

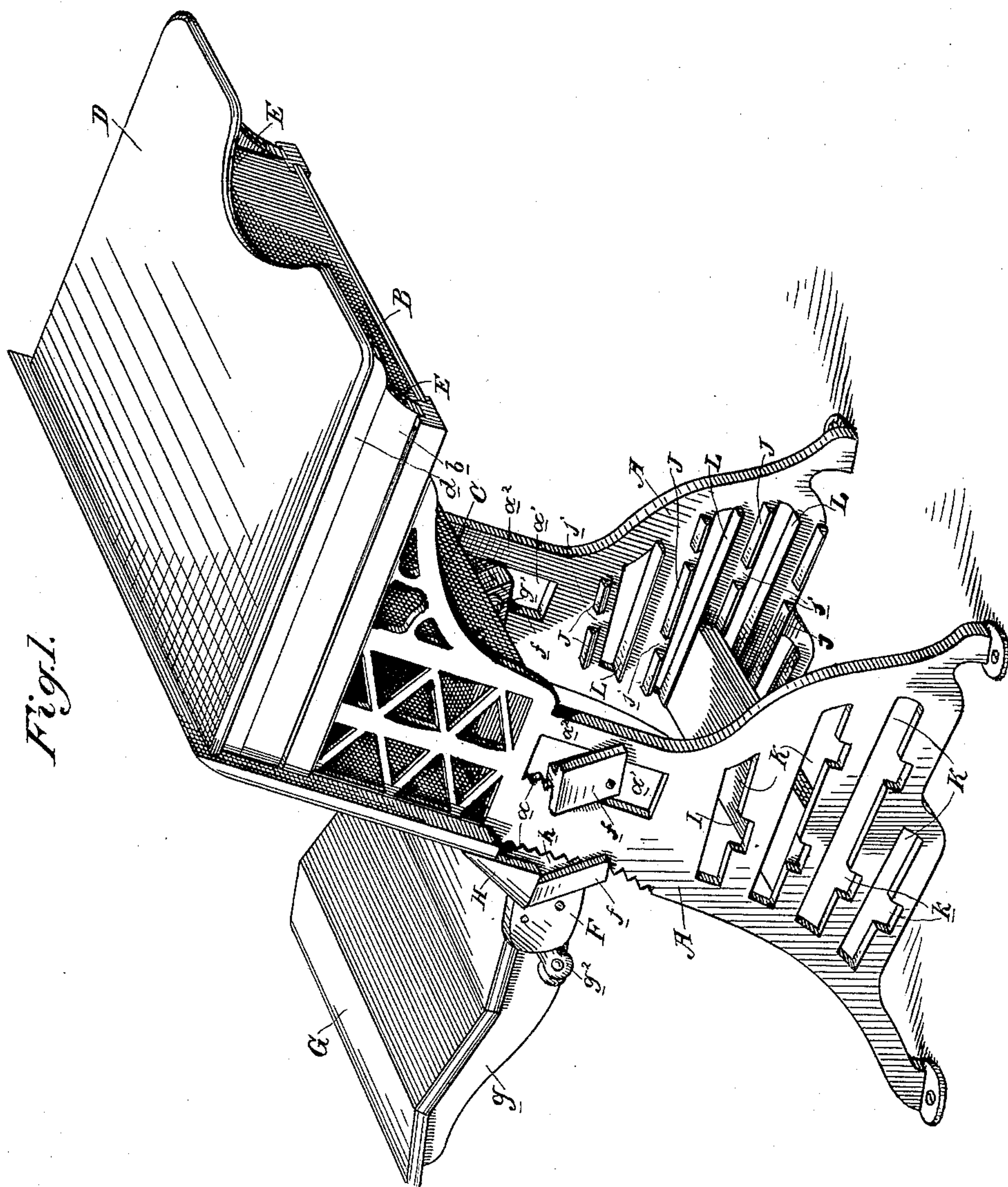
(No Model.)

3 Sheets—Sheet 1.

C. B. TOWLE.  
SCHOOL DESK.

No. 409,884.

Patented Aug. 27, 1889.



Witnesses,  
Geo. H. Strong  
J. H. Hourse

Inventor,  
Charles B. Towle  
By Duway & Co.  
Attys

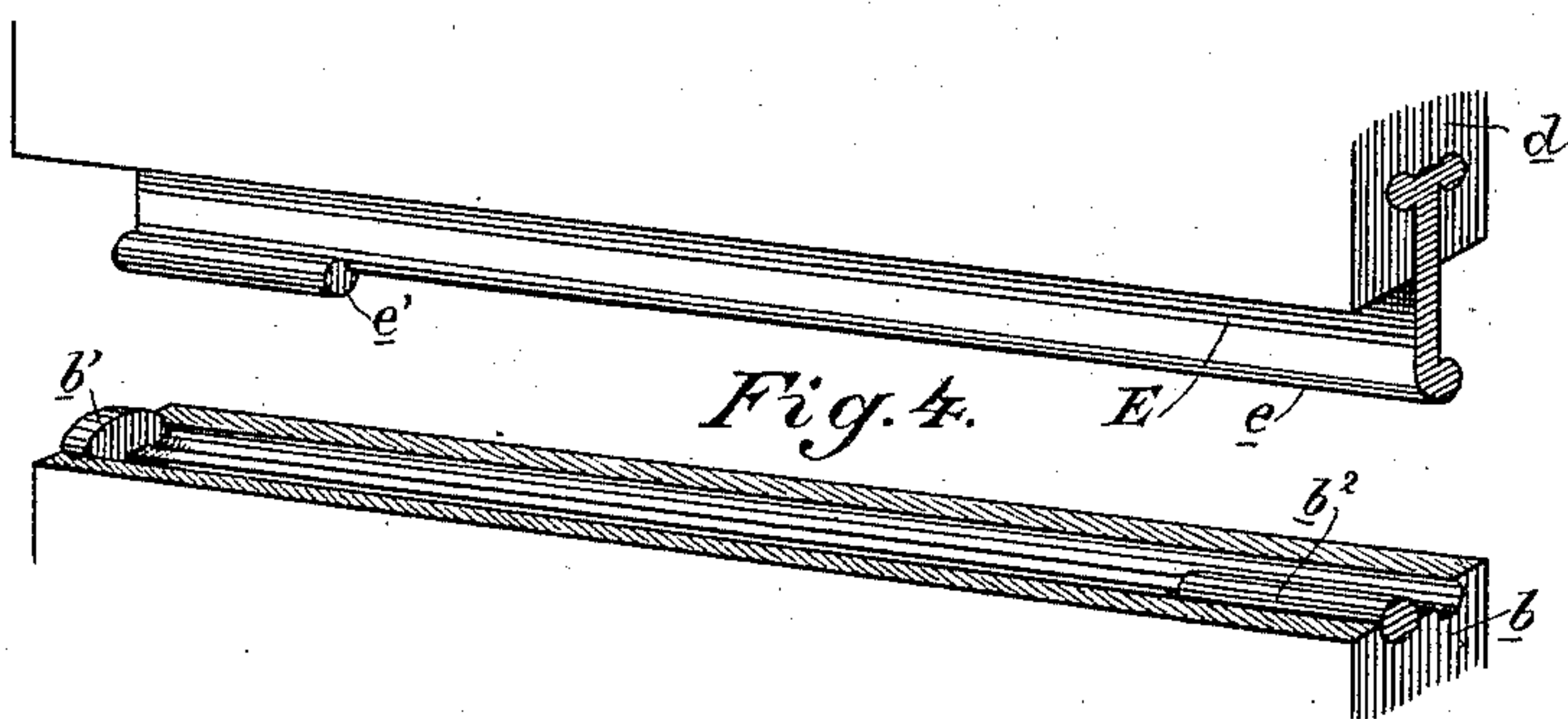
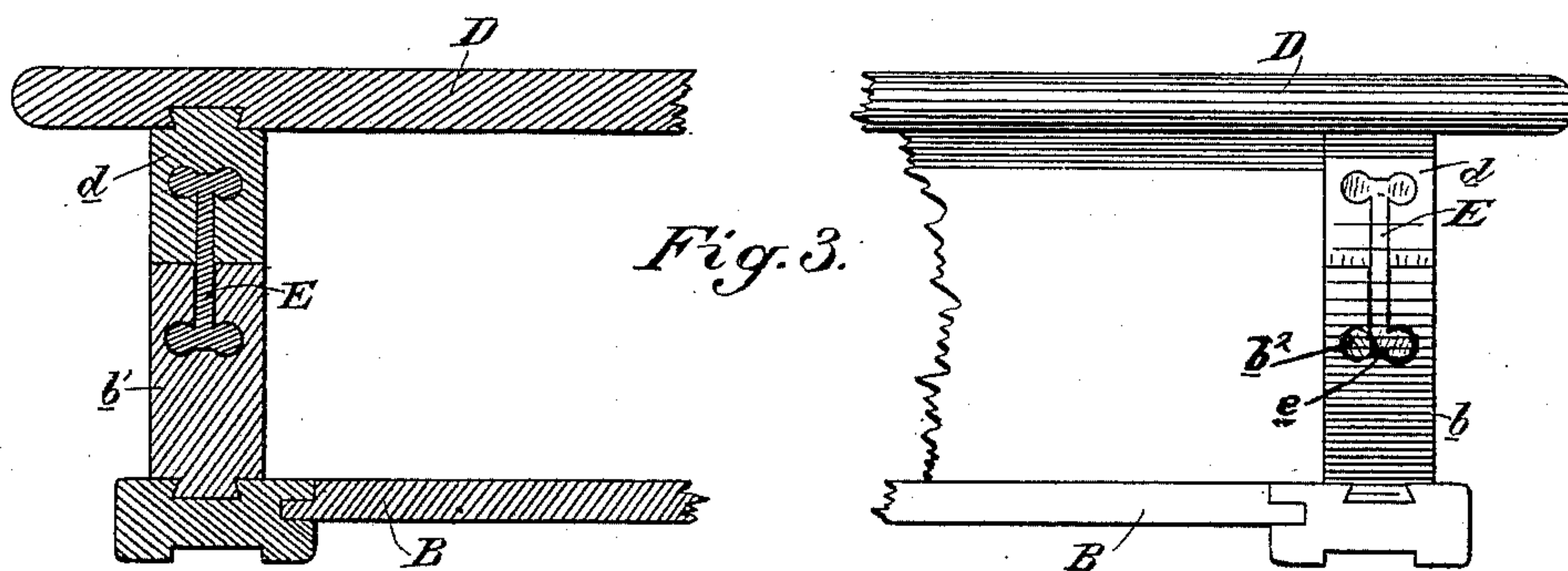
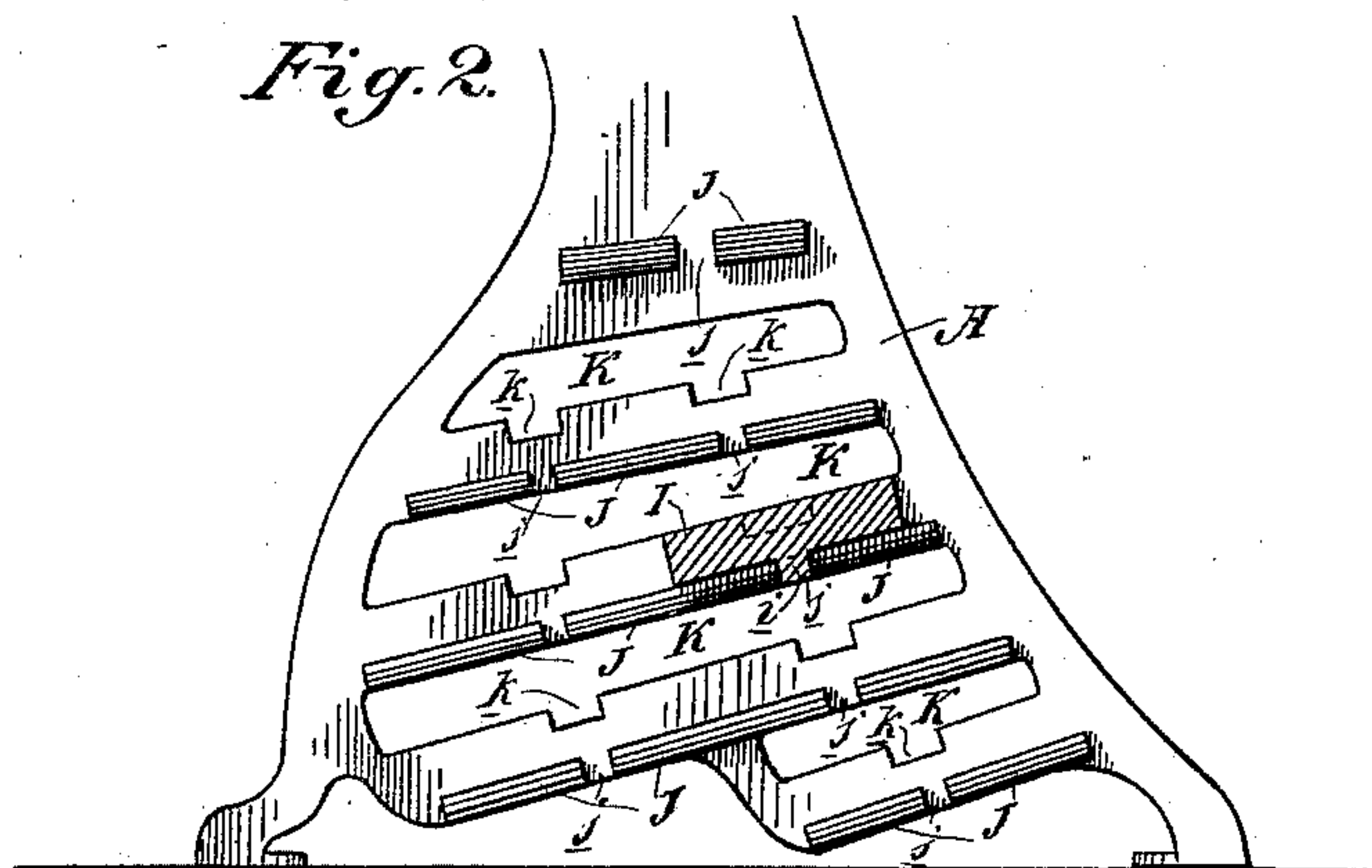
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Geo. H. Strong  
J. H. Hourse

Inventor,  
Charles B. Towle  
By Dewey & Co.  
attys

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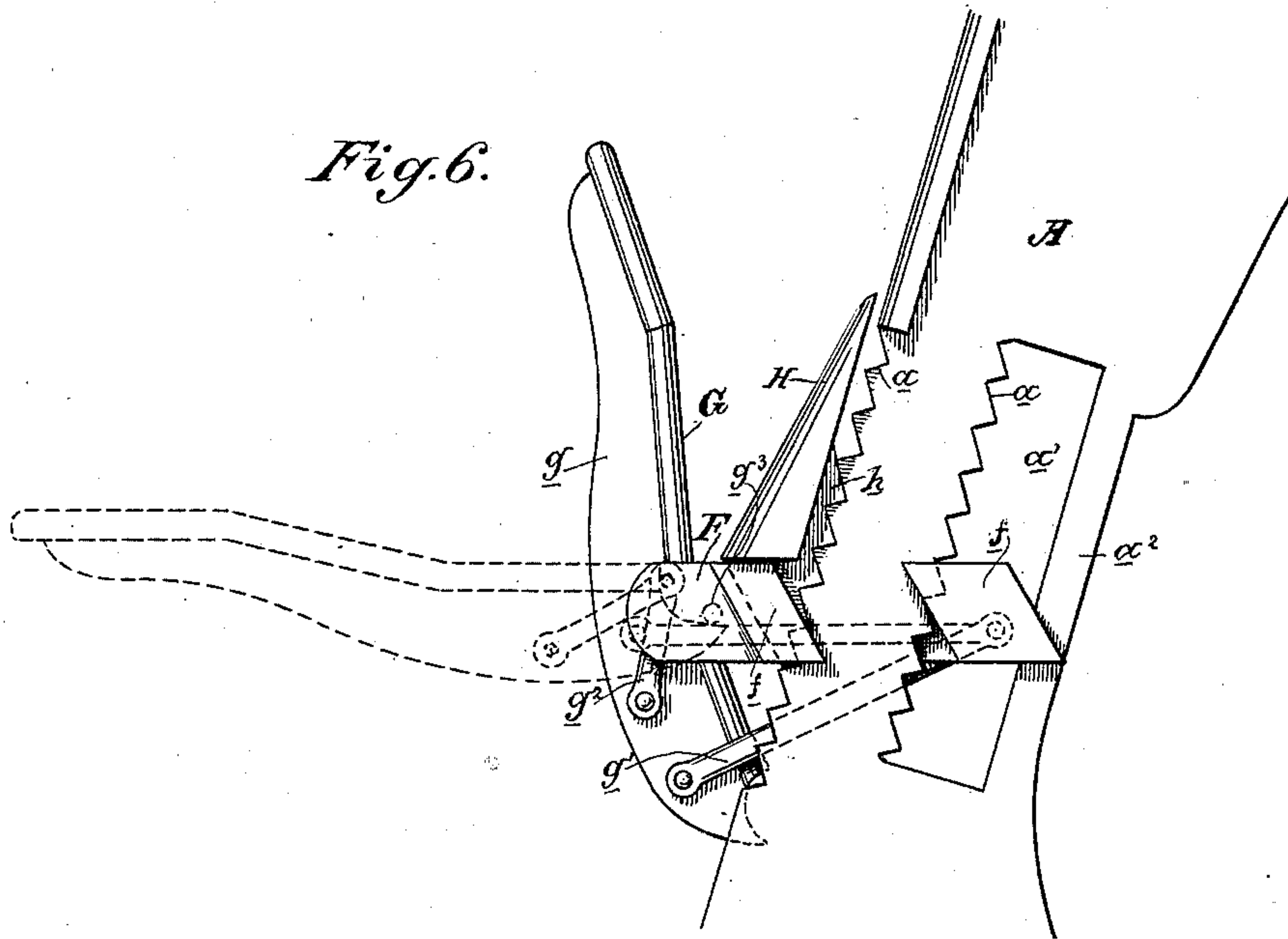
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C. B. TOWLE.  
SCHOOL DESK.

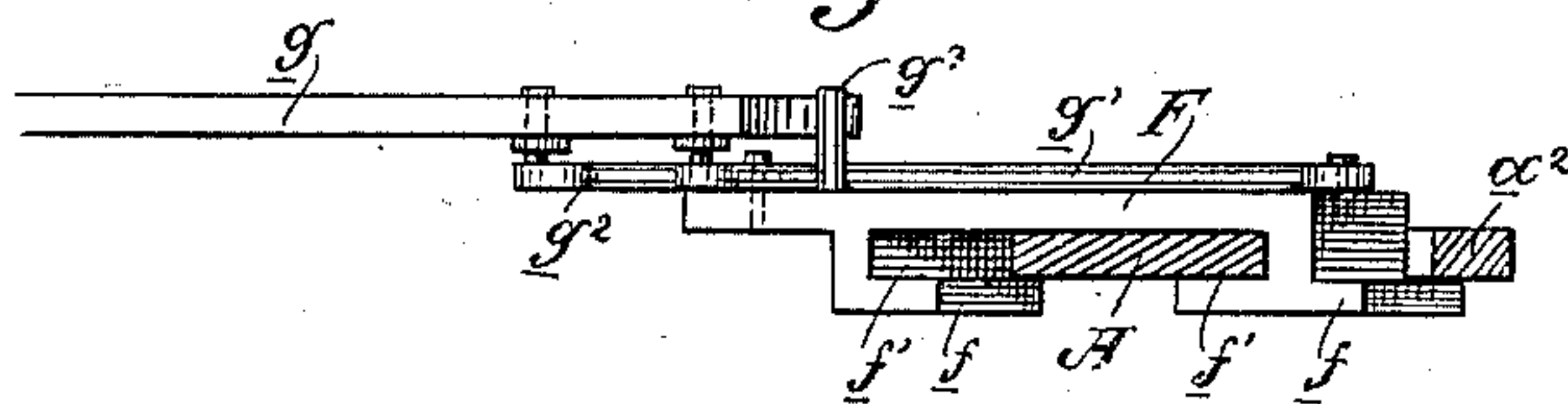
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*Fig. 6.*



*Fig. 7.*



Witnesses,  
Geo. H. Strong  
J. H. Morse

Inventor  
Charles B. Towle  
By Deruy & Co.  
attys



# UNITED STATES PATENT OFFICE.

CHARLES B. TOWLE, OF VALLEJO, CALIFORNIA.

## SCHOOL-DESK.

SPECIFICATION forming part of Letters Patent No. 409,884, dated August 27, 1889.

Application filed April 10, 1889. Serial No. 306,724. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES B. TOWLE, a citizen of the United States, and a resident of Vallejo, county of Solano, State of California, have invented an Improvement in School-Desks; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of school-desks; and my invention consists in the novel details of construction and arrangement hereinafter fully described, and specifically pointed out in the claims.

The objects of my invention are to provide simple, effective, and accurate connections between the sliding and the fixed top of the desk, whereby a suitable space may be formed between the two tops, and whereby the former may be readily moved and limited in its movement; to provide a simple and effective seat-connection whereby the seat may be raised and lowered; to provide simple and effective connections for the foot-rest, whereby said foot-rest may be readily put in place and adjusted to different positions and to different angles, and to provide a simple and effective seat-hinge.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a perspective view of my desk. Fig. 2 is an elevation of the inner surface of one of the sides A, showing in section the foot-rest I in position. Fig. 3 is a part section and part front elevation showing the connection of the tops. Fig. 4 represents the stops by which the movement of the desk-top is limited. Fig. 5 is a view in perspective of the under side of the foot-rest. Fig. 6 is a side view of the seat hinging and adjusting mechanism. Fig. 7 is a plan of one of the seat-connections, with the standard A in section.

A are the sides of the desk-frame, upon and between the tops of which is supported the fixed top B, below which is the receptacle C, access to which is had through an opening (unnecessary herein to show) in the upper portion of the fixed top.

D is the sliding top, located above the fixed top and adapted to be moved to or from the person in order to uncover and to cover the

entrance aperture or opening to receptacle C, to disclose and cover any other underlying receptacle, compartment, or device—such as a frame or bracket for pens, pencils, and ink-well—and to serve when drawn out as an arm-rest for the user of the desk. Between the two tops a space is formed in which may be placed suitable articles, such as paper, rulers, books, &c. The novelty in this part of my invention lies in the connections between the two tops, said connections being of such a nature as to provide a space between them of suitable height adapted for the reception of any article which it may be found convenient to place in it, and also to allow the sliding top to move easily and accurately on the fixed top and to limit its movement at the points desired. To this end I connect with the side bars of the fixed top by any suitable connection—as by the dovetail joint here shown—the cleats *b*, and I connect similarly with the sides of the sliding top the runners *d*. The runners lie and are adapted to move upon the cleats, and they are adjustably connected by the following means:

E are guide-bars, preferably made of metal. These bars when in complete cross-section have the double-flange or T shape shown. They are rigidly secured in runners *d*, and they play freely enough in the cleats *b* to slide accurately therein, accompanying the sliding top D in its movement. They are fitted to their seats in both cleats and runners by making correspondingly-shaped sockets in said parts, said bars being driven firmly into the runners so as to secure them thereto.

In the sockets of the cleats, at their upper or inner ends, are placed cushion-blocks *b'*, which serve as stops, against which the upper or inner ends of the guide-bars E come in contact when the sliding top is pushed up to its limit to fully cover the underlying parts. To limit its outward movement, cushion-blocks *b<sup>2</sup>* are placed at a suitable point in the outer or lower portion of the sockets in cleats *b*, but only in one side of said sockets, and the corresponding side flange of the guide-bars E of a given section or sections of said bars is cut out or omitted originally, as shown at *e*, leaving a shoulder *e'* in said bars or the upper sections thereof, said shoul-



der and the location of cushion-blocks  $b^2$  being determined by the amount of outward movement to be given to the sliding top.

Now, it will be seen that as the sliding top 5 is drawn outwardly the guide-bars E move freely in the sockets of cleats  $b$ , the cut-away or omitted flange of said bars permitting their passage by the fixed stop cushion-blocks  $b^2$ , until, the limit of outward movement being 10 reached, the shoulders  $e'$  of said guide-bars come in contact with stop-blocks  $b^2$  and arrest the sliding top and hold it in its drawn-out position. Upon the inward movement the bars E move freely up until their upper 15 or inner ends come in contact with stop-blocks  $b'$  in the head of the sockets of cleats  $b$ , thereby limiting inward movement of the sliding top. Thus both objects are attained. The first-named—the provision of suitable space 20 between the tops—is gained by making the fixed cleats  $b$  as high as may be desired, so that the runners  $d$  of the sliding top may remain small enough to satisfy all the requirements of strength, lightness, compactness, and 25 appearance; and the second object—namely, the provision of accurate motion, ease of movement, and its proper limitation—is gained by the employment of the connecting guide-bars and the stops. This shape of guide-bars 30 E provides for a substantial bearing, and its pressure in the runner is so uniform and in all directions that when pressure is brought upon the sliding top the bars will not have a tendency to split the runners or separate their 35 parts when said runners are made sectional.

The adjustable connection for the seat is as follows: In the sides A of the frame are made the ratchet-teeth  $a$ , one set being on the front edge of said sides, and a second set being 40 in the forward edge of a slot  $a'$ , made in said sides, the slot leaving a bearing  $a^2$ , forming its back wall.

F are the brackets, to which the seat G is connected in a manner presently to be described. The brackets F are formed on their 45 outer side with bearing-plates  $f$ , the inner faces of which are grooved out at  $f'$ , and said plates are separated by a space sufficient to allow them to pass by both sets of ratchet-teeth when the bracket is fitted to the side 50 A. This fitting is done by holding the inner edges of the bearing-plates parallel with the edges in which the teeth are formed. Then when the plates have passed the teeth, the 55 brackets are dropped to approximately a horizontal plane, in which position the teeth enter the grooved faces  $f'$  of the plates, a tooth of the forward set engaging under the bottom of the forward grooved faces, and a tooth of 60 the rear set engaging on the top of the back grooved faces, whereby the brackets are held firmly.

Lateral or side motion of the brackets is prevented by the bearing-plates  $f$  overlapping 65 the solid portions of the sides A, the lower inner portion of the forward plate overlapping the forward edge of the sides,

the upper inner portion of the back plates overlapping the sides just forward of the slots  $a'$ , and the lower outer portion of said 70 back plates overlapping the strips  $a^2$ , which said strips thus act as bearings as well as strengthening-pieces. These plates therefore hold the brackets steady.

Now, in order to lock the brackets in any 75 position to which they may be adjusted, I have the independent removable strip H, which fits across the frame-front and serves as a joining-piece between the seat and desk back. This strip has secured to each end 80 the toothed irons or pawls  $h$ , which are adapted to enter the triangular space which is formed between the upper portion of the grooved-faced forward bearing-plates and the front edges of the desk-sides, and the pawls fill 85 this space and their teeth engage the forward ratchet-teeth of the sides A, thus preventing the brackets F from being moved.

In order to vertically move the seat G, the removable strip H is lifted out, so as to remove 90 its pawls. Then the brackets are raised to an inclined position to free the plate-faces of the ratchet-teeth, whereupon they may be raised or lowered. When in required position, they are dropped to their engagement 95 and the strip H replaced with its pawls in position.

The seat G is hinged to the brackets F by the following connections: Links  $g'$  are pivoted to the inner or rear ends of the seat- 100 irons  $g$  and to the inner or rear ends of the brackets F. Shorter links  $g^2$  are pivoted to the seat-iron  $g$  at points farther forward than the pivotal connections of the links  $g'$ , and the inner or rear ends of said shorter links 105 are pivoted to the forward or outer ends of brackets F and at points in planes higher than the pivotal connections of links  $g'$  with the inner ends of said brackets. Fixed stops  $g^3$  are secured to or formed with the brackets 110 F on their inner surfaces, and against these stops the irons  $g$  are adapted to come in contact to limit and hold the seat in position for use.

The connections of the links  $g'$  and  $g^2$  are 115 with the inner surfaces of the brackets F, and the seat is made of a width adapting it to play up and down between the forward projecting ends of the brackets. The effect of these connections on the seat is that when 120 the seat is turned to a vertical position out of the way its inner end drops downwardly, its outer end rises, and the whole seat moves backwardly close up to the strip H. When moved to a position for use, the inner end 125 moves upwardly and forwardly, clearing the lower edge of strip H, until the seat-irons  $g$  are limited by the fixed stops  $g^3$ , which hold the seat firmly in position. All the parts being connected with the brackets F, the seat 130 is moved up and down with said brackets, as heretofore described. The links  $g'$  and  $g^2$  may be arranged to allow the seat to take positions, when folded, lower or higher, as may



be desired. The positions in this respect depend upon the relative length of the links. When folded, the seat is nearly balanced, and will remain in that position, but may be easily moved to position for use. The links will hold the seat in any position.

The means for connecting and adjusting the foot-rest are as follows: I is the foot-rest, having secured underneath it and extending its length, or only at each end, a bar *i*. In one side A of the desk, on its inner surface, are formed, in vertical series and at a suitable inclination, the ledges J, those in each line having spaces or openings *j* between them of a width sufficient to allow the foot-rest bar *i* to snugly lie between them. Openings K are made through the side A above each line of ledges, said openings having offsets *k* above each space or opening *j* in the ledge-lines. In the other side A of the desk, on its inner surface, are formed ledges, also designated by J, and in series corresponding to the ledges J on the opposite side, and having spaces or openings *j* between ledges in each line. Above each line of ledges in this side A is a guard-flange L, separated from the ledge below by a space sufficient to allow the foot-rest to fit snugly between them.

To fit the foot-rest to place, one end is passed through an opening K in the first side A, its bar *i* passing through the offset *k* in said opening. It is pushed through far enough to allow the outer end to be brought inside of the other side A, so that its end will rest upon a ledge J on said side fitting the space between the ledge and the flange L above, its bar *i* fitting in the space *j* between the ledge-sections. Then the first end is dropped down, its bar *i* fitting in space *j* and its end resting on the ledge-sections. The bar *i* thus holds the foot-rest in place and prevents it from being moved forward or back; nor can the foot-rest be lifted at one end, for it is confined by the flange L. To remove it, the foot-rest must be lifted at its other end, so as to bring it in line with opening K and offset *k*, whereupon it may be moved sidewise to free its first end, which, being drawn out, disengages the other end.

The openings K should be no more than enough to allow the foot-rest to pass through them, so that the hand must be used to move the foot-rest out of place, or so that the foot, carelessly lifting the end of the foot-rest, will not cause it to fall to the floor. The offsets *k* of said openings should be deep enough and wide enough for the free passage of the foot-rest bar *i*, and to allow the foot-rest to be turned or swung part way around when taking it out or putting it in. The uppermost of the ledges on each side are alike. They are for the purpose of putting the foot-rest up out of the way for sweeping. To insert the foot-rest on these top-ledges, it is to be pushed into place at both ends until its bar *i* drops into the space *j* between the ledge-sections.

There may be as many ledges and sections

thereof as may be found desirable, and the foot-rest may thus be placed in different positions to suit any given scholar.

A further point of novelty in connection with the foot-rest adjustment lies in the different inclinations of each line of ledges J. It will be seen that the angle which they form with a horizontal plane is greatest in the lowest ledge-line, which is also the farthest forward, and the angle of inclination decreases in each line of the vertical series. The object of this is to vary the inclination of the foot-rest according to its position, both as to height and proximately to the scholar, the angle being greater the farther removed and the lower its position and less as it is moved higher and nearer. This results in the greatest convenience and comfort to the scholar.

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

1. In a school-desk, the fixed top, and the sliding top separated therefrom to form a receptacle, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, and guide-bars between the runners and side cleats, substantially as described.

2. In a school-desk, the fixed top, and the sliding top separated therefrom to form a receptacle, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, and flanged guide-bars connecting the cleats and runners, substantially as described.

3. In a school-desk, the fixed top, and the sliding top separated therefrom and forming a receptacle, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, and guide-bars secured in the runners and adapted to fit and move in a groove in the side cleats, whereby said runners and cleats are connected, said guide-bars having double-flanged portions, substantially as described.

4. In a school-desk, the fixed top and the sliding top, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, whereby a suitable space is formed between the two tops, guide-bars secured in the runners and adapted to fit and move in grooves in the side cleats, and having one of their flanges cut away to form a shoulder, and stops in said grooves against which the shoulder of the guide-bars come in contact to limit the movement of the sliding top, substantially as described.

5. In combination with a fixed and a sliding part, the double-flanged guide-bar fixed in the sliding part and movable in the fixed part, said bar having one of its flanges cut away or omitted for a certain distance, forming a stop-shoulder, and a fixed stop in the fixed part against which said shoulder comes in contact to limit the movement of the sliding part, substantially as described.



6. In a school-desk, the sides thereof having the forward and back ratchet-teeth and the seat, in combination with the brackets supporting the seat, fitting against the desk-sides and having the grooved-faced separating bearing-plates overlapping and fitting against the desk-sides and engaging with their grooved faces the ratchet-teeth of said sides, the removable independent strip H between the seat and the desk-back, and the toothed irons or pawls *h*, carried by said strip and adapted to fit within the front bearing-plates and engage the forward ratchet-teeth of the desk-sides, whereby the brackets are locked in position, substantially as described.

7. In a school-desk, the vertically-adjustable brackets F, secured to the desk-sides and the seat G, in combination with the pivoted links *g'*, connecting the inner end of the seat with the brackets, and the shorter links *g''*, pivoted to said seat and brackets at points forward of the respective connections of the links *g'* therewith, whereby the seat may be turned from a horizontal to a vertical position, its inner end falling and its outer end rising, and fixed stops carried by the brackets for holding the seat in a horizontal position, substantially as described.

8. In a school-desk, the vertically-adjustable brackets F, secured to the desk-sides and the seat G, in combination with the pivoted links *g'*, connecting the inner end of the seat with the brackets, the shorter links *g''*, pivoted to said seat and brackets at points forward of the respective connections of the links *g'* therewith, whereby said seat may be turned from a horizontal to a vertical position, its inner end falling and its outer end rising, and the fixed stops on the inner surface of the brackets against which the seat-irons

come in contact to hold the seat in a horizontal position, substantially as described.

9. In a school-desk, the sides thereof having on their inner surfaces the series of ledges J with spaces or openings *j*, in combination with the removable and adjustable foot-rest I, adapted to rest on the ledges, and having the locking-bar *i* on its under side adapted to fit in the spaces or openings *j* of the ledges, substantially as described.

10. In a school-desk, the sides thereof having in their inner surfaces the series of ledges J, with spaces or openings *j*, the series of openings K with offsets *k* in one of said sides, and the series of guard-flanges L on the other side, in combination with the removable and adjustable foot-rest I, adapted to rest on the ledges, and having the locking-bar *i* on its under side adapted to fit in the spaces or openings *j* of the ledges, substantially as described.

11. In a school-desk, the sides thereof having on their inner surfaces the ledges J, with spaces or openings *j*, said ledges being arranged in lines in vertical series, the lines being inclined at different angles with a horizontal plane, in combination with the removable and adjustable foot-rest I, adapted to rest on the ledges, and having the locking-bar *i* on its under side adapted to fit in the spaces or openings *j* of the ledges, whereby said foot-rest may be set at different inclinations, substantially as described.

In witness whereof I have hereunto set my hand.

CHARLES B. TOWLE.

Witnesses:

G. W. WILSON,  
E. J. WILSON.