(No Model.) 3 Sheets—Sheet 1.

E. SCOTT.

COMBUSTIBLE MATERIAL.

No. 523,600. Patented July 24, 1894.

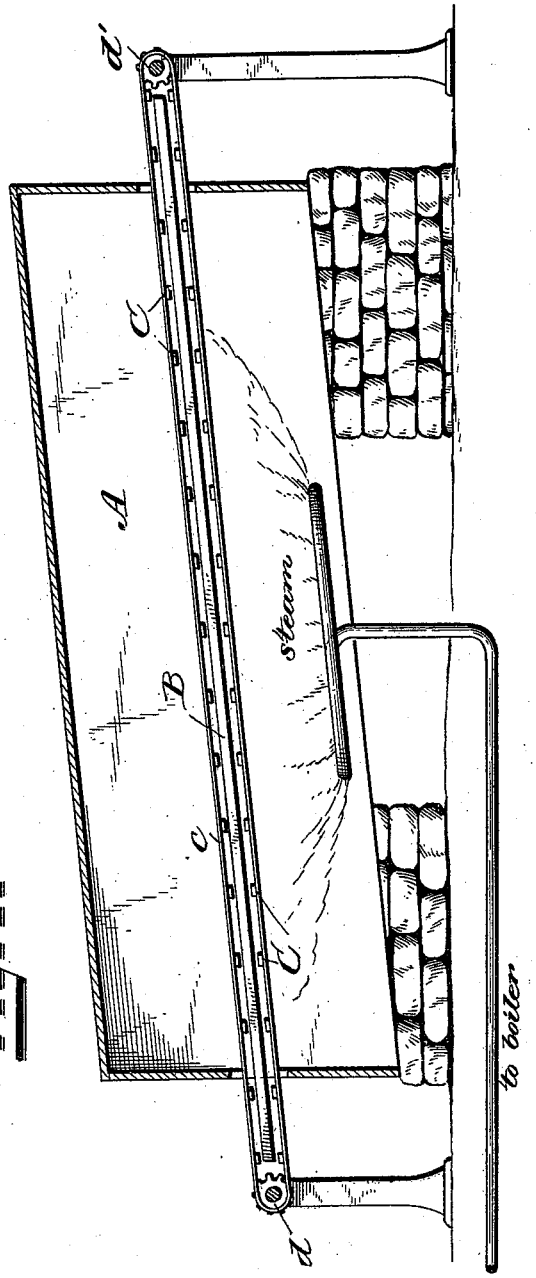


Fig. 1.

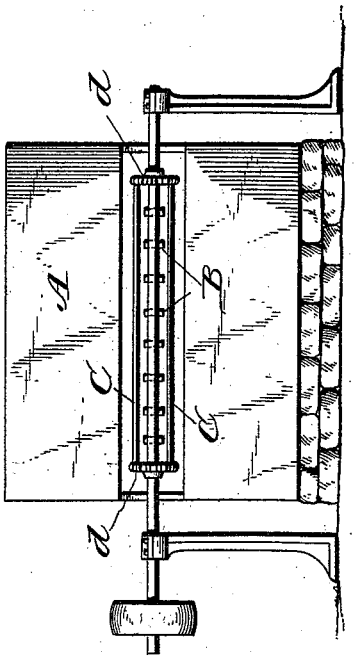


Fig. 2.

Witnesses.
J. Thomson Cross.
B. W. Sommers

Inventor:
Edward Scott,
By Geo. B. Parkinson,
His Attorney.

(No Model.) 3 Sheets—Sheet 2.

E. SCOTT.

COMBUSTIBLE MATERIAL.

No. 523,600. Patented July 24, 1894.

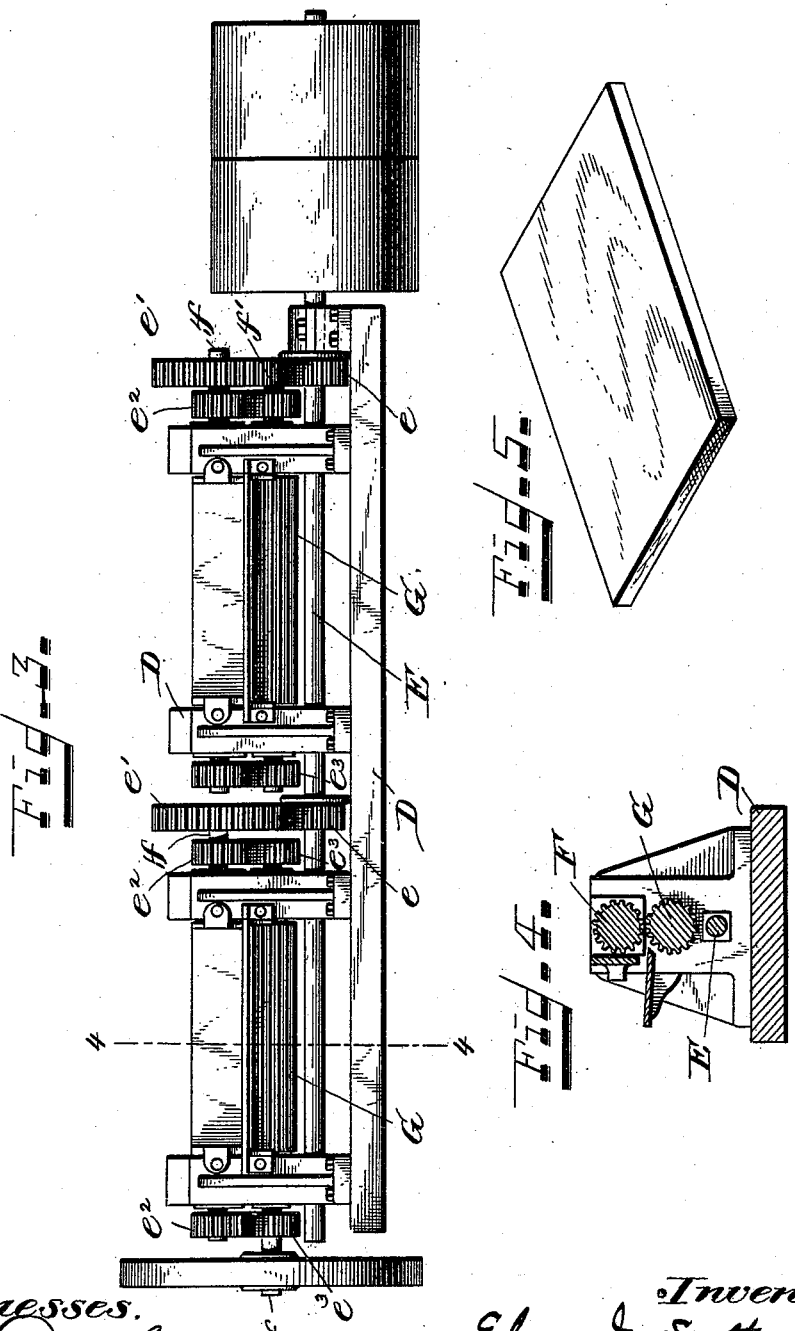


Fig. 1.

Fig. 5.

Fig. 2.

Fig. 3.

Witnesses.
J. Thomson Cross.
B. W. Sommers

Inventor:
Edward Scott,
By Geo. B. Fardinson,
His Attorney.

(No Model.) 3 Sheets—Sheet 3.

E. SCOTT.

COMBUSTIBLE MATERIAL.

No. 523,600. Patented July 24, 1894.

Fig. 7.

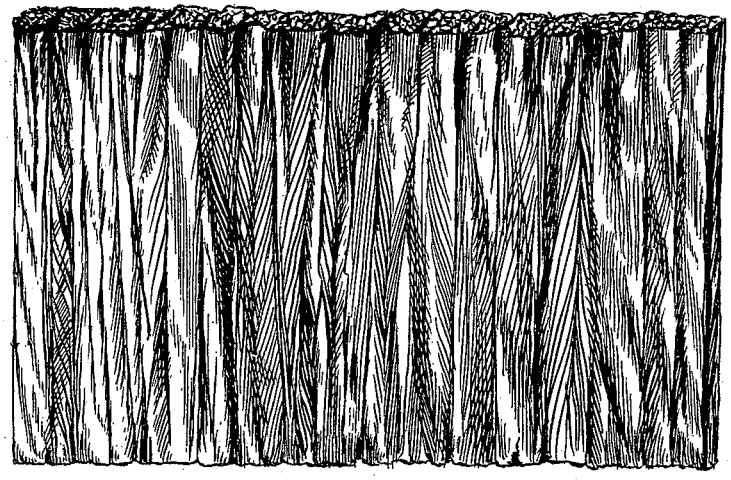


Fig. 8.

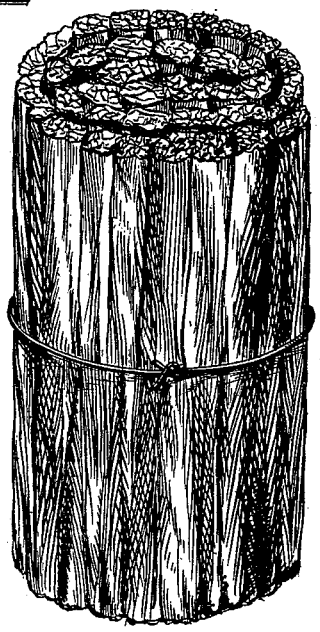
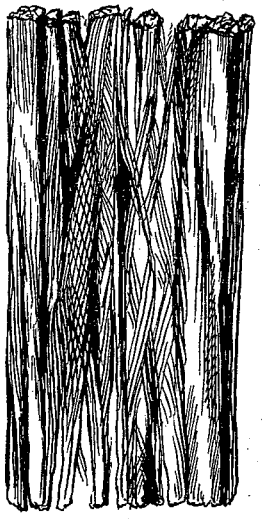


Fig. 6



Witnesses.
J. Thomson Cross.
B. W. Sommers.

Inventor
Edward Scott,
By Geo. B. Bartlett,
His Attorney.

UNITED STATES PATENT OFFICE.

EDWARD SCOTT, OF CHATTANOOGA, TENNESSEE.

COMBUSTIBLE MATERIAL.

SPECIFICATION forming part of Letters Patent No. 523,600, dated July 24, 1894.

Application filed May 27, 1893. Serial No. 475,754. (No specimens.)

To all whom it may concern:

Be it known that I, EDWARD SCOTT, a citizen of the United States of America, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Combustible Materials, of which the following is a specification.

The object of my invention is to produce, at slight cost, a fuel which ignites readily throughout its body, supports a vigorous and tenacious flame, and insures the most thorough combustion; which is adapted for use in kindling less combustible material, and affords in itself a bright and agreeable fire, which may also serve to disseminate aromatic or medicinal constituents; which can be conveniently and economically bundled, transported, handled, and used; and which is free from liability to produce explosions or hazardous flashes.

The invention consists in the article of manufacture hereinafter described and claimed.

The process of manufacture is as follows: I take sections of logs, stumps or other ligneous material, preferably of a resinous variety, and cut or split these sections into blanks of any convenient size. For general purposes the logs or stumps are cut into cross sections of from eight to twelve inches in length and these sections are split into blanks about one inch in thickness and of such width as the section may afford. These blanks are then subjected to the action of steam or boiling water until they are sufficiently softened to facilitate crushing without mashing or completely separating the fibers. While hot, soft and moist from the steaming process the blanks are subjected to a crushing force sufficiently powerful to spread and disperse without wholly disintegrating or separating the fibers. The product is a flexible fibrous web through which flame can instantly penetrate and air freely circulate to support and stimulate combustion. This web is capable of being readily rolled into compact bundles for transportation and sale. The fibers while still clinging together in a mat-like web are so spread and diffused as to greatly increase the bulk of the material and so disposed relatively to each other as to insure instant and uniform ignition throughout the mass, and a vigorous combustion, thus greatly increasing the efficiency of the fuel as compared with the material when used in its original compact state with its mass comparatively impervious to flame and air. The entire bulk, or so much of it as may be desired, may be ignited by the application of a lighted match or taper and burns with a brilliant and intense flame. When pitchy pine is used for this purpose the crushing action exposes the resinous properties of the wood to the flame and this serves both to feed the flame and to disseminate the fragrance of the wood. The beneficial and agreeable properties of this, or other aromatic or medicinal woods, are thus utilized and made readily accessible to every community. If the wood does not contain in itself sufficient combustible, aromatic or other desired qualities the web, after its fibers have been distended by crushing, may be saturated to any desired degree with any combustible, aromatic or medicinal agent consistent with or conducive to combustion. Some woods may respond sufficiently to the crushing without the previous steaming in which case that step may be omitted, though I find that better results are obtained by its use. The condition of the wood when it comes from the crushers is such that any liquid agent in which it may be immersed, or which may be applied thereto, readily permeates it, and, in like manner, the flame readily attacks the individual fibers throughout the entire mass of crushed material and combustion takes place with much less waste of heat units than would be involved in burning the solid blank.

The log sections may be split into blanks by an ordinary shingle knife and the steaming may be effected by any means which will insure sufficient exposure of the blanks to the softening and moistening effects of the steam.

The crushing agencies may be greatly varied but should be powerful in order to produce the best results. I prefer to use rolls, either smooth or corrugated. I have illustrated preferred apparatus for steaming and crushing.

In the drawings: Figure 1 is a longitudinal sectional view of a preferred form of steam-

ing apparatus. Fig. 2 is an end view of the same. Fig. 3 is a side view of a preferred form of crushing mechanism. Fig. 4 is a cross section on line 4—4 of Fig. 3. Fig. 5 is a perspective view of the blank before treatment. Figs. 6 and 7 are views of different sized blanks after they have been steamed and crushed and are ready to be rolled. Fig. 8 is a view of a bundle consisting of a blank after it has been steamed, crushed and rolled and is ready for shipment.

A designates the steaming box provided with a floor composed of slats B, arranged longitudinally therein and of a distance apart to allow steam or other vapor to pass through them. Over the slats travel carriers C, mounted on endless chains *c*, traveling over sprocket wheels *d*, *d'*, mounted on shafts at each end of the box and driven by any suitable means. The floor is preferably inclined so that the blanks may be fed to its lower end and elevated to a level from which they may be conveniently delivered to the machine. The strips of wood to be treated are placed on the floor of the steaming box, and are moved along by the carriers through the length of the box, becoming saturated in their passage.

The crushing mechanism consists of a frame D, having mounted therein, in suitable journals, the driving shaft E, driven by pulleys or equivalent device connected with a source of power. Gear wheels *e*, *e*, are mounted upon the shaft and adapted to engage with gear wheels *e'*, *e'*, mounted on shafts *f*, *f*, journaled in the frame and carrying the upper crushing rolls F, F. The shafts *f*, *f*, have also mounted thereon, gear wheels e^2, e^2, engaging with gear wheels e^3, e^3, mounted on shafts *f'*, *f'*, also journaled in the frame D and carrying the lower crushing rolls G, G.

What I claim is—

The herein described article of manufacture consisting of a flexible web of partially disintegrated wood, substantially as and for the purpose specified.

EDWARD SCOTT.

Witnesses:
B. W. SOMMERS,
JAMES N. RAMSEY.