

WILLIAM GIBSON.

Improvement in Apparatus for the Manufacture of Coal Gas.

No. 119,135.

Patented Sep. 19, 1871.

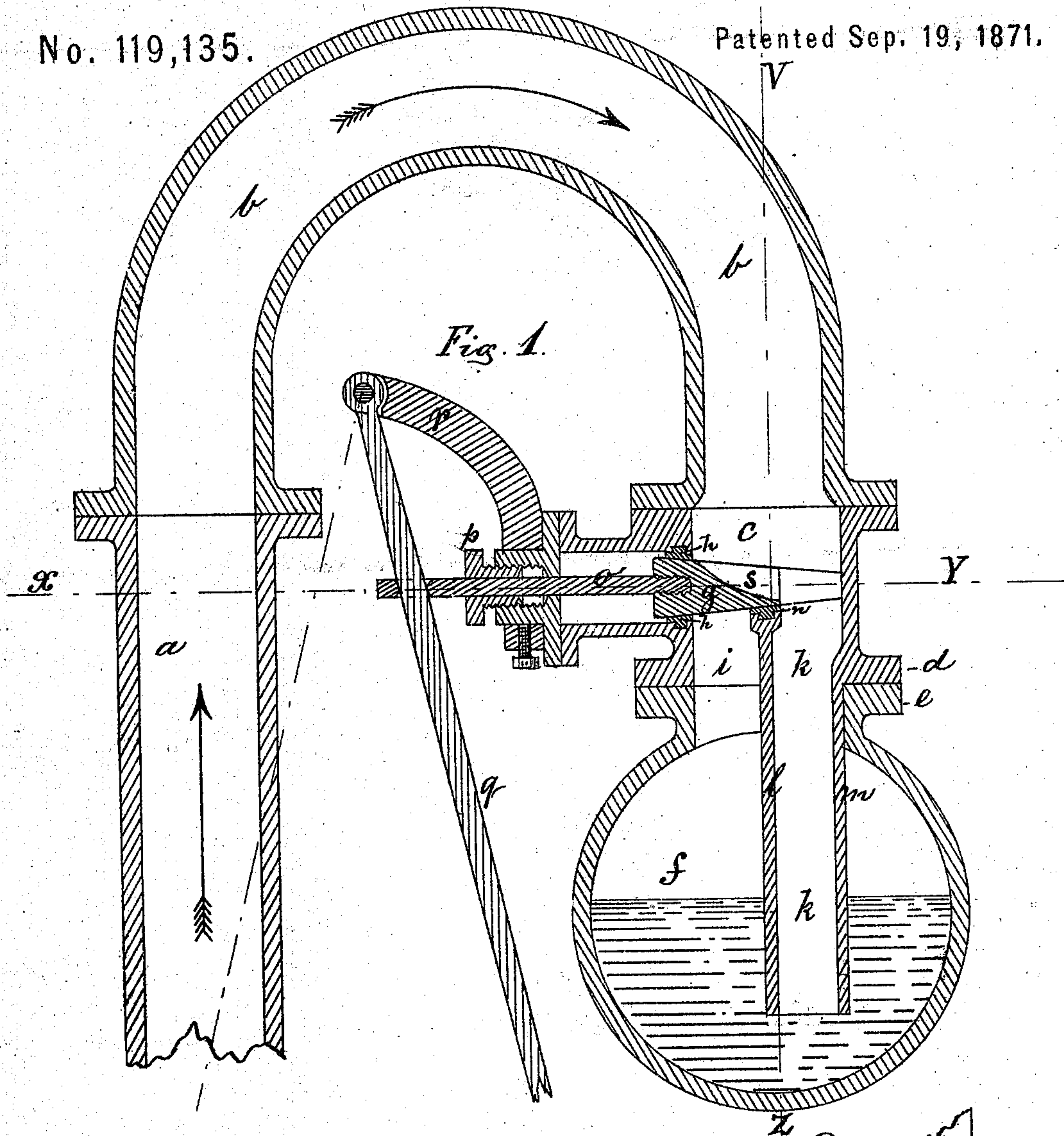
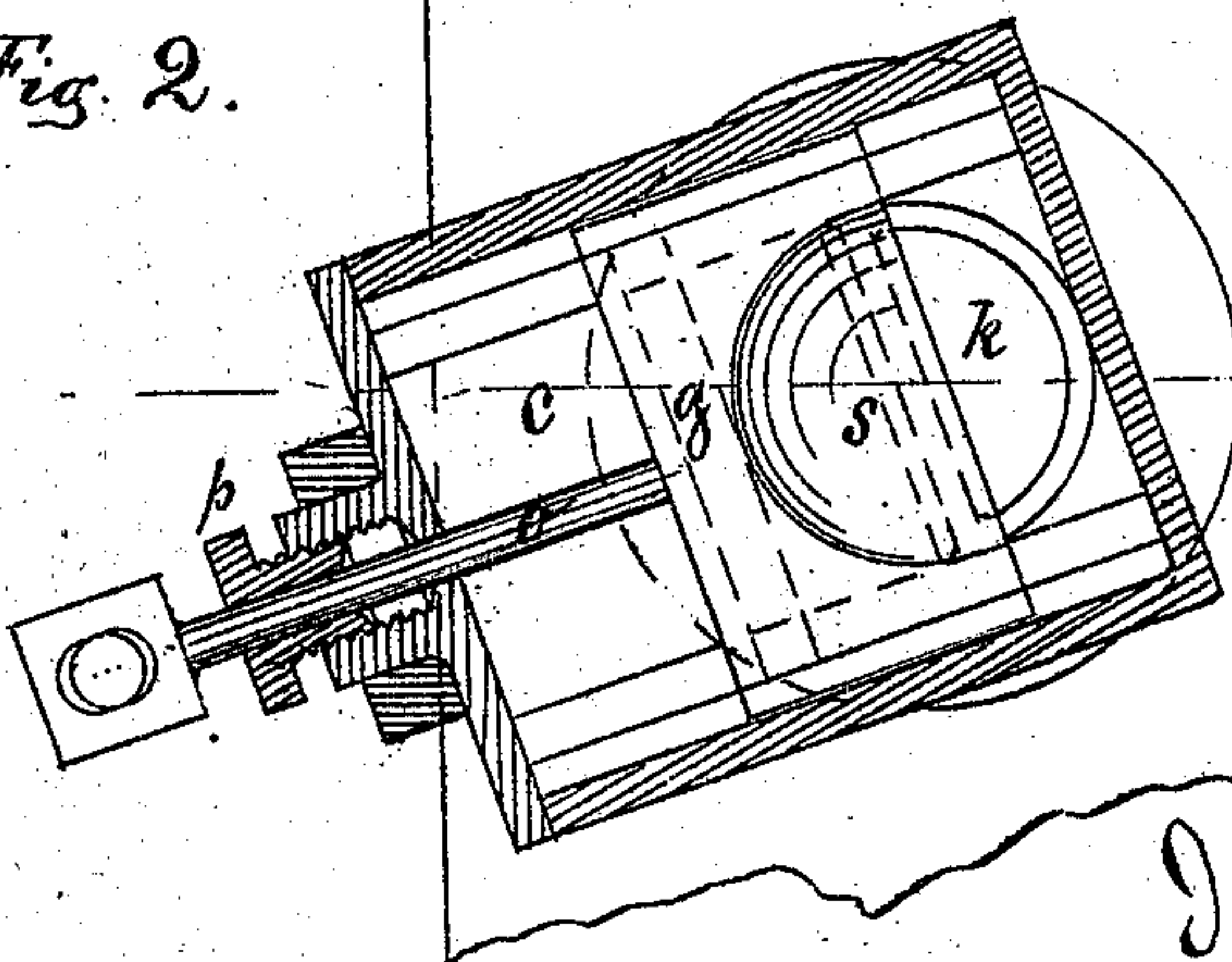
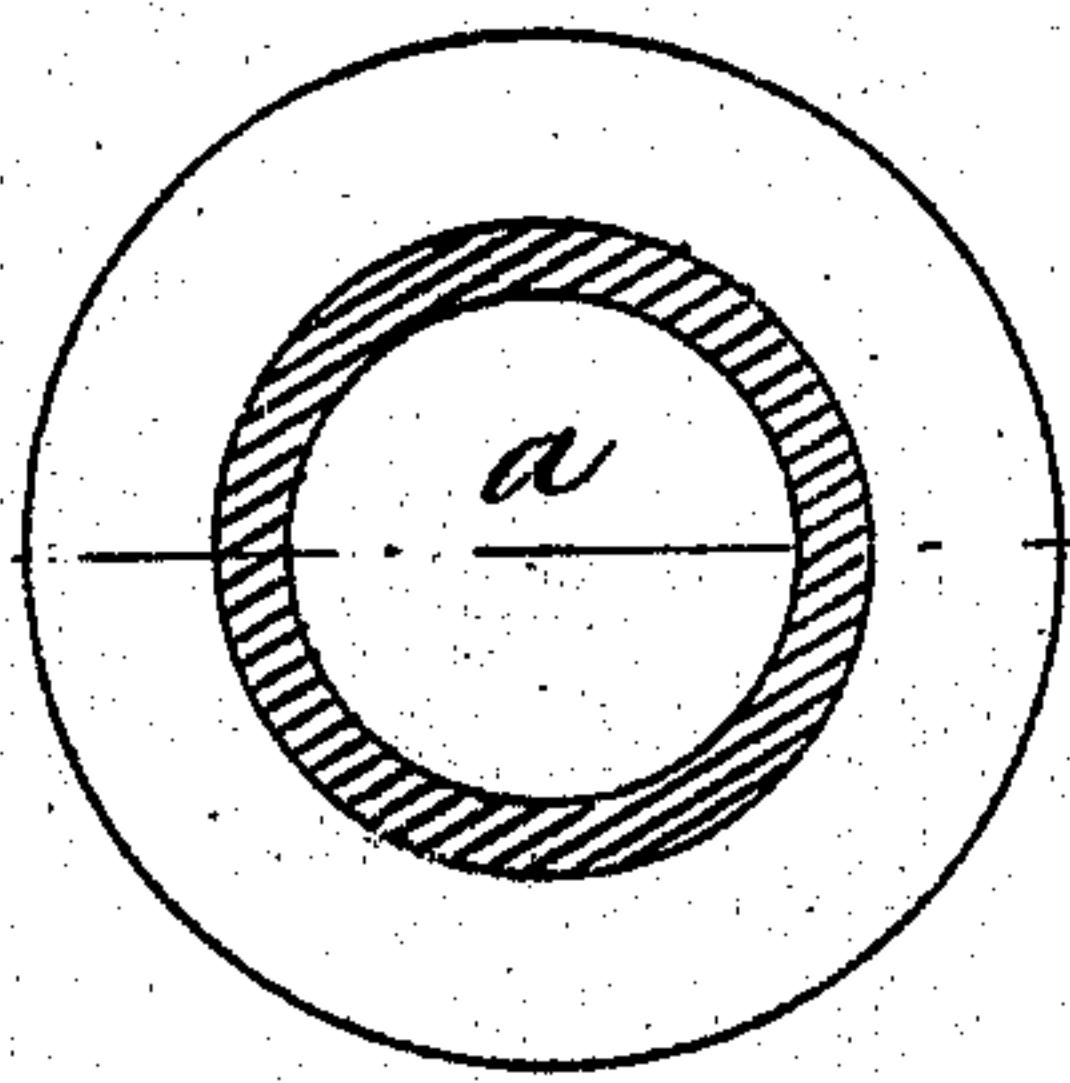


Fig. 2.



Witnesses:

Attest
Alfred Andrieu
John L. Tucker

Inventor:

William Gibson

WILLIAM GIBSON.

Improvement in Apparatus for the Manufacture of Coal Gas.

No. 119,135.

Patented Sep. 19, 1871.

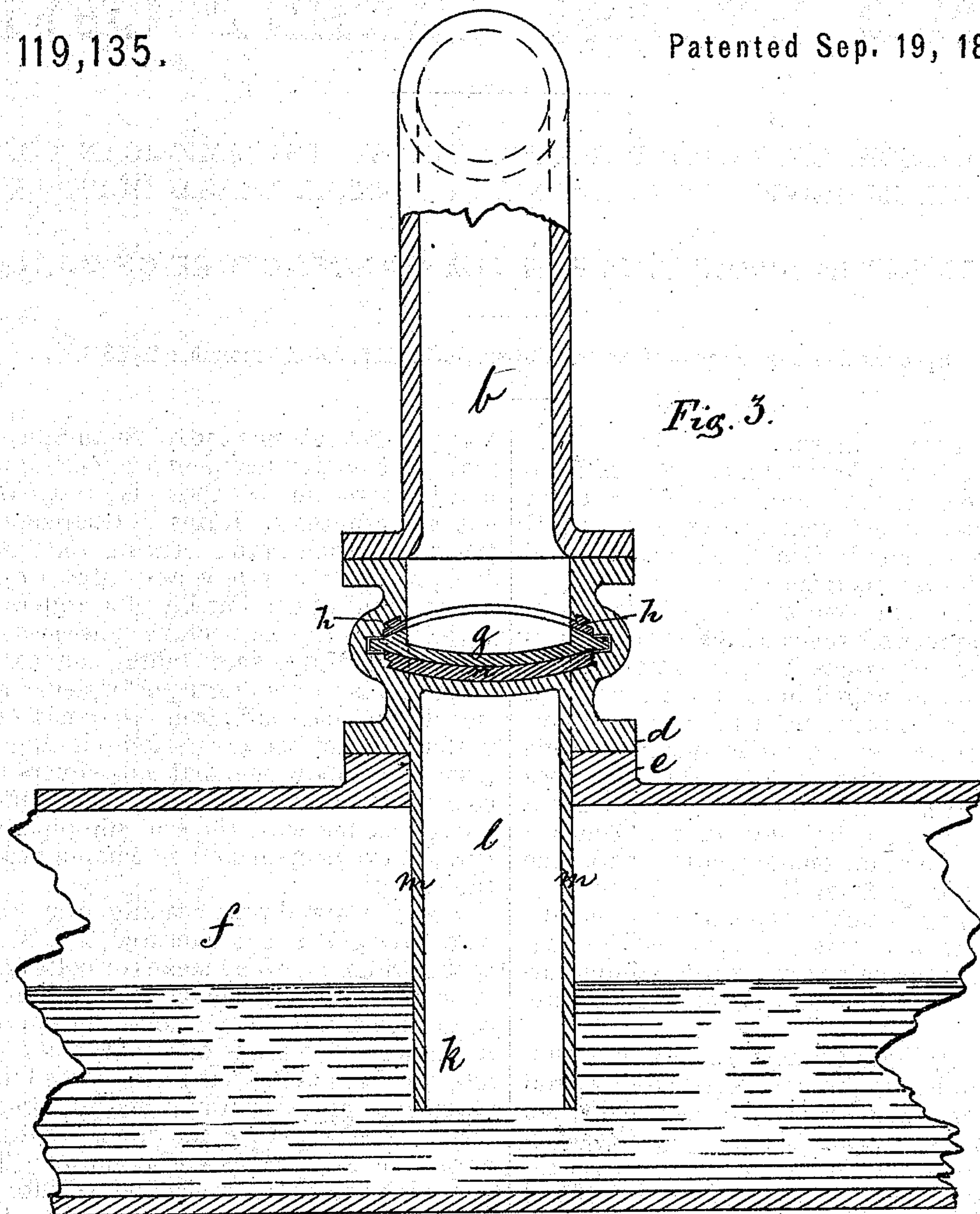
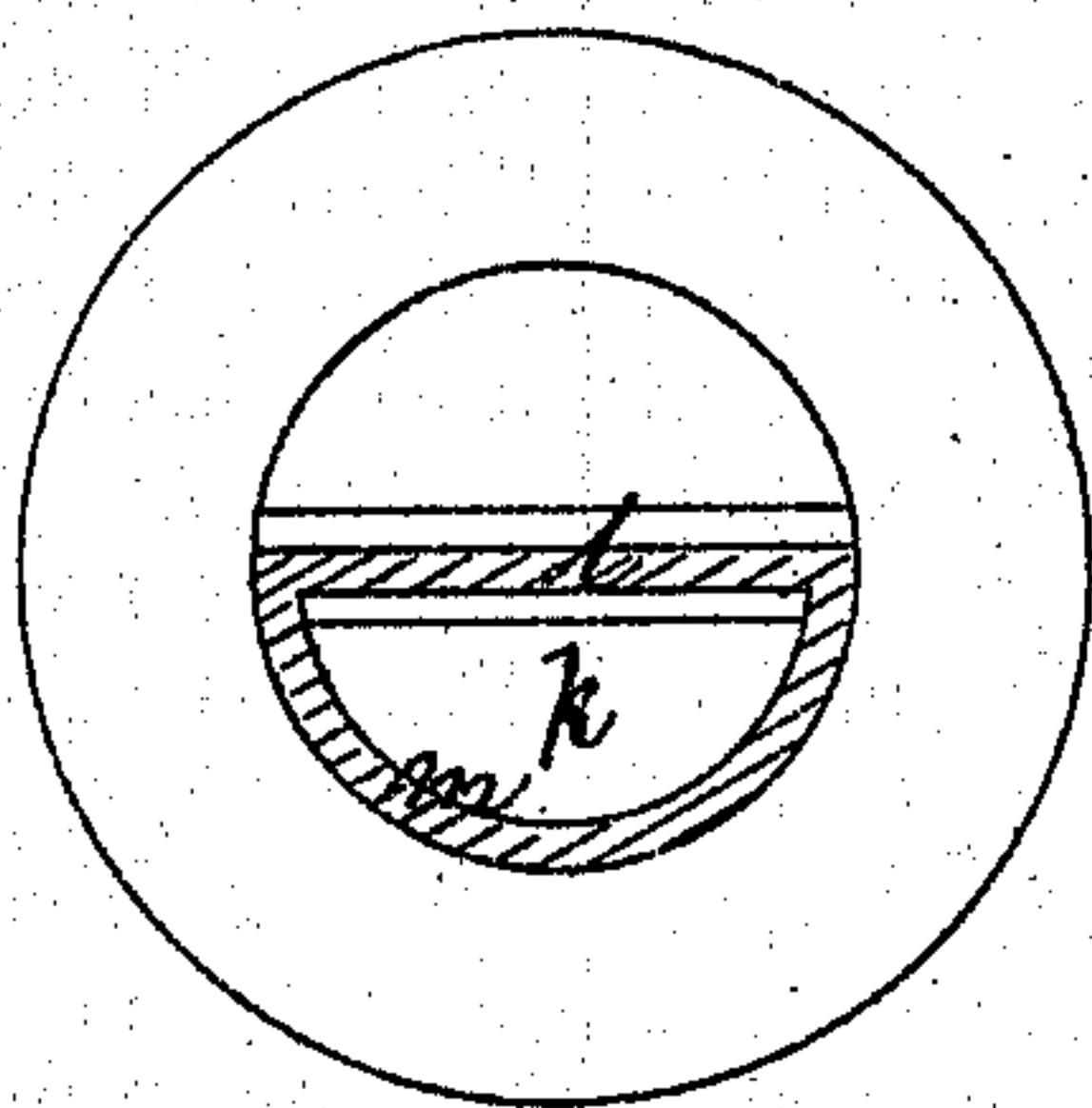


Fig. 3.

Fig. 4.



Witnesses:

Urban Andr  n
John L. Tucker

Inventor:

William Gibson

UNITED STATES PATENT OFFICE.

WILLIAM GIBSON, OF CAMBRIDGE, ASSIGNOR TO THE AMERICAN COAL-GAS-LIGHT IMPROVEMENT COMPANY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR THE MANUFACTURE OF COAL-GAS.

Specification forming part of Letters Patent No. 119,135, dated September 19, 1871.

To all whom it may concern:

Be it known that I, WILLIAM GIBSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Coal-Gas Apparatus, of which the following is a specification:

The nature of my invention relates to improvements on dip-pipes for the conduction of coal-gas or other illuminating-gas from the retort to the hydraulic main, arranged in such a manner that the dip-pipe and a valve are combined together, but made to operate entirely independent the one of the other, the difference from other dip-pipes and retort-valves being that I do not cover my seal-dip with the plug, but have it at all times in open and automatic communication with the stand-pipe leading from the retort to the hydraulic main, by which arrangement I remove the liability to accidents arising from the neglect of opening the valve during the manufacturing of gas, as will now be fully shown and described.

The drawing, Figure 1, represents a longitudinal section of the dip-pipe, valve, stand-pipe, and hydraulic main. Fig. 2 represents a cross-section over the line *xy* taken on Fig. 1. Fig. 3 is a central longitudinal section over the line *vz*, also taken on Fig. 1. Fig. 4 is a bottom view of the seal dip-pipe.

Similar letters refer to similar parts wherever they occur on the drawing.

The object I have in view is to provide an automatic arrangement, whereby the gas from the retort will be allowed to pass at all times to the hydraulic main either through an always-open dip-pipe, or through a passage that can be opened or closed by means of a valve, so as to prevent accidents, which it is apprehended might occur when the passage from the stand-pipe to the hydraulic main has been closed through neglect of the operator during the manufacture of gas. Several devices for this purpose have heretofore been made, but they have either been too costly or complicated and liable to clog up and get out of order. The mode in which I accomplish my purpose is simple, cheap, and reliable.

I am aware that a patent has been granted to Edward Jones, of Boston, Massachusetts, bearing date June 27, 1871. He, however, uses a secondary pipe leading to a point below the liquid surface of the hydraulic main, in combination with

a stop-valve between the retort and the hydraulic main, but his arrangement is not combined in one and the same shell. I am also aware that a patent was granted to Rufus B. Chapman, of Waltham, Massachusetts, bearing date August 1, 1871, where the dip-pipe and valve are combined in the same shell; but his plan differs from my invention in this respect, that he uses a number of direct passages surrounding the seal dip-pipe, and that his valve-plug is perforated. My invention differs essentially from Chapman's invention in that I do not use any perforated plug, but have a solid or hollow one, that only covers the direct communication with the hydraulic main, and has no connection with the seal dip-pipe, which remains always open and in communication with the retort.

a is the stand-pipe leading from the retort, where the gas is manufactured, and is connected to the bridge-pipe *b* by means of bolts and flanges or suitable arrangement. The bridge-pipe *b* is connected by similar means to the valve-chest *c*, as shown. The lower end of the valve-chest *c* is also provided with a flange, *d*, secured to a flange, *e*, attached to the hydraulic main *f*. In the valve-chest *c* is the plug *g*, movable, having Babbitt or soft metal-bearings *h h*, as shown. The lower part of the valve-chest *c* is divided into two separate channels, *i* and *k*. The former, *i*, is a direct communication from the valve-chest to the upper part of the hydraulic main, and the latter, *k*, is the seal dip-pipe that extends below the surface of the liquid in the hydraulic main, as shown. The dip-pipe *k* is cast in one piece with the valve-chest *c*, and is composed of an upright wall, *l*, and a half-circular wall, *m*, as shown in Figs. 1, 3, and 4. The upper part of the wall *l* forms a seat for the plug *g*, and is also provided with a Babbitt or other soft metal-bearing, *n*, on which the plug *g* is closely fitted, so as to close effectually the passage *i* when the plug *g* is in a position as shown in Fig. 1. I wish it to be distinctly understood that the plug *g* does not, at any time, cover the dip-pipe *k*, which always remains in open communication with the bridge-pipe *b* and the hydraulic main. The plug *g* is operated in the following manner: A spindle, *o*, is attached to the plug *g*, as shown, and guided in a suitable stuffing-box, *p*, in which it is made to move forward and backward by means of manual power applied to the lever *q*, hung to the arm *r*,

as shown. I do not, however, confine myself to this kind of lever arrangement, as any suitable construction of the lever and bearing will accomplish the same purpose. The upper side of the plug *g* is curved, as shown at *s*, Fig. 1, and slopes toward the dip-pipe *k*, by which arrangement any liquids that are carried from the retort and lodged on the plug *g* will drop down easily into the dip-pipe *k* or passage *i*. The extreme forward end of the plug *g* is made thin and sharp, so as to scrape off the accumulations that may settle on the bearing *n* when the plug *g* is withdrawn from said seat *n*, and thus keep the seat *n* always clean. A conical shape is given to the plug *g*, as shown, by which arrangement the plug *g* will always wear itself to a true seat in its guides and bearings. The valve-chest *c* does not stand in a line with the pipe *a*, but is turned to one side, as shown in Fig. 2, whereby I am enabled to operate the lever *g* without interference with the stand-pipe *a*. I employ Babbitt or other soft-metal bearings *h h* *n* for the plug *g*, but I do not confine myself to the use of soft metal only, as I could also make the bearings for the plug *g* of iron, cast in one piece with the valve-chest, or fit other kinds of metallic bearings thereto.

The operation of my valve and dip-pipe is as follows: When gas is made in the retort I keep the plug *g* drawn back so that the gas can pass freely through the channel *i* to the hydraulic main without going through the liquid in the main; but when it is required to charge the retort anew or to repair the same, I close the opening *i* by means of the plug *g*.

Should the operator neglect to open the passage

i when gas is being made, the result will be that the gas will pass through the dip-pipe *k* into the hydraulic main, as of old, and no accident can thus occur from over-pressure in the retort. From this it will readily be understood that my invention is an automatic or self-acting dip-pipe seal and valve combined, and that I never cover my dip-pipe *k* with the plug *g*, but keep the dip-pipe in open communication with the retort and the hydraulic main, whether said valve is open or shut.

Having thus fully described the nature, construction, and operation of my invention, I wish to say that I do not claim a dip-pipe outside the valve-chest; neither do I claim a perforated plug and a dip-pipe with one or more openings for the gas to pass through; but

What I claim, and wish to secure by Letters Patent, is—

1. An automatic dip-pipe seal and valve combined in the same chest, the gate or plug of the valve being arranged so as to close the direct passage only, without at any time closing the dip-pipe, for the purpose as fully set forth and described.

2. The construction and arrangement of the plug *g*, as described, with the upper side *s* curved sloping toward the dip-pipe *k*, in a manner and for the purpose set forth.

3. The soft-metal guides *h h* and *n*, in combination with a sliding plug, *g*, for the purpose as herein fully set forth and described.

WILLIAM GIBSON.

Witnesses:

CHS. H. HUNT,
JOHN L. TUCKER.

(37.)