

(No Model.)

W. P. TRACY.
EXTENSION CAR STEP.

No. 430,449.

Patented June 17, 1890.

Fig. 1.

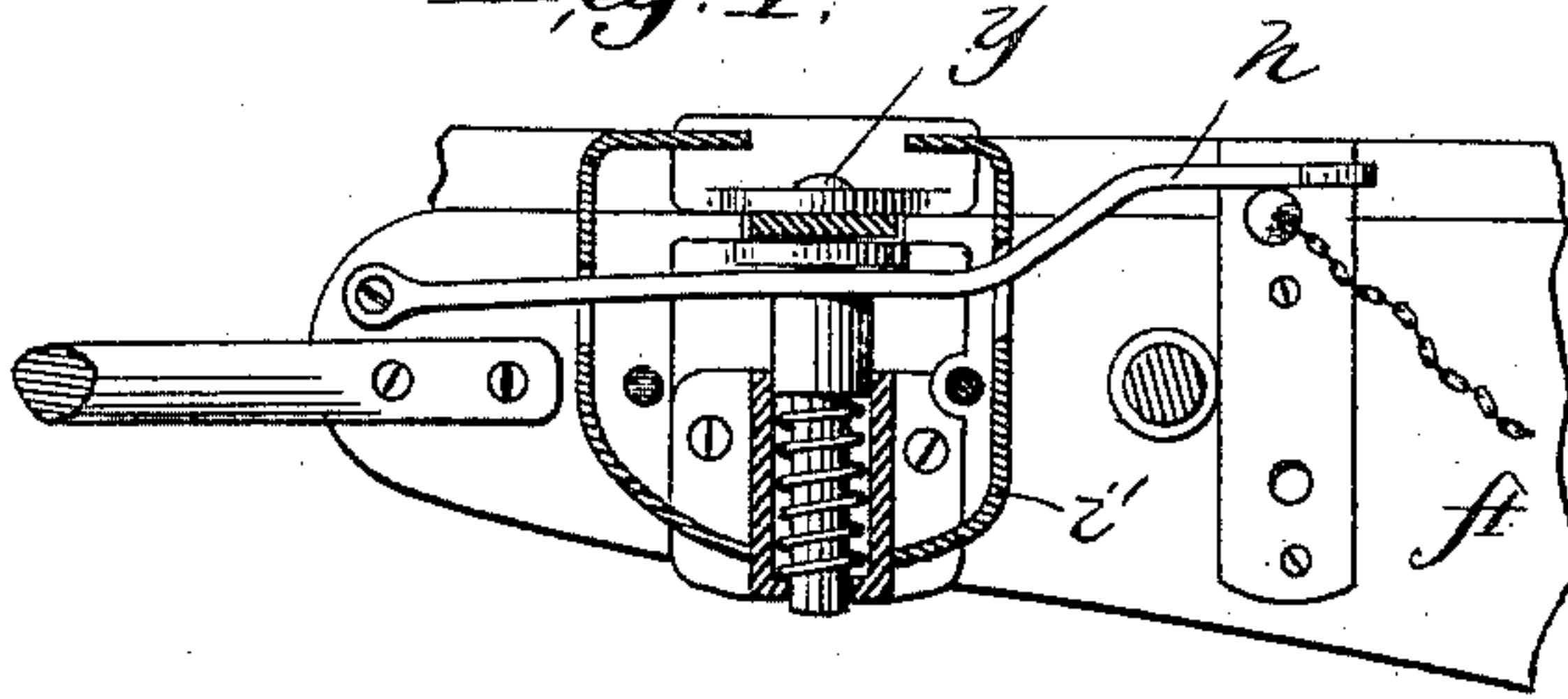


Fig. 2.

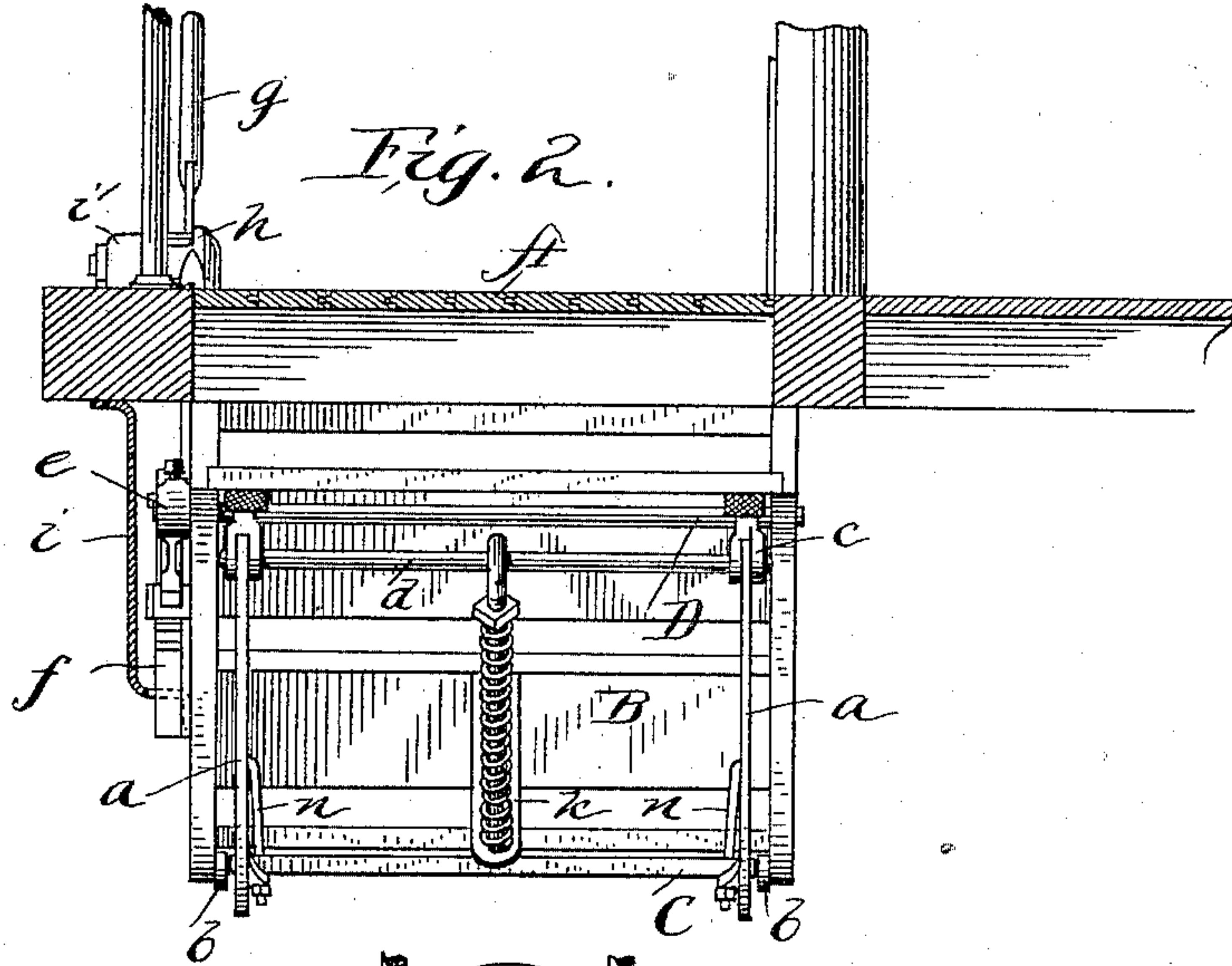
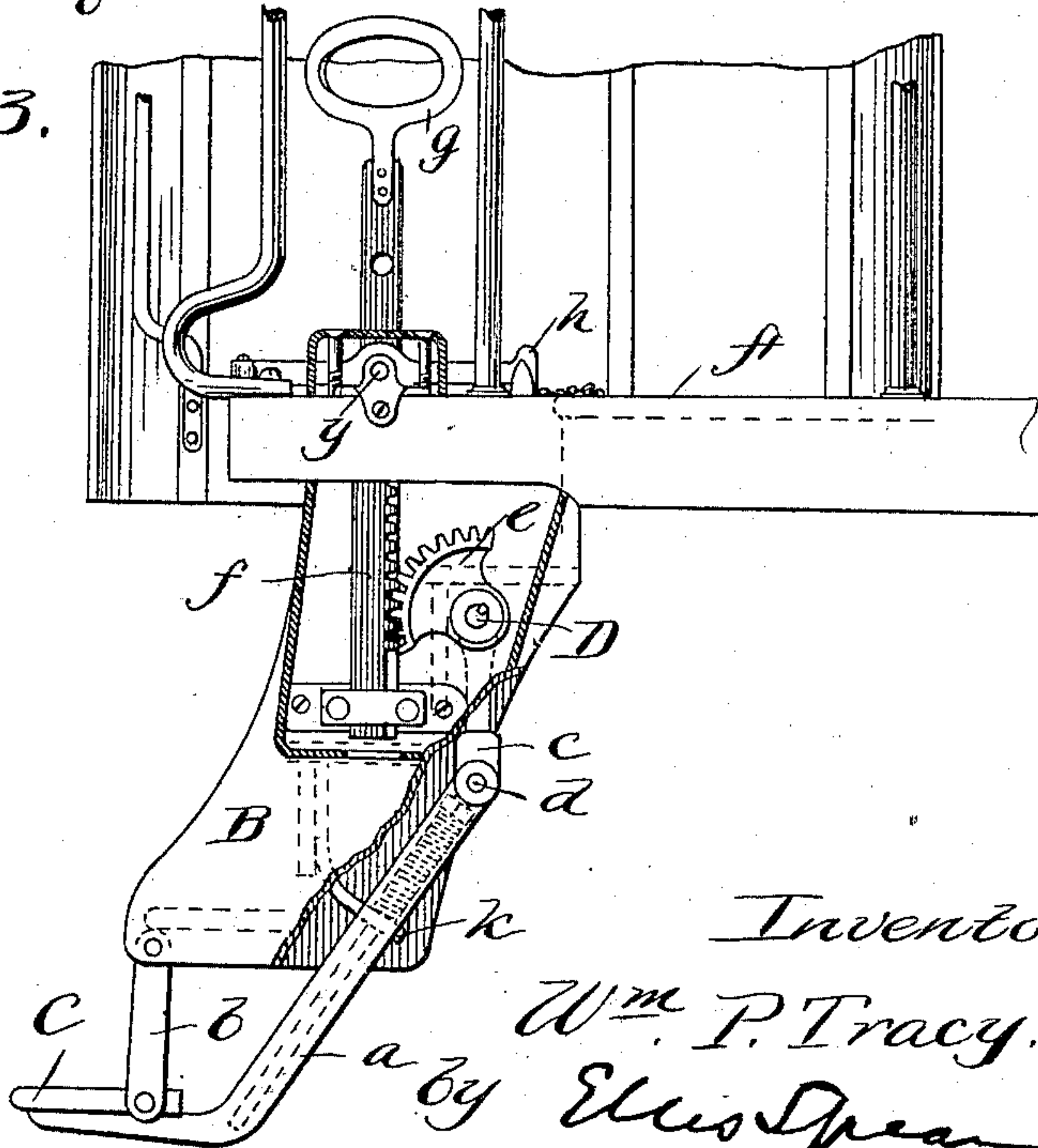


Fig. 3.



Witnesses—
W. F. Keene.
J. L. Middleton.

Inventor
W. P. Tracy.
By Ellis Spear Atty.

UNITED STATES PATENT OFFICE.

WILLIAM P. TRACY, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF TWO-THIRDS TO WILLIAM R. SHELBY AND ABE M. AMBERG, BOTH OF SAME PLACE.

EXTENSION CAR-STEP.

SPECIFICATION forming part of Letters Patent No. 430,449, dated June 17, 1890.

Application filed March 22, 1890. Serial No. 344,946. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. TRACY, of Grand Rapids, in the county of Kent and State of Michigan, have invented a new and
5 useful Improvement in Extensible Car-Steps; and I do hereby declare that the following is a full, clear, and exact description of the same.

My present invention is an improvement
10 upon the railway car-step which was the subject of Letters Patent of the United States granted to me on the 6th day of March, 1888, and numbered 379,140. In that patent an extensible step is shown attached to a sliding
15 frame moving in guides, with means for lowering the step by positive action, and automatic means for retracting the step, so as to cause it to move to a position directly beneath the fixed step of the car, and thus be
20 out of the way. In the present case I retain the same general arrangement of the parts, but have improved the details of construction, these details relating particularly to the locking means for the operating-lever and the
25 interposed supporting and operating means between the extensible step and the rock-shaft.

The invention consists, therefore, in the details which will be hereinafter particularly
30 referred to and specifically claimed.

In the accompanying drawings, Figure 1 is a plan view showing particularly the construction of the locking device for the operating-bar. Fig. 2 is a rear view showing the
35 supporting and operating means for the extensible step. Fig. 3 is a side view of the car platform and step.

In the drawings, the car-platform is shown at A and the series of ordinary fixed steps at
40 B. The extensible step is shown at C, and is supported by means of a frame consisting of side bars *a a*, having their lower ends bent in horizontal plane, so as to support the extensible step. This frame is supported at
45 its lower end by links *b b*, which are secured at one end to the lower part of the sides of the fixed series of steps and at their opposite ends to the frame in line with the rear part of the extensible step. From the upper ends

of the side bars *a*, constituting the frame, 50 short arms or levers *c c* extend to a rock-shaft D, which is the same as shown in my aforesaid patent. The arms or levers which extend to the rock-shaft have a pivoted connection with a cross-bar *d*, which connects 55 the side bars *a* of the frame, and thus when the shaft D is rocked the frame carrying the extensible step is forced downwardly, and the said step advances from its closed position beneath the last of the fixed steps to a 60 position beneath the same equal to the length of the links *b*, and in advance of the said step a distance equal to approximately the width of the step. The rock-shaft is moved by means of a segment *e*, secured to the end 65 thereof, which meshes with a vertical operating rack-bar *f*, which is provided with a handle *g*, and by the vertical operation of the same, by the brakeman or other operator, the extensible step C is extended to the 70 position shown. In order to lock the step C in its extended position, I provide the handle-bar with two perforations, which are engaged by a pin or stud *y*, carried upon a lever *h*, the said lever being under spring-tension 75 by the pressure of a pin against its rear face, this pin being fitted to a casing which incloses a coiled spring, and thus as the operator elevates the handle to extend the step the pin carried by the lever engages with the lower- 80 most opening in the handle-bar, which prevents the step from being closed until the handle-bar is released from the locking action of the pin or stud. In order to provide a support for the pin or stud, I provide on either side of the 85 handle-bar upright lugs, which are also provided with perforations, and the locking-pin passes through these perforations and finds a bearing on either side of the bar. The lever is also locked in its lower position by the 90 pin engaging with a like perforation passing through the handle-bar some distance above the perforation first mentioned. The spring-pin may be retracted by forcing the end of the lever *h* to the rear, and it may be held re- 95 tracted, so as to allow the lever to be freely operated by means of a pin fitting an opening formed in front of the lever *h* when in

its retracted position, and when the lever is forward it may be prevented from accidental movement or displacement by the pin being placed in rear of the same. When the pin is not to be used, it may be placed in an idle-hole located to the rear of the first. The pin is kept from displacement by a chain-connection with the platform.

The segment and vertical rack may be protected from dust and dirt by an inclosing-case *i*, and the locking device for the handle-bar may likewise be inclosed by a similar case *i'*.

I have described the positive action of the extensible step and frame to extend the same, and in the present case, as in my patent mentioned, the step is returned to its normal position beneath the lowest of the fixed steps automatically. In the aforesaid patent the frame carrying the extensible step was retracted by the action of springs coiled about the rock-shaft; but in the present case I extend a bar or rod encircled by a spring between the cross-bar *d* of the frame and a bracket *k*, secured to the fixed step. As the step is extended, the coiled spring is compressed, the lower end of the bar passing freely through the hole in the bracket, and when it is desired to elevate the step it is only necessary to release the handle-bar from its locking-catch and the spring will automatically operate. Beneath the first step, and in line with the movement of the arms connected to the rock-shaft, I provide buffers to take up the shock. I also brace the extensible step by tie-rods *n*, as shown. The lower end of the coiled spring on the rod rests on the fixed bracket; but the upper end of the rod is threaded and provided with a nut before it is attached to the cross-bar, and this nut, being adjustable, may be turned up or down, and thus afford an adjustable bearing for the upper end of the spring, by means of which its tension may be regulated easily and accurately.

In order to better sustain the adjustable step, I have also added a link *b* on each side. The upper end of this link is pivoted to the inner face of the side piece of the fixed steps and the lower end to the horizontal part of the side bar of the extensible step-frame on the outside thereof. When the extensible step is down, the link is in substantially vertical position. When the step is up, it folds inside of the side piece and is protected thereby. It is duplicated on the other side from that shown in the figure.

I claim as my invention—

1. In combination with an extensible car-step, an operating-bar provided with a handle, perforations extending through said bar, a locking-lever carrying a stud or pin adapted to register with the perforations, and a spring in rear of the locking-lever, substantially as described.

2. In combination with an extensible car-step, an operating-bar having perforations extending through the same, a locking-lever carrying a stud or pin adapted to engage the perforations in the bar, and a lug on either side of the operating-bar, said lugs having holes through which the locking stud or pin passes, as and for the purpose set forth.

3. In combination with an extensible car-step, a vertical operating-bar provided with a handle, a lever under spring-tension, a locking stud or pin carried thereby adapted to register with openings in the locking-bar, and a pin for holding the lever which carries the locking-stud in one position or the other, substantially as described.

4. In combination with an extensible car-step, a frame carrying the same, a rack and pinion for giving movement to the frame, locking means for holding the operating-bar in its raised and lowered position, and an inclosing-case for the operating parts, substantially as described.

5. In combination with the extensible car-step, a frame supporting the same, links connecting the lower end of said frame to the fixed steps, a rock-shaft and arms or levers extending between said shaft and the upper end of the said frame, and means for operating the rock-shaft, substantially as described.

6. In combination with an extensible car-step, a frame supporting the same, a rock-shaft in connection with said frame, a bracket secured to the fixed steps, a spring located between said bracket and the upper cross-bar of the frame, said spring encircling a rod, substantially as described.

7. In combination with the extensible car-step and means for operating it vertically, a threaded rod pivoted to the upper cross-bar of the frame and passing through a bracket on one of the fixed steps, a spring upon the rod, and a nut for adjusting the tension of the spring, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM P. TRACY.

Witnesses:

ABE M. AMBERG,
G. A. WOLF.