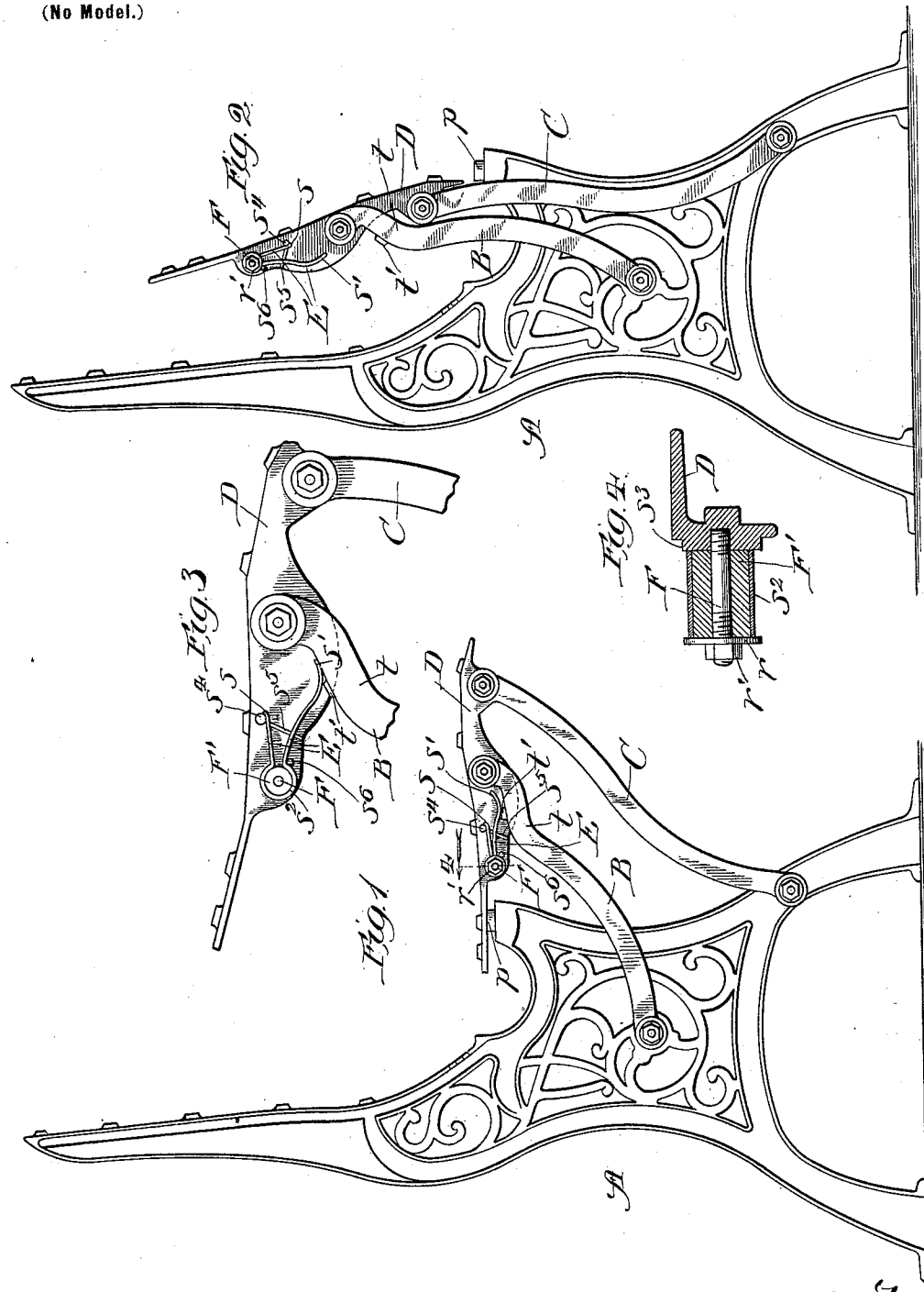
No. 607,275. Patented July 12, 1898.

F. L. RAINBOW.

SCHOOL SEAT.

(Application filed Feb. 14, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

FRED L. RAINBOW, OF MORRISON, ILLINOIS, ASSIGNOR TO THE ILLINOIS REFRIGERATOR COMPANY, OF SAME PLACE.

SCHOOL-SEAT.

SPECIFICATION forming part of Letters Patent No. 607,275, dated July 12, 1898.

Application filed February 14, 1898. Serial No. 670,205. (No model.)

To all whom it may concern:

Be it known that I, FRED L. RAINBOW, a citizen of the United States, residing at Morrison, in the county of Whiteside and State of Illinois, have invented a new useful Improvement in School-Desks, of which the following is a specification.

My invention relates to an improvement in school-desks of the class employing rear-folding seats, and more particularly to improved means for rendering the seats of such desks automatic in the initial movement of folding. Heretofore the most commonly-used device for accomplishing the automatic folding of seats of this description has been that of convolute springs placed upon one or more of the studs attaching the swinging arms to the desk-standards and having projecting ends engaging the arms and tending normally to raise them; but such an arrangement, besides complicating and enhancing the cost of the mechanism, is open to the objection that the springs are easily broken, it being found impossible, except at a prohibitive cost, to produce springs of this description of sufficient resilience and of suitable action to answer the requirements put upon them. My object is to overcome these objectionable features by providing a spring of such form and location as to be perfectly adapted to perform the function of starting the seat "off center," after which it is raised with ease by a slight backward pressure upon its front edge, readily exerted through the limbs of the occupant in rising.

My invention consists in the improved spring herein described and in the novel combinations and arrangement of parts set forth.

In the accompanying drawings, Figure 1 is a view in inner side elevation of a seat-standard and equipments embodying my improvements, the standard being shown provided with a seat-strap carried by swinging arms and with a spring, the parts being shown in the position which they occupy when the seat is in its lowermost position; Fig. 2, a similar view showing the relative positions of the parts when the seat is raised; Fig. 3, a broken view of the swinging arms and attached parts and showing the position of parts as the spring is about to leave the rear swinging arm upon which it rests, and Fig. 4 a section on line 4 of Fig. 1 and showing the manner of attaching the spring to the seat-strap.

A is a seat-standard, to the inner side of which are pivoted the rear ends of swinging arms B and C, which in turn carry at their upper forward ends a pivotally-secured seat-strap D. The upper end of the forward arm C is attached to the inner side of the strap, close to its front end, and the upper end of the rear arm B near to or slightly in front of the middle of the length of the strap and on the inner side thereof. The upper portion of the arm B is provided with an offset t, extending substantially in a horizontal position in Fig. 1 and shown provided on its upper side with a lug t'.

Attached to the inner side of the seat-strap a short distance to the rear of the point of attachment of the arm B is a two-pronged spring E, having forwardly-projecting arms $s s'$. The spring is provided with a loop s^2 in the form of an arc of a circle, at which portion it is attached to a boss s^3 on the seat-strap D by means of a stud F, provided with a washer r and nut r'. The stud is further provided with a sleeve F′ of elastic material, which when the ends of the spring are pressed together permits a certain yielding of the arc-shaped portion of the spring. As shown in Figs. 2 and 3, the arms converge toward the center of the loop, but do not meet when the spring is expanded. The upper arm of the spring bears against a pin s^4, with which the seat-strap is provided, and a rib s^5 serves to hold the arms in alinement with the outer surface of the lug s^3. Downward rotation of the spring is prevented by a pin s^6. During the compression of the spring the shoulders of the spring corresponding to the ends of the arc meet to form a fulcrum, thereby changing the point of greatest flexure in the spring. The spring is preferably of the flat type shown, and the forward end of the lower arm should be upcurved to permit it to move over the lug t'. It will be observed that the spring is being compressed during that portion of the movement of the seat when the strap moves from the position shown in Fig. 3 to the position shown in Fig. 1. When the occupant arises from the seat, the resilience of

the spring is sufficient to throw the seat to the position shown in Fig. 3, thereby changing the upper pivotal points to a position off center, so that a slight rearwardly-directed force is sufficient to fold the seat. Thus it appears that the sole function of the spring is to give to the seat its initial upward start and that the spring is under no compression after the seat-strap is raised to the position shown in Fig. 3, the lower arm of the spring being entirely removed from its resting-place upon the rear swinging arm B when the seat is raised above that position. In this manner I am able to secure a spring which will perform its work perfectly, and yet it is not subject to the danger of breaking, which is present in the case of springs which are in action throughout the entire movement of the seat. During the compression of the spring the end of the arm s' slides over the lug t' until it reaches the position shown in Fig. 1. The standard A is equipped with a rubber or felt stop p, upon which the rear end of the seat-strap strikes to limit the downward movement of the seat and which, with the spring, contributes to render the fall of the seat noiseless.

The relative positions of the coacting parts is, I believe, a factor of great importance in producing the improved results set forth. I therefore claim as a part of my invention a construction in which a seat-standard is equipped with a rear-folding seat, between the upper end of the rear swinging arm of which and the rear portion of the seat-strap is confined a spring attached to one of said relatively movable parts and contacting with the other of said parts throughout a portion only of the movement of the seat.

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

1. In a seat, the combination with a standard, of a seat-strap, a front and a rear arm pivotally joined to the seat-strap and to the standard, and a spring confined between the upper front portion of said rear arm and the rear portion of said seat-strap and attached to one of said last-named parts and contacting with the other of said parts through a portion of the movement of the seat only and aiding in the initial movement of raising the seat, substantially as and for the purpose set forth.

2. In a seat, the combination with a standard, of a seat-strap, a front swinging arm pivotally joined to the standard and to the front end of the seat-strap, a rear swinging arm pivotally joined to the standard and to the seat-strap near the center of the strap, a spring attached to the seat-strap a short distance to the rear of the upper end of the rear swinging arm and provided with a forwardly-projecting prong adapted to be engaged by the upper portion of said arm during a portion only of the movement of the seat, and means for limiting the downward movement of the seat, substantially as and for the purpose set forth.

3. In a seat, the combination with an end standard and a seat-strap, of arms B and C, having their ends pivotally joined to the standard and the seat-strap, a spring E provided with a loop s^2 attached to the seat-strap toward the rear end and having an upper arm s and a lower curved arm s', a bearing upon the seat-strap for the arm s, and a bearing on the arm B for the prong s' and means for limiting the downward movement of the seat, substantially as and for the purpose set forth.

4. In a seat, the combination with a standard, of a seat-strap, arms B and C pivotally joined to the inner side of the strap and standard, a two-prong spring E carried by the rear portion of said seat-strap, an offset t on the arm B affording a bearing on its upper surface for the lower prong of said spring when the seat is lowered, and a stop p on the standard in the path of the rear end of the seat-strap and limiting the downward movement, substantially as and for the purpose set forth.

5. In a rear-folding seat, the combination with a standard, of a seat-strap, front and rear swinging arms pivotally joined to the standard at their lower ends and to the seat-strap at their upper ends, a two-prong flat spring provided with a partially-closed loop, a stud on the seat-strap to receive the loop, an elastic collar confined between the loop and stud, bearings on the strap and the upper portion of the rear swinging arm for the prongs of the spring, and a stop p on the standard in the path of the rear portion of the seat-strap, substantially as and for the purpose set forth.

FRED L. RAINBOW.

In presence of—
J. B. MARKER,
WILLIAM BREARTON.