

A. F. DIVOK.  
FOLDING STEPS.

APPLICATION FILED SEPT. 11, 1909.

960,003.

Patented May 31, 1910.

2 SHEETS—SHEET 1.

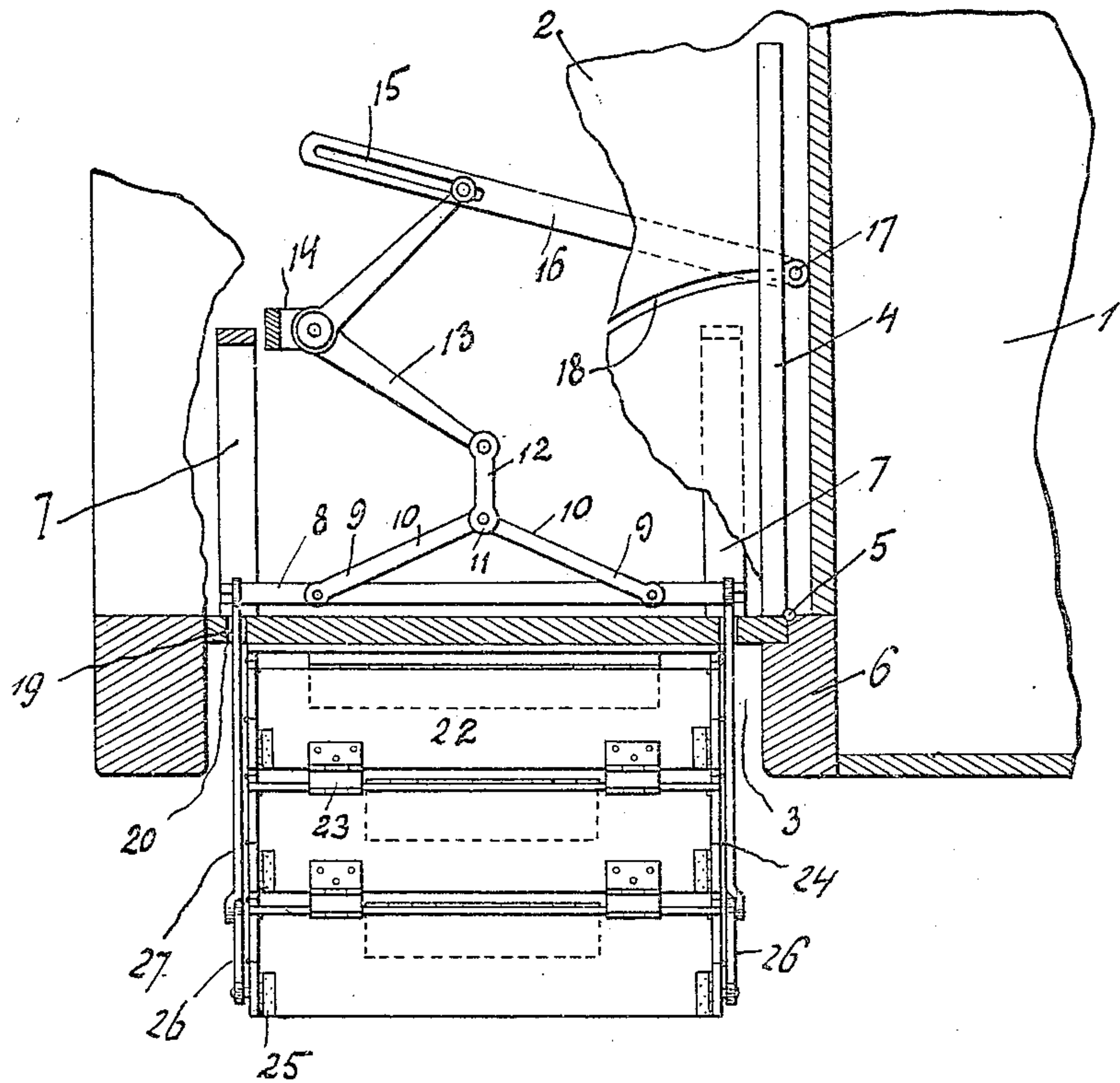


Fig. 1

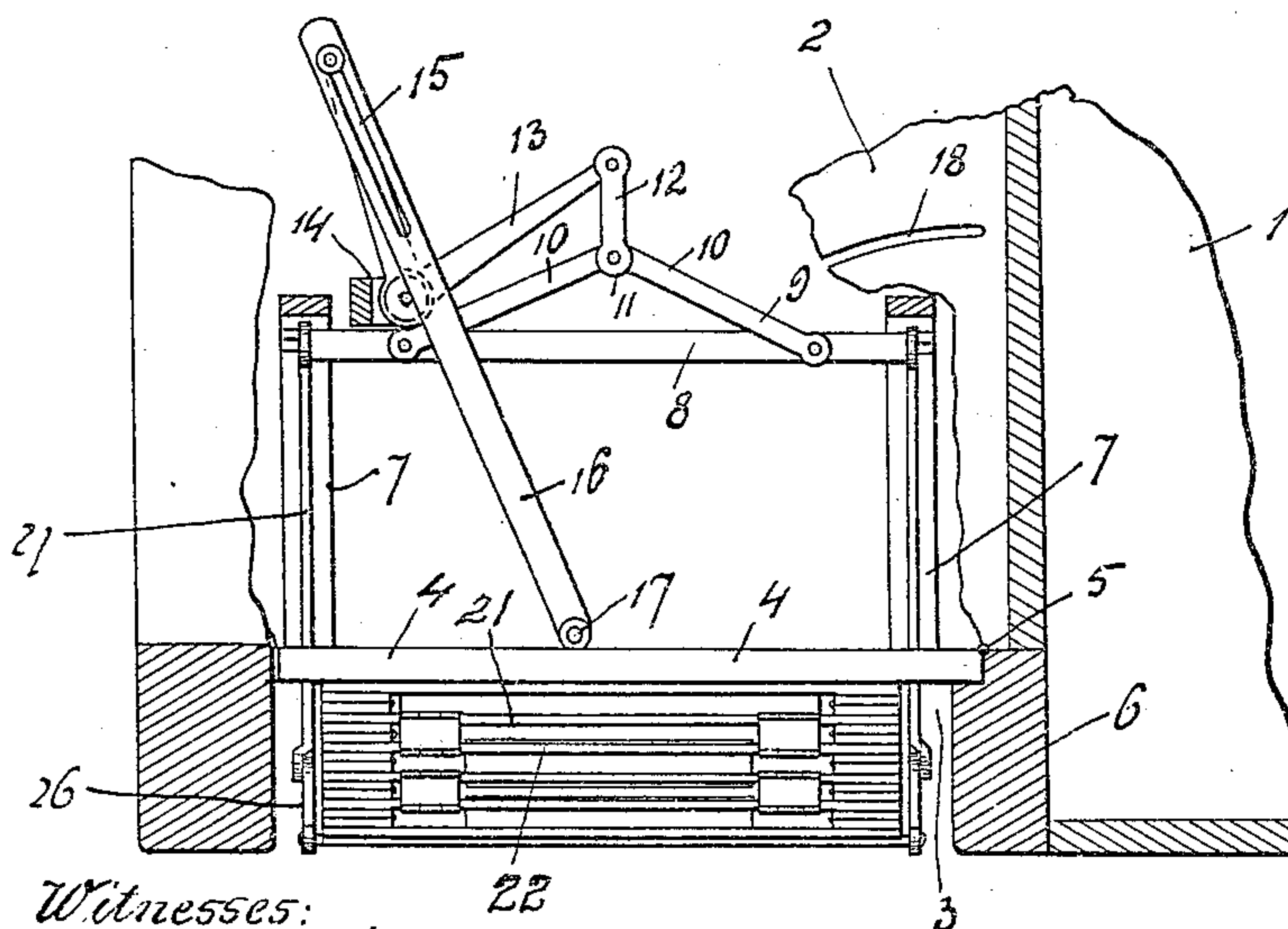


Fig. 2

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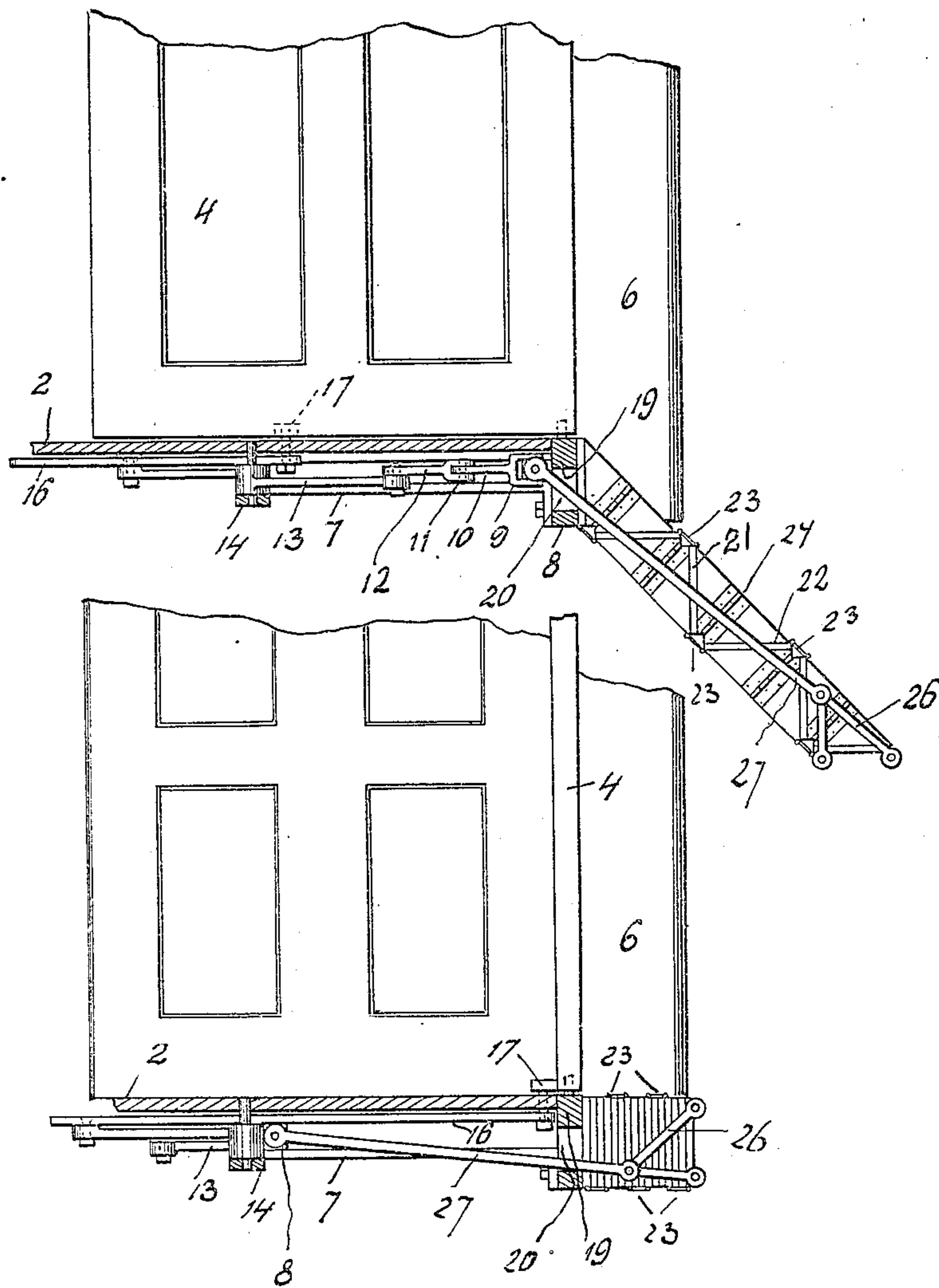


Fig. 3.

Fig. 4.

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# UNITED STATES PATENT OFFICE.

ALEXANDER F. DIVOK, OF PITTSBURG, PENNSYLVANIA.

## FOLDING STEPS.

960,003.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed September 11, 1909. Serial No. 517,345.

*To all whom it may concern:*

Be it known that I, ALEXANDER F. DIVOK, a subject of the King of Hungary, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Folding Steps, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to folding steps for vehicles, and more particularly to steps used in connection with passenger cars on railroads.

The primary object of my invention is to provide steps that can be easily and quickly folded to occupy a comparatively small and unobtrusive position relative to the car body or support of the steps.

20 Another object of this invention is to furnish novel means for easily and quickly folding and unfolding the steps, the mechanical means employed occupying a comparatively small space beneath the platform or floor of the car.

25 A still further object of this invention is to provide a car with a pair of steps that will prevent persons from boarding and leaving the car except when the steps are extended, thus preventing numerous accidents incurred by persons jumping on and off moving trains.

30 With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts to be hereinafter described in detail and then claimed.

Reference will now be had to the drawings forming a part of this specification wherein there is illustrated a preferred embodiment of the invention, and in which:—

40 Figure 1 is a plan of a portion of the car partly broken away, illustrating the steps thereof in an extended or open position, Fig. 2 is a similar view with the steps in a folded or closed position, Fig. 3 is a side elevation of a portion of the car, partly broken away and partly in section, illustrating the steps in an extended or open position, and Fig. 4 is a similar view showing the steps in a folded or closed position.

50 In the drawings 1 denotes the body of a car having the platform 2 and a doorway 3 adapted to be closed by a door 4 hinged, as at 5 to the post 6 of the car body 1.

55 7 denotes depending longitudinal parallel brackets carried by the platform 2 and mov-

ably mounted in these brackets is a cross head 8. Pivotally connected to the cross head 8 are the bifurcated ends 9 of links 10 and these links are pivotally connected together in the bifurcated end 11 of a stirrup 12. The stirrup 12 is pivotally connected to a bell crank lever 13 pivotally mounted in a depending bearing 14, carried by the bottom of the platform 2. The opposite end of the bell crank lever 13 is loosely and movably connected to the slotted end 15 of an arm 16, and the arm 16 is connected through the medium of a bolt 17 to the lower edge of the door 4, said bolt extending through a segment shaped guide slot 18 provided therefor in the floor of the platform 2.

19 denotes a sill provided with slots 20 alining longitudinally with the guide brackets 7. Connected to the sill 19 is the riser 21 of the upper step forming a part of the stair used in connection with the platform 2. The stair comprises three steps having the risers and treads 22 connected by strap hinges 23. The steps are provided with side rails consisting of triangular sections hinged together, as at 24 and to the risers and treads, as at 25. These triangular sections are adapted to fold inwardly, as best shown in Fig. 2 and permit of the steps folding or closing.

26 denotes pivoted links connecting the ends of the tread of the lowermost step with side bars 27, these bars extending upwardly through the slots 20 of the sill 19 and connecting with the ends of the cross head 8.

When the door 4 is closed, the arm 16 is shifted to move the cross head 8 to the inner ends of the guide brackets 7 and this cross head through the medium of the side bars 27 causes the steps to fold, the triangular sections of the side rails folding inwardly and the treads upwardly against the risers, all these parts being assembled within the doorway 3 of the car.

From the foregoing it will be observed that the steps are automatically opened and closed through the medium of the door 4, and with the framework of the steps made of strong and durable metal, the steps can be safely ascended and descended.

Having now described my invention what I claim as new, is:—

1. The combination with a car having a doorway provided with a sill, a platform, and a door adapted to close said doorway, of foldable steps extending when folded in



parallelism with respect to said sill and when extended adapted to lead to said platform, and a mechanism beneath said platform and connected with said steps and adapted to be actuated on the opening movement of said door to extend said steps and on the closing movement of the door to shift the steps to a position in parallelism with said sill.

2. The combination with a car having a doorway, a platform, and a door adapted to close said doorway, of foldable steps adapted to lead to said platform, a mechanism beneath said platform and adapted to be actuated by a movement of said door for opening and closing said steps, said mechanism including side bars, a cross head connecting said bars, a bell crank lever for moving said cross head and an arm connecting with said door and said bell crank lever and adapted to be guided by said floor of said platform.

3. The combination with a platform provided with a door and a sill, of foldable steps when folded extending in parallelism with respect to said sill and when extended leading to said platform, a mechanism supported by the platform and actuated on the opening movement of the door to extend the steps and on the closing movement of the door shifting the steps to a position in parallelism with the sill.

4. The combination with a car having a platform, a door sill and a door, of foldable

steps connected to said sill, a mechanism located beneath said platform and adapted to be actuated by a movement of said door for opening and closing said steps, said mechanism including bars extending through said sill and extending with the lower step, a cross head adapted to connect with said bars, a bell crank lever adapted to move said cross head, and an arm movable with said door and connecting with said bell crank lever.

5. The combination with a support, a door mounted thereon and a sill connected with the support, of foldable steps connected with the sill and formed of treads, risers and sectional side rails, means for hinging the risers to the treads whereby the treads will extend in parallelism with the risers when the steps are closed, means for hinging each pair of sections of the side rails together and to a riser and tread whereby said sections will fold inwardly between the risers and treads when the steps are closed, and means connected with said support and with said steps and adapted when actuated in one direction to open the steps and in the opposite direction to close the steps and position the treads and risers in parallelism with said sill.

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

ALEXANDER F. DIVOK.

Witnesses:

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MAX H. SROLOVITZ.