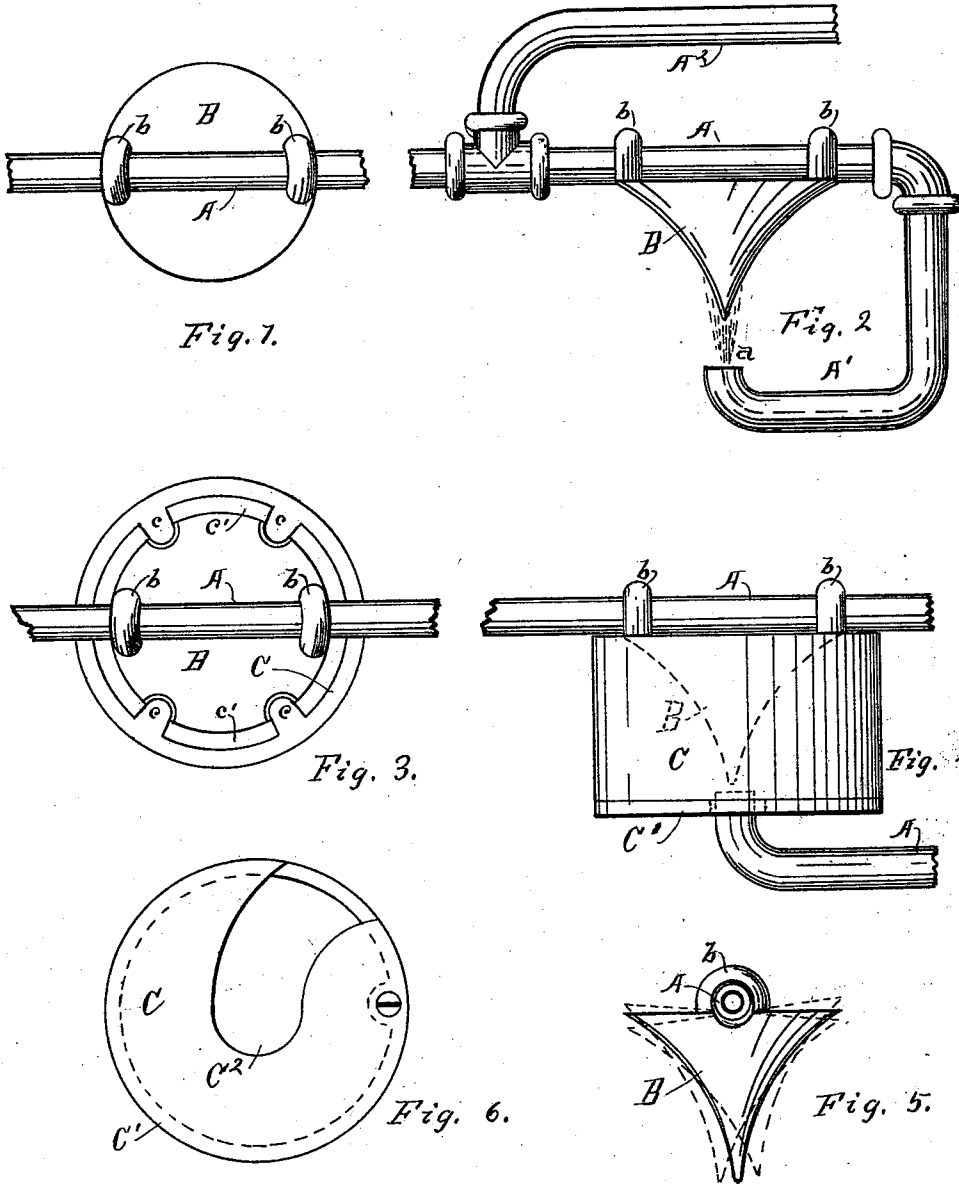


(No Model.)

H. CLUFF.
HYDROCARBON BURNER.

No. 527,012.

Patented Oct. 2, 1894.



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UNITED STATES PATENT OFFICE.

HARVEY CLUFF, OF GRAND RAPIDS, MICHIGAN.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 527,012, dated October 2, 1894.

Application filed July 13, 1893. Serial No. 480,395. (No model.)

To all whom it may concern:

Be it known that I, HARVEY CLUFF, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

My invention relates to improvements in hydrocarbon burners for use in cooking and heating stoves, and its objects are: first, to spread the flame and allow it to distribute the heat advantageously, where needed in the stove; second, to protect the supply pipe from direct exposure to the heat of the burning vapor; and, third, to render the burner convertible for winter or summer use. I attain these results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a plan of the spreader as attached to a supply pipe. Fig. 2, is an elevation of the same. Fig. 3, is a plan of the spreader, with a jacket surrounding it to concentrate the heat for summer use. Fig. 4, is an elevation of the same. Fig. 5, is an elevation of the spreader showing an end section of the supply pipe, and manner of shifting the spreader to divert the flame, and Fig. 6 is a bottom plan of the jacket when closed.

Similar letters refer to similar parts throughout the several views.

My spreader consists of an inverted cone B, loosely supported upon the supply pipe A, by ears *b*, with its apex near to, and directly over the vapor jet *d*, at the end of the feed pipe A' so that the escaping vapor will be thrown out in a thin sheet of flame over the surface of the cone and will spread as it passes over the base into a thin annular sheet upon the lower surface of whatever is about to be heated.

When using my burner as a heater I simply use the spreader, as shown in Figs. 1 and 2; but when desiring to concentrate the heat, for cooking purposes only, and to avoid diffusing it throughout the room, I cover the spreader with a jacket C which is supported by arms *c*, of any desired size or number, projecting over, and resting in receptacles in the upper surface of the spreader, as indicated in Fig. 3, with apertures *c'* of any desired size for the free passage of the burning vapor between the jacket and the base of the spreader. By this means the heat of the burning vapor is concentrated upon the ob-

ject being heated, and its diffusion, to heat the room, is averted so that the burner is thereby rendered available for summer use, while with the use of the uncovered spreader the diffusion of heat is sufficient to thoroughly heat an ordinary room in the coldest winter weather.

To render my jacket fully available I make it long enough to pass below the top of the feed pipe at *d*, and pivot to it a cover C' having an opening C² for the free passage of the pipe A so that it may be swung open, or closed to allow of the admittance of more or less air as desired.

If it is desirable to direct the burning vapor to one side or the other of the spreader, it may be done by throwing the point of the spreader to one side or the other of the jet, as indicated by the dotted lines B' B' in Fig. 5.

I prefer that my supply pipe A² enter the stove longitudinally of the fire box to the center thereof where the end is turned down at right angles to the supply pipe A, which runs parallel with the pipe A², and has the outer ends bent down as at A' in Fig. 2, the spreader being supported upon the pipe A immediately between the pipe A² and the jet *d* so that the flame in passing over the spreader will heat the pipe A² and greatly rarefy the oil before entering the pipe A, where it is still further heated so that by the time it has reached the jet at *d* it has been reduced to very nearly a gaseous state. The oil is forced through these pipes under pressure so that a steady flow is insured from the jet at *d*.

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

The combination, in a hydrocarbon burner, of supply pipes, an inverted cone suspended therefrom, a feed pipe having its discharge jet directly under, and near to the apex of said cone, a jacket around said cone with apertures for the free passage of the burning vapor and a cover pivoted to the bottom of said jacket for the regulation of the supply of air to said burning vapor, substantially as specified.

Signed at Grand Rapids, Michigan, this 10th day of July, 1893.

HARVEY CLUFF.

In presence of—

ITHIEL J. CILLEY,
CHAS. F. ATTWOOD.