

No. 721,644.

PATENTED FEB. 24, 1903.

B. WOLHAUPTER.

TIE PLATE.

APPLICATION FILED MAR. 31, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1

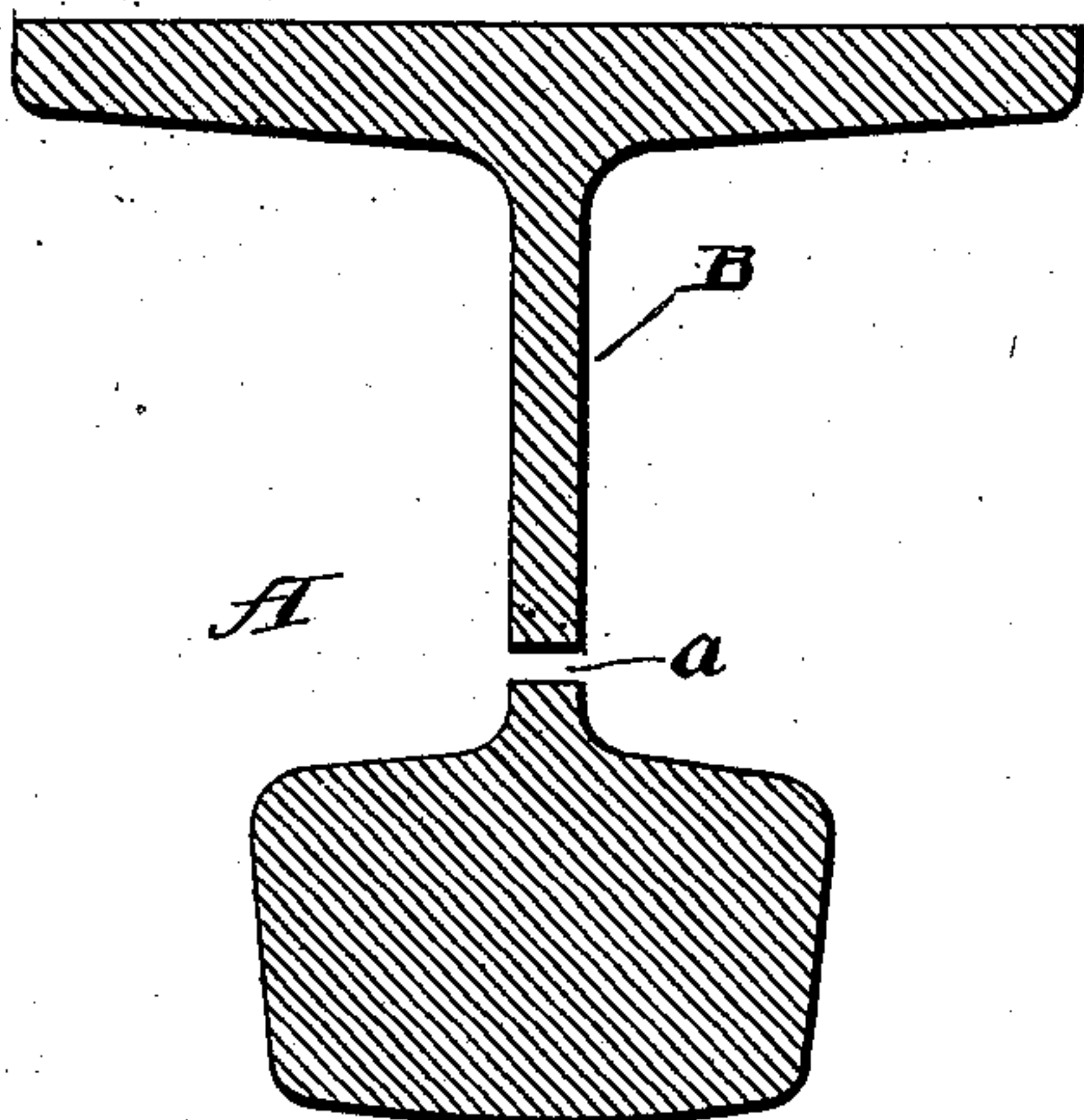


Fig. 2

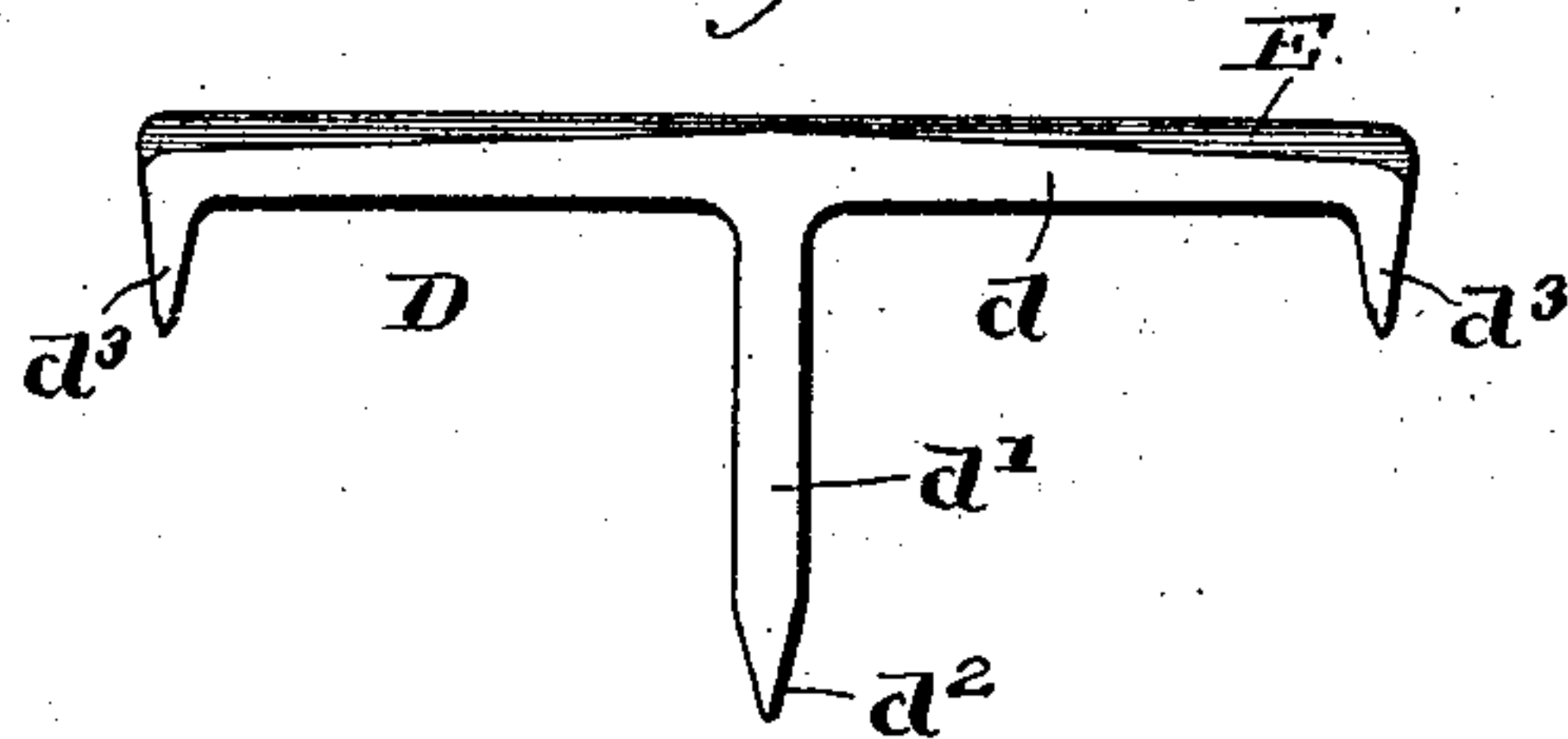


Fig. 3

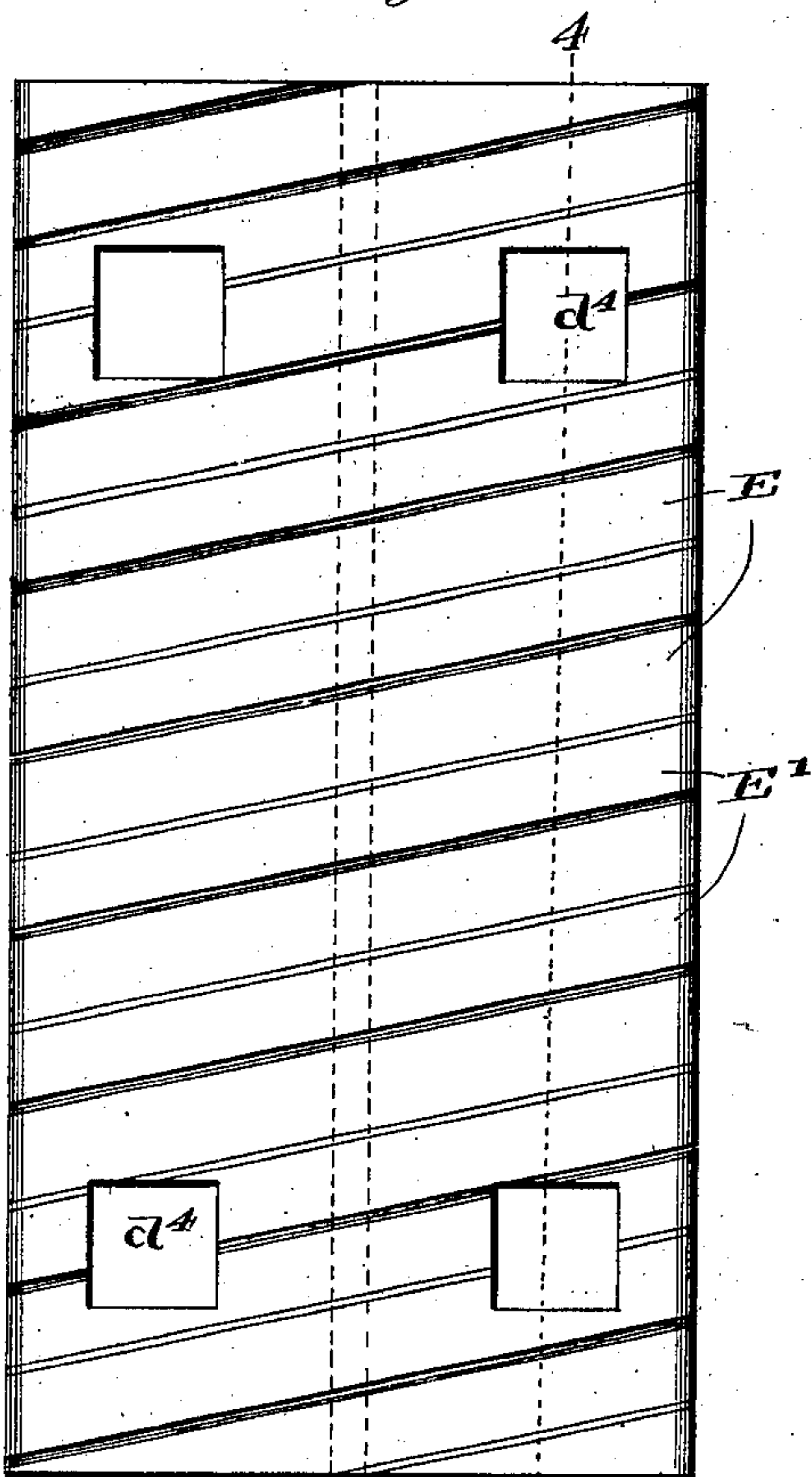
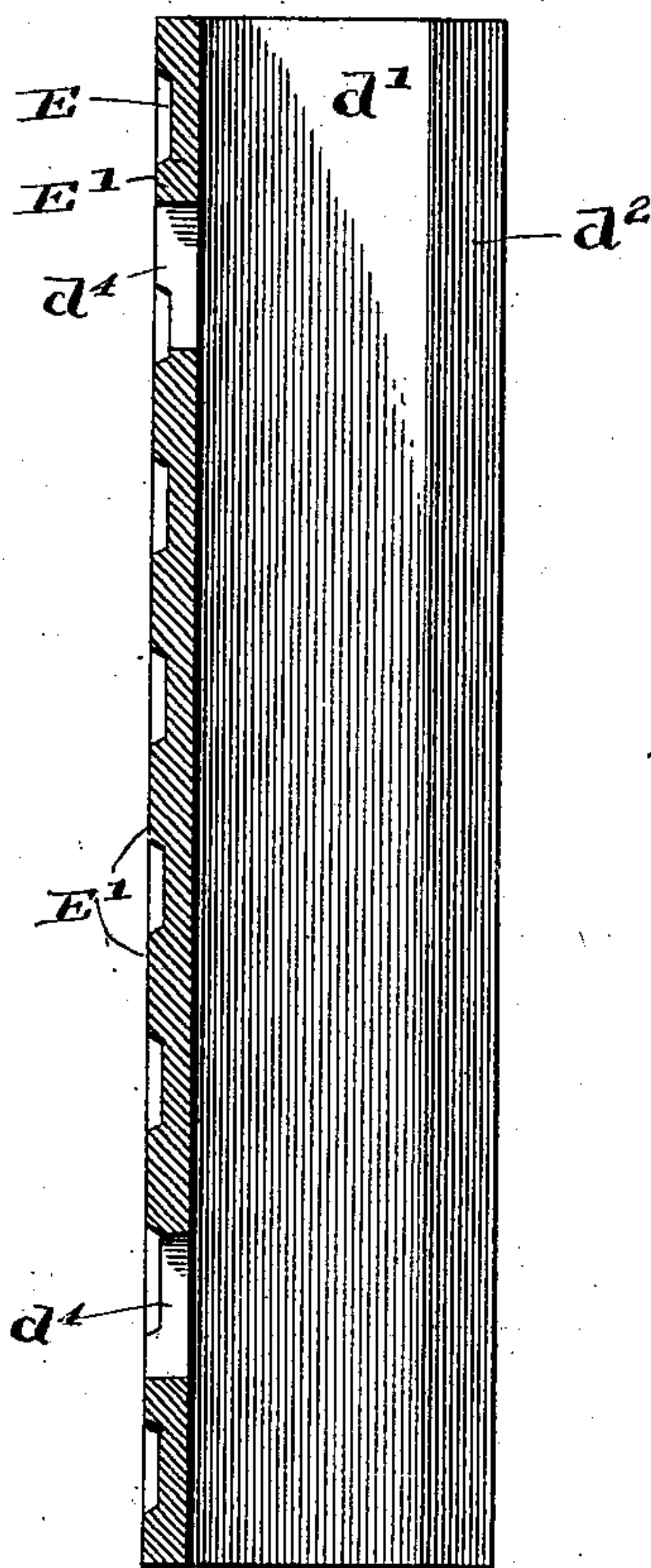


Fig. 4



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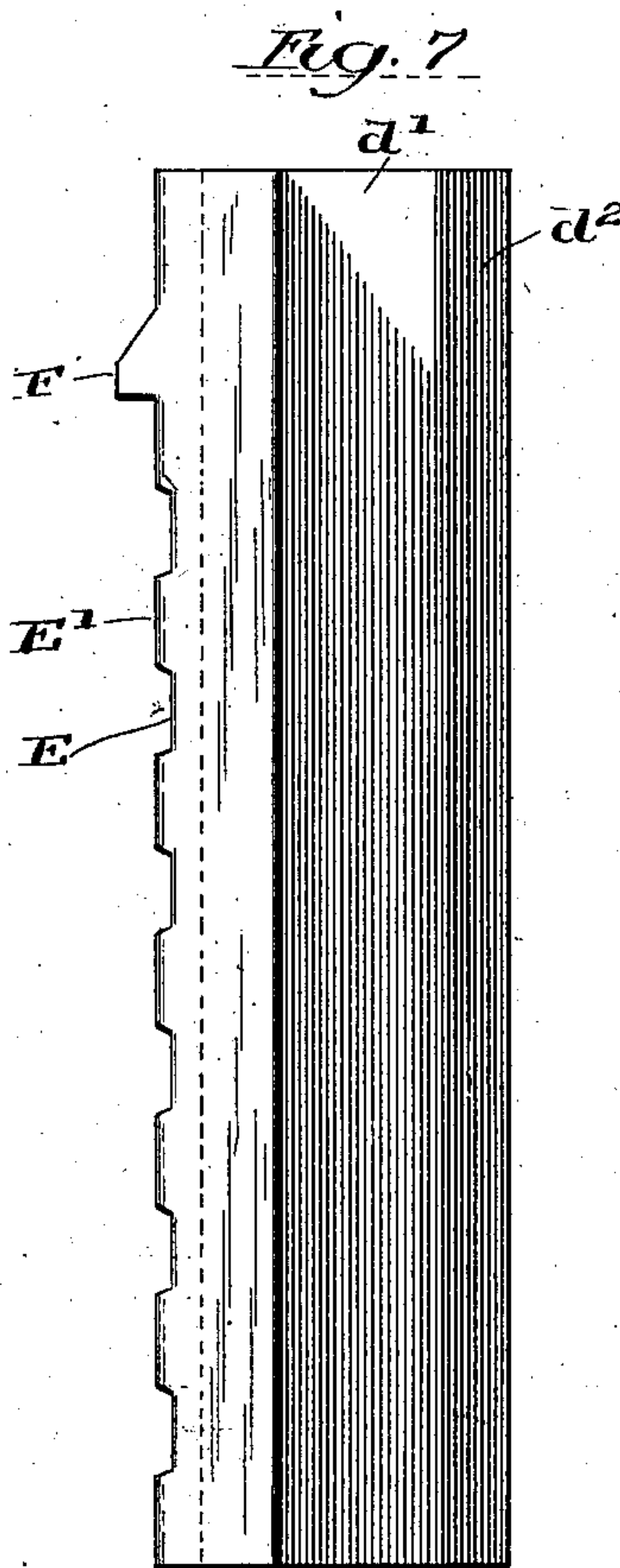
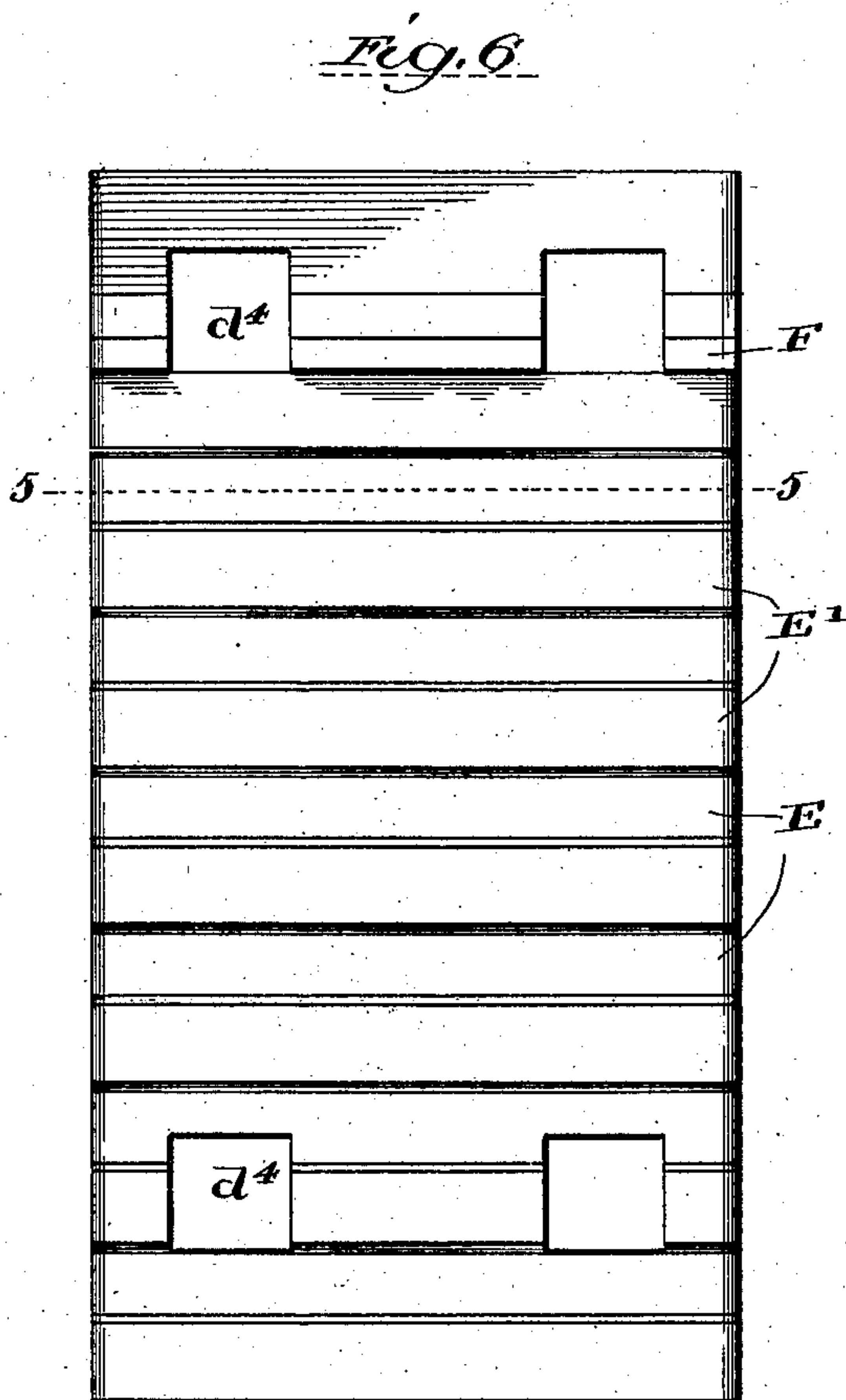
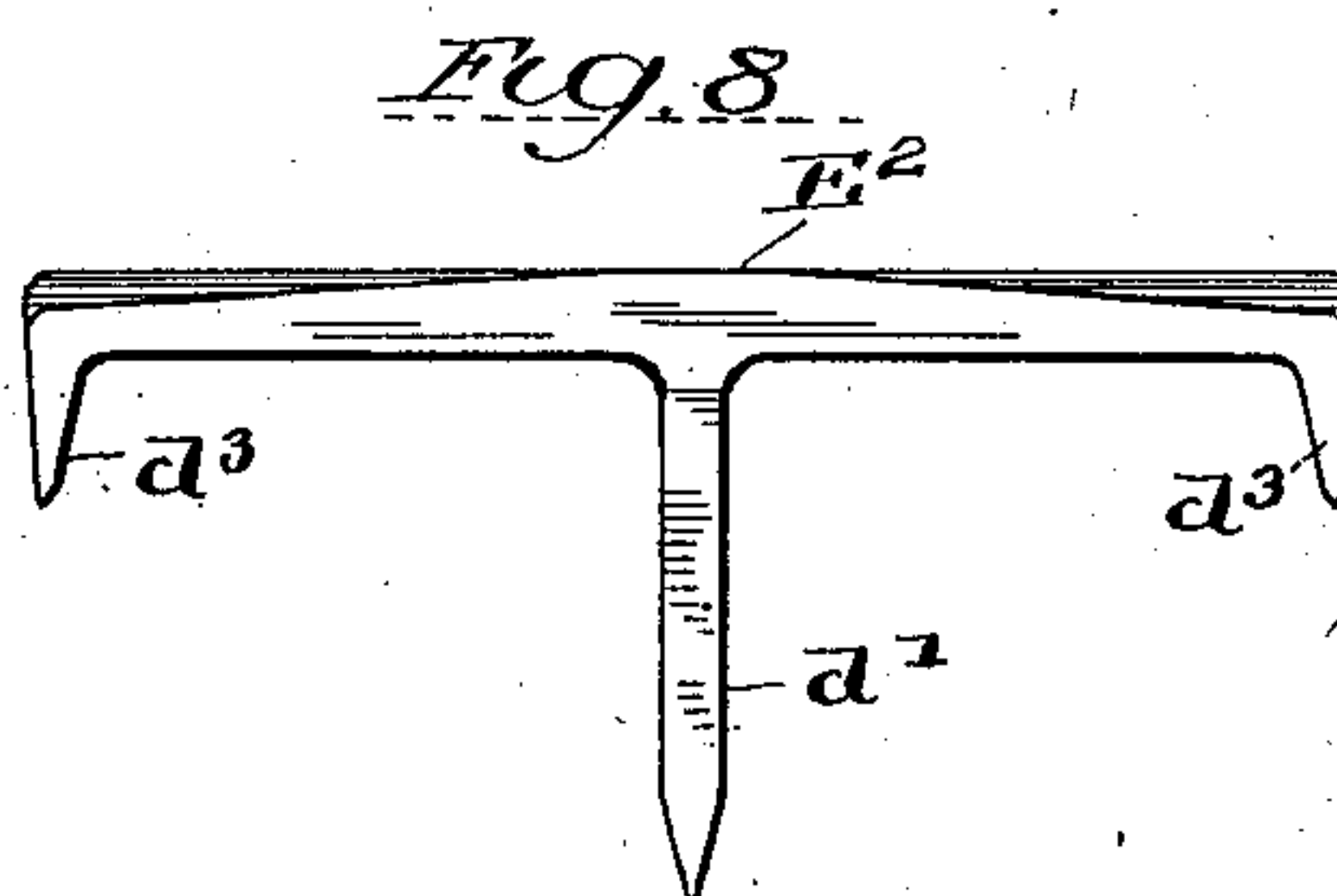
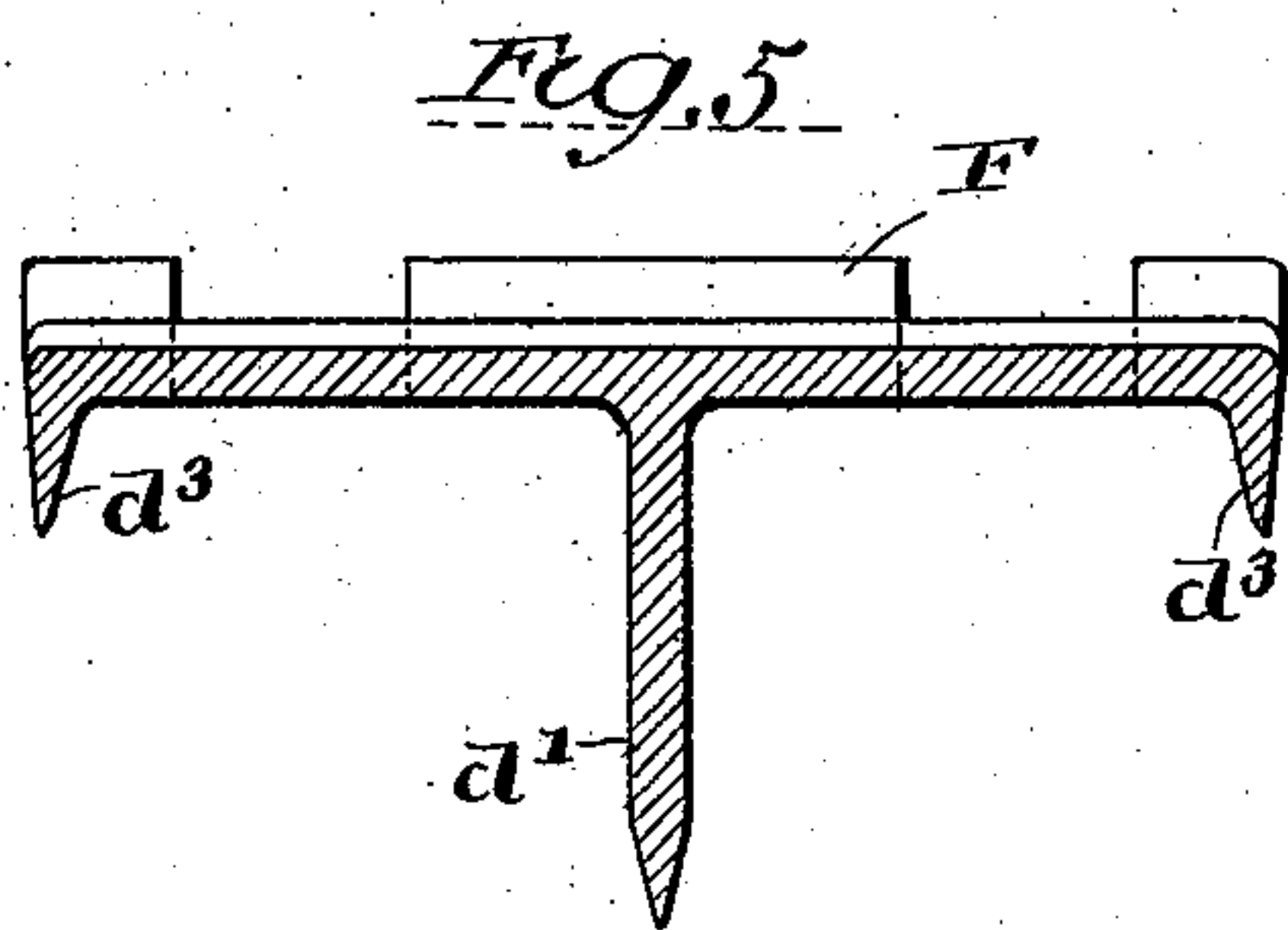
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

BENJAMIN WOLHAUPTER, OF CHICAGO, ILLINOIS.

## TIE-PLATE.

SPECIFICATION forming part of Letters Patent No. 721,644, dated February 24, 1903.

Application filed March 31, 1902. Serial No. 100,667. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN WOLHAUPTER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tie-Plates; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in railway-tie plates and embraces, among others, the following objects: first, the manufacture of a tie-plate made from old or discarded railroad-rails, whereby the cost of manufacture will be greatly cheapened; second, the manufacture of a tie-plate which will more firmly cling to the ties than those heretofore in common use; third, the manufacture of a tie-plate with the least amount of metal consistent with durability and strength, with a view of cheapening the cost of manufacture, and, fourth, the manufacture of a tie-plate of such configuration upon its surface that water, sand, or other deleterious material will be drained off or away from the same. These and other objects of the invention will be readily comprehended from the accompanying drawings and the description thereof and will be more clearly pointed out in the claims appended hereto.

In said drawings, Figure 1 illustrates in cross-section the two parts of an ordinary railway-rail separated and from one of which my tie-plate may be made. Fig. 2 shows an end view of one form of the tie-plate embodying my invention. Fig. 3 is a top plan view of another form of my tie-plate. Fig. 4 is a longitudinal vertical sectional view taken upon the line 4 4 of Fig. 3. Fig. 5 is a sectional view taken upon the line 5 5 of Fig. 6, showing another modified form of tie-plate. Figs. 6 and 7 are respectively top plan and side views of the form of tie-plate shown in Fig. 5. Fig. 8 illustrates in an end view still another modification.

In said drawings, A represents as a whole an old railroad-rail which has been cut or split lengthwise at *a*, leaving the flange and the web in one piece B and the head in another piece C. The latter forms a convenient billet for the manufacture of harrow-

teeth or other light articles as commonly made, or it may be rolled out into a billet-plate in a familiar manner. The piece B forms a shape ready to be manufactured into my improved tie-plate with very little additional rolling.

It is not thought necessary to illustrate or to describe the various steps to which the part B of the old rail is subjected before it becomes the finished tie-plate shown in Fig. 2. It will be understood by those skilled in the art that the part B goes through several passes in the rolls for the purpose of widening the foot-flange of the rail and making it of equal thickness from end to end, while the web would desirably be made thinner and with parallel sides and the extreme ends or points sharpened. This tie-plate (lettered D) as a whole consists of a plate proper, *d*, provided longitudinally with a central flange *d'*, having parallel sides and a sharpened end *d<sup>2</sup>* in order that the flange may enter the fibers of the wood easily and deeply. The side margins of the plate *d* are provided with longitudinally-arranged flanges *d<sup>3</sup>*, each projecting in the same direction as the flange *d'*, each being sharpened at its end, but each being shorter than the flange *d'*.

*d<sup>4</sup>* *d<sup>4</sup>* are suitable spike-holes extending through the tie-plate *d*. As a preferred construction I have shown the outside edges or faces of the side flanges *d<sup>3</sup>* as being inclined downwardly and inwardly toward the central flange *d'*. These may, however, be rolled with the side faces parallel with the faces of the central flange *d'*.

The upper surface of the plate D is provided with a series of sand spaces, channels, or grooves E E. These grooves are tapered or inclined away from the center—that is to say, the groove is deepest at the side margins of the plate above the flange *d<sup>3</sup>* and is shallowest over the flange *d'*. In the form shown in Figs. 5, 6, and 7, however, the groove is of equal depth throughout its length, while in the form shown in Fig. 8 the groove follows the inclination of the form shown in Fig. 2, but with this distinction: The grooves in Fig. 2 practically unite in the center, while they do not so unite in the form shown in Figure 8. The grooves may extend squarely across the tie-plate and the flanges, as shown



in Fig. 6, or they may extend in a diagonal line, as shown in Fig. 3, the object being to so dispose the grooves as to provide sand-spaces below the rail-bearing surface.

5 Between the grooves E, I provide transversely-arranged bars or ribs E', which extend from side to side of the plate and serve not only to stiffen the latter, but also act as a tie to hold the flanges  $d'$  and  $d^3$  firmly together. These bars E' may also run in a  
10 diagonal manner, as is shown in Fig. 3, or at right angles, as shown in Fig. 6.

In the form shown in Figs. 2 and 5 the channels or grooves do not extend to the surface of the bars E', whereas in the form shown in Fig. 8 the channels E extend only  
15 part way across the tie-plate, leaving a flat space E<sup>2</sup> at the center. In the form shown in Figs. 5, 6, and 7 it may be desirable to use one or more shoulders for the rail-flange, and such rail-abutting shoulder is shown at F. The object being to drain the water or sand from the rail-bearing surface of the tie-plate, it is obvious that the channel shown in Fig.  
20 5 will accomplish that purpose, and therefore I do not limit my invention to facing the channels with sloping bottoms across the tie-plate, since manifestly these channels may be faced in any desired direction.

30 The flanges  $d^3$  serve an important purpose in addition to stiffening the tie-plate proper—that of confining the fiber of the wood beneath the plate. The inside sloping faces of these flanges  $d^3$  tend to force the wood inward and toward the central holding-flanges  $d'$ , thus forcing the wood of the tie to a firm and close contact with the central flange, and thereby preventing its withdrawal. I am aware that tie-plates have heretofore been  
40 made with a central flange. These, as I understand, have been abandoned, it being found that the loading of the rail comes upon one edge and that the opposite edge rises off the tie, and thus sucks in water and sand beneath the tie-plate to the great detriment of tie-plates as well as the tie, each of which is thus more rapidly destroyed. By placing the flanges  $d^3$  upon the outer margins of the tie-plate this tendency of water and sand to  
50 suck in underneath the tie-plate or between the tie-plate and the tie is entirely prevented, and the tie is thus preserved and its life is thus prolonged. Of course it will be understood that my tie-plate D will be placed upon the tie longitudinally—that is to say, so that the flanges  $d'$  and  $d^3$  will be parallel with the grain of the wood.

It will be manifest from the foregoing description that my tie-plate may be easily manufactured, that it will be cheap and durable, and that it possesses all of the elements of strength with none of the disadvantages of tie-plates heretofore in use, which are provided with flanges. It will also be observed  
65 that my tie-plate may be cheaply manufactured, because by making it from old railway-rails, split as shown in Fig. 1, the body

of the plate and the deep central flange are already formed, and it therefore requires fewer passes through the rolls to complete the plate than if made from a square billet, as is commonly done. 70

What I claim, and desire to secure by Letters Patent, is as follows:

1. A tie-plate provided on its lower surface with flanges running lengthwise of the plate, and in its upper surface with channels or grooves running across the flanges on its lower surface. 75

2. A tie-plate provided on its lower surface with one or more longitudinally-arranged flanges, and on its upper surface with transversely-arranged channels or grooves which extend across the plate and reach to both side margins of the same. 80

3. A tie-plate provided on its lower surface with longitudinally-arranged flanges, and in its upper surface with channels or grooves, extending diagonally across the lower flanges, said channels or grooves sloping downwardly from the center of the plate and reaching to the side margins thereof. 85

4. A tie-plate having a deep central flange provided with vertical sides, and two side flanges arranged parallel with the central flange, and with the grain of the wood on which the tie-plate is to be used. 90

5. A tie-plate provided with channels extending transversely across the top of the plate and with flanges arranged longitudinally on the bottom of the plate and in a direction to cross the channels, said flanges being inclined on their inner faces to compress the fiber of the tie. 95

6. A tie-plate provided on its lower faces with flanges running lengthwise of the plate and upon its upper surface with channels or grooves running in a direction diagonally across the flanges below. 100

7. A tie-plate provided in its rail-supporting surface with transverse grooves or channels, and at one margin of said supporting-surface with a transverse rail-abutting shoulder. 105

8. A tie-plate provided on its lower surface with longitudinally-arranged flanges, and having in its rail-supporting surface transversely-arranged channels or grooves and at one margin of said surface a transverse rail-abutting flange. 110

9. A tie-plate provided in its rail-supporting surface with transverse grooves or channels, reaching to the edge of the plate, and at one margin of said surface a transverse rail-abutting shoulder. 115

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 29th day of March, A. D. 1902. 120

BENJAMIN WOLHAUPTER.

Witnesses:

TAYLOR E. BROWN,  
WILLIAM L. HALL.