

(No Model.)

W. D. SMITH.

MACHINE FOR CUTTING SOAP AND OTHER MATERIALS.

No. 273,176.

Patented Feb. 27, 1883.

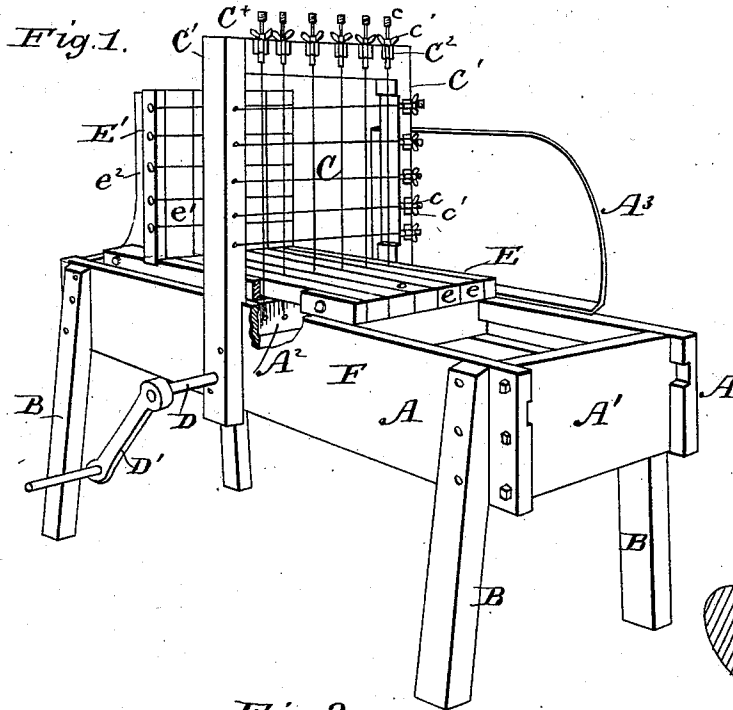


Fig. 2.

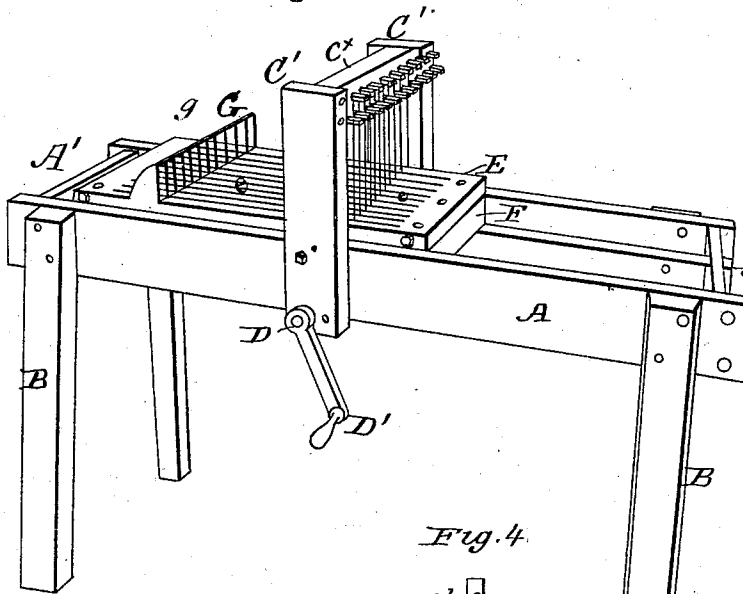


Fig. 5.

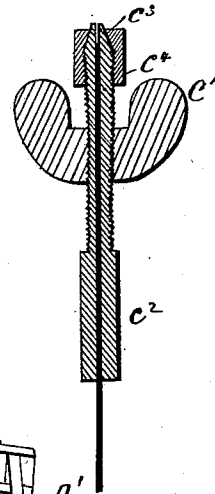


Fig. 4.

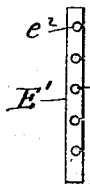
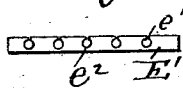


Fig. 3.



Witnesses:  
W. B. Masson.  
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# UNITED STATES PATENT OFFICE.

W. DEAN SMITH, OF BOSTON, MASSACHUSETTS.

## MACHINE FOR CUTTING SOAP AND OTHER MATERIALS.

SPECIFICATION forming part of Letters Patent No. 273,176, dated February 27, 1883.

Application filed November 26, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, W. DEAN SMITH, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Cutting Soap and other Materials; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The object of my invention is to construct a machine which shall be adapted for cutting soap or similar substances into bars or slabs with greater facility than such work can be done by any machines of earlier construction; and to this end the first part of my invention consists in constructing the abutment by means of which the material is supported against the thrust of the cutting-wires or is forced against the wires with grooves adapted to permit the passage of the wires, and which open rearwardly into spaces of greater dimensions, adapted to receive the material which is forced into said grooves by the cutting-wires, and permit the same to be rapidly removed from the abutment or to pass from them without clogging.

The invention further relates to the employment of two separate machines of a peculiar construction in carrying out a new method of cutting material into cubical blocks; and the invention further consists in certain details of construction, as will be hereinafter fully explained.

Figure 1 is a perspective view of a machine embodying the first part of my invention, together with some of the minor features. Fig. 2 is a perspective view of the second machine which I employ in carrying out my method. Figs. 3 and 4 are respectively top and edge views of the abutment. Fig. 5 is a vertical section enlarged of one of the clamps employed for holding one end of the cutting-wire and for producing the requisite tension upon it.

Like letters of reference refer to similar parts in all the figures.

The main frames of the machines consist of side pieces, A, end girts, A', legs B, vertical

posts C', attached firmly to side pieces, A, top girts or plates, C<sup>x</sup>, crank-shaft D, cranks D', traveling beds E, supported on cross heads or girts F, which travel on suitable ways or ribs formed upon the inner faces of side pieces, A, and are caused to travel backward by rack and pinion or any other suitable mechanism actuated by crank-shafts D. Each bed E is composed of a series of horizontal bars, e, arranged to pass between the vertical cutting-wires C, the lower ends of the wires being secured to a cross-girt, A<sup>2</sup>, (shown only in Fig. 1,) which is supported by the side pieces, A. Each wire is supported at its upper end by means of a tightening-screw, which is mounted in a boxing, C<sup>2</sup>.

Referring to Fig. 5, c<sup>2</sup> is the lower part of the screw, square in cross-section to fit and slide within the boxing C<sup>2</sup>, the upper part of the screw being round in cross-section, and threaded to receive a thumb-nut, c'. The screw is hollow to receive the wire, and is made tapering in form at its extreme upper end, where it is slitted transversely and receives a nut, c<sup>4</sup>, provided with a conical recess, c<sup>3</sup>, adapted to engage with the tapering slitted upper end of the screw, and by pressing it (the tapering end of the screw) cause it to grip the wire firmly.

In Fig. 2 I have shown cutting-wires supported at their upper ends upon the ordinary tightening screws or pins, which are seated firmly in plate C<sup>x</sup>.

Referring to Fig. 1, E' is the abutment, supported in a vertical position, preferably by means of a brace or knee in the rear, and has formed in its front face a series of vertical and horizontal slits or grooves, e', each of which communicates at its rear edge with a chamber or recess, e<sup>2</sup>, adapted to receive wire, and such of the material being cut as may be carried through the slits e' with the cutting-wire, the recess being of such size as will facilitate the ready removal therefrom of such material, whereby the operation of cutting may be readily carried on. I have found that in practice an abutment made of marble or other stone is preferable to wood, which is ordinarily used for abutments in machines of this class, particularly from the fact that there is less liability of splitting or otherwise fracturing the portions of it adjacent to the slits e' or recesses

$e^2$ , either during the process of manufacture or of use, than there is in constructing an abutment of wood; also, for the further reason that the abutment is less liable to be warped or sprung out of proper shape by reason of changes in the humidity of the air, and also because there is no liability of staining the material which is being cut through corrosion of the abutment, as is ordinarily the case where it is made of metal.

In Fig. 2 the abutment G, which is attached to the bed E, is constructed with slots or throats  $g$ , spaced to correspond with the spaces between the bars  $e$  of the traveling bed; and by preference each section of the abutment G is made in one and the same piece with the bar  $e$ , which supports it. When the bed is not too large it may be cast in one piece, having slots of suitable length to receive the cutting-wires, such construction being especially desirable when the beds are made of cast metal, of marble, or of celluloid.

$A^3$  is a wing-board, hinged to one of the vertical posts  $C^1$ , and extending in a plane substantially parallel with the vertical plane of the side pieces, A, and as close to the delivery-bed as is practicable, there being by preference a similar wing-board upon the opposite side of the machine.

The material is first cut into long bars on the machine shown in Fig. 1, the size of which in cross-section will be determined by the distance apart of the intersecting wires C. Each bar is then cut into flat, square, or rectangular pieces, laying said bars crosswise of the bed and against the abutment on the machine shown in Fig. 2, and when preferred the abutment may be of such height as to permit piling two or more bars on top of each other, such mode of operation effecting a very marked saving in time, as will be readily understood; and it will be readily seen that the use of a movable wing-board is very desirable, because it facilitates the removal from the machine of a large number of such cakes at once, they adhering to each other sufficiently to enable the operator to do this, although they do not stick together with such tenacity as to prevent their being readily separated after taking from the machine.

I am aware that soap has been cut into flat cakes by cutting rectangular bars transversely; but believe I am the first to cut a bar into cakes by a series of transverse cuts made simultaneously. I do not in this case claim any in-

vention except such as is specifically recited in the claims hereof, reserving to myself the right to claim all other patentable features in another application which I propose to file as a division of this case.

What I claim is—

1. In a machine for cutting plastic material, an abutment provided upon that face which engages with the material to be cut with a series of grooves or slits to receive the wires, and with enlarged recesses in rear of said slits, adapted to receive a material carried through said slits by the cutting-wires, substantially as set forth.

2. In a machine for cutting plastic material, a traveling bed having horizontal slats spaced to receive the cutting-wires, in combination with an abutment consisting of correspondingly spaced sections, each of which is formed in one and the same piece with one of the slats of the bed, substantially as set forth.

3. In a machine for cutting plastic material, the combination, with the wire-supports, the traveling bed, and the abutment, of the movable wing-board, substantially as set forth.

4. In a machine for cutting plastic material, the combination, with the boxing  $C^2$ , provided with annular seats adapted to receive the squared portion  $e^2$  of the screws, of the tightening-screw having a portion which is angular in cross-section, an upper screw-threaded portion to receive the thumb-nut  $e'$ , having its upper end made tapering and slitted, and the thumb-nut  $e'$  and gripping-nut  $e^4$ , substantially as set forth.

5. In a machine for cutting plastic material, an abutment provided with the intersecting vertical and transverse slits  $e'$  and the vertical and transverse intersecting recesses  $e^2$ , communicating with the slits  $e'$ , substantially as set forth.

6. In a machine for cutting plastic material, the cutting-wires, in combination with the abutment  $E'$ , when constructed of stone and provided with slits  $e'$  and the recesses in rear of the slits and communicating therewith, adapted to receive material thrust through the slits by the cutting-wires, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

W. DEAN SMITH.

Witnesses:

JOHN R. SHAY,  
HENRY H. PAGE.