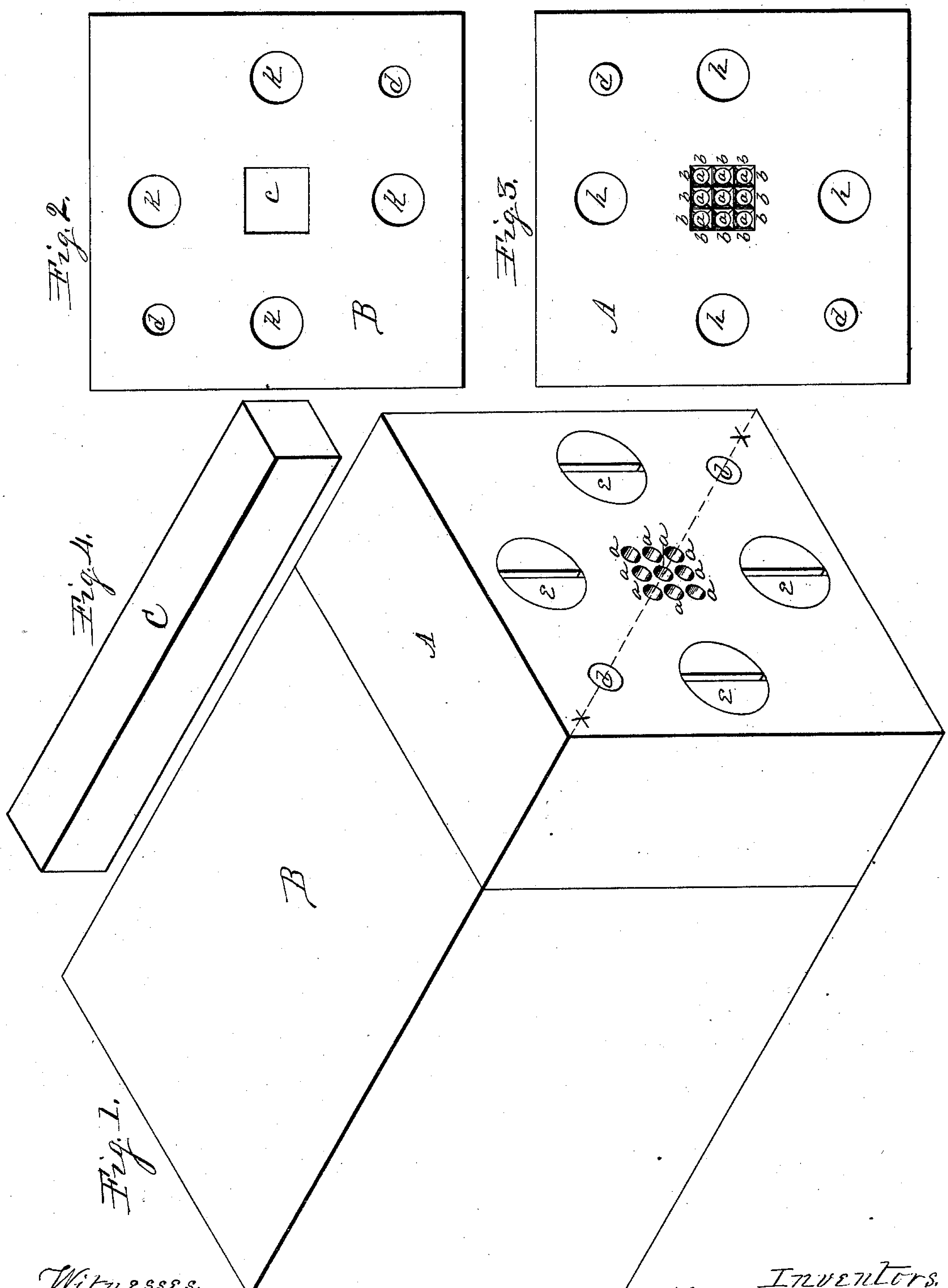
(No Model.)

2 Sheets—Sheet 1.

F. & B. GRAHAM.

DEVICE FOR CUTTING MATCH STICKS.

No. 305,072. Patented Sept. 16, 1884.



Witnesses.
M. C. Pardue.
A. O. Behel

Inventors.
Freeman Graham.
Byron Graham.
Per Jacob Behel. Atty.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. & B. GRAHAM.

DEVICE FOR CUTTING MATCH STICKS.

No. 305,072. Patented Sept. 16, 1884.

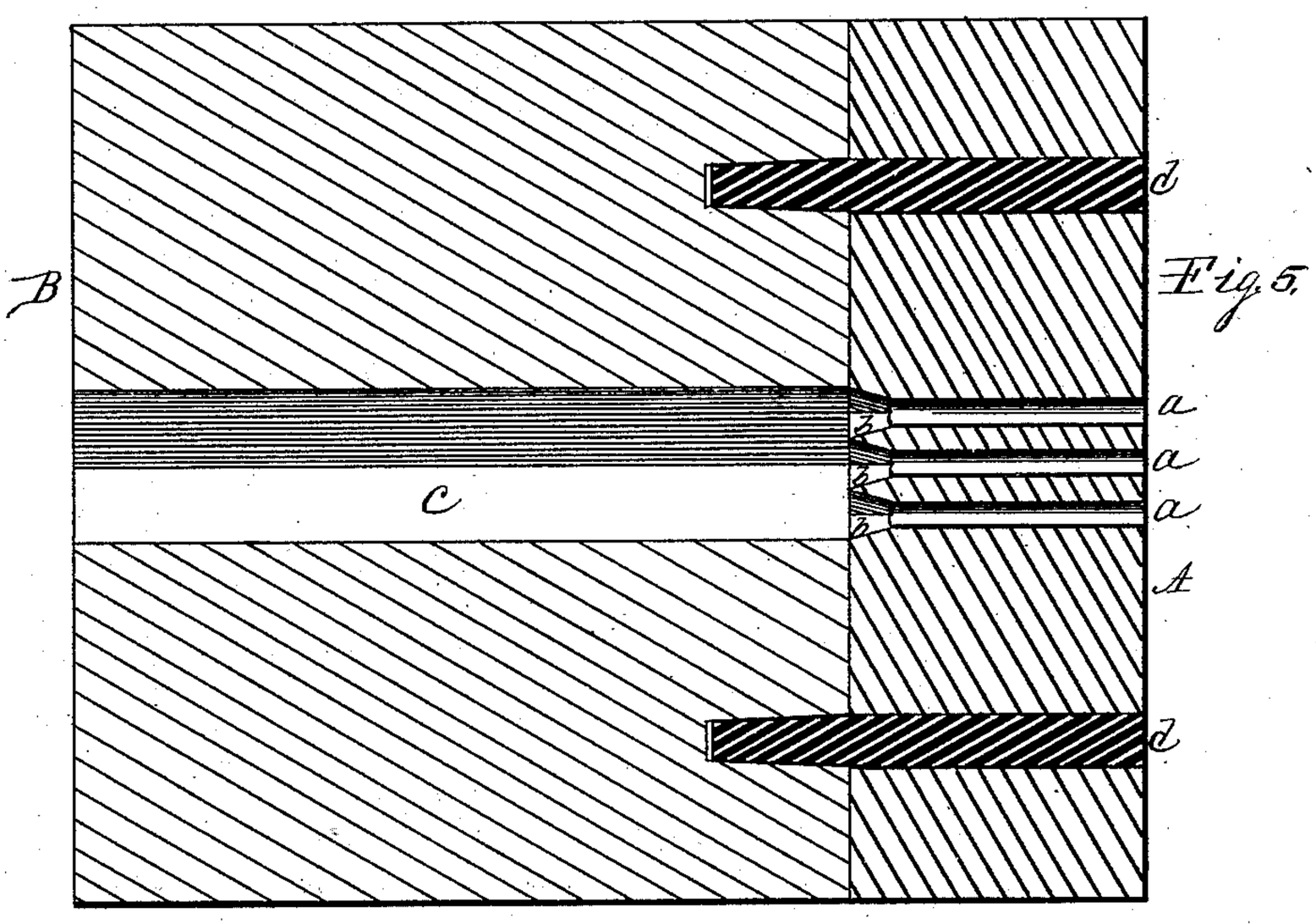


Fig. 5.

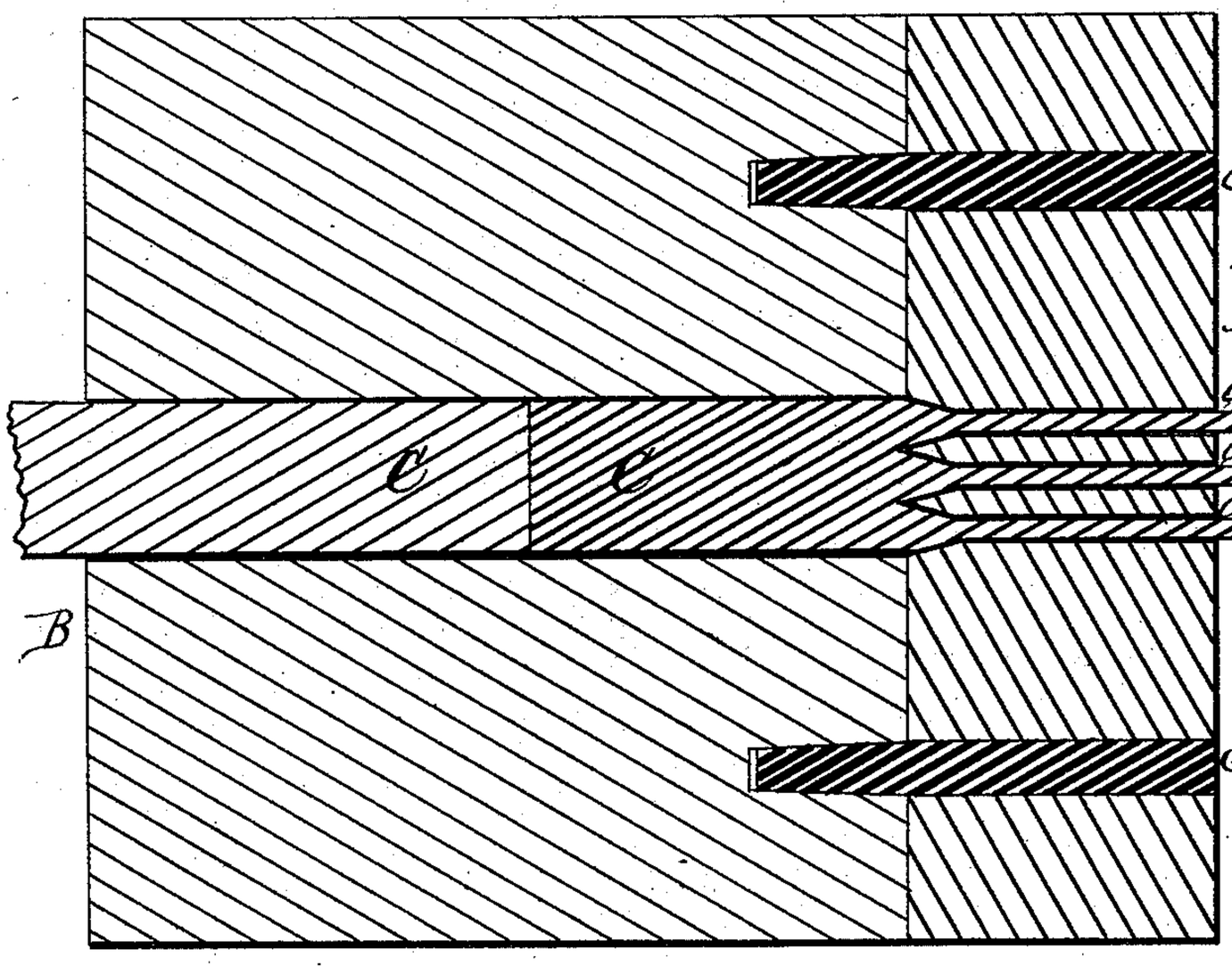


Fig. 6.

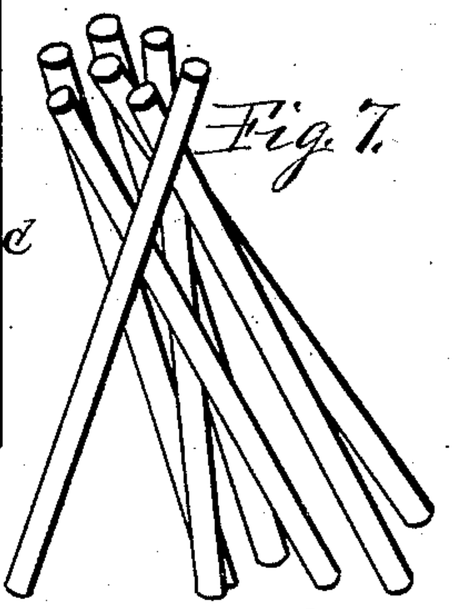


Fig. 7.

Witnesses
M. C. Bardin.
A. O. Behel

Inventors,
by Freeman Graham.
Byron Graham.
Per Jacob Behel
Atty.

UNITED STATES PATENT OFFICE.

FREEMAN GRAHAM AND BYRON GRAHAM, OF ROCKFORD, ILLINOIS.

DEVICE FOR CUTTING MATCH-STICKS.

SPECIFICATION forming part of Letters Patent No. 305,072, dated September 16, 1884.

Application filed April 3, 1883. (No model.)

To all whom it may concern:

Be it known that we, FREEMAN GRAHAM and BYRON GRAHAM, citizens of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented new and useful Improvements in Devices for Cutting Match-Sticks and in the Process of Manufacturing Match-Sticks, of which the following is a specification.

Our invention relates to the manufacture of the sticks employed in the manufacture of matches; and it consists, first, in a dividing and compressing implement to produce match-sticks from prepared blocks of wood; and, second, in the process of producing match-sticks from prepared blocks of wood without waste; and its object is to produce match-sticks rapidly, uniform in size and conformation, without waste, from prepared blocks of wood.

To this end we have designed and constructed the apparatus represented in the accompanying drawings, by which to carry out our improved process in the manufacture of match-sticks.

In the accompanying drawings, Figure 1 is an isometrical representation of the dividing and compressing apparatus employed in producing match-sticks. Fig. 2 is an end view of the guide portion of the apparatus. Fig. 3 is an end view of the dividing and compressing portion of the apparatus. Fig. 4 is an isometrical representation of a prepared block of wood from which to produce the match-sticks. Fig. 5 is a diagonal lengthwise central section of the apparatus on dotted line *x*. Fig. 6 is also a diagonal lengthwise central section on dotted line *x*, showing the division and compression of the match-sticks in the process of producing them from the prepared blocks; and Fig. 7 represents the match-sticks complete.

In the figures, A represents a dividing-block, preferably of steel, rectangular in section, and of suitable dimensions. The central portion of this dividing-block is provided with a series of holes, *a*, cylindrical in section, and having a diameter equal to the intended diameter of the match-sticks to be produced. These holes in this instance are produced in the center of the block in a group rectangular in outline form, and extends through the thickness of the block, and are placed in such near relation to each other as to be separated by the smallest practical division-walls. These holes on one end of the block, as at *b*, are squared by cutting, filing, or otherwise reducing the parts to form cutting or dividing edges between the several lines of holes crossing at right angles, dividing the group of holes into squares equal to the number of holes, each square produced in pyramidal or funnel form, having inclined or beveling walls terminating in the tubular or cylindrical holes.

At B is represented a guide-block, preferably of metal, produced in rectangular form in section, having a sectional dimension equal to that of the dividing-block A, and of any suitable length. This guide-block B is provided with a lengthwise axial opening, *c*, rectangular in section, having outline dimensions equal to the outline dimensions of the dividing end of the group of perforations or holes in the dividing-block A. These block parts are placed together in such a manner that the end of the dividing-block A in which the holes are reduced to rectangular form shall engage the end of the guide-block in such a manner that the rectangular outline form of its dividing portion shall coincide with the rectangular axial opening in the guide-block. In this position these two block portions are supported by means of steady-pins *d*, which are passed through the dividing-block and enter holes in the guide-block prepared for their reception.

At *e* are represented screw-bolts, which enter and pass through holes *h* in the dividing-block, and enter screw-threaded holes *k* in the guide-block, and serve to fix the two parts to each other firmly.

At C is represented a block from which to produce match-sticks by our improved method. These blocks are produced from suitable timber by any or several of the known processes, such as splitting, sawing, planing, or by forcing suitable billets or blocks endwise through a hollow cutting-tool, or otherwise reducing them to proper form and size to enter and pass through the axial opening *c* in the guide-block snugly. These blocks, in the further process of producing match-sticks, are passed endwise through the axial opening in the guide-block, and by means of any suitable known power—such as hand-power, horse-

power, steam, or hydraulics—by means of a suitable plunger or follower capable of a suitable reciprocating movement, are pressed, driven, or forced through the dividing and compressing block, which divides the block into sticks without waste, and in their passage through the cylindrical or tubular holes are compressed into cylindrical form, and discharged from the machine finished match-sticks, uniform in size and conformation.

In the foregoing we have represented our improved dividing-block provided with cylindrical holes for the purpose of producing cylindrical match-sticks; but, instead of the cylindrical form, the dividing and compressing block may be produced with holes rectangular in section, or in any of the known forms, to produce match-sticks of any sectional form desired, and still be within the scope of our invention.

We claim as our invention—

The combination, with a guiding-tube having a square opening to receive the prepared match-stick, of a dividing and compressing block attached thereto, said block having in line with the tube a series of openings the sides or cutting-edges of which are parallel with the sides of the opening in the guide, and the series filling the space at the end of the tube, substantially as and for the purpose set forth.

FREEMAN GRAHAM.
BYRON GRAHAM.

Witnesses:
C. O. PARMELE,
D. GRAHAM.