

No. 846,365.

PATENTED MAR. 5, 1907.

R. J. WALKER. PATENT
AUTOMATIC TROLLEY RETRIEVER.

APPLICATION FILED JAN. 13, 1906.

2 SHEETS--SHEET 1.

Fig.1.

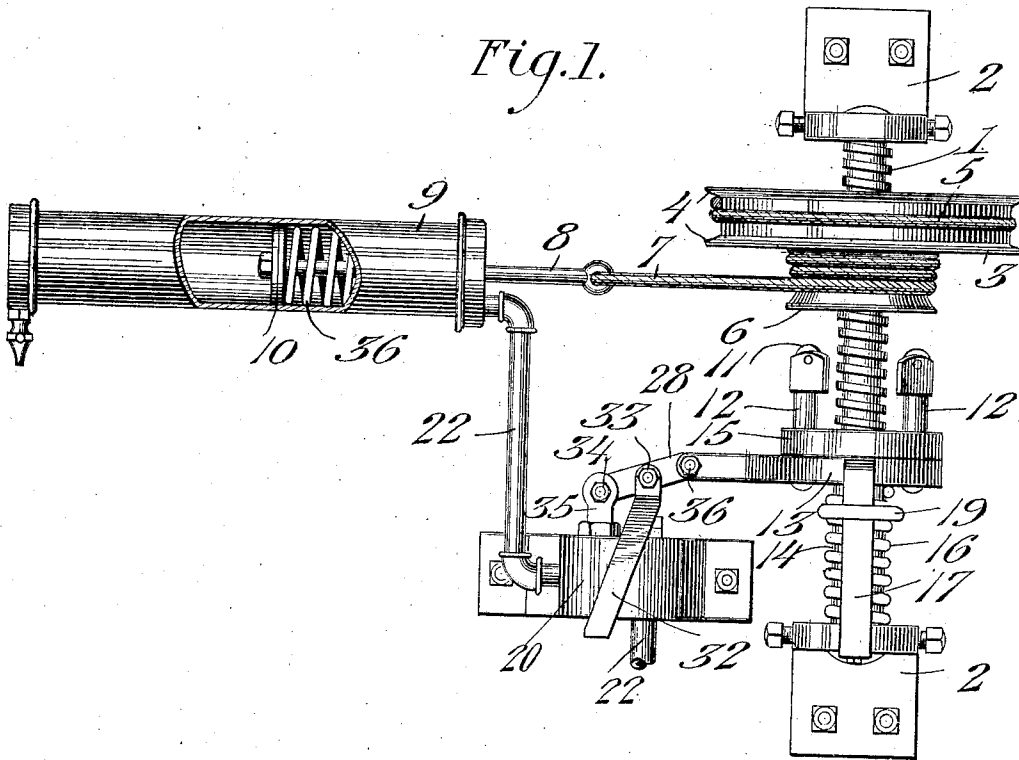
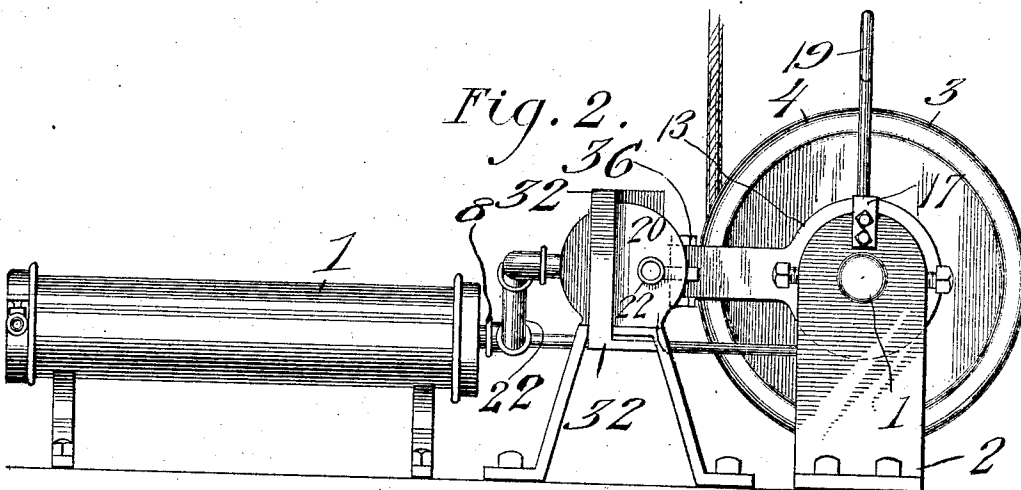


Fig. 2.



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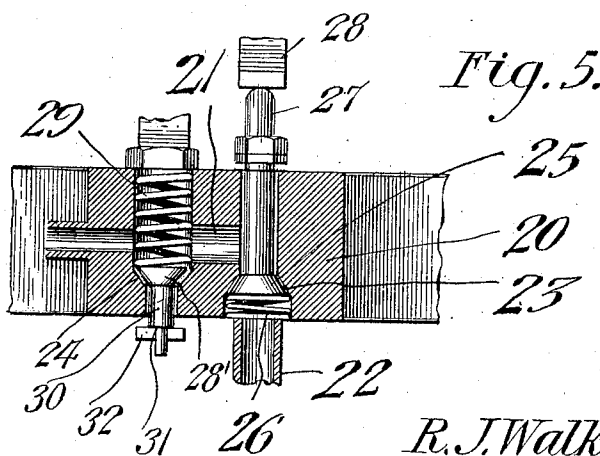
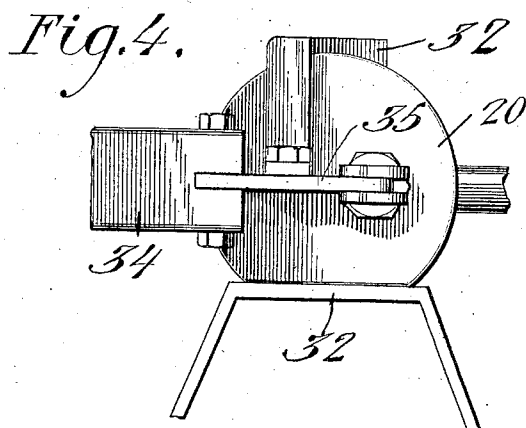
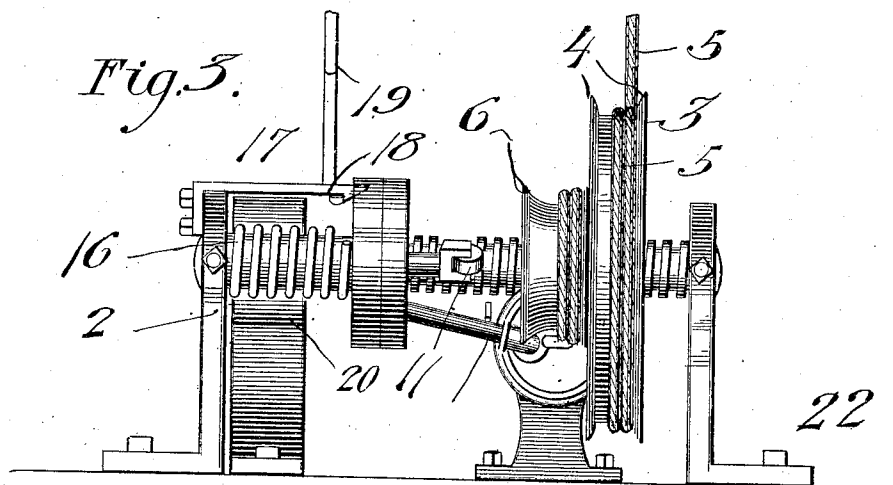
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ROBERT J. WALKER, OF ANDERSON, INDIANA.

AUTOMATIC TROLLEY-RETRIEVER.

No. 846,365.

Specification of Letters Patent.

Patented March 5, 1907.

Application filed January 13, 1906. Serial No. 295,937.

To all whom it may concern:

Be it known that I, ROBERT J. WALKER, a citizen of the United States, residing at Anderson, in the county of Madison and State of Indiana, have invented new and useful Improvements in Automatic Trolley-Retrievers, of which the following is a specification.

This invention relates to automatic trolley-retrievers, the object of the invention being to provide mechanism which is tripped by the trolley-arm when the trolley-wheel jumps the wire and which is operated pneumatically for drawing down the trolley-arm and carrying the same to a position out of the way of the cross-arms in the further movement of the car, so as to prevent the trolley arm and wheel from striking against the cross-arm of the supporting devices of the conductor, and thereby becoming injured.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts hereinafter described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a plan view of the mechanism embodying the present invention. Fig. 2 is an end elevation of the same. Fig. 3 is a side elevation of the mechanism. Fig. 4 is an enlarged end view of the valve-casing, showing the valve-operating connections. Fig. 5 is an enlarged detailed section showing the valve arrangement.

Like reference-numerals designate corresponding parts in all the figures of the drawings.

Referring to the drawings, 1 designates a fixed screw-shaft, the same being supported adjacent to its opposite ends by means of suitable brackets 2. Rotatably mounted on the shaft 1 is a tripping pulley or drum 3, suitably flanged at opposite sides, as shown at 4, and adapted to receive the trolley-rope 5, one end of which is fastened to the pulley 3 and the other end of which is attached to the trolley-arm, said trolley-rope 5 being adapted to be wound upon the pulley or drum 3 when the latter is rotated by the actuating means hereinafter described. Connected with the drum or pulley 3 and rotating therewith is a retriever-pulley 6, around which is wound a rope or retriever connection 7, one end of which is secured to the pul-

ley 6 and the other end to a piston-rod 8, which enters the adjacent end of a cylinder 9 and is provided with a piston-head 10, which traverses the cylinder 9.

The double pulley 3 6 above described has a threaded engagement with the shaft 1, so that when the trolley jumps the wire and the trolley-arm moves upward rotary motion is imparted to said double pulley, causing the same to move lengthwise of the shaft 1 until it comes in contact with antifriction-rollers 11, carried by posts 12, connected to a shipper-head 13, which is adapted to slide lengthwise of the shaft 1 on a smooth portion 14 thereof.

15 designates a stationary guide-plate and stop which surrounds the shaft 1 and is provided with guide-openings through which the posts 12 move back and forth. By reference to Fig. 1 it will be seen that the shipper-head 13 is resting in contact with the guide-plate 15, and thus said guide-plate forms a stop for arresting the movement of the shipper-head in one direction. The movement of the shipper-head in the opposite direction is resisted by means of a spiral spring 16, which encircles the smooth portion 14 of the shaft 1 and is interposed between the shipper-head and one of the brackets 2. Connected with the same bracket is a spring catch-arm or detent 17, provided at its free end with a catch-lip 18, which rests against the shipper-head 13 and is adapted to snap behind the shipper-head when the latter is moved a sufficient distance away from the guide-plate and stop 15, thereby locking the shipper-head for a purpose which will hereinafter appear. The spring catch-arm or detent 7 is provided with a suitable handle 19, whereby it may be lifted out of engagement with the shipper-head 13 to release the latter and allow it to move again into contact with the guide-plate and stop 15.

Arranged at a suitable point is a stationary valve-casing 20. This valve-casing comprises a passage 21, which communicates with a fluid-pressure pipe 22, one portion or section of said pipe leading to a suitable air-compressor, while the other portion or section of the pipe leads from the valve-casing into the end of the cylinder 9, above referred to. In the passage 21 there are two valve-seats 23 and 24, and in connection with the valve-seat 23 there is arranged an inlet-valve 25, held to its seat by means of a spring 26

and having the stem 27 thereof projecting outside of the casing, where it is acted upon by a valve-operating lever 28. Associated with the other valve-casing 24 is a pressure relief-valve 28', held to its seat by a spring 29 and having the stem 30 thereof extended through the opposite side of the casing, where it is reduced and shouldered, as shown at 31, the reduced extremity of the valve-stem passing through an opening in a stirrup 32, which embraces the valve-casing, as shown in Fig. 1, and is connected to the valve-lever 28 at an intermediate point 33. The lever 28 is fulcrumed at 34 on a post or bracket 35, connected to the valve-casing, as shown in Fig. 1, while the opposite end of the lever 28 is pivotally connected at 36 to the shipper-head 13.

It will now be seen that as the shipper-head 13 moves away from the guide-plate 15 the lever 28 is rocked in a direction which causes it to press the valve 25 away from its seat and by means of the stirrup 32 permit the pressure relief-valve 28' to seat itself. This opens the inlet-valve, which admits fluid under pressure to the cylinder 9 and simultaneously closes the outlet. This is caused by the double pulley 3 6 striking against the rollers 11, as hereinabove explained, and the movement of the pulley, as previously explained, is caused by the trolley jumping the wire and the trolley-arm imparting rotary movement to the pulley as it moves upward. The inlet-valve being opened, air passes into the cylinder 9 and moves the piston 10 outward, thus drawing on the retriever connection 7 and turning the pulley in a reverse direction, causing said pulley to wind the trolley-rope 5 thereon and draw the trolley-arm downward for the purpose explained. As the shipper-head 13 moves away from the guide 15 it is caught and held by the spring-detent 17, and the inlet-valve is thus held open and the position of the parts just described maintained until the time comes to reset the trolley-arm. This is done by disengaging the detent 17 with the aid of the handle 19. As the shipper-head 13 moves toward the guide 15 the inlet-valve is allowed to seat itself and the outlet-valve 24 is lifted from its seat sufficiently to allow the air or other fluid to escape from the cylinder 9.

Within the cylinder 9 is arranged a buffer-spring 36, which is interposed between the piston-head 10 and the inner end of the cylinder for the purpose of cushioning the piston-head as it moves toward the inner end of the cylinder, and thereby relieving the jar and strain on the mechanism when the trolley jumps off the wire or overhead conductor.

The retriever mechanism hereinbefore described is reliable and certain in action, is entirely automatic in operation, and acts to hold the trolley-arm downward until the

tripping mechanism has been unlocked to reposition the valves which control the passage of fluid to and from the cylinder in which the operating-piston works.

Having thus described the invention, I claim—

1. The combination with a trolley-arm, of a laterally-movable pulley having the trolley-rope connected thereto, a fluid-pressure cylinder, a piston working therein and operatively connected with said pulley, a valve controlling said cylinder, and tripping mechanism connected with said valve and adapted to be operated upon in the lateral movement of the pulley.

2. The combination with a trolley-arm, of a laterally-movable pulley having the trolley-rope connected thereto, a fluid-pressure cylinder, a piston working therein and operatively connected with said pulley, a valve controlling said cylinder, and a spring-pressed shipper-head operatively connected with said valve and arranged in the path of movement of said pulley.

3. The combination with a trolley-arm, of a laterally-movable pulley to which the trolley-rope is connected, a fluid-pressure cylinder, a piston working therein and operatively connected with said pulley, a screw-shaft on which the pulley is mounted, a valve controlling said cylinder, a valve-operating lever, and a lever-shipping element arranged contiguous to said screw-shaft and mounted in the path of said pulley as the latter moves in a direction lengthwise of said shaft.

4. The combination with a trolley-arm, of a drum or pulley to which the trolley-rope is connected, a shaft on which said pulley is mounted, a fluid-pressure cylinder, a piston working therein, a valve controlling said cylinder, a shipper-head operatively connected with said valve and provided with laterally-extending posts adapted to be acted upon by the pulley as the latter moves lengthwise of the shaft, a guide-plate for said posts acting as a stop for the shipper-head, and means for urging the shipper-head toward said guide-plate and stop.

5. The combination with a trolley-arm, a laterally-movable pulley to which the trolley-rope is connected, a fluid-pressure cylinder, a piston working therein, a valve controlling said cylinder, operative connections between said piston and pulley, means operable by the lateral movement of the pulley for moving said valve, and a spring interposed between the piston and one end of the cylinder.

6. The combination with a trolley-arm, of a laterally-movable drum or pulley having the trolley-rope connected thereto, a fluid-pressure cylinder, a piston working therein and operatively connected with the pulley, a valve controlling said cylinder, means operable by the lateral movement of said pulley

to open the inlet-valve to said cylinder, and means for locking the parts in position to maintain said valve open.

7. The combination with a trolley-arm, of
5 a drum or pulley having the trolley-rope connected thereto, a fluid-pressure cylinder, a piston working therein and operatively connected to the pulley, a valve controlling the inlet to said cylinder, a shipper-head operatively
10 connected to said valve and adapted to be operated upon by the pulley, and a spring catch-arm or detent for engaging said shipper-head and locking the same in position to hold said valve open.

15 8. The combination with a trolley-arm, of

a drum or pulley having the trolley-rope connected thereto, a fluid-pressure cylinder, a piston working therein and operatively connected to the pulley, inlet and outlet valves controlling said cylinder, and a valve-controlling shipper-head arranged to be operated by said drum or pulley for simultaneously changing the positions of the inlet and outlet valves.

In testimony whereof I affix my signature 25
in presence of two witnesses.

ROBERT J. WALKER.

Witnesses:

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