Dec. 17, 1929. J. HÖLZEL 1,739,591

THIRD RAIL GUARD

Filed June 20, 1927

Fig. 1.

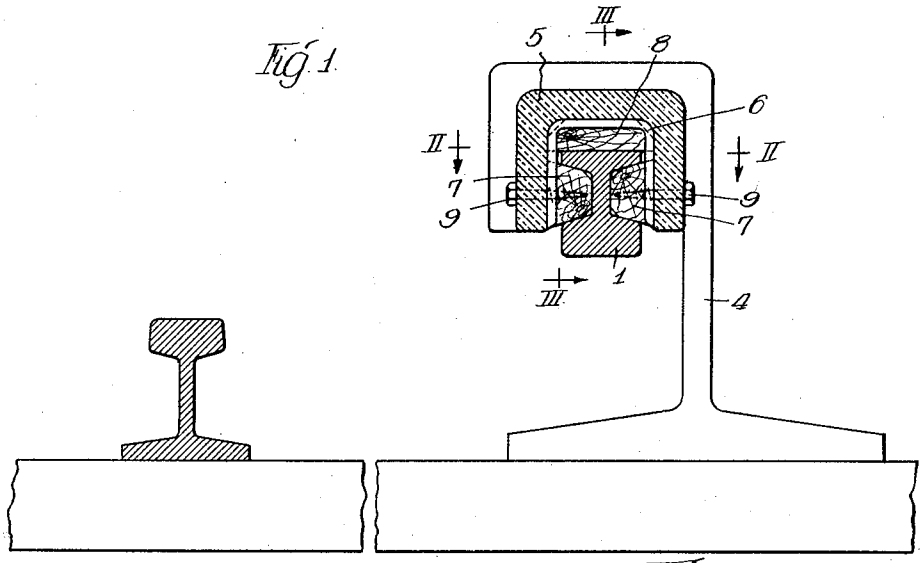


Fig. 2.

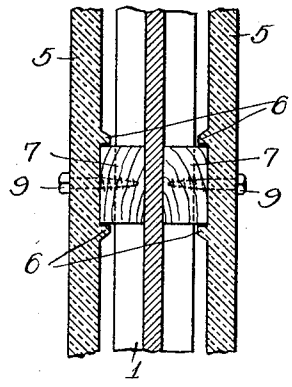


Fig. 3.

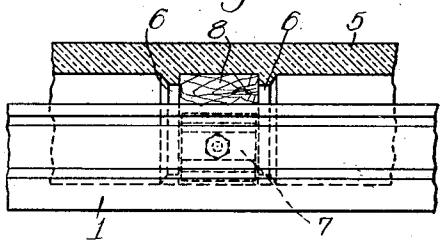


Fig. 4.

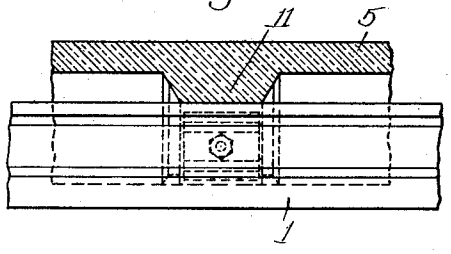
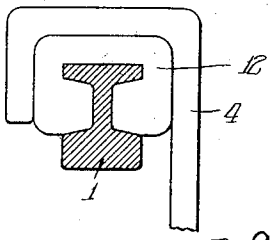


Fig. 5.



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UNITED STATES PATENT OFFICE

JOHANNES HÖLZEL, OF MUNICH, GERMANY, ASSIGNOR TO AKTIENGESELLSCHAFT BROWN BOVERI & CIE., OF BADEN, SWITZERLAND, A JOINT-STOCK COMPANY OF SWITZERLAND

THIRD-RAIL GUARD

Application filed June 20, 1927, Serial No. 200,159, and in Germany June 23, 1926.

This invention relates to third rail guards and has, among its objects the provision of a molded guard of improved construction for protecting and mounting the third rails of electric railways by means of which current is supplied to the electric motor drives of the cars and trains operated on such railways. The invention will be best understood from the following descriptions of exemplifications thereof, reference being had to the accompanying drawings wherein

Fig. 1 shows a sectional view through a third rail with the associated guard, and the mounting member thereof,

Fig. 2 is a horizontal sectional view through the rail structure along lines II—II in Fig. 1,

Fig. 3 is a longitudinal, vertical sectional structure along line III—III in Fig. 1,

Fig. 4 is a view similar to Fig. 3 of a modification of the invention and

Fig. 5 is a view similar to Fig. 1 of a still other modification of the invention.

The mounting of the third rail in electrically operated railways is a serious problem meeting many practical difficulties. In the first difficulty being that the rail must be disposed close to the ground near to the main rails. In the second difficulty being that the third rail must be insulated for relatively high voltage with respect to the nearby main rails and other portions of the supporting structure. The insulation must be able to operate satisfactorily under very unfavorable conditions, namely, exposure to the influences of the weather, such as rain, snow, etc., and the accumulation of metallic dust produced incident to the frequent braking of the trains or vehicles.

According to my invention, I provide a simple third rail structure fulfilling all of the foregoing conditions, and which is extremely simple and economical in manufacture and greatly facilitates the mounting of the rails and upkeep thereof in operative condition. This is effected by making the construction in the form of an under contact rail with a trough-shaped cover made of a molded mass of wood pulp, the supporting brackets of the structure engaging said cover at suitable intervals to hold the rail in proper relationship with respect to the main rails. By making the rail cover of a molded mass of wood pulp, it is possible to make said rail cover of much higher insulating quality than it would be possible were such cover to be made of lumber. The molded wood pulp rail covers are also much lighter than covers made of lumber, or other materials, are readily cut to any required length, and by impregnating the same or by embodying suitable agents in the molded mass, they may be made weather, acid and fire proof.

Furthermore, in such molded covers or guards, any desired projections or recesses for holding the rails may be readily provided, during the molding or casting process, for instance, guide ribs for supporting the brackets or bearing blocks, which may be located along the rail guard at suitable intervals. The bearing blocks may also be directly molded with the guards.

In the preferred construction, the rail insulating guard is directly molded on the rail, and constitutes therewith a unitary structure, thereby greatly simplifying the construction of the rail structure. The direct molding also improves the degree of insulation that may be secured, since the absence of crevices eliminates the accumulation of moisture, dust or other elements that impair the insulation. Referring to the drawings, a rail structure for an electric railway comprises a contact or third rail 1 arranged to have its lower side 2 exposed throughout its length so that an electric vehicle passing along said rail may establish free contact with the under surface for providing a flow of current between said third rail and the vehicle. The third rail 1 is suitably supported adjacent to the main rails as by means of brackets 4 disposed at intervals along the rails, a third rail cover or guard 5 serving as a protection as well as an insulator for said rail. According to the invention, a cheap, economical and highly efficient guard and insulating structure is obtained by making the guard 5 from a molded or cast mass of wood pulp. For instance, suitably ground wood pulp, after being prepared, as by drying, is mixed with a suitable binder, such as linseed oil, and the mass so obtained

molded in the shape of troughs of a desired length. The troughs so obtained are hardened as by heating the molded body within the mold. The resulting guard is relatively light and weather-proof. It is also much cheaper than the similar guards made of lumber, since it secures guard troughs having high insulating qualities from relatively cheap and readily available types of wood. Thus, for instance, in order to build a trough of similar insulating characteristics out of lumber, high quality hard wood, specially impregnated, would have to be used, at an expense which would be many times greater than the cost of molded structures. In addition, the molding permits ready shaping of the trough to conform to the shape of the rail, and eliminates crevices such as would naturally have to be present at the joints between the lumber members constituting such trough shaped guards.

The utilization of molded guard structures makes it also possible to simplify the mounting of the rail within the trough-shaped guard. To this end suitable ribs or projections 6 are molded at intervals in the inner side of the trough, and the rail is mounted in place by slipping the rail into the hollow portion of the trough with wooden side blocks 7 and bearing blocks 8 inserted between the rail and the ribs. The ribs 6 prevent longitudinal movement of the side blocks 7 and of the bearing blocks 8. Wood screws 9 extending through the sides of the trough into the side blocks 7 serve to secure the trough with respect to the rail. In the modification shown in Fig. 4 the bearing block 8 is omitted, and the guard has a suitably molded projection 11 which takes the place of the separate bearing blocks.

In the preferred arrangement shown in Fig. 5, the rail cover 12 and the rail 1 constitute a unitary body, the cover being molded directly on the rail. To this end, the mass of wood pulp with the binder added thereto, is inserted into a mold with the portion of the rail 1 which is to be imbedded in the mass, and the molding mass shaped and hardened over the rail. A simple, highly insulating and relatively cheap structure is thus obtained, which greatly facilitates the construction and mounting of third rails, while securing the utmost in protection.

The invention is susceptible of many modifications, and is not limited to the precise details of construction and processes described above. For instance, instead of linseed oil, another suitable binder may be combined with the wood mass—for instance, a suitable vegetable drying oil such as tung oil, or another cementitious or gluing material. The molding mass may also be impregnated with suitable materials for increasing the insulating qualities or for reducing the inflammability thereof, by embodying in the mass any one of the materials known in the art for such purpose.

I claim:

1. A contact rail for electric railways, comprising a rail having exposed contact portion and a mass of wood pulp molded over the unexposed portions of said rail.

2. A cover for an under-contact rail for electric railways comprising a trough of fibrous material molded on the rail, said trough having means for preventing movement of the rail relative thereto.

3. A cover for an under-contact rail for electric railways comprising a trough of fibrous material molded on the rail, said trough having projections integrally formed therewith in the interior portion thereof, and means arranged between said projections for contacting with the rail to prevent longitudinal movement thereof.

In testimony whereof I have hereunto subscribed my name, at Munich, this 30 day of May, A. D. 1927.

JOHANNES HÖLZEL.