

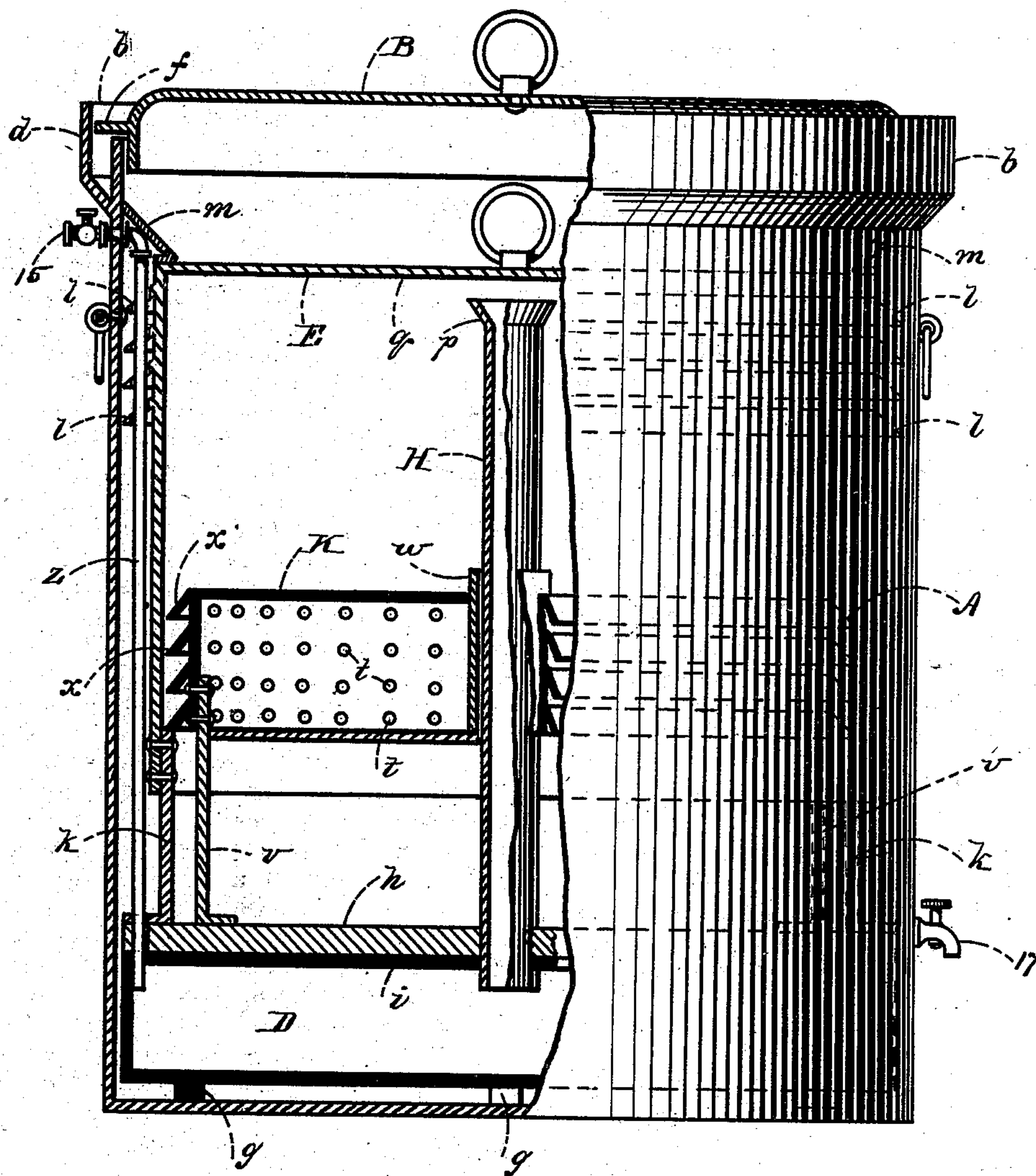
(No Model.)

P. YARRINGTON.

APPARATUS FOR THE MANUFACTURE OF HYDROGEN GAS.

No. 402,216.

Patented Apr. 30, 1889.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR THE MANUFACTURE OF HYDROGEN GAS.

SPECIFICATION forming part of Letters Patent No. 402,216, dated April 30, 1889.

Application filed February 18, 1889. Serial No. 300,327. (No model.)

*To all whom it may concern:*

Be it known that I, PERRY YARRINGTON, of Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Apparatus for the Manufacture of Hydrogen Gas, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which the figure in the drawing is an elevation of my improved generator, a portion of the body or case being broken away and certain parts of the interior shown in vertical section.

My invention relates to a portable apparatus for manufacturing illuminating-gas, being especially adapted for use on railway-cars and similar places; and it consists in certain novel features, as hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawing, A represents the body of the generator, which consists of a metallic tank having an annular gutter, *b*, near its upper edge, the outer wall, *d*, of said gutter extending slightly above the edge of the tank. A cover, B, is provided with an annular flange, *f*, which rests on the upper edge of the body and tightly closes it.

Resting on legs *g* in the bottom of the body A there is a metallic gas-reservoir, D, a thick wooden plate, *h*, being disposed on the top *i* of said reservoir to protect it from being accidentally perforated. A dome or inverted gasometer, E, is supported by legs *k*, resting on the wooden plate *h* within the body A. On the outer side of the dome E, in its upper portion, are formed a series of downwardly-inclined annular flanges, *l*, which serve as guards to prevent the liquid surrounding said dome from rising when the apparatus is subject to sudden shocks. The dome is held in position by rods *m*, secured thereto and to the body A. A vertically-arranged pipe, H, projects cen-

trally through the wooden plate *h* and reservoir-top *i*, said pipe having a flaring mouth, *p*, opening under the top *q* of the dome. A pan, K, provided with perforations *t* in its body, is disposed within the dome E, and supported by legs *v*, resting on the plate *h*. A vertical sleeve, *w*, is formed centrally in the pan K, through which the pipe H passes. Inclined annular guard-flanges *x* are formed on the side of the pan K, said flanges serving to prevent the liquid in the tank from flowing over the top of the pan. A vertical tube, *z*, leads from the reservoir D between the dome and the tank, said tube opening outward through the side of the tank, and provided with a valve and coupling, 15, to which a gas-pipe may be attached. Handles 16 are secured to the body A, and near the lower end of said body is disposed a faucet, 17, for drawing off waste liquid.

In the use of my improvement the reservoir is filled with naphtha, gasoline, or similar carbonaceous material, and iron scraps and marble-dust or other gas-generating substance is disposed in the perforated pan K. The bell or dome E is then placed in position and the tank A filled with a weak solution of sulphuric acid and water below the flanges *l*. The acid solution, passing through the perforations in the pan K, acts upon the iron therein and generates hydrogen and carbonic-acid gas, which passes through the pipe H into the reservoir D, where it comes into contact with the carbureting substance therein and receives its illuminating properties. The gas as thus prepared may readily be withdrawn for use from the reservoir by the tube Z. By employing the thick wooden guard *h* the reservoir is protected from accidental perforation, which would permit the acid solution to come in contact with the carbonaceous material.

It will be seen that the apparatus described is particularly well adapted for use on railway-cars and similar places where it may be subject to constant jarring, the flanges *x* preventing the acid solution from overflowing the pan K and coming into contact with the contents thereof in large quantities, whereby the gas would be generated too rapidly. The guards *l* serve a similar purpose in preventing the solution from being spilled from the tank should the cover B be accidentally removed.



Moreover, in my improvement the reservoir D, containing the carbonaceous materials, which are ordinarily of a highly-inflammable nature, is at all times completely submerged in a fire-extinguishing liquid, thus rendering the device far safer to transport than apparatus of this class as ordinarily constructed.

Having thus explained my invention, what I claim is—

10 1. In a hydrogen-gas generator, the combination of a body or tank, a carburetor disposed therein and provided on its top with a guard-plate, a perforated pan for the gas-generating material, supported on said plate and  
15 provided with guard-flanges, a bell or inner casing supported on said plate and inclosing said pan, a pipe from the carburetor opening into said bell, and a supply-tube leading from said carburetor through said body, substan-  
20 tially as described.

2. In a gas-generator, the combination of a body, a reservoir for carbureting material so disposed in said body that it may be surrounded by the acid liquid, a wooden guard-

plate on said reservoir, a perforated pan supported on said plate and provided with guard-flanges, a bell supported on said plate and inclosing said pan, said bell having guard-flanges, a pipe from the reservoir opening into the bell above said pan, and a supply-tube leading from the reservoir through said body, substantially as described.

3. In a gas-generator, a body provided with a gutter near its mouth, a cover for said body, a carburetor disposed in the bottom of the body, a wooden guard-plate on said carburetor, a perforated pan provided with guard-flanges supported on said plate, a bell inclosing said pan and resting on said plate, guard-flanges on said bell, a pipe from the carburetor opening into the bell above said pan, and a supply-tube leading from said carburetor through the body-wall, substantially as described.

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Witnesses:

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