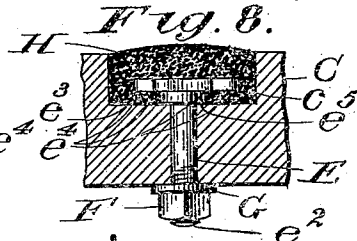
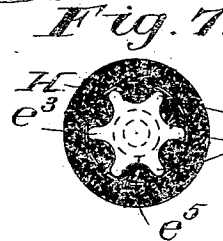
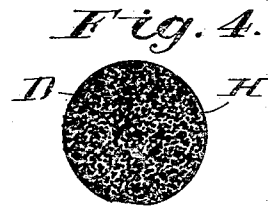
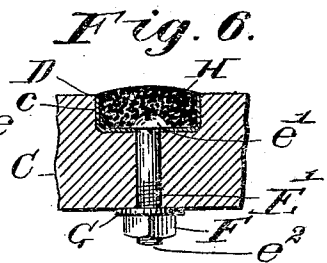
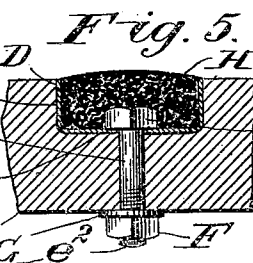
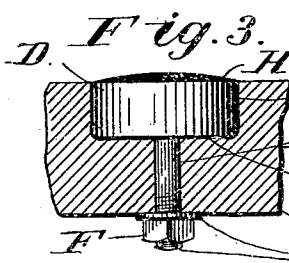
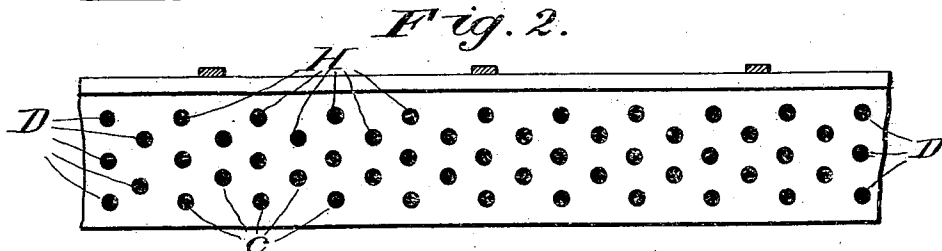
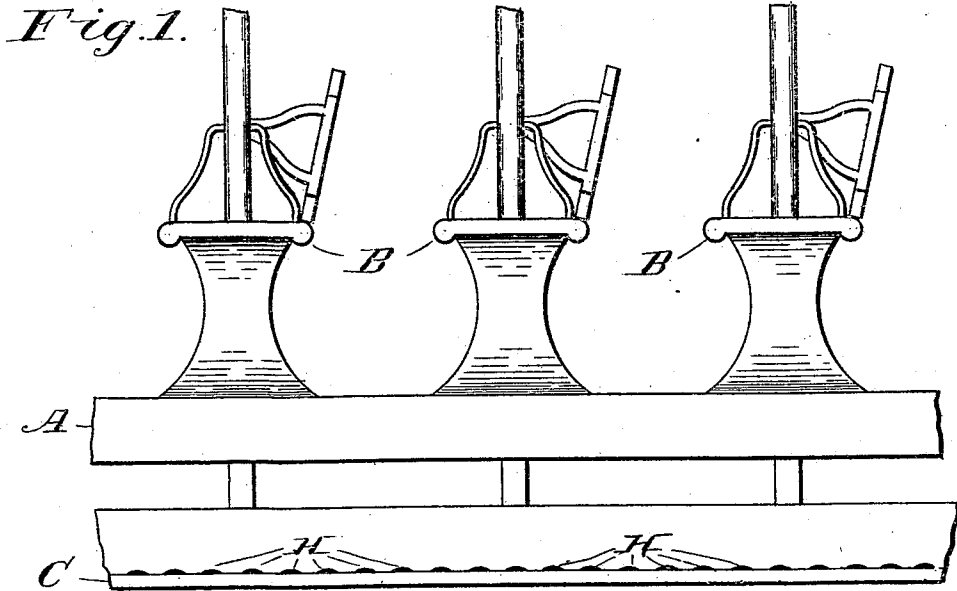


J. L. CAMPBELL.
NON-SLIPPING TREAD PLUG.
APPLICATION FILED JULY 18, 1906.

958,363.

Patented May 17, 1910.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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NON-SLIPPING TREAD-PLUG.

958,363.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed July 18, 1906. Serial No. 326,664.

To all whom it may concern:

Be it known that I, JAMES L. CAMPBELL, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Non-Slipping Tread-Plugs, of which the following is a specification.

This invention relates to non-slipping tread-plugs and comprises means of retaining such plugs in treads where non-slipping plugs are especially necessary and where jar, vibration or spring of the treads has a tendency to loosen said plugs, as in the foot-boards or running-boards of open street-cars, in the treads of temporary or slightly made wooden steps or stairs or where no risers are used, as step-ladders and ships' ladders, or in gang-planks or similar comparatively thin and springy walks.

In the accompanying drawing, Figure 1, is a side elevation of a part of an open street-car, showing seats, sill and foot-board with my invention applied to said foot-board; Fig. 2, a plan of said foot-board provided with safety-plugs; Fig. 3, a section of a tread as a part of a foot-board, with a plug in side elevation; Fig. 4, a plan of the plug shown in Fig. 3; Figs. 5 and 6, central sections of plugs in treads, showing the attaching means in side elevation; Fig. 7, a horizontal section of a plug on the line 7 7 in Fig. 8; Fig. 8, a vertical section on the line 8 8 in Fig. 7, the case represented in Figs. 3-6 being omitted in Figs. 7 and 8, which also show a modification of the attaching means.

A denotes a floor-sill of an open street-car; B, the seats of the same; C, a foot-board or running-board, all of any usual construction. The foot-board being of wood and frequently slippery, endangers the safety of the conductor who walks thereon to collect his fares, and of the passengers who get on and off the car and who sometimes are obliged to stand on said board. It has not been considered practicable to use upon the foot-board the metallic safety-treads having grooves filled with anti-slipping material commonly used on the steps of large buildings, owing to the great weight of said safety-treads and the difficulty of securing them in place and of retaining the filling in the grooves, because of the jar, vibration and

spring of said foot-boards. It is dangerous to provide such foot-boards with non-slipping plugs or similar devices arranged at intervals from each other and projecting to any considerable degree above the surface of the foot-board because such plugs would cause the conductor and passengers to stumble by engaging the toes and heels of their shoes. There are many other situations where owing to the lightness of construction of the treads or their supports, heavy grooved and filled metallic plates cannot well be used.

The safety plugs herein described are intended to supply the place of safety-treads in all such cases. The safety-plug is represented (Figs. 3-6) as comprising preferably a short cylindrical hollow case D of metal, as sheet-iron or sheet-brass or tinplate, closed at its lower end *d*; a bolt E or E¹ forming the shank of the plug passed down through the bottom *d* of said case until the head *e* *e*¹ rests on the top of said bottom, a nut F to engage the threaded lower end *e*² of said bolt or screw, a washer G, which may however be omitted and a suitable filling H of cement or similar composition containing a gritty non-slipping substance, as finely divided carborundum or quartz or sand or any usual mixture of these, such that when the cement is set or hardened its surface will be rough and abrasive to engage the soles and heels of shoes. The cement filling should be slightly convex as shown. Lead or other non-slipping material may be used as a filling.

The foot-board or other similar tread is bored out at *c* to receive the plug with the top of the case D just flush with the top of the tread so that the convex top of the filling rises slightly above the tread surface or top of said tread, and a smaller hole *c*¹ is bored entirely through said tread for the shank-screw or bolt which is of sufficient length to reach below said tread, and to engage the nut F, as shown, to prevent the loosening of the safety-plug and to enable the plug to be tightened if it should become loose by shrinking of the wood of the tread or otherwise.

In Figs. 7 and 8, the case is omitted and the bolt or shank E² is provided with a head *e*² and an annular shoulder *e*³ or enlargement of the shank which reaches to the

bottom of the cement or non-slipping body of the plug while the head e^2 is embedded in said cement between the top and bottom thereof, said cement entirely covering and
5 coming in contact with all parts of said head. Said head e^2 may be a round disk as indicated by the dotted circle shown in Fig. 7, but preferably consists of arms or projections e^4 radial to the axis of the shank to
10 enable the cement and the shank better to engage each other and to allow the upper and lower parts of the cement to be more perfectly united. In other respects the form of plug shown in Figs. 7 and 8 is the same
15 as the plug shown in Figs. 3-6.

Preferably the plugs will be molded or completed in the factory but either form of plug may be filled in the tread, the case D of the plug first described being placed in
20 the tread with its shank projecting through said tread and then filled, while in the plug last-named the counterbore or large hole serves as the mold for the non-slipping cement or material, the shank being first
25 passed through the tread and the body of

the plug being cast around it by filling said counterbore with said cement.

I claim as my invention:—

1. A non-slipping tread-plug comprising a suitable body of cement containing gritty
30 material adapted to be let into a tread flush with the tread surface thereof, and an attaching shank rigidly secured to said body and adapted to extend through said tread, and means to engage said shank below said
35 tread and to retain the same in said tread.

2. A non-slipping tread-plug consisting of a suitable case filled with non-slipping material, said case being adapted to be let
40 into a tread and having a screw-threaded shank rigidly connected to said case and adapted to extend through said tread and a nut to engage said shank below said tread.

In witness whereof, I have affixed my signature, in presence of two witnesses.

JAMES L. CAMPBELL.

Witnesses:

ALBERT M. MOORE,
WILLIAM S. LAMSON.