No. 897,406. PATENTED SEPT. 1, 1908.

F. J. RITTER.

RAILWAY TRACK MOTOR.

APPLICATION FILED NOV. 23, 1907.

2 SHEETS—SHEET 1.

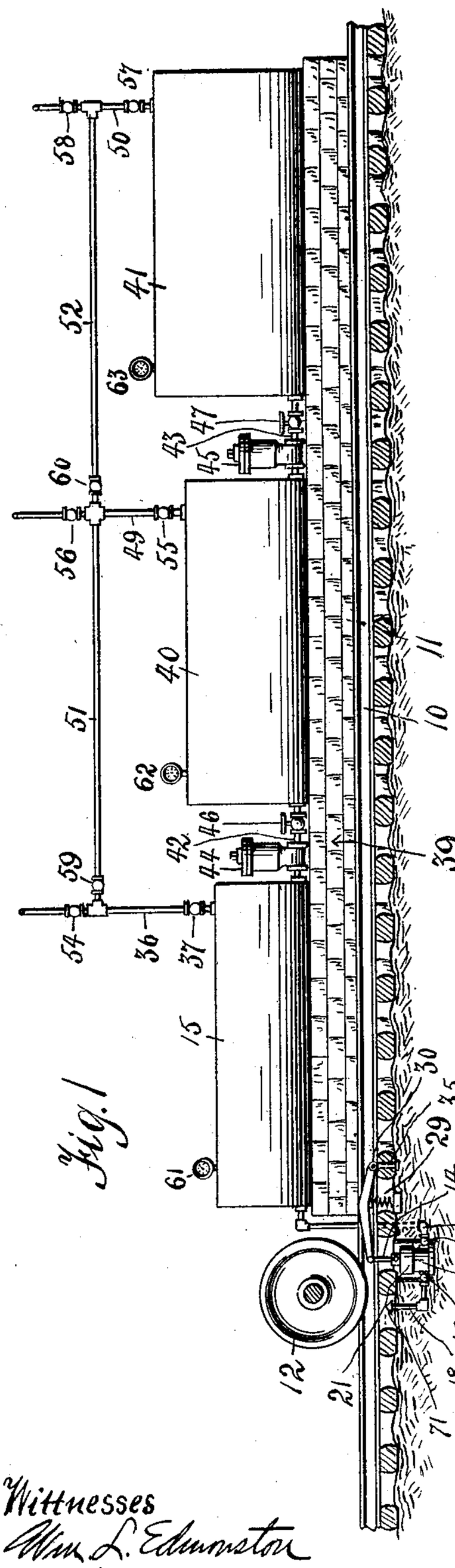

Fig. 1.

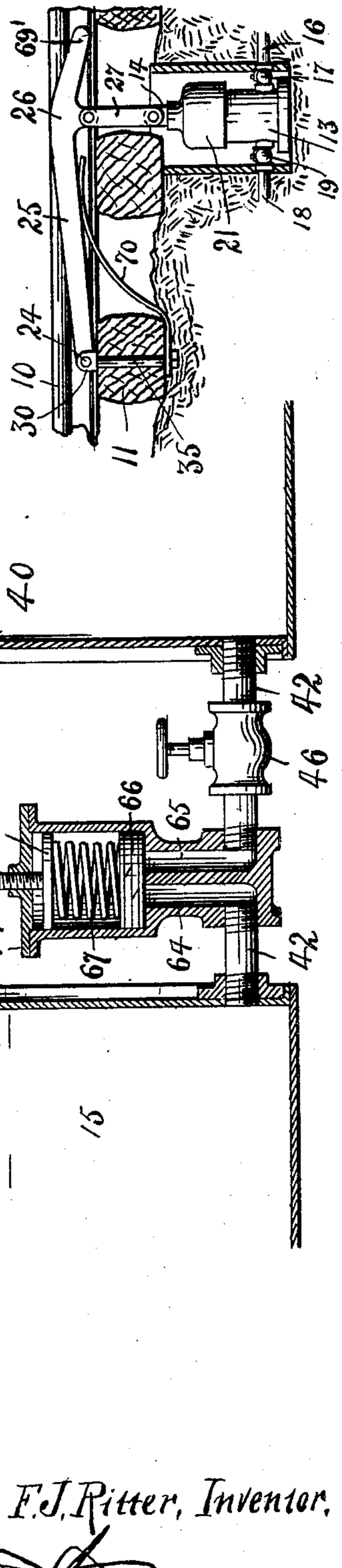

Fig. 2.

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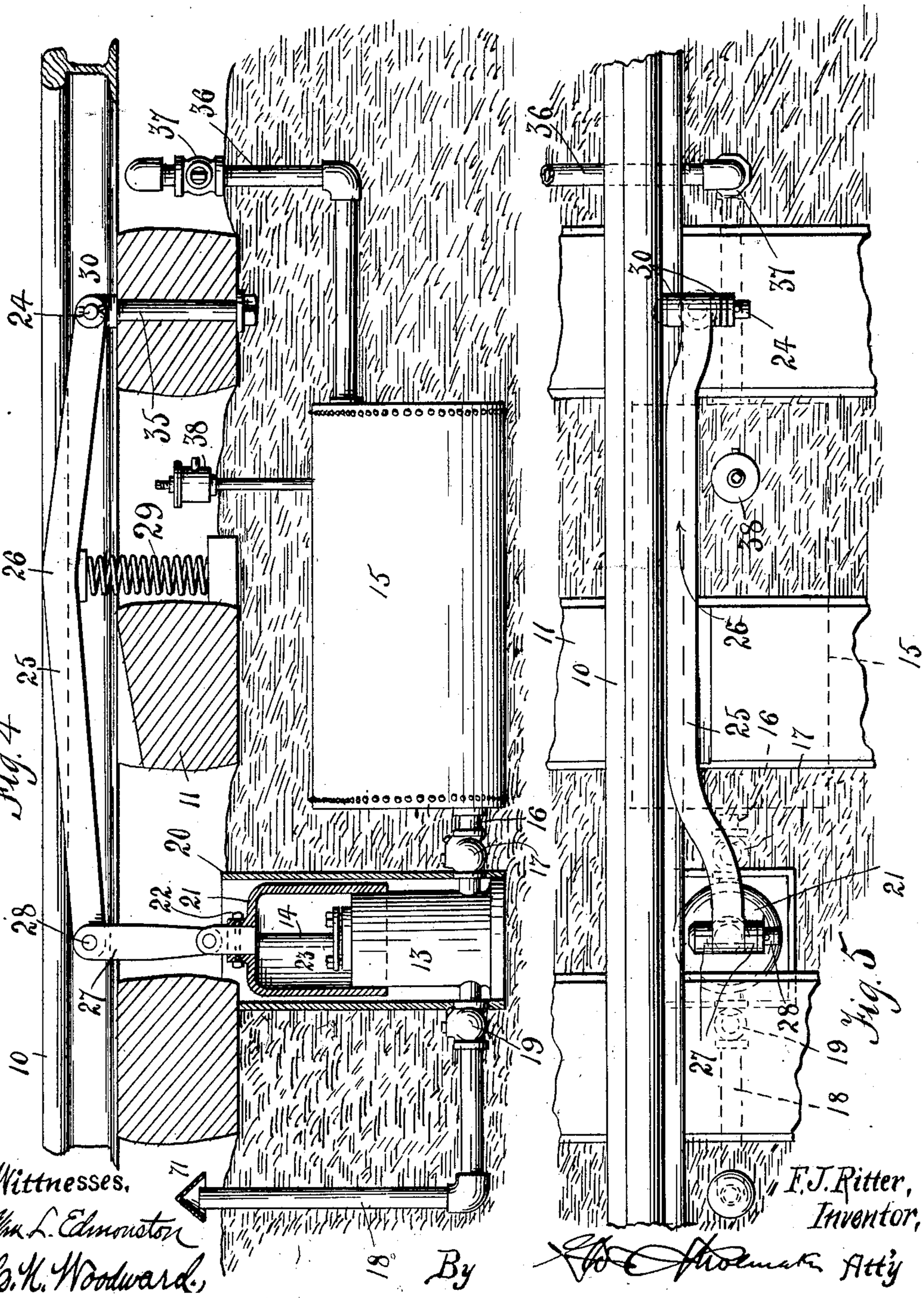

Witnesses.
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UNITED STATES PATENT OFFICE.

FRANKLIN J. RITTER, OF CHAPMAN, NEBRASKA.

RAILWAY TRACK-MOTOR.

No. 897,406. Specification of Letters Patent. Patented Sept. 1, 1908.

Application filed November 23, 1907. Serial No. 403,514.

To all whom it may concern:

Be it known that I, FRANKLIN J. RITTER, a citizen of the United States, residing at Chapman, in the county of Merrick and State of Nebraska, have invented certain new and useful Improvements in Railway Track-Motors, of which the following is a specification.

This invention relates to track motors, designed to be actuated by the movement of trains of cars over a railway track, and has for its object to utilize the force exerted by the weight of the cars transmitted through the movement of the wheels of the train in passing along the track.

Another object of the invention is to improve the construction and increase the utility and efficiency of the improved device.

With these and other objects in view, the invention consists in certain novel features of construction as hereafter shown and described and specifically pointed out in the claims, and in the drawings employed for illustrating the invention is shown the preferred form of embodiment of the same, but it will be understood that I do not desire to be limited to the precise construction shown, as various changes may be made within the scope of the appended claims without sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a side elevation of the improved device applied with the track in longitudinal section, and with one car wheel in position upon the track. Fig. 2 is an enlarged sectional detail of the adjacent portions of two of the receiving tanks with the controlling valves associated therewith. Fig. 3 is a sectional detail illustrating a slight modification in the construction. Fig. 4 is an enlarged sectional detail of a modified arrangement of the improved device. Fig. 5 is a plan view of the parts shown in Fig. 4.

It is well known that the power exerted by a moving train when passing over a railway track is relatively large, and the object of the improved apparatus herewith described and illustrated is to utilize this heretofore wasted energy to accomplish useful work, and without in any manner interfering with the operations of the trains or detracting from the force or power necessary to operate the train.

The improved device comprises an air pump located adjacent to the track and a spring controlled lever arranged in the path of the wheels of the train and connected to the plunger of the pump, so that the wheels in passing over the lever depress the same and thus actuate the air pump, the air pump being thus actuated one stroke by each wheel of the train. The lever is designed to be engaged by the flanges of the wheels, as they pass over the track, and thus operated without interfering with the ordinary operation of the train.

Associated with the air pump is a receiving tank or a series of coupled receiving tanks, the tanks having pressure controlling devices between them so that when the pressure in the first tank reaches to a certain predetermined point, the controlling valve is operated and the surplus air conducted to the second tank, and when the pressure in the second tank reaches a certain predetermined point it operates another pressure valve and thus transmits the air to a third tank, and so on through as many tanks as may be desired.

The tanks are provided with outlet pipes and controlling valves and requisite pressure gages, so that the air may be conducted from any one or more of the tanks and employed for any required purpose, such as the running of water pumps, the machinery of repair shops, or for any other required purpose.

In the drawings, the conventional section of a railway track is shown comprising a rail 10 with its ties 11 of the usual construction, and with a car wheel at 12 mounted on the rail.

A conventional air pump is represented at 13 and provided with a plunger 14, and with a receiving tank at 15 connected by a pipe 16 with the pump, the pipe having a check valve 17, while the intake pipe for the pump is represented at 18 and provided with a check valve 19, so that the operation of the plunger 14 will cause air under pressure to be supplied to the tank 15. The pump 13 is located adjacent to one of the rails 10 of the track and preferably embedded in the road bed below the ties 11 and surrounded by a protecting casing 20. The plunger 14 is provided with a combined guide device and hood 21, rigidly connected as by clamp screws 22 to the head portion of the plunger, and extending at its lower end around the outer surface of the cylinder in the pump 13 and closely engaging the same and slidable thereover, so that as the plunger is moved upwardly and downwardly, the hood 21 moves therewith upon the outer face of the pump cylinder, and thus not only guides the stopping box 23 of the pump, but also serves as a guide

to the upper end of the plunger and prevents lateral movement thereof when operated, as hereafter explained.

Pivoted at 24 adjacent to the rail 10 is a lever 25, preferably up-bent intermediate its ends, as at 26, and coupled at the upper end by links 27 to the plunger 14 of the air pump. The pivotal points 24—28 between the lever 25 and links 27 are located sufficiently below the upper line of the tread of the rail as to enable the treads of the wheels to pass over them, while the up-bent portion 26 hangs flush with the top of the rail tread, so that the flanges of the wheels will engage the up-bent portion and thus depress the lever the depth of the flanges of the wheels as they pass over the lever. A spring 29 is located beneath the lever 25, and operates to maintain the same yieldably in its upward position, and thus return the lever to its upward position after each stroke produced by the action of the wheels in passing along the track, as will be obvious. The pivot 24 is connected to a head 30 of a bolt 35 connected to one of the ties 11, as shown.

A supply pipe 36 leads from the tank 15 and is provided with a controlling valve 37, and may be conducted to any required distance to enable the compressed air from the tank to be utilized as required. By this simple arrangement it will be obvious that as the trains pass over the track, each wheel depresses the lever 25 and produces one stroke of the air pump 13, and thus fills the tank 15 gradually with compressed air, the degree of compression being governed by a suitable pressure valve represented at 38, the pressure valve being arranged to permit the escape of the surplus air when a certain predetermined pressure is reached.

In Fig. 1 a slightly different arrangement of the tanks is shown, the initial tank 15 being located above the track instead of being embedded beneath the track, as in Figs. 4 and 5, and preferably supported upon a suitable platform 39. Two other tanks 40—41 are also employed in the modified construction and connected by pipes 42—43, the pipe 42 having a pressure valve 44 between the tanks 15 and 40, and the pipe 43 having a pressure valve 45 located between the tanks 40 and 41, the pipe 42 also having a controlling valve 46, and the pipe 43 having a controlling valve 47, so that when the pressure in the tank 15 reaches a certain predetermined point the controlling valve will be opened and the surplus air conducted into the second tank 40, and when the pressure in this tank reaches a certain predetermined point, the controlling valve 45 will open and permit the surplus air to pass into the tank 41, and so on to any required extent.

Leading from the tanks 15—40—41 are supply pipes 36—49—50, the pipes coupled by lateral branches 51—52. The pipe 36 is provided with controlling valves 37—54 on opposite sides of the lateral branch 51, the pipe 49 is provided with controlling valves 55—56, while the pipe 50 is provided with controlling valves 57—58. The lateral branches 51—52 are provided respectively with controlling valves 59—60, while the tanks are provided respectively with pressure gages as indicated at 61—62—63. By this simple arrangement any required amount of compressed air may be stored in the various tanks and utilized for any required purpose, the tanks being preferably formed of increasing size, as shown.

The piping shown in Fig. 1 enables the air from any one of the tanks, any two of the tanks, or from all of the tanks to be utilized as required by simply manipulating the various controlling valves in the piping, as will be obvious.

One of the pressure valves is shown in section in Fig. 2, and comprises a casing having two parallel passages 64—65, one passage connected to one tank, as 15, and the other passage connected to the next tank, as 40, as shown. A plunger 66 is disposed within the casing of the valve and serves as a closure to the passages 64—65, and held yieldably in position by a spring 67, the spring provided with a follower plate 68 controlled by an adjusting screw 69 operating through the upper end of the valve casing. The spring 67 will be of sufficient force to resist the normal pressure of the air in the tank 15, but will yield and permit the surplus air to flow into the next tank through the passage 65 when the pressure in the initial tank rises above the normal, as heretofore explained.

In Fig. 3 a slight modification in the construction is shown consisting in connecting the operating lever 25 directly to the plunger of the pump by the links 27, the links being connected to the lever opposite the upturned intermediate portion 26, and the lever coupled at its longer end to the bolt 35 passing through one of the ties 11. The shorter end of the lever 25 is left free, as at 69; this end 69 being located below the path of the flanges of the wheel, so that the flanges of the wheel will freely mount the upturned portion 26 of the lever.

In the modification shown in Fig. 3 a leaf spring 70 is shown arranged to yieldably support the lever 25 instead of the coil spring 29 shown in Figs. 1 and 4 of the drawings, which form of spring may be employed under some circumstances, as required. Any required number of levers and air pumps may be employed and located at suitable intervals along the track so that the amount of air forced into the tanks may be increased at will, and thus correspondingly decrease the time required to provide the requisite pressure and quantity of air.

The intake pipe 18 for the air pump will

preferably be conducted upwardly through the road bed into one of the spaces between the ties and provided with a guard cap 71, and if preferred this pipe may be conducted to any required distance, as will be obvious.

The device may be employed for compressing water or other liquid instead of air, when the power required is hydraulic instead of pneumatic, and the power may be also employed without material structural change for operating pumps and like devices.

Having thus described the nature of the invention, what is claimed as new is:—

1. The combination with a railway track including the rails and ties, of an air compressing device located between said ties, a plurality of communicating tanks of progressively increasing size, each tank having an outlet pipe, branch pipes connecting said outlet pipes, means whereby the air from said compressing device is transmitted to the smaller of said tanks, means whereby the compressed air may be conveyed progressively through all of the tanks, and means whereby said compressing device is actuated by the wheels of the cars passing over said rails.

2. The combination with the track rails and ties of a railway, of an air compressing device including a cylinder and a plunger rod, a pivoted track lever having connection with said plunger rod and arranged for operation by the engagement therewith of the wheels of the cars passing over the rails, and a hood carried by said plunger rod and extending over the cylinder and thereby serving as a guide to the plunger rod and as a shield to the cylinder.

3. In a device of the class described, an air compressing device, a plurality of tanks of progressively increasing size having communication with one another, each tank having an outlet, branch pipes connecting said outlets, and means governing the flow of air from one tank to another.

4. In a device of the character described, an air compressing device including a cylinder and plunger rod, a lever having connection with the plunger rod, a plurality of tanks of progressively increasing size, means whereby the air from said compressing device is transmitted to the smaller of said tanks, means for controlling the air from said tanks, and means controlling the flow of air from one tank to another.

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

FRANKLIN J. RITTER.

Witnesses:
J. FRIMANN,
A. J. FRIMANN.