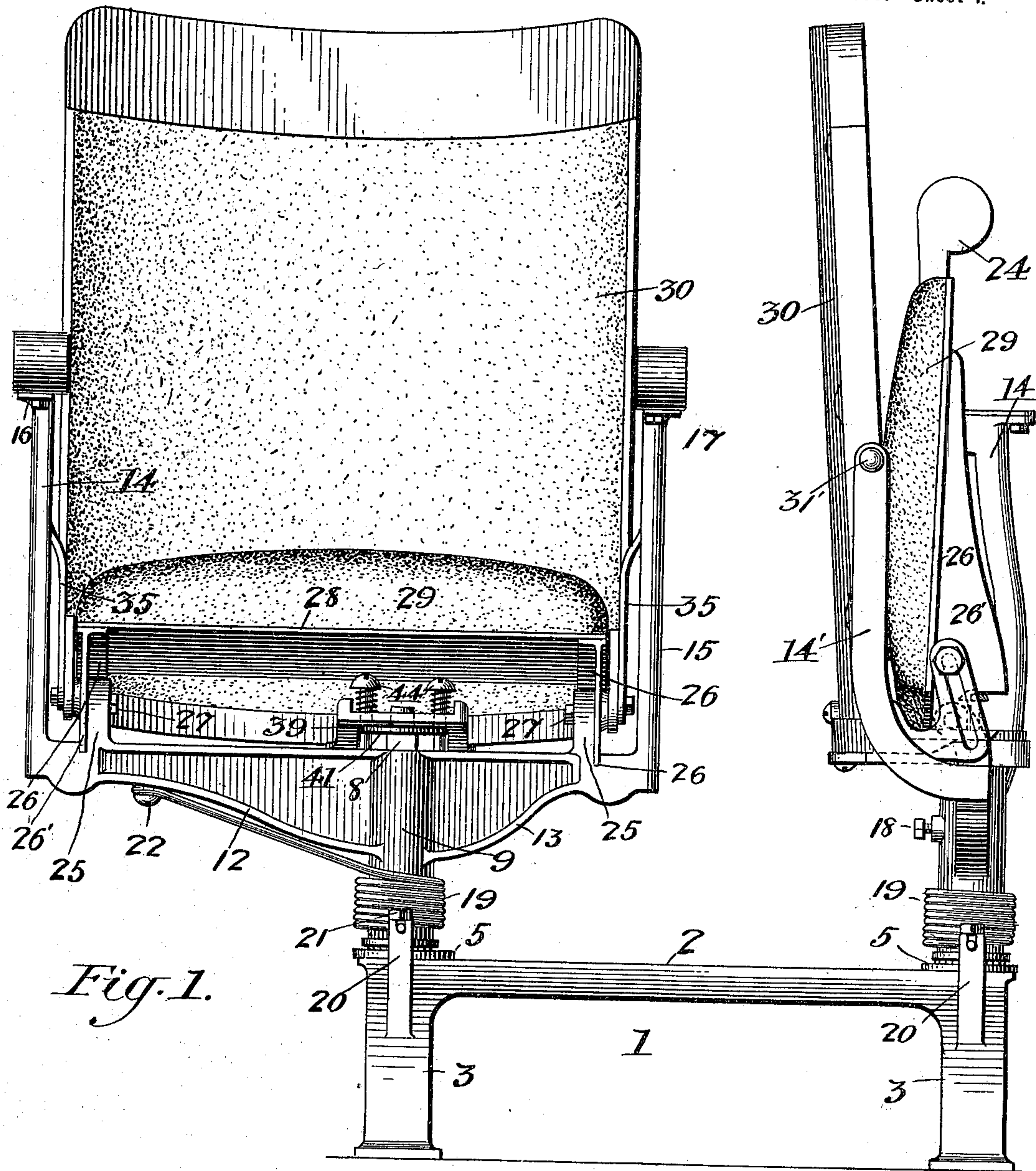


Fig. 1.

Witnesses:
D. W. Edelin.
Chas. J. O'Neill.

Inventor:
J. A. Wilkinson,
by Lemmie Goldsborough,
Atty.

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Fig. 2.

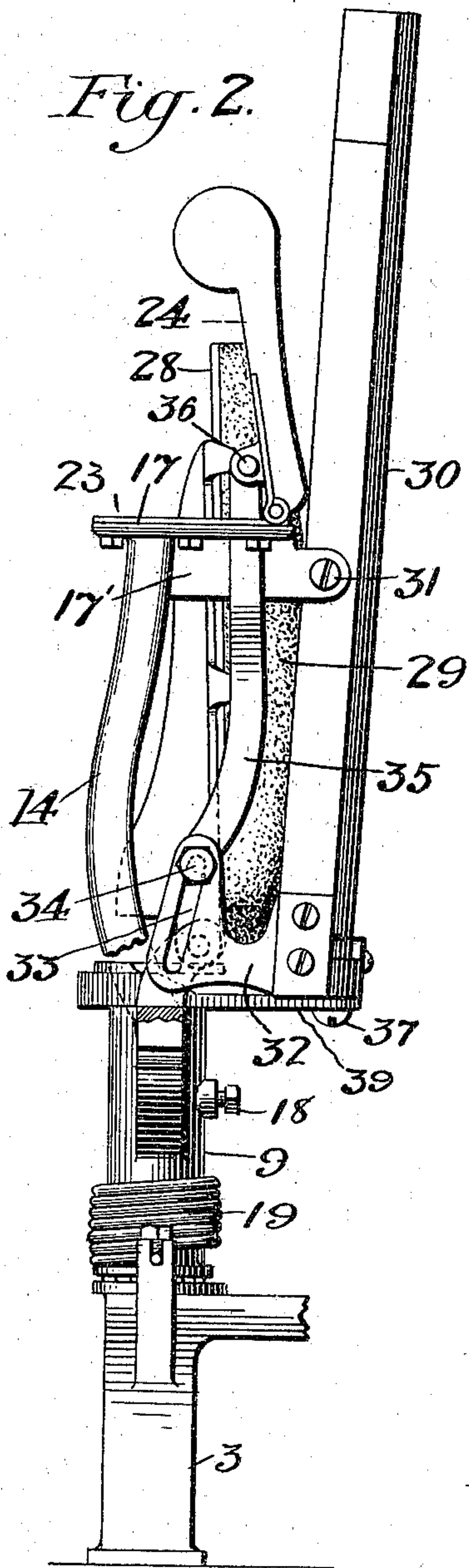
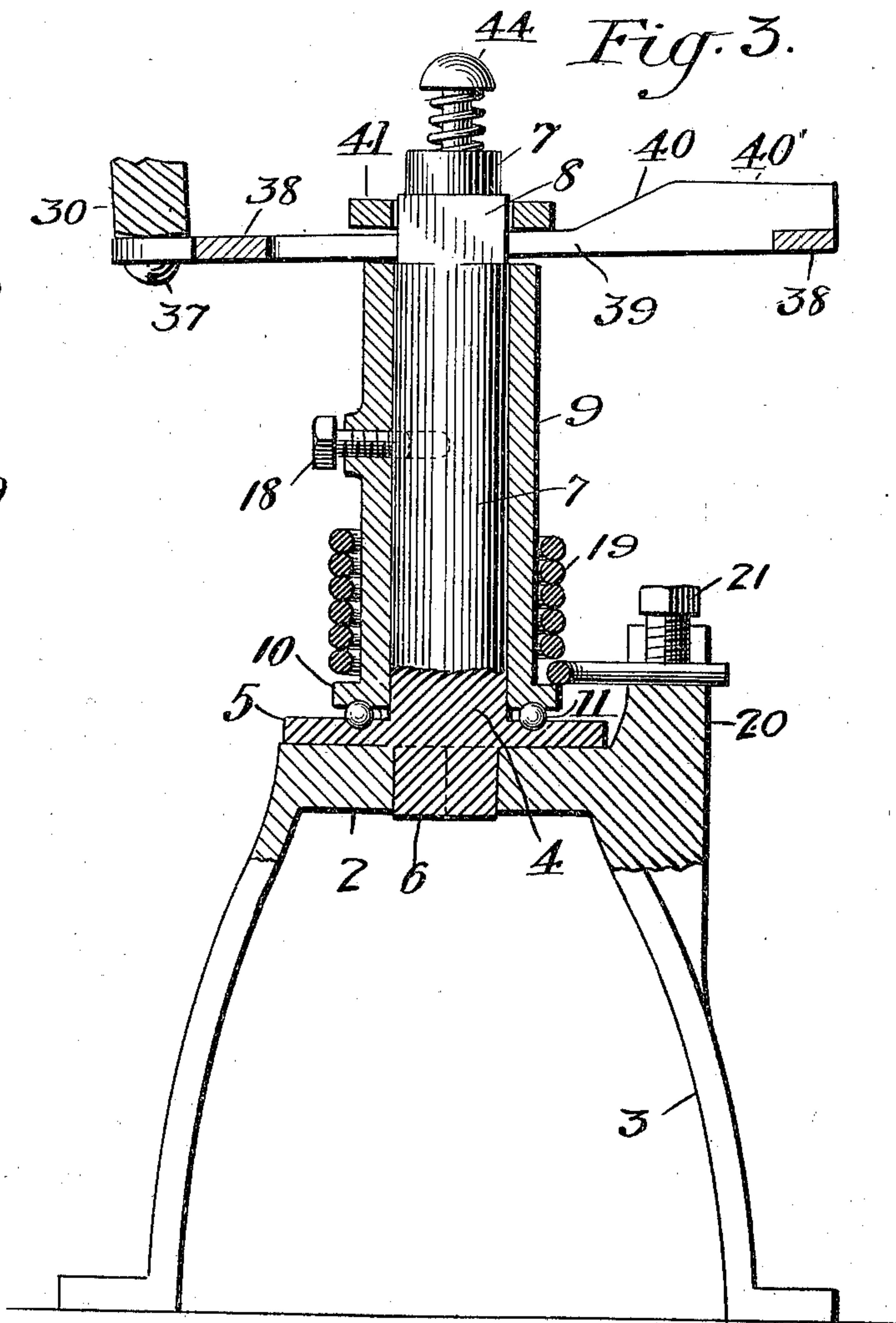


Fig. 3.



Witnesses:

D. W. Edelin.

Chas. J. O'Neill

Inventor:

John A. Wilkinson,
by Lemuel Goldsmith,
Attys.

No. 709,286.

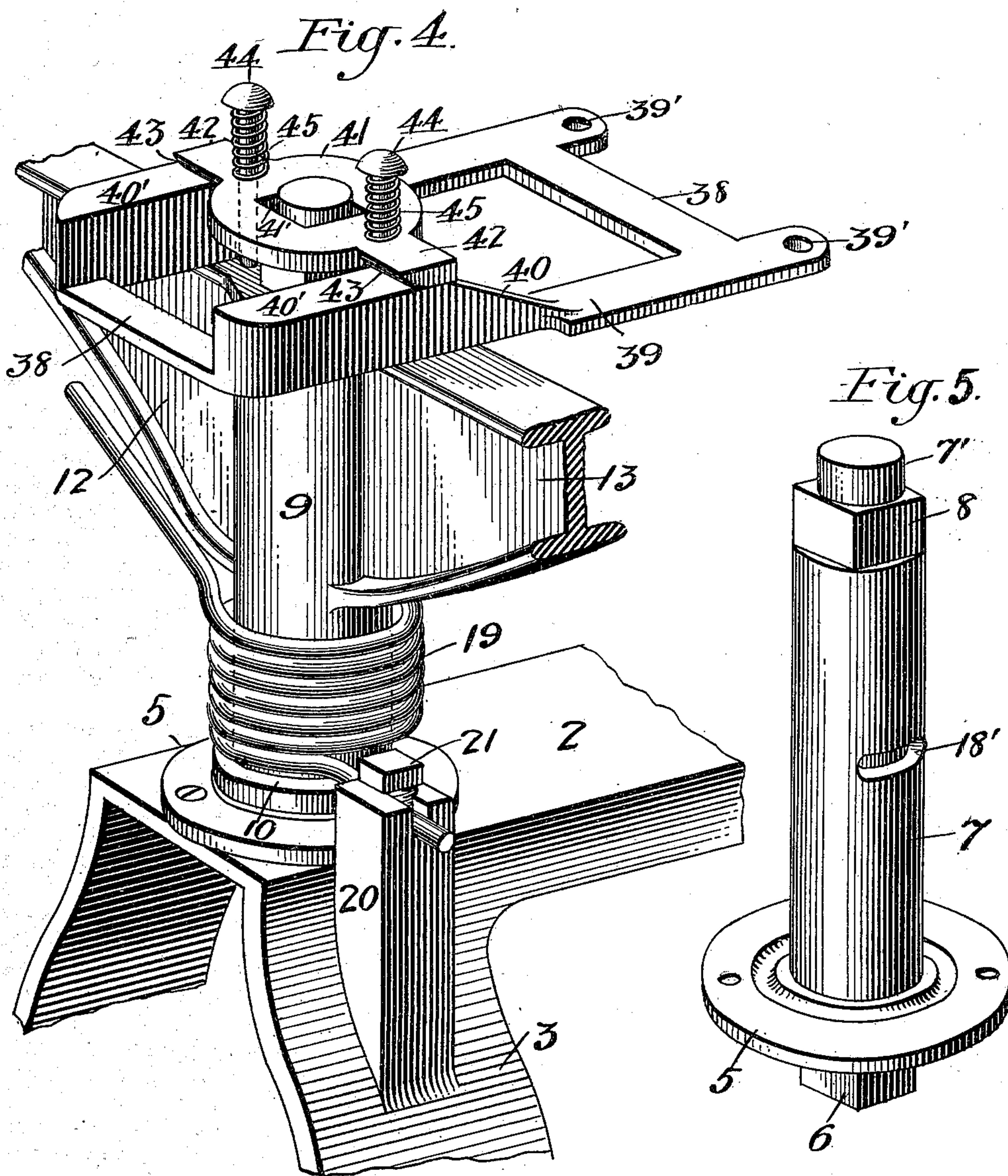
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(No Model.)

3 Sheets—Sheet 3.



Witnesses:
D. W. Odell.
Chas. J. O'Neill

Inventor:
J. A. Wilkinson,
by Annie Goldborough,
Attys

UNITED STATES PATENT OFFICE.

JOHN ALLAN WILKINSON, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF
TO GEORGE E. FROST, OF NEW YORK, N. Y.

ROTARY AND FOLDING CHAIR.

SPECIFICATION forming part of Letters Patent No. 709,286, dated September 16, 1902.

Application filed March 12, 1902. Serial No. 97,804. (No model.)

To all whom it may concern:

Be it known that I, JOHN ALLAN WILKINSON, a citizen of the United States, residing at New York, county of New York, State of New York, have invented certain new and useful Improvements in Rotary and Folding Chairs; 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.

My invention relates to foldable rotary chairs, and has for its object to provide a chair of this character having means to rotate it one-quarter of a revolution when the chair is moved from open or seating position, a lock for securing it against rotation when it is in open position, which lock comprises a plate on the rotary stem of the chair and an angular head on the stationary base, which head enters a correspondingly-shaped orifice in the plate to lock the parts together, and an actuating device connected with a moving part of the chair, which device coöperates with the orificed plate and serves to move the same out of engagement with the angular head on the stem, whereby the lock is released and the chair permitted to rotate on its stationary base.

My invention is particularly applicable to chairs for use in auditoriums and the like, wherein the chairs are arranged in regular rows or tiers in such relation as to provide passage-ways between the rows and also between the contiguous chairs of successive rows when the chairs are in folded position, thereby affording free entrance and exit to and from the front and rear or either side of the auditorium or assembly hall. For this purpose the chairs of each row are arranged in pairs, so that as the chairs of each pair are folded they turn to present their backs to each other. To facilitate assembling the several parts of the chairs and to provide for their ready adjustment and proper alinement on the floor, I prefer to mount each pair of chairs upon a foundation having a bench-like structure, and these several foundation structures are secured in position on the floor, after which the other parts of the chairs may

be applied or removed, even by unskilled workmen, with great facility.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a pair of chairs, showing one chair in its open or seating position and the other in its folded and turned relation. Fig. 2 is a partial front elevation showing the left-hand chair in Fig. 1 in its folded and turned position. Fig. 3 is an enlarged vertical section through the lower part of one chair, illustrating the locking and releasing mechanism. Fig. 4 is a perspective view showing the several parts illustrated in Fig. 3, with the locking mechanism in its released position. Fig. 5 is a detail of the central supporting-post, the upper portion of which constitutes one part of the locking mechanism.

Referring to the drawings, the numeral 1 represents a bench-like foundation or pedestal, having a flat top 2 and four legs 3, one at each corner. Mounted at the extreme ends of the top 2, in squared sockets prepared for that purpose, are two columns or posts 4, provided with basal flanges 5 and squared bosses 6, which bosses fit snugly in the squared sockets in the top 2. Each of these columns 4 is preferably cylindrical for the greater part of its length, as indicated at 7, and is provided near the top with an angular head 8, which is preferably square in cross-section, and above this angular head the column may terminate in a cylindrical head 7' of reduced cross-section. Surrounding the cylindrical portion of column 4 is a hollow cylindrical standard 9, provided with an annular flange 10, which rests and rotates upon a series of antifriction balls or rollers 11, held in channels formed in the contiguous faces of said flanges 5 and 10. This standard 9 forms the connecting part between the chair proper and the base, and said standard, together with its appurtenant parts, which support the seat, back, and arms of the chair, will hereinafter be designated the "stem."

The rotary stem of the chair comprises the standard 9, two integral brackets 12 and 13, which project from opposite sides thereof, and terminal supports 14 and 15, which form up-

ward extensions of said brackets 12 and 13 and have at their extremities flat plates 16 and 17, which constitute the base to which the arms of the chair are pivoted. Formed integrally with the plates 16 and 17 and projecting below and to the rear of the same are brackets 17', provided with perforations which constitute the journal-bearings in which the back 30 is pivoted. The standard 9 is secured in position to the columns 4 by means of a set-screw 18, which engages a segmental slot 18' in the face of the column, which set-screw and slot permit the stem to turn one-quarter of a rotation with respect to the base 1. Normally this rotation is accomplished in one direction by means of a spiral spring 19, which surrounds the standard 9 and is attached by a set-screw 21 at one end to a lug 20, projecting from the base, and at the other to the under side of bracket 12 by means of a set-screw 22. In the arrangement shown in Fig. 1 I have omitted the upright standard 14 on the left-hand side of the chair to the right, for the reason that a single arm interposed between two immediately-contiguous chairs is generally found sufficient to meet all requirements; but it is to be understood that each chair may be provided with two arms, as illustrated in the left-hand portion of said figure. In lieu of the terminal arm-support, one chair is furnished on its inner side with a rearwardly-curved upwardly-projecting support 14', which receives one of the pivots supporting the chair-back. Projecting from the top of brackets 12 and 13 are perforated lugs 25, to which the side rails 26 of the chair-bottom are pivoted by means of gudgeons or pintles 27. Each of these side rails has a depending fin or flange 26', terminating in a squared shoulder, which when the seat is lowered bears against the front face of the bracket 12 or 13, and thereby supports the seat. To the side rails 26 is secured the seat 28, which may be furnished with a cushion 29.

The arms 24 of the respective chairs are pivoted to the plates 17 by means of flat hinges 23, which are secured by bolt or screws to the upper sides of plates 23 and the under sides of the arms, so that when the arms are lowered they will lie snugly along the plates 17 and be supported thereby throughout the greater portion of their length. The back 30, which may be furnished in any preferred style or design, is pivoted by its side braces to the brackets 17' by means of studs or bolts 31, passing through said brackets and engaging the side rails. In case the inner arm of one of the chairs is dispensed with the contiguous side brace of the back will find an appropriate pivot-support 31' in the arm 14', hereinbefore referred to. Projecting forwardly from the side braces of the back are lugs 32, provided with elongated slots 33, which slots are engaged by pins or bolts 34, secured to the side rails 26' of the seat, and links 35, attached at one end to the bolts 34

and at the other to ears 36 on the under sides of the respective arms 24, connect the seat with the arms, so that when the seat is raised the back and arms are moved to an approximately upright position in the manner common to folding chairs of this type.

In order to secure the parts of the chair—viz., the rotary stem and the base—together, when said chair is in open or seating position, it has heretofore been the practice to employ a bolt passing through registering holes in the stem and the base or to provide a lug or latch attached to the back of the chair, which lug or latch engages a recess in the base when the chair is opened. Such locking devices have proved ineffective because the parts became worn or displaced to such an extent that they failed to register at the proper time, or the movable part of the lock fractured under the heavy blows incident to rough usage, which the chairs inevitably receive at the hands of the public. It is essentially the purpose of my invention to avoid these inherent difficulties of the former types of locking devices by providing a lock that will not be subjected to excessive wear or strain, that will automatically assume a locked relation as the chair is moved into full open position, and that will not become wedged, broken, or deranged under the severest use. I furthermore provide mechanism which is actuated by a moving part of the chair to move one part of the lock into engagement with the other part thereof in such a manner and to such an extent that the moving part will never jam or wedge against the fixed part and thereby prevent the operation of the chair.

Mounted upon the upper faces of the brackets 12 and 13 I provide a lock to secure the fixed and movable parts of the chair together, which lock comprises a plate 41, generally circular in shape, having two radial lugs or ears 42 and a central angular orifice 41', which is adapted to pass over the angular head 8 of column 4. Said plate 41 is retained in position and guided by two bolts 44, which pass through holes in the plate and are secured to the brackets 12 and 13. Spiral springs 45, surrounding the bolts 44, bear upon the upper face of plate 41 and serve to force said plate downward on the bolts until the angular orifice 41' engages the head 8, in which position the rotary stem is securely locked to the base. In order to quickly and positively release the plate 41 from engagement with head 8 and permit the stem to rotate, I provide a releasing mechanism consisting of a cam-plate, comprising an open frame formed of side bars 39 and cross-bars 38, said side bars 39 being provided with cams or inclines 40, terminating in upper guideways parallel to the plane of the plate. This cam-plate is connected to the lower edge of the chair-back by bolts 37, passing through lugs 39' at the rear of the frame, so that said frame is reciprocated under the plate 41 as the back 30 is oscillated on its

pivots 31. As the cam-plate is moved to the rear the inclined faces 43 on the lugs 42 of plate 41 ride up the cams or inclines 40 and lift plate 41 against the tension of springs 5 45 until the square orifice 41' in said plate is freed from engagement with the head 8 on column 4, and the chair is free to swing. When the chair is completely folded or closed, the lugs 42 occupy the flat guide-surfaces 40', 10 so that the plate 41 is held firmly and securely in its retracted position. When the cam-plate is moved forward, upon opening the chair the lugs 42 of plate 41 ride down the inclines 40 under the action of springs 15 45, and if the chair be simultaneously swung to the limit of its rotary movement either to the front or to the side the locking-plate 41 drops over the head 8 and lugs 42 occupy the lower portions of the side bars 39 of the 20 cam-plate, and the chair is rigidly and securely locked in position and is ready for occupancy. Normally the chairs remain in their folded position, as illustrated in Fig. 2 and in the right-hand part of Fig. 1. Under 25 these conditions the chairs of each pair swing to the right and left, respectively, and with their backs toward each other, leaving a wide space between each of the chairs and the chair adjacent to it on the next base. To 30 open the chair ready for occupancy, the operator rotates the chair until it faces to the front and then depresses the seat to assume an approximately horizontal position. The downward movement of the seat causes the 35 back to assume a rearwardly-inclined position on its pivots and brings the arms 24 down into horizontal relation, resting on the plates 17. The forward movement of the lower edge of the back 30 advances the cam-plate until lock-plate 41 passes over and engages the head 8 of the stationary column 4. The chair is thereby rigidly locked in open 40 or seating position and can only be released by moving the seat or the back in a direction to fold or close the chair.

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

1. A foldable, rotary chair, comprising a 50 supporting-base, a rotary stem mounted thereon, a locking-plate movably mounted upon said stem and engaging the base for securing the stem to the base, and a cam connected with a movable part of the chair to release the 55 lock when the chair is moved to open position, substantially as described.

2. A foldable, rotary chair comprising a supporting-base, a rotary stem mounted on said base, an angular head on said base, a 60 locking-plate movably mounted upon said stem and cooperating with said angular head to lock the stem to the base, and means for moving said locking-plate out of engagement with said head, substantially as described.

65 3. A foldable, rotary chair, comprising a supporting-base having an angular head, a rotary stem mounted on said base, a locking-

plate movably mounted upon said stem and cooperating with said angular head to secure the stem to the base, and a cam connected 70 with a movable part of the chair and engaging said locking-plate to disengage the plate from the head when the chair is moved from open position, substantially as described.

4. A foldable, rotary chair, comprising a 75 supporting-base having an angular head, a rotary stem mounted on said base, a spring-pressed locking-plate carried by said stem and provided with an aperture cooperating with said angular head to secure the stem to 80 the base, and a cam-plate connected with a movable part of the chair and located adjacent to said locking-plate, whereby the latter is caused to disengage the head when the chair is moved from open position, substantially 85 as described.

5. A foldable, rotary chair, comprising a supporting-base having an angular head, a rotary stem mounted on said base, a folding seat and back pivoted to said base, connection 90 between the seat and back to operate them simultaneously, a locking-plate movably mounted upon said stem and cooperating with said angular head to secure the stem to the base, a cam for releasing the locking- 95 plate, and a spring connected to the base and the stem to rotate the stem when said plate is released, substantially as described.

6. A foldable, rotary chair, comprising a supporting-base having an angular head, a 100 rotary stem mounted on said base, a folding seat and back pivoted to said base, connection between the seat and back to operate them simultaneously, a locking-plate movably mounted upon said stem and cooperating 105 with said angular head to secure the stem to the base, a cam-plate connected to the back and engaging the locking-plate to release the latter when the chair is moved from open position, and a spring connected to the base 110 and the stem to rotate the stem when said plate is released.

7. A foldable, rotary chair, comprising a supporting-base having an angular headed post mounted thereon, a rotary stem provided 115 with a hollow standard surrounding said post, a pin-and-slot connection between the post and standard to limit the rotation of said standard, a locking-plate movably mounted upon said stem and cooperating with said 120 angular head to secure the stem to the base, and means for moving said locking-plate out of engagement with said head, substantially as described.

8. The combination in a pair of foldable, 125 rotary chairs, of a stationary base, comprising a rectangular pedestal and two angular-headed posts mounted thereon, a rotary stem on each chair provided with a hollow standard engaging the respective posts, automatic 130 means to rotate the chairs one-fourth around into a back-to-back position, a locking-plate movably mounted upon the rotary stem of each chair cooperating with the angular heads

on the respective posts to lock the chairs in open position, and means to disengage the plates from the heads when the said chairs are moved from open position, substantially as described.

9. The combination with a stationary base, comprising a pedestal and an angular-headed post mounted on the top thereof, of a foldable rotary chair, having a hollow standard engaging said post, brackets projecting from opposite sides of said standard, cooperating foldable seat and back members pivotally connected with said brackets, a locking-plate mounted upon the upper faces of the brackets and provided with an angular orifice cooperating with the angular head of the supporting-post, and a sliding frame connected with the chair-back and provided with cam edges operating between the bracket-tops and the locking-plate to permit the latter to engage with the post-head when the chair is open and to break the engagement between the plate and the head when the chair is moved from open position; substantially as described.

10. The combination with a stationary base, comprising a pedestal and an angular-headed post mounted on the top thereof, of a foldable rotary chair, having a hollow standard engaging said post, brackets projecting from opposite sides of said standard, cooperating foldable seat and back members pivotally connected with said brackets, a locking-plate mounted upon the upper faces of the brackets and provided with an angular orifice cooperating with the angular head of the supporting-post, a sliding frame connected with the

chair-back and provided with cam edges operating between the bracket-tops and the locking-plate to lift the latter and unlock the chair when the chair is opened, and a spring connected to the chair and to the pedestal to rotate said chair one-fourth around when the lock is released; substantially as described.

11. The combination with a stationary base, comprising a pedestal having a post-receiving socket, a post having an angular head and flanged base provided with a boss engaging said socket, of a foldable, rotary chair having a hollow standard mounted upon said post, brackets projecting from opposite sides of said standard, cooperating foldable seat, back and arm members, pivotally connected with said brackets, a locking-plate provided with an angular orifice cooperating with the angular head of the supporting-post, pins supported in the tops of said brackets and guiding said locking-plate, a sliding frame provided with cam edges operating between the tops of the brackets and the locking-plates to lift the latter and unlock the chair when the chair is opened, and a spiral spring surrounding the standard and connected to the pedestal and the brackets and serving to rotate the chairs one-fourth around when the lock is released; substantially as described.

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

JOHN ALLAN WILKINSON.

Witnesses:

JOHN C. PENNIE,

EDWIN S. CLARKSON.