A. E. ROBERTS.

School-Desks and Seats.

No. 138,045. Patented April 22, 1873.

Fig. 1.

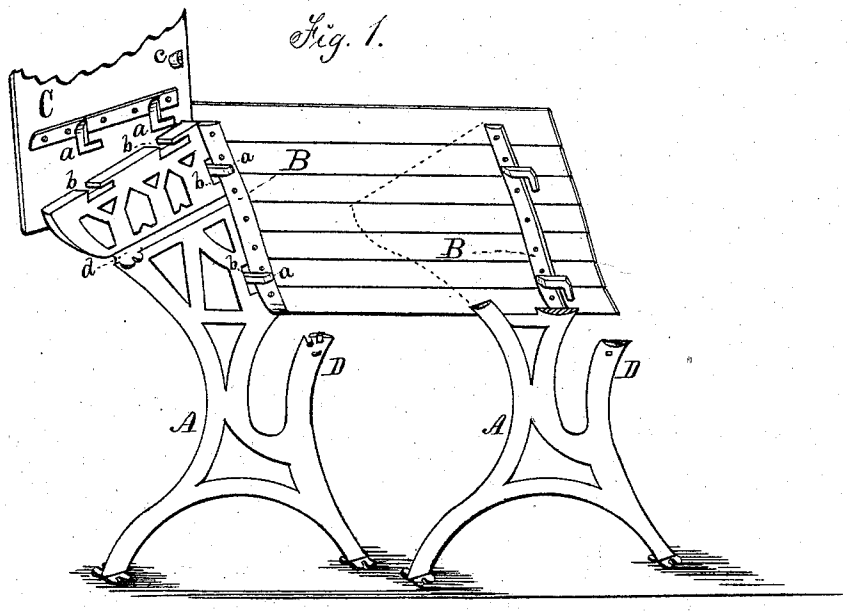
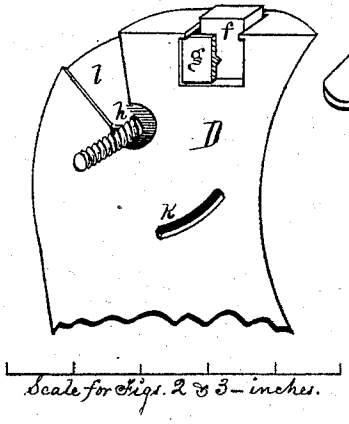
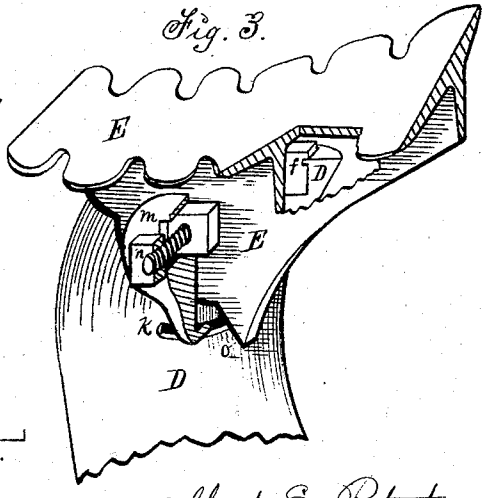


Fig. 2.



Scale for Figs. 2 & 3 – inches.

Fig. 3.



Witnesses.
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H. L. Bassett.

Albert E. Roberts,
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UNITED STATES PATENT OFFICE.

ALBERT E. ROBERTS, OF DES MOINES, IOWA.

IMPROVEMENT IN SCHOOL DESKS AND SEATS.

Specification forming part of Letters Patent No. **138,045**, dated April 22, 1873; application filed February 17, 1873.

To all whom it may concern:

Be it known that I, ALBERT E. ROBERTS, of Des Moines, in the county of Polk and State of Iowa, have invented a Sectional School Desk and Seat, of which the following is a specification:

The object of my invention is to form a school desk and seat in sections in such a manner that it can be readily taken apart for convenience in packing and shipping, and also to hinge the seat to the frame in such a manner that the friction of the joints can be easily regulated, and the seat turned noiselessly and held at any angle. It consists, first, in forming the top and back in complete separate parts, in such a manner that they can be attached and removed at pleasure; second, in combining a rubber cushion, a friction-plate, and a washer, in the form of a wrench, with the end frame and seat-arm to form a hinge, all as hereinafter fully set forth.

Figure 1 of my drawing illustrates the manner of forming and connecting the end frames, the back, and the top.

A A are the cast-iron end frames. They may vary in size and ornamental design. B B are cast-metal straps attached to the rear side of the wooden back. They are bent to conform with the shape of the human spine. *a a* are hooks extending from the rear or outside of the straps. They are cast on so that the strap and the hooks form a single complete casting. Malleable iron should be used to make them strong and durable. The wooden portion of the back may be fitted and glued together, or it may be formed of a series of slats. The irons B B are attached to the wooden back with screws. The back thus formed can be readily attached to the frame A by simply passing the hooks *a a* through the slots *b b* of corresponding size and shape formed in the side of the end frame, and then allowing the back to drop down so that the hooks will catch on the outside of the frame. By making the inside of the hook wedge-shaped, the edge of the strap B and the edge of the frame A will be drawn tightly together, and a firm bearing, extending the entire length of the strap, will be thus produced to aid in holding the back and end frames rigidly together. C is one of the metal straps attached to the bottom of the desk lid or top. It has hooks *a a* similar to those on the straps B B, and serves to preserve the wood from warping and splitting, and to connect it with the end frames. The metal straps on the lid and on the back are placed at equal distances apart, so that the straps C will bear against the insides of the frames A. The hooks on the straps C will enter the horizontal slots *b b* in the top edge of the frames A. By pressing the top or lid in tight against the back, the wedge-shaped bearings of the hooks will draw laterally and hold rigidly. A notch, *c*, or its equivalent, may be used on the under side of the lid, through which a screw may be passed into the wooden back, to prevent the lid from slipping rearward. After the hooks are pressed forward with the lid, the slots in the tops of the frames prevent all vertical motion. *d* represents the horizontal grooves on the inside of the frames, designed for the entrance of a movable bottom.

Fig. 2 represents that portion of the end frame A combined with the seat-arm to form a hinge. D is a section or projection of the end frame. *f* is a rubber cushion fitted in a recess or cavity in such a manner that it will protrude upward. *g* is a half-section of the metal friction-plate. A point on its under side and center enters the cushion *f* and aids in holding the two pieces together in the cavity. *h* is a socket or recess, which receives a corresponding journal or projection formed on the seat-arm. *k* is a slot, which receives the hook or cam formed on the washer *m*. *l* is an opening which allows the journal on the seat-arm to pass to and from the socket *h*.

Fig. 3 illustrates the manner of combining and co-operating the cushion *f*, the friction-plate *g*, and the movable wrench-form washer *m*, with the section D of the end frame and the seat-arm E. A common bolt, with a square head, is passed through the parts D and E, and a common nut put on to hold them together. The wrench-form washer *m* has an opening in its center to admit the nut. The washer *m*, when placed on the bolt and over the nut, performs the function of a wrench, and as the seat is turned up and down the wrench-form washer alternately loosens and tightens the joint by drawing the nut. The

hook or cam on the lower end of the washer *m* enters and traverses the cavity or slot *k*, and the movement of the wrench-form washer is thereby restricted and regulated so that the nut will not be made too loose or drawn too tight. A second common nut, *n*, is placed on the bolt on the outside or top of the washer *m*. When the seat is turned up, the nuts are loosened, and the friction of the joint diminished. When it is turned down, the nuts are drawn tight by means of the shoulder *o* on the seat-arm E, pressing the cam of the washer *m* to the rear of the slot *k*. The elastic cushion *f* also aids in loosening and tightening the joint and in making it noiseless. When the seat is turned down, the flange on the seat-arm E comes in contact with the cushion *f*, and as it presses down it expands the cushion laterally, and causes the metal friction-plate *g* to increase the friction of the joint by bearing hard against the inside surface of the seat-arm part of the joint. When the seat is turned up the rubber cushion contracts laterally and expands vertically, and thereby diminishes the friction of the joint and aids in lifting the seat. An automatically expansive and contractive hinge-joint is thus produced by means of the co-operative parts described. By drawing the nuts occasionally, to compensate for wear, the joint may be kept in such a condition that the seat will turn easily, while at the same time there will be friction enough to hold the seat stationary at any angle, and to prevent noise by falling and rattling.

By the use of the separate complete castings A, B, C, D, and E, I can have the perforations required for the passage of the screws cast in and thereby save the time and labor usually required in drilling screw-holes in the iron parts of school desks and seats.

Claims.

I claim as my invention—

1. Constructing a school-desk in separate complete movable sections, by means of the metal straps B and C, with the projecting hooks *a a* and the corresponding slots *b b* in the end frame A, substantially as described, and for the purposes specified.

2. Constructing an automatically expansive and contractive hinge-joint for adjustable seats by combining and co-operating the parts D and E by means of a common bolt, the elastic cushion *f*, friction-plate *g*, slot *k*, wrench-form washer *m*, nut *n*, and shoulder *o*, substantially as described.

ALBERT E. ROBERTS.

Witnesses:
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