

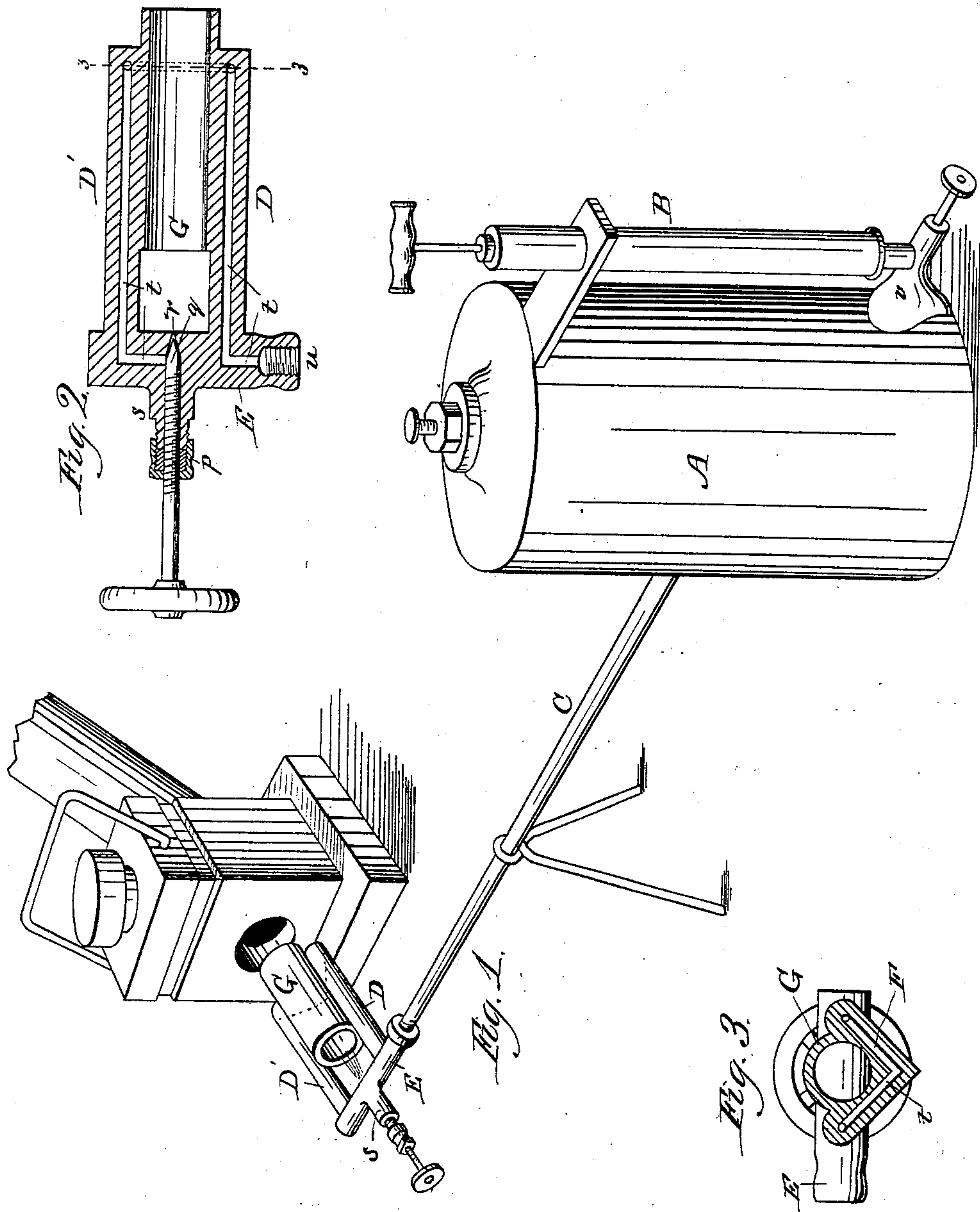
(No Model.)

J. HOSKINS.

HYDROCARBON GAS BURNER FOR BLAST FURNACES AND OTHER PURPOSES.

No. 267,431.

Patented Nov. 14, 1882.



WITNESSES—
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UNITED STATES PATENT OFFICE.

JOHN HOSKINS, OF CHICAGO, ILLINOIS.

HYDROCARBON-GAS BURNER FOR BLAST-FURNACES AND OTHER PURPOSES.

SPECIFICATION forming part of Letters Patent No. 267,431, dated November 14, 1882.

Application filed May 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN HOSKINS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Hydrocarbon-Gas Burners for Blast-Furnaces and other Purposes; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to
10 the accompanying drawings, of which—

Figure 1 is a perspective view of my apparatus as applied to an assay-furnace; Fig. 2, a central horizontal section of the gas generator and burner; and Fig. 3, a cross-section of the
15 same, taken on the line 3 3, Fig. 2.

My invention relates to the class of apparatus in which, for the purpose of producing or accelerating combustion in a blast or other furnace, a liquid hydrocarbon is forced into a
20 close chamber, vaporized or gasified therein by means of heat, the vapors or gases in a stream under pressure caused to commingle with atmospheric air, the mixture ignited, and the resulting flame directed upon the point desired;
25 and the essential feature of my invention lies in the peculiar construction of my combined gas generator and burner, all as hereinafter more fully set forth.

In the drawings, A is a reservoir, and B an
30 air-pump attached thereto. No particular description of this device is here necessary, as it is well known in the art. The construction is such that the tube *v*, connected to the bottom of the air-pump, passes up the interior of the
35 reservoir nearly to the top of the same. The reservoir is filled with a liquid hydrocarbon (generally gasoline) to any point not above the top of the internal tube from the air-pump, and thus the operation of the said pump fills the
40 reservoir above the liquid with compressed air.

C is a pipe leading out of the reservoir near its base, and it is advisable to provide it with a suitable cut-off valve close to the reservoir. By pumping air into the top of the reservoir
45 and opening the valve the liquid is forced rapidly in any desired quantity through the pipe C to the generator and burner, a particular description of which is as follows: A substantial casting is formed, preferably of brass, comprising two parallel bars, D D', having at their
50 rear ends the cross-piece E, and at their for-

ward ends the V-shaped connection F, passing under a large tube, G, lying between the bars D D' and projecting beyond the forward ends of the same, but falling short of the cross-piece
55 E at its rear end, as shown, whereby an open space subsists between the two at this point. One end of the cross-piece E is threaded internally, as shown at *u*, to receive the end of the
60 pipe C, and from the inner end of this screw-thread a passage, *t*, extends to a point opposite the center of the bar D, then turns at a right angle and passes centrally through the
65 bar D to a point opposite the center of the V-shaped connection F, then centrally through the said connection to a point opposite the center of the bar D', then centrally through that
70 bar to a point opposite the center of the cross-piece E, then at a right angle along the said cross-piece to a point midway between the bars D and D'. An extension, *s*, projects backward from the cross-piece E, this extension being
75 hollow and communicating with the passage *t* at its terminus. The passage through the extension *s* is continued on the opposite side of the passage *t* in the form of a conical aperture,
80 *r*, in line with the center of the tube G, said conical aperture forming the seat of a conical valve, *q*. The extension requires to be suitably packed around the valve-rod, as shown at *p*.

From the foregoing description it will be seen that when the liquid hydrocarbon is forced by means of the air pump into the pipe C it enters the passage *t* and continues along the same
85 through the bar D, thence through the V-shaped connection F, thence through the bar D', and finally along the cross-piece E again from the opposite direction, and out through the conical aperture *r*. In order to gasify it in the first instance, external heat is applied to
90 the V-shaped connection F, (which may be conveniently done by suspending a small cup of ignited gasoline beneath it,) and as soon as it becomes apparent from the sound that the hydrocarbon is issuing from the aperture *r* in the
95 form of a gas it should be ignited between the cross-piece and the inner end of the tube G. As soon as this is done it blows through the tube G in the form of an intensely-hot flame, and thenceforth continuously gasifies the hydrocarbon by heating the V-shaped connection F.
100

In the drawings I have shown my burner as applied to a small crucible-furnace, H. This, however, is only one of its many applications, as it is equally adapted, when constructed on
5 a suitably large scale, for use with smelting-furnaces, and for all analogous purposes.

I have referred to the connection F throughout the specification as V-shaped. The shape, however, is not material, and the same results
10 would obviously follow if it were made curved or rectangular. It may also pass over as well as under the tube G.

My burner is not alone adapted for use with hydrocarbons impelled from the reservoir by
15 pneumatic pressure, as represented in the drawings, as the same results may be obtained in other ways—for example, by means of hydrostatic pressure, the reservoir being supported at sufficient altitude to give the requisite force
20 to the flow. This latter method may even be

found preferable to the air-pump when the device is employed on a large scale.

What I claim as new, and desire to secure by Letters Patent, is—

The self-generating hydrocarbon-gas burner 25 herein described, comprising the tube G, parallel bars D and D' on opposite sides of said tube, and extending backward beyond the end thereof, connection F at the forward end of said bars, crossing the tube G, and cross-piece E at
30 the rear of said bars; having the tubular projection s, conical aperture r, and valve q, said bars, cross-piece, and connection being provided with the continuous passage t, beginning
35 at one end of the cross-piece E and terminating at the valve q, substantially as described.

JOHN HOSKINS.

In presence of—

WM. H. DYRENFORTH,
JAS. A. BURKE.