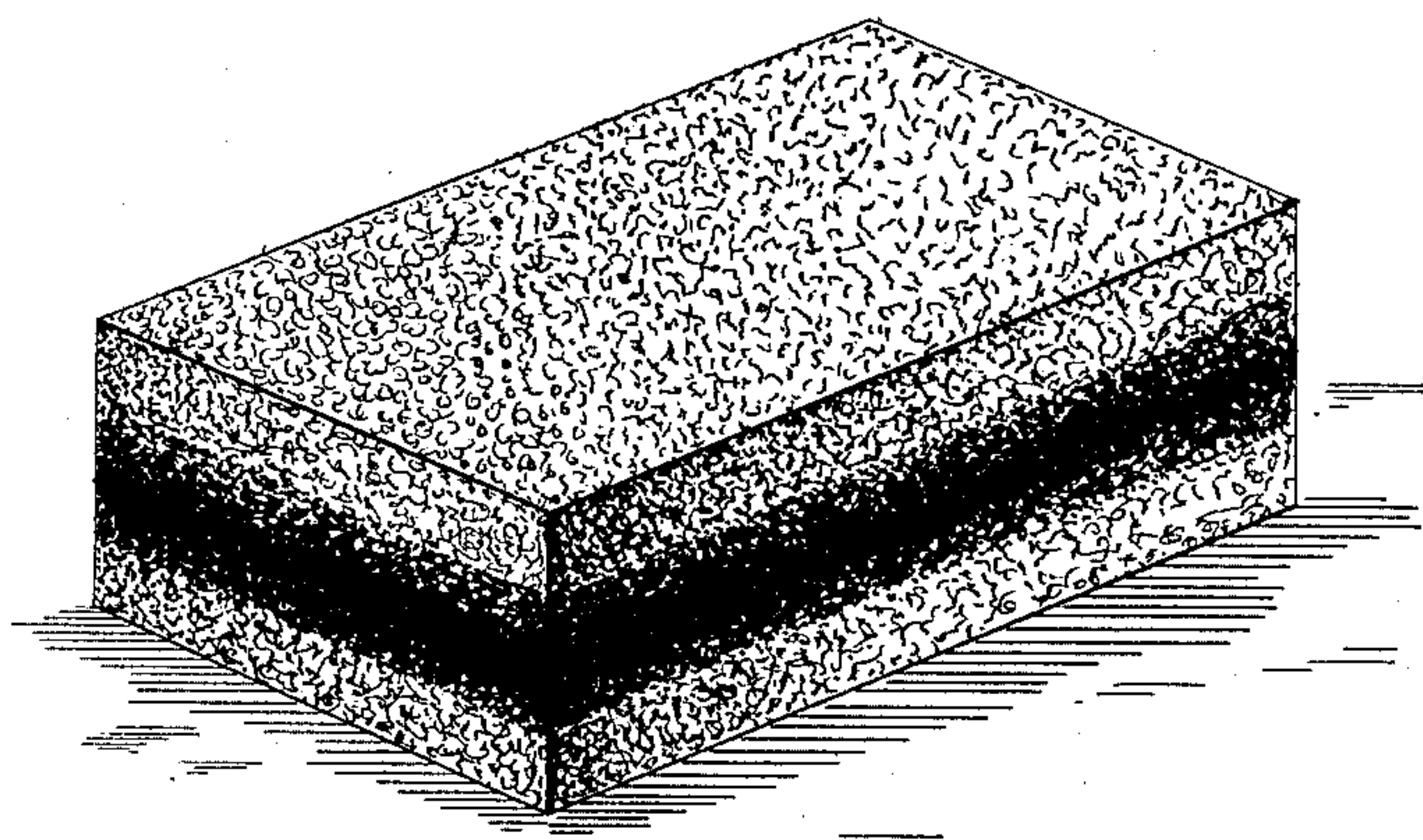


(No Model.)

C. C. GILMAN.  
FILTERING MATERIAL.

No. 341,651.

Patented May 11, 1886.



*Witnesses:*

*Henry Eichling*  
*A. J. M. Vermilyea*

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*by J. P. Frost*  
*his Atty.*

# UNITED STATES PATENT OFFICE.

CHARLES CARROLL GILMAN, OF ELDORA, IOWA.

## FILTERING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 341,651, dated May 11, 1886.

Application filed January 8, 1885. Serial No. 152,367. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES CARROLL GILMAN, of Eldora, in the county of Hardin and State of Iowa, and a citizen of the United States of America, have invented a new and useful Improvement in Filtering Materials, of which the following is a specification.

The accompanying drawing is a view of a piece cut out of a block of said material as it comes from the kiln.

My invention relates to a new filtering material consisting of comminuted carbon embedded in porous terra-cotta.

I will proceed to describe this material and my mode of making it. I mix and grind together clay and vegetable matter, using for the purpose, preferably, a clay that contains no free silex or grit, and for the vegetable matter wood sawdust. I mix these materials with water to about the consistency of clay tempered for making brick. The suitable proportions of the clay and sawdust are two parts, by bulk, of the former to three of the latter. The proportions may be varied, as it may be desired to incorporate more or less of charcoal with the terra-cotta or make the terra-cotta more or less porous. I prefer clay not containing free silex or grit, because this material when burned may be sawed or cut by edge-tools into any required shape; but any porous burned brick material combined with charcoal, as hereinafter described, would be a practical equivalent of the peculiar terra-cotta described for filtering purposes. I give this mixture the required shape preliminary to burning by pressing it in a mold, by stamping it with dies, by turning on the potter's wheel, or by running it through a press into the form of bricks or slabs, hollow or solid. This material thus prepared, after being dried, is placed in suitable kilns, clamps, or ovens and fired as follows: A light fire is at first kindled and a mild heat maintained until the residual moisture is gradually expelled, which is shown by the cessation of the escape of steam from the kiln. The fire is then gradually increased and the heat in the kiln to a degree which will ignite the sawdust imprisoned in the clay, and this heat is maintained until the sawdust is entirely con-

sumed to a depth from the surface of about one-half to one and one-half inch, while the rest of the sawdust in the interior of the clay is only charred. In blocks or forms of, say, from two to six inches in thickness this result will be reached in about six hours in an incandescent heat. The whole process of firing occupies about thirty hours under the conditions given, but about twenty-four hours' firing is usually required to bring the material to an incandescent heat.

For the purpose of testing or examining the progress of the operation, suitable pieces of the material should be placed within the kiln within convenient reach of a peep-hole in the kiln, and tests may be made from time to time by withdrawing one or more of these pieces from the fire through the peep-hole and breaking them open for inspection. As soon as the sawdust or other vegetable matter used has been consumed about the surface of the material to the depth of about one-half to one and one-half inch, as may be desired, the fires should be drawn, the fire-holes closely banked, and the damper of the kiln opened sufficiently to permit the escape of the gases, and the kiln allowed to cool, the time usually required being about thirty hours for a kiln seventeen to twenty feet in diameter and ten feet in height. The blocks or forms thus produced will be found to be combined porous terra-cotta and charcoal, the charcoal embedded in the terra-cotta hemmed in or surrounded by walls of porous terra-cotta alone. These porous walls may now be removed by being cut away with a saw or edge-tool, if only the combined terra-cotta and charcoal is desired to be used.

The entire blocks may be used as they come from the kiln, or they may be cut into any desired form or forms.

It may sometimes occur that a thin skin, more or less impervious to water, is formed on the surface of the blocks, caused by the impact of the hands, mold, or press upon them when in a plastic condition. This may be removed by tool-dressing, by attrition, or in any other suitable way.

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

1. A filtering material consisting of porous



terra-cotta combined with charcoal, substantially as described.

2. A filtering material consisting of porous terra-cotta having comminuted charcoal embedded therein, substantially as described.

3. A filtering material consisting of porous terra-cotta a portion or section of which is combined with charcoal, substantially as described.

4. A filtering material consisting of porous terra-cotta, the inner or intermediate portion or section of which is combined with charcoal, substantially as described.

CHARLES CARROLL GILMAN.

Witnesses:

HENRY MARKELL,  
A. G. N. VERMILYA.