April 21, 1936. W. C. BANKS 2,038,203

ELECTRICAL CONNECTER

Original Filed Nov. 4, 1932 2 Sheets-Sheet 1

FIG. 1

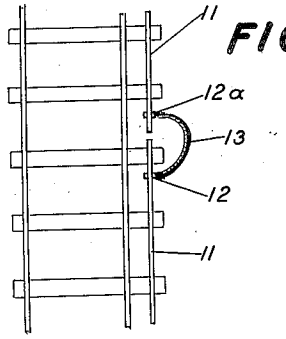


FIG. 2

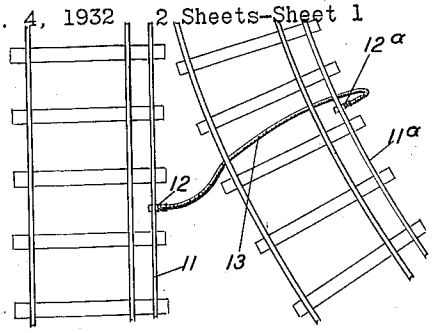


FIG. 4

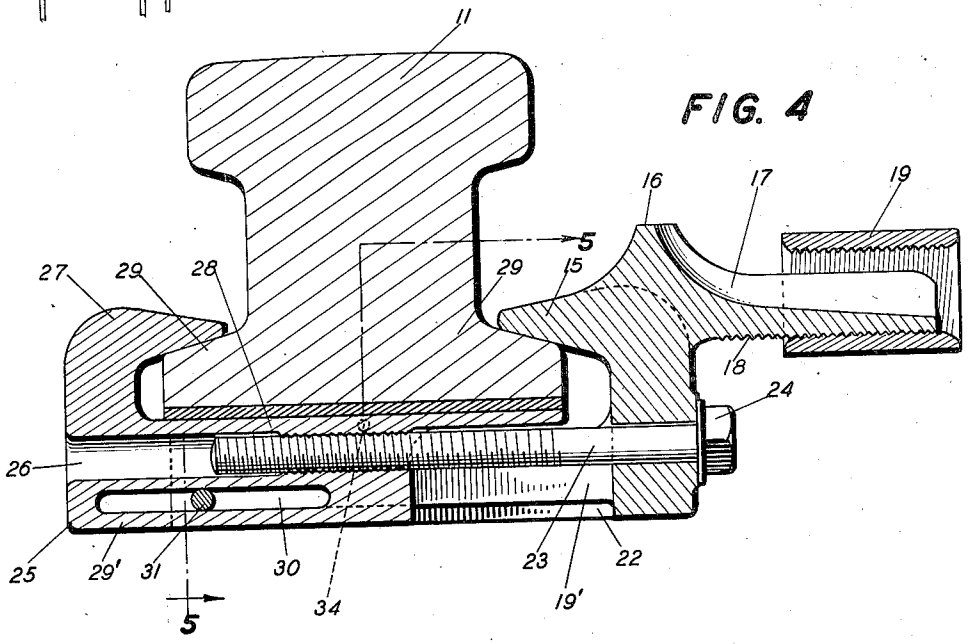
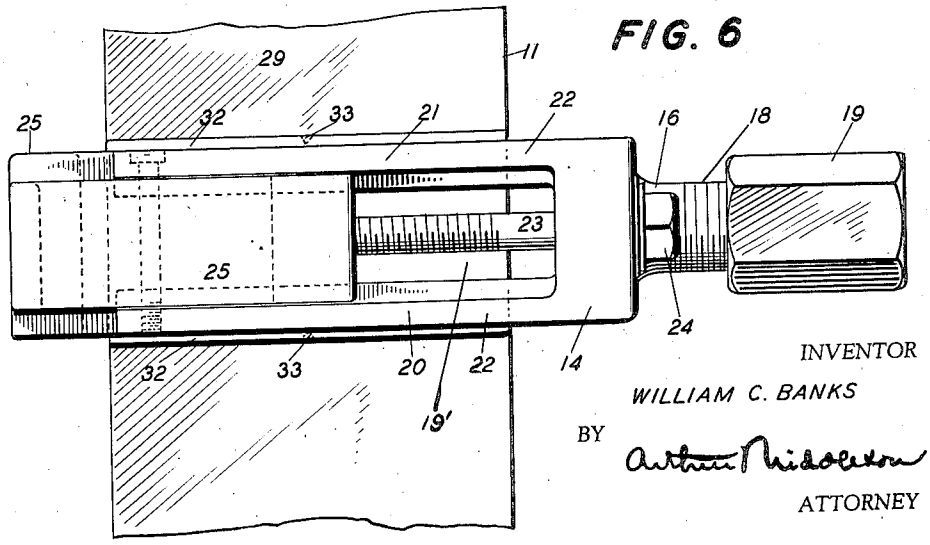


FIG. 6



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ELECTRICAL CONNECTER

Original Filed Nov. 4, 1932 2 Sheets-Sheet 2

FIG. 5

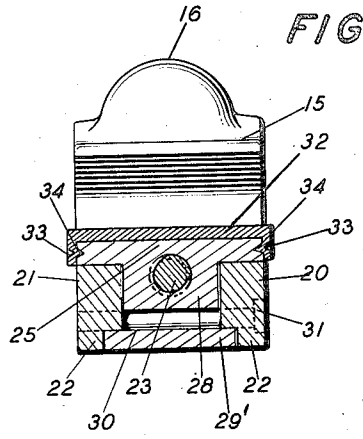


FIG. 3

FIG. 7

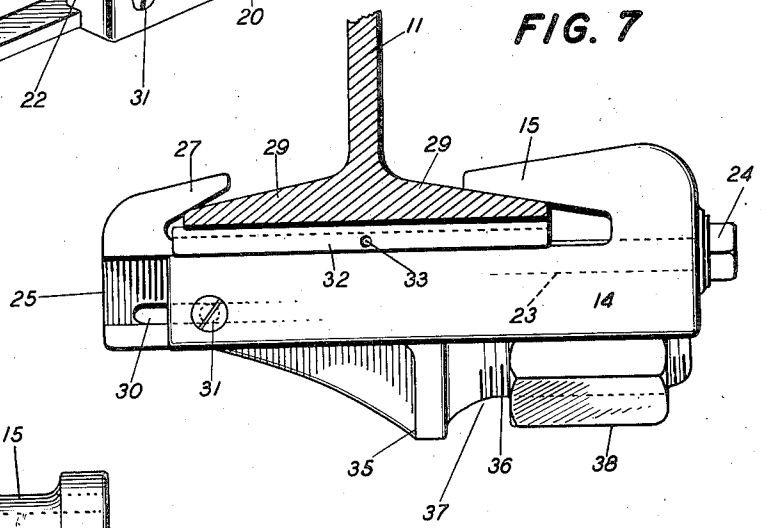
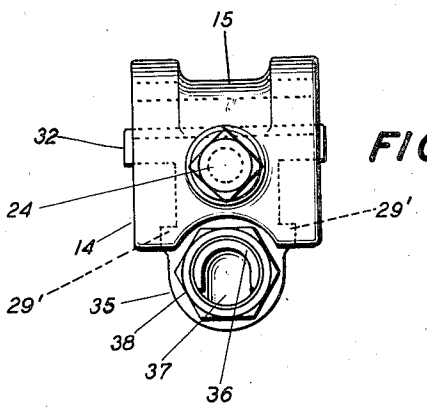


FIG. 8



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Patented Apr. 21, 1936 2,038,203

UNITED STATES PATENT OFFICE

2,038,203

ELECTRICAL CONNECTER

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Refiled for abandoned application Serial No. 641,142, November 4, 1932. This application February 24, 1934, Serial No. 712,846

1 Claim. (Cl. 173—277)

This invention relates to electrical connecters with especial reference to their use on the third rail of an electric railway. More particularly, the connecter is for emergency use to remedy a broken bond or rail in the power circuit or for otherwise conducting power temporarily to a conductor for operating an electrically propelled vehicle.

This application is a substitute for the abandoned application, 641,142, filed Nov. 4, 1932.

One object of the invention is to provide an emergency connecter which can be quickly applied to the third rail in a manner to give a maximum contact surface, and which can be securely clamped to the rail. Another object is to devise a connecting clamp which can be used in connection with rails of different sizes.

One of the features of the invention is a deformable bed plate which by the pressure exerted by the clamping jaws of the connecter, is caused to conform to the inequalities of the rail, whereby a maximum area of contact with the rail is secured for the passage of current from the connecter to the rail. Another feature of the clamp is its telescoping characteristics whereby it can be made to fit various size rails and yet is constructed in such a way as to be thoroughly rigid and strong enough to withstand all of the strains and stresses which are apt to be brought to bear upon it. Still another feature of the clamp is that it is self-contained and can be installed in operative position by the use of no other tool than an ordinary wrench.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of my invention.

In the accompanying drawings, I have illustrated the best embodiment of my invention known to me, but such embodiments are to be regarded as typical only of many possible embodiments and my invention is not to be limited thereto.

In the drawings Figure 1 illustrates diagrammatically one method of use of my emergency connecter. Figure 2 shows another example of use. Figure 3 shows a perspective view of my emergency clamping connecter. Figure 4 is a longitudinal transverse vertical sectional view through one of my connecters in place on the third rail. Figure 5 is a transverse vertical sectional view taken along the line 5—5 in Figure 4. Figure 6 is a bottom view looking upwardly at the parts as shown in Figure 4. Figure 7 is a view similar to Figure 4 but of a modified form of the device, while Figure 8 shows an end view of the parts in Figure 7, looking from right to left.

My emergency clamping connecter is for attachment to the third rail or power rail of a traction line and is for the purpose of conveying electrical current to that part of the third rail which may, for some reason, have become dead, for instance from a broken bond. Such a use is shown in Figure 1 wherein 11 indicates two sections of a third rail, one of which has gone dead. One of my clamps or connecters is applied at 12 to the rail 11 and a duplicate clamp or connection 12a is applied to the other part of the rail, and electric cable 13 connects the two clamping connecters. Thus electrical current is conveyed to the isolated part of the third rail. Figure 2 shows another use of my connecter wherein 11 represents a live third rail and 11a represents a dead third rail, or vice versa. In order to conduct current from the live rail to the dead one, one of my connecters 12 is applied to the live rail 11 while another of my connecters 12a is clamped to the dead rail 11a and the two connecters are connected by a conducting cable 13 whereby current is conducted from the live rail to the dead rail.

One embodiment of my invention is shown in the clamp or connecter illustrated perspectively in Figure 3. In this form 14 indicates a main body or base portion having a clamping edge or jaw 15 extending backwardly but above the body portion 14. This clamping edge or jaw is provided with a boss-like extension 16 channeled at 17 and threaded at 18 with which cooperates a nut 19.

The body portion 14 is provided with a recess 19′ so that in plan view the body part 14 is U-shaped and has two legs 20 and 21 respectively. The adjacent faces of the legs 20 and 21 are rabbeted. Projecting longitudinally within the U-shaped body portion 14 between the legs 20 and 21 and in the same plane thereof is a bolt 23 screw threaded in the usual manner and having a nutlike head 24.

Telescopically or slidably held within the U-shaped body portion 14 and between the legs 20 and 21, in a manner to close the space between the legs, is a co-acting clamping element 25 reciprocable into and out of the U-shaped body portion 14 in overlapping position so that it moves toward and away from the clamping edge or jaw 15 by means of co-action between the bolt 23 and a threaded aperture or bore 26 in the clamping portion 25. The part 25 is provided

with a clamping lip or jaw 27 which is bent upwardly and backwardly over a body part 28 of the movable clamping member 25 so that the clamping edges or jaws 15 and 27 can clamp the flanges 29 of the third rail 11.

The body portion 28 of the reciprocable clamping member 25 is also rabbeted as at 29' complementary to the rabbets 22 of the body portion 14 so that the clamping portion 25 cannot twist with respect to the main body portion 14. In order further to prevent relative and undesired displacement of the portion 25 in the U-shaped portion 14, the portion 25 has a transverse slot 30 through which is adapted to extend a bolt 31 secured to and carried by the legs 20 and 21 of the body portion 14. This bolt 31 with the slot 30 and the rabbet arrangement 22 and 29' permits desired adjustability longitudinally of the clamping members or parts 14 and 25 to act to prevent any undesired relative movements between said parts.

The movable clamping body 25 is provided with a seating bed or plate 32 which is preferably of some deformable material which is also a good conductor of electricity. Lead has been used for the seating bed or plate 32 with satisfactory results. I have also found that the deformable plate 32 can be held in place by detents 33 which force the lead of the plate 32 into complementary indentations 34 in the body part of the clamping member 25. For the purpose of effecting dependable electrical contact between the clamping body and the seating bed, and between the seating bed and the rail, it is advantageous to have the deformable bed 32 extend the entire width of the rail base.

In the modification shown in Figure 7, the relation of the parts are the same as in the embodiment shown in Figures 4 to 6 for the manner of connecting the electrical cable to the clamping connecter. In this form instead of having the boss 16 with its groove 17 and nut 19, the boss 35 is formed on the bottom of the body portion 14 which terminates in a threaded extension 36 having a groove 37 and a nut 38 for coaction with the threaded extension 36.

Operation.—When a break in the power line or third rail takes place, the workman expands or extends the parts of the clamping connecters 25 and 14 by rotation of the bolt 23 until the clamping jaws or lips 15 and 27 are far enough apart to permit the clamp to be moved upwardly from below the bottom flange 29 and the third rail until the bottom of the rail is engaged by the deformable plate 32 on the clamp. Then the bolt 24 is rotated until the clamping jaws 15 and 27 are drawn together and take the position with respect to the rail as shown in Figure 4. The nut 24 is drawn tight until the clamping jaws securely and rigidly engage the flanges of the third rail. Because of the inclined abutting faces of the clamping jaws 15 and 27 and the flanges 29 of the rail, the lead plate or bed 32 is drawn up against the bottom of the rail so securely that continued rotation of the bolt 25 deforms the upper face of the lead 32 until the lead is deformed to conform thoroughly to any inequalities in the bottom of the rail, whereby an excellent electrical contact is made. By the use of lead not only does this conformation take place, but it provides a cushioning effect between the rail and the clamping connection. The end of an electrical cable is then inserted in the groove 17 and within the nut 19. Tightening of the nut 19 deforms the end of the cable to a certain extent, and because of the incline of the groove 17 securely grips the cable in place to give a good electrical contact without the necessity of a soldered connection.

After repairs have been made in the power rail, it is a simple matter for a workman to back off bolt 24 to cause extension of the clamping members 14 and 25 whereby the clamping connecter is dropped off from the rail 11. It is equally simple for the workman to back off the nut 19 to disconnect the electrical cable from the connecter.

The operation of the embodiment shown in Figures 7 and 8 is identical with the one just described, the only difference between the two forms being in the location of the threaded extension to which the electrical cable is connected.

I claim:

An electrical connecter comprising two jawed rail clamping members, one having a U-shaped body portion into which the body portion of the other is adapted to slidingly fit, there being coacting rabbet means on abutting faces of said members, bolt means for moving said members with respect to each other, and means for securing an electrical cable to one of said members.

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