

No. 785,197.

PATENTED MAR. 21, 1905.

H. H. CASE.  
STEP LADDER.

APPLICATION FILED FEB. 18, 1904.

2 SHEETS—SHEET 1.

FIG. 2.

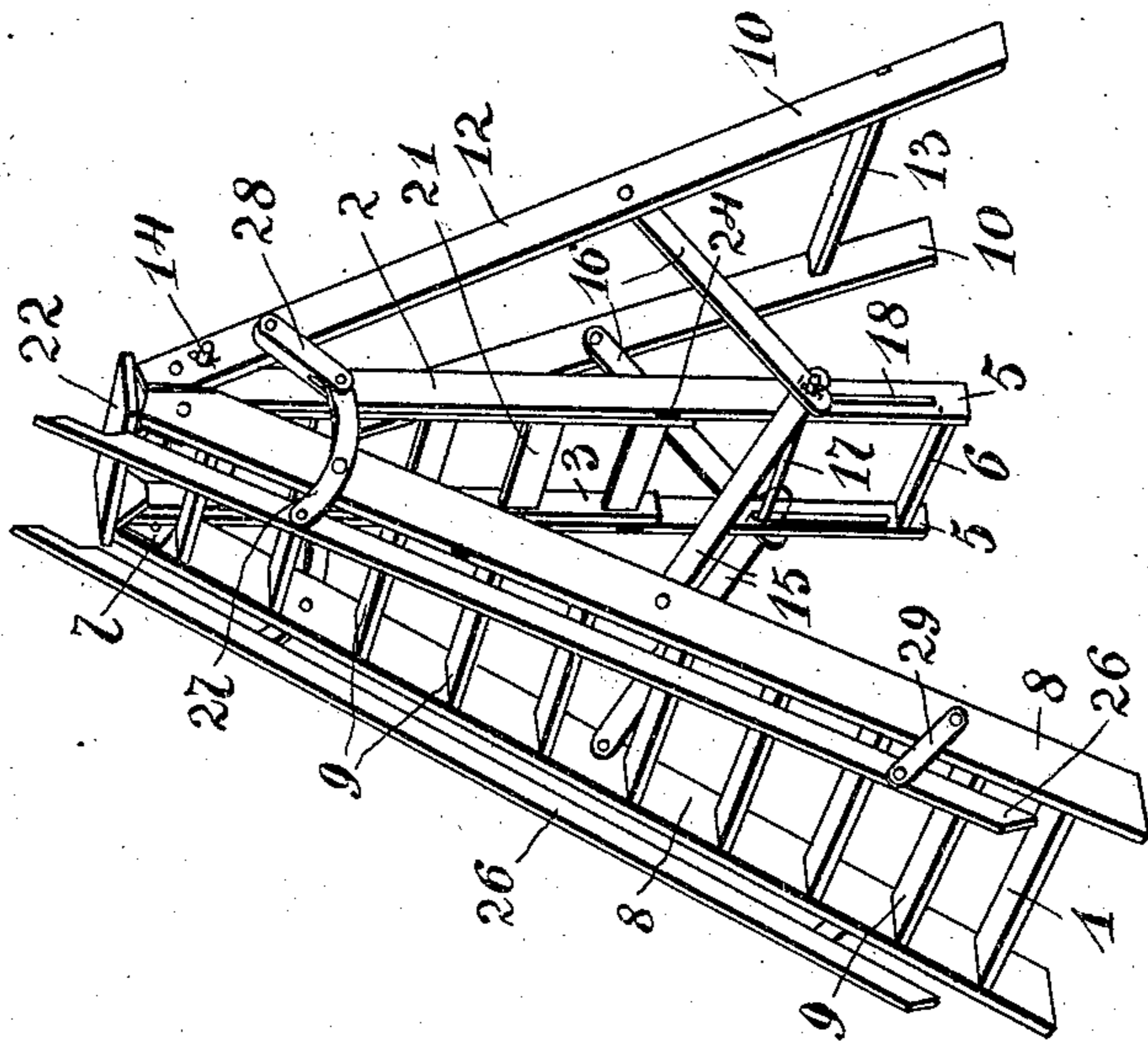
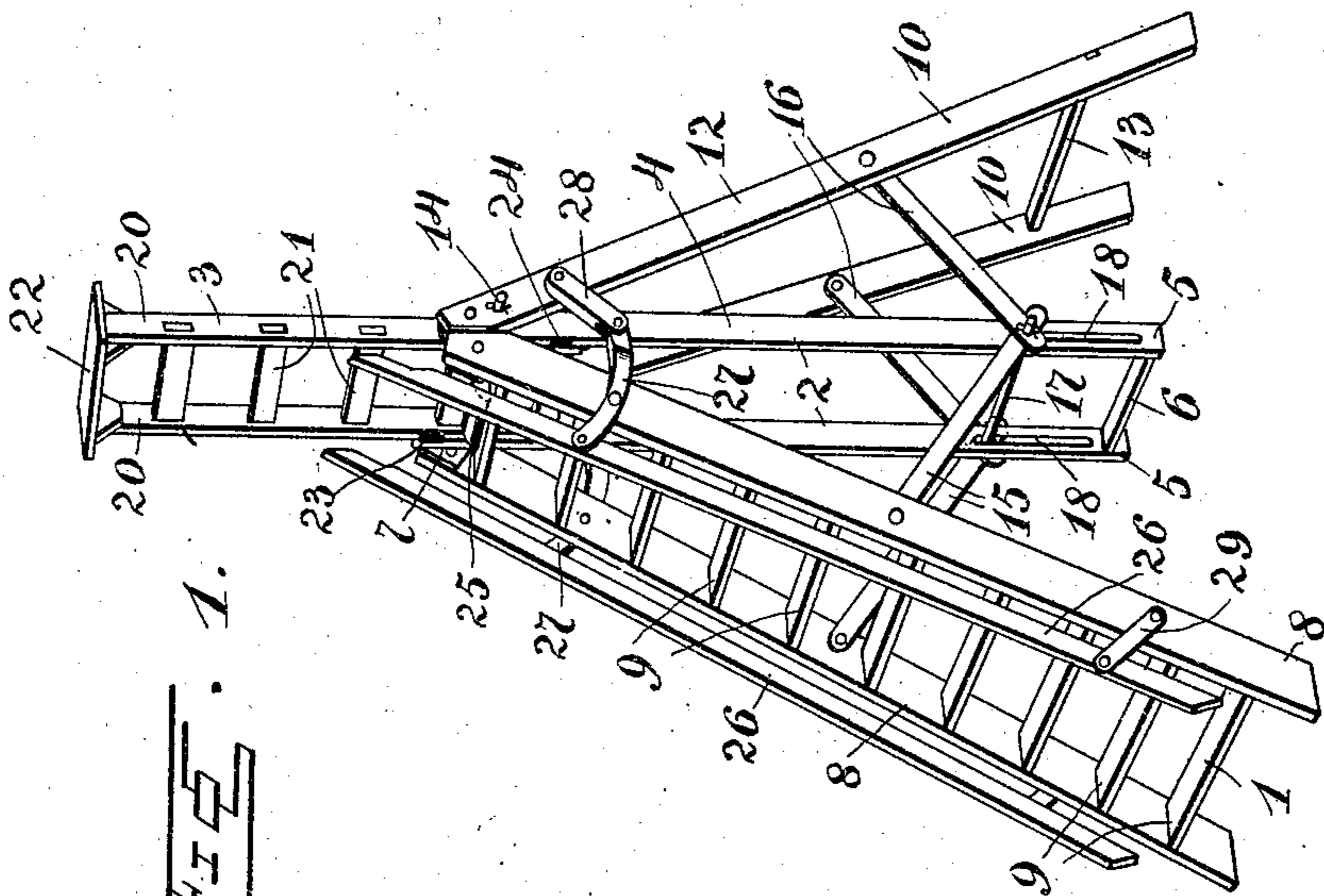


FIG. 1.



Witnesses

C. Munter

*C. Munter*

Henry H. Case

by

*H. H. Case*

Inventor

Attorney

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2 SHEETS—SHEET 2.

FIG. 5.

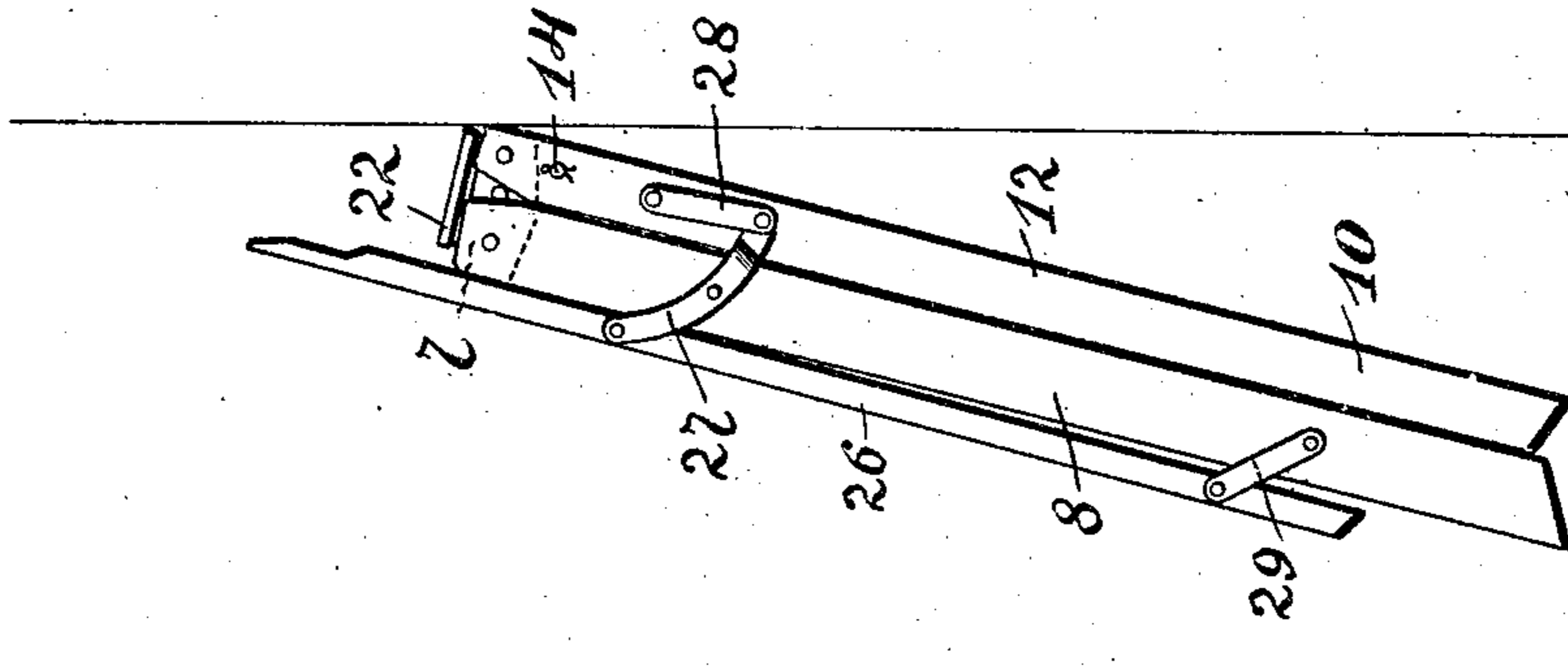


FIG. 4.

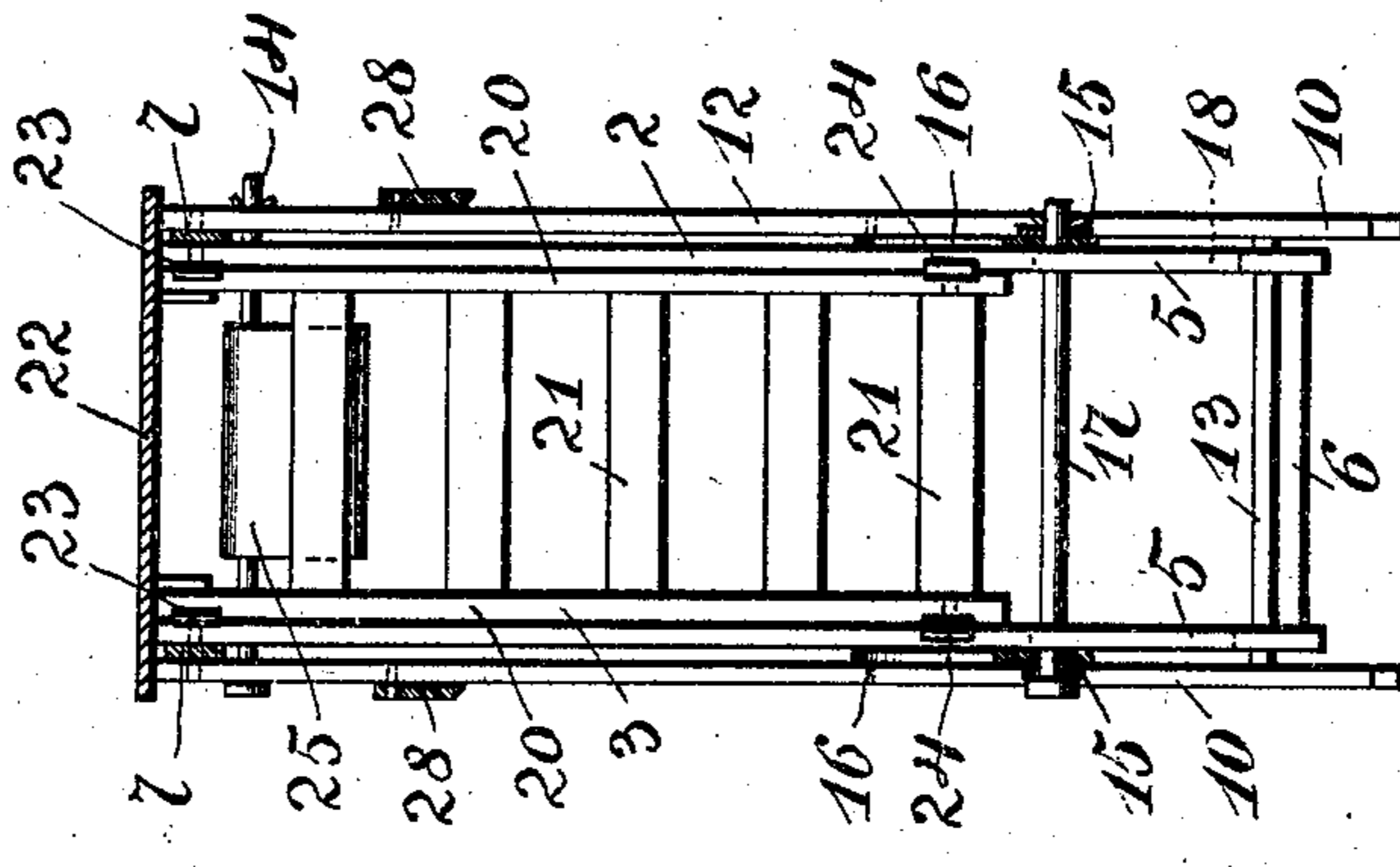
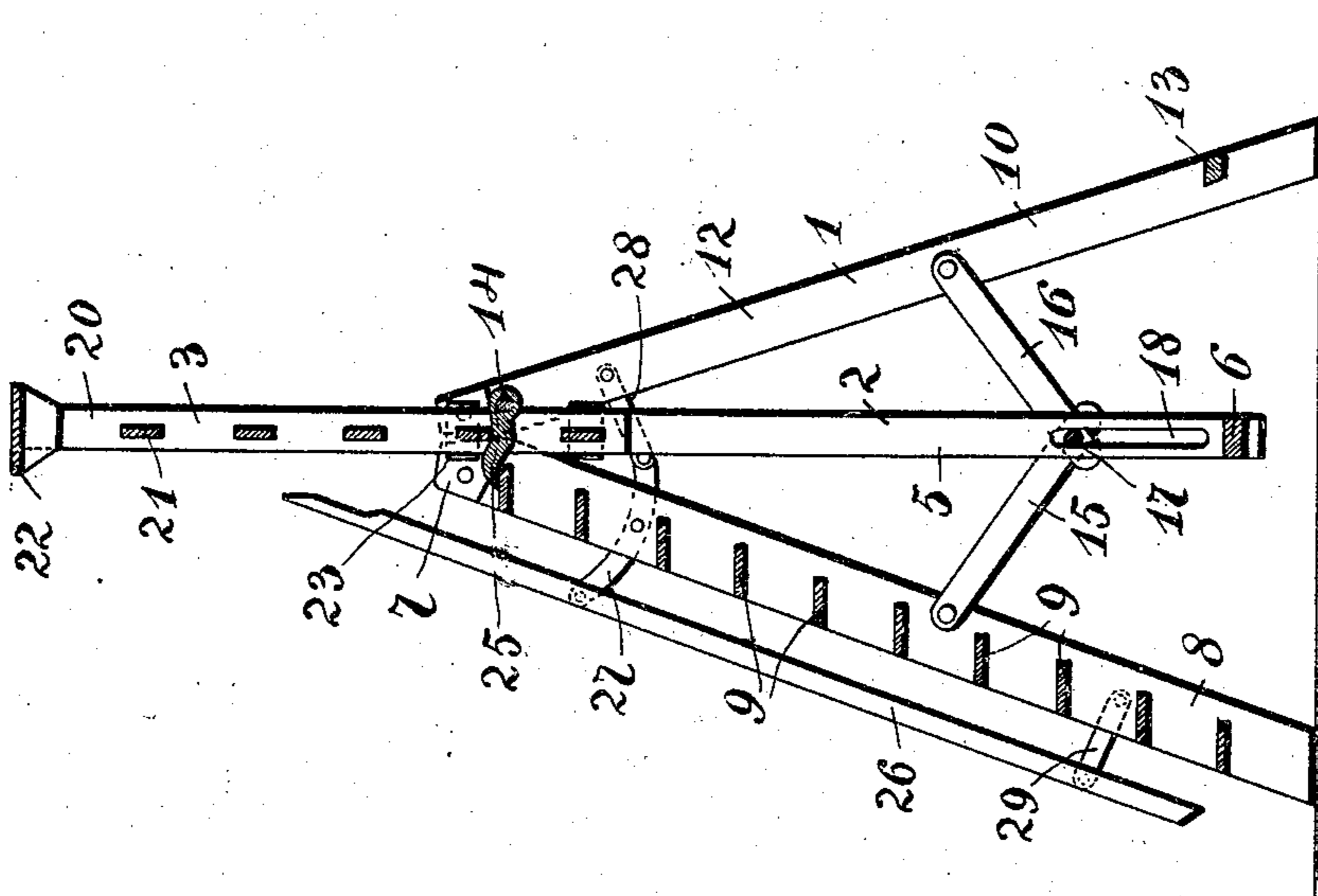


FIG. 3.



Witnesses  
C. Munger  
*C. Munger*

Henry H. Case Inventor  
by *A. B. Wilson*  
Attorney

# UNITED STATES PATENT OFFICE.

HENRY H. CASE, OF BISBEE, ARIZONA TERRITORY.

## STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 785,197, dated March 21, 1905.

Application filed February 18, 1904. Serial No. 194,237.

*To all whom it may concern:*

Be it known that I, HENRY H. CASE, a citizen of the United States, residing at Bisbee, in the county of Cochise and Territory of Arizona, have invented certain new and useful Improvements in Step-Ladders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in extension step-ladders.

The object of the invention is to provide a step-ladder having a lower or base portion and an upwardly extensible or adjustable portion, whereby the height of the ladder may be increased.

Another object is to provide a ladder of this character which may be compactly folded when not in use.

A further object is to provide a ladder of this character which will be simple, strong, and durable and which when in an open and extended position will not be easily upset.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a perspective view of a step-ladder embodying the invention, showing the same in open position and the extension raised. Fig. 2 is a similar view of the ladder with the extension lowered. Fig. 3 is a vertical longitudinal sectional view of the ladder with the part arranged as shown in Fig. 1. Fig. 4 is a vertical transverse sectional view taken in front of the extension with the parts in the position shown in Fig. 2. Fig. 5 is a side view of the ladder, showing the same in folded position.

Referring more particularly to the drawings, 1 denotes the ladder, which consists of a lower main portion 2 and an extensible portion 3, adapted to slide up and down in said main portion 2. This lower main portion 2 comprises a centrally-disposed frame 4, consisting of parallel vertically-disposed bars 5,

connected at their lower ends by a cross-bar 6. To the outer side of the upper ends of the bars 5 are secured metal plates 7, which project laterally to the front and rear of the bars 5.

To the forwardly-projecting portions of the plates 7 are hinged the upper ends of the side bars 8 of the lower ladder-section. Between the bars 8 and secured to the same are arranged the steps or treads 9 of this section of the ladder. To the rearwardly-projecting ends of the plates 7 are hinged the upper ends of the side bars 10 of the supporting frame or prop 12 of the ladder, said bars being connected by a lower cross-bar 13 and an upper cross-bar or tie-bolt 14. To the side bars 8 of the step-section are pivotally connected rearwardly and downwardly inclined links or metal straps 15, and to the bars 10 of the prop-section are secured forwardly and downwardly projecting links or straps 16. The lower ends of the straps 15 and 16 have formed therein alined openings, through which is passed a rod or bolt 17, said rod or bolt 17 also passing through vertically-disposed slots 18, formed in the lower ends of the bars 5 of the frame 4, so that when the ladder and prop sections are folded or unfolded the lower ends of the straps 15 and 16 and the bolt or rod 17 will be moved up or down, the upper end of the slots limiting the upward movement of the bolt, and thereby also limiting the outward movement of the step and prop sections, thus preventing their being spread too far apart.

Between the side bars 5 of the centrally-disposed frame 4 is slidably mounted the extensible ladder portion 3, which consists of parallel vertically-disposed side bars 20, connected at intervals by cross-bars or rungs 21 and having secured on their upper ends a suitable braced platform 22. On the inner sides of the upper ends of the side bars 5 are secured channel-shaped guide-plates 23, in which the side bars 20 of the ladder are adapted to slide, and to the lower ends of the ladder-bars 20 are secured channel-shaped plates 24, which are adapted to engage and slide on the side bars 5. The channel-plates 23 being fixed to the upper ends of the bars

5 will hold the upper portion of the ladder in place, while the plates 24 on the lower ends of the side bars of the ladder-section will hold that end of the same in place in its upward and downward sliding movement.

In order that the extensible ladder-section 3 may be held in its extended position, a stop plate 25 is pivotally mounted on the cross-bar or tie-bolt 14, so that when the extension 10 has been raised to the desired height said plate may be swung forwardly between two of the rungs 21 of the extension and into engagement with the top step of the lower ladder-section. The extension-ladder is now 15 pushed down until the rung next above the stop-plate comes into contact with the same, which will stop further downward movement of the extensible section and support the same.

20 On each side of the lower ladder-section are arranged hand-rails 26, which extend from the upper to near the lower end of said section. The rails 26 are pivotally connected near their upper ends to the outer 25 ends of curved levers 27, which are pivoted midway between their ends to the side bars 8 of the lower ladder-section and are also pivotally connected at their inner ends to short links 28, which are pivotally connected 30 at their opposite ends to the side bars 10 of the prop-section or supporting-frame 12. Near their lower ends the hand-rails 26 are pivotally connected to one end of links 29, the opposite ends of which are pivotally connected 35 to the side bars 8 of the lower ladder-section, so that when said section and the prop-frame are brought together the curved levers 27 will be actuated by the short links 28, so that when the lower ladder-section and 40 the prop-section are spread apart to open the ladder the hand-rails 26 will be opened or raised up in position to be grasped by a person using the ladder and when the ladder-sections are folded to close the same the rails

will be folded down onto the side bars 8 of 45 the ladder-section.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation. 50

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of 55 this invention.

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

A step-ladder, consisting of a lower fold- 60 ing portion, comprising a step-section and a prop-frame hinged to open and close, means for limiting the opening movement of said sections, a vertically-adjustable ladder section or extension mounted to slide in said 65 lower portion, means for guiding said section in its up-and-down movement, means for holding said extension in its adjusted positions, hand-rails arranged on each side of said lower ladder-section, and pivotally connected 70 at their lower ends to the side bars of said ladder-section by a link, curved levers pivoted to said side bars near the upper end of the same one end of said levers being pivoted to said hand-rails and links pivotally 75 connecting the opposite ends of the levers with said hinged prop-frame whereby upon the opening or closing of said ladder-section and prop-frame said hand-rails will be unfolded or folded against the sides of said ladder-section, substantially as described. 80

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY H. CASE.

Witnesses:

GEORGE J. McCABE,  
R. A. CASAD.