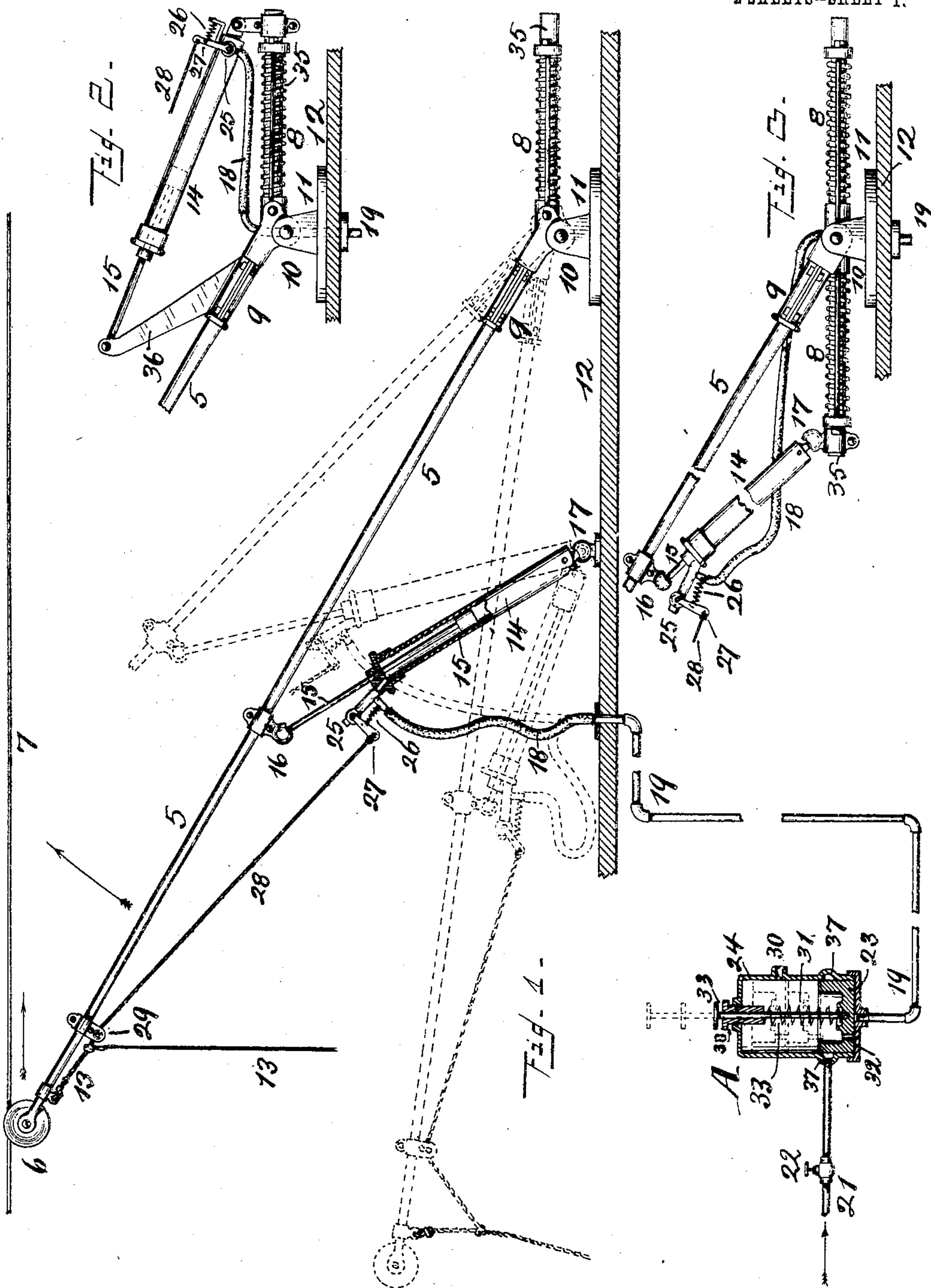


No. 779,654.

PATENTED JAN. 10, 1905.

E. J. JONAS.
TROLLEY RETRIEVER.
APPLICATION FILED APR. 1, 1904.

2 SHEETS—SHEET 1.



Witnesses

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Arthur Kline
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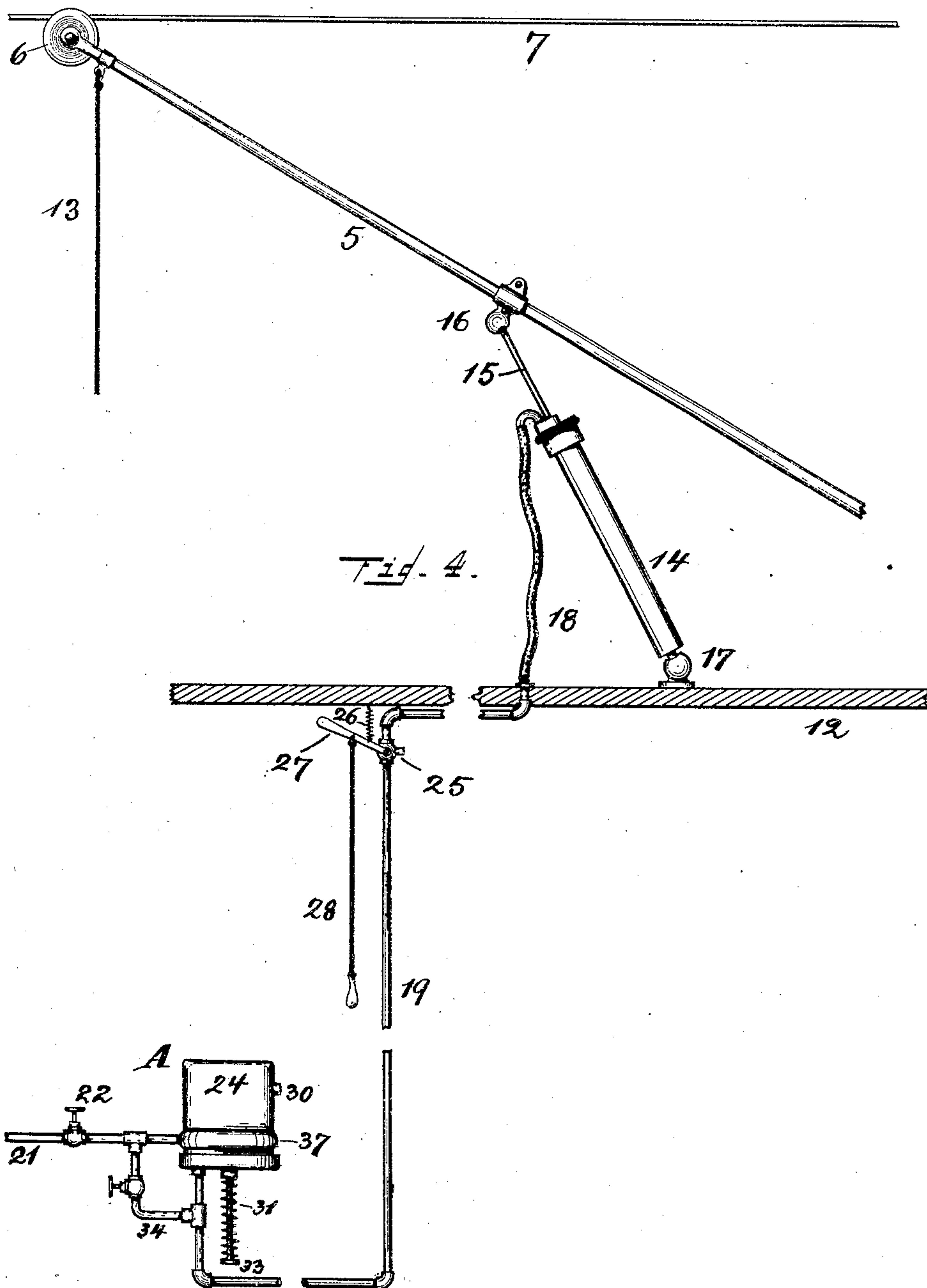
Emil J. Jonas
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

EMIL J. JONAS, OF HAMLET, OHIO, ASSIGNOR OF ONE-FOURTH TO
PHILIP M. OFFUTT, OF HAMLET, OHIO.

TROLLEY-RETRIEVER.

SPECIFICATION forming part of Letters Patent No. 779,654, dated January 10, 1905.

Application filed April 1, 1904. Serial No. 201,069.

To all whom it may concern:

Be it known that I, EMIL J. JONAS, a citizen of the United States, residing at Hamlet, in the county of Clermont and State of Ohio, have invented certain new and useful Improvements in Trolley-Retrievers; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to improvements in devices for returning automatically and instantly a trolley-wheel in case the same has escaped from its position below the trolley-wire. Whenever so unshipped, the trolley wheel and pole usually jump up quickly under the impetus received from the spring devices which normally keep the trolley-wheel in contact against the trolley-wire. In this disengaged condition unless quickly pulled down and returned to their normal position they are liable to do considerable damage to guy and suspending wires and other parts of track equipment in their path, and especially when cars are traveling at high speed—like, for instance, in interurban and traction service. My invention is more particularly intended for use on such cars for the further reason that in them there is also available the compressed air which I require in the operation of my device, the air being used in these cars for operating their air-brakes. In connection with such trolleys devices of this kind operate to instantly return the unshipped trolley, thereby avoiding the damage which would otherwise result before the conductor has a chance to replace the same.

The leading features of my invention are simplicity in construction and effectiveness in operation, whereby the action is quick and sufficient, and incidentally the construction is, further, such that my device may be attached readily to existing equipment.

In the following specification, and particularly pointed out in the claims following, is found a full description of the invention, to-

gether with its operation, manner of use, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 shows my invention in a diagrammatic view applied to a car, parts to the left, the automatic main valve, being shown at an enlarged scale and in section. Figs. 2 and 3 show my invention applied to a different style of trolley-stands, it being accordingly modified as to the manner of attachment to suit each case. Fig. 4 shows modified means for operating the automatic valve and the air-es-cape cock.

At the outset it is stated that this device does not return the trolley to its position on the trolley-wire, the intention being to merely pull it down sufficiently low to be out of the path and reach of guy and supporting wires and to hold it in such depressed position, where it can do no damage, until the conductor has a chance to restore things to normal order.

In the drawings, 5 indicates the usual trolley-pole, carrying at its upper end a customary trolley-wheel 6, which is held in contact with the trolley-wire 7 by means of springs 8 acting on socket 9, in which the pole is mounted. This socket member 9 is pivotally secured to a stand 10, stationary in some cases or rotatably mounted on a base 11, about which the entire structure may be turned for use when the car travels in opposite direction. Base 11 is attached to the roof 12 of the car.

13 is the pull-rope, by means of which the conductor manipulates the trolley when returning the same to position on the wire or for other purposes.

Whenever the trolley-wheel jumps its wire, it darts upwardly in the direction of the arrow, striking in this position against everything in its path. By means of my device it is automatically and instantly returned to a position as shown in dotted lines, in which position it is so low as to be harmless. From this position it is finally released and returned to its

proper place, rope 13 being used for the purpose in the usual manner. For so pulling the pole down automatically I use compressed air, admitted into a cylinder 14 and acting against a piston 15 therein. The outer end of this piston is attached to the trolley-pole and the lower end of the cylinder is attached to the roof of the car. In this form the device as to the attachment of its cylinder could not be used in connection with a trolley which is to be turned around for traveling in opposite direction. Joints sufficiently flexible, as universal or ball-and-socket joints, as shown at 16 and 17, are provided, however, to allow for vertical movements and vibrations and for a limited lateral swing. The attachment of these joints to the pole and roof of the car may be in any suitable manner detachable or more or less permanent. The air for so pulling the trolley down to a position as shown in dotted lines in Fig. 1 is admitted through an air-conduit, the outer stretch 18 of which is flexible, while the portion inside of the car may be customary tubing, as shown at 19. This admittance is controlled by the automatic main valve A, the general supply, normally open, being through a pipe 21, which is fed from a source of main supply which may be the storage-tank of the compressed-air supply used in connection with the air-brakes. Pipe 21 may be provided with a valve or stop-cock 22, which ordinarily is not used, however, and is merely for use in emergencies or during repairs, to cut off one part of the system from the other and to prevent escape and loss of air at such time from the main tank. The device is designed to operate automatically for so admitting air under pressure to cylinder 14, which is done by raising plunger 23 of automatic valve A to permit an open communication between pipes 21 and 19, each of which is connected to valve-housing 24 of this valve, and which communication is normally interrupted by said plunger. This latter is automatically operated by the very act of the trolley when leaving the wire, and which motion, being a quick one, produces a shock within the space of cylinder 14 and above the piston inside, whereby by reason of the sudden compression of air therein and in passages 18 and 19 an impulse is sent through these latter against the under side of plunger 23, which is instantly thrown upwardly. As soon as it has passed the open end of pipe 21 compressed air from the main supply-tank rushes in and under the plunger, aiding its upward movement and holding the automatic valve open. It also fills everything within the connected parts and bears also at once against piston 15, which is pushed down. The result is that the trolley-pole is jerked back again practically simultaneously and before it has a fair start upwardly. It will be held in this

depressed position as shown in dotted lines and where it can do no damage until the conductor replaces the trolley again to its normal position. This requires first a relief of the air-pressure, which occurs as soon as he tugs on pull-rope 13, whereby an escape-cock 25, held closed by a spring 26 acting against a lever 27, is opened, permitting the compressed air to escape to the atmosphere. This opening is caused by an auxiliary pull-rope 28, running over a small guide-pulley 29 and connecting-lever 27 to pull-rope 13. Spring 26 draws against lever 27 and rope 28, the length of this latter being so limited that a pull on rope 13 causes also an action on rope 28. In addition to this relief of the air-pressure it is of course necessary to also shut off further supply through pipe 21, such being done by plunger 23, which drops at once, owing to the reduced air-pressure under it. This drop may be accelerated by a spring 31 behind it, which should, however, be of limited action only so as not to oppose materially the lifting of the plunger. To render this shutting off of live air through pipe 21 as prompt as possible, I cause a preliminary drop of plunger 23, whereby this latter is caused to drop immediately after it has reached its highest position to which it was raised first by the action of piston 15 and whereby it is caused to approach the open end of pipe 21, so as to be in ready position to instantly close this latter as soon as the conductor acts on the pull-rope. This preliminary approach (observe dotted lines) is due to a small port 32 in the plunger, which permits the compressed air from one side of the same to leak over into the other part of the valve-housing, whereby the air-pressure becomes equalized, so that thereafter the pressure of the light spring 31 is sufficient to move the plunger. To prevent, however, this preliminary movement from going too far and to a point where it might shut out the air prematurely, the same is stopped short before reaching pipe 21, such stop being caused by another port, 30, in the side of the valve-housing which at that moment becomes uncovered by the side of the plunger and permits escape of the air to the outside. This escape at once disturbs the balance of pressure and enables the higher pressure below to hold the plunger against the lower pressure above. In order to prevent binding of plunger 23 against its housing by one-sided pressure from the air out of pipe 21 against a limited part of the side thereof and opposite to the opening of said pipe, I provide an annular air-space 37 thereat, which is in open communication with this pipe and extends entirely around the plunger, thereby equalizing the lateral pressure against the same. It also insures a quicker and more extended action against all parts of

the under side of the plunger when the same starts to move upwardly. 38 is a screw-plug to adjust the pressure of spring 31. This automatic valve may also be positively operated in case of emergencies or accidents, for which purpose a stem 33 is provided on plunger 23, which extends to the outside of the housing where it is accessible. The same effects may be obtained by means of a by-pass 34 and valve, as shown in Fig. 4. For such purpose these devices should be located inside of the car in a position where they are readily accessible. Their location should be further such that they are also constantly observable by either the conductor or motorman, the latter preferred, so that the jumping of the trolley may at once be noticed, it being indicated by the popping motion of stem 33. This latter might also project through the lower end, where loss of air by possible leakage through the perforation where the stem passes out through the housing would not interfere with the intended operation of the valve. This is shown in Fig. 4.

In some cases it may be preferable or necessary to have the auxiliary pull-rope 28 for operating escape-cock 25 to release the trolley entirely independent—that is, not connected to the main pull-rope, as shown in Fig. 4, so that it may be manipulated independently, but about at the same time as the other one. Likewise the escape-cock operated by it might be differently located—that is to say, it could be anywhere on the pipe-conduit between the end of cylinder 14 and the automatic valve, as shown in Fig. 4, and might be directly manipulated by hand and without a rope.

In its normal position piston 15 should be between the ends of cylinder 14 and with sufficient space on each side to permit first its preliminary movement in one direction and necessary for opening the automatic valve and after that for its movement in opposite direction to lower the trolley. These spaces allow, of course, also for the ordinary motions whereby the trolley follows the undulations of the wire during normal travel and in which the piston necessarily participates. The stem of piston 15 is fitted with sufficient looseness into the end of its cylinder so as not to resist these motions.

In Fig. 2 I show my invention applied to a trolley-stand which may be reversed. Cylinder 14 is attached to the front end of spring-guide 35, and the device is further modified by admitting the air to the lower part of the cylinder, the action of the piston being accordingly a pushing one for lowering the trolley. The outer end of the piston-rod is connected to an arm 36, attached to the trolley-pole. The air is passed in through the center of the trolley-stand. No universal joints 16 are needed in this form—that is, where the

device turns with the trolley-stand. Otherwise the operation remains the same.

In Fig. 3 I have shown my invention as applied to a trolley-stand with double springs. In this case either of the other two forms may be used—that is, either the pulling or the pushing piston. The first form could also be used in connection with a form of spring and reversible trolley as shown in Fig. 2 by providing a rearwardly-extending arm, which takes the place of the double spring-guide of Fig. 3 and to the free end of which arm cylinder 14 would attach. The position of cylinder 14 might also be reversed in this way, that instead of connecting it to the car-roof or trolley-stand it might be connected to the trolley-pole.

Having described my invention, I claim as new—

1. In a trolley-retriever, the combination of a lowering device connecting the trolley-pole to a member vertically stationary with reference to the trolley-pole, means to supply air under pressure to the device, a plunger-valve for automatically controlling this supply, a housing into which it is fitted, a main air-supply pipe entering this housing from the side and in a position in which it is closed by the side of the plunger when the latter is in its normal position and an air-conducting pipe leading from the end of the housing at a point opposite the face of the plunger to the lowering device.

2. In a trolley-retriever, the combination of a lowering device connecting the trolley-pole to a member vertically stationary with reference to the trolley-pole, means to supply air under pressure to the device, a plunger-valve for automatically controlling this supply, a housing into which it is fitted, a main air-supply pipe entering this housing from the side and in a position in which it is closed by the side of the plunger when the latter is in its normal position, a port through this plunger whereby the spaces at each side of the same are put in open communication with each other and an escape-port in the side of the housing in the space above the plunger.

3. In a device for automatically lowering a trolley-pole when escaped from its normal position on the wire, the combination of a piston and a cylinder into which it is fitted, one attached to the pole and the other to a member vertically stationary with reference to the pole, means to supply air under pressure to this cylinder, a valve which automatically controls this supply, a spring-actuated relief-valve to reduce this pressure and an auxiliary pull-rope to operate this valve.

4. In a trolley-retriever, the combination of a lowering device connecting the trolley-pole to a member vertically stationary with reference to the trolley-pole, means to supply air

under pressure to the device, a plunger-valve
for automatically controlling this supply, a
housing into which it is fitted, a main air-
supply pipe entering this housing from the
5 side and in a position in which it is closed by
the side of the plunger when the latter is in its
normal position, an air-conducting pipe lead-
ing from the end of the housing at a point
opposite the face of the plunger to the lower-

ing device and a stem on this plunger extended 10
to the outside, whereby the same may also be
directly operated by manual operation.

In testimony whereof I hereunto set my sig-
nature in the presence of two witnesses.

EMIL J. JONAS.

Witnesses:

C. SPENGEL,

ARTHUR KLINE.