

No. 829,861.

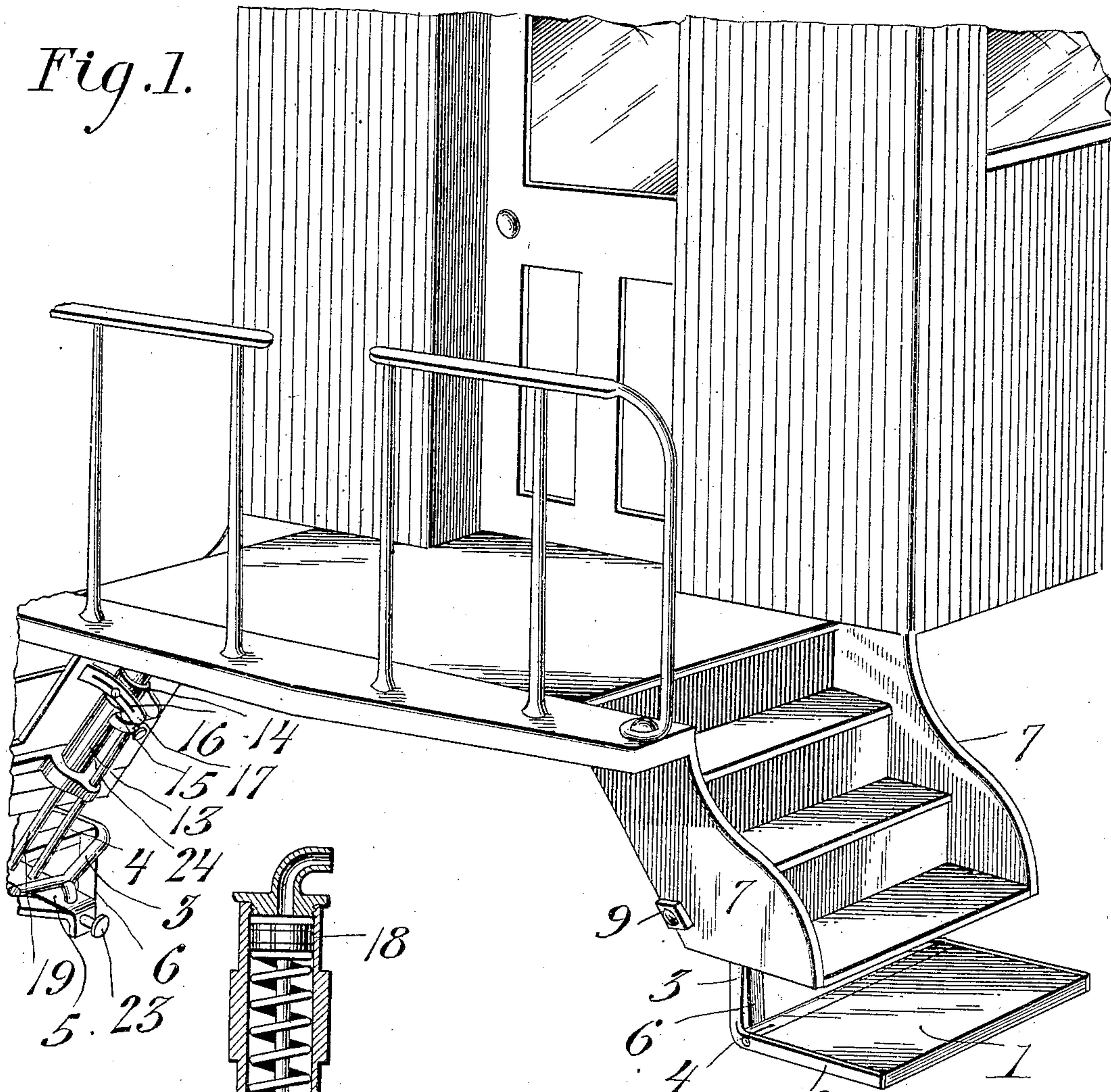
PATENTED AUG. 28, 1906.

A. F. ELKINS.  
SUPPLEMENTAL CAR STEP.

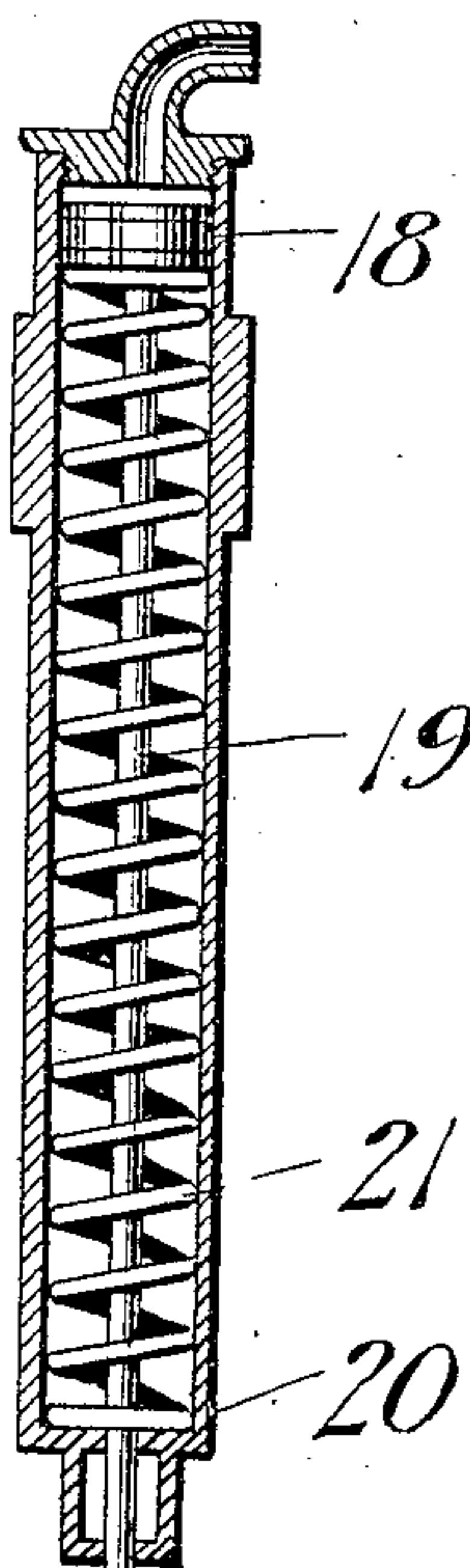
APPLICATION FILED DEC. 13, 1905.

2 SHEETS—SHEET 1.

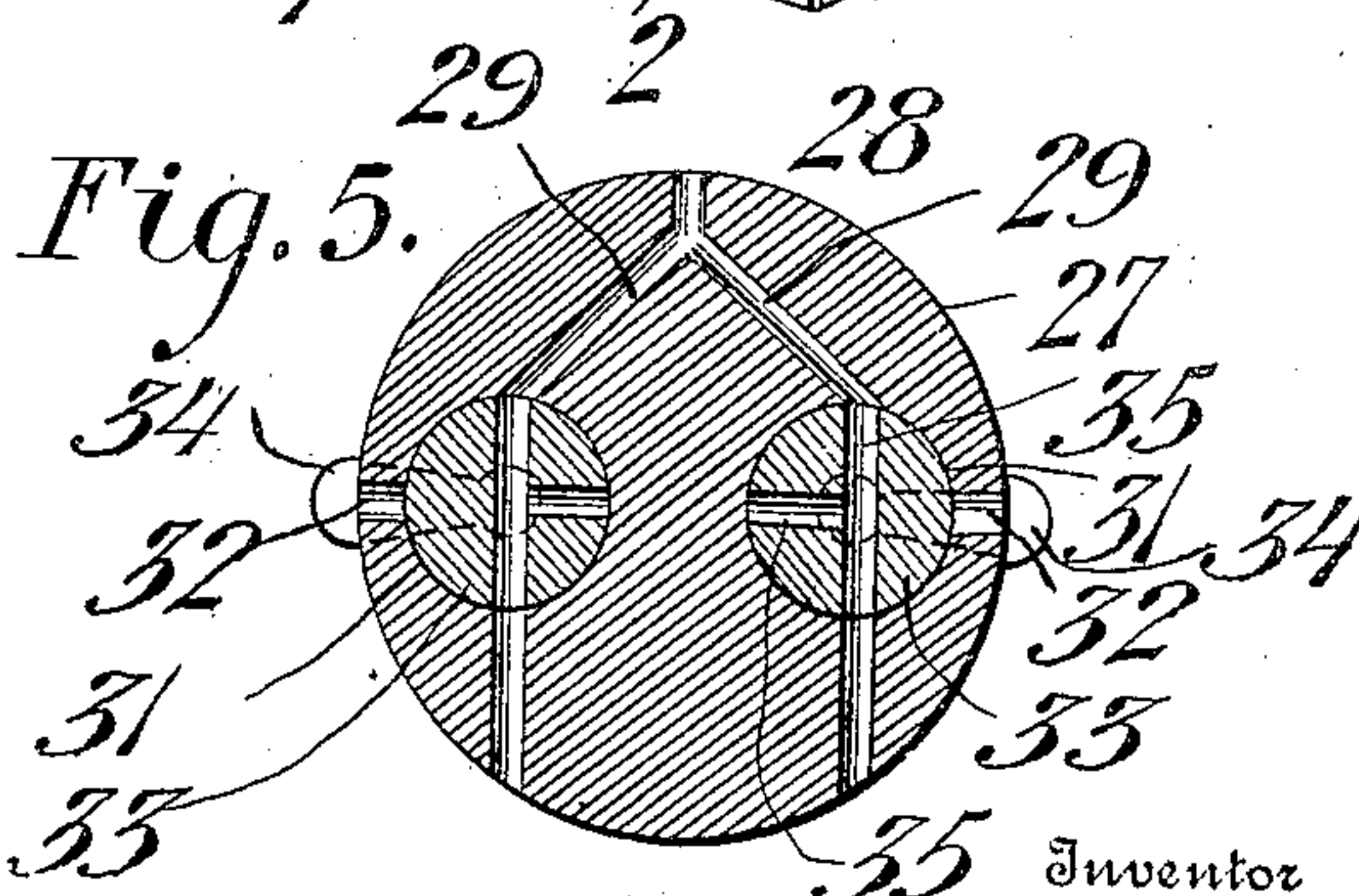
*Fig. 1.*



*Fig. 4.*



*Fig. 5.*



Witnesses  
*Phil. E. Barnes*  
*John H. Byrne*

Inventor  
*Arthur F. Elkins.*

By *Victor J. Evans.*  
Attorney

No. 829,861.

PATENTED AUG. 28, 1906.

A. F. ELKINS.  
SUPPLEMENTAL CAR STEP.

APPLICATION FILED DEC. 13, 1905.

2 SHEETS—SHEET 2.

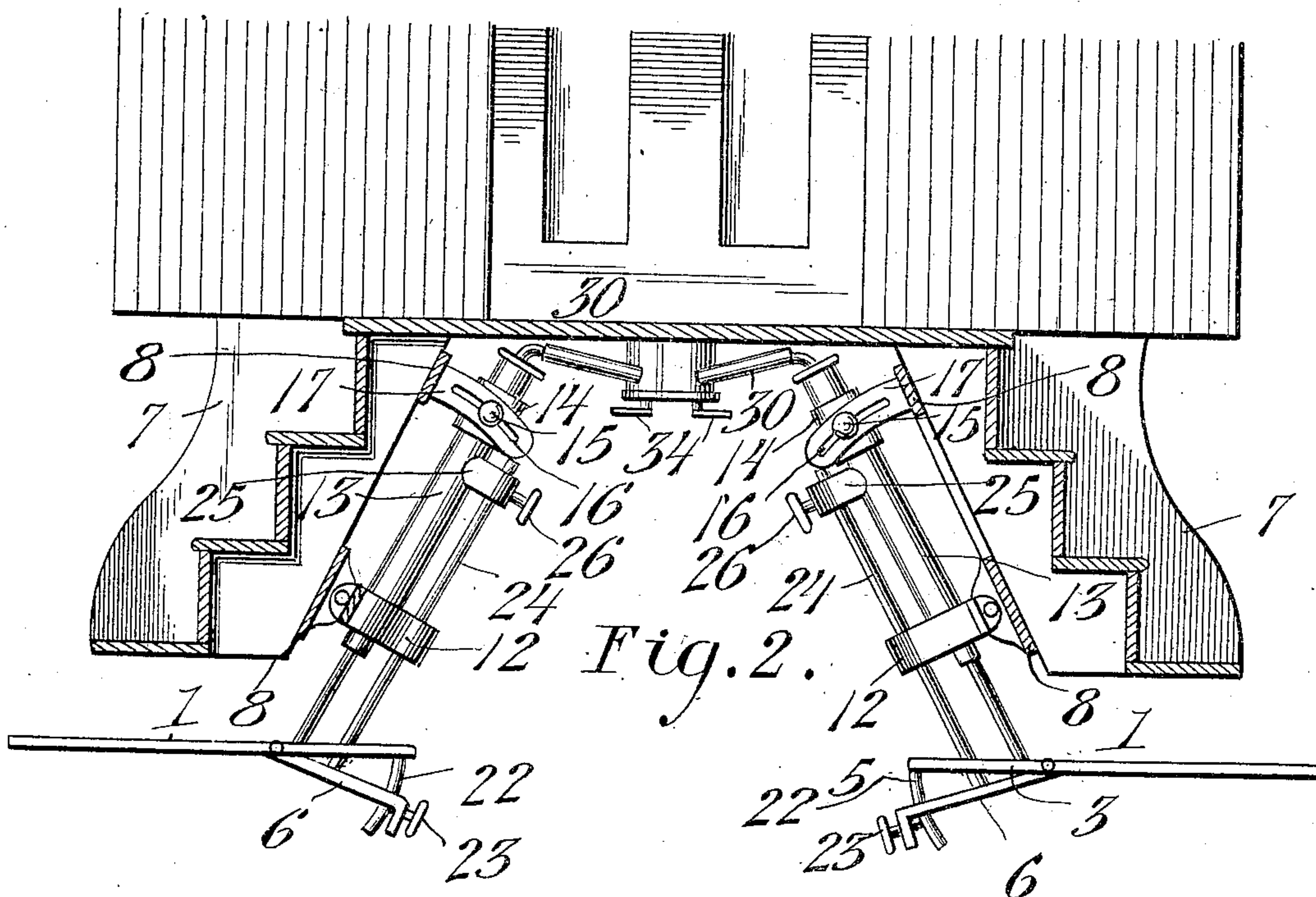
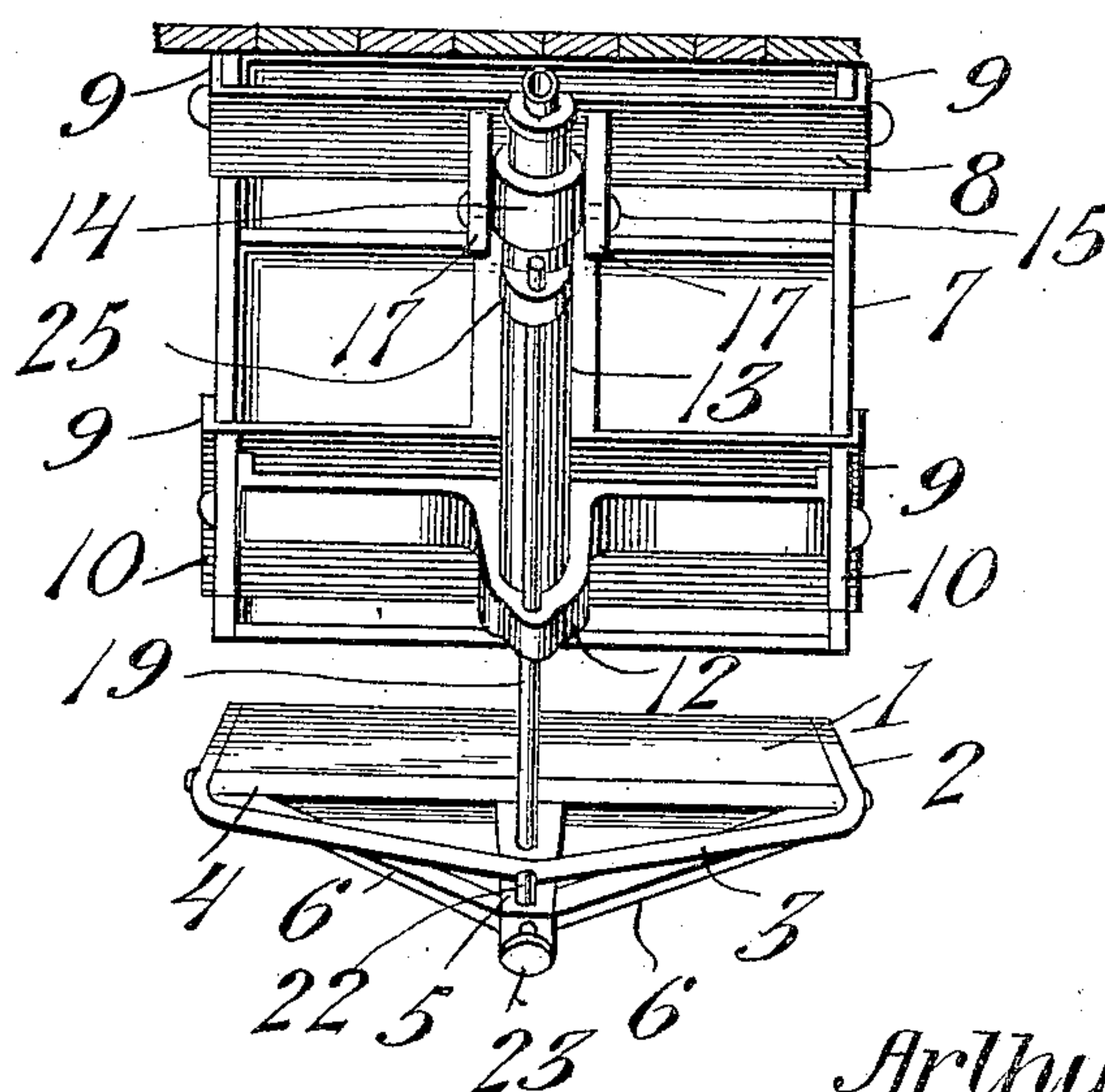


Fig. 2.



Witnesses  
Phil. C. Barnes.  
John F. Byrne.

Inventor  
Arthur F. Elkins.

By Victor J. Evans  
Attorney



# UNITED STATES PATENT OFFICE.

ARTHUR F. ELKINS, OF IRONTON, OHIO.

## SUPPLEMENTAL CAR-STEP.

No. 829,861.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed December 13, 1905. Serial No. 291 594.

*To all whom it may concern:*

Be it known that I, ARTHUR F. ELKINS, a citizen of the United States, residing at Iron-  
ton, in the county of Lawrence and State of  
Ohio, have invented new and useful Improve-  
ments in Supplemental Car-Steps, of which  
the following is a specification.

The invention relates to an improvement  
in supplemental or extensible car-steps, com-  
prehending specifically the means by which  
said steps may be moved to and from the op-  
erative or extended positions.

The main object of the present invention is  
the production of means by which the move-  
ment of the steps may be controlled by air or  
steam pressure, whereby the engineer or  
other train official may simultaneously con-  
trol all the supplemental steps of the cars.

Another object of the invention is the pro-  
duction of means by which the width of step  
projected beyond the next succeeding step  
may be adjusted as desired.

Another object of the invention is the pro-  
duction of means to permit manual adjust-  
ment of the inclination of the supplemental  
step and of means by which the supplemental  
step may be locked in any desired position of  
adjustment relative to the other steps.

The preferred details of construction of  
the present invention will be clearly described  
in the following specification, reference be-  
ing had to the accompanying drawings, in  
which—

Figure 1 is a broken perspective illustrat-  
ing the application of my invention. Fig. 2  
is a section longitudinally of the car-platform,  
illustrating the application of my invention,  
the steps being shown in extended or opera-  
tive positions. Fig. 3 is a section trans-  
verse of the platform, the operating mechan-  
ism being shown in elevation. Fig. 4 is an  
enlarged vertical section of the cylinder.  
Fig. 5 is an enlarged transverse section of the  
operating-valve.

Referring to the drawings, the improved  
step comprises a rectangular strip of mate-  
rial 1, as wood or the like, of suitable dimen-  
sion to provide the step proper. The side  
edges of the step are bound by a metallic  
strip 2, which extends in rear of the step in  
the form of an approximately triangular ex-  
tension 3, the central portion or apex of  
which is located some distance in rear of and  
in alinement with the transverse center of

the step proper, thus providing a skeleton ex-  
tension by the use of which the inclination of  
the step may be manually adjusted, as here-  
inafter described. Pivotally secured in said  
extension, preferably immediately adjacent  
the rear edge of the step proper, is a longitu-  
dinally-arranged bar 4, from which extends  
rearward and at a slight downward incline a  
centrally-arranged bar 5, the free end of  
which extends beyond and underlies the apex  
of the extension 3 and is preferably braced  
from the bar 4 by side braces 6. By this  
construction a secondary frame, comprising  
the bar 4, bar 5, and braces 6, is pivotally con-  
nected to the step proper.

The operating mechanism is supported  
from the platform-step hangers 7 by metallic  
strips 8, arranged transverse or across said  
hangers and terminally bent to provide for-  
wardly-projecting flanges 9, designed to em-  
brace the hangers and be removably secured  
thereto by screws or other connections.  
Near the respective side edges the lower strip  
8 is provided with rearwardly-projecting  
ears 10, between which is pivotally support-  
ed a bar 11, centrally enlarged to provide a  
cylinder-base 12.

Fixedly secured to the base 12 is a cylinder  
13, the upper end of which is adjustably se-  
cured relative to the upper strip 8 through  
the medium of a collar 14, slidably engaging  
the cylinder and having diametrically oppo-  
site projecting studs 15 to engage in longitu-  
dinally-arranged slots 16, formed in parallel  
spaced arms 17, projecting rearwardly from  
the upper strip 8. The studs 14 are prefer-  
ably of the set-screw type to adapt the cylin-  
der to be held in adjusted position, and the  
arms 17 are preferably of curved formation  
to provide for the necessary movement of  
the studs.

Within the cylinder is arranged a piston  
18, the rod 19 of which depends below the cyl-  
inder and is rigidly connected to the bar 5 of  
the supplemental frame. Within the cylin-  
der near the lower end, which is reduced in  
cross-section, I provide a transverse flange or  
stop 20, against which the lower end of a coil-  
spring 21 is adapted to bear, said spring en-  
circling the piston-rod and bearing at its up-  
per end against the piston.

To provide for adjusting the inclination of  
the step proper, which is gained by relatively  
moving the extension of said step and the



supplemental frame, the apex of the extension 3 is provided with a depending curved arm 22, which extends through an opening in the bar 5 of the supplemental frame and is held in adjusted position therein by a set-screw 23. I also provide means for securing the supplemental step in adjusted position relative to the other steps by securing a rod 24 to the bar 5 in rear of the piston-rod, which rod 24 extends through an opening in the cylinder-base 12 and through a lug 25, secured to the cylinder, a set-screw 26, mounted in the lug, being adapted to hold the rod 24 in adjusted position.

It is to be understood that each of the ordinary series of steps of the car are to be provided with the supplemental step and operating mechanism hereinabove described, and provision is to be made for simultaneously operating all the supplemental seats of the car or train. To this end a particular form of valve is employed for operative connection with the cylinders of the opposing supplemental steps at each end of the car. This valve (shown in horizontal section in Fig. 5) comprises a body or casing 27, formed with an inlet-port 28, designed to be connected with any suitable pressure-supply pipe extending lengthwise of the train. Branch ports 29 lead from the main port 28 and communicate, respectively, through suitable flexible pipe connections 30 with the upper end of the cylinders for operating the supplemental steps. The branch ports 29 are interrupted by circular valve-seats 31, with which seats exhaust-ports 32, leading to the atmosphere, communicate. Valves 33 are arranged for revolution in the seats 32, having operating-handles 34 projecting below the body of the casing for convenience in operation. Each of the valves 33 is formed with a main port 35 and with a branch port 36, communicating therewith and extending at right angles therefrom, all as clearly shown in Fig. 5. By proper manipulation of the valves the motive fluid, such as steam or air, may be directed through the ports 29 and into the respective cylinders or may be exhausted from the cylinders to the atmosphere, as will be clearly obvious.

In operation the motive fluid being admitted above the piston 18 forces the same downward within the cylinder, carrying with it the step proper, 1, the movement being regulated to position said supplemental step the proper distance below the lower fixed step. Upon exhausting the fluid from the cylinder the spring 21 operates to return the supplemental step to closed position or in contact with the under side of the lower fixed step. By adjusting the upper end of the cylinder with relation to the upper securing-strip 8 through the medium of the set-screw 15 the angle of projection of the piston-rod may be varied and the free or forward edge of the

supplemental step be projected to a greater or less extent beyond the free edge of the lower fixed step, thus adapting the device to accommodate restricted spaces between the cars and the platforms of stations.

The supplemental step proper may be varied in its inclination relative to the fixed step by adjusting the extension 3 with relation to the supplemental frame, as hereinbefore described. The supplemental step and operating mechanism provide a connected device entirely distinct from the fixed steps of the car, being connected to the latter through the medium of suitable screws or bolts, whereby my improved step and operating mechanism are readily applied and adapted for use in connection with the usual fixed steps at present employed in car construction.

Having thus described the invention, what I claim is—

1. The combination with the fixed steps of a car, of a cylinder adjustably secured thereto, and a piston within the cylinder, and a supplemental step secured to and solely supported by said piston.

2. The combination with the fixed steps of a car, of a cylinder pivotally secured thereto, means for adjusting the angle of said cylinder relative to the steps, a piston within the cylinder, a piston-rod secured to the piston, and a supplemental step secured to and solely supported by said piston-rod.

3. The combination with the fixed steps of the car, of a cylinder pivotally secured thereto near the lower end, means for adjusting the upper end of said cylinder, a piston within the cylinder, a piston-rod connected to the piston, and a supplemental step movably secured to the piston-rod.

4. The combination with the fixed steps of the car, of a cylinder pivotally secured thereto near the lower end, means for adjusting the upper end of said cylinder, a piston within the cylinder, a piston-rod connected to the piston, a supplemental step, and a frame adjustably secured to the step and connected to the piston.

5. A supplemental car-step comprising a step proper, a supplemental frame adjustably connected thereto, an operating-cylinder, a piston within the cylinder, and a connection between said piston and said supplemental frame, said connection forming the sole support for the frame.

6. The combination with a permanent step, of a frame having a supplemental step pivoted thereto, means for securing the supplemental step in adjusted angular relation, and means for moving the frame.

7. A supplemental car-step comprising supporting-strips designed for removable connection with the frame of the fixed car-steps, a cylinder pivotally supported on one of said strips, means for adjustably connect-



ing the cylinder with the other strip, a piston within the cylinder, a piston-rod connected with the piston, a spring for moving the piston in an upward direction, a supplemental step provided with a rearward extension, a supplemental frame pivotally connected to said extension and secured to the piston-rod, and means for adjusting said frame with relation to the extension.

10 8. A supplemental car-step comprising a step proper, a supplemental frame pivotally connected thereto, means for adjusting the relative position of the step and frame, an operating-cylinder, a piston within the cylin-

der, and a connection between said piston 15 and frame.

9. A supplemental step for use in conjunction with a permanent step comprising a step proper, a frame pivotally supporting the step, means for securing the step in adjusted 20 angular relation to the frame, and means for moving the frame.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR F. ELKINS.

Witnesses:

HARRY C. SLOAN,  
E. W. KETTER.