Aug. 12, 1924. 1,505,015

J. DUNLAP, JR

CAR STEP

Filed July 19, 1923

Fig. 1.

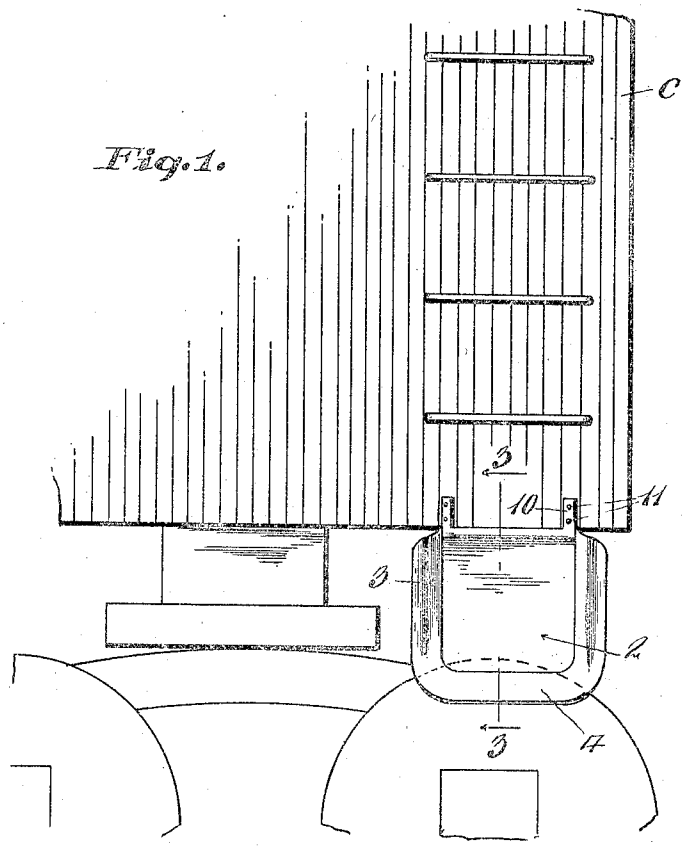


Fig. 2.

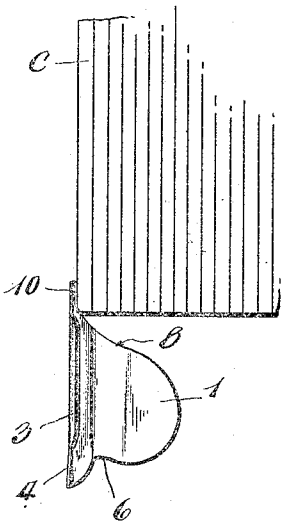


Fig. 3.

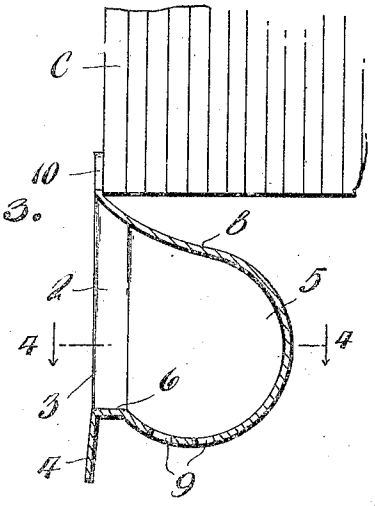
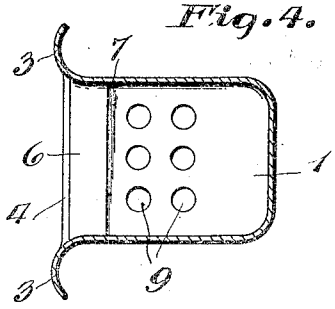


Fig. 4.



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UNITED STATES PATENT OFFICE.

JAMES DUNLAP, JR., OF EAST PITTSBURGH, PENNSYLVANIA.

CAR STEP.

Application filed July 19, 1923. Serial No. 652,652.

To all whom it may concern:

Be it known that I, JAMES DUNLAP, Jr., a citizen of the United States of America, residing at East Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car Steps; and I do hereby declare that the following is a full, clear, concise, 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 car steps, having for an object to provide a car step especially advantageous for use upon freight cars, or similar railway rolling stock, the device being of such construction and design as will afford a more positive and sure footing for a user, having means thereon for guiding the foot into engagement therewith, as when a person boards an equipped car in motion.

It is also an object of the invention to provide a car step which is so constructed as to prevent the slipping of the foot of a person boarding an equipped car through the same and possibly becoming entangled or crushed in or by the running gear.

Yet another object of the invention is to provide a car step so constructed and designed as to render the same more easily visible and also, will be conducive of confidence upon part of a user about to or using the same.

Other objects will be in part obvious and in part pointed out hereinafter.

In order that the invention and its mode of operation may be readily understood by persons skilled in the art, I have in the accompanying illustrative drawings, and in the detailed following description based thereon, set out one possible embodiment of the same.

In these drawings:

Figure 1 is a front elevation of the improved car step showing the same attached to a freight car;

Figure 2 is a side elevation thereof;

Figure 3 is a vertical section through the same taken on the line 3—3 of Figure 1 looking in the direction in which the arrows point; and,

Figure 4 is a horizontal section taken on the line 4—4 of Figure 3 looking in the direction in which the arrows point.

Having more particular reference to the drawings, in connection with like reference characters to designate corresponding parts throughout, the improved step may be stated to comprise a cast metal or otherwise formed body portion indicated in its entirety by the numeral 1, the forward side thereof being open, as indicated by the numeral 2, while upon the opposite side and bottom thereof, flanges 3 and 4 are formed, the side flanges 3 being of concavo-convex formation as clearly shown in the Figure 4, whereas the bottom flange 4 is plane and is slightly inclined towards the open front of the body portion of the step, as is indicated in the Figure 3.

The step body portion 1 is so constructed as to provide a form of pocket indicated by the numeral 5 and clearly shown in the Figure 3; having its upper, rear and bottom walls curved, as clearly shown and the bottom thereof arranged in a plane slightly below the basal portion of the open front of the step, whereat it is extended straight and transversely across the body portion, thus providing a flattened ledge or foot bar 6, which, if desired, may have the upper face or surface thereof roughened, in a suitable manner, not shown.

The opposite sides of the body portion 1 or the pocket 5 of the step are formed straight or plane, as indicated by the numeral 7 in the Figure 4, and as heretofore stated, carry upon their outer marginal portions, the concavo-convex flanges or guides 3; the adjacent or top portion of said pocket 5 being reversely curved, as indicated by the numeral 8 and forming an effectual guiding or deflecting means, whereby the sole of the foot of a person using the step will be directed downwardly and rearwardly into positive engagement with the pocket 5 in event that any difficulty is experienced in engaging the same.

The curved bottom of the pocket 5 has a plurality of openings 9 preferably formed therein, whereby to allow the draining of water or the passage of dirt or other matter accumulated or deposited therein from the same, thereby preventing the interference with the engagement of a foot of a person in the step.

Up-standing bracket arms 10 are formed integral with or secured to the forward marginal portion of the reversely curved top wall 8 of the step pocket 5 and as will be understood, afford means for effecting

the securing of the step to the desired portion of a freight car C as is clearly indicated in the Figures 1 and 2, rivets, bolts or other suitable fastening devices 11 being passed through openings in said arms into engagement with the adjacent portions of said car C.

In this connection, it may be herein noted that the interior surface of the body portion 1 of the car step is generally free of acute angles or corners and that the curvature of said interior surface is such as will tend to direct a foot of a user or any foreign matter downwardly towards the bottom thereof, thus ensuring positive and sure engagement of a foot of a person at the bottom of the step as well as the direction of any foreign matter to the perforated bottom of the step body portion with the following drainage or removal thereof from the body portion by way of the openings 9.

From the foregoing, it will be understood that I have provided a simple, but highly efficient form of step especially desirable for use in connection with freight cars and similar railway rolling stock. The concavo-convex flanges 3 arranged upon the opposite sides of the open front of the step body portion 1 are such as will cause the positive direction of a foot of a person towards and into the open front of the step, as when boarding an equipped car, thus rendering engagement of the foot with the bottom of the step positive. Furthermore, the formation and design of the bottom plane flange 4 is such as will cause the sole of the foot of a user when engaging the same to be directed upwardly onto the flattened ledge or foot bar 6 formed at the bottom of the open front end of the pocket 5 of the step body portion.

The foot of a person when engaging properly with the open front of the car step will have the toe and ball portion thereof passed into the pocket 5, while the instep of the foot will engage and rest upon the flattened ledge or foot bar 6, the forward portion of the heel of the shoe of the wearer's foot contacting with an adjacent portion of the plane bottom flange 4 and hence, affording an effectual stop for the foot, thereby facilitating the boarding of the equipped car.

Also, as heretofore stated, because of the curvature of the bottom of the pocket portion 5, and its arrangement in a plane below that in which the flattened ledge or foot bar 6 is arranged, it will be understood that water, dirt, or other foreign matter accumulated or deposited in said body portion 5 will be permitted to pass therefrom immediately by way of the openings 9 and in consequence, interference with the proper engagement of the foot of a user in the step will be avoided. Likewise, because of the fact that the rearward wall of the body portion of the step is closed, it will be seen that the passage of a foot of a user through the step into engagement with the running gear of an equipped car will be avoided, and in consequence, possibility of entanglement of the foot with the running gear, or the crushing of the same thereby will be prevented.

It is to be also noted that by reason of the reversely curved formation of the top wall 8 of the step body portion 1, that is, the pocket 5, should the foot of a person boarding an equipped car be raised too high with respect to the open front of the step, the toe thereof will engage the downwardly extending or directed reversely curved top wall 8 and hence, the foot will be directed rearwardly and downwardly so that it will positively engage with the bottom of the step, the instep resting upon the flattened ledge or foot bar 6.

The depth or length of the pocket 5 of the body portion 1 is to be such as to accommodate any size foot and in consequence, will ensure a person using the step of positive engagement therewith and prevent injury to such person as by way of slipping of the foot from the step or through the same.

Manifestly, the construction shown is capable of considerable modification and such modification, as is within the scope of my claims, I consider within the spirit of my invention.

I claim:

1. A car step comprising a body portion having concavo-convex flanges upon the opposite sides thereof adapted to direct the foot of a user into engagement therewith.

2. A car step comprising a body portion having concavo-convex flanges upon the forward portions of the opposite sides thereof adapted to direct the foot of a user into engagement therewith, and a downwardly extending flange formed upon the forward portion of the bottom thereof.

3. A car step comprising a pocket-like body portion having the rearward wall thereof closed and the forward portion thereof opened, and concavo-convex flanges upon the opposite sides of said body portion adapted to direct the foot of a user into engagement therewith.

4. A car step comprising a pocket-like body portion having the rearward wall thereof closed and the forward portion thereof opened, concavo-convex flanges upon the forward extremities of the opposite sides of said body portion adapted to direct the foot of a user into engagement therewith.

5. A car step comprising a pocket-like body portion having the rearward wall thereof closed and the front portion opened, concavo-convex flanges upon the forward ex-

tremities of the opposite sides of the body portion adapted to direct the foot of a user into engagement therewith, and a plane downwardly extending flange upon the forward extremity of the bottom of said body portion.

6. A car step comprising a pocket-like body portion having the rearward wall thereof closed and the forward portion opened, flanges upon the forward extremities of the opposite sides thereof adapted to direct the foot of a user into engagement therewith, a downwardly extending plane flange upon the forward extremity of the bottom of said body portion, said bottom of the body portion being flattened transversely of itself, as and for the purpose set forth.

7. A car step comprising a pocket-like body portion having the rearward wall thereof closed and the forward portion opened, the bottom of said pocket-like body portion being curved and arranged in a plane below the plane in which the bottom of the open front portion thereof is arranged, the bottom of said open front portion being flattened whereby to provide a foot bar, as and for the purpose set forth.

8. A car step comprising a pocket-like body portion having the rearward wall thereof closed and the forward portion thereof opened, the bottom of said pocket-like body portion being curved and arranged in a plane below that in which the bottom of the open forward portion is arranged, said bottom of the open forward portion being widened and flattened, and flanges upon the forward extremities of the opposite sides of said body portion adapted to direct a foot of a user into engagement therewith.

9. A car step comprising a pocket-like body portion having the rearward wall thereof closed and its front portion opened, the bottom of said pocket-like body portion being curved and arranged in a plane below that in which the bottom of the open front portion is arranged, said bottom of the open front portion being widened and flattened, concavo-convex flanges upon the forward extremities of the opposite sides of the body portion, and a plane downwardly extending flange upon the forward extremity of said widened and flattened bottom of the open front portion.

10. A car step comprising a pocket-like body portion having its rearward wall closed and its front portion opened, the bottom of said pocket-like body portion being curved and arranged in a plane below that in which the bottom of the open front portion is arranged and having a plurality of openings formed therein, said bottom of the open front portion being widened and flattened, concavo-convex flanges upon the forward extremities of the opposite sides of said body portion, and a plane downwardly extending flange carried upon the forward extremity of the bottom of said open front portion.

11. A car step comprising a pocket-like body portion having its rearward wall closed and its front portion opened, the top wall of said pocket-like body portion being reversely curved and downwardly directed, the bottom of said pocket-like body portion being curved and arranged in a plane below that plane in which the bottom of said open front portion is arranged, said bottom of the open front portion being widened and flattened, concavo-convex flanges upon the forward extremities of the opposite sides of said body portion adapted to direct the foot of a user into engagement therewith, and a plane downwardly extending flange arranged upon the forward extremity of the bottom of said widened and flattened open front portion.

In witness whereof I have hereunto set my hand.

JAMES DUNLAP, JR.