

(No Model.)

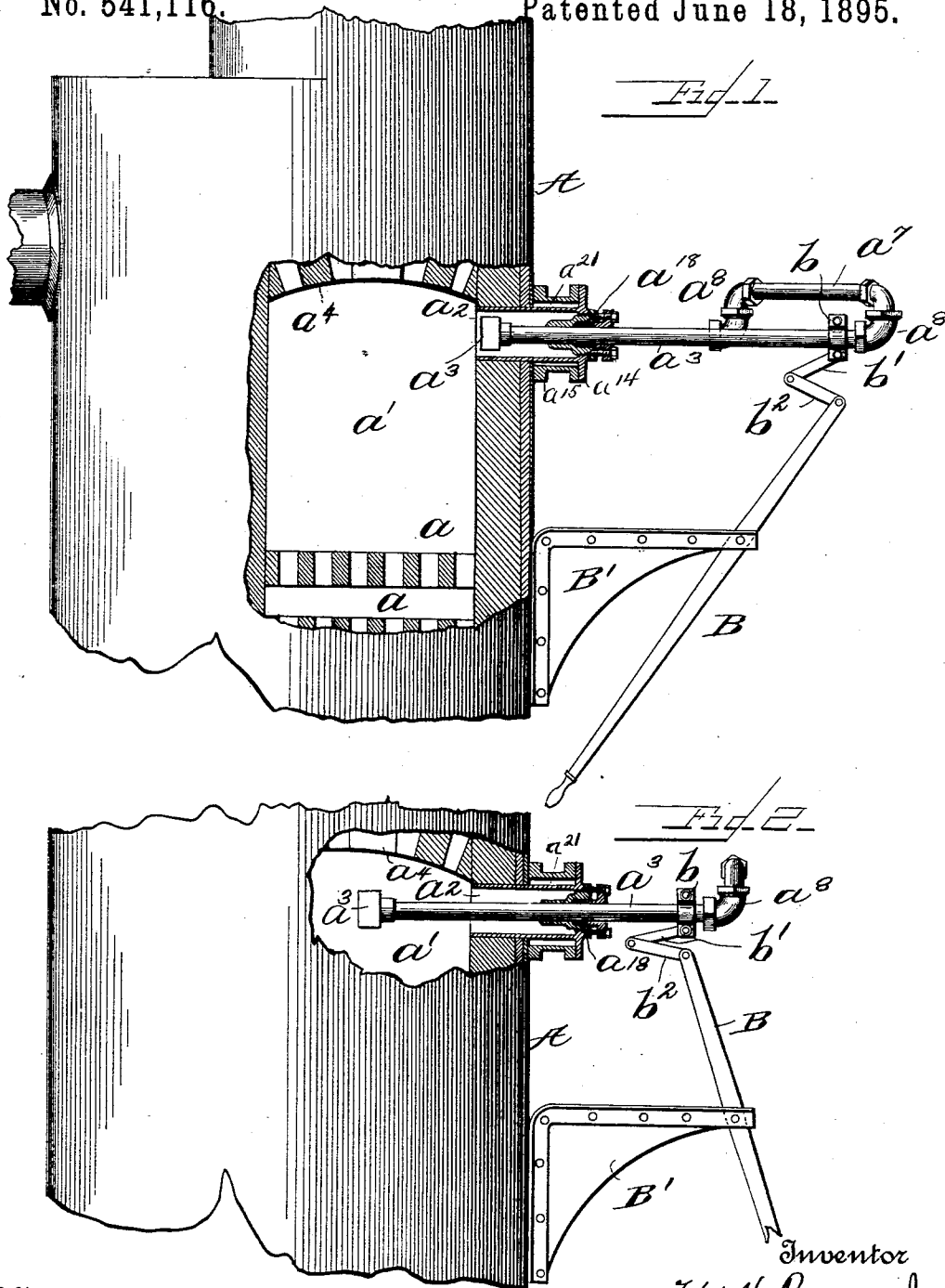
2 Sheets—Sheet 1.

W. H. PEARSON, Jr.

MEANS FOR SUPPLYING OIL TO SUPERHEATERS IN GAS MAKING
APPARATUS.

No. 541,116.

Patented June 18, 1895.



Witnesses

G. A. Taubenschmidt
W. E. Smith

Inventor

W. H. Pearson, Jr.

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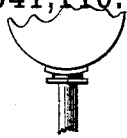


Fig. 3

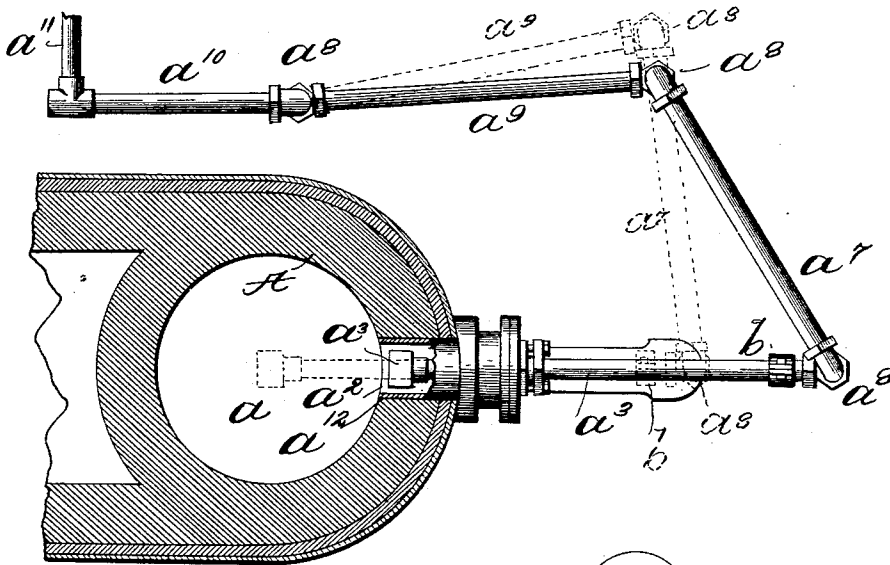


Fig. 4

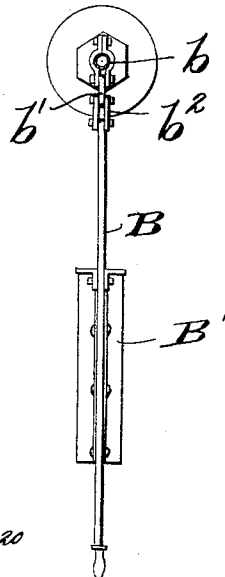
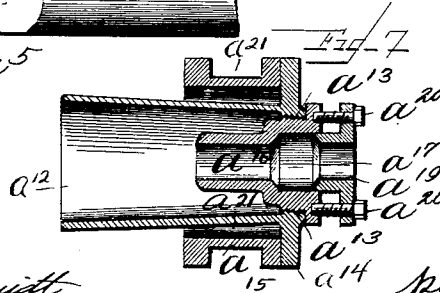
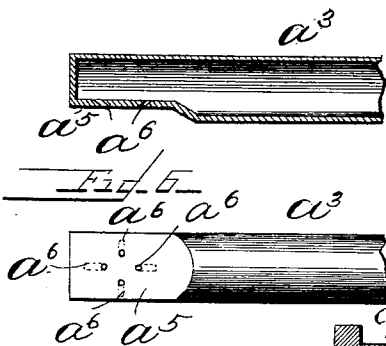


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY PEARSON, JR., OF TORONTO, CANADA, ASSIGNOR TO THE
ECONOMICAL GAS APPARATUS CONSTRUCTION COMPANY, LIMITED, OF
SAME PLACE.

MEANS FOR SUPPLYING OIL TO SUPERHEATERS IN GAS-MAKING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 541,116, dated June 18, 1895.

Application filed May 4, 1894. Serial No. 510,086. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY PEARSON, Jr., a subject of the Queen of Great Britain, residing at Toronto, in the county of York and Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Hydrocarbon-Injectors and Apparatus for Operating the Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to means for supplying oil to superheaters in gas making apparatus.

The main object of the invention is to shift the oil spraying device so that it will be out of the way of the products of combustion while the superheater is being heated and to bring it into its proper position when it is desired to carburet the water gas passed through the superheater between the heats.

Other and minor objects will hereinafter be set forth.

The invention consists of the construction and combination as will hereinafter be set forth in the specification and pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 represents a superheater with parts broken away to show the interior and my improved device attached thereto; Fig. 2, a similar view showing the improved device in a different position from that shown in Fig. 1; Fig. 3, a section of the superheater and a plan of the oil-supplying device; Fig. 4, an end elevation showing the arrangement of the levers; Fig. 5, a section of the preferred form of sprayer; Fig. 6, a bottom plan of the same; Fig. 7, a section on an enlarged scale of the thimble and other parts connected therewith.

A represents the superheater or mixing chamber, which may be of any of the well known types. The interior is provided with the usual checker-work a which is arranged so as to leave a mixing chamber a' at a certain point or points in the superheater. In the wall of the superheater is an opening a^2

of any suitable size or shape, for the insertion of the spraying nozzle a^3 , of any desired construction, into chamber a' . This nozzle is inserted through opening a until it is in the axial center of chamber a' , and preferably near the arch a^4 so that when the oil is sprayed into the chamber it will be delivered into the middle of the current of incoming water gas and carburet the same with oil. The advantage of this construction over the old form of delivering the oil into the superheater is manifest, when it is recalled that the oil is ordinarily projected from the side of the chamber at an angle to the course of the current of gas through the superheater, thereby giving to some parts of the current too much oil and forming tarry globules on the checker-work above it and not a sufficient quantity to the other parts of the currents to properly carburet it. By projecting the oil into the center of the current this objection is removed, and especially so when a spraying nozzle having the spraying openings so arranged that the oil ejected therefrom meet at a predetermined point and break one another up into a fine spray. Such a nozzle is shown in Figs. 5 and 6, and consists of a pipe or tube having the flattened face a^5 , provided with openings a^6 arranged obliquely on lines having a common center or force below the outlet ends of the tube so that the jets of oil forced out of the openings will strike one another and scatter themselves in a fine spray against the upcoming current of water gas.

The nozzle a^3 is preferably cylindrical in shape and projects outside of the superheater to any desired distance, and is connected to another pipe a^7 by a swiveled joint a^8 . The pipe a^7 projects at an angle and sidewise to nozzle a^3 , and it in turn is connected with pipe a^9 by a similar joint a^8 . The pipe a^9 is connected by a joint a^8 to a pipe a^{10} that is parallel to the nozzle a^3 , but to the rear and to one side thereof. The pipe a^{10} is connected with a suitable oil supplying device a^{11} located at any desired point. By this arrangement of pipes the spraying end of the nozzle can be moved in and out of the chamber a' without any strain upon the parts and with-

out the necessity of disconnecting any of the parts thereof.

The opening a^2 is provided with a flaring thimble a^{12} embedded in the wall of the superheater with the flaring mouth opening into chamber a' . The smaller or rear end is provided with a screw threaded opening a^{13} and a flange a^{14} between which and the wall of the superheater is interposed a flanged ring a^{15} that is secured to the flange a^{14} and forms a dead air space a^{21} between the thimble and ring. In the screw threaded opening a^{13} is screwed a sleeve a^{16} for the nozzle a^3 to slide in when moved back and forth for the purposes mentioned. The rear end of the sleeve a^{16} is enlarged to form a chamber a^{17} in which is placed packing a^{18} held in place by the gland a^{19} secured to the sleeve a^{16} by means of bolts or other retaining devices a^{20} . When properly packed the nozzle a^3 can be moved back and forth without the gas escaping. Any tendency of the nozzle when pulled out, to draw the thimble out of the opening a^2 is resisted by the flaring mouth and any tendency to force the thimble into chamber a' when the nozzle is pushed into position in said chamber is resisted by the ring a^{15} .

Any desired means for drawing the nozzle in and out of chamber a' may be used, but I prefer the device shown. In that device a lever B is fulcrumed upon a bracket B' secured to any desired place, preferably the wall of the superheater and is connected by one end to the nozzle by means of a clip b which embraces said nozzle as shown, and links b' and b^2 that break the end of the lever B and thereby prevent any bending strain upon the nozzle by the lever when used to move the nozzle in and out.

What I claim as new is—

1. The combination of a superheater having an opening in its wall, a nozzle adapted to be moved in and out of the superheater through said opening in a straight horizontal line, and an oil supplying device connected with said nozzle by pipes jointed together with swiv-

eled couplings which permits of said nozzle being moved in and out of said superheater.

2. The combination of a superheater having an opening in its wall, a stuffing box in said opening, and having a center opening, and nozzle adapted to be moved in and out of the superheater on a straight horizontal line through the opening in the stuffing box, and an oil supplying device connected with said nozzle by pipes jointed together with swiveled couplings which permit of said nozzle being moved in and out of said superheater.

3. The combination of a superheater having an opening in its wall, a thimble in said opening, and flared from the outer to the inner side and connected with the outer side of the wall of the superheater, a stuffing box having a central opening and screwed into the outer end of the thimble, a nozzle in said opening of the stuffing box, and means for moving said nozzle in said stuffing box to reciprocate the nozzle back and forth in a horizontal line.

4. The combination of a superheater having an opening in its wall, a thimble in said opening, and flared from the outer to the inner side and connected with the outer side of the wall of the superheater, a stuffing box having a central opening and screwed into the outer end of the thimble, a nozzle in said opening of the stuffing box, and a lever connected with said nozzle by links so as to reciprocate the nozzle back and forth in a horizontal line.

5. The combination of a superheater having an opening in its wall, a nozzle arranged in said opening and adapted to be moved back and forth therein on the same horizontal line, and a lever connected with said nozzle by links to reciprocate the nozzle back and forth in a horizontal line.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HENRY PEARSON, Jr.

Witnesses:

J. T. WESTCOTT,

D. M. LIGHTISER.