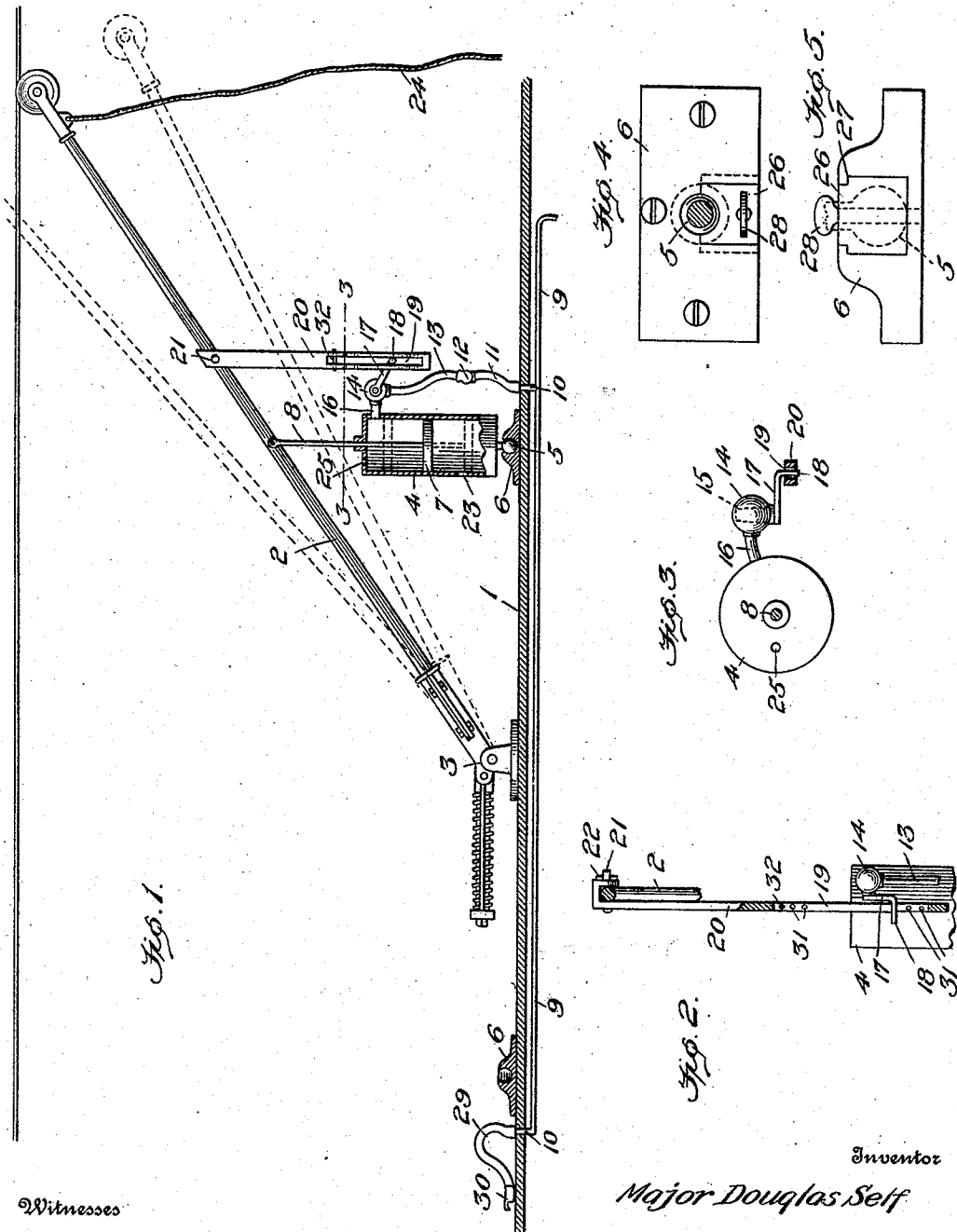


M. D. SELF.
 TROLLEY RETRIEVER.
 APPLICATION FILED DEC. 30, 1908.

930,698.

Patented Aug. 10, 1909.



Witnesses

Edwin L. Bradford
 Frank S. Dove.

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Inventor

Major Douglas Self

Robert Johnston
 Attorney

UNITED STATES PATENT OFFICE.

MAJOR DOUGLAS SELF, OF BESSEMER, ALABAMA, ASSIGNOR OF ONE-HALF TO WILLIAM E. WOODSON, OF JEFFERSON COUNTY, ALABAMA.

TROLLEY-RETRIEVER.

No. 930,698.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MAJOR DOUGLAS SELF, a citizen of the United States, residing at Bessemer, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Trolley-Retrievers, of which the following is a specification.

My invention relates to an improvement in apparatus for retrieving trolley poles and automatically drawing them, after they have jumped the trolley wire, down to a position in which they will not engage the brace strands for the wire, thereby preventing great injury both to the strands and the trolley pole itself.

One of the objects of my invention is to provide an apparatus which will be comparatively simple and inexpensive and in which the air pressure on the car will be utilized through a cylinder and piston to retrieve the pole as soon as it leaves the wire.

A further object is to provide an exceedingly simple valve controlling arrangement for the admission of air to the cylinder which is adapted to automatically trip the valve and admit the air to the cylinder as the trolley pole swings upwardly on leaving the wire, and which will cut off the air pressure when the trolley is pulled down by hand to a slightly lower position than that assumed by it when automatically retrieved.

My invention comprises further the details of construction and arrangement of parts hereinafter described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a side elevation of my improved apparatus mounted on the top of the car. Fig. 2 is a detail view of the valve tripping devices. Fig. 3 is a plan view of the cylinder and valve mechanism. Fig. 4 is a plan view of one of the socket blocks for the ball and socket joint supporting the cylinder. Fig. 5 is a side elevation of Fig. 4.

Similar reference numerals refer to similar parts throughout the drawings.

I have illustrated my invention as mounted on the top 1 of a trolley car having a trolley pole 2 and its supporting mechanism 3, all of which are of ordinary construction. My retrieving apparatus comprises a cylinder 4 which is supported in a ball and socket joint, the ball 5 being attached to the cylinder and the socket formed in the block 6, which is bolted or otherwise secured to the

top of the car. Sufficient clearance is left between the bottom of the cylinder and the top of the block to permit the former to rock through the angles required for following the movements of the trolley pole. In the cylinder is a piston 7 connected to a stem 8 which is pivotally connected to the trolley pole. The pipe 9, mounted on the car, is connected with the air tank and through a branch pipe 10, hose 11, train pipe hose coupling 12, and hose 13, will deliver air pressure to a valve casing 14, which contains a rotary valve 15 for controlling the admission of the air through pipe 16 into the upper end of the cylinder 4. The valve is operated by a crank 17, the outer end 18 of which is bent at right angles and extends into a longitudinal slot 19 in the valve trip rod 20, which is pivotally connected by a bolt 21 and a cotter-pin 22 to the trolley pole.

In operation, the piston 7 and trip rod 20 stand normally in the position shown in Fig. 1, and the trolley pole is free to ride up and down through the ordinary angular variations required to follow the trolley wire, and in all such movements the crank 18 will stand unmoved in the position shown, with pressure cut off from the cylinder and will not be engaged by the trip rod at either end of the slot. If, however, the trolley pole jumps the wire it will raise the trip rod 20 until the lower end thereof engages the crank 18 and raises it so as to open the valve and admit the air pressure to the cylinder through the pipe 16, where the same takes immediate effect on the piston 7 and forces the latter downwardly, drawing with it the trolley pole until the piston approaches the position of the lower dotted lines in Fig. 1. Here it will be noted that I provide an exhaust opening 23 which is about equal in area to the supply opening of the pipe 16. Accordingly when the piston moves to expose this exhaust, the air will flow out as fast as it flows in and the piston will assume substantially a stationary position as shown by the dotted lines, but if it attempts to rise above the opening it causes an immediate accumulation of the air pressure above it by throttling the exhaust which acts to hold it in the lowered position. To permit the trolley to be restored to the line, I use a rope 24 to draw the trolley pole to its extreme lowered position, it being noted that provision is made to allow the piston 7 to move down below the position as-

sumed when holding the trolley retrieved. When this occurs the trip rod at the top of the slot will strike the crank 18 and turn the valve 15 to cut off the pressure from the cylinder 4, when the trolley pole will be free to rise until the wheel engages the wire. To permit the pole to move freely up and down and also to dash-pot the piston in the cylinder to prevent the pole rising too rapidly, I provide a small dash-pot opening 25 at the top of the cylinder.

To adapt my invention to cars where it is desirable to reverse the trolley pole, I provide the block 6 with a movable section 26 which is shown and adapted to slide into an undercut groove 27 provided in the side of the block 6. This section is of sufficient width so that when removed the ball 5 may be slipped out. If then the coupling 12, which corresponds to the ordinary train pipe hose pipe coupling is broken, the trolley pole may be swung around to a reverse position. Here it will be seen that I provide a duplicate block 6 and accordingly, by withdrawing section 26 therefrom, I can slip the ball 5 in the block 6 and after inserting the section 26 it may be locked in place by a thumb screw 28. It is only necessary then to couple the pipe 13 to a hose 29 with its half part 30 of the coupling 12, and the apparatus is ready for use, the pipe 29 being connected up with the pipe 9 so as to deliver the air pressure to the hose 13 at this point. To adjust the length of the slot 19 to cause the valve to be operated by shorter movements of the rod 20, I provide opposite pairs of openings 31 through which pins, such as 32, can be inserted across the slot.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. An apparatus for retrieving trolley poles comprising in combination with a car and its trolley pole, a cylinder pivotally connected to the car, a piston for the cylinder connected to the trolley pole, a pipe for delivering air pressure to said cylinder at one end, a valve for controlling the admission of said pressure, a trip rod for said valve also connected to the trolley pole, and an exhaust port near the opposite end of the cylinder from the air pressure admission end, said trip rod acting only in its extreme raised and lowered positions to engage and throw said valve.

2. The combination with a car and its trolley pole, of a cylinder and piston, one connected to the car and the other to the pole, a pipe connected with a source of air pressure and leading to one end of said cylinder, an exhaust port near the opposite end of said cylinder, a valve for said pipe, a trip rod connected to the trolley pole having means to engage and move said valve to admit the air pressure when the trolley pole jumps the

wire and having means to engage and move said valve and cut off the air pressure from the cylinder when the trolley is drawn to its extreme lowered position, and means to move said pole to its extreme lowered position.

3. The combination with a car and its trolley pole, of a piston and cylinder, one connected to the trolley pole and the other to the car, said cylinder having an air admission port at one end and an air exhaust port at the other end, valve controlled means for the admission of fluid-pressure to said supply port, a mechanical trip device for said valve carried by the trolley pole and having means to engage and operate the valve to cut the air pressure on or off from the cylinder as the pole assumes extreme positions and which leave the valve unaffected by the normal mean movements of the pole, and means to move said trolley pole to its extreme lower position below that at which it is held by the retrieving apparatus.

4. A trolley retrieving mechanism comprising the combination with a car and its trolley pole, of a cylinder supported in a ball and socket joint on the car, the ball being attached to the cylinder, means whereby the ball can be withdrawn from the socket, a second socket provided in position to receive the ball when the trolley pole is reversed, a piston within the cylinder having a stem pivotally connected to the pole, an air pressure supply pipe, flexible hose connected thereto near each socket block, flexible hose leading to the supply port for the admission of air to one end of said cylinder, a detachable coupling to connect the latter flexible hose to the flexible hose adjacent to the socket supporting the cylinder, valve means to automatically cut said pressure on and off from the cylinder, and an exhaust port near the other end of said cylinder, substantially as and for the purposes described.

5. The combination with a car and its trolley pole, of a retrieving apparatus therefor comprising a piston and cylinder connected respectively to said car and pole, said cylinder having an air admission port at one end and an air exhaust port spaced from the other end of the cylinder, a valve controlling the admission of air pressure to said cylinder, an air supply pipe, a mechanical device carried by the trolley pole for tripping said valve to cut the pressure on or off, and a rope connected to the outer end of said pole, substantially as described.

6. A retrieving apparatus for trolley poles comprising a cylinder arranged substantially vertically and pivotally connected to the car, a piston therefor pivotally connected to the trolley pole, an air pipe comprising a flexible hose leading to the upper end of said cylinder, a valve carried by the cylinder and controlling the admission of air pressure thereto,

an exhaust port near the lower end of the cylinder, a dash-pot orifice at the top of the cylinder, trip means for the valve comprising a rod provided with an elongated slot, a crank on the valve stem which rides in said slot and is tripped by the rod when it reaches the top or bottom of the slot, said rod being so arranged that the top of the slot stands a small distance above the crank when the air pressure is admitted to the cylinder and the pole stands in its automatic retrieved position, and manually operated means to further lower said pole to cause the rod to engage the crank and cut off the air supply, as and for the purposes described.

7. The combination with a car, a trolley pole and a pivotal support therefor mounted on the car, of a reversible retrieving apparatus comprising two pivotal bearing blocks disposed equi-distantly from and on opposite sides of said trolley pole support, a piston

having a stem connected to said pole, a cylinder in which said piston works which has an air supply opening near one end and an exhaust opening near the other, means to automatically control the cutting on and off of said pressure which are controlled by said trolley pole, a supply pipe for the air pressure disposed adjacent to each bearing block, a flexible hose connected to said cylinder, and a detachable coupling to connect up said latter hose with the air supply pipe adjacent to the bearing block upon which the cylinder is then mounted, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MAJOR DOUGLAS SELF.

Witnesses:

WILLIAM ELLIOTT WOODSON,
ANNIE L. PEACE.