

A. A. HAMMELL & C. E. BROOKS.
 EXTENSIBLE CAR STEP AND CATCH THEREFOR.
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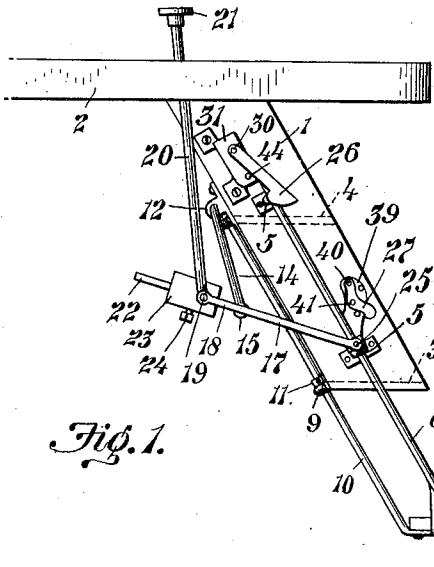


Fig. 1.

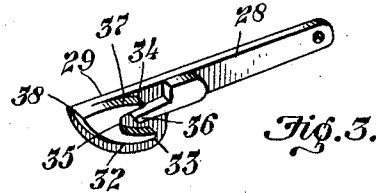


Fig. 3.

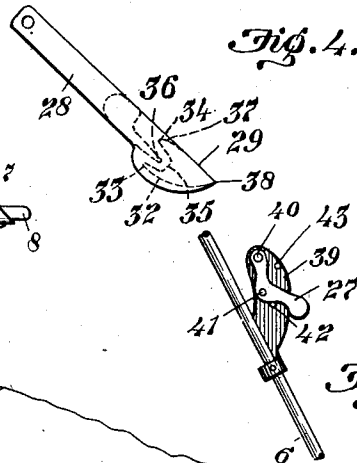


Fig. 4.

Fig. 2.

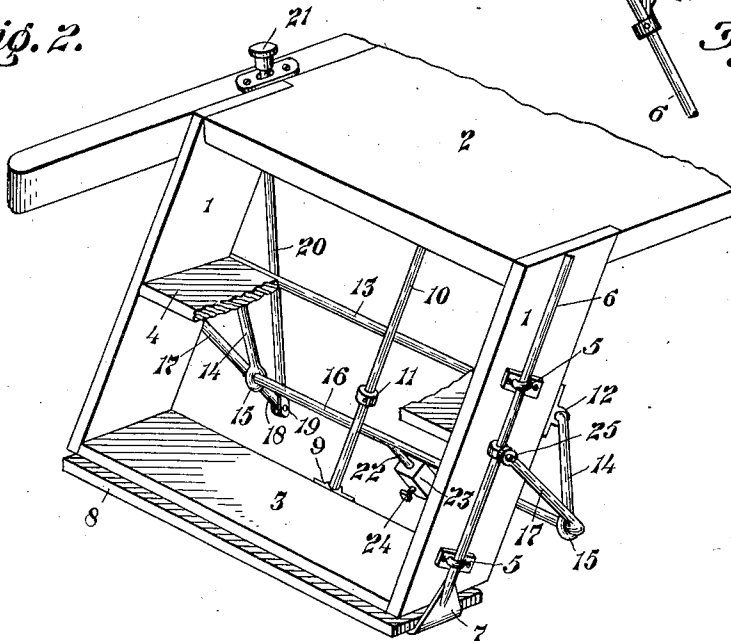


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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EXTENSIBLE CAR-STEP AND CATCH THEREFOR.

1,056,412.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, ARBIE A. HAMMELL and CHARLES E. BROOKS, citizens of the United States, residing at Sherodsville, in the county of Carroll and State of Ohio, and at Bowerston, in the county of Harrison and State of Ohio, respectively, have invented certain new and useful Improvements in Extensible Car-Steps and Catches Therefor, of which the following is a specification.

Our invention relates to improvements in extensible car steps and catches therefor particularly adapted for use on street cars, railway cars and the like, but equally adapted to a large number of other practical uses as will be apparent from the following description.

The objects of the invention are to generally improve devices of the character mentioned, to provide a simple, strong and durable extensible car step which will be easily operated, and to provide mechanism for the operation of said step, including a catch to hold said step in its raised position and the whole device adapted for positive and certain action.

These objects, together with other objects readily apparent to those skilled in the art, may be attained by the construction illustrated in the accompanying drawings, although the invention may be embodied in other forms, the construction illustrated being chosen by way of example.

In the drawings Figure 1 is a side elevation of a car step embodying our invention, showing the extensible step in its lower position. Fig. 2 is a perspective view of a car step embodying our invention, showing the extensible step in raised position, and one of the steps broken away to more fully disclose the construction. Fig. 3 is an enlarged inner side perspective view of the gravitating latch. Fig. 4 is an enlarged outer side elevation of said latch. Fig. 5 is an enlarged fragmentary view illustrating one of the slide rods and the gravitating locking dog connected thereto.

Throughout the several views similar reference numerals indicate similar parts.

More specifically describing the construction disclosed in said drawings, the numerals 1 represent the side frames of a car step fixedly connected in any suitable manner to

the car platform 2 and extending outwardly and downwardly therefrom. Fixedly connected at their ends to the pieces 1 are the lower and middle stationary steps 3 and 4 respectively. Said side frame pieces and stationary steps may be of any well known construction except that said side pieces 1 should preferably be parallel to each other.

Fixedly connected to the pieces 1 are slide bar keepers 5 slidably engaging the spaced slide bars 6, one for each side frame piece, said slide bars adapted for sliding movement substantially in line with the longitudinal disposition of the pieces 1. At the lower ends of said bars 6 broadened step-attaching portions 7 are provided and extending from one portion 7 to the other and connected to said portions is the extensible step 8. To the rear edges of the steps 3 and 4 slide bar keepers 9 similar to the keepers 5 are provided and a slide bar 10 is slidably mounted in said keepers 9 and connected at its lower end to the step 8. Upon the bar 10 is mounted a stop collar 11 which may be slidably moved along the bar 10 and may be held in fixed position on said bar, as by means of a suitable set screw. The collar 11 should be so positioned upon the bar 10 that when the step 8 is in its lower position the collar 11 will engage the keeper 9 on the step 3, as illustrated in Fig. 1, and thus prevent any further downward movement of said step. It will thus be understood that the step 8 in so far as its slide bar connection with the stationary portion of the car step is concerned is free to be slidably moved up and down in line with the general inclined disposition of the fixed steps, said step 8 being capable of being moved upward into position to closely underlie the lower stationary step 3, as shown in Fig. 2, or to be extended until the stop collar 11 prevents further extension, as shown in Fig. 1.

For the purpose of raising, holding in raised position and lowering the extensible step, actuating mechanism and a catch comprising a gravitating latch and a gravitating dog are provided. To the rear edges of the side frame pieces 1 are connected the eyes 12 in which is rotatably mounted the cross-member 13, which member is provided beyond the eyes 12 at each side with integral downwardly extending arms 14 provided at

their ends with the eyes 15. Said cross-member 13 together with the integral arms 14 and eyes 15 may be properly called a supporting yoke. Pivotaly mounted in the eyes 15 is the cross-member 16 provided at its ends beyond the eyes 15 with the integral or fixedly connected slide bar lifting arms 17, one of which arms is provided with a rearwardly extending projection 18, to the rear end of which is pivotaly connected at 19 the operating rod 20 which extends substantially vertically through the floor of the platform 2 and is preferably provided with a head 21 extending slightly above the floor and adapted to be pressed downward by the foot of the operator.

Fixedly connected to the cross-member 16 intermediate the arms 17 is the weight arm 22, which extends rearwardly substantially in the same plane with the arms 17 and projection 18, and on which is slidably mounted a counter-weight 23 preferably provided with a set screw 24 or equivalent means for fastening said weight upon the arm 22 in fixed adjustment.

It will be apparent from the description given and especially by an inspection of Fig. 1 of the drawing that by pressing downward with the foot upon the head 21 the operator will move the projection 18 downwardly and the arms 17 upwardly rotating the cross-member 16 in the eyes 15, and throwing the forward ends of the slide bar lifting arms 17 upwardly. Said forward ends of said arms are pivotaly connected to the slide bars 6 at 25 and it will thus be apparent that the upward movement of said arms 17 will lift said bars 6 and the step 8 from the position illustrated in Fig. 1 to the position illustrated in Fig. 2, the arms 14 swinging back and forth to an extent sufficient to permit the points 25 to pass the center with reference to the eyes 15. The counter-weight 23 should be adjusted, however, so that at all times the step 8 will have a tendency to drop by gravity into the extended position, carrying the points 25 past the center mentioned.

For the purpose of holding the extensible step in its upward position a catch comprising the gravitating latch 26 and the gravitating dog 27 is provided. Said gravitating latch comprises an elongated body portion 28 provided at its lower end with the head 29 and pivotaly connected at its upper end at 30 to the side frame piece 1 as by means of a supporting bracket 31. At its head end said latch is provided with a downwardly disposed latch lifting face 32 curving backwardly and upwardly. Said face terminates in the backwardly and upwardly extending point 33 which is spaced from a similar point 34 extending backwardly and upwardly above the point 33, said points 33 and 34 providing between them the recessed

supporting face 35. Into the recess formed by the face 35 and spaced from the points 33 and 34 extends the downwardly disposed point 36, for the purpose hereinafter more fully disclosed and from the point 34 extends the upwardly disposed forwardly and downwardly curving face 37 which meets the face 32 at the point 38, which is farthest from the pivotal point 30.

Fixedly connected to the slide bar 6 on that side of the step upon which the latch 26 is arranged is a bracket 39 to the upper end of which, at 40, is pivoted the gravitating dog 27. Said dog extends from the point 40 downwardly and thence outwardly and forwardly, forming a member of angular shape and at a point intermediate its ends said dog is provided with an out-standing latch pin 41 adapted to engage the various faces of the latch 26 as will hereinafter more fully appear. Fixedly connected to the bracket 39 are the lower and upper stop pins 42 and 43 respectively to limit the pivotal movement of the dog 27 upon its connection at 40. By gravity the dog 27 is normally held in the position illustrated in Fig. 5, resting against the stop pin 42.

Upon the bracket 31 is provided the fixed stop pin 44 adapted to limit the downward movement of the latch 26 and so positioned as to hold said latch in proper elevation so that the latch pin 41 will engage the latch lifting face 32 as the step 8 is raised to the upper position. As the dog 27 moves upwardly with the bar 6, to which it is attached, the said pin 41 raises the latch 26 against the action of gravity until said pin passes beyond the point 33, whereupon the latch 26 drops, bringing the point 36 into engagement with the pin 41. If the step 8 be then slightly lowered by releasing the pressure of the foot upon the head 21 the pin 41 moves into the recessed supporting face 35, whereupon the latch 26 will hold the dog 27 from further downward movement, thus retaining the step 8 in its upper position. Should it then be desired to lower the step a slight pressure of the foot upon the head 21 will cause the step 8 with the bars 6 to move slightly upwardly, causing the pin 41 to move up upon the upper side of the face 35 and between the points 34 and 36 until said pin 41 has passed beyond the point 34, when the latch 26 will drop into engagement with the pin 44, bringing the point 34 below the pin 41, whereupon, when the pressure upon the head 21 is released said pin 41 may ride up over the face 37, the dog 27 pivotaly moving upon the connection at 40, until said pin 41 has moved beyond the point 38, when the dog 27 will again drop by gravity into engagement with the stop pin 42. The step 8 may then be further lowered to its extreme extended position, as shown in Fig. 1. The

parts will again be in position to repeat the raising and latching of the step as just above described.

We claim:

5 1. A device of the character described comprising, in combination with a car platform and a flight of stationary steps connected thereto, an extensible step located
10 beneath the lowermost step of said flight, sliding members connected to said extensible step and to said stationary steps and adapted to be slidably moved to raise and lower
15 said extensible step with relation to said lowermost step, supporting arms pivotally connected at their upper ends to said stationary steps, a lifting yoke comprising a cross bar pivotally connected to the lower
20 ends of said supporting arms, step-lifting arms formed integrally with said cross bar and having their forward ends connected to said sliding members, a counter-weight connected to said cross bar and adapted to substantially counter-balance said extensible
25 step, and lifting-arm-actuating means connected to said cross bar and extending through said platform.

2. A device of the character described comprising, in combination with a car platform and a flight of stationary steps connected
30 thereto, an extensible step located beneath the lowermost step of said flight, slide members connected to said extensible step and to said stationary steps and adapted to be slidably moved to raise and lower
35 said extensible step with relation to said lowermost step, a supporting yoke formed of a cross member pivotally connected to said stationary steps and provided at its ends with integral, downwardly extending arms, a step-lifting yoke formed of a cross bar
40 pivotally connected to the free ends of said downwardly extending arms and slide-member-lifting arms formed integrally with said cross-bar and having their free ends
45 connected to said slide members, the cross member of said step-lifting yoke provided with a rearwardly extending weight arm, a counter-weight connected to said arm and adapted to substantially counter-balance the
50 weight of said extensible step, one of said slide-member-lifting arms provided with a rearwardly extending projection, an operating rod pivotally connected to said projection, and extending upwardly through said
55 platform, and a catch for holding said slide-members in the upper position and adapted to automatically engage and release said

slide-members when the device is actuated by said operating rod.

3. For a device of the character described, 60 in combination with two relatively movable members a catch therefor comprising a gravitating latch connected to one of said members and a gravitating dog connected to the other member, said latch comprising an
65 elongated body portion pivotally connected at one end to said member and provided at the other end with a head, said head provided with a backward and upwardly curved latch lifting face, upper and lower
70 backward directed spaced points, a recessed supporting face intermediate said points and a downward and forwardly disposed point extending intermediate the first mentioned points, a dog pivoted at its upper end
75 to said other member and provided with an outstanding latch pin, said latch pin, when said members are moved toward each other, adapted to slidably engage the latch lifting face on the gravitating latch, to pass
80 between said upwardly disposed and downwardly disposed points and to rest in said recessed supporting face, substantially as described.

4. For a device of the character described, 85 in combination with two relatively movable members a catch comprising a gravitating latch comprising an elongated body portion pivotally connected at one end to the first member and provided with a head at its
90 other end, said head end provided with a curved backward and upward extending latch lifting face terminating in a rearwardly directed point, a second rearwardly directed point located above and spaced
95 from said first mentioned point and a recessed supporting face between said points, and a forwardly directed point extending between said rearwardly directed points and forming with said rearwardly directed
100 points and said supporting face a U-shaped channel, and the second relatively movable member provided with a gravitating dog having an outstanding latch pin adapted for engagement with said faces and points
105 of said latch.

In testimony that we claim the above, we have hereunto subscribed our names in the presence of two witnesses.

ARBIE A. HAMMELL.
CHARLES E. BROOKS.

Witnesses:

JOHN H. BISHOP,
WILLIAM H. MILLER.