(No Model.)

W. S. CHILTON.

HYDROCARBON BURNER FOR STOVES, FURNACES, &c.

No. 504,667. Patented Sept. 5, 1893.

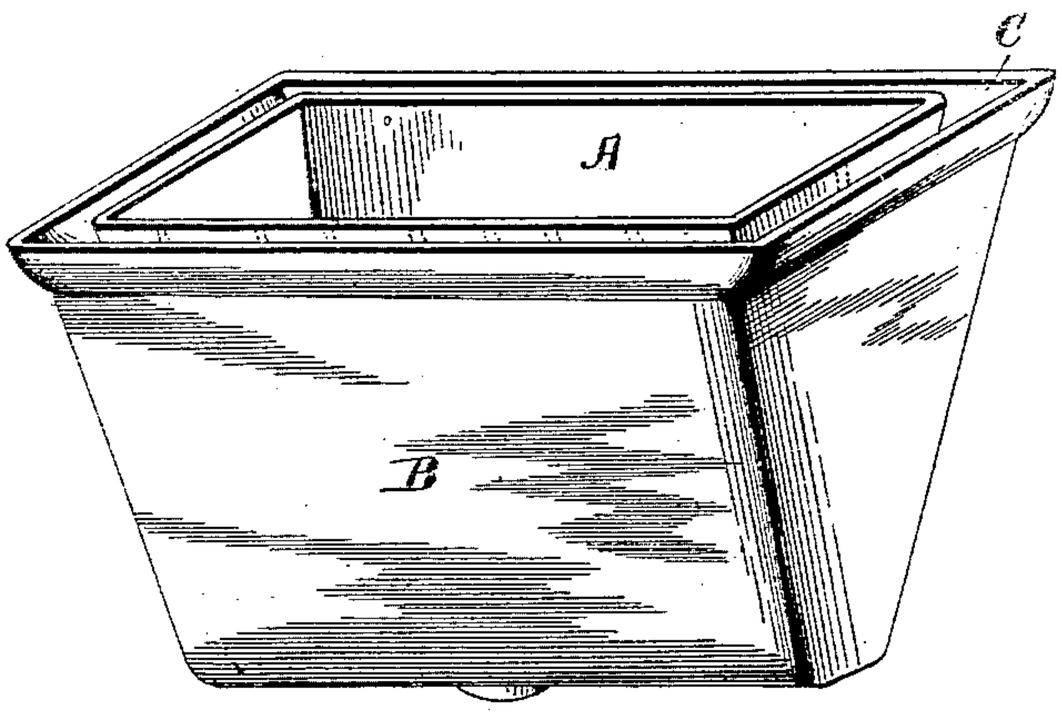


Fig. 1.

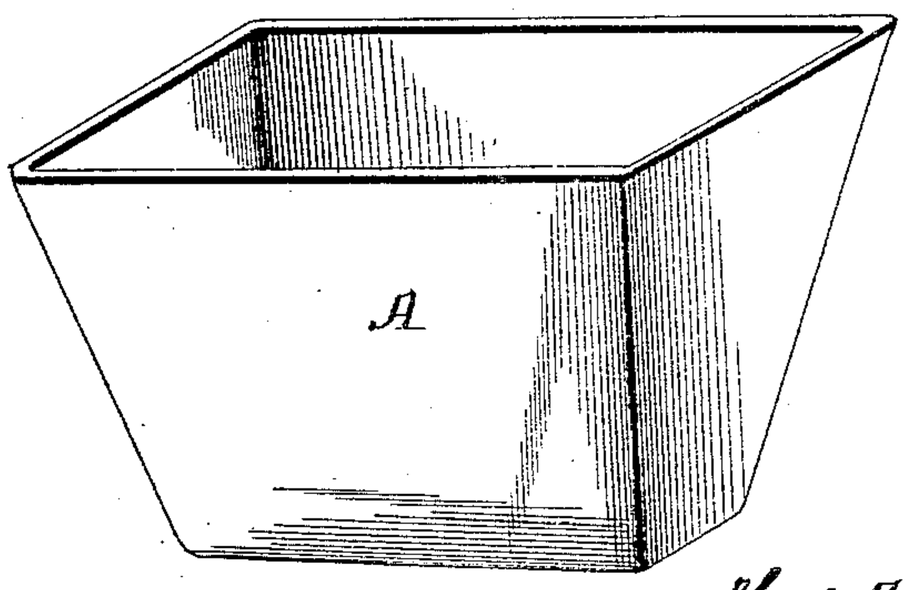
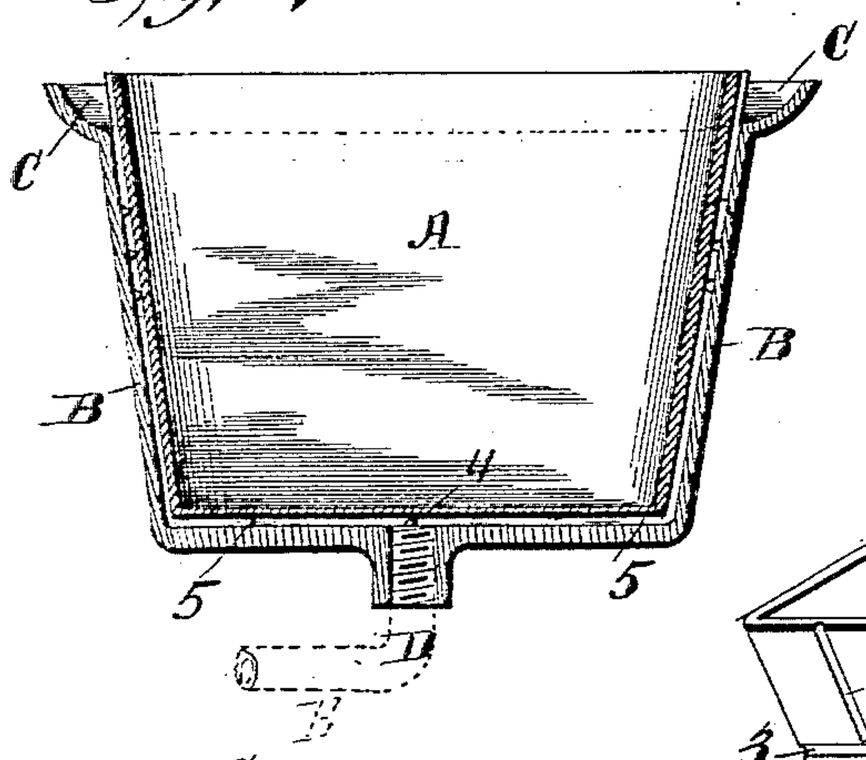


Fig. 4.

Fig. 2.



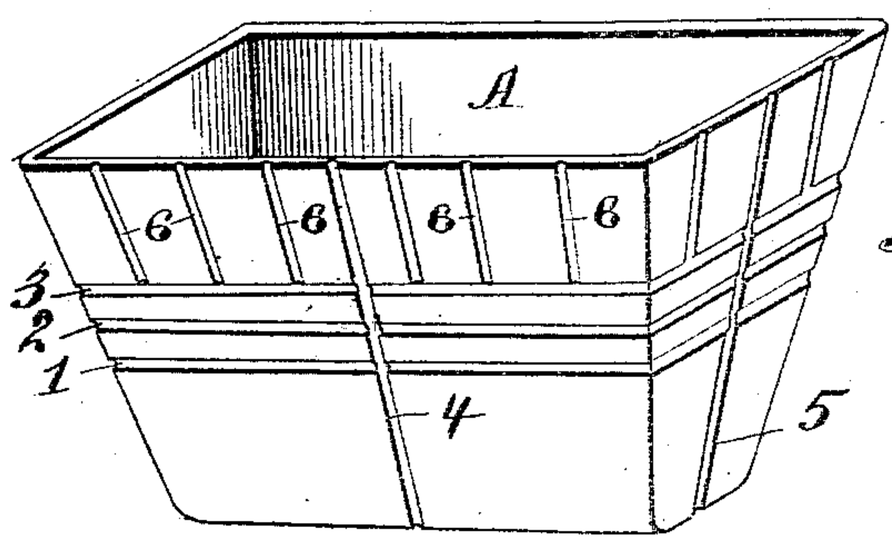


Fig. 6.

Fig. 3.

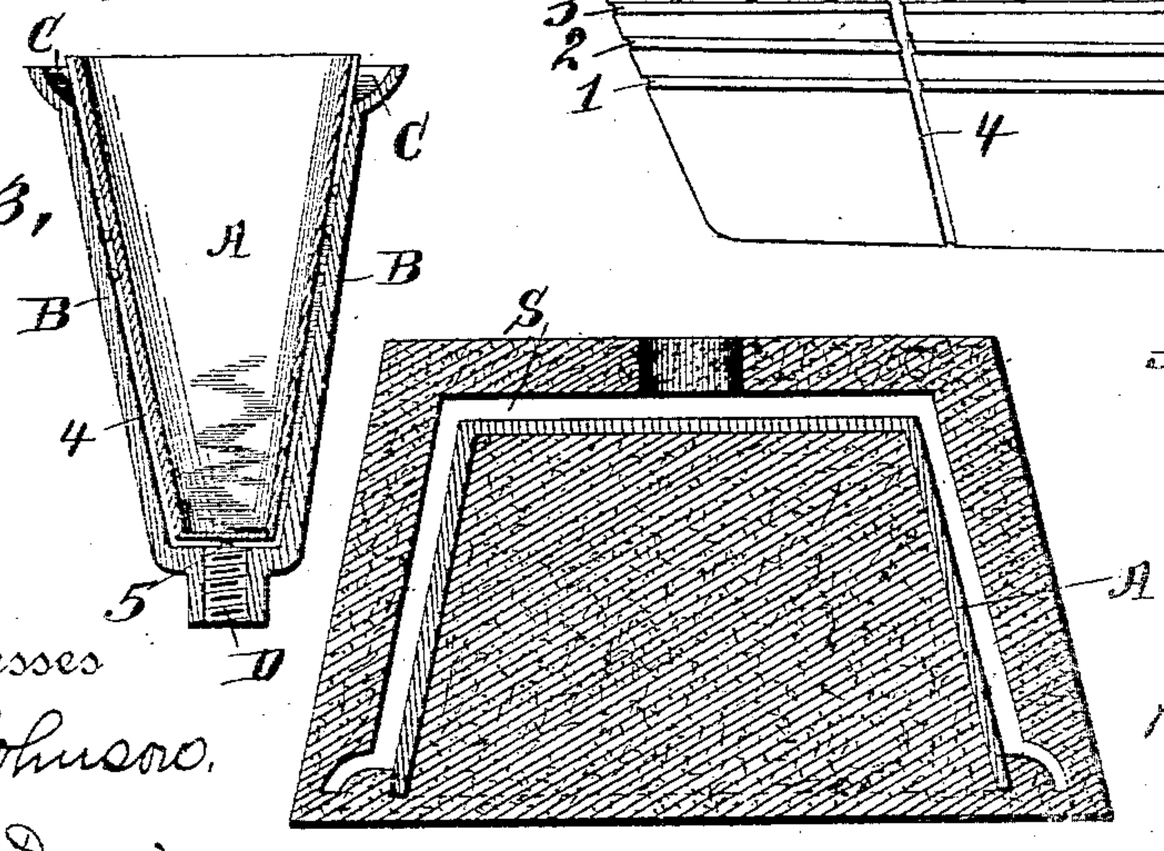


Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM S. CHILTON, OF DAYTON, OHIO.

HYDROCARBON-BURNER FOR STOVES, FURNACES, &c.

SPECIFICATION forming part of Letters Patent No. 504,667, dated September 5, 1893.

Application filed May 15, 1893. Serial No. 474,276. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. CHILTON, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners for Stoves, Furnaces, &c., of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to petroleum or hydrocarbon vapor burners for stoves, furnaces and the like, and the method of producing said burners.

The object of the invention is to make a good burner at small cost, and particularly to produce a petroleum burner in which the vapor may be generated or produced in grooves or channels between strong metallic shells, whereby the strength of the shells may be such as to endure combustion and prevent explosion; also to make a burner of the kind described, in which the hydrocarbon shall be vaporized in small channels or grooves between two close fitting shells, whereby the space permitted for the fluid and gas developed therefrom between the shells is very small, and the quantity of fluid or gas in the mixing channels is too small to be dangerous; also to produce a petroleum or vapor burner consisting of two closely fitting shells with grooves or channels between, one of the shells being chilled or hardened; also to produce a petroleum burner of cast metal consisting essentially of two close fitting parts, in which one of the parts shall serve as a partial mold or pattern for the other, so as to insure a close joint between the parts; also to improve burners of the character described and the method of producing them.

Figure 1 is a perspective view of a petroleum or hydrocarbon burner, illustrating one form of my invention. Fig. 2 is a longitudinal section of same, a little one side of the center. Fig. 3 is a central cross section. Fig. 4 is a perspective of the inner shell, prior to the cutting of the mixing grooves. Fig. 5 is a section of a mold showing the inner shell in the mold, and acting as a core on which the outer shell is cast. Fig. 6 is a perspective of the inner shell complete.

I have illustrated a rectangular burner but other forms may be used.

The drawings are diagrammatic, not precise.

A, denotes the inner shell. This as illustrated is a hollow truncated pyramid. The shell A is preferably cast hollow, of iron, steel, or other suitable metal, but preferably iron. After casting if necessary the outer surface of shell A is ground or otherwise finished up to a smooth surface. As the shell A, is intended to act as a core of the mold, it is preferable that it should taper, so as to draw easily after casting. It will be understood that other forms than that of the pyramid will have the same advantage as to easy removal from the casting if made tapering. The shell A having been brought to a smooth surface, is used as a core in a mold M, and by means of a suitable pattern a space, S, is left in the mold for the outer shell B. The outer shell B, preferably of iron, is then cast in the mold, and will fit closely to the inner shell A, making a very tight joint between the two. Shell B is preferably of the same general shape as shell A, but has a trough C and lug D for purposes to be explained. By this method of casting, the outer shell B will be chilled, so that without extra expense it will be very hard and durable. At the same time the inner shell A will be heated and partially tempered, by the action of the hot metal, so that it is softened and toughened. The two shells have thus different characteristics, but each is well adapted for its use. After the outer shell B, is cast, the two shells are taken from the mold, and taken apart one from the other. If properly constructed the two shells can readily be taken apart, but when placed together will fit with a gas tight joint. After the shell A is removed from shell B, grooves 1, 2, and 3, (more or less in number) are cut, planed, or ground in the outer surface and extended entirely round the shell A. These grooves are shown parallel with the top and bottom of the shell A. Grooves 4, and 5, are made in the shell, extending across the outer surface of the bottom, and from top to bottom along the sides. These grooves will be of size proportioned to the capacity of the burner, but generally will not be more than five or ten one-hundredths of an inch in width or depth for a stove burner, although the area may be increased for fur-

naces. A considerable number of vertical or nearly vertical grooves 6 will be formed in the exterior surface of shell A, connecting the upper groove 3 with the upper edge of the shell. The shell A is about high enough to extend to the top of shell B or a little above the same when placed therein, and the bead or trough C on the outer shell thus extends round the upper edge of the shell A, when the two are turned together, as in Figs. 1, 2, 3. The lug D of shell B is bored or cored and tapped for the reception of a supply pipe, indicated in dotted lines E, Fig. 3. Now supposing the shells to be put together to form the upright burner, (Figs. 1, 2, 3,) and crude or refined petroleum admitted by pipe E until it rises to a little above the groove 1, at which height the feed supply should normally maintain the supply. Then the inner shell may be heated by igniting a small quantity of petroleum, gasoline, or other inflammable substance in the hollow central space of shell A. The heat thus developed soon vaporizes the thin film of oil in the groove 1, and the vapor so generated passes along the grooves 3 and 6, and conveys the liquid hydrocarbon or the gas in small quantities along said passages to the trough C, where the vapor is ignited. The vapor burns with great steadiness and great uniformity all along the trough C, and however rapidly the gas may be produced, the combustion will not follow down the passages 6, to a sufficient extent to cause explosion. The open chamber in shell A will receive any drip that may fall into the burner, so that the device tends to cleanliness about the stove or furnace. The inner shell may be readily removed and the entire device cleaned at any time.

I have described the outer shell as chilled, thus giving it a hardness which will tend to durability, and the inner shell as unchilled, so that the grooves may be cheaply made therein, as being the most desirable form in which I have so far made the burner. But I would consider a reversal of the parts, or of the mode of casting, as a mere mechanical expedient, and the equivalent of what I have described.

I wish it to be understood that modifications may be made without departing from the spirit of my invention.

What I claim is—

1. A hydrocarbon burner consisting essentially of two close fitting metallic shells with oil passages between, the passages being in the metal of one of the shells, and below the general level of the surface thereof, and the other shell forming one closing wall of the grooves, all substantially as described.

2. A hydrocarbon burner consisting essentially of two close fitting metallic shells, one of said shells being a tapered core inside the tapered cavity of the other, and having grooves in the body of one shell closed on one side by the wall of the other shell, substantially as described.

3. A hydrocarbon burner consisting essentially of two metallic shells, the inner shell being a tapered frustum with grooves in its outer surface, the outer shell having a cavity which closely fits the outer surface of the inner shell excepting the grooves, and having a supply orifice, substantially as described.

4. The method of making a hydrocarbon burner which consists in casting a metallic shell in a mold and using it as a chill piece against which a second close fitting shell is cast, and finishing the burner by forming grooves in the unchilled shell, so that the grooves are between the shells and in the body of one of them, substantially as described.

5. The method of forming a hydrocarbon burner which consists in forming a tapered shell as a core piece, placing such piece in a mold and casting a second shell thereon, then removing the core piece, grooving the surface thereof, and reassembling the two, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM S. CHILTON.

Witnesses:
WM. G. FRIZÈLL,
Mrs. J. H. LERBE.