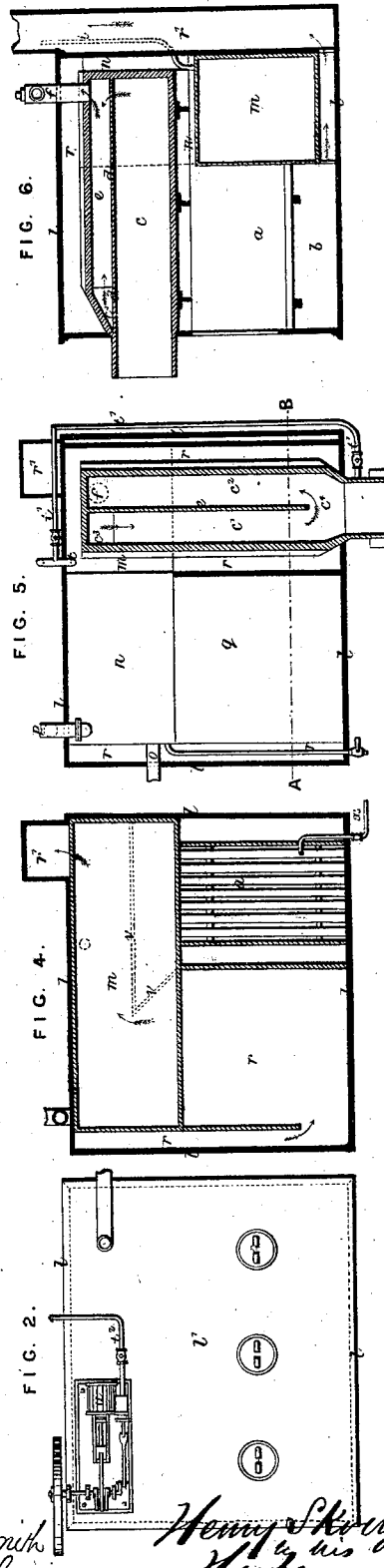
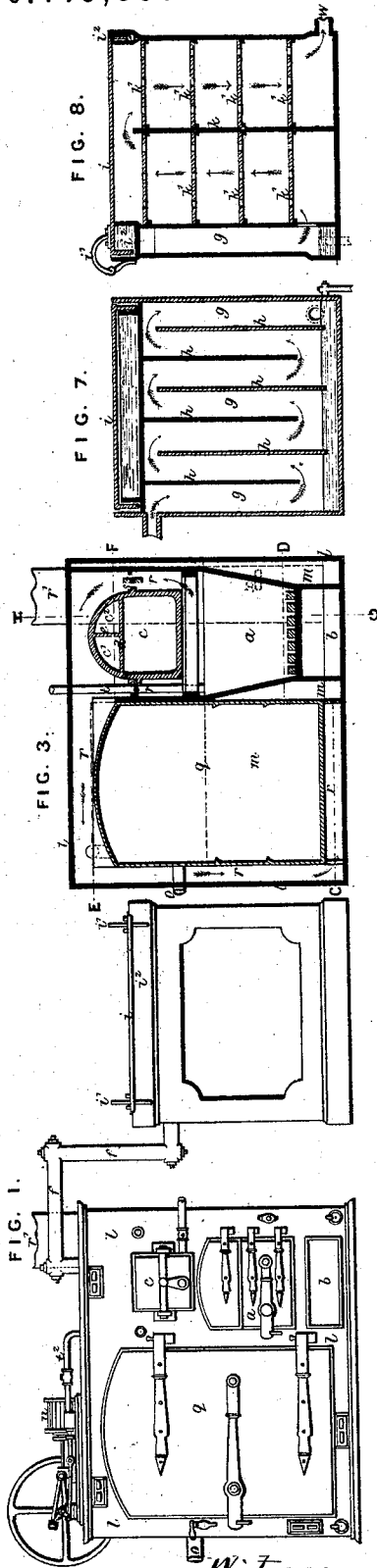


H. SKOINES. Domestic Gas-Apparatus.

No.149,533.

Patented April 7, 1874.



Harry Smith
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by his atty.
Houtens and Son.

UNITED STATES PATENT OFFICE.

HENRY SKOINES, OF LONDON, GREAT BRITAIN.

IMPROVEMENT IN DOMESTIC GAS APPARATUS.

Specification forming part of Letters Patent No. **149,533**, dated April 7, 1874; application filed December 16, 1873.

To all whom it may concern:

Be it known that I, HENRY SKOINES, of Argyle street, King's Cross, London, Kingdom of Great Britain and Ireland, have invented an Improved Combined Apparatus for Cooking, Heating, Generating Steam, and Making Gas, of which the following is a specification:

My invention has for its object a simple, compact, and economical apparatus for cooking food, heating liquids, generating steam, warming apartments, and making illuminating and heating gas.

My invention will be readily understood from the following description thereof, reference being had to the accompanying sheet of drawings, in which—

Figure 1 is a front elevation of my improved apparatus. Fig. 2 is a plan. Fig. 3 is a vertical section taken in the line A B of Fig. 5. Fig. 4 is a horizontal section in the line C D of Fig. 3. Fig. 5 is a horizontal section in the line E F of Fig. 3. Fig. 6 is a vertical section in the line G H of Fig. 3. Fig. 7 is a longitudinal vertical section of the condenser, and Fig. 8 is a transverse vertical section of the condenser and purifier.

The apparatus is constructed with a furnace or fire-place, *a*, having an ash-pit, *b*, below it, and a retort, *c*, above. The upper part of this retort is divided from the lower part by a horizontal partition, *d*, above which there is a vertical partition, *e*, which divides the upper part of the retort into two chambers, *c*¹ *c*². The chamber *c*¹ communicates at one end with the lower part or carbonizing compartment of the retort by an aperture or opening, *c*³, and at its other end by an aperture or opening, *c*⁴, with the chamber *c*². From the chamber *c*² a pipe, *f*, leads to a condenser, which consists of a chamber, *g*, provided with a number of transverse vertical divisions or baffles, *h*, so that the gas in passing through is compelled to pass (as indicated by arrows) several times, alternately, to the upper and lower parts of the condenser with which the purifier for purifying the gas is combined in such manner that a single lid, *i*, hinged at *i*¹, and provided with a suitable luting or liquid sealing at *i*², is made to cover both the condenser and the purifier. The purifier is constructed with a vertical par-

tion, *k*, at each side of which are arranged a number of perforated plates or shelves, *k*¹, the spaces between these plates or shelves being furnished with lime or other well-known purifying agents, in the usual manner. Within the lower part of the main casing *l* of the apparatus, is a steam-generator, *m*, which forms the rear wall of the furnace. Above this steam-generator, at one side, is the rear end of the retort, and at the other side (also within the main casing *l*) is arranged a circulating boiler or water-heater, *n*, which is provided with an inlet-pipe, *o*, and with an outlet-pipe, *p*. At the side of the furnace and retort is an oven, *q*, having flues *r* at its sides, as well as above and below it, the whole of the flues being within the main casing *l*. The flues *r* at each side of the retort are furnished with dampers *s*, running from front to back of the apparatus for regulating the direction of the products of combustion. *r*¹ is the chimney. *t* is a steam-pipe, one branch, *t*¹, of which conducts steam from the generator *m* to the front of the retort, when necessary to produce hydrogen gas for heating purposes, and the other branch, *t*², leads (in the arrangement shown) to a small engine, *u*, placed on the hot plate *v* of the apparatus, but the steam may be utilized for any other purpose.

The operation of the apparatus is as follows: The products of combustion from the furnace *a* pass up one or both sides of the retort over its top, then over the tops of the circulating boiler and oven, down between their outer sides, and the side of the main casing *l*, then toward the front bottom part of the oven, then under the oven and under the steam-boiler *m*, and away by the chimney *r*¹. *v* are baffle plates or guides, to prevent the too ready escape of the products of combustion, and to insure their utilization under the steam-generator. The lower chamber of the retort being charged with cannel-coal or analogous substances, the crude gases, vapors, or products therefrom, pass up into and through the heated chambers *c*¹ *c*², thereby converting the tar and oils into permanent gas. The whole of the gas passes by the pipe *f*, into and through the condenser in the direction indicated by arrows in Fig. 7, and thence through the purifier, as indicated by the arrows in Fig. 8.

From the purifier the gas (now ready for use) passes by a pipe, *w*, to any suitable gas-holder.

When it is desired to heat the apparatus by means of gas, in lieu of coal or other fuels such gas may be produced by passing steam through incandescent iron, coke, or analogous substances in the lower part of the heated retort; the resulting gases being caused to pass through the upper chambers *c*¹ *c*², and thence through the condenser and purifier into any suitable holder, from whence the gas may be fed by a pipe, *x*, or otherwise, to the furnace or fire-place *a* (containing incandescent fuel or some highly-heated substances) for use, the requisite quantity of oxygen to sustain combustion being admitted between the bars of the furnace, as usual. Gas produced, as last above described, may be used for other heating purposes.

I am aware it has been proposed to use a re-

tort in connection with an ordinary range, and I make no claim to such combination, nor do I claim the use of vertical baffle-plates in a chamber for condensing gas, or the employment of perforated plates with lime or other purifying-agents for purifying gas; but

I do claim as my invention—

1. The combination of the casing *l*, and the furnace *a*, retort *e*, generator *m*, circulating-chamber *n*, and oven *g*, when relatively arranged, as and for the purpose described.

2. The combination in a casing of the partition *n n* *k*, and perforated plates *k*, arranged in respect to each other, and to openings or passages *f w* in the casing, as and for the purpose set forth.

HENRY SKOINES.

Witnesses:

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