(No Model.) 2 Sheets—Sheet 1.

F. R. BEAL.

TENSION JOINT FOR SCHOOL DESKS.

No. 352,968. Patented Nov. 23, 1886.

Fig. 1.

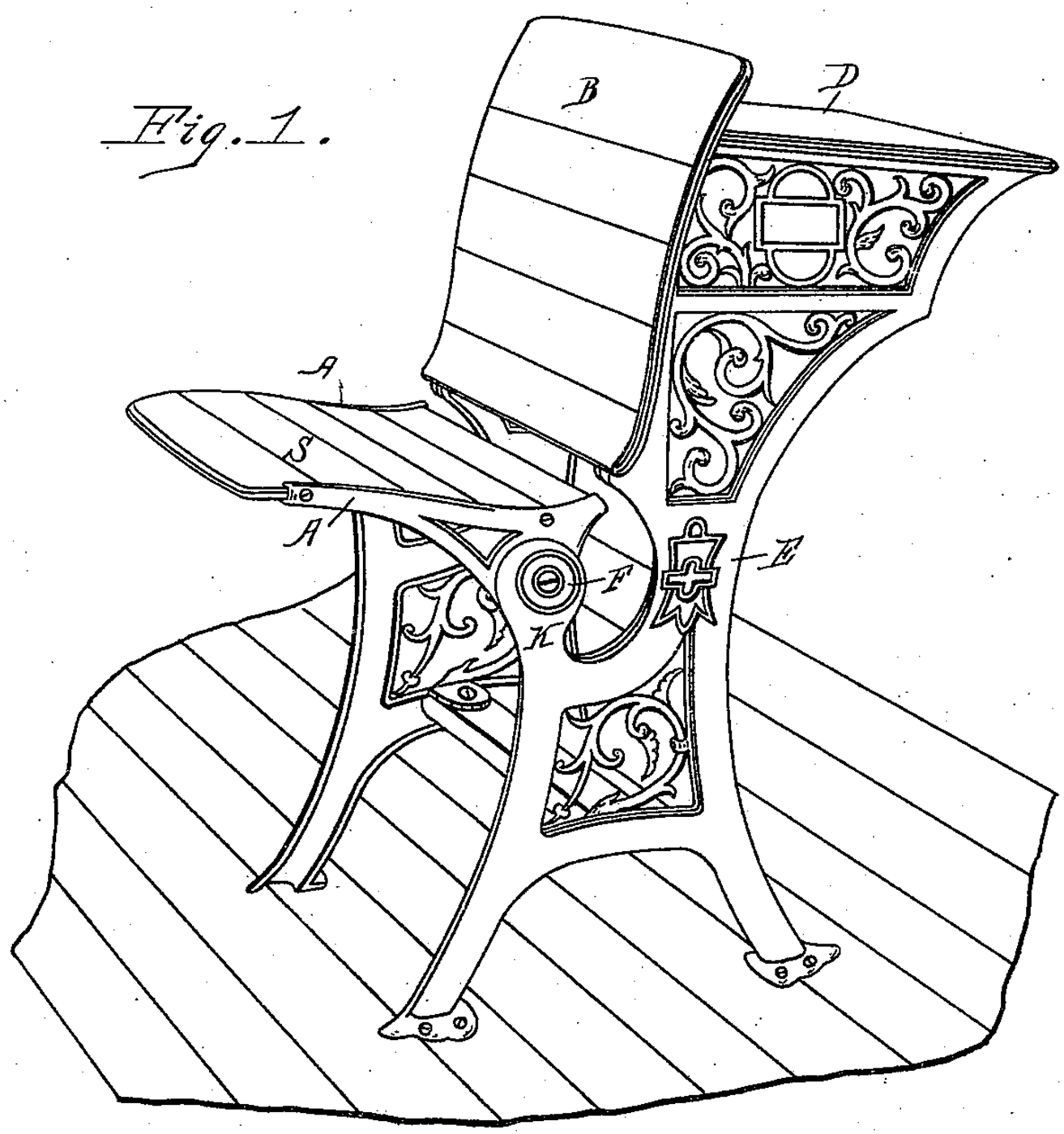
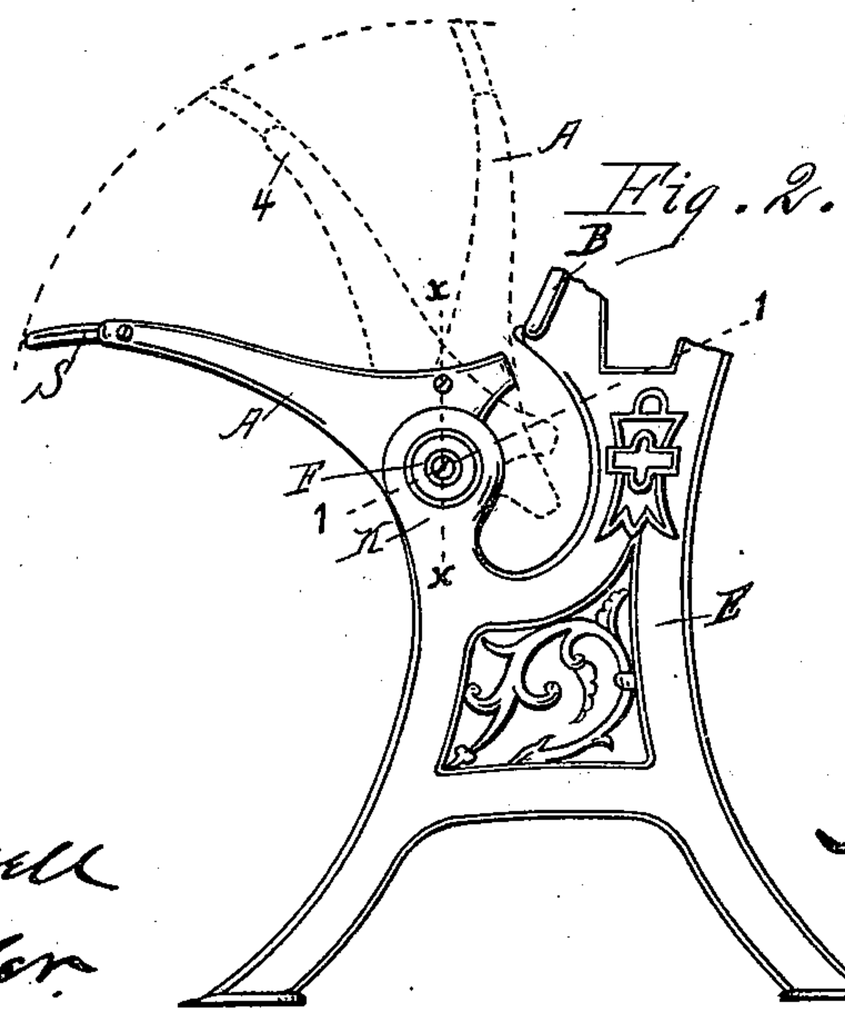


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

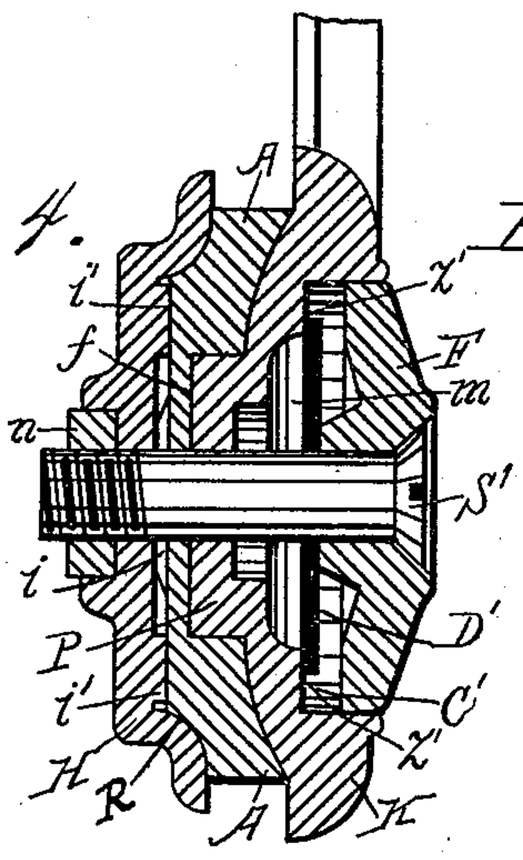


Fig. 5.

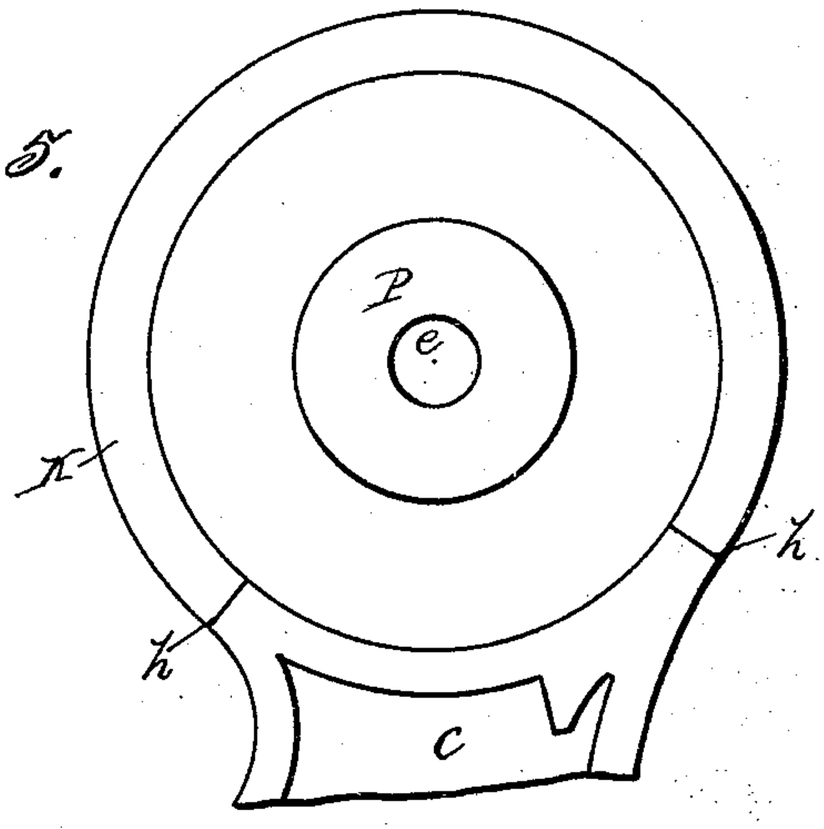


Fig. 9.

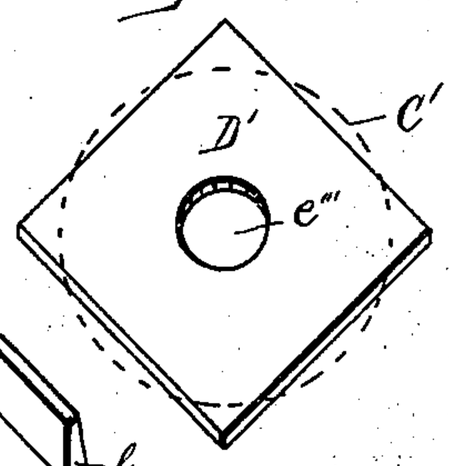


Fig. 3.

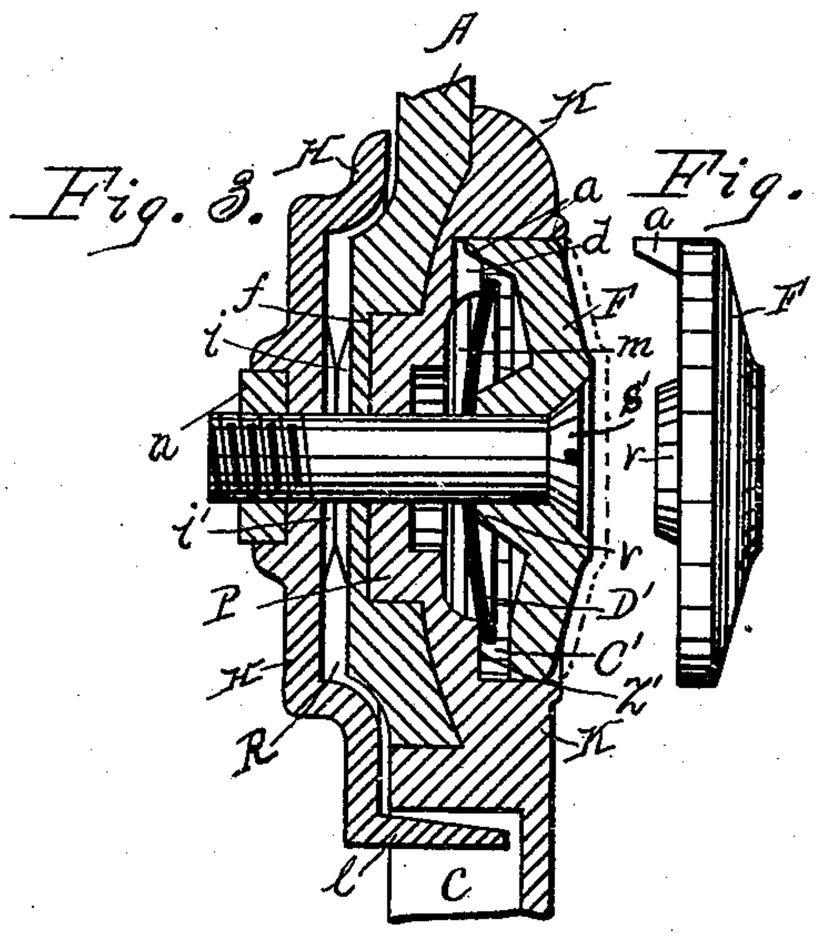


Fig. 6.

Fig. 7.

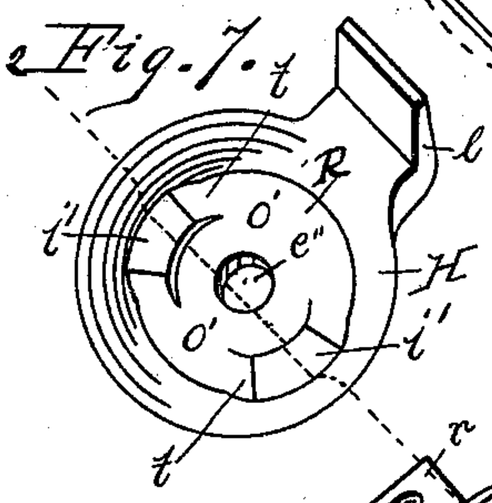
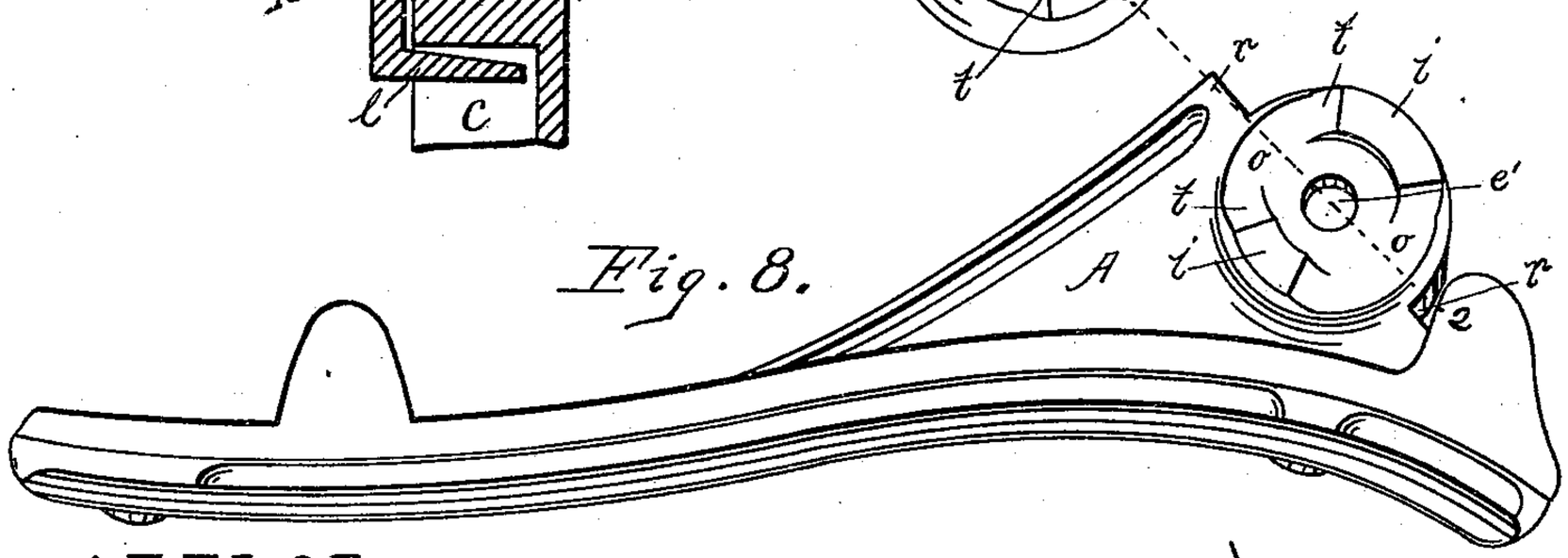


Fig. 8.



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UNITED STATES PATENT OFFICE.

FRANCIS R. BEAL, OF NORTHVILLE, MICHIGAN.

TENSION-JOINT FOR SCHOOL-DESKS.

SPECIFICATION forming part of Letters Patent No. 352,968, dated November 23, 1886.

Application filed May 10, 1886. Serial No. 201,775. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS R. BEAL, a citizen of the United States, residing at Northville, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Tension-Joints for School-Seats; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in the joints to seats of school-desks, and especially to that class of seats adapted to be turned from a horizontal to a vertical position and back again.

The great objection to seats heretofore constructed has been the noise in the stopping of the seat when adjusting it and the liability of the seat to drop or fall forward when turned up to a vertical position. By my present arrangement I am able to overcome these objections, as I so construct the joint upon which the seat turns that it tightens as the seat passes back to its vertical position, and again as it assumes its horizontal or normal position. The tension is such that the seat will remain in any position desired, all of which I accomplish by the mechanism hereinafter set forth; and my invention consists in the general arrangement of parts as hereinafter specified, and pointed out particularly in the claims.

In the drawings forming a part of this specification, Figure 1 is a perspective view of a school seat and desk containing my invention. Fig. 2 is an end elevation, having parts broken away. Fig. 3 is an enlarged section of the seat-joint on dotted line *x x* of Fig. 2. Fig. 4 is a section of same on dotted line 1 1 of Fig. 2 and dotted line 2 2 of Figs. 7 and 8. Fig. 5 is an enlarged rear elevation of the joint-head K. Fig. 6 is an edge view of the pressure-cap F. Fig. 7 is a back face view of the locking-cap H. Fig. 8 is a back face view of the seat-arm A. Fig. 9 is a view of the steel disk or spring-plate D′.

In the drawings, E is the standard, B the seat-back, and S the seat.

A A are the arms supporting the seat. Said arms are journaled on the hub P of the joint-head K of the uprights or standards E.

In the outer face of the head K, I form an annular chamber, C′, with an annular ledge, Z′. Fitting in said chamber and upon said ledge is a square steel disk, D′, and *m* is a chamber in the head K.

Below or back of the disk D′, meeting the front face of the disk and lying within the chamber C′, is a metal cap, F, its hub *v* pressing against the center of the disk, as clearly shown in Figs. 3 and 4. The cap F is provided with a horizontal arm, *a*, which enters a recess, *d*, in the face of the head K, to prevent the cap from turning on the screw-bolt S′, as shown in Fig. 3. The cap F has a horizontal movement in the chamber C′, as shown by its position from dotted line of Fig. 3.

The front face of the seat-arm A is provided with an annular chamber, *f*, which is made sufficiently large to freely fit over the projecting hub P of the head K, and on said hub the arm turns. (See Figs. 3 and 4.) The back face of the arm is provided with two projections or lugs, *i i*, having inclined ends *t*, (see Figs. 3 and 8,) with spaces *o* between the inclined ends of the lugs *i*.

H is a locking-cap, having its inner face provided with an annular chamber, R, to receive the projections *i i* on the back face of the arm A. The bottom of the chamber is provided with projections *i′ i′*, with inclined ends *t*, with depressed spaces *o′*, located between the ends of the inclined raised parts *i′*, the parts being the same as shown on the back face of the arm A.

l is an arm projecting outward at right angles to the face of the cap H, and when in position, as shown in Figs. 1, 2, and 3, engages in the recess *c* of the head K, whereby said cap is prevented from turning on the screw-bolt S′. The back face of the cap H is provided with a square chamber to receive the square nut *n*, to prevent it from turning as the bolt S′ is turned to adjust the parts, as will be hereinafter fully explained.

The parts are placed together as follows: The steel disk D′ is placed in the chamber C′ of the head K, and the cap F is then placed in said chamber, its nose *v* meeting the face of

the disk D′. The screw-bolt S′ is then passed through the cap F, and the hole *e‴* of the disk, then through the hole *e* in the hub P of the head K. The arm A is then placed with its chamber *f* fitting over the hub P. The bolt S′ passes through the hole *e′* of said arm. Said bolt is then passed through the hole *e″* of the cap H, the arm *l* of said cap fitting in the chamber C of the head K, as clearly shown in Fig. 3. The nut *n* is then placed on the bolt S′, and by turning the head of said bolt with a screw-driver the parts are firmly bound together. The bolt S′ is turned sufficiently to cause the nose *v* of the cap F to press snugly the face of the disk D′ when the seat-arm A is turned to the dotted position 4 of Fig. 2. When the seat is turned up to this position, the turning of the arm on the hub P of the head carries the raised portions *i i* of the arm A over the depressed surfaces *o′ o′* of the cap H, when the steel disk D′ will be straight, the cap F thrown out or in the position of Fig. 4. The seat at this point moves freely; but as the seat is thrown back from the dotted position 4 of Fig. 2 to the vertical dotted position of said figure, the arm A, revolving on the sleeve P, brings the raised ledges *i i* in contact with the projecting ledges or lugs *i′ i′* of the cap H, each part riding over the incline *t* of the other. The additional thickness of the ledges *i i* causes the cap H to move back, carrying with it the cap F. The advancing of the cap F causes its nose *v* to depress the steel disk D′, as clearly shown in Fig. 3, thus increasing the tension or pressure against the arm A as it reaches the vertical position, which prevents the seat from falling back as it is raised. In turning the seat down from the vertical dotted position of Fig. 2 to the horizontal or normal position of Figs. 1 and 2 the ledges *i i* upon the arm A slide over the ledges *i′ i′* of the cap H, then over the depressed portion *o′ o′* of said cap, and as the seat assumes its horizontal position the turning of the arm A causes the ledges *i i i′ i′* to again meet, when the disk D′ is again depressed and the tension increased, whereby the seat is prevented from dropping down, causing a noise, as is common with school-seats now in use.

The tension on the disk is regulated by turning the screw-bolt S′. The extreme movement of the seat is limited by the stop *r r* on the arm A meeting the shoulders *h h* of the head K, which is common.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a tension-joint for school-seats, the combination of the head having the annular chambers and central annular ledge, the spring-metal disk and cap F, located therein, the seat-arm having the lugs, with inclined ends formed on its back face, the cap H, having the locking-arm *l* engaging with the recess C of the head, and lugs *i′* with inclined ends on its inner face, said lugs adapted to engage with the lugs on the arm A, and the bolt and nut for securing said parts together.

2. In a tension-joint for school-seats, the combination of the standard, the head K, formed integral therewith, the hub P, the chamber C′, having the ledge Z′, the spring-metal disk, the cap F, having the nose *v* and arm *a*, the seat-arm A, having the chamber *f*, the lugs *i i*, and depressions *o o*, the cap H, having the arm *l* engaging with the recess C of the head, and lugs *i i*, with screw-bolt securing said parts together, as and for the purposes set forth.

3. In a tension-joint for school-seats, the combination of the head K, having the chamber C′ and annular ledge, the square metal disk located in said chamber, the arm A, having the lugs *i i* with inclined ends and depressed spaces *o o*, the cap H, having the lugs *i′ i′*, with depressed spaces *o′ o′* on its inner face, said cap adapted to be locked to the head K, also the cap F, with bolt and nut securing said parts together, as and for the purposes specified.

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

FRANCIS R. BEAL.

Witnesses:
B. G. WEBSTER,
WM. H. AMBLER.