Oct. 15, 1963 A. M. JACOBI 3,107,122

CHURCH KNEELER

Filed April 7, 1961

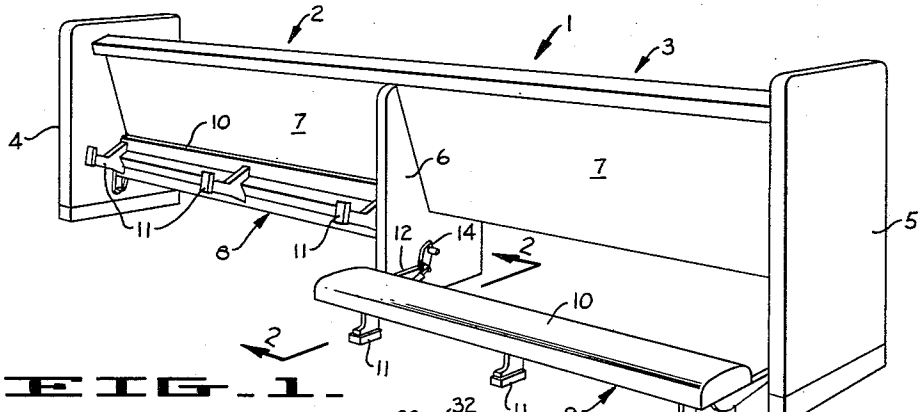


FIG. 1.

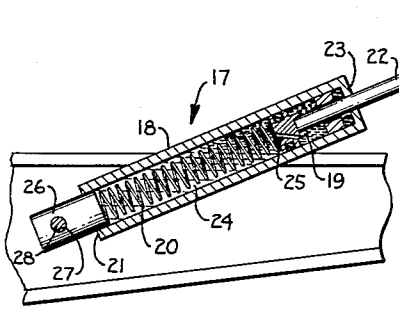


FIG. 4.

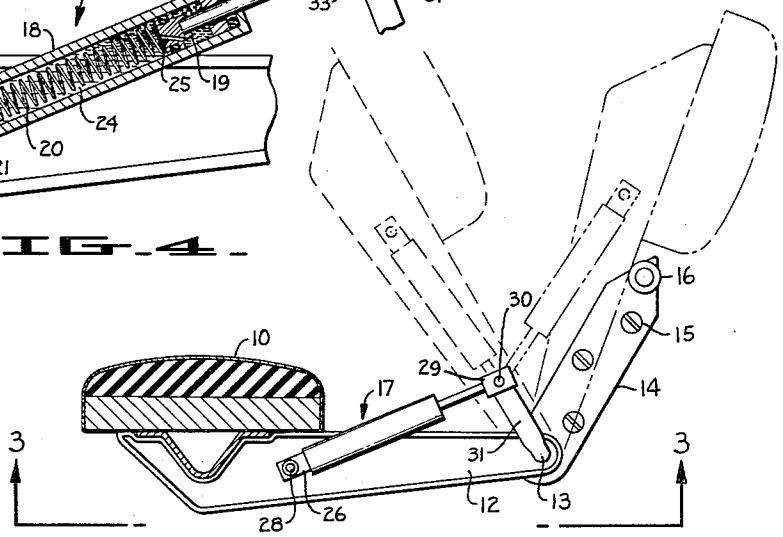


FIG. 2.

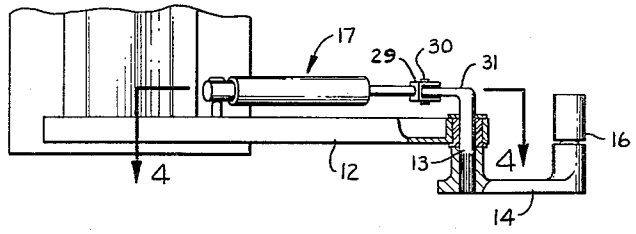


FIG. 3.

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CHURCH KNEELER

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The present invention relates to improvements in a church kneeler, also known as prie-dieu, and used to provide a raised cushion for members of the congregation when kneeling during certain portions of the services.

Kneelers of this character are usually mounted with freedom of swinging movement between active horizontal position and inactive upright position. During the church services it becomes necessary from time to time, to swing the kneelers from one end position to the other, and vice versa.

Since the conventional kneelers are freely swingable, they land in each end position with a thump or thud, which spread through the entire congregation, causes confusion and distracts from the solemnity of the occasion.

In the present invention it is proposed to provide control means for the swinging movement of the kneeler designed to slow down the movement toward the end of each excursion and to cause the kneeler to land softly in each end position and thus to avoid all irritating and disturbing noises when the kneeler reaches each one of the end positions.

More particularly, it is proposed to use for this purpose spring means arranged in such a manner that it is placed under tension by the first one-half of the swinging movement and is released during the second half to urge the kneeler toward end position, the spring means having means associated therewith to slow down the second half of the swinging movement and to cause the kneeler to softly land in end position.

Further objects and advantages of my invention will appear as the specification proceeds, and the new and novel features of my church kneeler will be fully defined in the claims attached hereto.

The preferred form of my invention is illustrated in the accompanying drawing, forming part of this application in which:

FIGURE 1 shows a perspective rear view of a church bench having my kneeler attached thereto, the kneeler being shown in upright position on the left side and in horizontal position on the right side of the figure;

FIGURE 2, a vertical section taken along line 2—2 of FIGURE 1;

FIGURE 3, a bottom plan view as seen from line 3—3 of FIGURE 2; and

FIGURE 4, a detail view, partly in section, of a control element used in my invention, as seen from line 4—4 of FIGURE 3.

While I have shown only the preferred form of my invention, it should be understood that various changes or modifications may be made within the scope of the claims hereto attached, without departing from the spirit of the invention.

Referring to the drawing in detail, FIGURE 1 illustrates the general arrangement in rear view, a church bench 1 having two alined sections 2 and 3, with end supports 4 and 5, a middle support 6 and a common back 7 stretching through the full length of the bench 1.

The kneelers, one for each section, are shown at 8 and 9, each comprising an elongated cushion 10 extending through the full length of each section, three legs 11 for each section adapted for supporting the cushion horizontally behind the bench, at an elevation suitable for kneeling and a pair of end brackets 12 fitting inside the end pieces of each bench section and pivoted thereto by

means of posts 13 projecting sidewise from plates 14 secured upon the bench at a suitable height, by means of screws 15, preferably on a forward incline, as shown in FIGURE 2.

Each plate 14 has a second post 16 projecting therefrom in parallel relation to and a desired distance above, and preferably forwardly of the post 13.

The structure thus far described is substantially conventional and allows the kneeler to swing, on the post 13, from the horizontal position shown in the right-hand section of FIGURE 1 to the upright position shown in the left section of FIGURE 1, in which position the entire kneeler is disposed within the confines of the bench preferably on a forward incline.

When the kneeler is swung from the upward position to the horizontal position, the legs 11 hit the floor with considerable force, because there is nothing to interfere with the downward movement. And, when the kneeler is swung upward into its out-of-the-way position, inside the bench, the brackets 12 strike the post 16 with considerable force, because the kneeler again is on its downward course, having passed a vertical position.

Thus, each move of the kneeler is accompanied by considerable noise as it comes to rest in each end position, which is annoying and distracting to the worshipping congregation and confusing to the kneeler who creates the noise.

It is the object of the present invention to eliminate this objectionable noise and to provide a perfect control for the kneeler movement whereby the kneeler is made to approach each of the end positions at a slow pace and to soften its final engagement with the stop, such as the floor or the post 16, to such an extent that the engagement becomes inaudible.

For this purpose I introduce the cushioning element 17 illustrated in detail in FIGURE 4. This element comprises a cylinder 18 having a piston 19 reciprocable therein, with a spring 20 inside the cylinder and bearing at one end on the closed end 21 of the cylinder and at the other end upon the piston. The piston has a connecting rod 22 extending through the other closed end 23 of the cylinder.

The cylinder is filled with a fluid 24, and the piston is formed with a relatively narrow opening 25 so that any movement of the piston in the cylinder is accompanied by a certain movement of the fluid through the aperture, which naturally slows down and checks the piston movement.

This element is introduced into the organization as follows:

The closed end 21 of the cylinder has a lip 26 projecting therefrom which is perforated, as at 27, to revolvably fit on a pin 28 projecting from the bracket 12 underneath the cushion 10, that is, at a considerable distance from the post 13 on which the bracket swings.

The free end of the piston rod 22 terminates in a U-shaped member 29 which is pivoted to the peg 30 of a fixed arm 31 projecting from the fixed post 13 in the vertical plane of the cylinder. The fixed arm 31 is arranged at an angle substantially midway the range of the swinging movement of the kneeler and the peg or pin 30 is much closer to the post 13 than is the cylinder pivot 28.

In fact, the distances are calculated so that when the bracket is swung upward from the full-line position shown in FIGURE 2, the entire cylinder 17 is free to swing past dead center (see first dotted line position) to line up with the arm 13 and to leave a certain amount of play for the plunger within the cylinder.

In operation:

Starting with the position indicated in FIGURES 2 and 4, with the kneeler cushion in horizontal position, the spring 20 is only under slight tension. As the kneeler is lifted and the cylinder 17 swings about pin 30, the

piston 19 is forced into the cylinder, placing the spring under tension, and, at the same time, forcing a certain amount of fluid through the aperture in the piston.

This operation continues until the cylinder reaches a dead center-line position, that is, in alinement with the pin or pivot 30 and the post 13. At this point the spring in the cylinder is under maximum pressure.

As the cylinder passes dead center, the spring expands and now crowds the kneeler into its most forward position, as shown in the second dotted-line position in FIGURE 2, where the bracket comes to rest against the post 16.

During the forward drive the advancing piston has to crowd a certain portion of the fluid in the cylinder through the aperture 25, which slows down the piston movement, particularly toward the end where the tension of the spring lessens, so that the bracket 12 lands softly, and almost imperceptibly, against the post 16.

In reverse movement, the same action takes place. The kneeler is drawn back manually until the cylinder 17 passes dead center, when the spring takes over, subject to control by the fluid passing through the aperture 25, and gently lands the kneeler on the floor, without any perceptible noise.

While the kneeler passes dead center, there seems to be a certain hesitancy, due to the reversal of the spring action and the reversal of the fluid flow through the aperture 25, in continuing its movement in the desired direction instead of reversing it.

To overcome this tendency, I shape the end of the arm 31 to form a peak, as at 32, and provide a spring-pressed ball 33 in the end of the piston rod which bears on the peak and slides over the same at the time the kneeler passes the midway position so as to bear on the front face of the peak and to oppose a backward swing so as to hold the kneeler to its intended course.

My church kneeler, in its utilitarian nature, is sturdy in construction, quiet in movement, inconspicuous, economical in manufacture and easy to install.

It is apparent that I have invented a church kneeler which will greatly enhance the peaceful and solemn stillness within the church sanctuary, which is conducive to meditation and prayer and permits uninterrupted worship by the congregation and quiet for the message of the priest or minister to be absorbed and understood.

I claim:

1. In combination with a kneeler pivotally mounted for swinging movement between two end positions, control means operable for damping the movement of the kneeler toward each end position, the said means comprising a fixed arm extending within the angle of swinging movement, and a spring mounted between a pivotal mounting on the kneeler and a pivotal mounting on said fixed arm whereby the spring is placed under pressure by the kneeler during the first part of the kneeler movement and the spring pressure is released beyond the dead center position for driving the kneeler during the second part of the movement at a controlled rate.

2. In combination with a kneeler pivotally mounted for swinging movement between two end positions, control means operable for damping the movement of the kneeler toward each end position, the said means comprising a fixed arm extending within the angle of swinging movement, and a spring mounted between a pivotal mounting on the kneeler and a pivotal mounting on said fixed arm whereby the spring is placed under pressure by the kneeler during the first part of the kneeler movement and the spring pressure is released beyond the dead center position for driving the kneeler during the second part of the movement at a controlled rate, with fluid means cooperating with the spring in controlling the rate.

3. In combination with a kneeler pivotally mounted for swinging movement between two end positions, control means operable for damping the movement of the kneeler toward each end position, the said means comprising a spring mounted to be placed under pressure by the kneeler during the first half of the kneeler movement and to slowly release the pressure for driving the kneeler during the second half of the movement at a controlled rate, with fluid means cooperating with the spring in controlling said rate, the spring having a cylindrical housing surrounding the same, with one end of the housing pivoted to the kneeler at a point spaced from the axis of the swinging movement, a piston slidable in the housing and having a piston rod pivoted at a fixed point spaced from the axis of the swinging movement and located substantially in the median plane of the swinging movement and inside the circle described by the housing pivot, the housing being closed at both ends and having a fluid therein, and the piston having a small aperture allowing fluid to pass therethrough at a slow rate in response to spring pressure.

4. In combination with a kneeler of the character described comprising a knee supporting surface, a bracket projecting therefrom and a pivotal support for the bracket allowing the kneeler to swing between a substantially horizontal rearward position and a forwardly inclined upright position, a fixed arm projecting from the pivot substantially midway of the angle of the swinging movement of the kneeler, a pin secured to the bracket at a radial distance from the pivotal connection greater than that of the free end of the arm, and a cushioning member pivoted to said pin and to the free end of the arm and adapted to be placed under tension as the bracket approaches the center of the swinging movement from either direction and to release the tension on continuation of the movement toward either end position for urging the bracket toward each end position, the cushioning member being operative for damping the movement of the bracket while approaching each end position.

5. In combination with a kneeler of the character described comprising a knee supporting surface, a bracket projecting therefrom and a pivotal support for the bracket allowing the kneeler to swing between a substantially horizontal position and a forwardly inclined upright position, a fixed arm projecting from the pivot substantially midway of the angle of the swinging movement of the kneeler, a pin secured to the bracket at a radial distance from the pivotal connection greater than that of the free end of the arm, and a cushioning member pivoted to said pin and to the free end of the arm and adapted to be placed under tension as the bracket approaches the center of the swinging movement from either direction and to release the tension on continuation of the movement toward either end position for urging the bracket toward each end position, the cushion member having means associated therewith for damping the movement of the bracket while approaching each end position.

6. In combination with a kneeler of the character described comprising a knee supporting surface, a bracket projecting therefrom and a pivotal support for the bracket allowing the kneeler to swing between a substantially horizontal rearward position and a forwardly inclined upright position, a peg fixedly mounted substantially midway of the angle of the swinging movement of the kneeler, a pin secured to the bracket at a radial distance from the pivotal connection greater than that of the peg, a cushioning member pivoted to said pin and said peg and adapted to be placed under tension as the bracket approaches the center of the swinging movement from either direction and to release the tension on continuation of the movement toward either end position for urging the bracket toward said end position, the cushioning member being operative for damping the movement of the bracket while approaching each end position, and means associated with said cushion element and said bracket to oppose a backward swing after the kneeler is pivoted beyond the half-way position.

7. In combination with a kneeler of the character described comprising a knee supporting surface, a bracket projecting therefrom and a pivotal support for the bracket allowing the kneeler to swing between a substantially horizontal rearward position and a forwardly inclined upright position, a peg fixedly mounted substantially midway of the angle of swinging movement of the kneeler, a cushion element pivoted to the bracket and swingable on the peg while the bracket swings on its pivotal support,

and means associated with said cushion element and said bracket to oppose a backward swing after the kneeler is pivoted beyond the half-way position.

References Cited in the file of this patent

UNITED STATES PATENTS

2,460,791	Bernhard	Feb. 1, 1949
2,665,447	Lovejoy	Jan. 12, 1954
2,892,488	Frost	June 30, 1959