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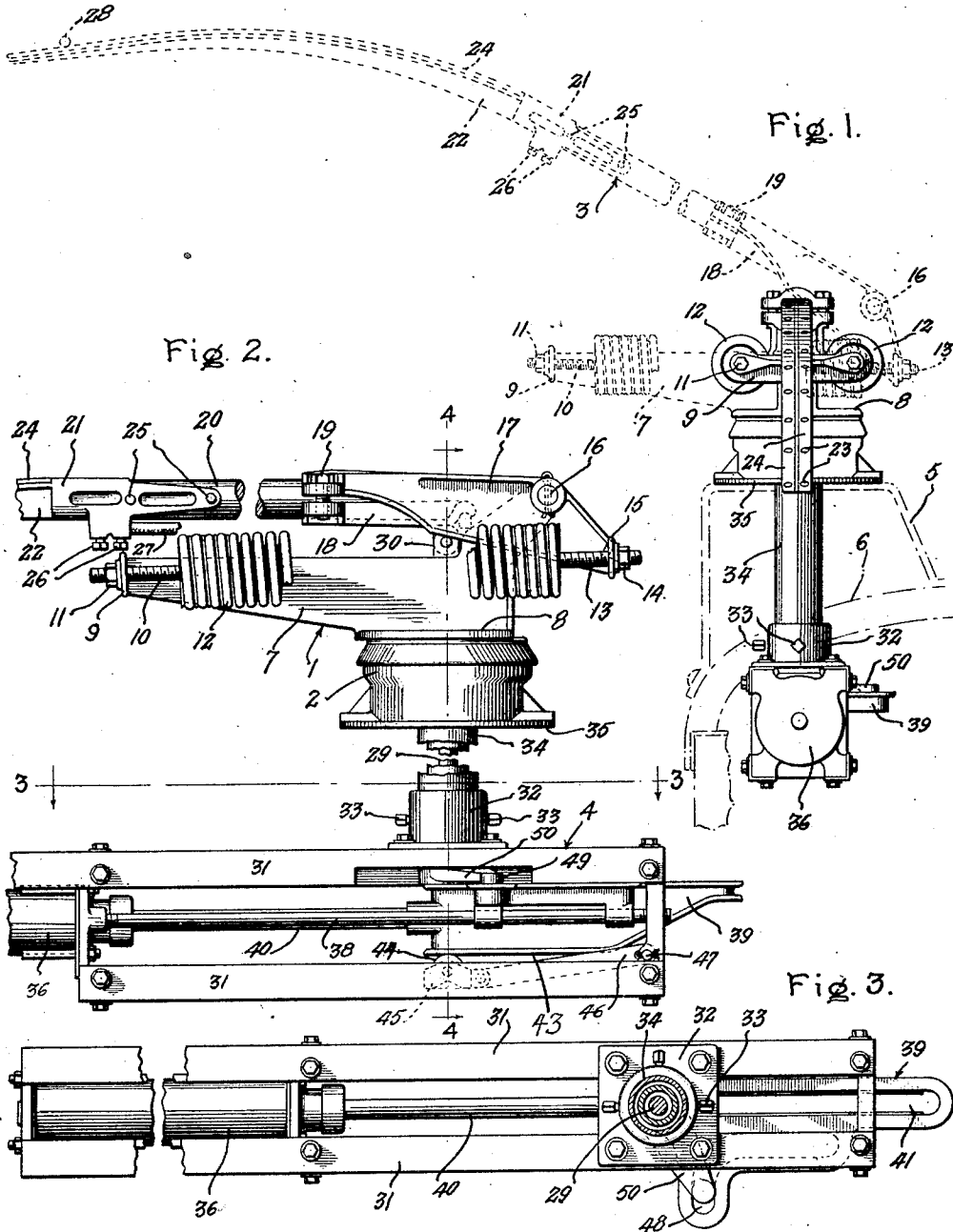
1,658,703

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ELECTRIC CURRENT COLLECTOR

Filed Nov. 27, 1925

2 Sheets-Sheet 1



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Fig. 4.

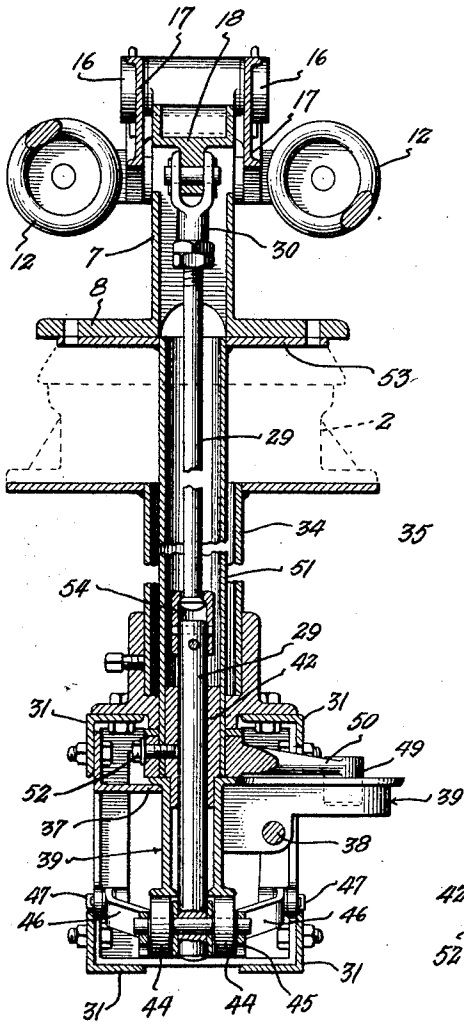
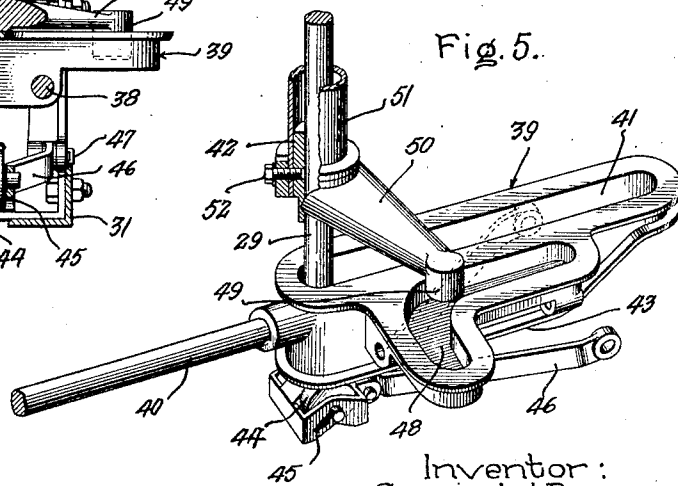


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ELECTRIC-CURRENT COLLECTOR.

Application filed November 27, 1925. Serial No. 71,557.

The present invention relates to electric railways and more particularly to current collectors whereby electric power for actuation of the car motors is received from a stationary trolley wire suspended along the roadway.

Trolley wires are generally suspended over the roadway and the current collector mounted on the roof or top part of the car with its wire-engaging part freely movable up and down according to the varying elevations of the wire. There are, however, electric systems on which such location of the trolley wire above the roadway would be a source of danger to human beings or liable to interfere with traffic, as where a roadway is used in common by steam locomotives and by electric locomotives, and in consequence thereof it is necessary to suspend the trolley wire to one side of and removed from the roadway. On account of such side location of the trolley wire, the forms of current collectors in general use are impractical.

The object of my invention is the provision of an improved electric current collector which shall function efficiently with trolley wires supported a considerable distance to one side of a roadway, which shall be adapted to be folded close to the vehicle mounting the same when not in operation, which shall be adapted to withstand rough usage, and which may be operated with facility.

One embodiment of the invention is shown in the accompanying drawings in which Fig. 1 is a front elevation of my current collector showing the collector shoe in full lines in inactive or folded position and in dotted lines in extended and operative position; Fig. 2 is a right-side elevation of the current collector drawn to a larger scale and with parts shown broken away; Fig. 3 is a plan of the operating means of the collector taken on line 3—3 of Fig. 2; Fig. 4 is a vertical section taken on line 4—4 of Fig. 2, and Fig. 5 is a perspective of the operating cam with its coaxing crank arm raised above its normal position for sake of clearness of illustration.

As indicated in the drawings, my current collector comprises a base 1 pivotally supported on a thrust bearing 2, with a swinging contact arm 3 pivoted to the upper side thereof and operating means 4 at the lower

end of a hollow shaft and a rod connected respectively to the base and the swinging contact arm.

The thrust bearing 2 is supported on a frame 5 extended above the roof 6 of the vehicle near one side thereof, while the operating means 4 is located inside the car roof.

The base 1 comprises a box beam 7 having a bearing plate 8 near one end supported upon the thrust bearing 2 and at the opposite end is a cross bar 9 with both ends apertured for the passage of threaded rods 10 having nuts 11 on their outer ends, while their inner ends connect with helical tension springs 12 whose opposite ends are similarly connected by rods 13 and nuts 14 to a cross bar 15 carried on the lower end of the swinging contact arm 3 and passing beneath its pivotal point of connection 16 to the base.

The swinging contact arm 3 comprises a cast metal box member 17 having beneath its free end a clamping plate 18 adapted to be bound by set screws 19 upon an inserted end of a wooden pole 20. The opposite end of the wooden pole 20 has attached thereto a metallic contact shoe 21. The shoe 21 comprises a saber-shaped spine 22 of cast aluminum having attached to its curved upper surface by means of rivets 23 strips of hard drawn copper 24. The lower end of the aluminum spine is forked and secured by rivets 25 to the wooden pole and it is also provided with set screws 26 for electrically connecting the contact shoe to a flexible conductor 27 which leads to the car circuit. The springs 12 normally act to urge the swinging contact arm 3 upwardly into engagement with the underside of the trolley wire 28 and in opposition to the retracting rod 29 connected thereto by a clevis 30.

The operating means consists of a rectangular frame of angle irons 31 connected to a cast hanger 32 supported by set screws 33 from the lower end of a tubular housing 34 connected at its upper end to a plate 35 upon which the thrust bearing 2 is seated. In the frame are mounted an air cylinder 36 and two longitudinal guide bars 37 and 38 on which a cam block 39 is freely slidable under the pneumatic pressure in the cylinder 36 communicated thereto by the piston rod 40.

The cam block 39, as indicated in Figs. 2 and 5, has a vertical channel 41 whereby it clears the retracting rod 29 and its guide bearing 42 and the lower edges adjacent the channel 41 are provided with horizontal shoulders 43 which incline upwardly at the forward end and are adapted to engage with rollers 44 on a little truck 45 carried at the lower end of the retracting rod 29, so that as the cam block 39 is drawn toward the rear end of its travel the rollers 44 ride up the inclined portion of the ways 43 and permit the collector shoe to rise under the recoil of its springs 12.

The truck 45 is stayed in place by a yoke 46 pivotally connected thereto and to transverse bolts 47 carried in the end of the angle iron frame opposite to the air cylinder 36.

In order to swing the collector outwardly and inwardly at right angles to the vehicle concurrently with the up and down control movements thereof, the cam block 39 is provided in its upper side with an L-shaped slot 48, the walls of which engage a knob 49 at the end of a crank arm 50 rigidly connected to a tubular shaft 51 and guide bearing 42 by a set screw 52. The tubular shaft 51 extends upwardly through the housing 34 and thrust bearing 2 and is provided at its upper end with a plate 53 on which the base plate 8 is mounted. In order that the side swing of the collector may take place without twisting of the retracting rod 29, the latter is provided with a swivel joint 54.

The air cylinder 36 is connected in well known manner by pipes and valves to a supply of compressed air (not shown).

When the driver desires to move the current collector from inoperative position, as shown in full lines Fig. 1 to its operative position as shown in the dotted lines of that figure, he controls the entrance of the pressure air to retract the piston rod 40 and thereby moves the cam block 39 to the left, as shown in Figs. 2 and 3, which by reason of its slotted engagement with the crank arm 50 causes the tubular shaft 51 and connected base 1 to turn clockwise through an angle of 90°, the longitudinal portion of the L slot 48 thereafter permitting further travel of the cam block 39 until the inclined ends of its shoulders 43 pass the rollers 44 and permit the collector arm 3 to rise into engagement with the trolley wire under the recoil of the springs 12. When the collector is to be retracted from operative position, the driver similarly controls the pressure fluid to move the cam block 39 to the right, as shown in Figs. 2 and 3, with the resultant steps executed in inverse order to that just described.

While I have shown and described the

best embodiment of the invention known to me, I do not desire to be restricted thereto.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. An electric current collector comprising a sliding contact arm normally engaging the current supply conductor in a plane transverse thereto and movable into inactive position in a plane parallel thereto, means for pivotally supporting said contact arm for horizontal and vertical movements, and means to insure the concurrent relative movements of said contact arm.

2. An electric current collector comprising a rotatably mounted base, a contact arm pivoted on said base transversely to the axis thereof, yieldable means for actuating said arm in one direction, and means to insure the concurrent rotation of said base and the movement of said arm in opposition to the actuating means thereof.

3. An electric current collector comprising a base rotatably mounted on a vertical axis, a contact arm horizontally pivoted on said base, spring means operating to move the free end of said arm upwardly, and means to insure concurrent depression of said arm and the partial rotation of said base.

4. An electric current collector comprising a rotatably mounted base, a contact arm pivoted on said base, yieldable means for actuating said arm in one direction, a crank connected to said base, a retractile rod connected to said arm, and a cam block operatively engaging said arm and said rod to effect concurrent movements of said base and said contact arm.

5. An electric current collector comprising a rotatably mounted base, a coaxial extension therefrom provided with a crank, a contact arm mounted on said base on a pivot transverse to the axis thereof, a connection rod connected to said arm and extending in substantial alignment with said base extension, and a cam block operatively engaging said rod and said crank.

6. An electric current collector comprising a rotatable base, a coaxial extension therefrom provided with a crank, a spring-actuated contact-arm pivotally mounted on said base, a retractile rod connected to said contact arm and extending into proximity to said crank, a cam block provided with an L-shaped slot for engagement with said crank and with inclined ways for engagement with said retractile rod, and means for reciprocating said cam block.

In witness whereof, I have hereunto set my hand this 25th day of November, 1925.

GEORGE W. BOWER.