(No Model.)

W. MITCHELL.

ELECTRICALLY HEATED MUFFLE.

No. 491,438. Patented Feb. 7, 1893.

FIG. 1.

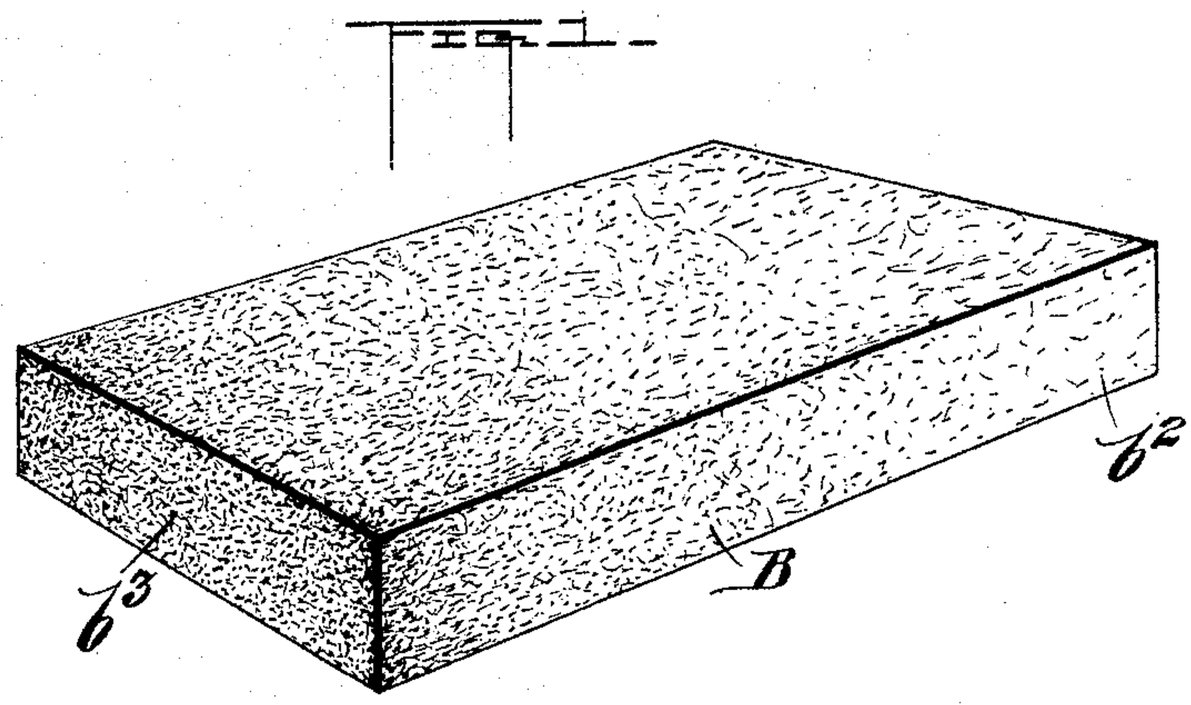


FIG. 2.

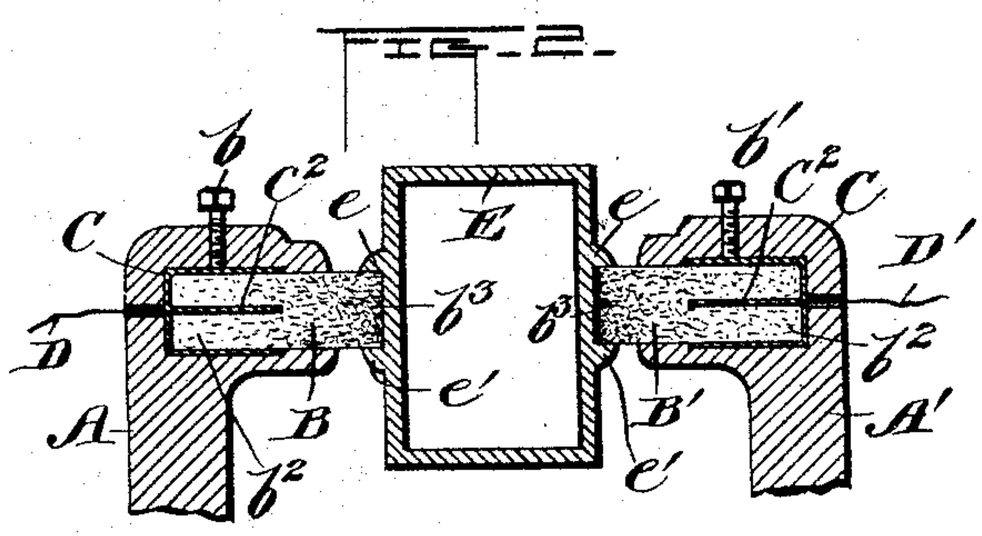


FIG. 3.

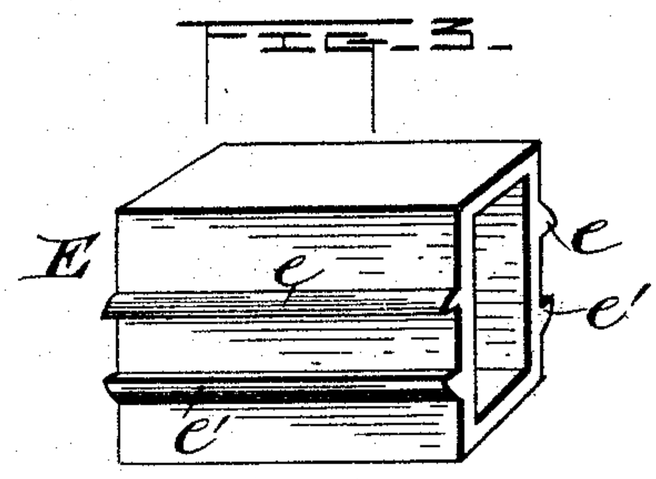
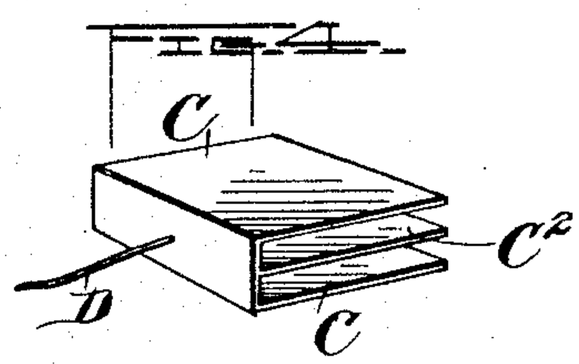


FIG. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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ELECTRICALLY-HEATED MUFFLE.

SPECIFICATION forming part of Letters Patent No. 491,438, dated February 7, 1893.

Application filed July 5, 1892. Serial No. 438,950. (No model.)

To all whom it may concern:

Be it known that I, WILLIS MITCHELL, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electric Metal-Working Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention is an improvement on my application Serial No. 436,972, filed June 16, 1892; and it consists partly in the peculiar construction of the carbons therein employed and partly in a peculiarly constructed intervening muffle and the combination thereof with the said carbons.

In the accompanying drawings Figure 1 represents one of the carbons showing the peculiar distribution of material therein; Fig. 2 represents on a smaller scale a vertical section through the carbons the upper ends of the carbon-supports and the muffle; Fig. 3 represents a detail perspective view of the muffle; and Fig. 4 represents a detail perspective view of the copper shell or backing for the carbon.

A and A′ designate the two carbon supparts which may have the general construction and arrangement shown in the application above mentioned.

B B′ designate the two carbons which are secured by screws *b b′* in recesses of the heads of the said supports as in the said application. The rear or inner end of each of the said carbons is incased in a copper shell or backing C having approximately the form of a book cover. These shells or backings of copper are in communication with wires D D′ which extend through openings in the said supports and complete the circuit through the generator of electricity and the muffle E. This muffle is a hollow casing, preferably rectangular as shown, having two parallel ledges *e e′* formed externally on its sides, which receive the protruding ends of the carbons between them. Each of these carbons consists of a mixture of pulverized plumbago and pulverized fire clay or other material of high heat-resistance, that part of the said carbon, marked b^2, which is at the rear and within the copper shell having a greater proportion of the plumbago and the protruding part b^3 of the said carbon having a less proportion of the plumbago. This latter part is that which holds the muffle and applies the heat. In consequence of this distribution of material the greatest production of heat will be at the sides of the muffle, for the purpose of acting on the metal or other substance inclosed therein to the best advantage. This muffle is constructed of very refractory material and has also a higher electrical resistance than the carbon blocks or plates B B′. When the circuit is closed the current of electricity generates an intense heat within it, which may be used for firing porcelain, fusing metals or any like purpose.

To insure better metallic connection I provide each shell or backing C with an intervening integral leaf of copper C^2, and mold the mass of plumbago and fire clay into this shell and on both sides of this leaf, so that the latter is embedded within it. The proportions of fire clay and plumbago in the carbon block or plate thus formed may vary with the degree of heat desired and the work to be done. But the relative amount of more highly resisting material should be greatest at the heating end of each carbon.

Of course this method of construction or arrangement of particles may be adopted with other forms of carbons. Also other carbonaceous material or the equivalents thereof for such purposes may be substituted for plumbago. But I prefer everything as described and shown.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A carbon consisting of a mixture of comminuted material of greater electrical resistance and comminuted material of less electrical resistance, the proportion of the former being greater at the heating end of the said carbon substantially for the purpose set forth.

2. A carbon composed of a mixture of plumbago and fire clay or other material of higher resistance to electricity, the proportion of fire-clay being greater at the heat producing end

than at the other end of the said carbon substantially as set forth.

3. A carbon having its rear end incased in a metallic shell, the latter being provided with a metallic leaf which is embedded in the said carbon substantially as set forth.

4. In combination with a pair of carbons and electrical conductors making circuit through them a muffle arranged between the said carbons and adapted to be supported as well as heated by them substantially as set forth.

5. A muffle provided with a pair of ledges on each of two opposite sides, in combination with carbon plates which fit between the said ledges and support the said muffle and electric conductors making circuit through the said carbons and muffle substantially as set forth.

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

WILLIS MITCHELL.

Witnesses:
A. F. SARGENT,
WILLIAM D. WRIGHT.