A. P. GOTHAM.
Artificial Fuel or Kindler.

No. 196,656. **Patented Oct. 30, 1877.**

FIG. I.

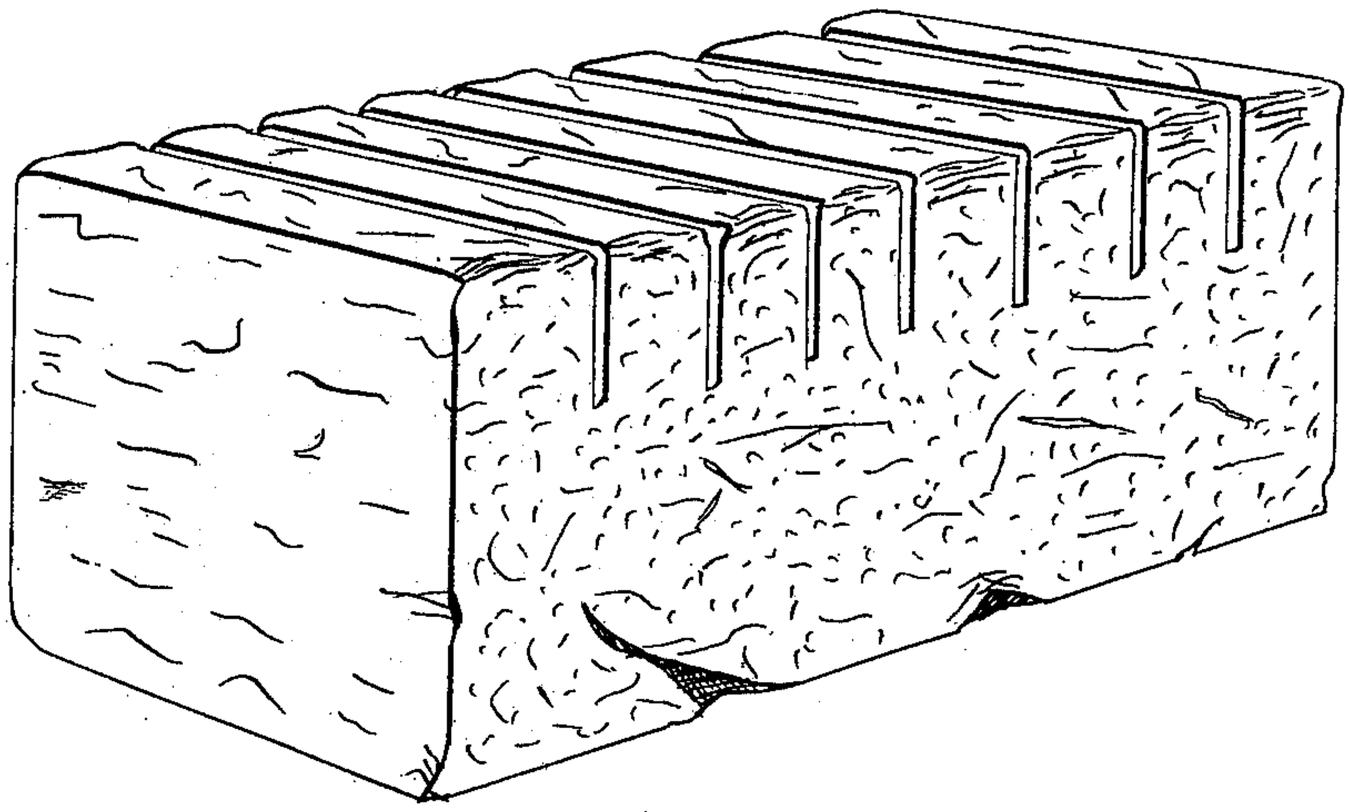
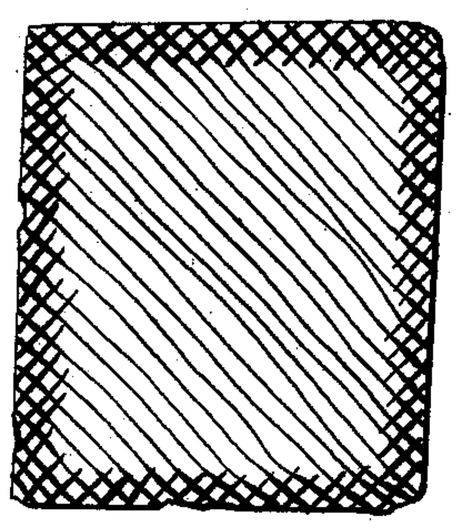


FIG. II.



WITNESSES.

J. B. Townsend

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INVENTOR.

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UNITED STATES PATENT OFFICE.

AMISA P. GOTHAM, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN ARTIFICIAL FUEL OR KINDLER.

Specification forming part of Letters Patent No. **196,656,** dated October 30, 1877; application filed October 8, 1877.

To all whom it may concern:

Be it known that I, AMISA P. GOTHAM, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Artificial Fuel or Kindling; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

I desire to offer to the public an improved fire-kindling block and artificial fuel free from the disadvantages of those now in the market, and prepared by a method which I shall hereinafter describe.

It is not necessary here to detail the bad and insufficient preparation of the kindling and artificial fuel now in use further than to say that none of them are properly imbued with the carbon or fire element; nor is this element so protected as to avoid evaporation, which, when it takes place, renders the kindling-block useless as an effective kindler or fuel.

The fuel block is of any shape or size, and is of peat as cut from the ground and dried. It is then saturated with a hot composition of petroleum, or what is known as "B. S." oil, mixed with resin or pitch, the resin or pitch being used to neutralize the odor of the petroleum or B. S. oil. To avoid evaporation of this carbonaceous element, the block thus prepared is dipped into a bath of resin or pitch, or of resin and pitch combined, intensely heated, and is allowed to remain in such bath until heated through and through, and thus the bath of resin or pitch percolates through the pores of the peat block to a distance sufficient to form an inclosing air-tight sealing-wall.

The fuel or kindling block thus produced is subdivided into smaller blocks or kindlers by grooves or incipient divisions, which form the channels for the knife of the servant or other person making the fire, and thus the same quantity is easily broken off by hand every day, or the groove may be completed, to sever the division from the balance of the block; but when used as an element of fuel alone the blocks need not be grooved.

The manner of subdividing the block into smaller blocks and of forming the sealing-wall to guard against evaporation are shown in drawings accompanying this specification.

I am aware that peat has been long used in combination with inflammable materials as an artificial fuel, and I am also aware that it has been attempted to prevent evaporation of the combustible gases of such inflammable material by covering the block or dipping it into a bath of some glutinous material. Such attempts, however, have been futile, since the coating of glutinous or resinous material has scarcely differed in degree from a common sizing. This, from its nature, being hard and brittle, cracks, and, coming off in scales, exposes the pores of the block, and permits of the escape of that carbon gas which is the prime element in kindling or burning.

By my process the peat block is cut from the ground and allowed to dry. It is then saturated in a hot bath of petroleum and resin or pitch, or of what is known as B. S. oil and resin or pitch, preferably in equal parts—that is to say, one part petroleum or B. S. oil and one part resin or pitch, or resin and pitch.

The B. S. oil is cheap, and forms a good equivalent for the petroleum.

This inflammable liquid compound, when in the vat, is of very thin consistency, and immediately, almost, fills the cells of the porous peat block, which absorbs the liquid to its innermost part.

The prime function of the resin is to neutralize the offensive odor of the petroleum, while at the same time it gives what slight consistency is required for the liquid in the vat.

The inflammable liquid compound just described fills all the cells of the peat like a sponge. Now, if the block thus saturated were exposed to the air it would gradually evaporate.

This difficulty I obviate by subjecting the peat block, first treated as above described, to a second bath of resin or pitch, or of both combined. This bath is intensely hot, and the treated block is allowed to remain therein until it becomes heated through and through. In thus heating it, the hot resinous mass expands the block, and, being the heavier, displaces the fluid of the first treatment for a short distance,

and enters into the outer ends of the cells of the peat block, and forms thereby an inclosing sealing-wall, as shown in the section, Fig. 2. Sufficient of the oily liquid of the first bath is displaced by expansion from the heat from the outer parts of the block to admit an equal quantity of the resinous mass of the second bath.

Thus the remaining liquid cannot press against and soften the wall formed by this resinous bath, above described, (it being remembered that, when the block is removed from its second bath and allowed to cool, the walls become very hard,) and the block will last for years, and preserve its contained gases.

The peat block, before being treated, is subdivided by incipient grooves into divisions, (see Fig. 1,) which, when treated and put upon the market, may be completed by the person using the fuel or kindler. Thus I obtain a block which may be easily cut into equal pieces for each day's fire.

As a fuel for making illuminating-gas my invention is of especial value. The blocks can be thrown into the retort with perfect safety, and in places where the coal is poor its use will not only enrich the gas, but serve to cheapen its manufacture.

I prefer to use, in the first bath described, the sediment from crude petroleum known as B. S. oil, as I find that it has more body, and is capable of being used to better advantage, as it is cheaper. When so used it is subjected to boiling heat to render it sufficiently thin to cause it to enter freely the pores of the block.

For steam fire-engines and for locomotive and stationary engines my new fuel will answer the best purposes, and for cooking I find it free from objection.

I desire it to be particularly understood that my method of treating the block to the second or resinous bath, in order to seal it to prevent evaporation, is not merely covering the block with a film, or even a thick coating, but, after the heat expands the block, it displaces a certain quantity of the oily liquid of the first bath, and the surrounding space left, as it were, is immediately filled with an equal quantity of the resinous mass of the second bath, which, when cold, forms a surrounding seal or wall integral with the block—that is to say, I form an integral wall as distinguished from a coating or film.

I claim—

The process herein described of making artificial fuel or fire-kindling, by treating native peat, after being cut into blocks and dried, first to a bath of inflammable liquid, and then to a second bath of resinous material, to first saturate the block with the elements of combustion, which is then sealed, to prevent evaporation, by forming in the block an integral wall of considerable depth, as distinguished from a surface-coating or film.

In testimony that I claim the foregoing I have affixed my signature in presence of two witnesses.

AMISA P. GOTHAM.

Witnesses:

A. E. H. JOHNSON,

J. W. HAMILTON JOHNSON.