F. P. GRODE.

FURNITURE.

APPLICATION FILED APR. 18, 1908.

911,233. Patented Feb. 2, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

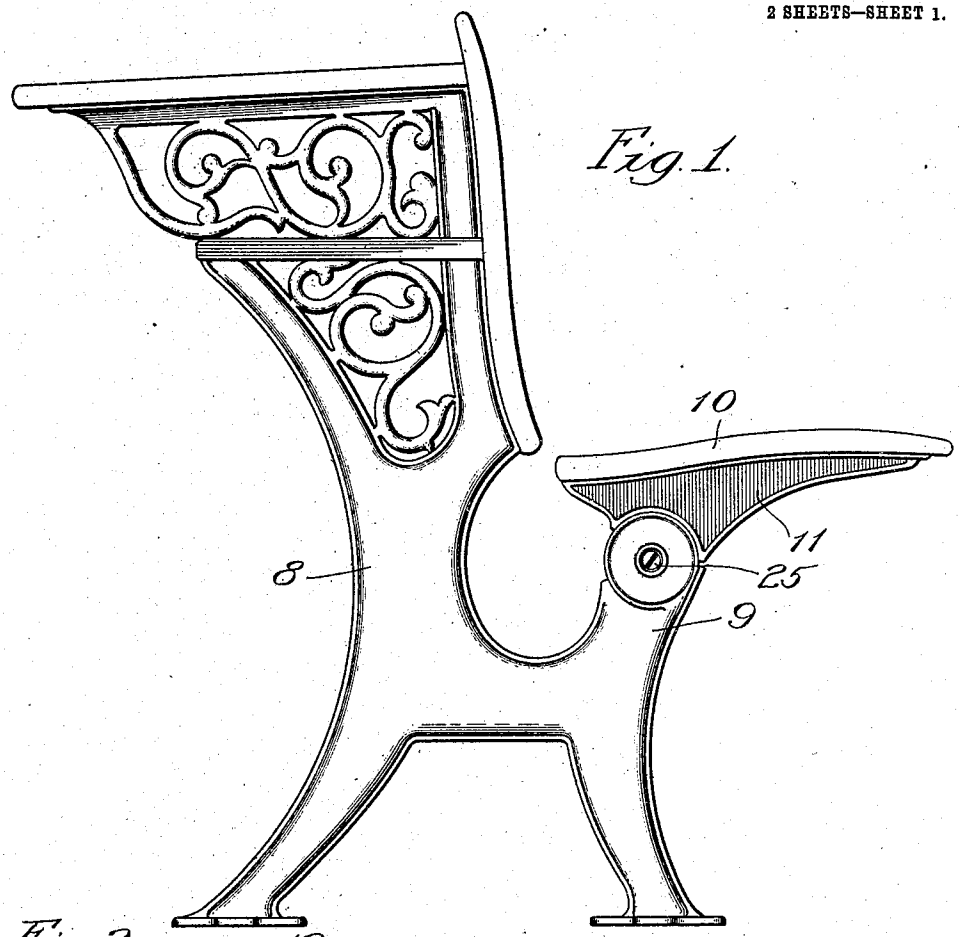


Fig. 2.

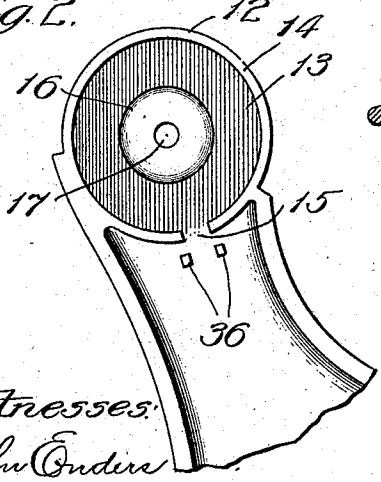
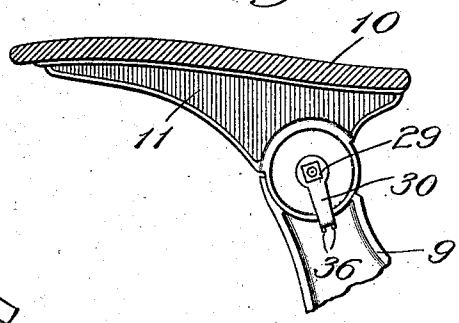


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

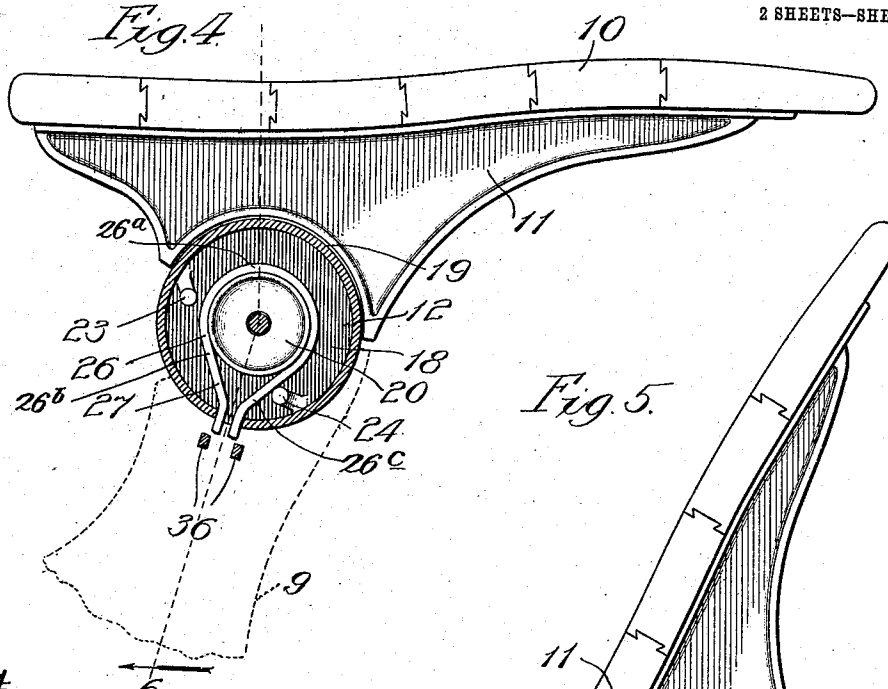


Fig. 5.

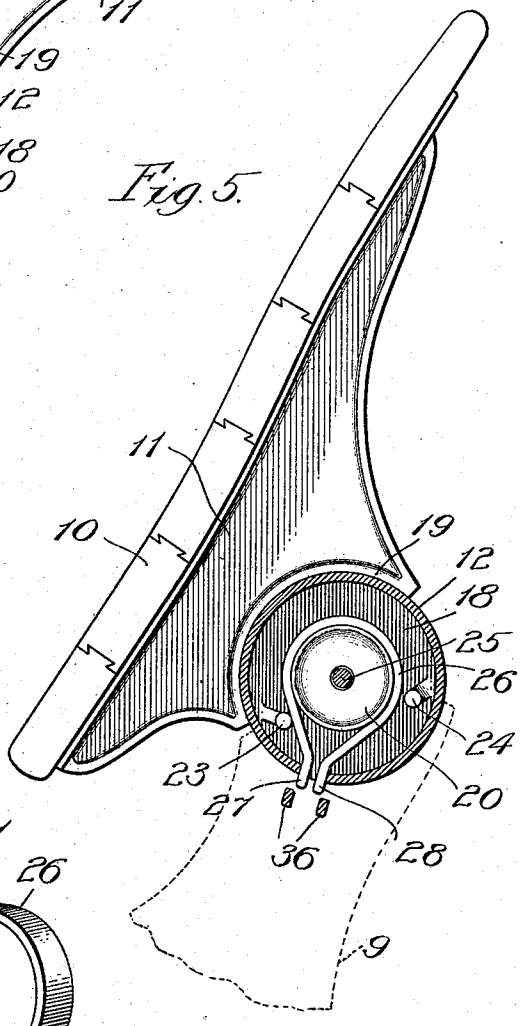


Fig. 6.

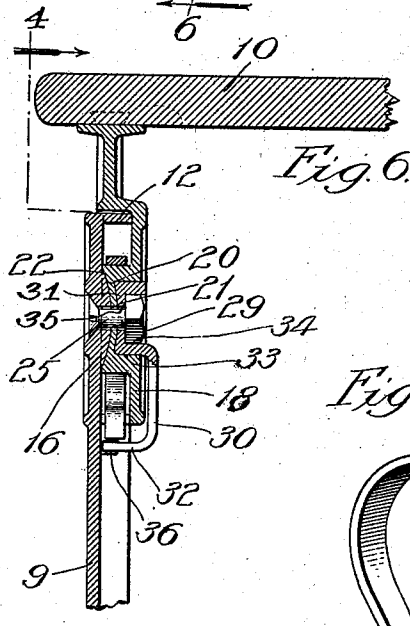
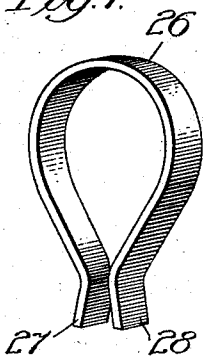


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK P. GRODE, OF WABASH, INDIANA.

FURNITURE.

No. 911,233. Specification of Letters Patent. Patented Feb. 2, 1909.

Application filed April 18, 1908. Serial No. 427,931.

To all whom it may concern:

Be it known that I, FRANK P. GRODE, a citizen of the United States, residing at Wabash, in the county of Wabash and State of Indiana, have invented a new and useful Improvement in Furniture, of which the following is a specification.

My invention relates, more particularly, to an improvement in furniture of the variety involving a swinging or folding seat, as exemplified in school-desks of the folding seat pattern.

My object is to render the operation of moving the seats of such structures as noiseless as possible, and to prevent the binding or sticking of the seat at its hinged connection with the supporting standards in either its raised or lowered position, thereby providing a construction in which its seat may be readily moved to swing it towards or away from the seat-back with little or no noise.

Referring to the accompanying drawings—Figure 1 is a view in end elevation of a school-desk embodying my invention. Fig. 2 is a rear face view of the upper end of one of the desk-standards. Fig. 3 is a view in elevation of the upper end of the standard and the seat shown in Fig. 1, this view showing the side opposite to that illustrated in Fig. 1. Fig. 4 is a view in sectional elevation of the upper end of the standard and seat shown in Fig. 1, the section being taken through the standard and the seat being illustrated in lowered position. Fig. 5 is a view similar to that of Fig. 4 with the seat in partially raised position. Fig. 6 is a section taken at the line 6 on Fig. 4 and viewed in the direction of the arrow; and Fig. 7, a perspective view of a spring employed in the construction of the above figures.

In the drawings in which I have chosen to illustrate my invention as applied to a school-desk, 8 represents one of the two opposed standards of the desk of the general form as commonly provided, each standard having an upward projection 9 which is spaced from the main portion of the standard as represented. As in constructions of this character the folding seat 10 is carried by two spaced seat-irons hinged or otherwise joined to the two opposed standards, the joints being duplicated on opposed standards, the description of one joint will suffice for both.

The upper extremity of the standard is rounded as indicated at 12 to correspond with the arc of a circle, and formed in the rear side of the standard, to extend concentric with the portion 12, is a circular socket 13 bounded by a flange 14, which is cut away as indicated at 15 to form a notch, a rounded boss 16 containing a bolt-opening 17 concentric with the portion 12, extending into the socket 13. Each of the two seat-irons 11, one only of which is shown, has formed on it a depending circular disk 18 which is set back from the outer face of the seat-iron, thereby affording an arc-shaped wall 19 conforming approximately to the arc described by the portion 12 of the standard. The disk 18 carries a concentric circular boss 20 preferably formed integrally therewith and provided with a central bolt-opening 21, the outer face of the boss being concave as represented at 22 to correspond with the contour of the boss 16, against which latter it bears when the parts are assembled as hereinafter explained. Lugs 23 and 24, spaced apart as hereinafter described, extend from the face of the disk 18 a slight distance away from the boss as represented.

Each seat-iron 11 is assembled with its supporting standard 9 by applying the iron to the standard to cause the flange 14 and boss 16 to fit against the face of the disk 18 and the boss 20, respectively, and the bolt-holes 17 and 21 to register with each other. The parts are secured together in the relation described by a bolt 25 which passes through the bolt-openings 17 and 21.

In assembling the parts as described, a relatively stiff band spring 26 is applied to encircle the boss 20 and extend at its free ends 27 and 28 into the notch 15 in the flange 14, the opposed walls of the notch forming stops or abutments for the free ends of the spring, it being preferred that the spring 26 be so proportioned as to cause it to be under slight tension when assembled with the other parts as described. The preferred form of spring employed is that illustrated affording a substantially circular portion 26^a with the portions of the free ends of the springs intermediate its curved portion and ends 27 and 28 approximately straight and converging with relation to each other as represented at 26^b and 26^c. Assuming the seat to be in lowered position as illustrated in Fig. 4, it is raised in the usual manner by throwing it up by hand, thus causing it to turn at its pivotal con-

nections with the supporting standards 9. The lugs 23 on the disks of the two seat-irons are so positioned as to cause them to impinge against the adjacent free end-portions 26^b of the springs when the seat is thrown up, the force of the impact of these lugs against the spring-portions 26^b causing the springs to cushion the blow and arrest the movement of the seat without producing objectionable noise. When the force of the impact is spent the springs 26 in returning to their normal position, force back the lugs 23 a slight distance, thereby turning the seat sufficiently far to permit it to be readily swung down to seating position when desired. When the seat is thrown down to seating position, the lugs 24 on both of the two seat-irons 11, which are so positioned as to engage with the spring-portions 26^c of the springs when the seat is lowered to the desired extent, impinge against these spring-portions, and the cushioning and releasing action as described of the parts when the seat is raised, takes place.

It is manifest that where the springs are so proportioned as to normally fit snugly about the bosses 20, the engagement of the lugs 23 and 24 with the portions 26^b and 26^c of the springs 26 will cause the springs to be moved into frictional engagement with these bosses and thus a braking action is caused to supplement the cushioning action afforded by the springs. Where the springs are so constructed as not to grip the bosses when engaged by the lugs, the cushioning action as described is alone afforded.

As a means for preventing loosening of the parts, as by accidental unscrewing of the nuts 29 from the bolts 25, I prefer to provide an arm 30 for each seat-iron with a head 31 at one end and a finger 32 at the other end. The head which is round fits in a socket 33 in the rear face of the disk 18 and contains an opening 34 communicating with a bolt-opening 35 and corresponding to the nut 29 which fits in it. In assembling the parts, the head 31 with the nut 29 in it is seated in the socket 33 and the finger 32 introduced between two lugs 36 carried by the extension 9 adjacent to the notch 15, whereupon the bolt 25 is screwed into place as by turning it at its headed end, to hold the seat-iron in pivotal relation to its supporting standard. It is also manifest that the lugs 23 and 24, when the seat is swung on its pivot in opposite directions, engage the adjacent converging spring-ends 26^b and 26^c without creating any noise as the latter are struck glancing blows; and that the effect of having the boss 20 rigid with the disk 18 is that of causing a braking action to result when the spring is contracted above it, and thus the movement of the seat in either direction, and consequently the lugs 23 and 24, are arrested before the spring is contracted sufficiently to cause its ends 27 and 28 to strike each other, and thus noise from such cause is avoided. The effect of forming the spring and disk as described is that of preventing any of the objectionable clicking noise referred to as existing in prior constructions.

As clearly illustrated in the drawings, the free ends of the springs 26 are directed downwardly, whereby should a spring break, the parts thereof will drop to a position in which they will not become wedged and thereby prevent the swinging of the seat. The seat may thus be used even in its impaired condition.

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

1. The combination of a standard, a seat-iron pivotally connected with the standard, a band-spring carried by one of said members, a boss rigid with the other of said members and surrounded by said spring, a stop for one end of the spring, and means carried by said boss-equipped member for engagement with the other end of the spring, for the purpose set forth.

2. The combination of a standard, a seat-iron pivotally connected with the standard, a band-spring carried by one of said members, a boss rigid with the other of said members and surrounded by said spring, and means on said boss-equipped member for alternately engaging with the free end-portions of the spring for cushioning the seat-iron at the limits of its throw in opposite directions.

3. The combination of a standard, a seat-iron pivotally connected with the standard, a boss rigid with one of said members, a band-spring carried by the other of said members and embracing said boss and having its free end-portion converging with relation to each other, and means carried by said boss-equipped member for engaging with the converging portions of the spring, for the purpose set forth.

4. The combination of a standard, a seat-iron pivotally connected therewith, a boss on one of said members, a band-spring carried by one of said members and surrounding said boss, and means on the other of said members for engaging with said spring, the spring-end with which said means engages being so shaped as to cause said means to strike it a glancing blow, for the purpose set forth.

5. The combination of a standard, a seat-iron pivotally connected therewith, a boss on one of said members, a band-spring carried by one of said members and surrounding said boss, and means on the other of said members for alternately engaging with the free end-portions of said spring, said spring-ends being so shaped as to cause said means to strike them glancing blows, for the purpose set forth.

6. The combination of a standard, a seat-iron pivotally connected therewith, a band-spring carried by one of said members and having its end-portions converging, and means on the other of said members for engaging with said spring-ends, for the purpose set forth.

7. The combination of a standard, a seat-iron pivotally connected therewith, a boss carried by one of said members, a band-spring carried by the other of said members and embracing the boss and having its end-portions converging, and means carried by said boss-equipped member for alternately engaging with the spring-ends, for the purpose set forth.

8. The combination of a standard, a seat-iron pivotally connected therewith, a boss rigid with one of said members, a band-spring carried by the other of said members and surrounding said boss and having its end-portions converging with relation to each other, and spaced lugs carried by said boss-equipped member at right angles to the face thereof for alternately engaging with the converging end-portions of the spring, for the purpose set forth.

9. The combination of a standard, a seat-iron pivotally connected therewith, a pair of stops on one of said members, a band-spring carried by one of said members extending at its ends between said stops, the outer ends of the springs converging, and means on the other of said members for engaging with the converging end-portions of said spring, for the purpose set forth.

FRANK P. GRODE.

In presence of—
W. B. DAVIES,
R. A. SCHAEFER.