

R. BOECKLEN.  
Illumination of Railroad Cars.  
No. 224,576 Patented Feb. 17, 1880.

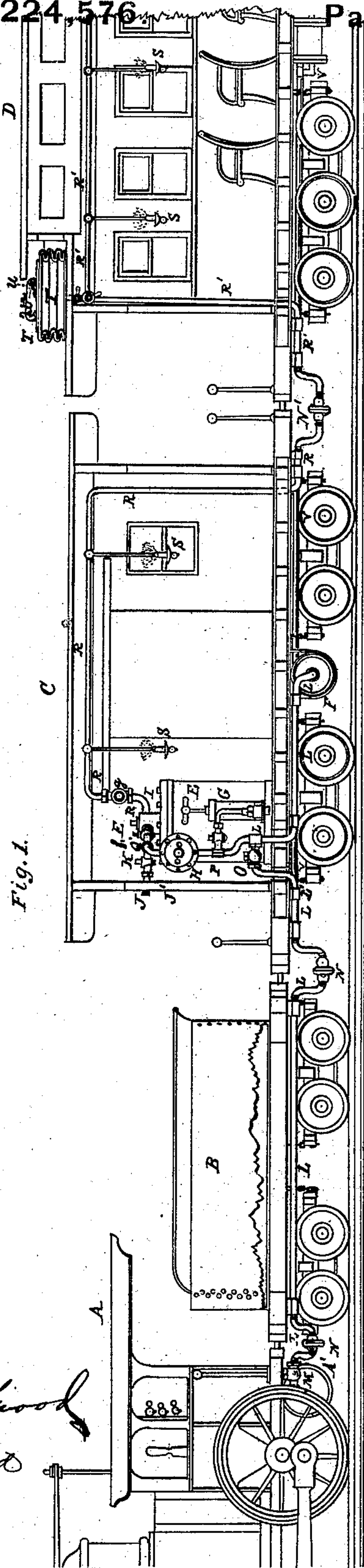


Fig. 1.

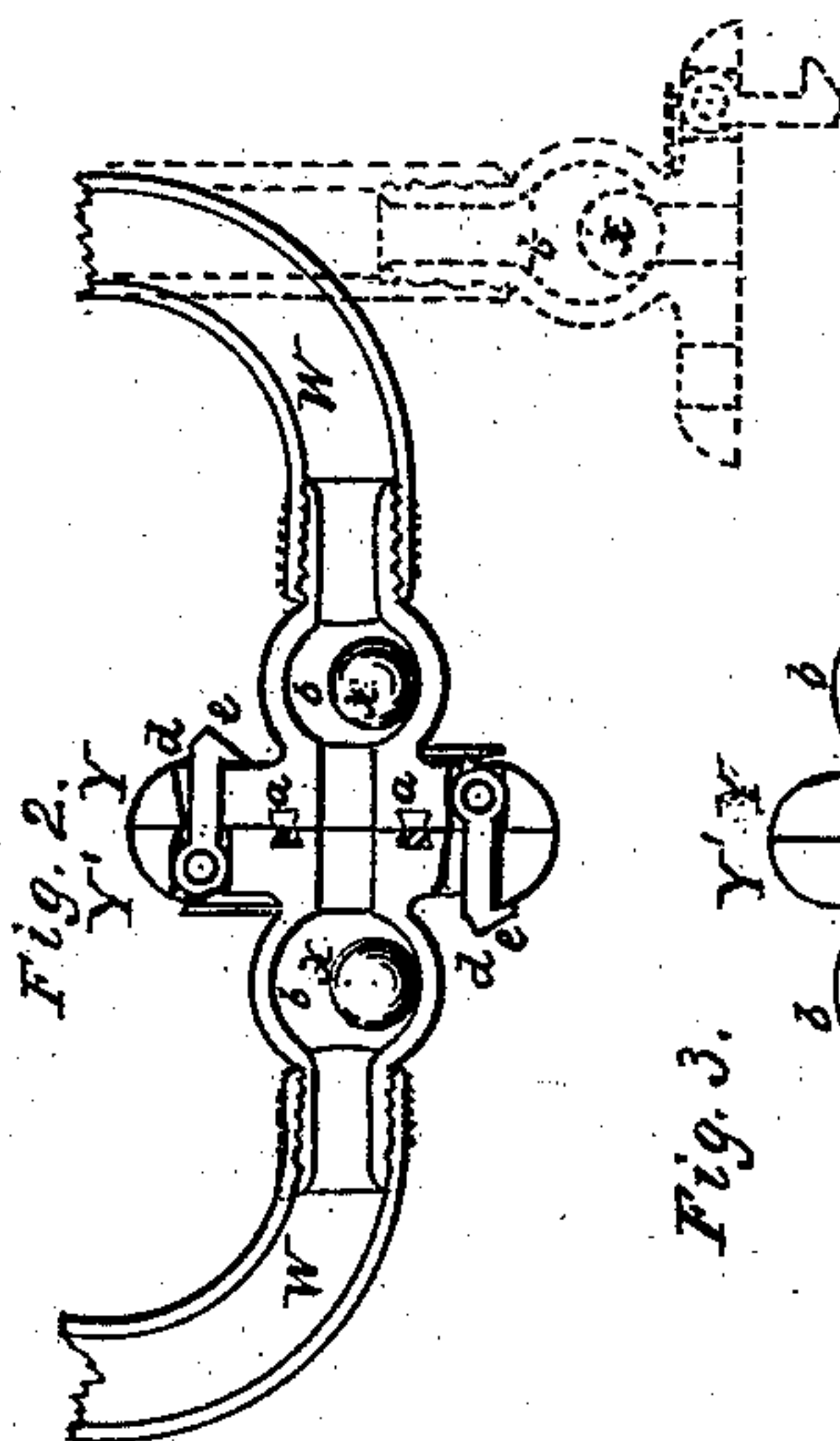


Fig. 2.

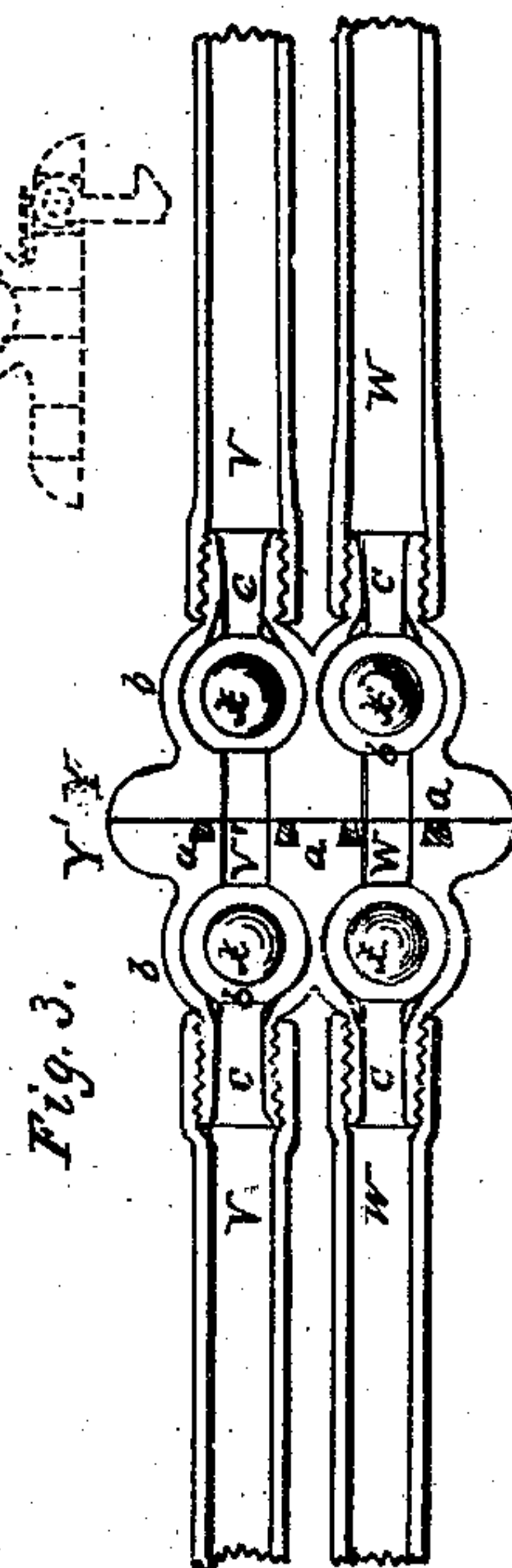


Fig. 3.

Witnesses.

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Fig. 4.

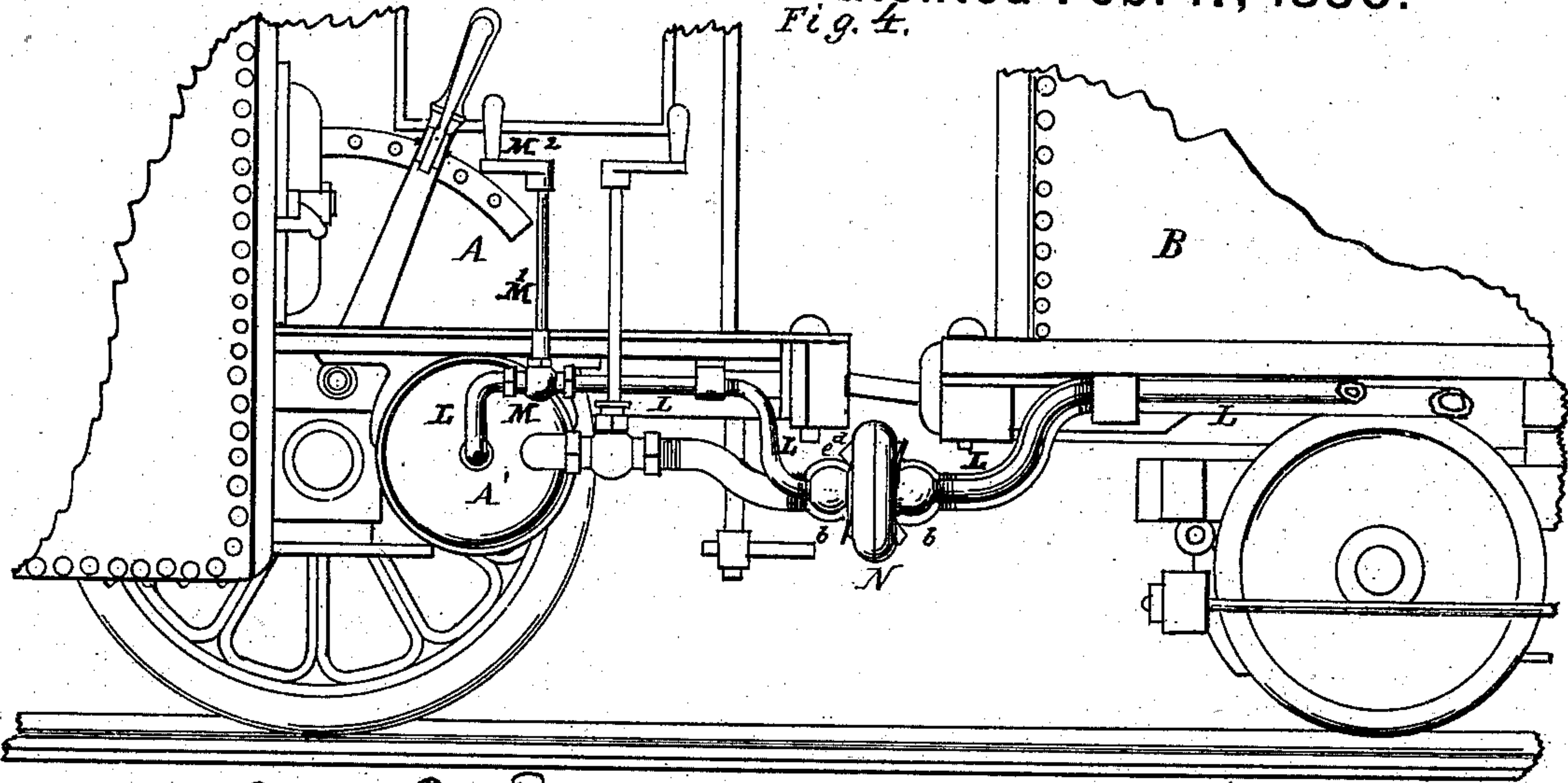


Fig. 6.

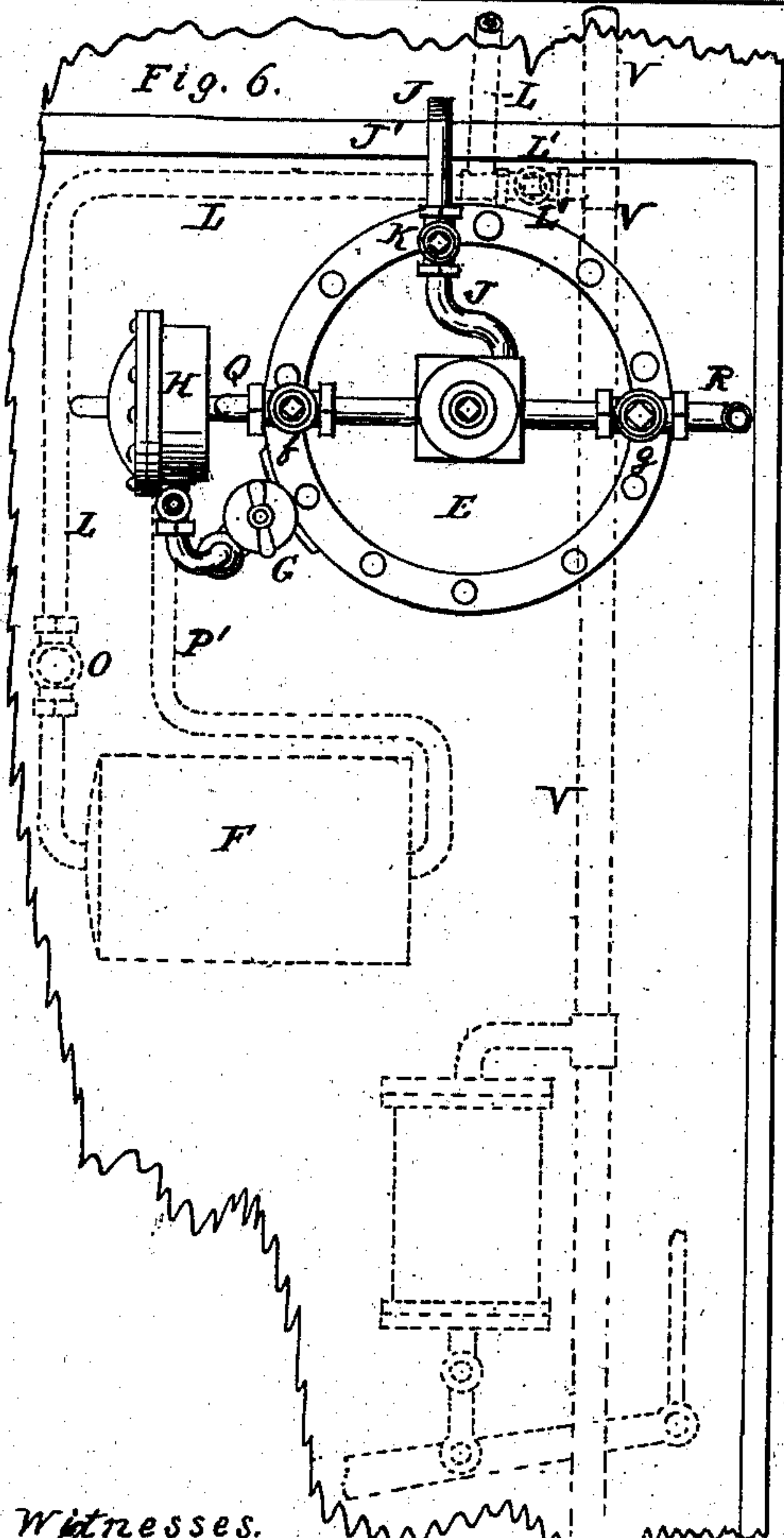
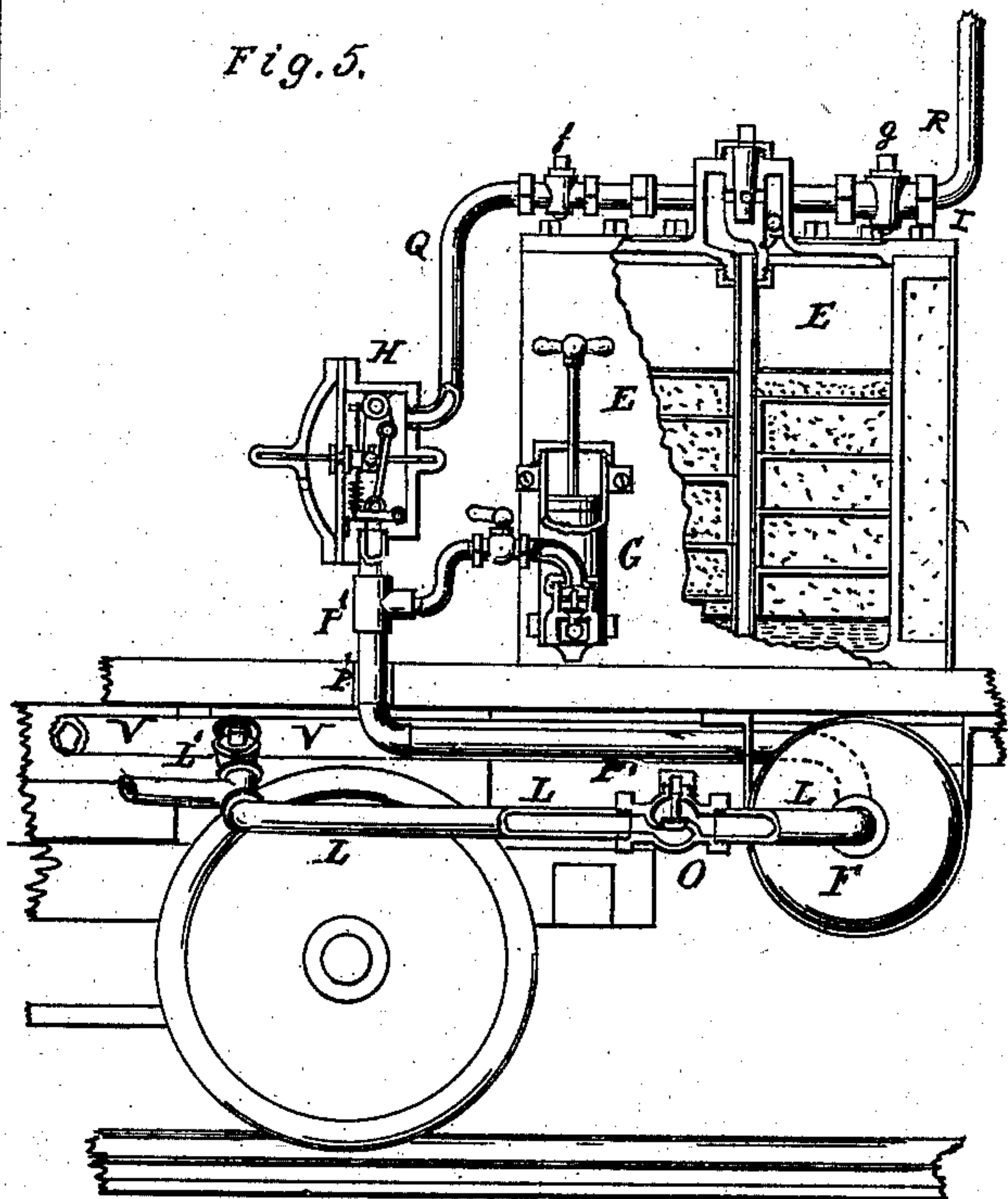


Fig. 5.



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# UNITED STATES PATENT OFFICE.

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## ILLUMINATION OF RAILROAD-CARS.

SPECIFICATION forming part of Letters Patent No. 224,576, dated February 17, 1880.

Application filed September 5, 1879.

*To all whom it may concern:*

Be it known that I, REINHOLD BOEKLEN, of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Illuminating Railroad-Cars with Gas, of which the following is a specification, accompanied by drawings, in which—

Figure 1 represents a longitudinal vertical section of a railroad-train provided with gas-light from an apparatus according to my invention. Fig. 2 is a detached longitudinal section of my combined gas and air coupling connecting the cars. Fig. 3 is a horizontal section of the same. Fig. 4 is a longitudinal section of the joining portions of the locomotive and tender to exhibit the air-connections for the gas-light and air-brake of the cars with the locomotive air-tank. Fig. 5 represents a longitudinal section of a portion of a car with the carbureter, reservoir, and its check-valve connected according to my invention. Fig. 6 is a horizontal section of the same, the section being shown as from above the car-bottom.

This invention relates, first, to the arrangement of one or more carbureters, each provided with a pressure-regulator, upon the baggage or other car or cars of the train, with one or more air-reservoirs, each provided with a check-valve connected either directly or indirectly with the air-brake or its tank on the locomotive, for the supply of air to the carbureter with which the gas fixtures and burners of the car or cars are connected for illumination; and it relates, secondly, to the combination of the above with gas-reservoirs upon such cars having no carbureters and with combined air and gas couplings for coupling the gas and air for the light and the brake together, and for storing a quantity of gas to use after disconnection of the car or cars; and it relates, thirdly, to the arrangement of the carbureter with the pressure-regulator and air-reservoir, its check-valve, and air and gas connection on the car with an oil-supply pipe and faucet, arranged to connect with the supply can or barrel outside of the car, so as to prevent spilling of oil in the car and to pre-

vent bad odor and an unsafe charging or filling of the carbureter; and it relates, finally, to the combination of a hand air-pump with the carbureter, air-reservoir, and regulator, arranged and connected in manner so that the tank or reservoir can be supplied with air at such times as the supply of air from the air-brake pipe or tank is insufficient or cut off.

By these means the train is illuminated by gas conveniently and for a small expense, and lighted and kept lighted during such times as the locomotive is detached from the train or car. The gas-pipes are coupled from car to car at the same time as the air-pipes for the brake.

The oil is supplied to the carbureter without entering with the supply-barrel or can into the car in a safe and nearly odorless manner, and without spilling oil in the car.

A represents the rear part of the locomotive of the train, which is provided with the air-tank A', to supply the air-brake. To the locomotive is coupled the tender B, and to it the baggage-car C, and to the latter the passenger and other cars, D, of the train. In the baggage-car C is employed a carbureter, E, and under it an air-reservoir, F, and to the carbureter is attached a hand air-pump, G, and also a pressure-regulator, H.

The cap I of the carbureter has an oil-supply pipe, J, and a cock, K. The outer end of said pipe J protrudes through the side J' of the car, and is threaded for coupling an oil hose or pipe to it, so that the carbureter may be charged with oil or naphtha from a can or barrel located outside or entirely away from the car, to prevent spilling of oil and to avoid odor in the car, and thereby performs the filling of the carbureter with perfect safety.

The air-reservoir F under the car is connected with the air-brake tank A' under the locomotive either directly, by means of the air-pipe L, or indirectly, by means of a faucet or other connection, L', of it with the air brake pipe V, as shown in Figs. 5 and 6. When said pipe L connects directly with said tank A', I employ a valve or faucet, M, on it near the tank, and provide it with a vertical arbor, M', and crank-handle M<sup>2</sup> within the engineer's



cab, readily accessible for the engineer to operate. Said air-pipe is furnished with hose ends and a coupling, N, at the junctions of the locomotive with the tender and the tender with the baggage-car, and it has a check-valve, O, to prevent the pressure in the air-reservoir F from retreating to the tank A' or air-brake pipe V. Either the same air-pipe L has a branch, P, beyond said valve O to the regulator H, as shown in Fig. 1, or a separate pipe, P', connects from said reservoir F to said regulator, as shown in Figs. 5 and 6. From the outlet of this regulator a secondary pipe, Q, conducts the regulated air into the carbureter.

After the air passes through the carbureter, and is thereby carbureted and converted into illuminating-gas, it is conducted through the gas-pipe R to the burners S of the baggage-car, and also down under the rear part of said car and through the hose and coupling N' to the gas-pipe R', fixtures and burners of the succeeding passenger or other car, and so on from car to car to the rear of the train. For several or each of said passenger or other cars is provided on the top or roof a gas-reservoir, T, which is made to expand by the pressure of the gas, so as to take up in it a limited supply of gas for a reserve to furnish gas to the car or cars at times when such car or cars are detached from the main supply from the carbureter or car containing the same. The said gas-reservoir T may be furnished with a regulator, or it may be constructed, as shown, to contract and cause its delivery of gas with an even pressure by a spring or weight, U, of the proper power to produce the requisite light at the burners.

The object of the hand air-pump G is to furnish the air-reservoir F with compressed air while the engine is detached from the train, and in case all pressure in the said reservoir F has been consumed, so that in all cases of detachment of the engine or of cars provision is made to carry on the gas-light, at least for a short time.

To avoid all extra labor in coupling cars, making up a train, or detaching cars from one another, I construct the coupling for the air-brake with a secondary connection through it to conduct the gas at the same time, as shown in Fig. 3, in which the passage V' represents the air-passage for the brake, and to which the pipes V of the air-brake are connected, and the passage W represents the gas-passage connecting with the gas-pipes R and R'. Said coupling is made of two joining counterparts, Y and Y', meeting with a straight face, and either one or both having their said faces made with dovetail grooves *a a*, circumscribing and separating their passages V' and W by packing or rubber applied in said grooves to prevent any leakage from one passage to the other and from either to the outside of the coupling.

The rear part of each counterpart Y and Y' is made with a valve-chamber, *b*, for each passage, and in each of said chambers is employed a ball-valve, *x*, for which a proper seat is formed in the passage toward the face. The rear part of each of said chambers is made with a shank, *c*, to which the hose is attached, and the passage through this shank *c* is made square or of such form that the valve cannot seal or close it.

On the top and bottom of said counterparts are made slots *d*, and each of said counterparts has a pivoted hook, *e*, attached in its slot, to pass through the empty slot of the opposite part, and to drop with its hook beyond the rear side of the said part, and thereby cause the locking of both parts together. Said hooks are provided with springs to hold them in their place.

When the coupling is locked together the valves drop from their seats, but as soon as detached become suspended, as shown in dotted lines in Fig. 2, as in uncoupling the car said valves drop upon their seats, and thereby seal the passages and confine the air and gas within the pipes.

The pipe Q, which conducts the air into the carbureter from the regulator H, has a proper stop-cock, *f*, and the gas-pipe R, opposite to it, has a gas-faucet, *g*; and between said cock *f* and said gas-pipe R is arranged an air-mixing cock, with a passage from the pipe Q to the pipe R direct, to adulterate the gas in case of its being too rich in carbon.

The hand-pump G is connected by its discharge end to the pipe P below the regulator.

What I claim is—

1. In apparatus for illuminating railroad-cars with gas, the combination of the carbureter E, with its regulator H, the air-reservoir F, and air-tank A' or its air-brake pipe, with the pipe L, its check-valve O, the couplings N, and the air-pipe Q, the gas-pipes R, and the combined couplings N' and the burners S, substantially as and for the purpose herein set forth.

2. The tank A', the pipe L, its check-valve O, cock M, couplings N, and the reservoir F, the carbureter E, its regulator H, and the hand air-pump G, the pipe Q, and pipes R and R', with their couplings N', and burners S, and the gas-reservoirs T, all combined and operating substantially as and for the purpose herein stated.

3. The combination of the carbureter E, with its regulator H, and pipes Q and R, supply-pipe J, faucet or valve K, hand air-pump G, pipe L, check-valve O, pipe P, reservoir F, and air-tank A' with the cock M and couplings N, arranged substantially as and for the purpose herein mentioned.

4. The tank A', the pipe L, with the cock M and check-valve O and couplings N, the reservoir F, the pipe P, and the hand-pump G, and the regulator H, and carbureter E, the



5 pipes Q and R and R', and burners S with the coupling N' and gas-reservoirs T and weight U, all combined and operating substantially as and for the purpose herein described.

5. The combination of the air-tank A', or its connecting air-brake pipe V, with the pipe L and check-valve O, the air-reservoir F, the

pipe P or P', with the regulator H, the pipe Q, the carbureter E, pipe R, with a faucet, g, 10 and the pipe J, with its faucet or valve K, substantially as and for the purpose herein set forth.

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