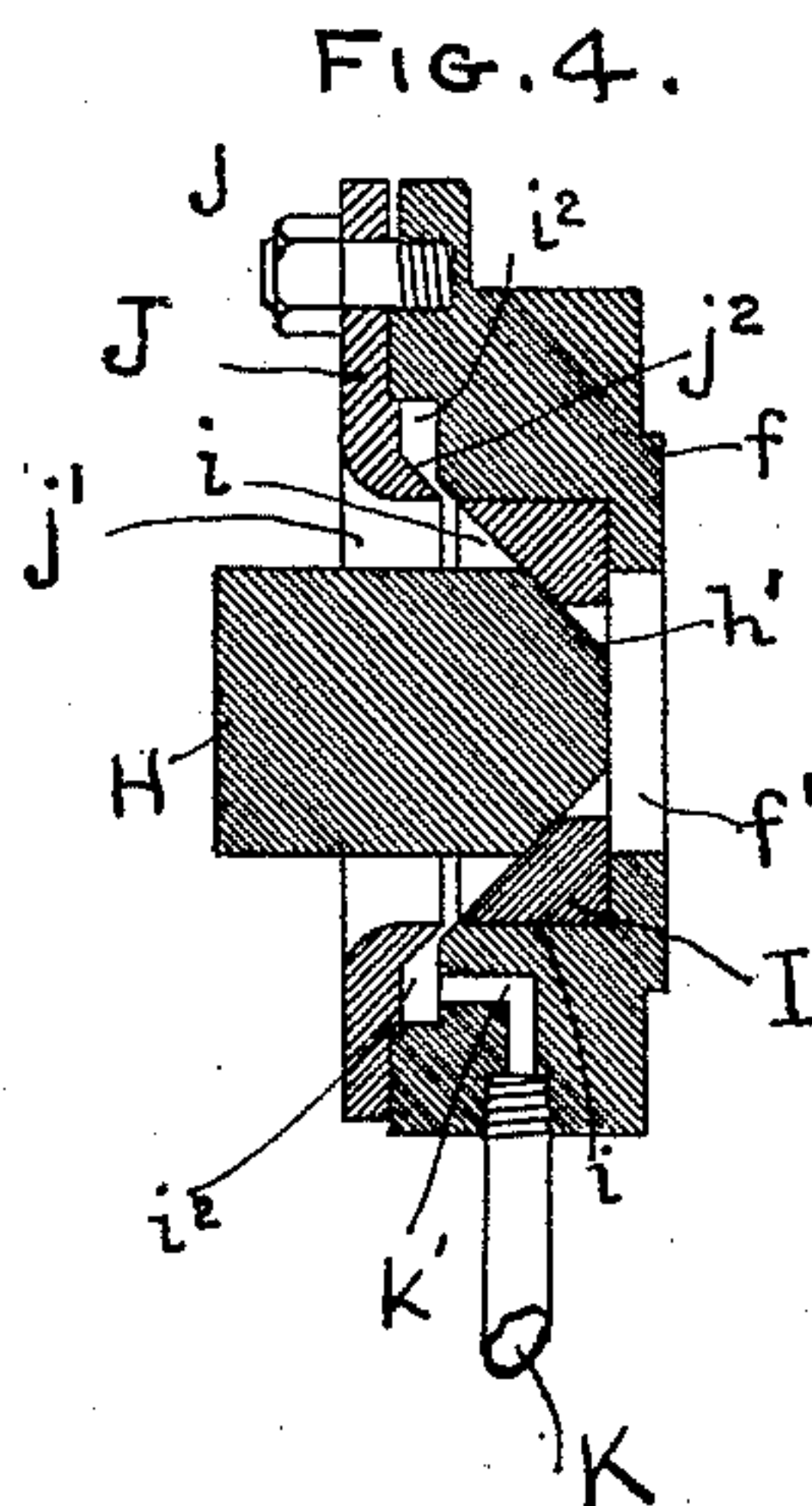
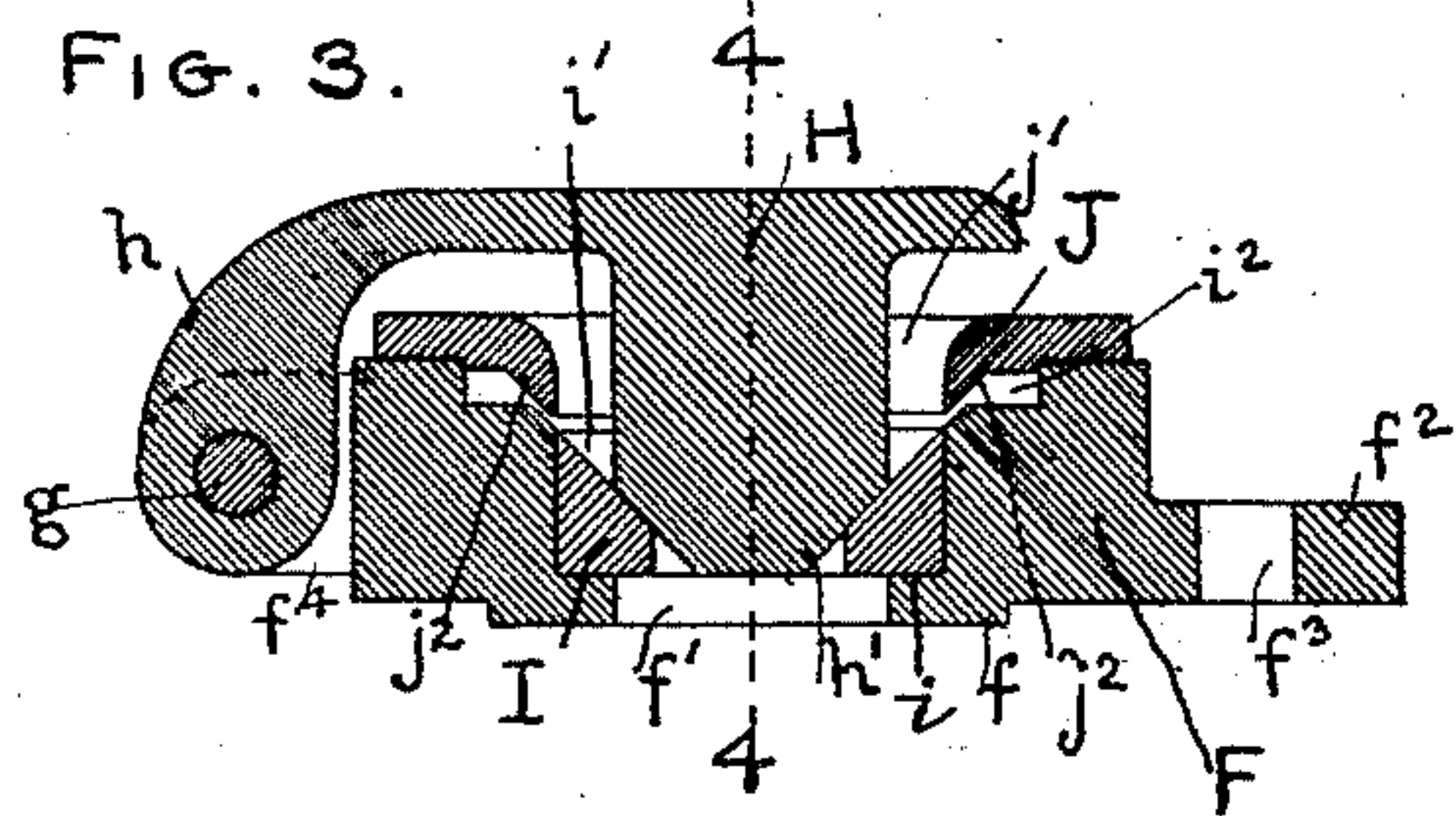
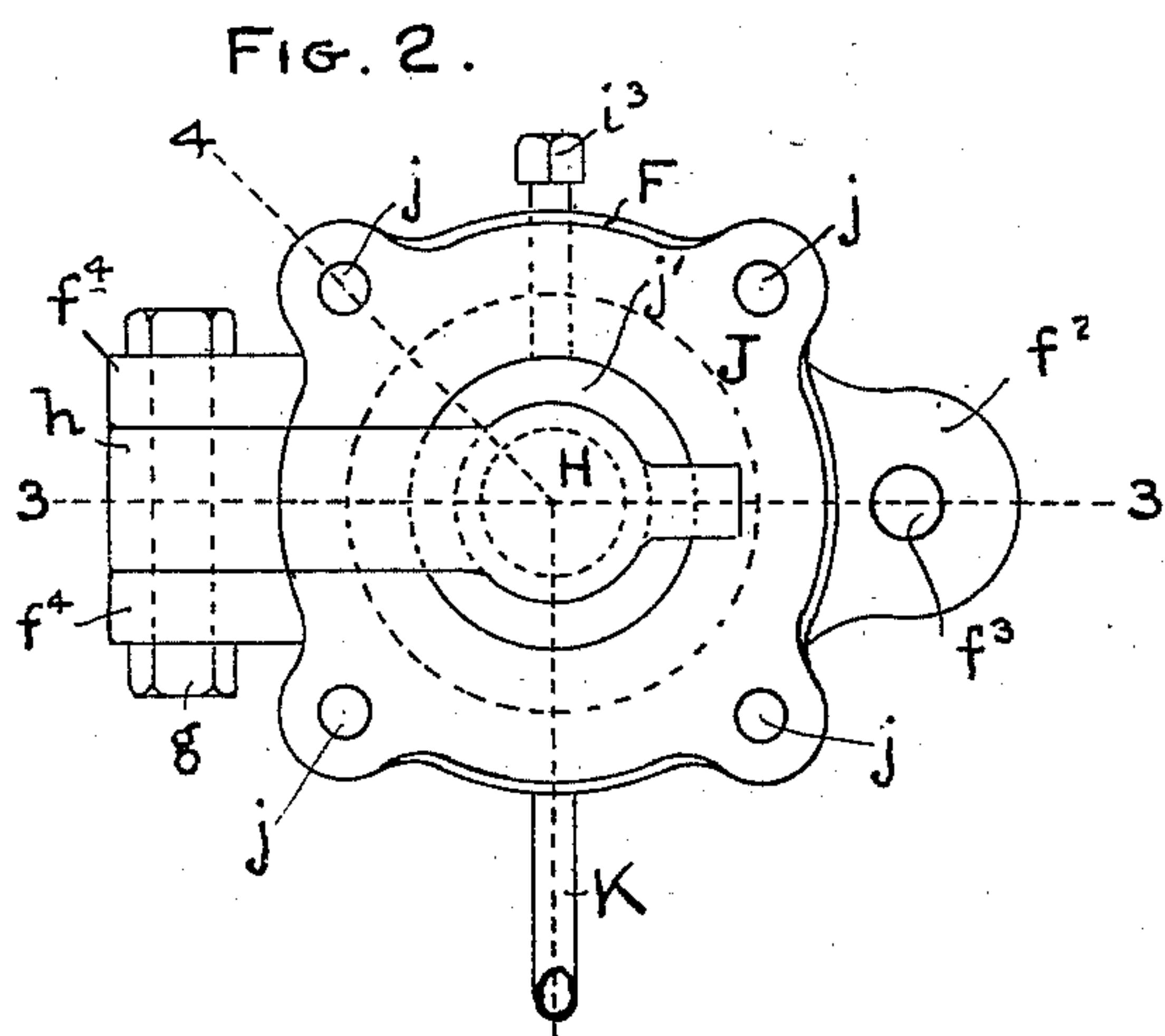
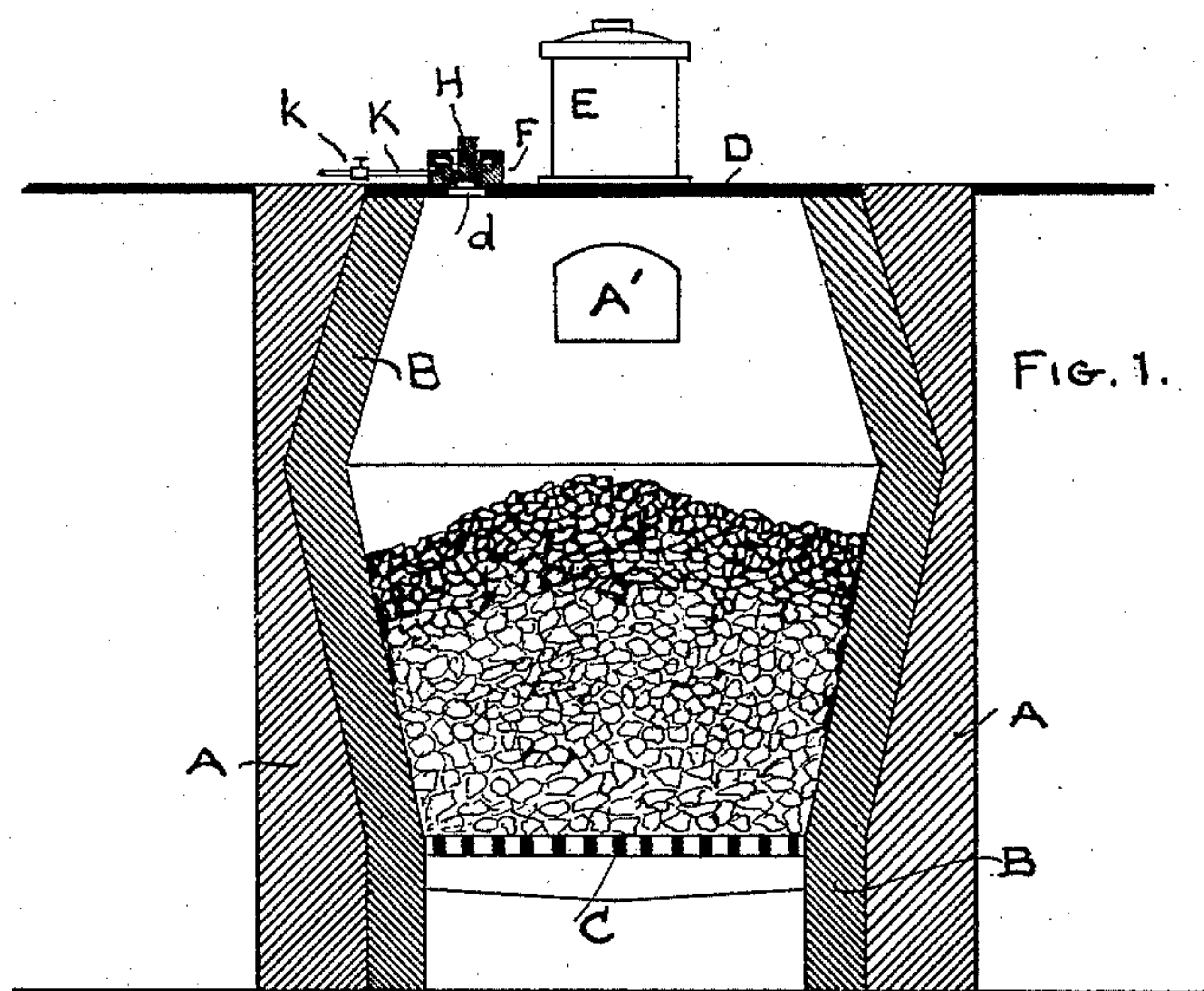


(No Model.)

G. W. GOETZ.
POKE HOLE FOR GAS PRODUCERS.

No. 444,631.

Patented Jan. 13, 1891.



WITNESSES.
Harry Hyatt.
Wm Klug

INVENTOR.
George W. Goetz
by H. G. Underwood
ATTORNEY.

UNITED STATES PATENT OFFICE.

GEORGE W. GOETZ, OF MILWAUKEE, WISCONSIN.

POKE-HOLE FOR GAS-PRODUCERS.

SPECIFICATION forming part of Letters Patent No. 444,631, dated January 13, 1891.

Application filed August 27, 1890. Serial No. 363,172. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. GOETZ, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Poke-Holes for Gas-Producers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to gas-producers employed in producing gas for use in furnaces; and my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described, and pointed out in the appended claims.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a transverse vertical section of a gas-producer having my improvements applied thereto. Fig. 2 is a detached plan view of my improved attachment for the poke-hole. Fig. 3 is a cross-section of the same on the line 3 3 of Fig. 2. Fig. 4 is an irregular cross-section of the same on the line 4 4 of Figs. 2 and 3.

The inflammable gas which is largely used as the fuel for furnaces is usually produced in special producers forming, for the sake of economy, part of the furnace plants. Charges of gas-producing coal are fed into these producers and are ignited and gasified under the action of an air-blast. During the gasifying action it is necessary to frequently stir the charges of coal in the producers, so as to avoid the formation of holes in the bed of fuel and to thereby insure the production of the maximum quantity of good gas. The action of the blast causes a pressure of gas within the producers, and consequently when the poking-bars are inserted through the poke-holes quantities of the gas escape. This escape of gas is very detrimental to the health and efficiency of the workmen and is a prolific source of annoyance, if not of danger, in the production of the gas, not to speak of the waste of gas.

The object of my invention is to effectually prevent all escape of gas during the poking or stirring of the charges, and also to provide means for effectually sealing the poke-openings during the intervals between the poking

or stirring of the charges. These objects I attain by virtue of the construction which I will now proceed to describe.

Referring to the drawings, A designates the exterior wall or casing of the gas-producer, said wall being of brick or masonry work, and B designates the refractory lining of the interior of the producer. Within the lower part of the chamber of this producer is located a suitable grate C, and at the upper part of the wall of the producer is an opening A', through which the gas passes on its way to the furnace. The top of the producer is covered by a plate D, upon which rests a hopper E, through which coal is introduced into the interior of the producer. An aperture *d* is formed through the top plate D at one side of the hopper E, and through this aperture is passed the poker or poke-bar by which the charges of coal within the producer are stirred to effect a more complete production of gas.

It is to be understood that the combustion of the charges of coal is effected by means of an air-blast blown in beneath the grate C, and it is obvious that this causes a compression of gas in the upper part of the producer. Consequently when the aperture *d* has heretofore been opened for poking a considerable quantity of the gas has escaped through the opening *d*. To prevent this escape of gas I provide a frame F, which has on its under side an offset *f*, formed to fit into the opening *d* and provided with a central opening *f'*, which, when the device is in position, comes into axial alignment with the said opening *d*. At one side this frame is formed or provided with an ear or extension *f*², having a hole *f*³ to receive a bolt or pin, which enters the top plate D, and thus secures the frame F in position. At its opposite side the frame F is formed or provided with a pair of lugs *f*⁴ *f*⁴, through which extends a bolt or pintle *g*, and this pintle also extends through the outer end of an arm *h*, which is interposed between the lugs *f*⁴, thus constituting a hinge. The opposite end of the arm *h* carries a downwardly-extending plug H, for a purpose to be presently explained. In the upper side of this frame F is formed a cavity *i*, within which is placed a removable ring I, which is retained in position by a set-screw *i*³, extending through

the frame F, and the upper surface of this ring is formed with a central conical depression i' , which forms the seat for the conical lower end h' of the plug H. An annular recess i^2 is formed in the upper side of the frame F and communicates with the recess i' in the ring I when the parts are properly assembled, and over this recess extends a deflector-plate J. This plate is secured upon the frame F by four bolts j , and is formed with a central opening j' , the under margin j^2 of which is inclined inwardly and downwardly, as shown in Figs. 3 and 4, leaving an annular orifice between the said margin j^2 and the adjacent upper surface of the frame F around its central opening, said orifice forming a downwardly-inclined annular jet-opening for the steam or fluid under pressure admitted by the pipe K, next described.

K designates a steam-pipe, which is provided with a valve k , and which is also inserted at one end into one side of the frame F, and which communicates with the outer end of a steam-channel k' in the frame, the opposite end of which communicates with the recess i^2 , before referred to.

The operation of the above-described structure is as follows: When it is necessary to poke or stir the coal in the producer, the plug is lifted up out of its seat on the ring I, and the steam-pipe valve k is opened. The jet of steam is deflected by the margin j^2 of deflector-plate J downward into the poke-opening, and its pressure, acting against the gas-pressure within the producer, completely prevents any escape of gas from the poke hole or opening. The poker or poke-bar is inserted into the opening and the coal is thoroughly stirred, after which the poker is withdrawn and the plug H is again closed down into its seat upon ring I, steam having been shut off by closing valve k as the poker was being withdrawn. During the operation of stirring the coal the poker bears repeatedly against the ring I, and it is for this reason that said ring is made removable. As soon as the ring becomes worn so that the plug-seat is no longer true a new ring can be easily substituted for the worn ring. It will thus be seen that I have devised a simple and efficient arrangement for the poke-holes of this class of gas-producers, and one which entirely prevents all escape of gas through the poke-hole.

It is obvious that while I have shown and described my improvements as applied to ver-

tical gas-producers the form and arrangement of the producer, as well as the relative location of the poke-hole, may be varied without departing from the essential spirit of my invention. It is also obvious that while I have described the recesses and openings of my device as of circular form and the part I as a ring such forms may also be varied without exceeding the spirit of my invention, and also that other fluid under pressure (such as compressed air) may be used in place of steam, as described.

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

1. An appliance for preventing the escape of gas from the poke-holes of gas-producers, comprising a frame arranged to be connected to a steam or fluid pressure generator and over the poke-opening and having a centrally-perforated and shouldered offset formed to fit into the said poke-opening, a plug-seat resting on the shoulder of said offset, a centrally-perforated deflector-plate resting on said frame and having an inwardly and downwardly inclined under margin, a closing-plug hinged to the frame, and a jet-opening arranged to discharge steam or fluid under pressure into the poke-opening against the gas within the producer, substantially as set forth.

2. The combination, with a gas-producer, of a frame secured upon its poke-hole, said frame being connected to a steam or fluid pressure generator and having a downwardly-inclined annular jet-opening arranged to discharge steam or fluid under pressure into said poke-opening against the gas within the producer, substantially as set forth.

3. The combination, with a gas-producer, of a frame, a removable seat contiguous to the poke-opening of the frame, a deflector carried by the frame, a duct for steam or fluid under pressure opening beneath the deflector, and a closing-plug hinged upon said frame, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

GEORGE W. GOETZ.

Witnesses:

H. G. UNDERWOOD,
WM. KLUG.