

(No Model.)

H. C. SPALDING.

MANUFACTURE OF INSULATING BLOCKS FOR ELECTRICAL CONDUCTORS.

No. 327,465.

Patented Sept. 29, 1885.

Fig 1

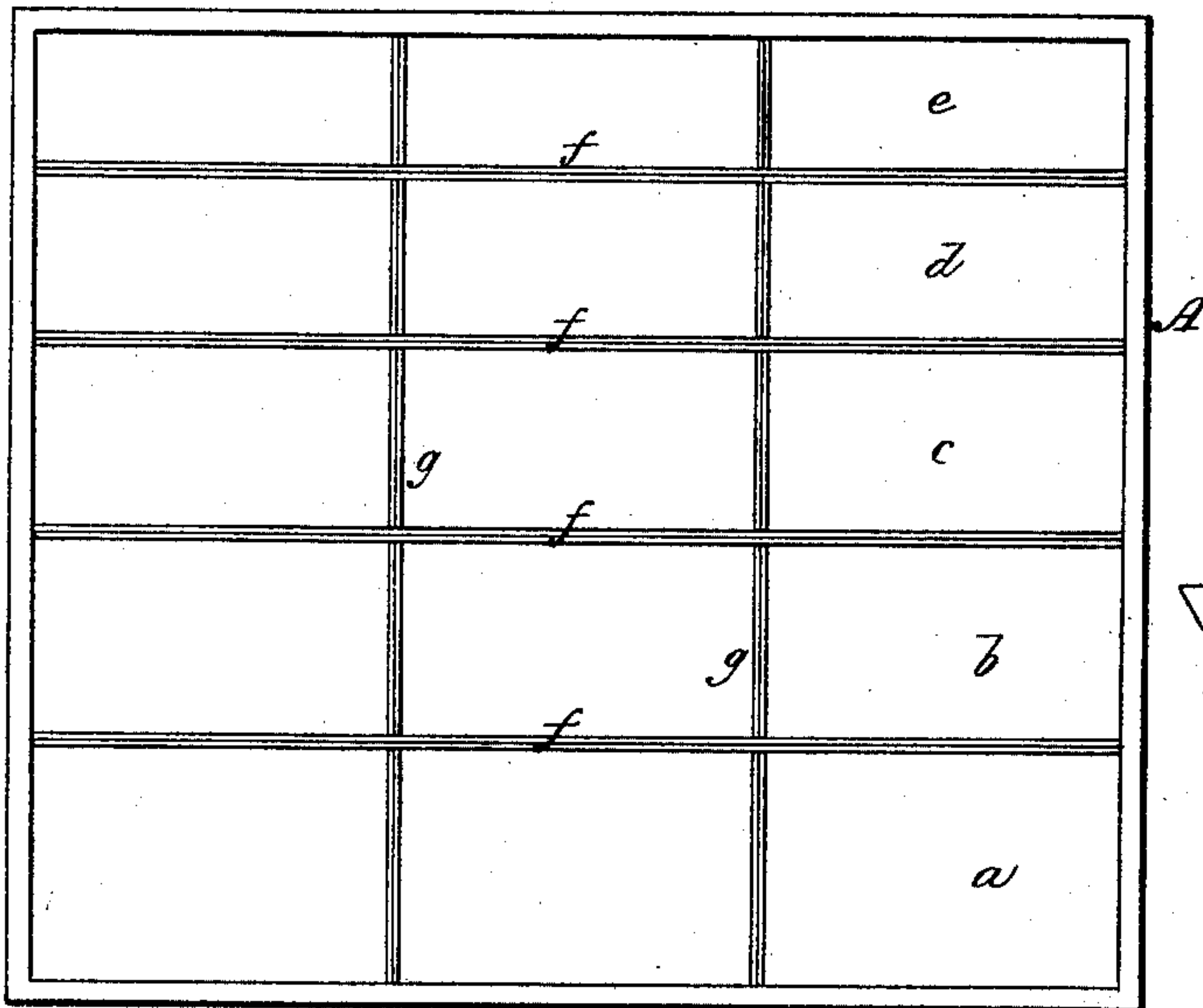


Fig 5

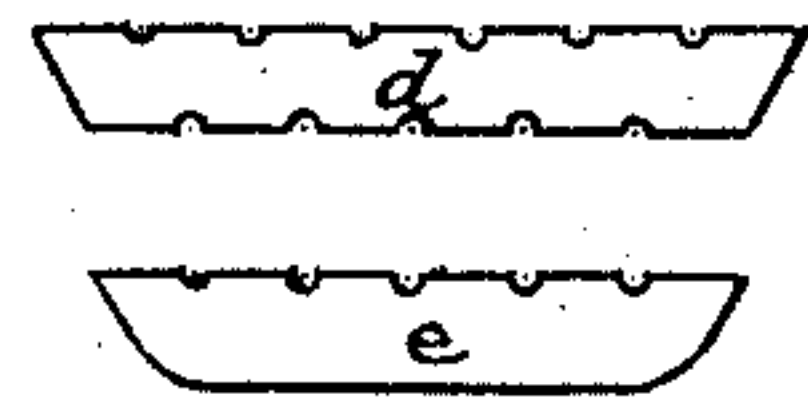


Fig 2

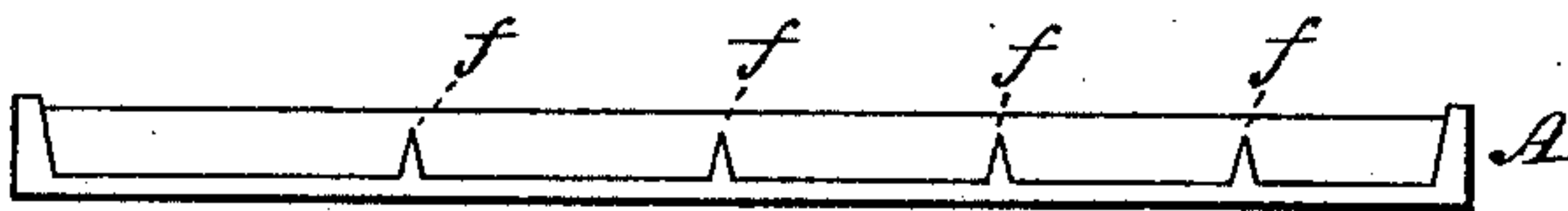


Fig 4

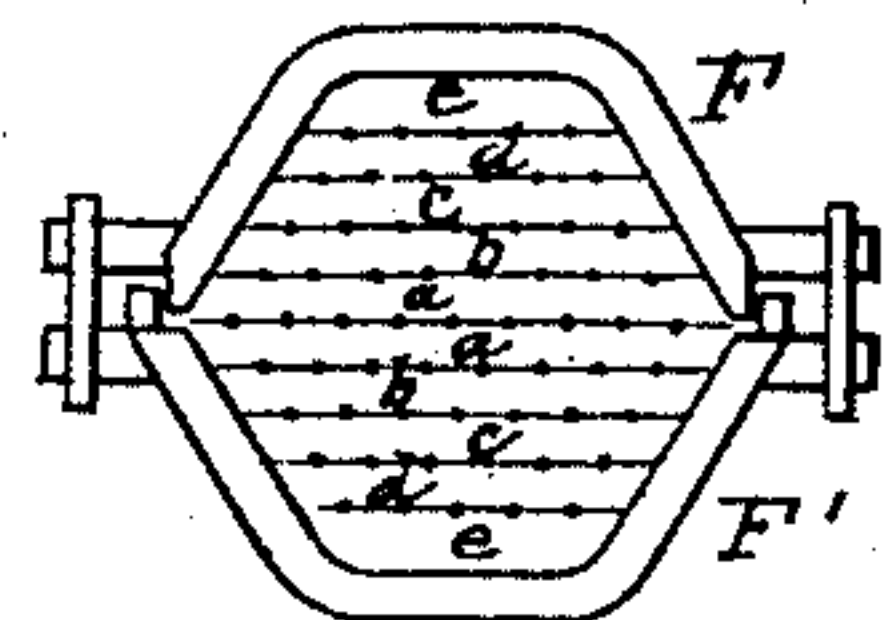
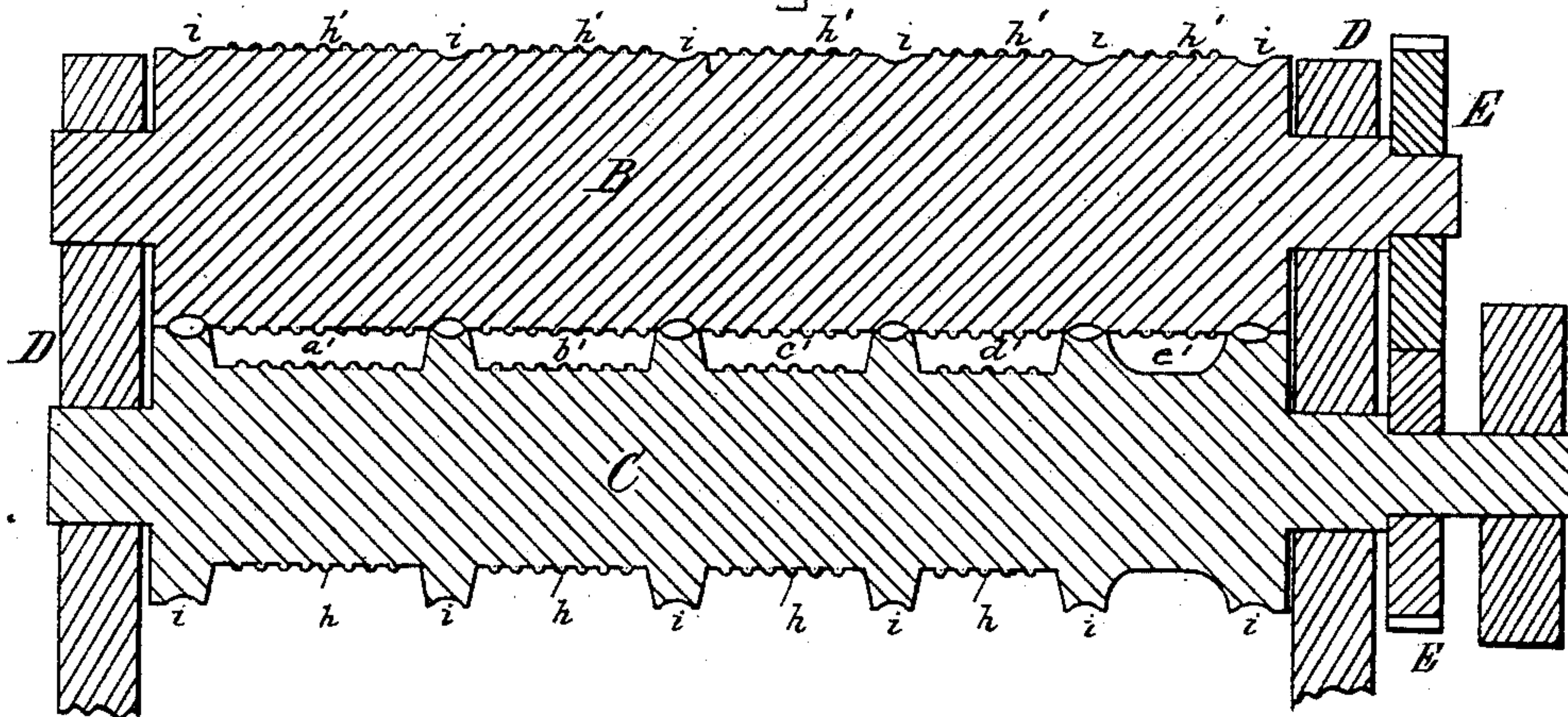


Fig 3



WITNESSES

*E. L. Smith*  
*A. B. Wray*

INVENTOR

*Henry C. Spalding*  
*by Marshall Bailey*  
*his attorney.*



# UNITED STATES PATENT OFFICE.

HENRY C. SPALDING, OF BOSTON, MASSACHUSETTS.

MANUFACTURE OF INSULATING-BLOCKS FOR ELECTRICAL CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 327,465, dated September 29, 1885.

Application filed June 8, 1882. Renewed February 28, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY C. SPALDING, of Boston, Massachusetts, have invented certain new and useful Improvements in the Manufacture of Insulating-Blocks for Electrical Conductors, of which the following is a specification.

This invention relates to the manufacture of segmental blocks of viscous insulating substances similar in character to those described in my application for Letters Patent filed December 7, 1881, and designed to be used for spacing, insulating, separating, and confining electrical conductors within a pipe-line for subterranean use in a regular order.

Having found that the casting of such articles in molds was a tedious and difficult process, I now cast them on a table separated in compartments, and roll them to their proper shape and thickness in grooved rolls or press them in dies open at the ends, wherein the surplus material merely adds to the length of the piece without variableness in its thickness or breadth. These and other features of my invention can, however, best be explained and understood by reference to the accompanying drawings, in which—

Figure 1 is a plan of a table arranged for casting a series of blocks by pouring on the material to the requisite amount, and Fig. 2 is a cross-section thereof through the compartments *a b c d e*. Fig. 3 is a pair of rolls; and Figs. 4 and 5 illustrate forms of the product and one of the uses thereof, which will presently be referred to.

The insulating material which I prefer is the article of asphalt known as "Trinidad" pitch or bitumen. This should first be refined—that is, separated from débris of any sort and from the water and volatile oils with which it is commonly charged—this being accomplished by subjecting it to such a degree of heat as will cause the oils and water to pass off in the form of vapor, after which it is decanted, and thus separated from the accompanying débris. The next step is the combining it with such quantity of the residual oils or tar of the petroleum-still as may be requisite to make it permanently viscous when cold. These proportions may be varied somewhat, according to the temperature of the weather, when it is to be used, and the char-

acter of the climate at the locality. For cold climates and for work to be used therein the proportion in some cases may be eighty per cent. refined pitch and twenty per cent. residual oil. In warm weather and in warm climates the proportion may be ninety per cent. pitch and ten per cent. oil.

In the manufacture of the blocks or segments I prefer that the compound should be slightly harder than the composition which it is best to use for filling the pipe, because the blocks must be handled, and therefore should be stiff enough to retain their shape. When the compound is sufficiently heated to enable it to become completely liquid, it is poured from a ladle over the table A, Figs. 1 and 2, in such a manner that the compartments will all be filled uniformly to a height above the tops of the partitions *f g*. Care must be taken to set the table level beforehand. The partition *g* should be lower than partition *f*, so as to render the cakes thus formed more easily separated at *f* than at *g*. When the formed cake is separated along the lines corresponding with *f*, the strips are of width suitable for the rolls. There are at least as many tiers of compartments in the table A as there are of sorts of blocks required to make up a set for the pipes.

The table A should be water-jacketed or formed with a double bottom, through which a stream of water flows under such a head as will completely fill the chamber, and thus absorb and carry off the caloric imparted to the table by the heated material.

As will be perceived in Fig. 4, the upper and lower sections, *F F'*, of the pipe are of the same shape and size, and the layers or segmental blocks which go to make up the set at that point in the pipe are, as indicated, ten in number, five in each section. In each section they are lettered *a b c d e*. Like lettered segments are counterparts of one another, and the lettered segments are made from portions of the cake included in like lettered compartments of the table A. The cake when divided along the lines *f* is separated into strips of varying widths corresponding to the varying intervals which separate adjoining partitions *f*, and each strip is longitudinally creased or partly divided along lines corresponding to partitions *g*. The strips are then



passed between power-driven revolving rolls B C, which form the wire-receiving grooves in them and at the same time give them proper shape and dimension. These rolls are supported in a suitable frame, D, and are geared together, as at E. The under roll C has five peripheral annular recesses, *a' b' c' d' e'*, which constitute the passages through which the strips *a b c d e* are respectively passed. The roll, except in the recess *e*, is provided with annular rounded beads or ribs, *h*, and the upper roll, B, is provided with correspondingly placed like ribs, *h'*, the two sets of ribs *h h'* serving to roll into the upper and under faces of the strips the longitudinal grooves designed to receive the conductors. In the rolls between each set of "points," as they may be termed, are oval-shaped annular recesses *i*, which are made for the purpose of providing receptacles for any small portion of the compound which may find its way laterally beyond the line of the points.

The strip *e* is passed between the rolls *e'*, and is grooved only on its upper face. The strip *d* passes through at *d'*, and so on.

Scrapers (not shown in the drawings) should be attached to the machine and follow each groove or recess for the purpose of removing surplus material therefrom.

The surface of the strips should be powdered or dusted over, so as to prevent adhesion to the rolls. Common whiting answers very well for such uses.

A traveling apron should be used to receive the strips as they emerge from the rolls. This may be of canvas, and the lower part should run in water to keep it wet, as by means thereof adhesion will be prevented.

The temperature of the room wherein the

rolling or pressing process is carried on should be kept at 70° or upward, so that the material should be softened enough to insure plasticity in the process. After the process is completed the product should be placed upon flat surfaces in order to straighten it, and then placed in a refrigerating-chamber until it becomes rigid, after which the sections should be separated on the lines corresponding to *g*, and the product is ready for use.

Having described my invention, what I claim is—

1. The method of making insulating block-segments for electrical conductors, which consists in first forming the insulating compound into strips of proper width by casting or molding, substantially as described, then pressing said cast or molded strips so that they shall have cross-section of the requisite shape and dimension with grooved faces for reception of the conductors, and said strips being subdivided either before or after the pressing operation into blocks or segments, substantially as set forth.

2. The roll C, constructed with strip forming or shaping recesses, *a'*, &c., grooves *i* and ribs *h*, in combination with the roll B, formed with like grooves, *i*, and ribs *h'*, for joint operation, as hereinbefore set forth.

3. The casting or molding table A, provided with partition *f* and lower cross-partition, *g*, as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 25th day of May, 1882.

H. C. SPALDING.

Witnesses:

I. V. L. RIANHARD,  
C. H. CROSBY.