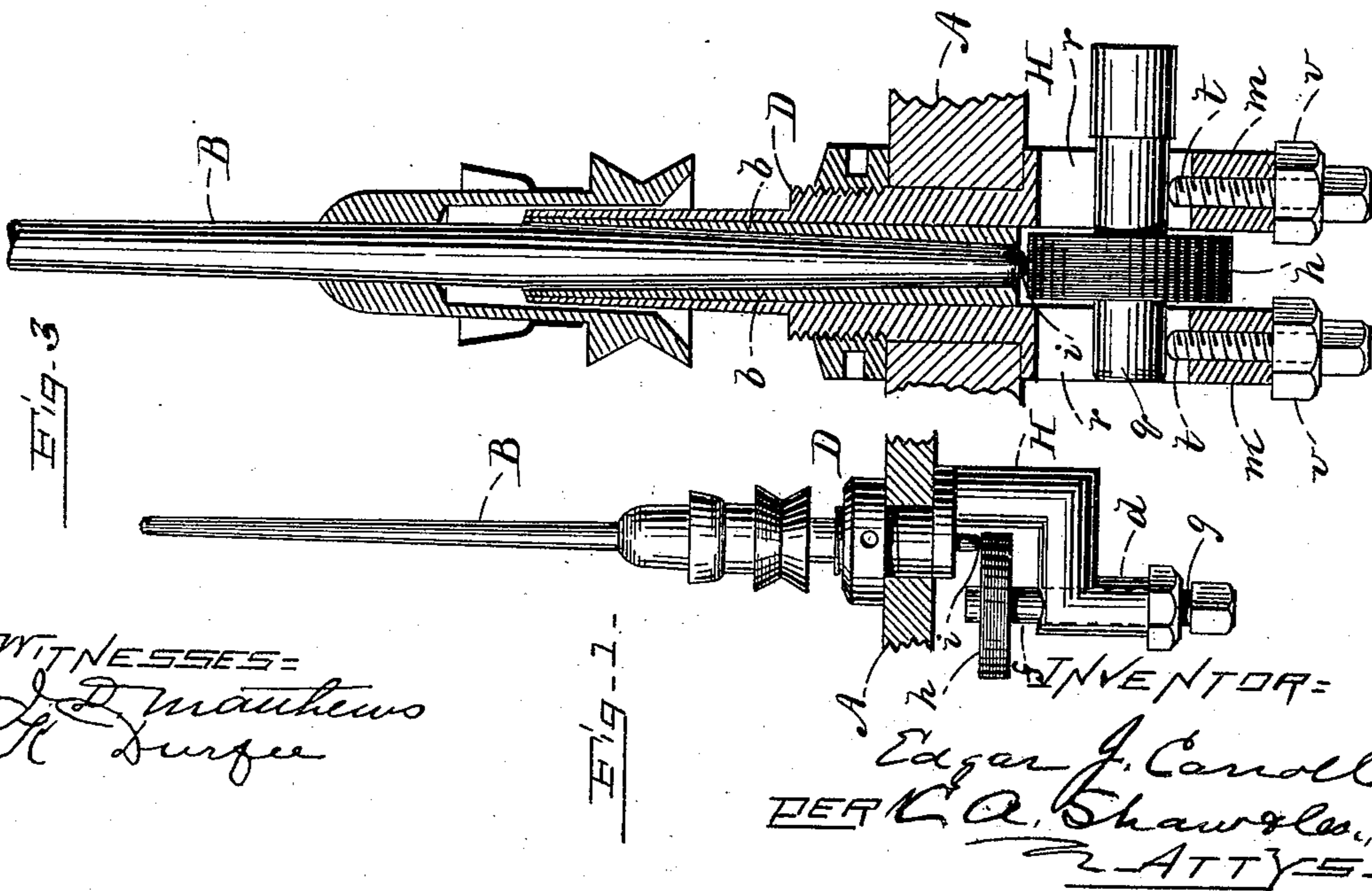
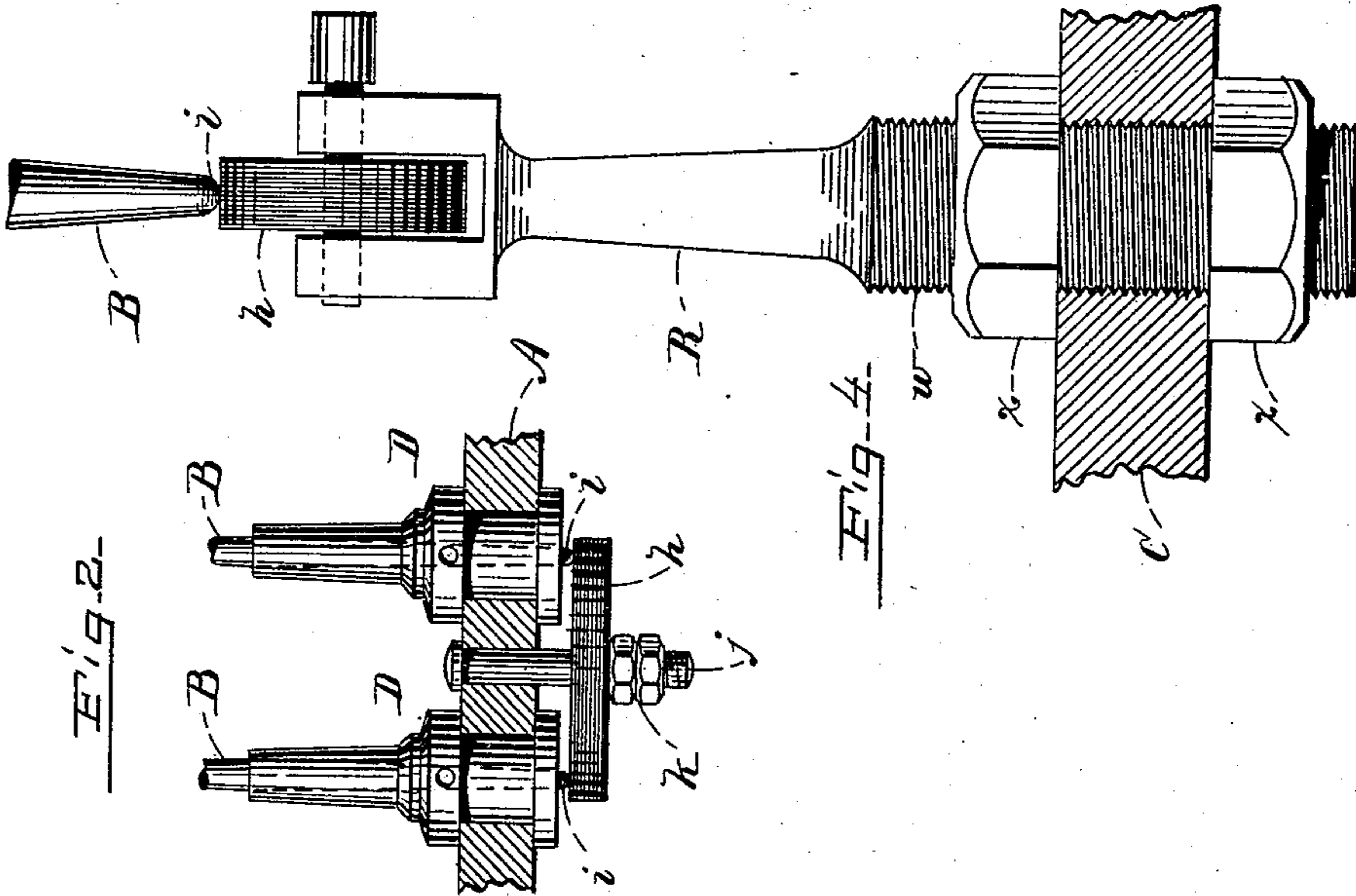


(No Model.)

E. J. CARROLL.  
SPINDLE STEP.

No. 488,688.

Patented Dec. 27, 1892.



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# UNITED STATES PATENT OFFICE.

EDGAR J. CARROLL, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO  
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## SPINDLE-STEP.

SPECIFICATION forming part of Letters Patent No. 488,688, dated December 27, 1892.

Application filed January 4, 1892. Serial No. 416,949. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR J. CARROLL, of Worcester, in the county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Spindle-Steps, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a spindle showing my improved step in position, the rail being represented in section; Fig. 2 a like view showing the step supporting two spindles; Fig. 3 a vertical transverse section enlarged of the bolster showing the step, in elevation; and Fig. 4 an elevation showing means for mounting the step on the lower rail.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to an adjustable step for spindles; and it consists in certain novel features hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper and more effective device of this character than is now in ordinary use.

In the drawings, A represents the rail and B the spindle. The main parts of the bolster, D, and spindle are of the ordinary construction, said bolster being secured to the rail in the usual manner. The spindle case or bolster has its spindle opening extended through its lower end so that the spindle projects there-through. I employ within the bolster a bushing, b, shown in Fig. 3 preferably constructed of wood prepared in oil to avoid the necessity of lubricating the spindle in the usual way. The spindle tapers toward its step and the spindle opening in said bushing is tapered correspondingly. The spindle is held out of frictional contact with said bushing by means of the step hereinafter described. On the lower end of the bolster, D, below the rail a bracket, H, is constructed; the form shown in Fig. 1 being offset slightly from the spindle opening of the bolster and comprising a right angle-iron. The arm, d, of said bracket is

tapped vertically to receive an arbor, f, fitted to rotate in said opening. Said arbor bears on a screw, g, turned into the lower end of said opening. On the upper end of said arbor a horizontally arranged wheel, h, is mounted and projects below the spindle opening of the bolster, D, in position to receive the lower end, i, of the spindle, B, for which it forms a step. The wheel, h, is constructed of a composition of paper stock or indurated fiber known as "leatheroid" and which is of extreme hardness. As the spindle, B, rotates bearing on the side of the wheel, h, said wheel is gradually set in motion by the friction of the spindle, continually changing the point of contact therewith. This wheel may be constructed of any material desired but I prefer that described as I find in practice that it avoids the necessity of lubricating the step, the peculiar nature of such material reducing the friction of the spindle thereon to a minimum. The wear resulting from, the contact of the spindle is also greatly reduced by the rotary movement of the step wheel. Said wheel can be adjusted vertically to regulate the bearing of the spindle in its bushing by means of the screw, g.

In Fig. 2 a stub-shaft j is mounted in the rail, A, and the wheel, h, of enlarged diameter is journaled on said shaft. The ordinary bolsters, D, are in this case employed and said wheel is shaped to receive the bearing points, i, of two adjacent spindles. The wheel is adjustable vertically on the shaft by means of nuts, k. In Fig. 3 said wheel is mounted on a shaft, q, in openings, r, in said arms, m, said shaft bearing on the points of two screws, t, turned through the lower ends of the arms, m, and held in position by check nuts, v. The wheel in this form will be set in motion by the rotation of the spindle and can be adjusted vertically by means of said screws, t.

In Fig. 4 a standard, R, is substituted for the bracket, H, and is mounted in the lower rail, C, the wheel, h, being journaled in a fork at the upper end of said standard. The lower end of the standard is screw-threaded at, w, so that it may be adjusted vertically and check-nuts, x, secure it in position.

I do not confine myself to any method of mounting the step, but deem the wheel form-

ing an adjustable support for the spindle and journaled to rotate by contact therewith whereby the point of contact may be continually changed, the preferable construction.

5 Having thus explained my invention, what I claim is—

1. The combination of a spindle the bolster provided with a spindle opening extending through its lower end with a wheel journaled  
10 below said opening in position to support the spindle, substantially as described.

2. The combination with a spindle; a bolster having a spindle opening extending through its lower end; and a wheel journaled below  
15 said opening and forming a step for the spindle, the journal of said wheel being vertically adjustable, substantially as described.

3. The combination of a spindle; a bolster having a spindle opening extending through  
20 its lower end and with an arm projecting below the rail, a wheel journaled on said arm in position to support the spindle, the journal of said wheel being vertically adjustable, substantially as described.

25 4. A spindle and a bolster provided with a bracket projecting below the rail and a spin-

dle opening extending through its lower end in combination with a wheel journaled to rotate horizontally in said bracket and projecting under the spindle opening of said bolster  
30 and mechanism for adjusting the wheel journal vertically, substantially as described.

5. The bolster, having the spindle opening, the bushing and spindle, in combination with the bracket, H, the arbor, f, adjustably jour-  
35 naled in said bracket and the wheel, h, on said arbor all being arranged to operate substantially as described.

6. The bolster provided with a spindle opening extending through its lower end in com-  
40 bination with the bushing therein having the taper spindle opening; the taper spindle disposed in said bushing with its end projecting therethrough; and a step for said spindle comprising a wheel journaled below said opening  
45 and having a vertically adjustable journal whereby the bearing of the spindle in said bushing may be adjusted.

EDGAR J. CARROLL.

Witnesses:

JOHN S. SEARS,  
JOHN HEWITT.