

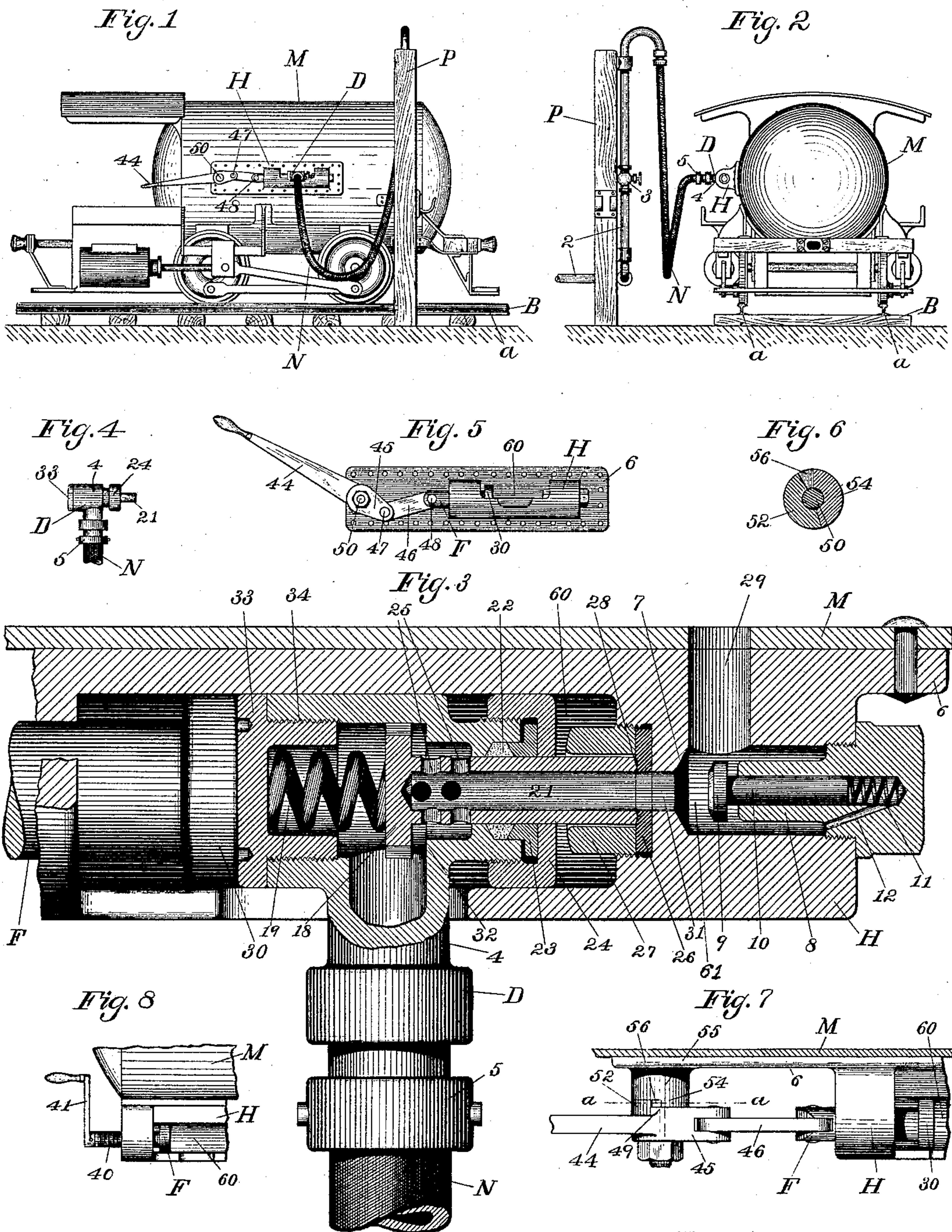
(No Model.)

F. H. RICHARDS.

APPARATUS FOR SUPPLYING COMPRESSED AIR TO PNEUMATIC MOTORS.

No. 446,822.

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Witnesses:

Henry L. Rickard.
L. C. Heermann.

Inventor:

Francis H. Richards

UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO
ECKLEY B. COXE, OF DRIFTON, PENNSYLVANIA.

APPARATUS FOR SUPPLYING COMPRESSED AIR TO PNEUMATIC MOTORS.

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To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Apparatus for Supplying Compressed Air to Pneumatic Motors, of which the following is a specification.

This invention relates to apparatus for supplying compressed air to pneumatic motors from a pipe adjacent to the tramway-line, the object being to furnish means whereby this operation may be accomplished in an expeditious manner.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation, drawn on a small scale, of a motor furnished with apparatus embodying my improvements. Fig. 2 is a front elevation of the same. Fig. 3 is an enlarged horizontal section of the delivery and receiving valves in use. Fig. 4 is a top or plan view of the delivery-valve. Fig. 5 is a side view of the valve-receiver, illustrating its mode of operation. Fig. 6 is a section in line *a a*, Fig. 7. Fig. 7 is a plan view, on a larger scale, of a part of the valve-receiver. Fig. 8 illustrates a modification.

Similar characters designate like parts in all the figures.

My said improvements being especially designed for use in mines, I have shown the same in connection with a motor M, supposed to be adapted for such service and to run on the rails *a a* of tramway B. At a point along-side of the track I place a post P, carrying one end of a suitable supply-pipe 2, which receives the air from the source of supply and conveys the same to the motor. Connected to this pipe is a hose-pipe N, such as ordinarily used in connection with rock-drills, &c. A stop-valve 3 may be placed in the pipe 2 for shutting off the air-supply as required. The delivery-valve (designated in a general way by D) consists of a body 4, usually secured to the hose by a coupling 5; a valve 18, arranged to deliver air to the passage 7 in the receiver-head H; a resistance-spring 19, acting on said valve to close the same, and certain minor details completing the delivery head or

valve D. The valve 18, as one means for actuating the same, has a stem projecting without the body 4 to rest against and be driven back by that part of the head H on which said stem abuts. As shown in the drawings, and preferably, said stem is a hollow tube 21, extending from the valve 18 through the packing 22, stuffing-box gland 23, and nut 24. Holes 25 are made in the stem 21, through which the air gains access to the interior thereof. A packing disk or ring 26 is placed around the orifice 31 of the valve-chamber 61, and is or may be held in place by the tubular nut 27. The point of tube 21 enters said nut (when the same is used) and bears at 28 on said washer. This, when the tube is firmly held against said washer, forms of the interior of the tube, the valve-chamber, and the passage 29 a continuous way from the valve-seat 32 to the interior of the tank M. A cap 33 closes the rear end of the valve-body 4 and serves, by reason of the long screw-thread 34, as a means for compressing the spring 19 to its normal working-tension.

On the side of the motor-tank, or, if preferred, on any other suitable part of the motor, I place the receiver, through which the compressed air (or other compressed gas for motive power) is supplied to the tank. This receiver may be of various particular forms and arrangements; but the construction shown in the drawings I consider a suitable one for the purpose. This receiver (designated in a general way by H) consists of a plate or frame 6, securely attached to the motor-tank, and having the valve-chamber 61, the supply-passage 29, and the valve-seat 7, and means (as the stud 8 or the like) for supporting the check-valve 9 by its stem 10. A spring 11 should be provided for assisting to close said valve; also a vent 12 should be provided. One end of the head H is provided with a plunger, as F, whose face 30 is located and constructed to be forced against the delivery-valve, and thus actuate the same. The plunger F is operated by devices constructed to impart a longitudinal motion thereto. One such device is the ordinary screw-stem 40, operated by a crank or the like 41, as shown in Fig. 8.

This arrangement, while effective, is not considered sufficiently convenient, and accordingly I have designed a device adapted for quicker operation. This consists of a hand-
 5 lever 44, whose short arm 45 is connected to actuate slide F by a link 46 or other well-known connection.

In Fig. 5 the lever 44 is shown raised and the slide F retracted. In Fig. 1 the opposite
 10 position of said parts is shown. In the latter case the pivot 47 is shown above the center line of pivot 48 and stud 50, which stud is fixed to the head H (or the tank-plate) and carries said lever 44. For properly limiting
 15 the stroke of lever 44 I construct the hub 49 thereof with a segmental stop 52, which engages another similar (but fixed) stop 54 on the hub 55 of the head or frame H. The space
 20 56, Fig. 6, shows the arc of movement of the arm 45.

In using the apparatus, air being admitted to the valve-body 4 and the valve 18 being closed, the attendant, on the motor coming to rest, seizes the hose N and places the valve D
 25 within the pocket or chamber 60 forward of plunger F. The engineer then forces down the lever 44, which pushes the stem 21 against washer 26, and then drives forward the body 4, compressing still more the spring 19, and
 30 opening the valve 18 to deliver air to the valve 9, and through passage 29 into the tank M. The tank being filled, the lever 44 is lifted, thus retracting the plunger F and permitting the spring 19 to close valve 18, when
 35 the valve D is removed from its seat in said head H and the motor is ready to proceed.

By this improvement the motor-tank can be filled very quickly, since coupling on the hose-pipe opens the valve simultaneously.

Having thus described my invention, I 40 claim—

1. In apparatus of the class specified, the combination, with a tank having a receiver-head, substantially as described, of a supply-
 45 pipe, a delivery-head on said pipe, said delivery-head having a valve opened by a projecting stem, and the receiver-head having a plunger operating said delivery-head to open
 said valve, substantially as described.

2. In apparatus of the class specified, the 50 combination of the receiver-head having the plunger, the passage normally closed by a check-valve, and the delivery-head having a valve adapted to be opened by a stem driven
 by said plunger against the receiver-head at 55 said passage, substantially as described.

3. The combination of the valve-body 4, having seat 32, the spring-actuated valve 18, having a hollow stem and openings thereinto,
 said stem projecting outside of said body, as 60 set forth, and a receiver-head having a socket adapted to receive said stem and furnished with means for operating said valve by pressure thereon, substantially as described.

4. The combination of the valve-body 4, 65 having seat 32, valve 18, having stem 21 and openings 25, the packing around said stem, and spring 19, substantially as described.

5. In apparatus of the class specified, the combination of the receiver-head, the delivery 70 head or valve, the plunger, the lever and link operating said plunger, and the stops limiting the movement of said lever, substantially as described.

FRANCIS H. RICHARDS.

Witnesses:

HENRY L. RECKARD,
 LEWIS C. HEERMANN.