

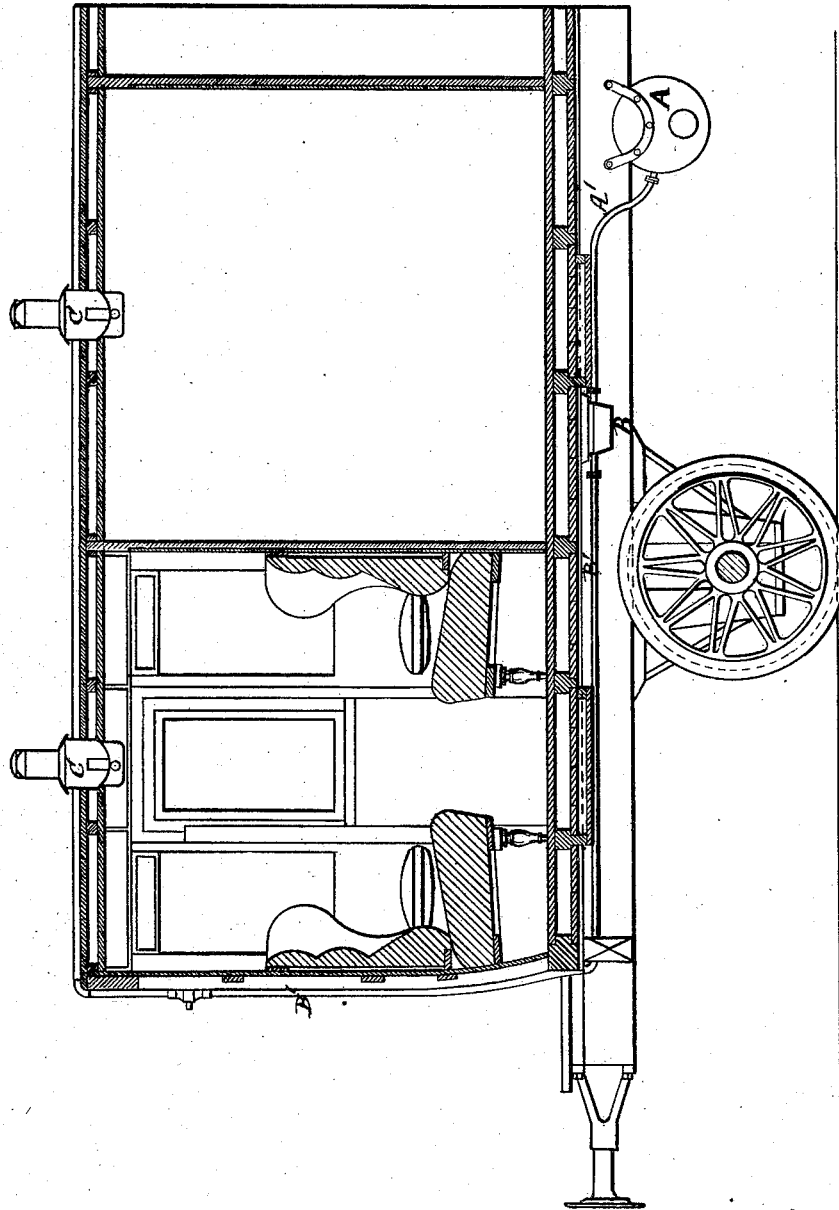
R. PINTSCH.

Apparatus for Lighting Railway-Cars..

No. 162,946.

Patented May 4, 1875.

Fig. 1.



Witnesses;

Char. Hoock

M. Morris Smith

Inventor;

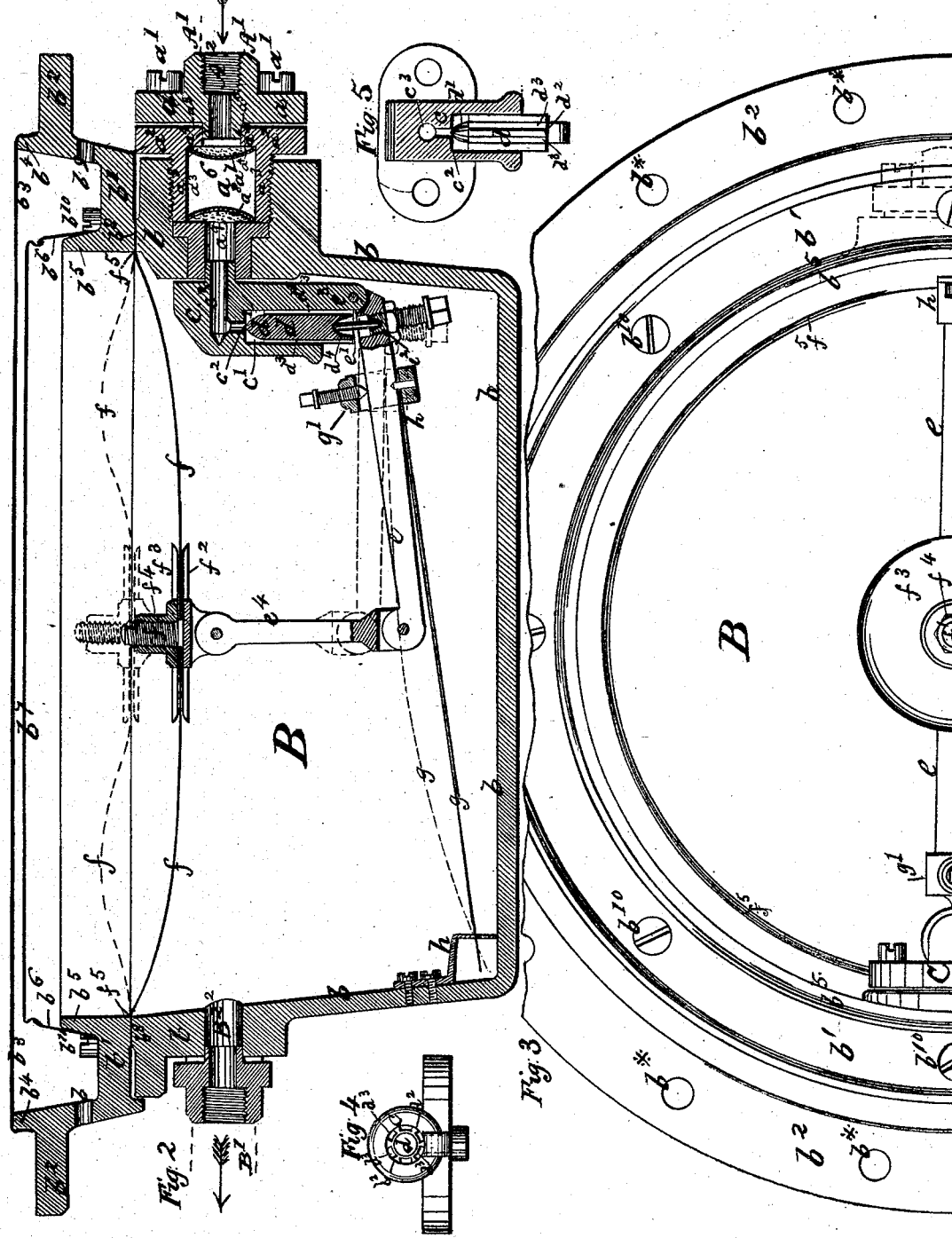
Richard Pintsch

by his Attorney

Colborne Brooks

R. PINTSCH.
Apparatus for Lighting Railway-Cars.
No. 162,946

Patented May 4, 1875.



Witnesses:
Chas. Hoock
M. Morris Smith

Inventor:
Richard Pintsch
 by his Attorney
Collum Brooker

UNITED STATES PATENT OFFICE.

RICHARD PINTSCH, OF BERLIN, PRUSSIA.

IMPROVEMENT IN APPARATUS FOR LIGHTING RAILWAY-CARS.

Specification forming part of Letters Patent No. **162,946**, dated May 4, 1876; application filed October 31, 1874.

To all whom it may concern:

Be it known that I, RICHARD PINTSCH, of the city of Berlin, in the Kingdom of Prussia, have invented certain Improvements in Apparatus for Lighting Railroad-Cars with Gas; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings making a part of the same.

My invention relates to improvements in apparatus for lighting railway and other cars with gas, the object of my invention being to enable each car to carry, in a compact form, sufficient gas to light the lamps thereof for a longer period than heretofore, while, at the same time, each car is perfectly independent of any other car of a train, thereby enabling such car to be disconnected from one train and coupled to another without in any way affecting the gas-supply.

In carrying out my invention I employ gas of the highest illuminating power produced from oil. This gas is then forced, under pressure of from five to six atmospheres, into a reservoir or holder placed, by preference, beneath the body of the car. This reservoir is, by means of a pipe or pipes, connected to a regulator or graduator, hereinafter described, for the purpose of graduating and regulating the pressure and flow of the gas passing to the burners by another pipe or pipes leading from the regulator or graduator to the burners.

But that my invention may be fully understood I will proceed to describe the same in detail by aid of the accompanying drawings.

Figure 1 represents a sectional view of a railway-car with my improvements applied thereto. Fig. 2 is a vertical section, and Fig. 3 a partial plan, of my improved regulator on a larger scale. Figs. 4 and 5 are detail views of parts of the same.

Similar letters of reference are employed to indicate corresponding parts wherever they occur.

A represents the gas reservoir or holder, which is supported beneath the body of the car. From this reservoir A a pipe, A¹, passes to the regulator B, after passing through which the gas is conducted, by a pipe, B¹, to the burners arranged in the lamp C, supported in the roof of the car. The case or frame of the

regulator B is, by preference, formed of two main castings, *b b*¹, the lower portion, *b*, being cast in the form of a basin, while the upper portion, *b*¹, is annular, and provided with a flange or rim, *b*², for the purpose of connecting the apparatus to the car by means of screw-bolts passed through holes *b*^{*} in the same, or by clamps or other suitable means. The upper portion of the ring *b*¹ is provided with a cover, *b*³, fitted air and gas tight over a flange, *b*⁴, extending round the upper side of the part *b*¹, thereby securely inclosing the mechanism of the regulator contained within the casing *b b*¹, as hereinafter explained. *b*⁵ is a second flange formed on the inner periphery of the part *b*¹ for the purpose of receiving a metallic ring, *b*⁶, across which a screen, *b*⁷, is distended, for the purpose of keeping any dust or dirt from the interior mechanism which may pass in with the air admitted through the apertures *b*⁹ in the part *b*¹, which are formed for the purpose of equalizing the atmospheric pressure above such diaphragm. *a* is a cap, in which is formed the inlet-passage to the regulator B. This cap *a* is tapped at A² to receive the end of the pipe A¹, and, by means of screws *a*¹, is connected to the flange *a*² of the tube *a*³, which is provided with a screw-thread on its periphery, for the purpose of holding the tube *a*³ in position in the casting *b*. *a*⁴ is a projecting nipple, which fits closely into the contracted mouth *a*⁵ of the tube *a*³, for the purpose of forming a perfect joint at the junction of the parts, and preventing the action of the gas on the washer placed between the same. Within the tube *a*³ a chamber, *a*⁶, is formed for the reception and retention of any dust or dirt entering from the inlet-pipe A¹. This chamber *a*⁶, at each end, is provided with a reticulate screen, *a*⁷ *a*⁸, so arranged that any dust or dirt passing through the screen *a*⁷ shall impinge against the screen *a*⁸, and by that means be prevented from passing to the interior of the regulator B. It will be evident from the construction of the parts that as soon as the chamber *a*⁶ becomes clogged by dust or dirt the same may be readily removed and cleansed. *c* is the main casting or body, in which is formed the chamber *c*¹ for a valve, *d*, the valve-seat *c*², and also a passage, *c*³, to such valve-chamber from the passage *a*⁹ from

the dust-chamber a^6 to the valve-chamber c^1 . The valve d , at its upper end d^1 , is conical, while its stem is formed with projections d^2 , leaving a series of channels, d^3 , for the passage of gas to the upper part of the valve-chamber c^1 . On the under side of the stem of the valve d a semi-oval aperture, d^4 , is formed for the reception of the upper end of a supporting-rod, e^1 , the lower end of which is received into a correspondingly-shaped recess in an adjustable screw-bearing, e^2 , carried by the lever e . The lever e , at e^3 , is pivoted to the casting c , while, at its opposite end, it is, by pin-joint, connected to the lower end of a link, e^4 , the upper end of which is pivoted to the under side of a screw-bolt, f^1 , which passes through the center of and, by means of washers f^2 f^3 and a nut, f^4 , embraces a diaphragm, f , which is distended across the upper part of the regulator-chamber by means of its periphery f^5 being embraced and held firmly between the parts b b^1 by means of the rim b^6 and the retaining-screws b^{10} , which hold the parts b b^1 together. g is a compound counterbalance-spring formed of two layers of watch-spring. This spring g , at one end, is connected to the lever e by means of an adjustable screw-clip, g' , in order that the pressure of the spring on the lever e may be readily adjusted, while its opposite end works in a forked bearing, h , affixed to the side of the casting b . The diaphragm f is formed of fine sheep-skin treated by being stretched in a solution of gutta-percha and grease.

The casting c , in which is the chamber c^1 , I form of bronze, while the valve d and its stem I construct of an amalgam composed of eighty-six per cent. tin, five per cent. copper, and nine per cent. antimony. The object of employing this amalgam for the valve and bronze for the casting c is, that they are the only metals that I am enabled to employ in the construction of these parts that will work together without being so affected by the action of the gas and dust and dirt as to destroy the operation of the parts in a very short time. The composition of the valve and chamber may be reversed, if desired.

The operation of the apparatus is as follows: The reservoir A being duly charged with gas, the same is allowed to escape through the pipes A^1 to the dust-chamber a^6 , through which it

passes to the passage c^3 , and from thence to the valve-chamber c^1 , through which it passes, by the channels d^3 in the valve-stem, to the interior of the regulator-chamber, where it acts upon to lift the diaphragm f in proportion to the pressure of the gas. If the pressure is high it will lift the diaphragm in proportion, and in so doing raise the lever e and valve d , so as to more or less close the gas-inlet, and thereby regulate the supply, and consequently the pressure of the gas passing out of the regulator by the outlet B^2 to the supply-pipe B^1 leading to the burners C .

The dotted lines in Fig. 2 represent the parts in the position they will assume when the valve is closed, while the same parts are shown by full lines in the position they assume when the valve is open.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, in apparatus for lighting railway and other cars with gas, is—

1. The combination, with a reservoir or holder in which gas is contained at a high pressure, of a regulator, B , constructed with a main case or castings, b b^1 , cover b^3 , dust-chamber a^6 , valve c d , levers e e^4 , spring g , and diaphragm f , constructed and operating substantially as and for the purpose described.

2. The valve d , provided with a seat or aperture, d^4 , in combination with a supporting-rod, e^1 , and a lever, e , provided with an adjustable seat or recess in a bearing, e^2 , substantially as described.

3. The combination, with the valve d , supporting-rod e^1 , and lever e , of the adjustable counterbalance-spring g , arranged, constructed, and operating substantially as described.

4. The combination, with the valve casting or body c , formed with a chamber, c^1 , valve-seat c^2 , and passage c^3 , as described, of the valve d , formed with a conical upper end, d^1 , and a stem provided with channels d^3 and a seat, d^4 , for the reception of a supporting-rod, e^1 , substantially as shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

RICHARD PINTSCH.

Witnesses:

HERMANN KREISMAN,
 ROBERT GOTTHEN.