

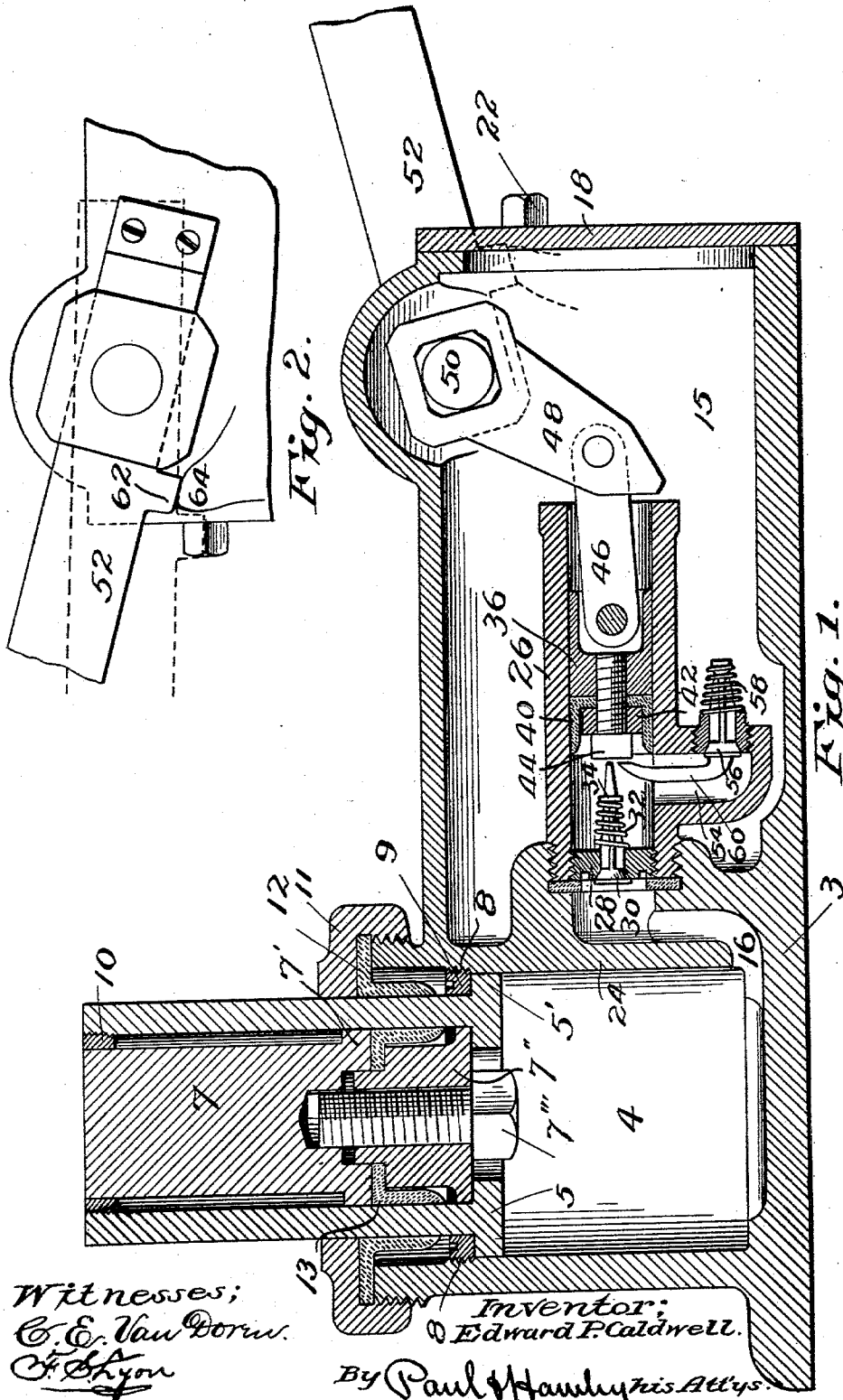
(No Model.)

2 Sheets—Sheet 1.

E. P. CALDWELL.
TRACK JACK.

No. 569,574.

Patented Oct. 13, 1896.



Witnesses;
C. E. Van Dorn.
C. E. Lyon

Inventor;
Edward P. Caldwell.
By Paul H. Hawley, His Attys.

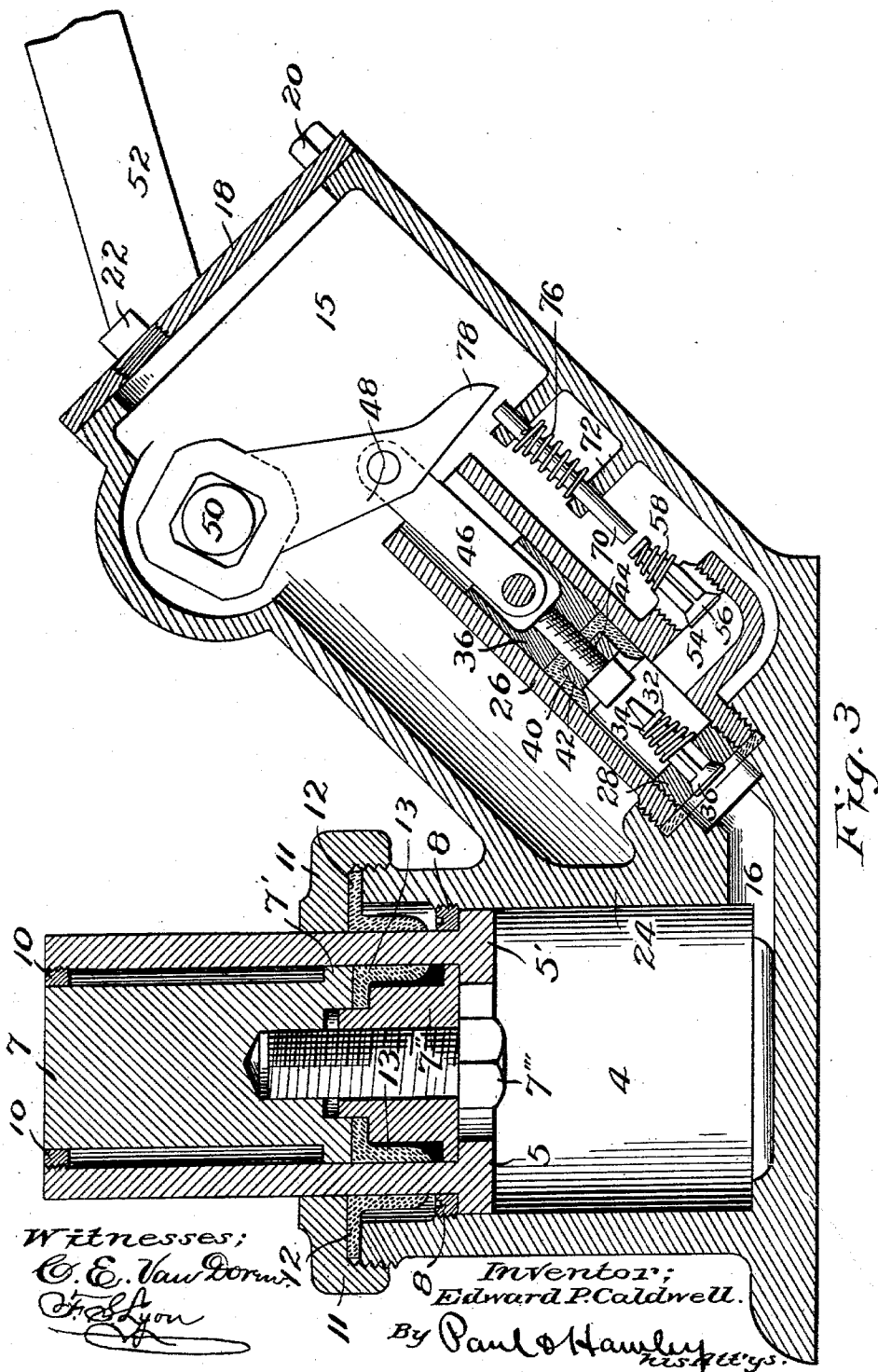
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UNITED STATES PATENT OFFICE.

EDWARD P. CALDWELL, OF MINNEAPOLIS, MINNESOTA.

TRACK-JACK.

SPECIFICATION forming part of Letters Patent No. 569,574, dated October 13, 1896.

Application filed May 7, 1895. Serial No. 548,375. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. CALDWELL, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Track-Jacks, of which the following is a specification.

My invention relates to track-jacks designed especially for use in railroad-work.

It has heretofore been customary to provide track-jacks for use in surfacing railroad-tracks which were adapted to be placed inside of the rail and were generally arranged to hook under the bottom of the rail, the body of the jack extending above the upper surface of the rail. When a device of this kind was in use and a train was approaching, it was necessary to release it and remove it before the train could pass. It sometimes occurred that the releasing device did not operate easily and the jack could not be released in season to avoid the approaching train striking it. Numerous serious accidents have occurred from this cause.

My object is to provide a jack of this class which when in use will be entirely beneath and outside of the rail, so as not to interfere with the passing train. Another object is to provide a jack of this class that can be quickly released in case of necessity, so as to permit it to be dropped and thereby avoid the strain that would be occasioned by having the jack support the rail while the train was passing.

A further object of my invention is to provide a track-jack which by a very slight exertion may be made to lift a very heavy weight, and, further, a jack which will act quickly and which may be released or dropped almost instantly in case it becomes necessary to lower the rail or tie to permit the train to pass.

A further object of my invention is to provide a track-jack which will be of a comparatively simple construction, which may be operated by an inexperienced person, and which will be thoroughly durable and reliable.

My invention consists generally in the constructions and combinations, all as hereinafter described, and particularly pointed out in the claim.

The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a longitudinal vertical section of a track-jack embodying my invention. Fig. 2 is a detail of a portion of the handle, showing the arrangement for releasing the jack. Fig. 3 is a longitudinal vertical section showing a slightly-modified construction.

The jack is preferably constructed of iron or steel and has preferably a broad flat bottom or base 3, forming in itself a sufficient rest for the jack when in use. Arranged upon or constructed integrally with this base is a suitable cylinder 4, within which is arranged a plunger 5. The upper end of the cylinder 4 is preferably provided with an internal thread 8 to receive a collar or ring 9, which serves as the stop for the plunger 5. A similar ring 10 is provided in the upper end of the plunger 5, said plunger 5 being preferably made in cylindrical form and having within it the second plunger 7. Both plungers have shoulders 5' and 7' upon their lower ends to engage the stop-rings 9 and 10. The cylinder 4 is provided with the screw-cap 11, within which the plunger 5 fits, and a flexible packing 12 is preferably secured by the cap 11 and is adapted to make a close joint with the walls of the plunger 5.

The plunger 7 is preferably made of two parts, being provided below its shoulder 7' with the removable section 7'', which is secured to the main part of the plunger by means of the bolt or screw 7³. A suitable packing 13 is arranged between the section 7'' and the main part of the plunger 7 and forms a tight joint between said plunger and the interior wall of the plunger 5. If preferred, more than two plungers may be used, telescoping within one another, and, in fact, any preferred number arranged in substantially the manner shown and described for the two-part plunger herein may be employed.

The base 3 has secured to it or formed integrally with it a reservoir 15. A port or opening 16 preferably leads from the reservoir 15 into the cylinder 4. Said reservoir 15 is preferably provided with a suitable cap or head 18, secured thereon by bolts 20 or other suitable means. Said head is also preferably provided with a threaded opening having the plug 22 arranged therein. As here shown, there is, preferably, a division-wall 24 between the reservoir 15 and the cylinder 4, and

through this wall the port 16 extends. The pump barrel or tube 26 is preferably arranged within the reservoir 15, and its lower end is preferably screw-threaded and is screwed into a threaded opening in the division-wall 24. The lower end of this barrel is closed by a threaded disk 28, that is screwed into the lower end of the barrel and has an opening through it, within which is arranged the valve 30. A spring 32 preferably surrounds the valve-stem, bearing upon the disk 28 and pin 34 in said valve-stem. Said spring tends to hold said valve to its seat, and as the valve opens toward the cylinder 4 it prevents the passage of liquid at all times from the cylinder into the reservoir except when the valve is held open for the purpose hereinafter specified. Arranged in the pump-barrel is a piston 36, below which has a leather or other suitable packing 40, secured in place by a washer 42, said washer being held in position by means of the screw or bolt 44. A link 46 connects the piston 36 with an arm 48, secured upon a shaft 50. Said shaft 50 is mounted in bearings in the reservoir 15, and one end of said shaft passes through a suitable stuffing-box and is provided upon its outer end with a recess adapted to receive a suitable handle 52. The pump-barrel 26 is provided near its lower end with the inlet-port 54, which is provided with a suitable valve 56. Said valve is provided with a spring 58 and engages the valve-stem and tends to hold said valve at all times to its seat. The valve 56, in the form shown in Fig. 1, is provided with a lug 60, extending inward through the port 54 and terminating below the end of the piston in the pump-barrel 26. The handle 52 is provided with a lug 62, as shown in Fig. 2, and this lug, when the handle is in its normal position, engages a lug 64 on the side of the reservoir 15. This limits the downward movement of said handle, and consequently limits the movement of the shaft 50 and of the piston 36.

The operation of the track-jack is as follows: The reservoir 15 being filled with water, alcohol, or other suitable liquid, some non-congealing liquid being preferably used in cold weather, and the plungers being depressed in the cylinder 4, the cylinder is placed under a track rail, tie, or other article that is to be raised. The handle 52 is then operated, being moved back and forth, and thereby the shaft 50 is rocked and the piston 36 is moved back and forth in the pump-barrel 36. This causes the liquid in the reservoir 15 to be forced through the port 54 and through the port in the disk 28 into the cylinder 4. This action causes the plungers 5 and 7 to be raised. These plungers would move together until the plunger 5 reaches the limit of its movement, caused by the engagement of the shoulder 5' with the ring 9, after which the plunger 7 will move within the plunger 5. Should more than two plungers be employed, they will continue to move in this manner until all of the

plungers have reached the limits of their movement, the inner or smaller one moving last. As there is a large difference between the area of the piston in the pump-barrel and the area of the bottoms of the plungers, but a small power will be required to operate the track-jack and to raise a very heavy load supported by said plungers. When it is desired to release the track-jack for the purpose of removal or for any other purpose, the handle 52 is drawn out so that the lug 62 will pass by the lug 64, as indicated by dotted lines in Fig. 2, and the handle is then forced downward so as to give an additional movement to the rock-shaft 50 and the piston 36. This causes the end of the piston or the head of the screw or bolt 44 to engage the end of the stem of the valve 30 and also the lug 60 on the valve 56 and simultaneously to open both of said valves. This permits the liquid in the reservoir 4 to flow through the open valves into the reservoir 15. In place of providing the valve 56 with the lug 60, as shown in Fig. 1, I may provide a rod 70, supported in lugs 72 in the wall of the reservoir 15 and held in position by a spring 76. The arm 48 on the shaft 50 is in this instance provided with a toe 78, and when the piston 36 is forced downward or inward beyond its normal movement this toe engages the end of the rod 70, forces it downward, and opens the valve 56. This construction is shown particularly in Fig. 3. In this figure I have also shown the reservoir 15 arranged in an inclined position instead of in the horizontal position shown in Fig. 1. It will be understood, however, that I do not confine myself to any particular shape or arrangement of the reservoir 15, as any suitable or preferred shape and arrangement of this reservoir may be employed. In each instance, however, I seek to provide a low track-jack having a broad base, and the entire jack being of such height that it may be readily placed under a railroad-rail, and when so arranged the highest point of the jack being below the upper surface of the rail, so as to prevent any portion of the passing train, such, for instance, as the cow-catcher, from striking the track-jack when it is in position for supporting the rail. This permits me to use this track-jack for surfacing roads upon which trains are passing at frequent intervals, and while it is not desirable to have the rails supported upon the track-jack while the train is passing, should this occur there will be no liability of derailing the train. When, however, a train is approaching, it is desirable to throw the lever to the greatest extent of its movement, thereby opening the valves between the reservoir and the cylinder and permitting the liquid in the cylinder to flow back into the reservoir, thus permitting the plungers to return to their lowest or normal position. This prevents any strain or weight of the passing train coming upon the track-jack.

It will be seen that I provide a track-jack

capable of use in any position and one from which there can be no liability of causing derailment of passing trains, as is frequently the case where the ordinary track-jack is employed.

While I have described the jack as especially adapted for use in connection with railroad-tracks, it will be understood that it may be used for other purposes.

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

15 In a track-jack, the combination with a broad base, of an upright cylinder mounted thereon, a removable cap therefor, a reservoir also arranged upon said base at one side of said cylinder and below the plane of the upper end thereof, a plunger within said cylinder, suitable packing between said plunger

and said cap, said plunger being provided 20 with an opening in its lower end, a second plunger arranged within the same, the removable section forming the lower portion of said second plunger, the packing between 25 said removable section and the inner surface of said first-named plunger, the pump-barrel arranged within said reservoir, and provided with a passage leading to said cylinder, a valve for closing said passage, a piston for opening said valve and means for operating 30 the same, substantially as described.

In testimony whereof I have hereunto set my hand this 20th day of April, A. D. 1895.

EDWARD P. CALDWELL.

In presence of—

RAE LINDSTROM,
ROSWELL H. BUCKINGHAM.