

C. E. GIERDING.
 TROLLEY POLE BASE.
 APPLICATION FILED MAR. 2, 1914.

1,154,759.

Patented Sept. 28, 1915.
 2 SHEETS—SHEET 2.

Fig. 3.

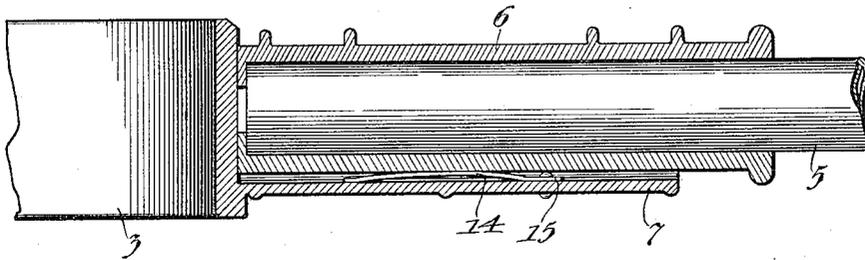


Fig. 4.

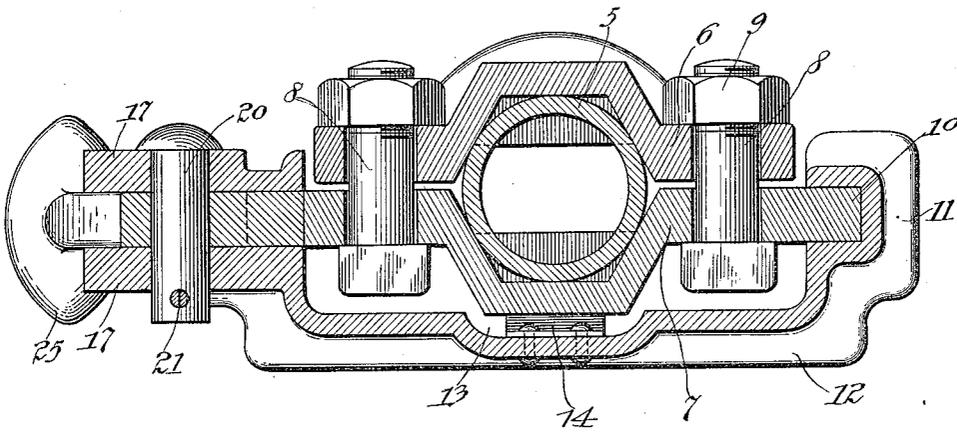


Fig. 5.

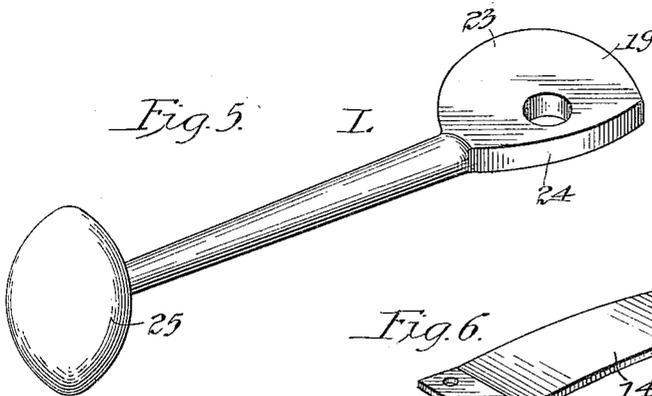
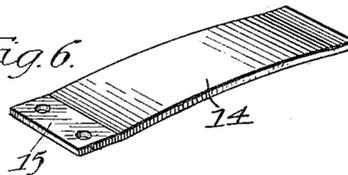


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES E. GIERDING, OF MANSFIELD, OHIO, ASSIGNOR TO THE OHIO BRASS COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF NEW JERSEY.

TROLLEY-POLE BASE.

1,154,759.

Specification of Letters Patent. Patented Sept. 28, 1915.

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To all whom it may concern:

Be it known that I, CHARLES E. GIERDING, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Trolley-Pole Bases, of which the following is a specification.

My invention relates to improvements in trolley pole bases, and more particularly to an improved clamping device for attaching the trolley pole to the base.

One of the objects of my invention is to provide an improved trolley base of this character which will be simple, durable and reliable in construction, and effective and efficient in operation.

Other objects of my invention will appear hereinafter.

Referring to the accompanying drawings, Figure 1 is a view in elevation of a portion of a trolley base embodying my invention. Fig. 2 is an enlarged plan view of the operating fork and my improved device for attaching the trolley pole thereto. Fig. 3 is a longitudinal sectional view on the line 3—3 of Fig. 2. Fig. 4 is an enlarged transverse sectional view on the line 4—4 of Fig. 2. Fig. 5 is an enlarged perspective view of the cam lever. Fig. 6 is a detail perspective view of the contact spring, and Fig. 7 is a detail fragmentary view showing the action of the cam lever.

The trolley base A itself, which I have illustrated in the drawings, and particularly in Fig. 1, is representative of any suitable or desired form of trolley base. The trolley bases which are generally in use have a frame 1 which is mounted upon the top of the car represented by the line 2. This frame carries a trolley fork 3 generally pivoted at some place on the frame, such as at 4, so that the trolley pole 5, which is carried by this fork, will swing or operate in a vertical plane. The trolley base usually has some sort of spring mechanism (not shown) acting upon the trolley fork 3 to constantly urge this trolley fork and pole upward against the trolley wire. This spring mechanism must of necessity be very powerful and in the event, therefore, that the trolley jumps the wire or any other abnormal condition occurs, the trolley pole is thrown violently forward by the spring mechanism in the base. The result is that

the trolley pole often strikes some of the overhead system and either damages the overhead system or is itself damaged to such an extent as to render it useless. The trolley poles must therefore be constructed so that they can be readily replaced by new trolley poles, and in consequence some sort of clamp or holding device is provided on the fork whereby an unskilled workman may readily remove or replace trolley poles. The rough abuse and vibrations to which the equipment is subjected in practice in time often cause the clamps to work loose and allow the trolley pole to drop upon the roof of the car with considerable damage, and in addition the electrical contact between the trolley pole and the fork or base becomes defective. In the drawings I have shown a structure which overcomes these various objections. I provide a socket in which the lower end of the trolley pole 5 is adapted to be removably inserted. This socket is formed by two plate members 6 and 7 between which the end of the trolley pole 5 is clamped. These plates are placed or positioned close together at their outer longitudinal edges but they have central offset portions or depressions between which the end of the trolley pole is clamped and which form the above mentioned socket. As shown more particularly in Fig. 4 these offset portions of the clamping plates, when placed in juxtaposition, form a pole socket which is preferably polygonal, for instance six sided, in section so as to provide more effective clamping surfaces than if they were circular in section. These plates or members 6 and 7 are clamped together by a number of clamping bolts 8 and nuts 9. These bolts are preferably passed through suitable holes therefor in the corners of the plate from the underside and the nuts 9 are threaded on to the bolt on the upper side of the device so that they may be conveniently accessible. The lower or under plate or member 7, as shown in the drawings, is wider than the upper plate and its side or longitudinal edges are parallel and straight. The difference in width of these two plates forms lateral flanges or guide ribs 10 which are adapted to slide longitudinally in correspondingly formed grooves or guide ways. These grooves or guide ways are formed in the upstanding flanges 11 of a plate or supporting member 12 which is preferably

formed integrally with the fork 3. The clamping plates 6 and 7 and the supporting member 12 in practice are preferably of considerable length so that the clamping plates must move a considerable distance longitudinally before they will actually become separated from the supporting member 12 and allow the trolley pole to drop upon the car roof. The supporting member 12 has a central depression 13 which accommodates a flat leaf spring 14, one end of which is riveted or otherwise suitably fastened to the member 12 and the other portion of which yieldingly bears against the under-face of the offset portion of the lower plate 7 so as to provide a satisfactory electrical contact between the trolley pole and clamping plate and trolley fork.

In order now that the trolley poles may be quickly removed or replaced by an unskilled workman I prefer that the clamping plates be placed upon the poles in advance, that is, in the car shops or other places where this can be done effectively and at leisure. When it is necessary to replace a trolley pole, therefore, the conductor may simply pull out the clamping plates and trolley pole together out of the guide ways in the supporting member 12 and replace said pole by a new one having its clamping plates already attached. The supporting member 12 has laterally outstanding lugs or ears 17 which are spaced apart and between which a clamping or cam lever L is pivoted. This lever has at one end a flat cam portion 19 (see Fig. 5) which is positioned between the outstanding lugs 17 and which is removably held in place by a pivot pin or bolt 20. This bolt passes down through holes in the ears and in the cam 19 and is held against accidental displacement by means of a cotter pin 21. This lever L is intended to be rotated about its pivot through an arc of about 180 degrees, more or less. The edge of the flange 10 of the clamping plate 7 which is adjacent the cam lever has, as shown more clearly in Fig. 7, a curved notch 22, which, when the clamps are inserted all the way into the guide ways, is coincident with the cam edge 23 of the cam lever. The cam portion 19 of the lever has a flat or substantially flat side or edge 24, which when the lever is rotated substantially 180 degrees from the position shown in Fig. 2, will clear the notch 22 and allow the clamping plates and trolley pole to be freely withdrawn from the supporting member 12. When, however, the lever L is in the position shown in Fig. 2 the cam surface 23 occupies the notch 22 and positively prevents the clamping plates from being moved longitudinally in the guide ways of the supporting member 12. The cam surface 23 and the notch 22 are preferably machined so as to provide a good

electrical contact, and since these surfaces rub or slide relatively to each other they will always be maintained clean. In practice the trolley pole and fork usually operate at substantially 45 degrees angle with respect to the top of the car, such for instance as shown in Fig. 1, and I therefore preferably arrange the cam lever L so that when in locking position it will hang downwardly. Hence any vibration to which the equipment is subjected will tend to cause the lever, through the action of gravity, to tighten its clamping action upon the plate 7. To further aid in this tightening action I provide the lever with a heavy knob or weight 25 at its free end so that the action of gravity upon the lever will be increased. This knob also serves as a convenient operating handle for the lever. It is thus seen that with my improved device it is simply necessary for the conductor, when he desires to remove or replace a pole, to swing the cam lever about its pivot and thereby release the clamping plate 7. Upon the insertion of a new trolley pole and clamping plate in the guide ways of the supporting member the conductor simply swings the lever L back to its original position and thereby positively locks the trolley pole and clamping plate against removal. It is obvious to one skilled in the art, after having obtained an understanding of my invention from the disclosures herein made, that my invention may be modified without departing from the scope and spirit thereof and I wish it therefore to be so understood.

What I claim is:

1. The combination with a trolley pole supporting member having guideways, of a trolley pole consisting of a hollow pipe, means to clamp the pipe slidable in said guideways having a lateral notch therein, and a lever having a cam portion adapted to engage in the notch of the clamping means and to hold the means in the supporting member.
2. The combination with a trolley base having a movable supporting member formed with longitudinal guideways, a trolley pole with a hollow base, members to clamp the hollow trolley pole slidable in the guideway with a notch in one edge thereof, and a lever pivoted to the supporting member having a cam portion adapted to engage the notch of the members for clamping the trolley pole for releasably holding the said members and the pole against movement in the supporting member.
3. The combination of a trolley fork having a supporting member, flanges on said supporting member forming longitudinal guide ways, a trolley pole, means clamped on the end of said trolley pole having guides which slide in the guide ways in said flanges,

one of said guides having a notch in its edge, and a lever pivoted on said supporting member adjacent said notched guide and having a cam portion adapted, when the lever is rotated in one direction, to enter the notch and lock said clamping means on the trolley pole against movement in said guide ways.

4. The combination of a trolley fork having a supporting member, flanges on said supporting member forming longitudinal guide ways, a trolley pole, a pair of plates clamping the trolley pole between them, guides carried by one of said plates to slidably fit said guide ways, one of said guides having a notch in its edge, a rotary cam positioned to engage the notch and lock the plates against movement, and a weighted operating lever for said cam.

5. The combination of a trolley fork having a supporting member, flanges on said supporting member forming longitudinal guide ways, a trolley pole, a pair of plates clamping the trolley pole between them, guides carried by one of said plates to slidably fit said guide ways, one of said guides having a notch in its edge, a rotary cam positioned to engage the notch and lock the plates against movement, a weighted operating lever for said cam, and a contact spring positioned between said supporting member and one of said plates.

6. The combination of a trolley fork having a supporting member, flanges on said supporting member forming longitudinal guideways, a trolley pole adapted to normally operate at an angle to the horizontal, a pair of plates clamping the trolley pole between them, guides carried by one of said plates to slidably fit said guideways, one of said guideways having a notch in its edge, a rotary cam positioned to engage the notch and lock the plates against movement, and a weighted operating lever for said cam positioned to automatically respond to vibrations to urge the cam into tighter locking position.

7. The combination of a trolley base, a movable body supporting member carried thereby, a trolley pole, means on the end of said trolley pole removably interfitted with said supporting member, and a weighted rotary device normally positioned to be acted upon by gravity and thereby urged, due to vibrations of the parts, to lock said supporting member and means together.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 27 day of February A. D. 1914.

CHARLES E. GIERDING.

Witnesses:

JOHN L. YOUNG,
DE RIZDON STAMBAUGH.