

C. J. ATKINSON.
VAPORIZER FOR GAS PRODUCERS.
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1,018,152.

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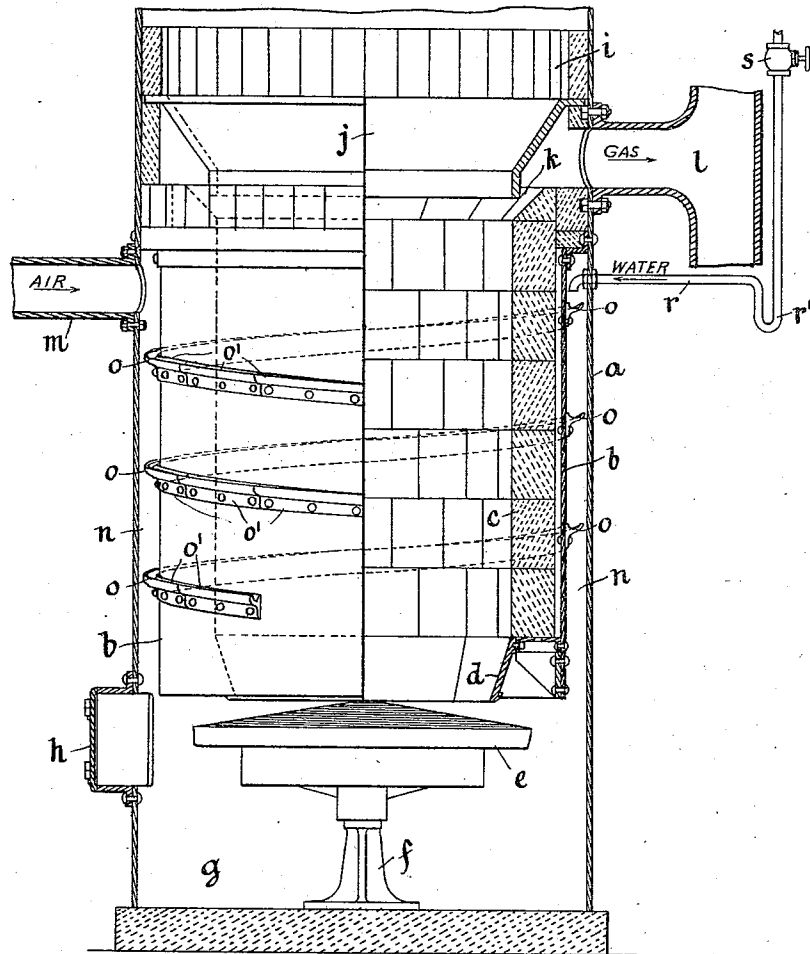


Fig. 1

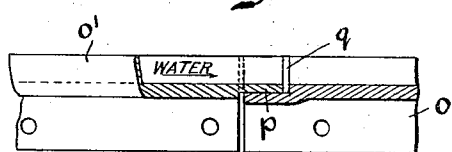


Fig. 2

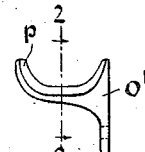


Fig. 3

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Witnesses

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UNITED STATES PATENT OFFICE.

CYRIL J. ATKINSON, OF WATERTOWN, WISCONSIN.

VAPORIZER FOR GAS-PRODUCERS.

1,018,152.

Specification of Letters Patent.

Patented Feb. 20, 1912.

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To all whom it may concern:

Be it known that I, CYRIL J. ATKINSON, of Watertown, Wisconsin, have invented a Vaporizer for Gas-Producers, of which the following is a specification.

This invention relates to gas producers and more particularly to that part of the producer which is known as the vaporizer. More particularly, the present invention is adapted to gas-producers of that type having an upright cylindrical magazine and fuel-column which is surrounded by an external shell which leaves an annular passageway through which the gasifying air is caused to pass on its way to the fuel, thereby absorbing the heat radiated through the fuel-column.

The principle of my invention consists in providing a helical trough mounted on and wound around the shell of the fuel-column within the aforesaid annular passageway, and means for delivering a supply of water into the upper end thereof whereby it is caused to run down and spread along said helical trough and thus exposes an extensive surface to the current of air, so that on or before reaching the lower end of said trough said water is all evaporated.

My invention comprises more particularly the specific combinations which are hereinafter described and pointed out in my claims.

For the better understanding of my invention, I have illustrated the preferred form thereof in the accompanying drawing wherein—

Figure 1 is a longitudinal section through a portion of a gas-producer constructed according to my invention, the grate and the left-hand of the fuel-column being shown in elevation; Fig. 2 is a fragmentary longitudinal section through parts of two adjacent segments of said trough on the plane 2; and Fig. 3 is an end-view of the left-hand segment of Fig. 2.

The reference letters refer each to the same part in each figure of the drawings. Only those parts of the producer which are immediately accessory to my invention are illustrated, the other parts being supplied in any customary or usual manner.

The cylindrical outer shell of the producer is designated *a*, and the cylindrical inner shell, which forms part of the fuel-column, is designated *b*, this latter being shown as lined with fire-brick *c* and provided with a

conical bosh *d*, below which for the support of the fuel is placed a grate *e*, which is shown in outline for purposes of illustration and may be made according to any preferred or usual construction, as it forms no part of the present invention. The grate is supported upon a pedestal *f* above the ash-pit *g*, to which access is had by a door *h*.

Above the fuel-column is placed a magazine *i*, parts above which are omitted from the present drawing, said magazine delivering through a funnel *j* into the upper end of the fuel-column an annular passageway *k* between the two being left to permit the escape of the generated gas, which passes out through the pipe *l*. The air is delivered into the producer through an intake-pipe *m* opening into the annular passageway *n* between the shells *a* and *b* whereby the air is caused to pass down through said annular passageway and into the fuel-column at the bottom. As thus far described, the elements shown are merely accessory to my invention.

The vaporizer proper comprises the helical trough *o*, which is made up of a plurality of curved segments *o'* each independently secured to the shell *b*, and the ends of the segments are preferably made to overlap one another in the manner shown in Fig. 2, the lower end of each segment being provided with an extension lug *p* which is received within a recess *q* in the upper end of the next adjacent segment, in the same manner as a bell-and-spigot joint, whereby the water is prevented from leaking out between the segments. This, however, is not essential, as even should a little water leak out, it would spread over the shell *b* and thereby become vaporized just the same, and moreover the crack between the segments soon becomes filled with scale or incrustation from the evaporation of the water. It is to be observed that the ends of the segments do not quite abut, there being a little space left between them to allow for expansion and contraction due to varying temperatures.

The trough *o* begins near the top of the fuel-column at which point a water-pipe *r* having a gas-seal *r'* leads in and delivers a stream of water into the trough. The quantity of water delivered may be regulated as usual in gas-generators either manually or automatically, such means being here symbolized by a valve *s*. The trough winds

downwardly around the shell *b* through as many turns as are necessary to vaporize the water, so that under proper conditions of operation, none of the water escapes at the lower end.

It will be understood that air entering through the pipe *m* and passing over the extended water-surface of the trough *o* rapidly takes up the water, and as all is taken up in the process, the vapor-supply can be very exactly regulated to prevent either too much or too little being absorbed by the air. It will also be seen that the trough *o* acts as a vane and creates a spiral movement in the current of air passing down through the passageway *n*, the rapid motion so produced acting to take up the water from the trough more quickly, according to well-known principles of evaporation.

From the above description it will be readily seen that my invention will assume a variety of forms all embodying the same principles and that a great number of changes and modifications are possible in the nonessentials without departing from the spirit of my invention, the scope of which is particularly defined in my claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a gas-producer, in combination with a wall, a vaporizer comprising a trough mounted on said wall, said trough comprising a plurality of independent downwardly sloping segments, the lower end of each segment overlapping the upper end of the next adjacent segment, and means for delivering water into the upper end of said trough.

2. In a gas-producer, the combination with the cylindrical upright shell contain-

ing the fuel-column and a concentric cylindrical outer shell leaving an annular air-passage between them, means for delivering air into the upper end of said passage, a helical trough mounted on and surrounding said inner shell and consisting of a plurality of curved segments, the lower end of each segment having an extension lug which is received within a recess in the upper end of the next adjacent segment and the abutting ends of said segments being normally separated by a distance sufficient to allow for expansion, and means for delivering water into the upper end of said trough.

3. In a gas-producer, the combination with the inner and outer cylindrical shells, said inner shell containing the fuel column, of a helical trough mounted on and encircling said inner shell and composed of a series of segments independently secured to said shell and connected one with the other by expansion-joints.

4. In a gas-producer, the combination with the inner and outer cylindrical shells, said inner shell being a cylinder of sheet-metal, of a helical trough encircling said inner shell, said trough comprising a plurality of segments of cast-metal independently secured end to end to said inner shell and extending laterally outward therefrom, said segments being connected one with the other by expansion-joints permitting water to flow continuously from one to the next, and means for delivering water at the upper end of the trough.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

CYRIL J. ATKINSON.

Witnesses:

GEORGE W. COLLES,
JAS. L. WARNER.