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Applicant (Actual Inventor)	PERCY MARKHAM DE COURCY IRELAND.
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Drawing attached.

COMPLETE SPECIFICATION.

"Trolley pole safety appliance for electric trams and the like."

I, PERCY MARKHAM DE COURCY IRELAND, of "Amberley," Plenty Road, Heidelberg, in the State of Victoria, Commonwealth of Australia, Draughtsman, hereby declare this invention and the manner in which it is to be performed, to be fully described and ascertained in and by the following statement:—

This invention relates to a trolley pole safety appliance for electric trams and the like and which is designed to prevent the spring controlled trolley pole from continuing to be kept in an upright or in such a position that it will foul the overhead wire system, after the trolley wheel has accidentally broken away or become disengaged from the trolley wire.

The construction of the appliance is such that when the trolley wheel leaves its overhead wire, means are provided which enable the trolley pole and an oscillating pivoted frame to which it is connected, to automatically free itself from the action or influence of a coiled spring or springs by the rotation or release of a rocking frame and thus the pole descends beneath the trolley wire where it is in a position to be conveniently lowered by the conductor or person in charge.

The pole is then lowered to a horizontal position in order to re-set the rocking frame and to bring the pole again under the influence of the coiled spring or springs, to enable the trolley wheel to engage the trolley wire.

Referring to the accompanying drawings wherein like reference numerals and letters denote corresponding parts in the specification,—

Fig. 1 is a side elevation of one form of the appliance and

Fig. 2 represents a plan of Fig. 1.

Fig. 3 shows the appliance in elevation when the trolley pole is being pulled down to re-set the rocking frame.

Figs. 4 and 5 are elevation and plan views respectively of a modified form of the appliance, and

Fig. 6 is a part sectional view of the modified form of the appliance.

Figs. 7 and 8 illustrate in elevation and plan an alternative form of the appliance wherein tension springs are emplcyed, and

Figs. 9 and 10 represent in elevation and plan a modified form of the appliance employing tension springs.

In the construction shown in Figs. 1, 2 and 3 of the accompanying drawings, the numeral 1 represents a cylindrical member adapted to rotate about its vertical axis or

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spring 24 and guide rod 23 are dispensed with and the two coiled springs 43 are employed positioned parallel to, and on the inside of, two compression rods 38, the rearward movement of said connecting rods being limited by the recoil of the springs 43 and their forward travel also regulated or limited by the nuts 40 on their threaded front portions 41, these nuts acting as stops which butt up against the front apertured lugs or eyes 39a of pins 39 which are rotatably secured in openings in the side edges of the rocking frame 42 by split pins 42a which bear against their grooved or concaved ends.

Another pair of transversely mounted pins 39 are similarly secured in the lateral extensions 50 of the pole frame 2. The front and rear pairs of pins 39 receive the front and rear ends 43a respectively of the springs 43, the rear pair having heads 39b which hold the eyes 38a of the rods 38 securely in position and enable the said rods to freely pivot about the pins.

The rotatable member 1 is provided with an integral longitudinally disposed tube or rod 46 which is adapted to be slidably adjusted in a sleeve 47 by a set screw or threaded bolt 48 which passes through the front face of the sleeve 47, and bears against the front end of the rod 46 and is secured in position by a nut 49. The said tube or rod 46 has ribs formed on its surface to take into similar longitudinal recesses in the sleeve 47 and thus prevent these parts from rotating or turning. If desired the bar 46 can be made rectangular in cross section and adapted to take into a sleeve of similar cross section. The said sleeve 47 is provided with an integral upper transverse bearing 45 extending on both sides of the same and which bearing receives a pin 44 provided with end nuts 44a and about which pin the frame 20 is free to rotate or tilt when the levers 7 are forced downwards and which latter, in this form of construction, are positioned on the inside of the compression rods 38. The telescopic tube 46 and sleeves 47 are designed to enable the tension of the springs 43 to be adjusted, either to be further compressed or relaxed as the case may be.

The levers 7 and their parts are the same as those hereinbefore described and shown in Figs. 1 and 2 and are connected by the bridging strap 13, the cross piece 4 with the pivoted T piece 5 and depending stop 5a and which latter is adapted to be engaged by the face 26b of the L plate 26, the functions of all of which parts have been hereinbefore described.

The appliance as illustrated in Figs. 7 and 8 is shown in its normal or working condition, the trolley wheel being in engagement with the trolley wire (not shown) and is kept into such engagement by the tension of the springs 43. After the trolley wheel has accidentally disengaged itself from the trolley wire, the pole rises, and the pole frame swings forward and through the medium of the cross piece 4 which being integral with the pole frame arms describes an arc similar to that of the pole frame and bears against the nut 12 and thus the pole frame, cross piece and the levers move as one piece and the levers thus actuated tilt or turn the rocking frame about its pin or axis 45. The nuts 40 limit the forward slidable movement of the compression rods 38 and which nuts act as stops and perform the same function as the nuts 24a on the central guide rod 23, and enable the rocking frame to pivot about its hinge pin 45 when the nuts 40 bear against the eye lugs 39a and in which position the springs 43 become inoperative and thus the pole frame is released from their influence or tension and is free to oscillate or pivot rearwards.

If desired, more than one pair of springs can be employed such as a pair on each side of and between the connecting rods and levers.

The appliance illustrated in Figs. 9 and 10 is practically the same as that just described except that the pole frame and independent arms 28 the subject matter of that illustrated in Figs. 4, 5 and 6 are employed in conjunction with the tension springs 43. The action of the said appliance is similar in all respects to that herein described and the rocking frame 20 is re-set or re-adjusted in exactly the same manner as that hereinbefore described and as illustrated in Figs. 4, 5, 6, 7 and 8 of the accompanying drawings.

Having now fully described and ascertained my said invention and the manner in which it is to be performed I declare that what I claim is:—

1. A trolley pole safety appliance for electric trams and the like, consisting in combination with a trolley pole, of an upright rotatable member, an integral socket piece, a guide rod supported by said socket piece, a coiled spring, sleeve and nuts mounted on said guide rod, a rocking frame pivoted to and adapted to partially rotate

the parts when in such position being shown in Figs. 1 and 2.

If the trolley wheel, accidentally or otherwise, breaks away from the trolley wire, the trolley pole 52 is jerked upwards with considerable force, and the frame 2 swings or oscillates forward causing the member 4, through the medium of the nuts 12, to communicate the motion of the pole frame to the levers 7 which are thrust downwards and bearing on the arms of the U shaped rocking frame 20 tilt or rock the latter about its pivot pins 19 into an approximately vertical position thus temporarily disconnecting the draw bars, levers, the pole and its frame from the influence of the spring 24.

After the forward rotation of the rocking frame 20, the pole frame 2 swings back until the arms 2a assume an approximately vertical position, governed by the gradual compression of the springs 9 and further back until the stop 6 of the pivoted T piece 5 engages the bridging strap 13 and thus the pole which has fallen beneath the trolley wire is steadied or prevented from vibrating.

The pole can now be conveniently pulled down to a horizontal position in order to re-set the rocking frame 20 and so bring the slidable guide rod sleeve 14, the tilting levers 7, the draw bars 16 and the pole frame 2 under the influence of the spring 24 to give the necessary tension to the pole and enable its trolley wheel 53 to re-engage the trolley wire.

The pole 52 is provided with the usual pull cord (not shown) and which, when drawn down, lowers the pole to a horizontal position during which operation the front and lower ends of the draw bars and levers describe arcs bearing on the upper and lower portions respectively of the rocking frame, and rotate same counter clockwise until it assumes a horizontal position.

On releasing the cord the recoiling action of the spring 24 forces the sleeve 14 towards the guide rod nuts 24a and the pole frame 2 swings forward to its normal and working position, the stop 26b when the pole is in a horizontal position, having contacted with the depending stop 5a tilts or raises the T piece 5, and its stop 6 is thus disengaged from the bridging strap 13 enabling the trolley wheel to again engage the overhead wire.

When the trolley wire is engaged by the trolley wheel the rocking frame cannot accidentally pivot forwards or be released from the influence of the spring 24 as the axis of the rocking frame pivot pin 19 is positioned above the axis or middle point of the bearing 20b and hence the rocking frame owing to the arrangement of the pivot points mentioned is subjected at 20b to a force which tends to rotate it counter clockwise and prevents it from becoming released from the influence of the spring, and which force is only overcome and the rocking frame rotated in the opposite direction when the levers 7 are thrust forward.

In a modified form of the appliance as illustrated in Figs. 4, 5 and 6, two arms or uprights 28 are employed in lieu of the pole frame extensions 2a, the arms 28 being loosely mounted on the shaft 3 which also supports the side cheeks of the pole frame 2. 29 is a cross bar which passes through the upper eyes of and is supported by the arms 28 and has end holes for the reception of the levers 7 which are held rigidly to same by nuts 36 and 37, the lower threaded ends of said levers being pivotally connected to the rocking frame 20 as hereinbefore described, but said levers in this construction are not provided with a sleeve and coiled spring. The cross bar is provided with rings or collars 31a and the arms 28 carry a cross strap 30 which, when the pole frame oscillates rearwards, is engaged by the stop 6 of the pivoted T piece 5 which latter is secured on a cross pin 33 freely mounted in the integral bearing 32 of the pole frame 2.

The inner faces of the frame 2 are provided with integral projecting studs 35 which are adapted to contact against the back edges of the arms 28 and force same forwards causing the levers 7 to tilt or rotate the rocking frame and release same from the influence of the spring 24 when the trolley leaves the wire and the pole rises or swings forwards.

The pole frame is also formed with two legs or members having short inwardly projecting ends 34 which are adapted to bear against the front edges of the arm 28 to re-set the rocking frame when the pole is pulled down to a horizontal position.

The principle underlying this invention and which briefly consists of the automatic release of the pole frame and trolley pole from the action of the spring when the trolley wheel leaves its wire is shown applied to a form of the appliance wherein two tension springs 43 are employed. In this construction the central guide rod

spring 24 and guide rod 23 are dispensed with and the two coiled springs 43 are employed positioned parallel to, and on the inside of, two compression rods 38, the rearward movement of said connecting rods being limited by the recoil of the springs 43 and their forward travel also regulated or limited by the nuts 40 on their threaded front portions 41, these nuts acting as stops which butt up against the front apertured lugs or eyes 39a of pins 39 which are rotatably secured in openings in the side edges of the rocking frame 42 by split pins 42a which bear against their grooved or concaved ends.

Another pair of transversely mounted pins 39 are similarly secured in the lateral extensions 50 of the pole frame 2. The front and rear pairs of pins 39 receive the front and rear ends 43a respectively of the springs 43, the rear pair having heads 39b which hold the eyes 38a of the rods 38 securely in position and enable the said rods to freely pivot about the pins.

The rotatable member 1 is provided with an integral longitudinally disposed tube or rod 46 which is adapted to be slidably adjusted in a sleeve 47 by a set screw or threaded bolt 48 which passes through the front face of the sleeve 47, and bears against the front end of the rod 46 and is secured in position by a nut 49. The said tube or rod 46 has ribs formed on its surface to take into similar longitudinal recesses in the sleeve 47 and thus prevent these parts from rotating or turning. If desired the bar 46 can be made rectangular in cross section and adapted to take into a sleeve of similar cross section. The said sleeve 47 is provided with an integral upper transverse bearing 45 extending on both sides of the same and which bearing receives a pin 44 provided with end nuts 44a and about which pin the frame 20 is free to rotate or tilt when the levers 7 are forced downwards and which latter, in this form of construction, are positioned on the inside of the compression rods 38. The telescopic tube 46 and sleeves 47 are designed to enable the tension of the springs 43 to be adjusted, either to be further compressed or relaxed as the case may be.

The levers 7 and their parts are the same as those hereinbefore described and shown in Figs. 1 and 2 and are connected by the bridging strap 13, the cross piece 4 with the pivoted T piece 5 and depending stop 5a and which latter is adapted to be engaged by the face 26b of the L plate 26, the functions of all of which parts have been hereinbefore described.

The appliance as illustrated in Figs. 7 and 8 is shown in its normal or working condition, the trolley wheel being in engagement with the trolley wire (not shown) and is kept into such engagement by the tension of the springs 43. After the trolley wheel has accidentally disengaged itself from the trolley wire, the pole rises, and the pole frame swings forward and through the medium of the cross piece 4 which being integral with the pole frame arms describes an arc similar to that of the pole frame and bears against the nut 12 and thus the pole frame, cross piece and the levers move as one piece and the levers thus actuated tilt or turn the rocking frame about its pin or axis 45. The nuts 40 limit the forward slidable movement of the compression rods 38 and which nuts act as stops and perform the same function as the nuts 24a on the central guide rod 23, and enable the rocking frame to pivot about its hinge pin 45 when the nuts 40 bear against the eye lugs 39a and in which position the springs 43 become inoperative and thus the pole frame is released from their influence or tension and is free to oscillate or pivot rearwards.

If desired, more than one pair of springs can be employed such as a pair on each side of and between the connecting rods and levers.

The appliance illustrated in Figs. 9 and 10 is practically the same as that just described except that the pole frame and independent arms 28 the subject matter of that illustrated in Figs. 4, 5 and 6 are employed in conjunction with the tension springs 43. The action of the said appliance is similar in all respects to that herein described and the rocking frame 20 is re-set or re-adjusted in exactly the same manner as that hereinbefore described and as illustrated in Figs. 4, 5, 6, 7 and 8 of the accompanying drawings.

Having now fully described and ascertained my said invention and the manner in which it is to be performed I declare that what I claim is:—

1. A trolley pole safety appliance for electric trams and the like, consisting in combination with a trolley pole, of an upright rotatable member, an integral socket piece, a guide rod supported by said socket piece, a coiled spring, sleeve and nuts mounted on said guide rod, a rocking frame pivoted to and adapted to partially rotate

about said sleeve, an upper bridge formed integral with said rocking frame and provided with stops to limit its forward rotation, a pole frame pivoted to said rotatable member, a cross piece carried by the said pole frame, two spring controlled levers pivoted to the rocking frame and slidably mounted in the eyes of the said cross piece, two draw bars pivotally connected to the pole frame and slidably mounted in integral bearings of said rocking frame, means for the automatic release of the pole and pole frame from the influence of the guide rod spring, to allow the pole to descend beneath the overhead wire system after the trolley wheel has left the trolley wire, means for preventing the pole from vibrating, and means for conveniently re-setting the rocking frame to bring the pole and its trolley wheel again under the influence of the guide rod spring—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

2. In a trolley pole safety appliance for electric trams and the like, as claimed in Claim 1, an upright rotatable member adapted to be bolted to the roof of the car, an oscillating pole frame mounted on a spindle supported in integral bearings of said rotatable member, an integral socket piece projecting from the front of said rotatable member, a guide rod supported by said socket piece, a coiled spring and sleeve mounted on said guide rod with nuts and stops on the threaded front portion of the latter, and a rocking frame adapted to pivot about pins or screws secured in two integral side lugs of said slidable sleeve—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

3. In a trolley pole safety appliance for electric trams and the like as claimed in the preceding claims, a rotatable member carrying an oscillating pole frame, two apertured arms formed integral with said pole frame and which are adapted to support a cross piece, two spring controlled levers pivoted to a rocking frame and having their upper end portions slidably mounted in the eyes of the said cross piece and adapted to turn or tilt the said rocking frame into a vertical position after the trolley wheel has left the trolley wire, and two draw bars pivotally connected to said pole frame and having their front portions slidably mounted in the side bearings of the said rocking frame—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

4. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a rotatable member adapted to pivotally support an oscillating pole frame and provided with a front integral socket piece for the reception of a horizontally projecting guide rod, an upper bearing cast integral with the said socket piece, a slotted L plate formed with a rear upstanding face and adjustably secured in position by a set screw, and inner transverse bearings of said rotatable member to support a cross spindle which carries the said oscillating pole frame—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

5. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, an oscillating frame supporting a trolley pole with a trolley wheel mounted on its upper end, and provided with two upper apertured integral arms which are adapted to receive and support a cross piece, a rocking frame carrying two spring controlled levers the upper ends of which are slidably mounted in the eyes of said cross piece, a T piece pivotally mounted on said cross piece and provided with a notched under surface or vertical face and an integral depending plate, a transversely mounted bridging strap rigidly secured to aforesaid levers, and adapted to be engaged by the notched end of the said T piece after the trolley wheel has left its wire and the pole frame pivots rearwards said stop being adapted to disengage itself from the bridging strap when the pole has been pulled down to a horizontal position to re-set the rocking frame and the pole frame is allowed to pivot forwards—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

6. In a trolley pole safety appliance for electric trams and the like as claimed in the preceding claims, a sleeve slidably mounted upon a guide rod carrying a coiled spring, two hollow internally threaded side lugs cast integral with said sleeve for the reception of set screws, a U shaped rocking frame, the arms of which are adapted to pivot on said set screws, and two side hollow lugs cast integral with the rocking frame arms, and adapted to take threaded pins or set screws for the reception of the front eyes of two spring controlled levers, which, when the trolley wheel leaves its wire, are thrust downwards and impart a rearward rotary

movement to the said rocking frame—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

7. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a guide rod cast integral with a rotatable member and provided with end stops, a coiled spring, and a slidably mounted sleeve, a U shaped rocking frame pivoting about said sleeve and adapted to be rotated in a clockwise direction by two spring controlled levers, two internally threaded lugs cast integral with said rocking frame and designed to slidably receive the front ends of two draw bars, nuts on said draw bars at the sides of said lugs and at some little distance from the front and rear of said lugs to allow the said draw bars sufficient play or movement when the rocking frame is rotating rearwards—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

8. In a trolley pole safety appliance for electric trams and the like, an oscillating pole frame connected to a rocking frame by two spring controlled levers and by two draw bars—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

9. In a trolley pole safety appliance for electric trams and the like, a spring controlled trolley pole frame connected to a rocking frame by two levers, draw bars, a coiled spring and a slidable sleeve, said rocking frame being adapted to release itself from the action of said spring when the trolley wheel leaves the trolley wire—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

10. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a rocking frame pivoted to a sleeve slidably mounted on a guide rod provided with end stops, and an upper integral bridge cast with said rocking frame having stops to limit the forward rotation of the latter—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

11. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, an oscillating pole frame connected to a pivoted rocking frame by two spring controlled levers, each lever having a sleeve positioned between a nut and a tubular casing, said casing being held in position by a rear nut, a coiled spring on said sleeve, a bridging strap rigidly connected to said levers and a cross piece supported by said pole frame having eyes to slidably receive the upper portions of said levers—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

12. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a rotatable member having an integral socket piece to support a guide rod, and integral bearings to support a transverse spindle, an oscillating pole frame adapted to oscillate with said spindle, integral bearings formed on the side cheeks of said pole frame, and adapted to receive pins or bearings to pivotally support the rear apertured ends of two draw bars, and a rocking frame adapted to slidably receive the front ends of said draw bars—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

13. In a trolley pole safety appliance for electric trams and the like, an oscillating pole frame connected to a pivoted rocking frame by spring controlled levers and draw bars and wherein the pivoting point of the rocking frame is above the axis of the rocking frame bearings which slidably receive the front ends of the draw bars, and so prevent the accidental rotation of said rocking frame—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

14. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a sleeve slidably mounted on a guide rod carried by a rotatable member, and means for reciprocating said sleeve to compress its spring and re-set the rocking frame permitting said spring to recoil and force said sleeve up against the stops on the end of said guide rod—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

15. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a pivoted pole frame connected to a rocking frame by two spring controlled levers, a cross piece carried by the said pole frame and provided with outer eyes to slidably receive said levers, a cylindrical casing having an apertured base, a sleeve mounted on said lever, a coiled spring on said sleeve and nuts mounted on said levers to limit the forward slidable movement of said cross piece and to hold the said sleeve and cylindrical casing in position on the levers—substantially as described and as illustrated in Figs. 1, 2 and 3 of the drawings.

16. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, means for the automatic release of the trolley pole of a disengaged trolley wheel from the action of a coiled spring and means for conveniently bringing said trolley pole under the influence of said coiled spring to enable the trolley wheel to again engage the trolley wire—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

17. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a pivoted pole frame and means which enable it to rotate a rocking frame and release the latter and the pole frame from the recoiling action of a spring—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

18. In a trolley pole safety appliance for electric trams and the like, a pivoted pole frame carrying the lower end of a trolley pole and connected to a pivoted rocking frame through the medium of a coiled spring, a slidable sleeve draw bars and spring controlled levers—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

19. In a trolley pole safety appliance for electric trams and the like, an oscillating pole frame connected to a rocking frame by two spring controlled levers and draw bars, means for compressing a recoiling spring to re-set said rocking frame when the pole frame is swung rearwards and the pole brought to a horizontal position substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

20. In a trolley pole safety appliance for electric trams and the like, as claimed in the preceding claims, a guide rod carrying a coiled spring and a slidably mounted sleeve which pivotally supports a rocking frame said spring adapted to expand and force the sleeve up against nuts on the front end of said guide rod and allow the rocking frame to be rotated rearwards by the pole frame levers and be freed from the influence of said coiled spring, after the trolley wheel has become disengaged from the trolley wire—substantially as described and as shown in Figs. 1, 2 and 3 of the drawings.

21. A trolley pole safety appliance for electric trams and the like, consisting in combination, with a trolley pole of a rotatable member, an integral socket supporting a guide rod, a coiled spring, slidable sleeve, and end nuts mounted on said rod, a rocking frame pivotally supported by said slidable sleeve, a pole frame mounted on a shaft carried by said rotatable member, two upright arms loosely mounted on said shaft; a cross strap carried by said arms, front and rear pairs of stops on said pole frame designed to engage the front and rear edges respectively of the upright arms, levers rigidly secured to the said cross strap and connected to the rocking frame, draw bars connected to said pole frame and the rocking frame, means for automatically releasing the pole from the action of the coiled spring means for preventing the fallen pole from vibrating and means for conveniently re-setting the rocking frame to bring the pole and its trolley wheel again under the influence of the spring—substantially as described and as shown in Figs. 4, 5 and 6 of the drawings.

22. In a trolley pole safety appliance for electric trams and the like, as claimed in Claim 21, in combination a rotatable member, a socket cast integral with said member, a guide rod supported by said socket and receiving a coiled spring a transverse spindle carried in bearings of said rotatable member, a slidable sleeve adapted to reciprocate on said guide rod and contact with stops on the front end of the rod, a rocking frame pivotally mounted on said slidable sleeve, a pole frame mounted on the spindle carried by the rotatable member, two upright arms loosely mounted on said shaft and connected by a cross strap, two levers rigidly secured to the cross strap and connected to the rocking frame, and two draw bars connecting the pole frame and rocking frame together—substantially as described and as shown in Figs. 4, 5 and 6 of the drawings.

23. In a trolley pole safety appliance for electric trams and the like, as claimed in Claims 21 and 22, a pole frame mounted on a transverse spindle carried by a rotatable member, stops on said pole frame, two upright arms mounted loosely on said spindle a cross bar rigidly secured to the upper end portions of said arms, an upper bearing cast integral with the pole frame to pivotally support a T piece stop and which is adapted to be engaged by the said cross bar to steady the trolley pole and prevent it from vibrating when the trolley wheel has broken away from the trolley wire—substantially as described and as shown in Figs. 4, 5 and 6 of the drawings.

24. In a trolley pole safety appliance for electric trams and the like, as claimed in

Claims 21, 22 and 23, an oscillating pole frame provided with front and rear stops which are adapted to engage the front and rear edges respectively of two upright arms loosely mounted on the pole frame shaft for the purpose herein specified and as shown in Figs. 4, 5 and 6 of the drawings.

25. In a trolley pole safety appliance for electric trams and the like, as claimed in Claims 21, 22, 23 and 24, a rotatable member provided with an integral guide rod which receives a coiled spring, a slidable sleeve and end nuts, and a U shaped rocking frame connected to a pivoted pole frame by draw bars and connected to two upright arms loosely mounted on the pole frame spindle by levers, for the purposes herein specified—substantially as described and as shown in Figs. 4, 5 and 6 of the drawings.

26. In a trolley pole safety appliance for electric trams and the like, as claimed in Claims 21, 22, 23, 24 and 25, a trolley pole having its lower end supported by an oscillating frame provided with means to enable the pole, when its trolley wheel breaks away from the trolley wire, to be automatically released from the influence of a coiled spring—substantially as described and as shown in Figs. 4, 5 and 6 of the drawings.

27. In a trolley pole safety appliance for electric trams and the like, as claimed in Claims 21, 22, 23, 24, 25 and 26, a U shaped rocking frame pivoted to a sleeve slidably mounted on a guide rod cast integral with a rotatable member, and a coiled spring mounted on said guide rod which is adapted to recoil and force the said sleeve against stops mounted on the front end of said guide rod when the rocking frame rotates clockwise and is released from the action of the said coiled spring by two levers connected to the said rocking frame and to two loosely mounted upright arms—substantially as described and as shown in Figs. 4, 5 and 6 of the drawings.

28. In a trolley pole safety appliance for electric trams and the like, consisting in combination, a rotatable member, a ribbed rod cast integral with said rotatable member, an internally grooved sleeve adapted to receive said rod, a set screw for adjusting said rod in position, a bearing cast integral with said sleeve, a rocking frame adapted to pivot on a pin or bolt carried by said sleeve bearing, a pole frame secured to a spindle supported by said rotatable member, two loosely mounted pins carried by the rocking frame and pole frame, two coiled tension springs connected to the said pins, two compression rods pivoting on the pole frame side pins and slidably mounted in the eyes of the rocking frame side pins, and two spring controlled levers slidably mounted in a cross piece carried by the pole frame and connected to the arms of the rocking frame—substantially as described and as shown in Figs. 7 and 8 of the drawings.

29. In a trolley pole safety appliance for electric trams and the like, as claimed in Claim 28, in combination a pole frame pivoting about a rotatable member, a front projecting guide rod cast integral with said rotatable member and provided with ribs, and an internally grooved sleeve adapted to receive said rod which is adjustably secured in position by a set screw, an integral upper bearing on said sleeve, a bolt mounted in said bearing and a rocking frame adapted to pivot about said bolt—substantially as described and as shown in Figs. 7 and 8 of the drawings.

30. In a trolley pole safety appliance, as claimed in Claims 28 and 29, an upright rotatable member supporting a ribbed rod, an internally grooved sleeve adapted to receive said rod and pivotally supporting a U shaped rocking frame, an oscillating pole frame carried by a cross spindle, two coiled tension springs and two spring compression rods connected to said pole frame and to the rocking frame, means for automatically releasing the tension springs from the rocking frame and pole frame and means for resetting the rocking frame to bring the trolley pole again under the influence of the said tension springs —substantially as described and as shown in Figs. 7 and 8 of the drawings.

31. In a trolley pole safety appliance as claimed in Claims 28, 29 and 30, an upright rotatable member, an oscillating pole frame pivotally mounted on a spindle carried in integral bearings of said rotatable member, a pivoted rocking frame, tension springs and spring compression rods connecting said pole frame and rocking frame together and operating—substantially as and for the purposes as herein described and as shown in Figs. 7 and 8 of the drawings.

32. In a trolley pole safety appliance as claimed in Claims 28, 29, 30 and 31, a pivotally mounted U shaped rocking frame formed with integral side lugs for the reception of pins to receive the end eyes of two spring controlled levers, lateral extensions

and a bridge provided with a screw threaded pin to limit the forward rotation of the rocking frame—substantially as described and as shown in Figs. 7 and 8 of the drawings.

33. In a trolley pole safety appliance as claimed in Claims 28, 29, 30, 31 and 32, two spring compression rods, each being pivoted to the lateral extensions of a pole frame and slidably mounted in the hollow lugs of loosely mounted pins carried by the lateral extensions of a rocking frame, and two coiled tension springs having their ends secured to the said pins carried by the lateral extensions of the said rocking and pole frames —substantially as described and as shown in Figs. 7 and 8 of the drawings.

34. In a trolley pole safety appliance for electric trams and the like, as claimed in Claims 28, 29, 30, 31, 32, and 33, a rotatable base pivotally supporting an oscillating pole frame and means for automatically releasing said pole frame from the action of tension springs when the trolley wheel leaves its wire, and means for re-setting a rocking frame and bringing the trolley pole under the influence of the said tension springs—substantially as described and as shown in Figs. 7 and 8 of the drawings.

35. In a trolley pole safety appliance for electric trams and the like, as claimed in Claims 28, 29, 30, 31, 32 and 33, a pivoted pole frame connected to a U shaped rocking frame and through the medium of two spring compression rods, two tension springs and two spring controlled levers said rocking frame being adapted to pivot rearwards and release the tension of the coiled springs from the trolley pole allowing the latter to descend underneath the trolley wire and without fouling the overhead wire system—substantially as described and as shown in Figs. 7 and 8 of the drawings.

36. In a trolley pole safety appliance for electric trams and the like, a rotatable member adapted to pivotally support a pole frame carrying the lower end of a trolley pole, said pole frame connected by springs, compression rods, tension springs and spring controlled levers to a U shaped rocking frame pivotally mounted on a sleeve which is adapted to receive a rod cast integral with said rotatable member for the purposes —substantially as described and as shown in Figs. 7 and 8 of the drawings.

37. In a trolley pole safety appliance for electric trams and the like, a pivoted pole frame supporting the lower end of a trolley pole and adapted to release itself from the action of two tension springs after the trolley wheel has become accidentally disengaged from the trolley wire—substantially as described and as shown in Figs. 7 and 8 of the drawings.

38. A trolley pole safety appliance for electric trams and the like, consisting in combination with a trolley pole, of a rotatable base supporting an integral rod, a sleeve for the reception of said rod and adapted to hold same against rotation a set screw for adjusting the position of said rod, a rocking frame pivoted in a bearing formed integral with said sleeve, two upright arms loosely mounted on the pole frame spindle, a cross strap connecting said arms, two spring controlled levers connected to the upright arms and rocking frame, two spring compression rods and two coiled tension springs, connected to the said pole frame and rocking frame, means for releasing the disengaged pole from the action of the tension springs when the trolley wheel leaves the wire, means for holding the pole against vibration, and means for bringing the said pole again under the influence of said springs to enable the trolley wheel to engage its wire—substantially as described and as shown in Figs. 9 and 10 of the drawings.

Dated this seventh day of February, 1921.

B. L. Bodycomb,
Patent Attorney for Applicant.

Witness—Leslie L. Bear.

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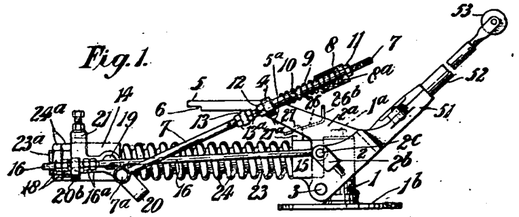
PERCY MARKHAM DE COURCY IRELAND.

Trolly Pole Appliance.

Fig.1.



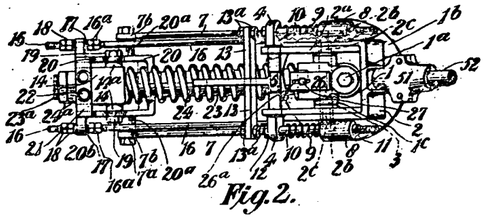


Fig.2.

Fig.3.

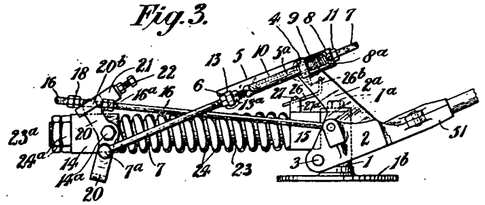
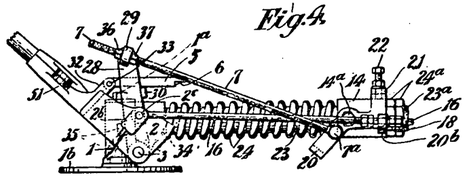


Fig.4.



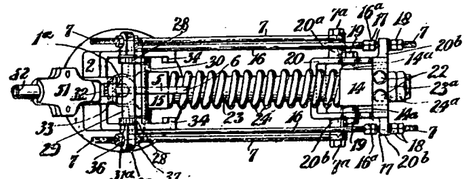
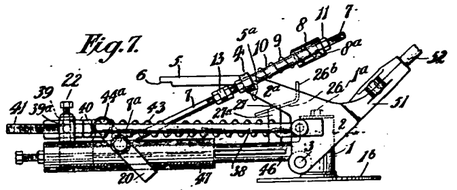


Fig.5.

Fig.7.



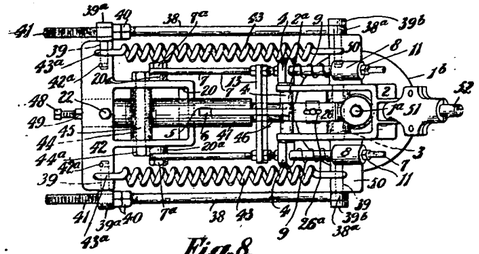
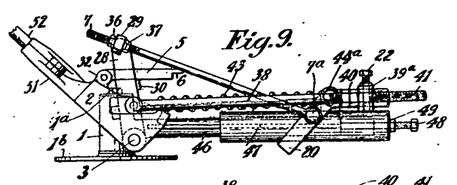


Fig.8.

Fig.9.



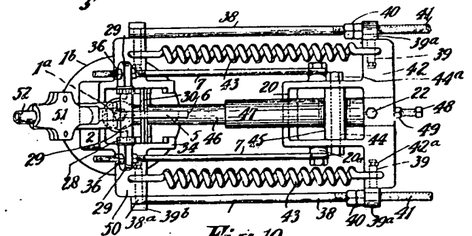


Fig.10.

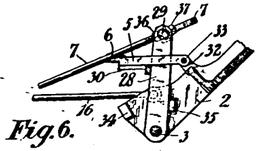


Fig.6.

One litho. sheet.