April 8, 1958 J. L. MONNERY 2,830,138

ELECTRIC CURRENT COLLECTOR INSERTS

Filed Dec. 1, 1952 3 Sheets-Sheet 1

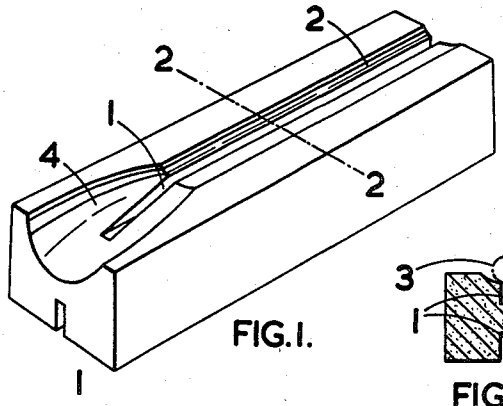



FIG.1.

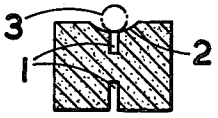



FIG.2.

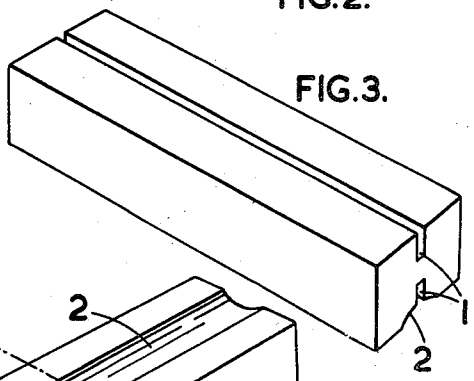



FIG.3.

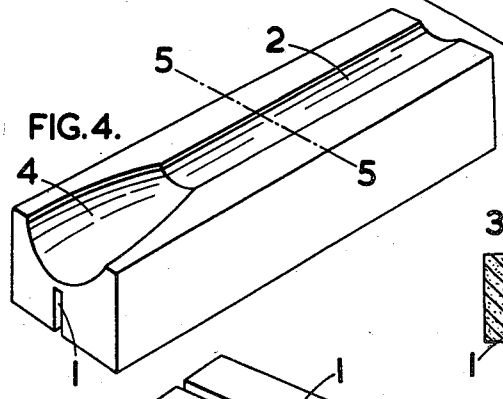



FIG.4.

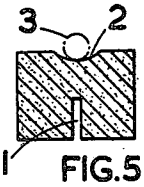



FIG.5.

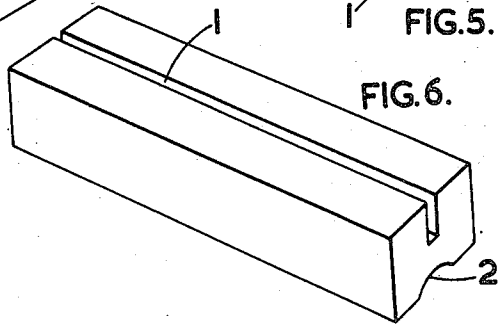



FIG.6.

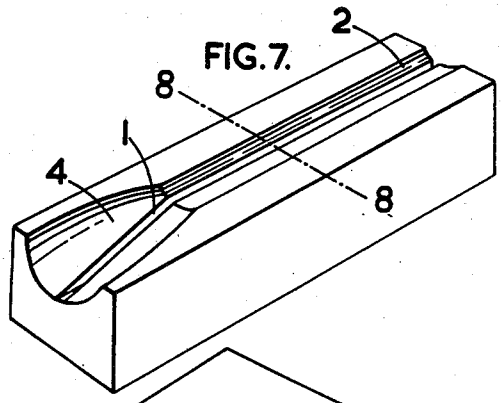
Inventor:
John Lionel Monnery
By his Attorneys:
Baldwin & Wight

April 8, 1958 J. L. MONNERY 2,830,138

ELECTRIC CURRENT COLLECTOR INSERTS

Filed Dec. 1, 1952 3 Sheets-Sheet 2

FIG.7.



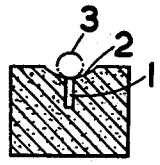




FIG.8.

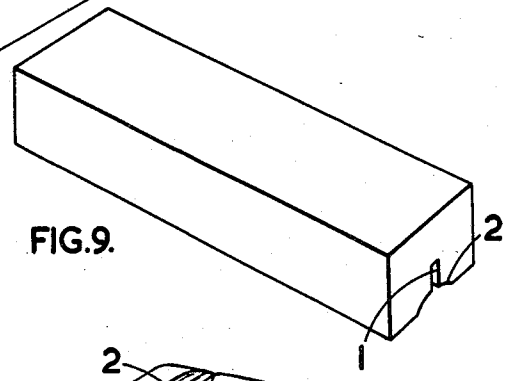



FIG.9.

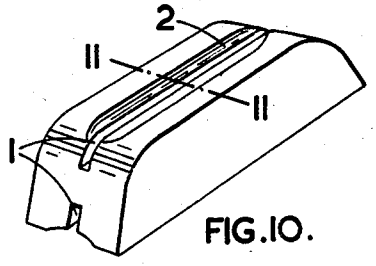



FIG.10.

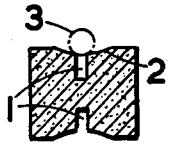



FIG.11.

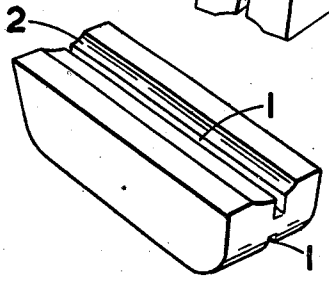



FIG.12.

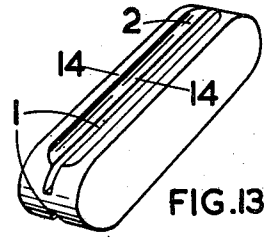



FIG.13.

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April 8, 1958 J. L. MONNERY 2,830,138

ELECTRIC CURRENT COLLECTOR INSERTS

Filed Dec. 1, 1952 3 Sheets-Sheet 3

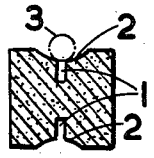



FIG.14.

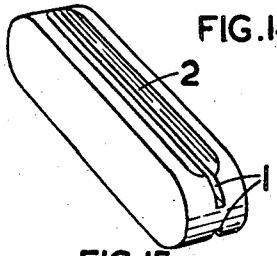



FIG.15.

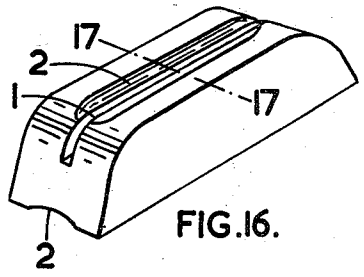



FIG.16.

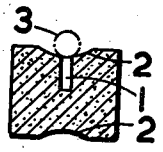



FIG.17.

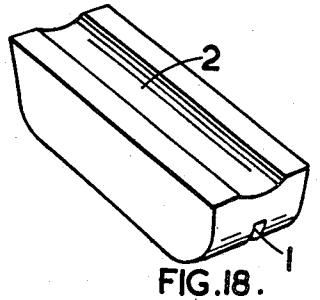



FIG.18.

FIG.19.

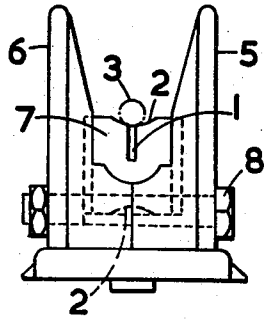
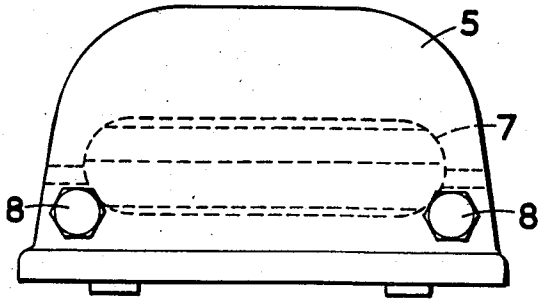



FIG.20.




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United States Patent Office 2,830,138 Patented Apr. 8, 1958



2,830,138

# ELECTRIC CURRENT COLLECTOR INSERTS

John Lionel Monnery, London, England, assignor to The Morgan Crucible Company Limited, London, England, a British company

Application December 1, 1952, Serial No. 323,376

3 Claims. (Cl. 191—59.1)

This invention comprises improvements in electrically conductive inserts for overhead current collectors or electric vehicles, especially carbon inserts for the collector shoes in the "trolley heads" of electric buses and trams. Such inserts are made, for example, of breakable or frangible carbon or carbon-metal compositions.

The improved insert according to the invention is characterised by having in its top or bottom surface, or in each of these surfaces, a narrow and relatively deep slot extending in a direction longitudinally of the insert, which direction is substantially parallel to the line of travel of the insert. The width of the slot is much less than its depth and is substantially less than the diameter of a conductor wire from which the insert is designed to collect current. The depth of the slot, or the combined depths of two slots in the case where there is a slot in each of the top and bottom surfaces, is preferably about a half of the distance between the top and bottom surfaces.

The top or bottom surface of the insert in which the said longitudinal slot is formed is not necessarily flat because it may be shaped so as to have a relatively wide groove or recess. It is in fact usual to provide such a groove or recess to locate or guide the conductor wire. It will be understood that the longitudinal slot provided according to the present invention in the case of such inserts will extend into the body of the insert from the base of the depression in the surface of the insert constituted by the relatively wider groove or recess. When, therefore, reference is made herein to the top or bottom surface of the insert, there is meant the actual surface whether the latter be flat or whether it be locally depressed to provide a guideway for the conductor wire. The longitudinal slot is distinct from and additional to any such guideway.

The longitudinal slot is preferably centrally disposed, i. e. in the longitudinal axial plane of the insert or equidistant from the sides of the insert, but there may be a plurality of longitudinal slots, in the same surface of the insert, suitably spaced apart from each other. Also it is not essential that a slot shall lie exactly parallel to the sides of the insert or to the run of the conductor wire for it may be inclined at a small angle thereto, or it may itself be wavy or otherwise depart slightly from straightness.

The invention has various advantages. Due to the slot the insert has a certain elasticity, more particularly in the region of the slot, rendering the insert less liable to break. If, on the other hand, breakage should occur it will be oriented by the slot and therefore broken pieces will not drop away as is customary with other types of frangible inserts. An additional desirable advantage of the longitudinal slot in the top surface of the insert is that it serves the useful purpose of providing drainage for dust and water in a space which is clear of the conductor wire.

The invention is illustrated by way of examples in the accompanying drawings, of which:

Figure 1 is a perspective view of one example of insert.

Figure 2 is a section on the line 2—2 of Figure 1.



Figure 3 is a perspective view showing the underneath portion of Figure 1.

Figure 4 is a perspective view of a second example.

Figure 5 is a section on the line 5—5 of Figure 4.

Figure 6 is a perspective view showing the underneath portion of Figure 4.

Figure 7 is a perspective view of a third example.

Figure 8 is a section on the line 8—8 of Figure 7.

Figure 9 is a perspective view showing the underneath portion of Figure 7.

Figure 10 is a perspective view of a fourth example.

Figure 11 is a section on the line 11—11 of Figure 10.

Figure 12 is a perspective view showing the underneath portion of Figure 10.

Figure 13 is a perspective view of a fifth example.

Figure 14 is a section on the line 14—14 of Figure 13.

Figure 15 is a perspective view showing the underneath portion of Figure 13.

Figure 16 is a perspective view of a sixth example.

Figure 17 is a section on the line 17—17 of Figure 16.

Figure 18 is a perspective view of the underneath portion of Figure 16.

Figure 19 shows an end elevation of an insert mounted in a collector shoe. Figure 20 shows the same in side elevation.

Referring to Figures 1–18 of the drawings, the reference numeral **1** indicates a longitudinal slot in either or both of the top and bottom surfaces of the insert. The reference numeral **2** denotes a wide and shallow groove in either or both of the top and bottom surfaces of the insert. In Figures 2, 5, 8, 11, 14 and 17 is shown the cross-section of a conductor wire **3** from which current is collected by the inert.

In Figures 1, 4 and 7 one end of the top surface of the insert is dished in the known manner, as shown at **4**, to guide the entry of an overhead conductor wire into the groove **2**.

Figures 19 and 20 shows a customary form of collector shoe comprising side wings **5** and **6** between which is mounted an insert **7** having longitudinal grooves **2** in its top and bottom surfaces and a longitudinal slot **1** in its upper surface. The wings **5** and **6** have recessed base portions for nesting into insert and are clamped together by bolts **8**.

As shown in the drawings, the depth of the slot, or the combined depths of two slots in the forms where there is a slot in each of the top and bottom surfaces, from the bottom of the associated groove to the bottom of the slot is substantially greater than the depth of the groove.

I claim:

1. A frangible electrically conductive insert adapted to collect electric current from an overhead conductor to power an electric vehicle, said insert having a bottom surface and a top surface, said top surface having a groove for the accommodation of said conductor, said top surface having a slot formed therein in communication with the groove, said slot extending longitudinally of said insert and in a direction substantially parallel to the length of said conductor and being more narrow than said groove, the depth of said slot from the bottom of said groove to the bottom of said slot being substantially greater than the depth of said groove and the width of the slot much less than its depth, said slot rendering said insert relatively more elastic in the region of the slot than at the other parts of the insert.

2. A frangible electrically conductive insert adapted to collect current from an overhead conductor to power an electric vehicle, said insert having a bottom surface and a top surface, said top surface having a groove for the accommodation of said conductor, each of said surfaces of the insert having a slot which is relatively narrow compared to its depth and relatively deep compared to its

width, the combined depths of the slots being about half the distance between said top and bottom surfaces, each of said slots being more narrow than the groove and extending longitudinally of said insert and in a direction substantially parallel to the length of said conductor, said slots rendering said insert relatively more elastic in the region of the slots than at other parts of said insert.

3. A frangible electrically conductive insert adapted to collect electric current from an overhead conductor to power an electric vehicle, said insert having a bottom surface and a top surface, said top surface having a groove for the accommodation of said conductor, said top surface having a single slot formed therein in communication with the groove, said slot being more narrow than said



groove and extending longitudinally of said insert and in a direction substantially parallel to the length of said conductor and being relatively narrow compared to its length and relatively deep compared to its width, said slot rendering said insert relatively more elastic in the region of the slot than at other parts of said insert.

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