

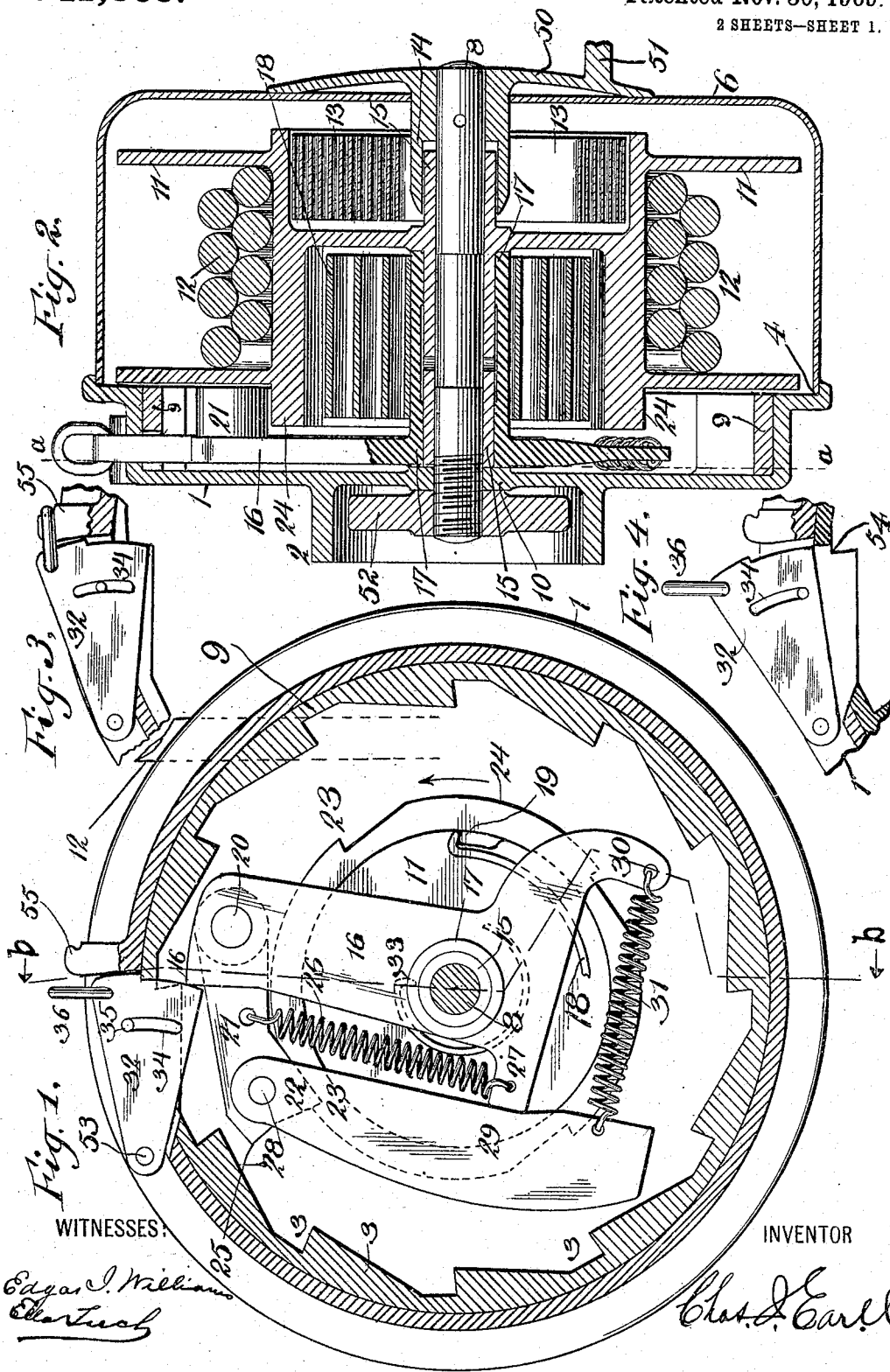
TROLLEY CATCHER.

APPLICATION FILED SEPT. 30, 1903.

Patented Nov. 30, 1909.

2 SHEETS—SHEET 1.

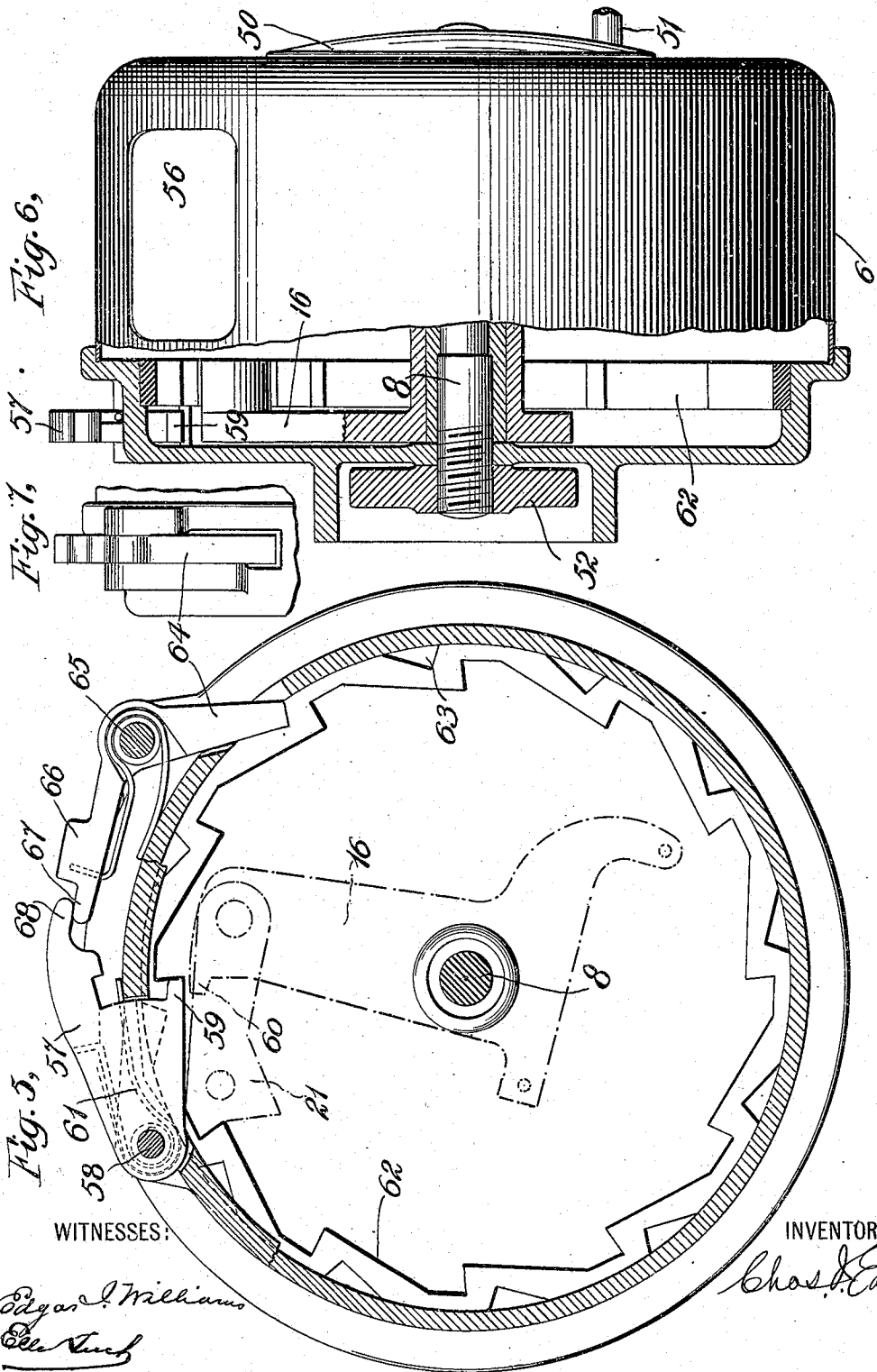
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WITNESSES:

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TROLLEY-CATCHER.

941,363.

Specification of Letters Patent.

Patented Nov. 30, 1909.

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To all whom it may concern:

Be it known that I, CHARLES I. EARLL, a citizen of the United States of America, and resident of the city, county, and State of New York, have invented certain new and useful Improvements in Trolley-Catchers, of which the following is a specification.

My invention relates to trolley-catchers or retrievers, devices for automatically pulling down the trolley-rope and pole when the trolley-wheel leaves the wire, and more particularly to improvements in that form of trolley-catcher shown by me in United States Patent No. 683,026, of September 24, 1901, in which the trolley-rope is attached to a revoluble drum, the said drum being at all times under the action of a relatively weak spring to take up the slack, and, at such times as the wheel leaves the wire, being brought under the action of a relatively strong spring which acts to draw the said trolley-pole down out of contact with the supporting structure.

In the invention above referred to in order to release the drum from the action of the strong spring to return the trolley to the wire it was necessary to pull down the trolley-rope a short distance until the strong spring had ceased to exert any considerable pressure upon the drum. When this was done the drum was wholly released from the action of the strong spring and the trolley-rope could be withdrawn to any amount. When the position, to which the strong or retrieving spring had drawn the trolley-pole, was not too close to the roof of the car this was easily accomplished, but if, as sometimes happened, the trolley-wheel should leave the trolley-wire at a point where the wire was close to the roof of the car as in passing under a low bridge, the trolley-pole would occasionally be brought down upon the roof of the car before the retrieving spring had been sufficiently relaxed to enable the drum to be released from its action. And again, in the invention above referred to, when the trolley-rope was pulled out to permit the trolley to rise and make contact with the wire it was necessary to withdraw the rope at a speed below a certain predetermined limit in order not to re-engage the retrieving spring, and in the invention above referred to, as in all devices of this class, accidents may happen to the operating mechanism which make it impossible to withdraw the rope. In such cases

the rope generally has to be cut in order to restore the trolley to the wire, causing great inconvenience and sometimes great dangers, as would be the case should such an accident happen when the car was at rest on a grade crossing.

It is the object of this invention to provide means whereby when the trolley-pole has been brought down by the action of the retrieving spring it may be released therefrom without drawing down the trolley-rope, and independently of the means which brought the retrieving spring into action, and to so release the retrieving spring that the rope may be withdrawn at any speed.

The object of this invention is further to provide a simple and efficient means for adjusting the position of the opening through which the trolley-rope is led to the winding drum, for adjusting the tension of the weaker spring which takes up the slack in the trolley-rope and keeps it taut, for holding the parts of the inclosing case together, and for more conveniently setting the retrieving spring.

My invention consists in providing a winding drum adapted to wind up trolley-rope, in providing a relatively weak spring adapted to act upon the drum to take up the slack and keep taut the trolley-rope, in providing a relatively strong spring normally under stress and inactive but adapted to be brought into action by a sudden jerk upon or rapid unwinding of the trolley-rope, and means for throwing said relatively strong spring out of action independent of the means by which it is brought into action.

My invention consists further in providing a simple and efficient means for holding the two parts of the inclosing case together, means for easily adjusting the tension of the relatively weak spring, means for adjusting the position of the opening through which the trolley-rope leads through the drum, in a novel arrangement whereby a screw-thread and nut upon the central shaft on which the drum is mounted serves to hold the two parts of the inclosing case together and to clamp the means for adjusting the relatively light spring in position in such a manner that the action of said spring tends always to tighten said nut thus obviating the likelihood of the nut becoming loosened through shocks or jars and avoiding the use of any means for locking said nut in position.

My invention consists in other novel features of construction to be hereinafter more fully pointed out and described.

In the drawings accompanying and forming part of this specification, Figure 1 is a transverse section on line *a a* of Fig. 2. Fig. 2 is a section on line *b b* of Fig. 1. Figs. 3 and 4 details of the pawl or catch which holds the ratchet-ring from rotation, Fig. 3 showing the pawl in its normal position, Fig. 4 showing it raised to its extreme position to free the ring. Figs. 5 and 6 represent sections corresponding respectively to Figs. 1 and 2 and showing a modified form of the ratchet-ring and pawl for releasing the same. Fig. 7 is a partial side view showing the pawl 64.

The reference characters are used in the same sense in all of the figures and the specification.

Numeral 1 represents a stationary support which is adapted to be secured to the dash of the car in any convenient manner.

2 represents a cylindrical projection made integrally with the support 1, which is adapted to be received in a corresponding socket (not shown) secured to the end of the car or in any other convenient manner.

3 represents internal ratchet-teeth formed on a ring 9 revolubly mounted in the support 1.

6 represents a case, preferably made of sheet metal, which, with the support 1, incloses the mechanism of the trolley-catcher, the said support being provided with a recessed seat 4, on which the case is securely held by means of the thumb-nut 52 resting on the seat 10.

8 represents a shaft journaled in the support 1 and in the case 6. Mounted on the shaft 8 is the drum 11, on which is wound the trolley-rope 12, the other end of the trolley-rope being secured to the trolley-pole near its end in the usual manner.

13 represents a light spiral spring called the tension spring secured at its outer end to the drum 11 and at its inner end to the projection 14 of the disk 50, the disk 50 being pinned or otherwise secured to the shaft 8 and provided with a crank or handle 51 by means of which it is turned to adjust the tension spring 13 when the nut 52 is loosened. The projection, or inwardly projecting hub 14, which engages the inner end of the spring 13 is recessed to receive the outer end of the hub 15 of the drum, the object being to avoid having the drum overhang its bearing and to provide a longer bearing than would otherwise be possible for the drum. The tension spring 13 acts to wind up the trolley-rope 12 with a slight tension, preferably just sufficient to take up the slack in said trolley-rope. The drum 11 is provided with the elongated hub or sleeve 15 which fits freely on the shaft 8. Mounted

on the sleeve 15 is the rotatable member or lever 16 which is provided with the elongated hub or sleeve 17, the said sleeve 17 fitting freely over the sleeve 15 of the drum.

18 represents a relatively stiff spiral spring located within the drum 11, having its outer end engaging the lug 19 on said drum and its inner end engaging the groove 33 of the sleeve 17 of the lever 16, so that when the spring 18 is under stress or wound up and the lever 16 is held against rotation the spring 18 tends to rotate the drum in a direction to wind up the trolley-rope 12. The lever 16 is provided with the pin 20 which carries the clutch or pawl 21. The said pawl 21 is provided with the inner point 22 adapted to engage one of the teeth 23 on the flange 24 of the drum 11. The pawl 21 is provided with the point 25, which, as said pawl is thrown out of engagement with the teeth 23, engages a tooth 3 of the ratchet-ring 9. The lever 16 and the pawl 21 are seen to form a means for locking the inner end of the spring to the drum, the outer end of the spring being in permanent engagement therewith.

26 represents a spring secured at one end to the lug 27 of the lever 16 and at the other end to the pawl 21, said spring tending to keep the pawl 21 in engagement with the flange 24 of the drum. Secured to the pawl 21 is the pin 28, on which is mounted the centrifugal pawl 29. Secured to the lug 30 of the lever 16 is the spring 31 which is also secured to the centrifugal pawl 29 and tends to hold the said centrifugal pawl against the lug 27.

32 is a pawl mounted on the pivot 53 in the base 1 and operating in a slot or recess in said base to engage a corresponding slot or recess 54 in the ratchet-ring.

35 is a pin in the frame 1 which engages the slot 34 in the pawl 32 to limit the movement of said pawl. The pawl 32 is adapted to occupy three positions. First, that shown in Fig. 1 which is its lowest position, in which the lower point of the pawl engages the end of the lever 16 and holds said lever when the trolley-rope is being withdrawn to set the retrieving spring. Second, the position shown in Fig. 3 where the pawl is in its central position and acts to hold the ratchet-ring 9 against rotation, but in which position said pawl is clear of the end of the lever 16; and third, the position shown in Fig. 4, in which the pawl is raised to its highest position to release the ratchet-ring 9 and permit it to revolve under the action of the heavy spring, when the pawl 21 has been thrown out into engagement with said ratchet-ring.

36 is a ring pivotally fixed in the end of the pawl 32 and adapted to snap over the end of the lug 55 to hold the pawl in its central position as shown in Fig. 3.

The operation of the device is as follows: When the parts are in their normal position they are as represented in Figs. 1 and 2, with the exception of the pawl 32, which normally occupies its central position as shown in Fig. 3. The centrifugal pawl 29 is held against its banking 27, the pawl 21 engages the tooth 23 of the drum and the spring 18 is under strain or tension, tending to rotate the drum 11 and the lever 16 in opposite directions, thus tending to rotate the drum to the right as seen in Fig. 1, to wind up the trolley-rope 12 and tending to rotate the lever 16 to the left. This relative rotation of these two members is prevented by the engagement of the pawl 21 with the tooth 23 of the drum, and as is evident the drum and lever together with the spring 18 and the pawls 21 and 29 rotate together as though made of one piece. The spring 13 acts at all times to wind up the trolley-rope, and it is made of just sufficient strength to prevent slack or looseness in the trolley-rope as the trolley-wheel rises and falls due to the varying distance of the trolley wire from the car. When, however, the trolley-wheel has from any cause left the trolley-wire, it starts upward with a rapid increase of speed, which is of course transmitted to the drum 11. The sudden jerk and the increased centrifugal force acting upon the pawl 29 overcomes the tension of the spring 31 and permits the pawl 29 to swing outward and engage one of the teeth 3 of the internal ratchet 9 mounted in the support 1. The continued movement of the lever 16, when the pawl 29 is in engagement with a tooth 3, throws the pawl 21 out of engagement with the tooth on the drum and into engagement with a tooth 3 of the ratchet-ring 9, the ratchet-ring 9 being held against rotation by the pawl 32 thus bringing the spring 18 into action and causing the trolley-rope to be wound up on the drum 11, the spring 18 being made of sufficient strength to overcome the upward pull of the trolley-pole when the trolley has left the trolley-wire. The trolley-pole and wheel are thus pulled down clear of the trolley-wire and its supporting structure thereby preventing the damage which would be likely to occur if the trolley-pole were allowed to strike the overhead structure. To return the trolley to the wire the trolley-rope may be pulled down a short distance, which allows the pawls 21 and 29 to return to their normal position, the pawl 21 resting anywhere on the flange 24 and the pawl 29 returning to its banking 27. The trolley-rope may then be withdrawn from the trolley-catcher against the action of the light spring 13 and the trolley replaced on the wire in the usual manner; or, the pawl 32 may be withdrawn to the position shown in Fig. 4 and thus release the ratchet-ring 9 and permit the

strong spring to run down and relax without the necessity of lowering the bolt or drawing down upon the trolley-rope to release the pawl 21 from engagement with the ratchet-ring. In this condition the car may be at once started or continued in motion without loss of time. To again set the stiff spring 18 the pawl 32 is pressed in and the trolley-rope is pulled out. The drum 11 and lever 16 will then revolve together until the lever 16 engages the pawl 32, when the further withdrawal of the rope will wind up or place under stress the spring 18, the pawl 21 dropping into engagement with the tooth 23, leaving all of the parts in their normal position as they were originally. The tension of the spring 13 is readily adjusted by loosening the thumb-nut 52 and turning the flange 50 by means of the crank 51. Moreover, the position of the opening 56, through which the trolley-rope passes, is readily adjusted to any convenient point when the thumb-nut 52 is loosened. When, however, the thumb-nut 52 is made tight both the cylindrical case 6 and the disk 50 are securely clamped in position. It will be noticed that the weaker spring 13 tends to turn the shaft 8, and the direction of the thread on the end of the shaft is made such that this tendency to turn tightens the nut upon the shaft.

It is thus seen that in this mechanism the drum is at all times under the action of a relatively weak spring tending to wind up the trolley-rope, and that there is, when the mechanism is in its normal condition, connected to this drum a relatively strong spring which is normally under stress and in a strained condition, one end of said spring being attached to the drum and the other to a rotatable member which is clutched to the drum in such a way that the relatively strong spring has no influence whatever on the motion of the drum, and when, by a sudden jerk or increase of the speed of rotation of the drum, the rotatable member to which the strong spring is attached is released from the drum and clutched to the stationary support the drum is then under action of the relatively strong spring tending to wind up the trolley-rope. It is also seen that when the strong spring has been thrown into action by its engagement through the instrumentalities of the pawls 29 and 21 with the ratchet-ring 9, that the ratchet-ring may be released at will by the withdrawal of the pawl 32 and thus be permitted to run down or unwind without the necessity of drawing down the trolley-rope and allowing more of the rope to be wound up on the drum. It is obvious that if, assuming the strong spring to be relaxed and the pawls 21 and 29 to be in their normal position resting upon the flange 24, the trolley-rope is withdrawn quickly, the said

pawls will be thrown outward into engagement with the ratchet-ring and thus bring the spring into action to resist the further withdrawal of the rope. In this case as
 5 before the withdrawal of the pawl 32 makes it possible to continue to withdraw the trolley-rope without the necessity of having to first return it until the strong spring has been relaxed and the pawls 21 and 29 have
 10 been returned to their normal position.

In Figs. 5, 6 and 7 a modification is shown in which separate pawls are employed for setting the strong spring and for releasing the ratchet-ring. Here the setting pawl 57
 15 is pivoted on the pin 58 in the base and operates through a slot therein. A projection 59 of the lower side of said pawl is adapted, when the pawl is depressed, to engage the end of the lever 16 coming beneath the lug
 20 60 and the end of said lever, this engagement causing the pawl 57 to be held down in engagement with said lever while the trolley-rope is being withdrawn to set the stiff spring. During the setting of the stiff
 25 spring the pawl 21 will drop into engagement with the teeth 23 on the drum as before. When the spring has been sufficiently set the trolley-rope is relaxed and the drum and lever 16 rotate together backward or
 30 under the action of the light spring 13, carrying the end of the lever 16 away from the pawl 57 which is thereby released and returned to its normal position by the spring 61. The ratchet-ring 62, which corresponds
 35 in its chief functions with the ratchet-ring 9 shown in Figs. 1 to 4 inclusive, is provided with one or more notches or depressions 63 which are adapted to be engaged by the pawl 64, mounted on the pivot 65 in the base.
 40 The pawl 64 has a lever 66 secured thereto adapted to be pressed downward by the hand, and it has a projection 67 adapted to be engaged by the extension or projection 68 on the pawl 57 so that the pawl 64 may be
 45 thrown out of engagement with the ratchet-ring 62 by depressing the lever 66 independently of the pawl 57, but it will always be thrown out of engagement with the ring when the pawl 57 is depressed to set the
 50 stiff spring. The purpose of this interlocking arrangement, that is, insuring the release of the ratchet-ring from the pawl 64 when the pawl 57 is depressed, is to insure the release of the ratchet-ring during the
 55 setting of the stiff spring in case the operator should withdraw the trolley-rope so suddenly as to cause the centrifugal pawl and the pawl 21 to engage the ratchet-ring before the lever 16 had made contact with
 60 the pawl 57. It is to be noted that the pawl 21, the ratchet-ring 62 and the pawl 64 are all in the same plane, and that the pawl 57 is in the same plane with the lever 16.

Having thus described my invention, what
 65 I claim is,

1. In a trolley catcher the combination with a rotatable drum adapted to receive the trolley rope and automatic means for checking the rotation of said drum, of means for manually rendering said automatic means
 70 inoperative whereby said drum may be quickly rotated without being automatically checked.

2. In a trolley retriever the combination with three relatively movable members, one
 75 constituting a drum another a normally stationary member and another an intermediate member, and a power spring having one end attached to the intermediate member and the other end to one of the other of said
 80 members, of means for releasing said normally stationary member to permit it to rotate.

3. In a trolley retriever the combination with three relatively movable members, one
 85 constituting a drum, another a normally stationary member rotatably mounted and another an intermediate member, and a power spring having one end attached to the intermediate member and the other end to one of
 90 the other of said members, means for holding said stationary member against rotating and means for releasing said normally stationary member to permit it to rotate under the action of the power spring to free the
 95 drum from the action of said power spring.

4. In a trolley-retriever, the combination with a winding drum, of a spring normally under stress, having its one end in fixed and
 100 its other end in releasable engagement with said drum, means for freeing said releasable end from said drum and engaging it with a stationary member and means for freeing said releasable end from said stationary
 105 member.

5. In a trolley-retriever, the combination with a winding drum, of a spring normally under stress, means for causing said spring to act upon said drum to wind a trolley-rope thereon and means for releasing said spring
 110 from stress independent of said drum.

6. In a trolley-retriever, the combination with a winding drum, of a spring normally under stress, means for causing said spring to act upon said drum to wind a trolley-rope thereon and means for releasing said
 115 spring from stress independent of the rotation of said drum.

7. In a trolley catcher the combination with an inclosing case of a drum mounted in
 120 said case, a ratchet ring mounted in said case concentric with said drum, means adapted to rotate with said drum and to engage said ratchet ring when the drum is quickly rotated and means for holding and
 125 releasing said ratchet ring.

8. In a trolley-catcher, the combination with a drum a stationary support and rotatable member mounted concentrically, of a spring engaging said drum and said rota-
 130

table member tending to rotate them in opposite directions, a clutch connecting said drum and said rotatable member, means for automatically disengaging said clutch and holding said rotatable member against rotation, and means for releasing said rotatable member to permit it to rotate relatively to the stationary support and said drum.

9. In a trolley-catcher, the combination with a stationary support, of a shaft mounted in said support, a drum mounted on said shaft, a lever mounted on the hub of said drum, a spring connecting said lever with said drum, a pawl pivotally mounted on said lever normally engaging said drum, means for automatically disengaging said pawl from said drum and engaging it with said stationary member and means for releasing said stationary member.

10. In a trolley-retriever, the combination with a drum, of a spring normally under stress, having its one end in fixed and its other end in releasable engagement with said drum, a ratchet, means for connecting said ratchet with the releasable end of said spring and means for locking and unlocking said ratchet.

11. In a trolley-retriever, the combination with a fixed support, of a drum mounted therein, a spring normally under stress, having one end in fixed and the other in releasable engagement with said drum, a revoluble ratchet-ring mounted concentrically in said support, means for automatically releasing the releasable end of said spring from said drum and engaging it with said ratchet-ring and means for locking and unlocking said ratchet-ring.

12. In a trolley-catcher, the combination with a base, of a ratchet in said base, a cylindrical cap concentric with said base, a circular seat in said base for said cap and means for clamping said cap against said base.

13. In a trolley-catcher, the combination with a base, of a cylindrical shell or case, a circular seat in said base for said shell, a shaft centrally mounted in said base and said shell having a flange secured to its outer end engaging the end of said shell and means for securing said shaft to said base.

14. In a trolley-catcher, the combination with a base, of a cylindrical shell, a circular seat in said base for said shell, a shaft mounted concentrically in said shell having a flange secured to its outer end adapted to bear against said shell, a drum mounted on said shaft, a spring having its outer end secured to said drum and its inner end to said shaft and a nut on said shaft adapted to hold said shell and said base together.

15. In a trolley-catcher, the combination with a base, of a cylindrical shell, a circular seat in said base for said shell, a shaft

mounted in said shell having a flange provided with an extension projecting inside of said shell secured to its outer end adapted to bear against said shell, a drum mounted on said shaft, a spring having its one end connected to said drum and its other end connected to the extension of said flange extending inside of said shell.

16. In a trolley-catcher, the combination with a drum, of a cylindrical shell inclosing said drum, a base, a seat in said base for said shell, a shaft on which said drum is mounted passing through said base and said shell having a flange on one end and a nut on its other end whereby said shell may be adjusted and clamped in position.

17. In a trolley-catcher, the combination with a winding drum for the trolley-rope, of a spring permanently connected at one end to said drum, the other end of the spring being adapted to be connected with said drum to rotate therewith, and disconnected therefrom and held fixed against the drum's rotation, and mechanism for releasing the said fixed end of the spring and permitting it to become inoperative substantially as shown and described.

18. In a trolley-catcher, the combination with a winding drum, of a spring permanently connected at one end to said drum, a clutch normally engaged with the drum to rotate therewith to which the other end of the spring is connected, mechanism for disengaging said clutch from the drum, a normally fixed stop with which said clutch engages when it is thrown out of engagement with the drum, and mechanism for releasing said stop and permitting the clutch to rotate as the spring runs down.

19. In a trolley-retriever, the combination with a winding drum, of a spring permanently connected at one end to said drum, a rotatable member to which the other end of the spring is connected, a pawl on said member normally engaging with the winding drum to compel the said member to rotate with the drum, a normally fixed stop against which the pawl is thrown when too rapid rotation of the drum forces it out of engagement therewith, and mechanism for releasing said stop to allow the rotation of the said member and the running down of said spring.

20. In a trolley-retriever, the combination with a winding drum, of a spring permanently connected at one end to said drum, a rotatable member to which the other end of the spring is connected, a pawl on said member normally engaging with the winding drum to compel the said member to rotate with the drum, of an internally toothed ring normally fixed from rotation, means for throwing the said pawl out of engagement with the drum and into engagement with the toothed ring, and mechanism for releasing

said ring so that it may be free to rotate with the said member as the said spring runs down.

21. In a trolley-retriever, the combination
5 with a fixed support a normally fixed stop
connected at will to the fixed support, of a
drum, a spring normally under strain having
its one end in fixed and the other end in re-
leasable engagement with said drum, means
10 whereby the releasable end of said spring is
freed from said drum and engaged with said
normally fixed stop to cause the drum to
rotate under the action of said spring, and
mechanism for releasing said stop whereby
15 the said spring may run down.

22. In a trolley-retriever, the combination
with a winding drum, a spring permanently
connected at one end to said drum, a rota-
table member to which the other end of the
20 spring is connected, a main pawl on said
member held in engagement with said drum,
a centrifugally controlled pawl pivoted to
said main pawl adapted, when thrown out
by centrifugal force, to release the said main
25 pawl from the drum and force it outward, of
a normally fixed stop against which said
main pawl is forced, and mechanism for re-
leasing said stop to allow the said spring to
run down.

23. In a trolley-retriever, the combination
with a winding drum, a tooth on said drum,
a spring permanently connected at one end
to said drum, a rotatable lever to which the
other end of the spring is connected, a main
35 pawl on said lever held in engagement with
the tooth on said drum, and a centrifugally
controlled auxiliary pawl pivoted to said
main pawl, of a normally fixed internally
toothed ring against which the said auxiliary
40 pawl is thrown, the said tooth engaging with
the said auxiliary pawl to force it to move
the main pawl out of engagement with the
drum and into engagement with the said
ring-teeth, a catch for holding said ring
45 fixed and means for disengaging the catch
from the ring to allow the ring to rotate with
the said lever as the spring runs down.

24. In a trolley-retriever, the combination
with a winding drum, of a spring perma-
nently connected at one end to said drum,
a rotatable member to which the other end
of the spring is connected, a clutch on said
member normally engaging with the wind-
ing drum to compel said member to rotate
55 therewith, a normally fixed internally
toothed ring and mechanism for disengag-
ing the clutch from the drum and engaging
it with said toothed ring, of a catch or pawl
adapted to hold said toothed ring in its
60 fixed position, and means for releasing the
catch from the ring to release the ring where-
by the ring is made free to rotate with the
said rotatable member.

25. In a trolley-retriever, the combination
65 with a winding-drum, a spring permanently

connected at one end to said drum, a rotata-
ble lever mounted concentrically to the drum
to which the other end of the spring is con-
nected, a pawl pivoted to the end of the
lever, normally engaging said drum, cen-
trifugal mechanism for disengaging said
70 pawl from the drum and throwing it out-
ward, of a ring encircling the path of said
lever and pawl and having a slot therein
and teeth with which said pawl is adapted
75 to engage, a catch normally projecting
through the slot in said ring to hold it fixed,
said catch being adapted to be raised en-
tirely free of the ring to allow the ring to
rotate or to be depressed through the ring
80 to a position where it will act as a stop to
prevent the rotatable lever from rotating.

26. In a trolley-retriever, the combination
with a flanged base-plate, a casing adapted
to fit therein, a winding drum mounted in
85 said casing, a spring connected to the drum,
a rotatable lever mounted concentrically
with said drum to which the other end of
the spring is connected, a pawl on said lever
normally in engagement with the drum but
90 adapted to be released therefrom and thrown
outward when the drum is rotated beyond a
certain speed, of a ring revoluble within the
flange of the base-plate and encircling the
path of the movement of the lever, inwardly
95 projecting teeth or stops on said ring capa-
ble of engaging with the lever-pawl when it
is forced outward, a slot in said ring, a
catch or pawl pivoted to the base-plate, the
free end of said catch or pawl adapted to be
100 depressed into said slot to hold the ring
fixed, or still further depressed to engage
with the end of the said lever to keep it
from rotation, and means for holding the
said catch or pawl normally above the end
105 of the lever but in engagement with said
ring.

27. In a trolley-retriever, the combination
with a casing, a shaft in said casing, a drum
rotating on said shaft, a weak spring con-
tinually acting on said drum and connected
110 to said shaft, a strong spring whose torsion
is brought into play when the drum is re-
volved too rapidly, of a pressure plate fast
on said shaft adapted to be forced against
115 the casing to increase its frictional contact
whereby it is held in whatever position it
may be turned to, and a handle for turning
said plate and tightening or loosening the
spring.
120

28. In a trolley catcher the combination
with a drum adapted to receive the trolley
rope and having a recess formed in its end
to receive the slack-absorbing spring and a
hub extending into said recess, of a nor-
125 mally stationary sleeve extending into said
recess over said hub and a slack-absorbing
spring in said recess having its outer end
secured to said drum and its inner end to
said sleeve.
130

29. In a trolley catcher the combination with a drum adapted to receive the trolley rope and having a recess formed in its end to receive the slack-absorbing spring and a hub extending into said recess, of a normally stationary sleeve extending into said recess over said hub, a slack-absorbing spring in said recess having its outer end secured to said drum and its inner end to said sleeve and means for securing and turning said sleeve.

30. In a trolley catcher the combination with an inclosing case, of a drum revolubly mounted in said case, said drum having a recess in its end for the reception of a spring to take up the slack trolley rope and a central hub extending into said recess, an inwardly projecting normally stationary hub mounted in said case concentric with said drum having a recess in its end to receive the hub of the drum, a coiled slack-absorbing spring having its outer end secured to

said drum and its inner end to said inwardly projecting hub, and means for turning and securing said inwardly projecting hub to adjust the stress upon said spring.

31. In a trolley catcher the combination with an inclosing case of a drum rotatably mounted therein having a recess in its end for the reception of a slack-absorbing spring and a hub extending into said recess, of a normally stationary recessed projection extending from said case into the recess of said drum over said hub and a slack-absorbing spring in said recess having its outer end secured to said drum and its inner end to said recessed projection.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. I. EARLL.

Witnesses:

A. B. BOSSE,
ELLA TUCE.