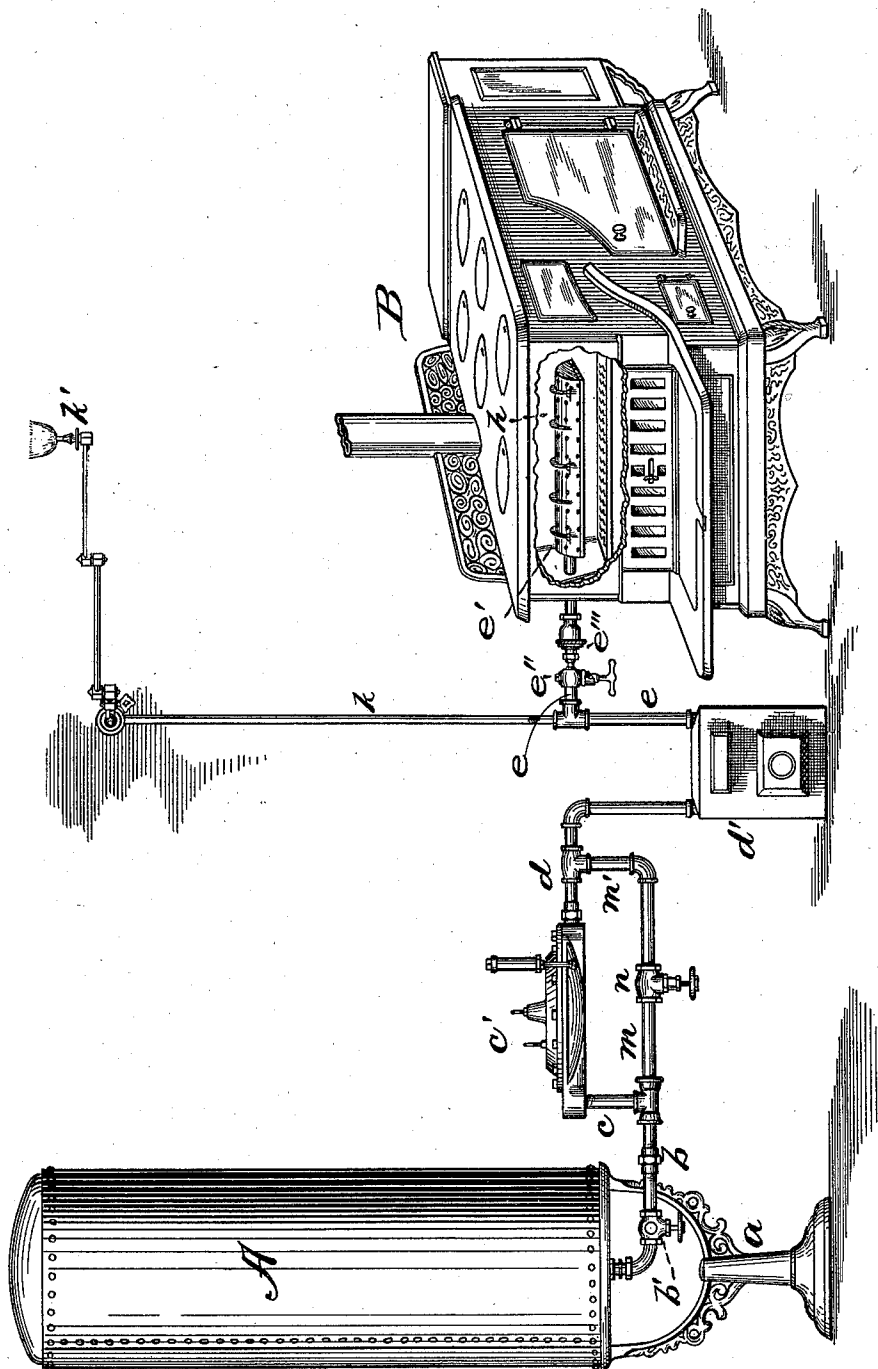


(No Model.)

L. S. CRANDALL.
GAS HEATING AND LIGHTING APPARATUS.

No. 545,851.

Patented Sept. 3, 1895.



WITNESSES:

H. A. Carhart
C. B. Kime

Lucy S. Crandall
by Smith & Denison
his

INVENTOR

ATTORNEYS.

UNITED STATES PATENT OFFICE

LUCIEN S. CRANDALL, OF PARISH, ASSIGNOR TO C. GODFREY PATTERSON,
OF NEW YORK, N. Y.

GAS HEATING AND LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 545,851, dated September 3, 1895.

Application filed December 5, 1892. Serial No. 454,051. (No model.)

To all whom it may concern:

Be it known that I, LUCIEN S. CRANDALL, of Parish, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Gas Heating and Lighting Apparatus, of which the following, taken in connection with the accompanying drawing, is a full, clear, and exact description.

My invention relates to gas-burning apparatus, and my object is to produce an apparatus comprising a combination of elements, by which, for instance, a stove can be supplied with gas for fuel and a house can be lighted, either separately or in unison, independent of and without any direct connection to any permanent source of gas-supply, and consisting of a tank in which gas is stored under pressure, and piping leading therefrom through a meter, if desired, into a hydrocarbon burner within a stove, such piping being provided with ordinary cut-off valves, an ordinary pressure-reducing valve, and an ordinary air-mixing valve, and also with means whereby, when the gas-pressure in the tank is reduced below a certain point, the flow of gas can be diverted or switched away from the reducing-valve and conducted around instead of through it.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawing, in which I show a plan perspective of my apparatus connected to a cook-stove and also to a gas-burner for lighting purposes.

A is a tank into which the gas is forced under pressure and stored, being afterward mounted detachably upon a suitable standard *a*, and also detachably connected to the education-pipe *b*, which is provided with a shut-off valve *b'*. From this pipe a branch *c* conducts the gas into the pressure-reducing valve *c'* of ordinary construction, whence the gas passes, through the education-pipe *d*, into the meter *d'* of ordinary construction, whence the education-pipe *e* conducts the gas to the burner *e'* of ordinary construction, mounted in the combustion-chamber *h* of the cooking-stove B or other heater, this latter pipe being also

provided with a shut-off valve *e''* and with an air-mixing valve *e'''* of any ordinary construction like those used for mixing air with natural gas. When the meter is omitted, then the pipes *d* and *e* are directly connected. I also show a pipe *k* leading to the burner *k'* for lighting purposes, and the pipe *k* may be the main supply-pipe for a system of piping for lighting purposes.

When the pressure in the tank becomes reduced, so that the use of the pressure-reducer is not necessary or becomes of insufficient strength to maintain a flow through said reducer, I divert or switch off the flow of gas away from the reducer by means of the pipe *m*, connected to the pipe *b*, and the branch *m'*, connected to the pipe *d*, by simply opening the shut-off valve *n* in the pipe *m*, and thereafter the gas will flow through said pipes *b*, *m* and *d* to the meter, or through the pipes *b*, *m*, *d*, and *e* direct to said burner or lighting system when the meter is omitted.

The devices last above described, in combination with a detachable and portable gas-storage tank, constitute an important feature of my invention, for the reason that when the gas in the tank becomes so reduced as not to flow through the pressure-reducer the person having charge of the heater or the lighting apparatus will, by the extinguishment of the flame, be notified of the low condition of the gas in the tank, whereupon such person in charge can open the by-pass valve *n* and thus use up the gas remaining in the tank under low pressure, which gas will last long enough to give ample time for the person in charge to provide another full tank.

It will be readily seen that this apparatus can also be used for lighting purposes only with or without a meter.

It will be readily seen that these tanks can be charged with natural gas or any other hydrocarbon gas, and thence transported long distances, as to places where coal is very dear, and supplied to families much cheaper than coal or wood.

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

In a gas-burning apparatus, the combination with the gas-burner proper, of a portable gas-storage tank for containing gas under

high pressure, a pressure-reducing device, a
pipe detachably connected to said tank and
also connected to said pressure-reducing de-
vice, a pipe connecting the reducing device
5 and the burner, and a by-pass switch pipe
and valve connected with the tank and with
the burner for passing the gas by or around
the pressure-reducing device, whereby, when
the gas in the tank becomes reduced in press-

ure, the attendant will be notified and given 10
time to provide a full tank, as set forth.

In witness whereof I have hereunto set my
hand this 29th day of November, 1892.

LUCIEN S. CRANDALL.

In presence of—

C. W. SMITH,

HOWARD P. DENISON.