

(No Model.)

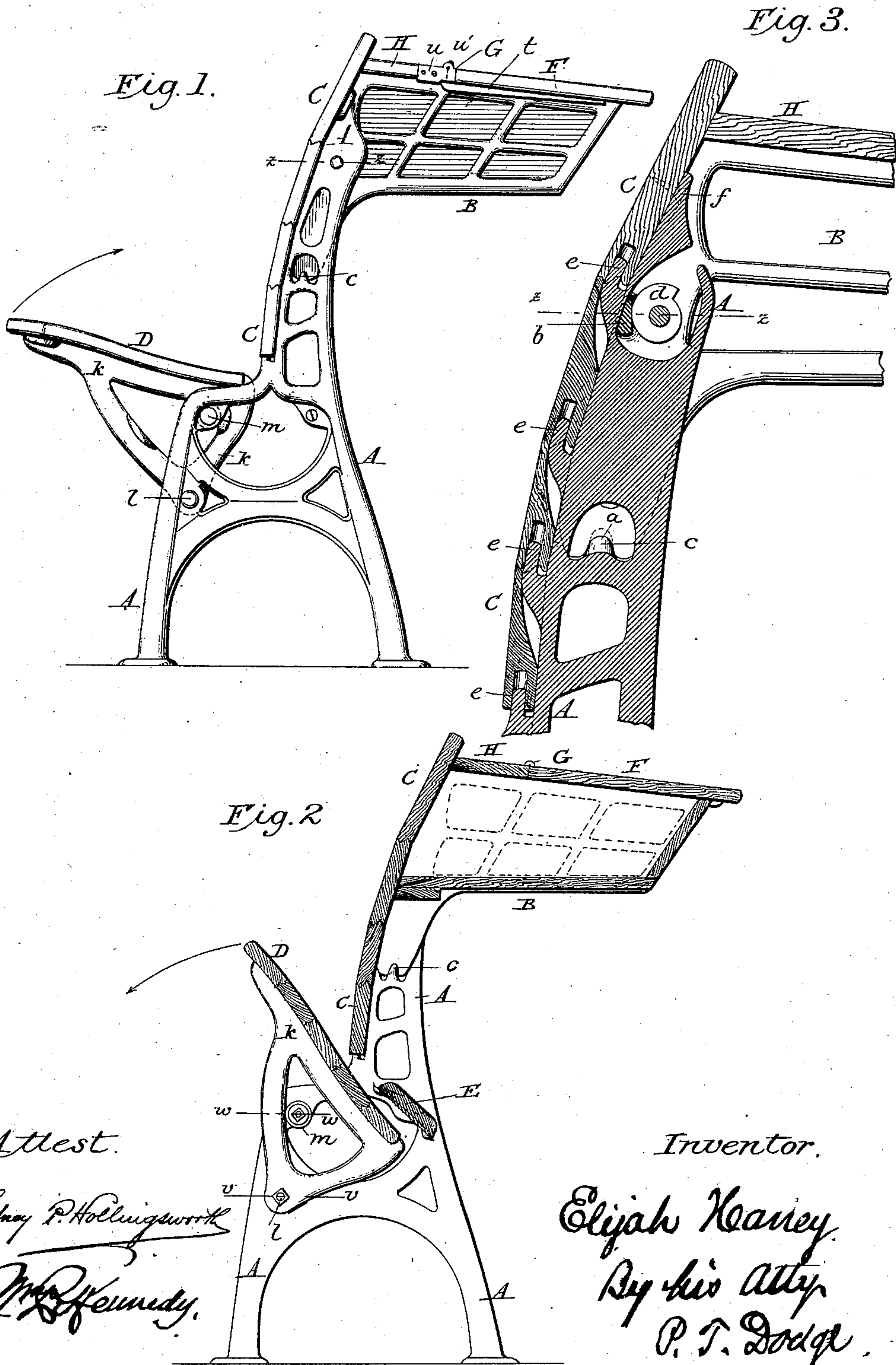
2 Sheets—Sheet 1.

E. HANEY.

SCHOOL DESK OR OTHER FURNITURE.

No. 389,807.

Patented Sept. 18, 1888.



Attest.
Sidney P. Hollingsworth
J. J. Kennedy.

Inventor.
Elijah Haney.
By his Atty.
P. T. Dodge.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

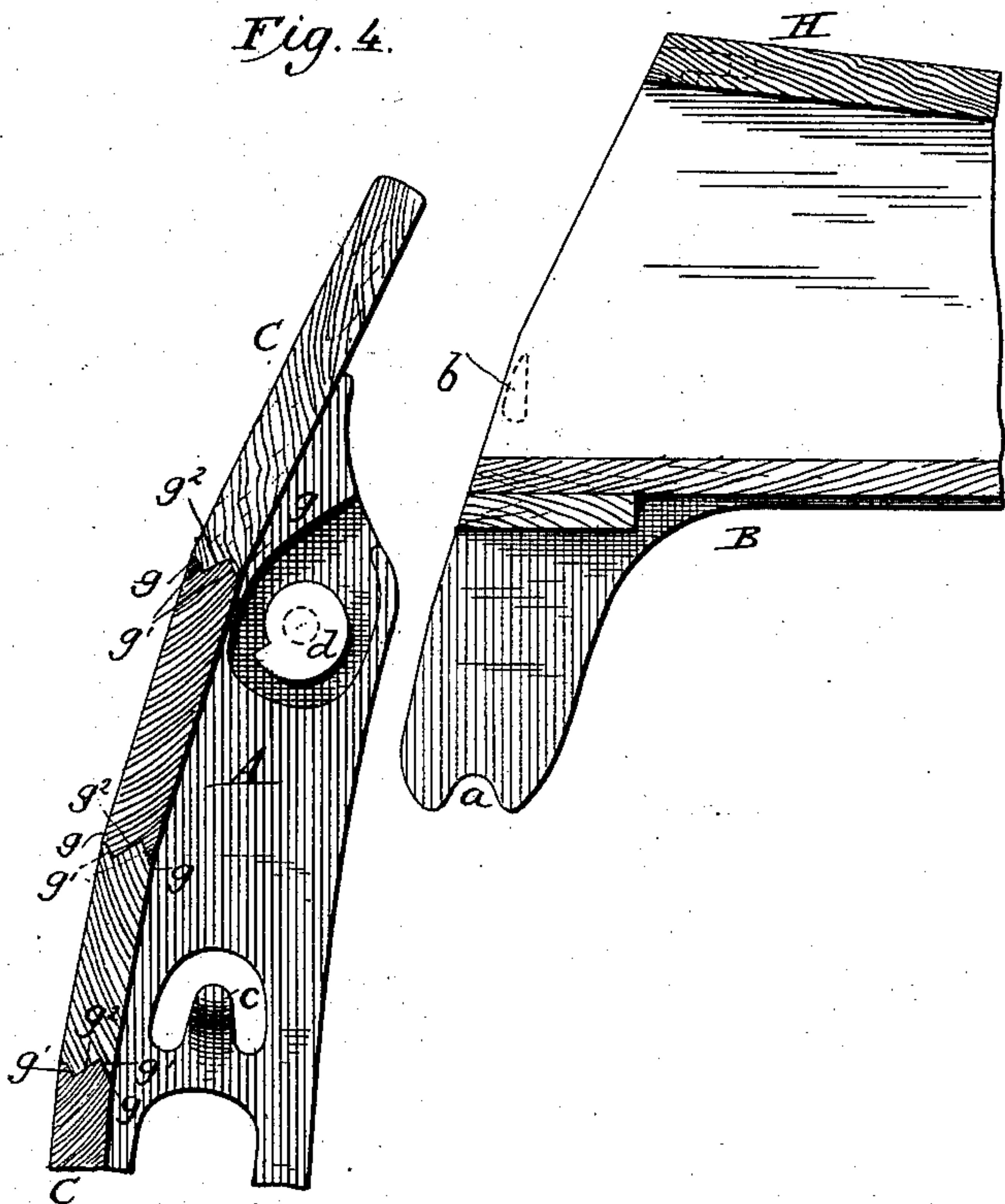


Fig. 5.

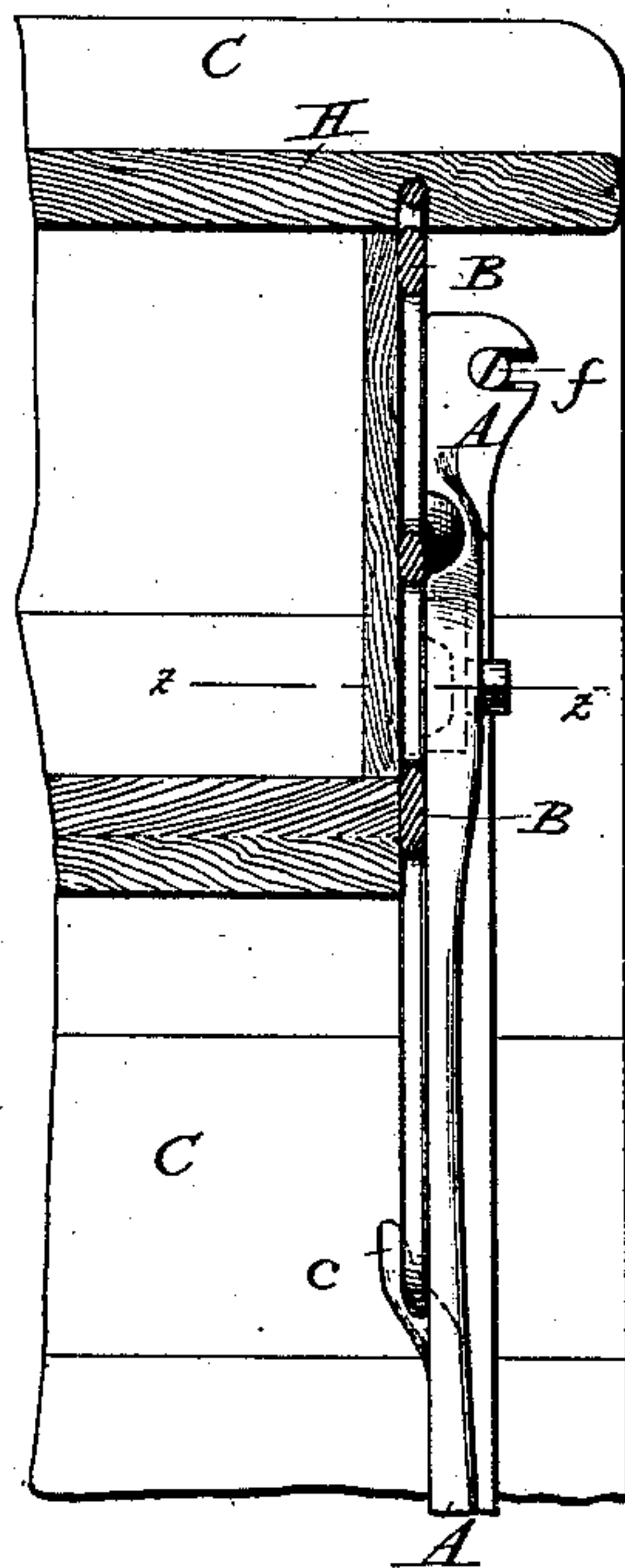


Fig. 6.

ON LINE Z-Z

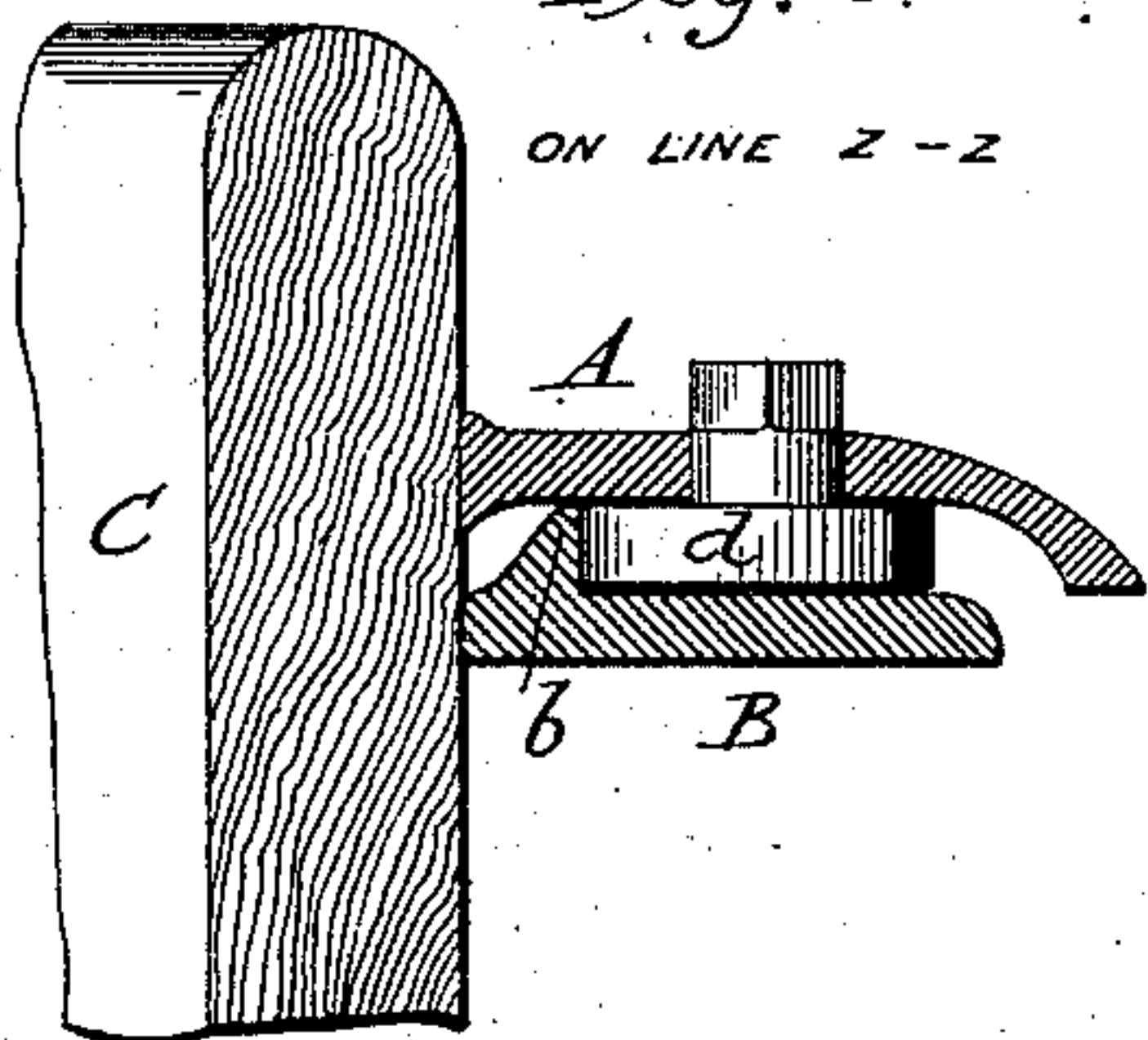


Fig. 7.

ON LINE V-V

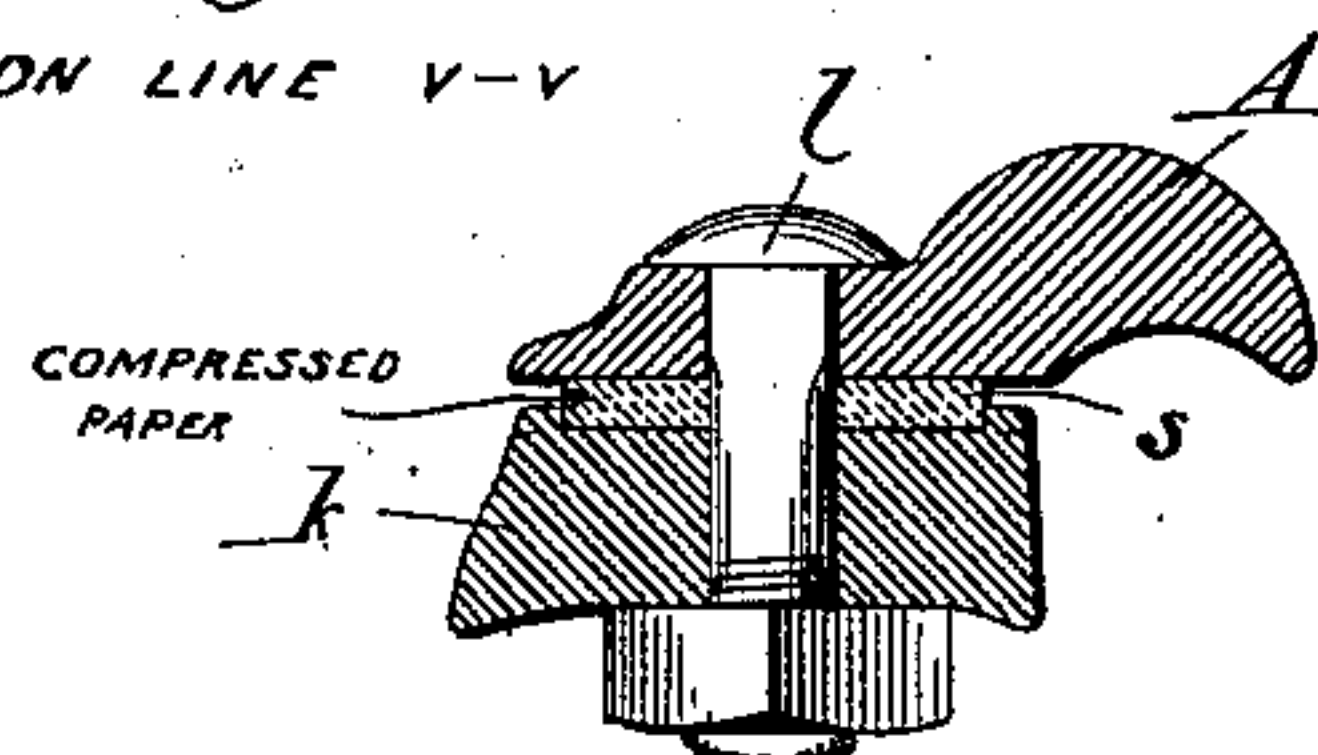


Fig. 8.

ON LINE W-W

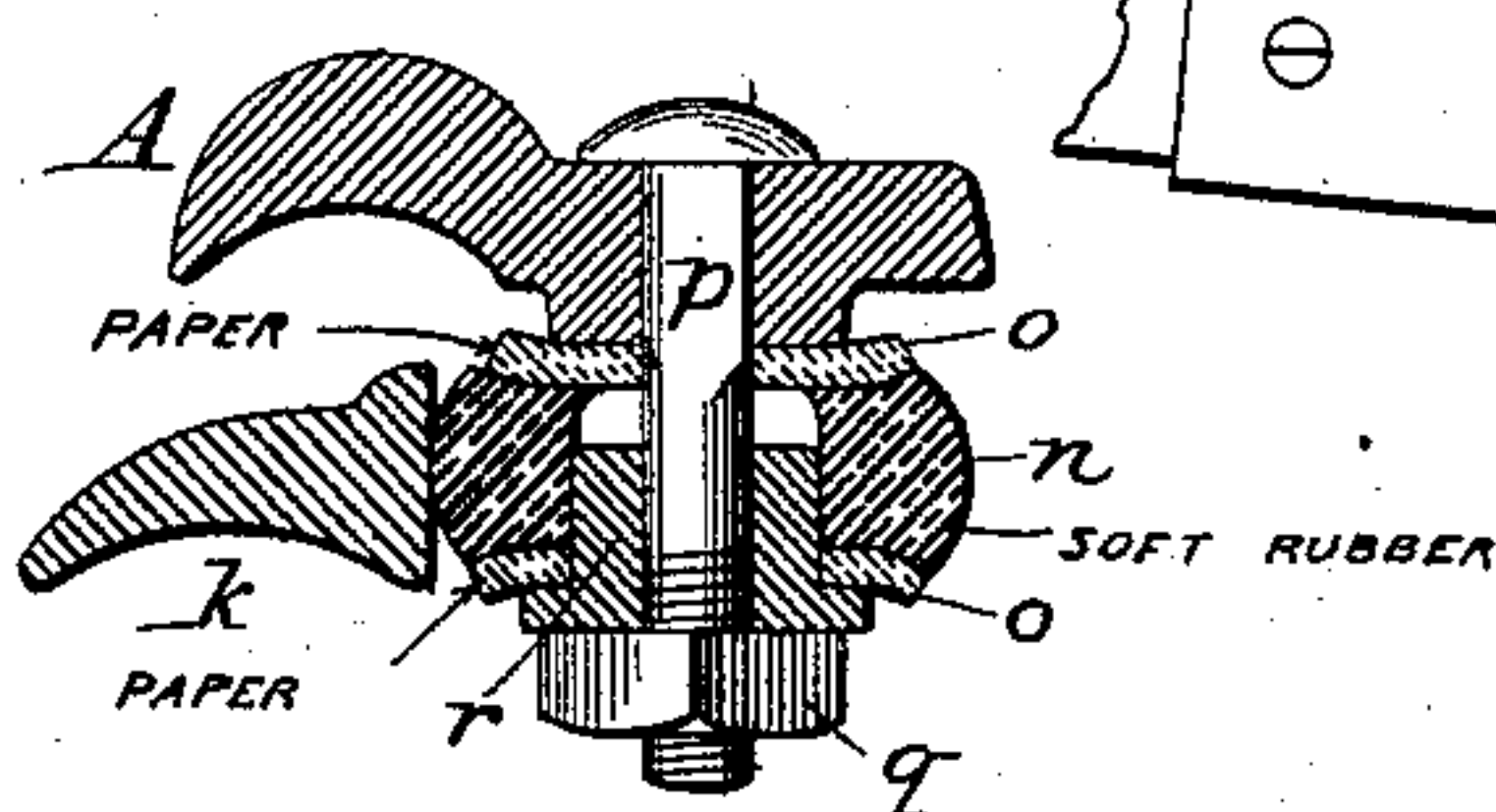
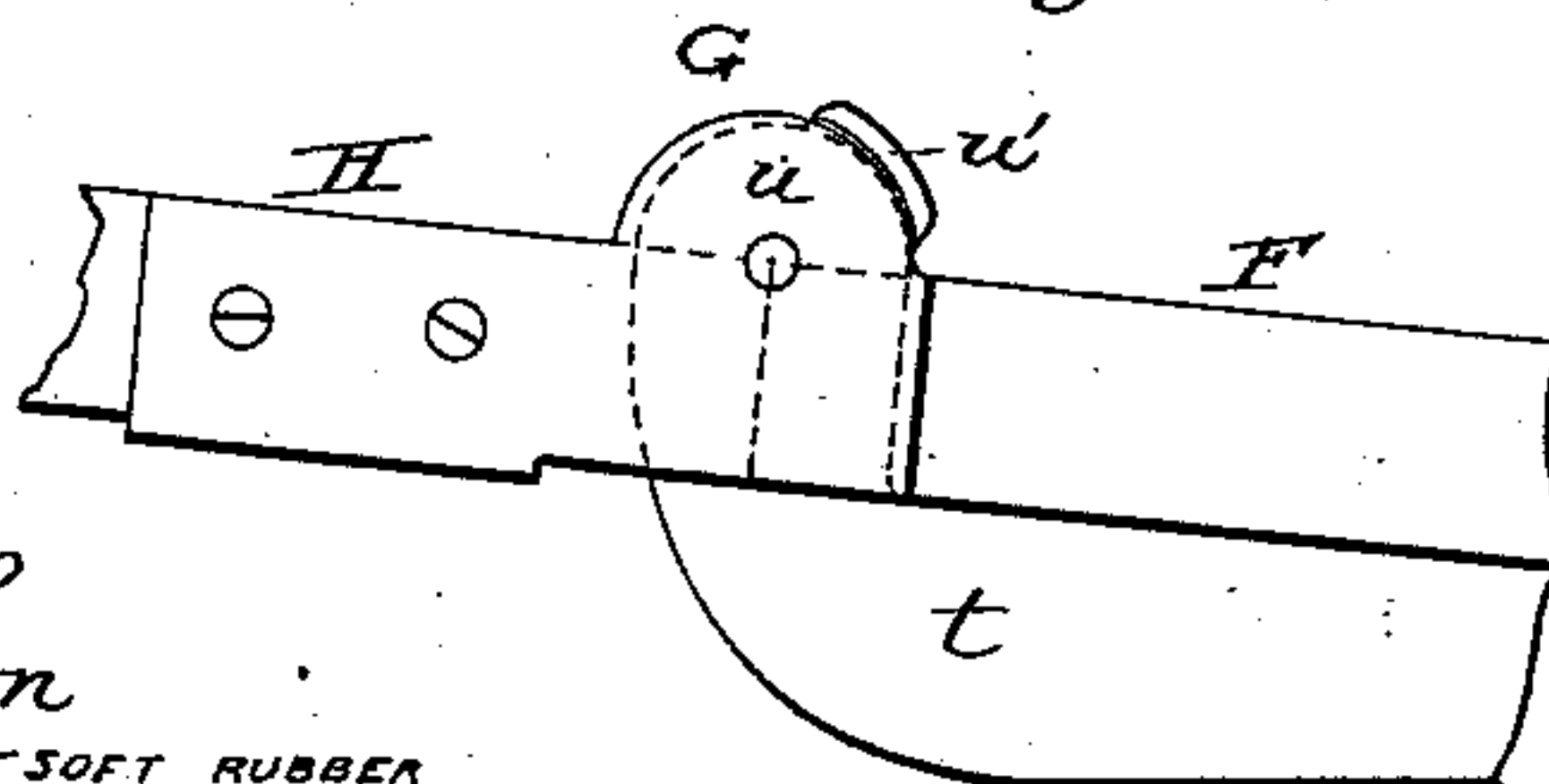


Fig. 9.



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UNITED STATES PATENT OFFICE.

ELIJAH HANEY, OF GRAND RAPIDS, MICHIGAN.

SCHOOL-DESK OR OTHER FURNITURE.

SPECIFICATION forming part of Letters Patent No. 389,807, dated September 18, 1888.

Application filed July 30, 1886. Serial No. 209,548. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH HANEY, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain Improvements in School-Desks and other Furniture, of which the following is a specification.

My invention relates to that class of school-furniture in which metallic standards or seat-frames have wooden cross-bars attached thereto, and in which the seat is pivoted to fold upward out of the way when not in use.

The invention consists in an improved manner of attaching the wooden slats to the metal frame, whereby they are turned securely in position and prevented from being loosened by the expansion and contraction of the wood; in the manner of attaching the top supporting-arms to the main portion of the standard by means of eccentrics and lugs, as hereinafter more fully explained; in the manner of pivoting the seat, so that it will be automatically folded by the limbs of the occupant as he rises to his feet and automatically lowered to an operative position as the occupant seats himself thereon; in a peculiar hinge for the lid, and in noiseless joints having paper washers embodied therein, as hereinafter explained.

In the accompanying drawings, Figure 1 is a side elevation of my desk. Fig. 2 is a vertical cross-section through the middle of the same from front to rear. Fig. 3 is a vertical cross-section through one end of the desk in the plane of its supporting-standard. Fig. 4 is a sectional elevation illustrating the manner in which one of the side arms is applied to the standard, looking against the inner face of the latter. Fig. 5 is a rear elevation of one end of the desk, a portion of the top being broken away to expose other parts. Figs. 6, 7, and 8 are sections on the lines thereon indicated. Fig. 9 is a side elevation, on a large scale, of the hinge used on my desk.

Referring to the drawings, A represents an upright metallic standard, of which there will be two—one at each end of the desk—as usual.

B represents the top supporting-arm extending rearward from the upper end of the standard A. This top arm is formed, as shown in Fig. 4, with a depending projection having a notch, *a*, in its lower end, and is provided on its outer side face, near the forward edge, with a stud, *b*.

The standard A is provided on its inner face with a stud, *c*, to enter the notch *a* of the top arm, and also provided with a revolving eccentric, *d*, designed to engage the stud *b*. This eccentric is cast in one piece, with an angular hub or journal to receive a wrench or equivalent tool by which to turn it. The standard is cast with a recess in its inner side face to receive the eccentric and with a hole through which the journal of the eccentric protrudes on the outside of the standard. In attaching the top arm its lower notched end is seated on the stud *c*, and the stud *b* at the same time slipped backward in front of the eccentric *d*, as shown in Fig. 3, after which the eccentric is rotated and caused to force the stud *b* forward until the parts are locked rigidly together.

It will be perceived that the eccentrics act to hold the top supporting-arms firmly and immovably in place on the standards, and that they are themselves made without permanent handles or other operating or locking devices and retained in place solely by their frictional engagement with the other parts, so that it is beyond the power of the student to loosen them or detach the top. In these respects a clear distinction is to be drawn between my eccentrics and those cams which are sometimes mounted on a rock-shaft and operated and locked by a lever fixed on said shaft for the purpose of adjusting the height or inclination of the desk-top.

To the front of the standard A is secured the wooden seat-back C, composed of a series of horizontal wooden slats glued firmly together at their edges in such manner as to form practically one piece. The back thus formed is secured to the standard by means of studs or ears *e*, which are cast on the front edge of the standard, their ends projecting upward in lines parallel with the face of the standard. The back is provided in its rear face with suitable notches to admit these studs and with vertical holes in which the studs are seated. The back, being slipped upon the studs, is driven downward firmly thereon and fastened in place by the insertion of a screw, *f*, through the upper end of the standard into the back, as shown.

I am aware that inclined lugs have been cast on the front edge of a seat-standard and seated in the edges of wooden slats which were con-

nected with each other by dowel-pins, and this I do not claim.

It is to be observed as a peculiarity of my invention that the slats are inseparably united 5 and that the retaining-studs *e* lie parallel with the face of the standard, and that consequently the back is held firmly to the standard under all conditions, the expansion and contraction of the wood having no tendency whatever to 10 loosen the same from the metal.

The peculiar formation of the glued joints by which the wooden slats are united (shown in the drawings) is not claimed herein, being the subject of a separate divisional applica- 15 tion, filed July 31, 1888, No. 281,531.

D represents the seat proper, consisting of a series of wooden slats attached at each end to a triangular supporting frame or arm, *k*. The slats are preferably united to each other and 20 secured to the top of the supporting-arm in the same manner that the slats of the back are united and attached to the standard. The arm *k* is cast complete in one piece and is united to the frame by a pivot, *l*, at its lower angle, so 25 that the seat may tip forward and backward. The peculiar location of this pivot with relation to the seat is a matter of the utmost importance in securing the proper automatic action of the seat. It is located a consider- 30 able distance below the seat proper and in a vertical plane considerably forward of the rear edge of the seat. It occupies such position in reference to the forward edge of the seat that the latter will swing sharply upward 35 as it is turned backward, so that as the student rises to his feet the pressure of his limbs against the front edge of the seat will cause the same to swing backward to an inoperative position, as shown in Fig. 2.

A stop, *m*, applied to the frame within the 40 arm or bracket *k*, encounters the front and rear edges of the same, and thus limits the motion of the seat both in a forward and in a backward direction. This stop is so arranged that 45 it permits the seat to tip backward until the center of gravity falls slightly in rear of the pivot *l*, so that the seat remains in its folded position. When thus folded, the seat extends upward in an inclined position and extends 50 forward of the pivot, so that as the student seats himself his person will encounter the upper edge of the seat and turn the same downward smoothly and easily to its operative position.

I am aware that seat arms have been pivoted 55 below the seat proper to the standard so that the seat could swing forward and backward; but I believe myself to be the first to locate this pivot in such manner that in folding the seat its forward edge leaves the operative po- 60 sition with a sharp rising movement as distinguished from a substantially horizontal movement, and also the first to locate the pivot in such manner that the seat in leaving the folded position turns abruptly downward at its for- 65 ward edge, so that it may be depressed by direct downward pressure without using the

hand to turn it forward. In order to protect the rear edge of the seat from injury from the feet of the pupil sitting next in order thereto, and to give increased stability to the structure, 70 I extend a board, *E*, across the seat from side to side, its upper face having a downward inclination to the rear. This board or guide, which will be secured at its ends to the stand- 75 ards in any suitable manner, overlies the rear edge of the seat when the latter is folded, as shown in Fig. 2. In order that the stop *m* may arrest the motion of the seat in a noiseless manner, I prefer to construct it as shown in Fig. 8, in which *n* represents an elastic rub- 80 ber ring or collar seated between two paper washers, *o*, and fastened to the standard by a through-bolt, *p*, provided at one end with a fastening-nut, *q*, and with a hub, *r*, to enter the rubber washer. By tightening the bolt 85 the rubber may be subjected to any required degree of compression. Its edge being exposed, it encounters the two sides of the arm *k* alternately, as before explained.

In order to prevent the seat from being 90 thrown violently in either direction and otherwise lessen the noise, I seat around the pivot of arm *k*, between the arm and the standard, a washer, *s*, of compressed paper, as represented in Fig. 7. I find that a paper washer 95 thus applied is highly advantageous in that it affords sufficient protection to retard the motion of the seat without allowing the parts to grind or wear one upon another; that it needs no lubrication, as in the case of metal 100 washers, and that, unlike the rubber and other elastic washers, it will remain indefinitely without change.

The top arm, *B*, may be provided with a stationary or with a hinged top or lid. I com- 105 monly employ a hinged lid, *F*, united by peculiarly-constructed hinges *G* to a stationary board or cleat, *H*, at the front. The hinge consists of two plates, *u* *t*, united by a pivot, the axis of which coincides with the upper 110 edge of the lid-joint, so that when the lid is raised a closed joint will remain between the parts, so as to prevent the introduction of foreign matters, which would tend to destroy the parts near the lid. The part *u* is constructed 115 with its edge or periphery eccentric to the pivot, and the part *t* provided with a lip, *u'*, on its forward edge, so that as the lid assumes an upright position the lip will arrest the motion of the top in a noiseless manner. It thus 120 serves the twofold purpose of preventing the lid from being thrown forward, preventing it from being accidentally thrown downward, and of securing a noiseless action.

It is to be particularly observed that my 125 folding seat is designed with special reference to its being operated without the employment of the occupant's hands. It is to this end that the seat is pivoted to the standard without the employment of locking devices to hold it in 130 position, and it is to this end also that the pivot is located below the seat and in such re-

lation to its rear edge and to the stationary back that a rearward pressure of the occupant's legs in rising against the rear edge of the seat will cause it to swing sharply upward out of the way, leaving its edge, however, in advance of the seat-back and of the pivot in such position that as the occupant sinks to his seat his contact with the upper edge of the same will cause it to swing smoothly and easily downward to its operative position.

I do not claim, broadly, a seat pivoted to swing forward and backward past the lower edge of a stationary back. I am aware that a seat pivoted near the floor and provided with locking devices to hold it in position, so that it required to be operated by hand, is shown in United States patent to Slaymaker, No. 123,797. I am also aware that it has been proposed to sustain a seat by rigid arms extending downward therefrom and hinged immediately above the floor, so that the seat could be moved forward and backward by hand, as shown in Letters Patent of Germany No. 2,483. To the end which I have in view—the natural and easy folding of the seat as the student rises therefrom and the falling of the seat as he sinks thereon without the use of the hands—I find it necessary to locate the pivot in substantially the relation to the seat herein described and shown—that is to say, at approximately one-third the distance from the seat to the floor and slightly forward of the rear edge of the seat when the latter is in operative position, and that it is also necessary to restrict the swinging motion of the seat thus pivoted within substantially the limit herein described and shown. It is to be understood, therefore, that my invention is restricted as regards the folding of the seat to parts of substantially the proportion and arrangement herein described, and particularly pointed out in the following claims.

Having thus described my invention, what I claim is—

1. In a school-desk, the standards and the sustaining-arms interlocked therewith at one point and bearing against the same at a second point, and independent frictionally-held eccentrics pivoted to one of said parts and bearing against the other for the purpose of wedging the two solidly in contact, substantially as set forth.

2. In combination with the standard having the stud *c* and recess *g*, the top arm, *B*, provided with notch *a* and stud *b*, and the eccentric *d*, provided with a neck or journal adapted to receive a wrench and mounted in the recess *g* in position to act on the stud *b* of the lid-arm, as described and shown.

3. In a school-seat, and in combination with the standards having the arms or studs *e* thereon parallel with their faces, the back composed of the series of wooden slats glued firmly together and provided in their edges with open-

ings to receive the studs, as shown, whereby the shrinking and swelling of the wood are prevented from loosening the back.

4. In combination with the desk-standards and the seat hinged to swing downward and rearward between the standards, the rigid guard *E*, extending from one standard to the other and lying in position, as shown, to cover the rear edge of the folded seat.

5. In combination with the standard and the pivoted seat-frame with radial arms, the buffer consisting of the rubber disk, two disks of compressed paper, and a central fastening-bolt.

6. In combination with a metal standard, a vertically-swinging metal arm pivoted thereto and an intermediate washer of compressed paper seated against smooth surfaces, on the metal parts.

7. In combination with a metal standard, an arm recessed in its side face, a compressed paper washer seated in said recess and bearing against a smooth surface on the standard, and a through-bolt uniting said parts and serving the double purpose of a pivot and of a compression device for the washer.

8. In a folding seat, the standard with a seat-back thereon, in combination with a seat provided with sustaining-arms pivoted to the standards at approximately one-third of the distance from the seat to the floor and somewhat in advance of the rear edge of the seat, said seat arranged to turn upward and present its edge in advance of the seat-back and to swing at its rear edge downward and rearward beneath the back, substantially as described.

9. In an automatic folding seat, the standards, in combination with the seat having the sustaining-arms extended below the seat proper and pivoted to the standards at approximately one-third the distance from the seat to the floor and forward of the rear edge of the seat, and a stop limiting the pivotal motion of the seat to an arc of approximately forty degrees, whereby the seat is automatically folded as the occupant rises therefrom and automatically opened as he sinks thereon.

10. The combination of a metal standard, a vertically-swinging metal arm, a metal washer on the outer side of the arm, two washers of compressed paper applied on opposite sides of the arm to isolate the same from the adjacent metal surfaces, and a central bolt, whereby the above-named parts are maintained in forcible contact.

In testimony whereof I hereunto set my hand this 16th day of June, 1886, in the presence of two attesting witnesses.

ELIJAH HANEY.

Witnesses:

WM. P. KENNEDY,
WM. H. SHIPLEY.