M. G. PARKER.

Process of Producing and Maintaining a High Degree of Heat by Hydrocarbon Vapor-Blast on Heated Metallic Salt-Sponge and Mode of Preparing the Heating-Case.

No. 205,760. **Patented July 9, 1878.**

Fig. 1.

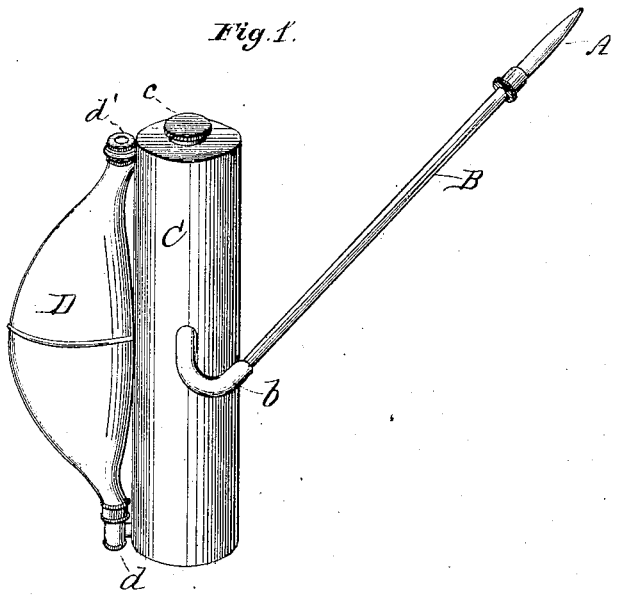


Fig. 2.

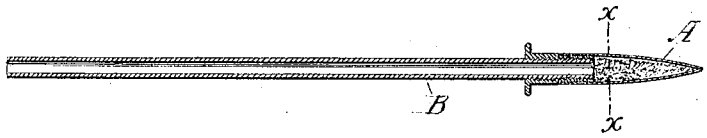
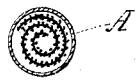


Fig. 3.



Witnesses.

Hilbert Ames

Paul Butler

Inventor.

Moses G. Parker

UNITED STATES PATENT OFFICE

MOSES G. PARKER, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN PROCESSES OF PRODUCING AND MAINTAINING A HIGH DEGREE OF HEAT BY HYDROCARBON-VAPOR BLAST ON HEATED METALLIC SALT SPONGE, AND MODES OF PREPARING THE HEATING-CASE.

Specification forming part of Letters Patent No. **205,760**, dated July 9, 1878; application filed January 5, 1877.

To all whom it may concern:

Be it known that I, MOSES G. PARKER, of the city of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful process of burning hydrocarbon vapors for producing and maintaining various degrees of heat for any useful purpose to which heat may be applied. This I accomplish by bringing together sponge salts of the metals with the hydrocarbons and the preparations from the distillations of acohol, preferably the oily hydrocarbon vapors.

To carry out my invention, I make a metallic salt sponge by dissolving in any proper solvent, by any of the approved chemical formula, the metal I propose to use, which I precipitate as a salt from its solution, and afterward change by heat or otherwise into a porous, spongy mass. Thus I obtain the sulphate of iron, the nitrate of silver, the chloride of platinum, or any other combination of these or other metals with acid as solvents in the form of a precipitate powder or sponge.

I also make use of the chloride of the several metals. I prefer the sulphur-salts of iron, the chloride of iron, or the sulphate of copper for the sake of economy, but can use the salts of other metals or of several metals in combition.

Having got my chloride or metallic salt in a somewhat dry state, after precipitation or other means of preparation I place it upon sheets of metal, or in a perforated or open tube, case, or box, made, preferably, of platinum, because of its known resistance to heat, or of any suitable substance, and subject it to a high degree of heat, sufficient to deposit the salt sponge on the surface of the tube or sheet of metal or other material in the form of a sponge, and then, if sheets of metal have been used, I form them into a case or tube; or I pack a tube of metal or other material as tightly as possible with a metallic sponge or salt such as I have described. Having thus prepared my tube, or box, or case, so that I can do so, I force through, over, and on, in contact with metallic salt sponges contained in them, by any suitable mechanical or other means, air or oxygen gas which has been forced through, mixed, or impregnated with hydrocarbon, and apply heat to any part of my case or tube, bringing it to redness; and by keeping up my stream of air thus impregnated I secure a very high degree of heat in the part containing the metallic salt or sponge, which may be increased by increasing the velocity of the current of impregnated air or oxygen. The degree of heat is limited only by the fusing-point of the salt or sponge metal used.

Referring now to the accompanying drawing, Figure 1 is a view, in perspective; Fig. 2, a detached longitudinal sectional view; and Fig. 3, a cross-section on line *x x*, Fig. 2, of a modified detail of one kind of apparatus by which my invention may be car-ried into effect—

A is a tapering case, preferably made of platinum, and provided at or near its apex with one or more holes or outlets for the escape of hot gases, as will hereinafter more fully appear. B is a hollow tube or pipe, removably connected to the rear end of the case A, and communicating, by means of the flexible joint *b*, with the hydrocarbon-reservoir C.

The reservoir C is provided with an opening, closed by a screw-stopper, *c*, through which it may be charged with any suitable hydrocarbon, and has an opening, *d*, near its base, through which a stream of air or oxygen may be forced into the liquid hydrocarbon by means of the flexible rubber pump D. The pump D has an inlet-opening, *d'*, near its base, through which a stream of air or oxygen may be forced into the liquid hydrocarbon by means of the flexible rubber pump D. The pump D has an inlet-opening, *d'*, at its upper end, closed by a drop or other suitable valve, and is in all essentials the same as is usually employed in atomizing and other like instruments.

The apparatus I have shown is more particularly applicable to the purposes of thermocautery, as practiced in surgery, though I do not wish to be understood as confining myself to this single use of my invention, for it is plainly capable of being employed for many purposes and in the arts.

In making my apparatus, I first prepare a saturated platinic solution by dissolving the metal in a mixture of two parts of muriatic acid and one part of nitric acid. To this solution I add a saturated aqueous solution of sal-ammoniac, and after collecting, washing, and drying the powdery precipitate of platinic chloride which is thus formed, I mix with it about five per cent. of powdered sulphate of iron, this latter salt insuring the more certain adherence of the mixed powder to the sides of the case A and to the scraps in the case A when subjected to heat. I now charge the case A with the mixed powder just mentioned and with small scraps of platina. After this case has been filled with the powder and scraps it is submitted to a high degree of heat—less, however, than would melt common iron under like circumstances—which causes the metals (platinum and iron) contained in the mixed powder to adhere to the inside of the case and to the scraps of platinum filling the case in the condition of a spongy, porous mass.

Instead of filling the powder directly into the case, it may be spread upon the surface of sheets of platinum, heated to a like high degree of heat, so as to cause the adherence of the salts to the surface, as above. The prepared sheets of platinum are then rolled up into cylindrical or tapering coils to conform to the contour of the case, and placed within the case, the appearance of which, when so charged, being plainly indicated by Fig. 3. In either event, after having filled—*i. e.*, prepared—the case, it is attached to the hollow tube B, and heated at some part of it to a moderate red heat by a lighted match, or other suitable means, externally applied, the pump D being at the same time operated, forcing a current of air or oxygen up through the hydrocarbon within the reservoir C, and thence through the tube B into the rear of the case A and into it. The air, impregnated with the hydrocarbon vapors, is minutely disseminated in passing through the porous mass contained in the case to the escape-vents at its apex. Under these conditions a very high degree of heat results so long as the pump is operated. After the tube has been heated to redness at any part of it the heat is kept up by the action of the pump, forcing the air mixed with the hydrocarbon vapor through the case, prepared as above described. The only precaution necessary is that the heat shall not be carried to a point so high as to melt the metallic mass with which the case is charged or lined. In such an event the apparatus will cease to operate, and the case must be reprepared.

Some economy is obtained by placing over the tube or case I have described a closed case, made of ordinary sheet-platina, which does not fit the perforated case—*i. e.*, the inner or prepared case—so tightly as to prevent the circulation of the escaping gases through the fine holes in the end of the inner case between the two cases.

Having thus described my invention so that others may use the same, what I claim, and desire to secure by Letters Patent, is—

1. The herein-described process of producing high temperatures by forcing a current of air impregnated with hydrocarbon vapors through a metallic salt sponge, some part of which had been previously heated to redness, as herein set forth.

2. The mode of preparing the heating-case for the hydrocarbon-vapor blast, which consists in charging the case with an adherent metallic salt sponge, with or without the commixture of a suitable scrap to promote adhesion and the free passage of the blast, as hereinbefore set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

MOSES G. PARKER.

Witnesses:
ADELBERT AMES,
PAUL BUTLER.