

J. KINZMAN.

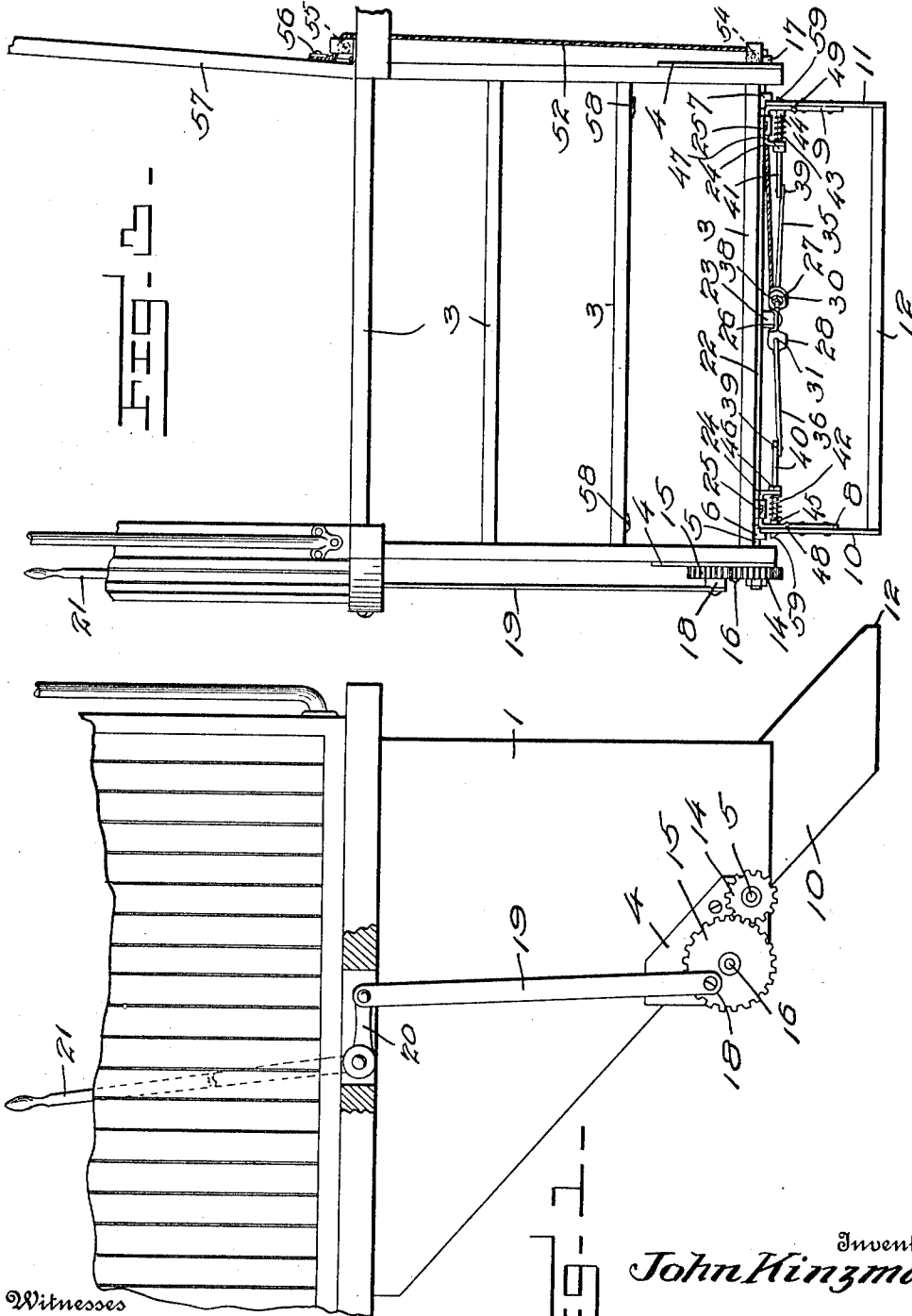
FOLDING CAR STEP.

APPLICATION FILED NOV. 8, 1910.

Patented Aug. 22, 1911.

1,001,283.

2 SHEETS-SHEET 1.



Witnesses
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By *[Signature]*
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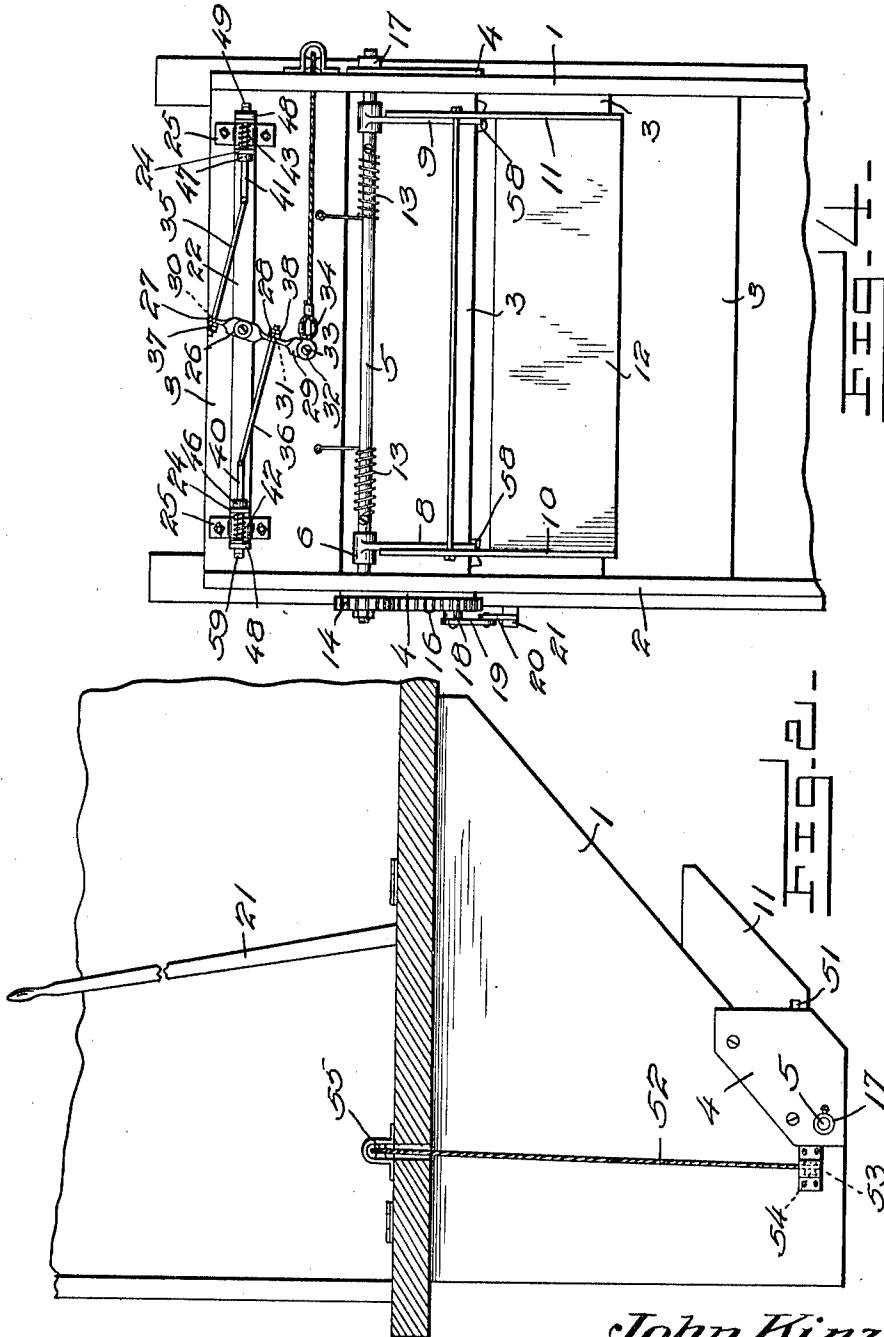
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Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

JOHN KINZMAN, OF LAPORTE, INDIANA.

FOLDING CAR-STEP.

1,001,283.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed November 8, 1910. Serial No. 591,288.

To all whom it may concern:

Be it known that I, JOHN KINZMAN, a citizen of the United States, residing at Laporte, in the county of Laporte and State of Indiana, have invented certain new and useful Improvements in Folding Car-Steps, of which the following is a specification.

This invention relates to folding car steps, and more particularly to those which may be conveniently operated by an authorized attendant from the platform of the car.

The object of the invention is to provide a durable, practicable and efficient device of this character which may be readily attached to the step of the car, whereby an additional step is provided for the convenience of passengers on entering or leaving the car, said step being so attached to the car as to be readily moved out of its operative position when not in use.

Another object of the invention is to provide means for operating the movable step by suitable pinions, and being further provided with a suitable locking device for holding the step in a fixed position when in use.

A further object of the invention is to so construct a device of this character, whereby a minimum amount of power may be exerted by the operator, and the folding step placed in close proximity to the platform of a station or depot.

Other objects and advantages will be apparent from the following description and it will be understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings, Figure 1 is a side elevation of the invention showing the folding step in an open or operative position. Fig. 2 is a similar view of the opposite side of the same showing the step in a folded position under the usual steps, preferably, of a vestibule or Pullman car. Fig. 3 is a front elevation of the device with the step in a lowered or unfolded position, and showing a portion of the platform in a raised position. Fig. 4 is a bottom plan view of the device, showing the step in its folded or inoperative position.

Referring to the drawings, 1 designates the usual sides of the car step having secured thereto the usual steps 3. Bolted or otherwise suitably secured to the outer sides

of the steps 1 are plates 4. A transverse rotatable rod 5 is arranged near the bottom of the car step and has its opposite ends passed through the sides 1 of the step and plates 4. Rigidly secured to the shaft 5 are collars 6 and 7 being provided with extensions 8 and 9 to which are suitably secured the sides 10 and 11 of the folding or auxiliary step 12. Surrounding the rotatable transverse shaft 5 are coil springs 13—13, having one of their terminals secured to the shaft 5 and the other to the under side of the lower step 3.

To one of the ends of the transverse shaft 5, and adapted to rest against the outer face of one of the plates 4 is a pinion 14, said pinion being rigidly secured upon the end of the shaft by suitable means. Meshing with the pinion 14 is a larger pinion 15, the same being secured to the plate 4 upon a stub shaft 16. The other end of the shaft 5 carries a collar 17 to prevent any undue lateral movement of the shaft 5.

Eccentrically arranged upon the pinion 15 is an outwardly projecting stud 18 having pivotally secured thereto a connecting rod 19 having one of its ends pivotally secured to a bell crank lever 20. The bell crank lever 20 may be conveniently pivoted to a portion of the platform in any suitable manner, which will permit the handle 21 of the bell crank lever to project above the platform so that the same can be readily grasped by an authorized attendant.

Upon the under face of the extreme lower steps 3 is a metallic strip 22 having formed in its center an outstanding stud 23. Upon each end of the strip 22 are provided U-shaped bolt carrying members 24, said U-shaped bolt carrying members being secured to the strip 22 by strap irons 25. Pivotally mounted upon the stud 23 is a lever 26. It will be noted that this lever 26 is formed or twisted in such a manner that vertical portions 27 and 28 are formed in said lever, and having one of its ends provided with a horizontal face 29. The vertical portions 27 and 28 are provided with openings 30 and 31, the opening 31 being intermediate, the pivotal point of the lever 26 and the horizontal face 29. The horizontal portion of the lever 26 is provided with an opening 32 adapted to receive a bolt 33 to pivotally connect a clip 34 thereto. Adapted to pass through the openings 30 and 31 are links 35 and 36, each

of which is screw threaded for a certain distance of its length to receive lock nuts 37 and 38, the other end of the links being pivoted to the inner ends, as at 39 of the drawings, of sliding bolt latches 40 and 41. These bolts are adapted to be mounted in suitable registering openings provided in the U-shaped bolt carrying members 24 and are adapted to freely slide therein when the lever 26 is shifted. Surrounding the bolts 40 and 41 are coil springs 42 and 43, said springs having their terminals resting against the inner walls of the U-shaped members 24 and their outer terminals resting against the inner portions of the enlarged heads of the bolts 44 and 45 of the latch bolts 40 and 41. Collars 46 and 47 are carried by the sliding bolt latches, said collars being adjustably mounted upon the bolt to limit the movement of the latch bolts. These bolts are adjusted in such a manner as to allow the heads of the same to project sufficiently beyond the outer walls 48 and 49 of the U-shaped members 24 to engage openings 50 and 51 formed in the sides 10 and 11 of the folding or auxiliary step 12, to securely lock said step in its unfolded or operative position.

Suitably attached to the clip 34 is a cord or wire 52, said cord or wire passing through an opening 53 formed near the bottom edge of one of the sides 3 of the car step and adapted to pass over a pulley 54, said pulley being suitably mounted upon the outer side of the car step, and continuing upwardly to pass over a pulley 55 and to be suitably connected to a fastening device 56, said fastening device being secured adjacent the hinged end of a portion of the platform 57. The platform 57 is of the usual form used in connection with vestibuled or Pullman cars. From this construction it will be noted that the cord or wire 52 is of sufficient length to allow the latch bolts to engage the openings 50 and 51 in the sides 10 and 11 of the folding step only when the hinged portion of the platform is in a raised or open position, and when the hinged platform is lowered or closed the cord or wire will pull the lever 26 in the direction of the arrow, thereby withdrawing the bolts from the openings 50 and 51 and allowing the auxiliary step 12 to automatically return to its folded or inoperative position.

Secured upon the front edge of one of the steps 3 are buffers 58 so arranged that the sides 10 and 11 of the auxiliary step will contact with the same when said step is automatically released, and folded in its inoperative position.

The latch bolts 40 and 41 have their heads 44 and 45 beveled as designated by the numeral 59, so that the same will readily snap into the openings 50 and 51.

To operate the device, it is only necessary

that the attendant raise the hinged portion of the platform, and grasps the handle of the bell crank lever, pulling the same in the direction of the arrow, thus pulling upon the connecting rod and rotating the pinions 15 and 14 in the direction as shown by arrows, thereby rotating the transverse shaft 5 against the tension of the springs 13—13 until the auxiliary step is swung into its operative position, and the latch bolts engage the openings 50 and 51 in the sides 10 and 11 of the steps. Now when it is desired to fold the step in its inoperative position the hinged portion of the platform is dropped, thereby pulling upon the cord or wire 52 which swings the lever 26 which in turn withdraws the latch bolts from engagement with the openings in the sides of the auxiliary step allowing said step to return to its folded or inoperative position.

What is claimed is:

1. The combination with the steps of a railway coach, of a transverse shaft mounted in the lower portion thereof, an auxiliary step fixed to and supported by said shaft, a pinion rigidly secured to one end of said shaft, a plate secured to one side of the usual step, a stud shaft carried thereby and having a pinion mounted thereon and meshing with the first mentioned pinion, a bell crank lever pivoted to a portion of the platform, a connecting rod pivotally connected to one arm of the bell crank lever, and eccentrically pivoted to one of the pinions, coil springs surrounding the transverse shaft, and having one of their terminals secured to the shaft and their opposite terminals secured to the usual lower step of a coach, a metallic strip secured to said lower step, a stud carried thereby, a lever pivotally mounted on said stud, U-shaped bolt carrying members arranged at both ends of said strip, spring pressed latch bolts carried by said U-shaped members and having links pivoted to their inner ends, said links also being suitably secured to said lever at points opposite its pivotal connection, and a draw string suitably secured to one end of the lever.

2. The combination with the steps of a railway coach, of a transverse shaft having coil springs surrounding the same, said shaft being journaled near the bottom of the usual coach steps, an auxiliary step fixed to said shaft, a pinion rigidly connected to one end of the shaft, a second pinion carried by one side of the said bottom step, and meshing with the first mentioned pinion, a platform having a movable portion, a bell crank lever including a handle pivotally secured to the platform, a rod having one end connected to the bell crank lever, and its other end connected to an eccentrically arranged stud carried by one of the pinions, connections between the movable portion of the platform and said auxiliary step, where-

by upon lowering said platform portion, the step will automatically fold.

3. The combination with the steps of a railway coach, of an auxiliary step pivotally
5 connected thereto, said auxiliary step having bolt receiving openings formed in its sides, a metallic strip having an outwardly extending lug formed at its center, said strip being suitably secured to the lower step of
10 the coach, U-shaped bolt carrying members mounted upon each end of said strip, sliding spring pressed bolts carried by said U-shaped members, a lever pivotally connected to said lug, links pivotally connected to the
15 inner ends of said bolts and to the lever, a draw cord or wire provided with a suitable clip, said clip being pivotally connected to one end of the lever, the draw cord or wire passing through an opening formed in the
20 side of the usual steps and connected to the inner edge of a hinged portion of the platform.

4. The combination with the steps of a railway coach, of a transverse shaft having
25 coil springs surrounding the same, an auxiliary step fixed thereto, a metallic strip carrying an outstanding lug secured to the under side of a usual coach step, a lever pivotally connected to said lug, sliding bolts arranged at each end of said strip, links con-

necting the inner ends of the bolts to said lever, a draw cord connected to one end of said lever and being connected to a certain portion of the usual hinged platform of a coach, said draw cord adapted to shift the
35 lever and move the bolts toward each other.

5. The combination with the steps of a railway coach, of a transverse shaft having fixed thereto an auxiliary step, a bolt actuating mechanism carried by the usual lower
40 step of the coach, a hinged platform, a cord connected to said bolt operating mechanism and to the hinged platform to operate said bolt mechanism when the hinged platform is opened or closed.
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6. The combination with the steps of a railway coach, of an auxiliary step, locking means for holding said auxiliary step in its operative position, a hinged platform, and
50 means connected therewith to operate the locking means for automatically releasing the step, said step being adapted to return to its inoperative position.

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

JOHN KINZMAN.

Witnesses:

CHAS. E. WOLFE,
OLIVER P. M. SQUIRES.