

O. A. MYGATT.
PRISMATIC REFLECTOR.
APPLICATION FILED DEC. 14, 1903.

2 SHEETS—SHEET 1.

FIG. 1.

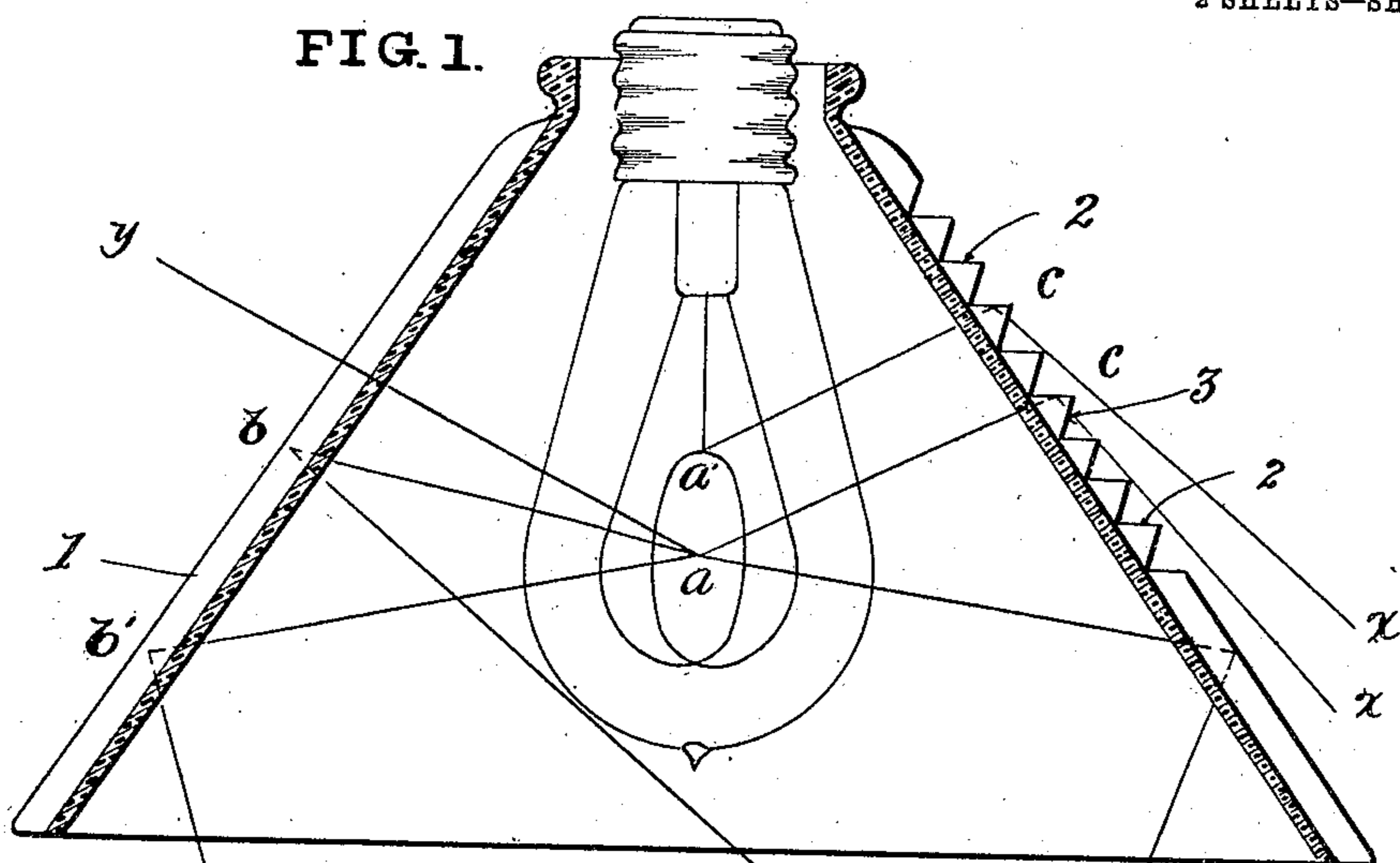


FIG. 2.

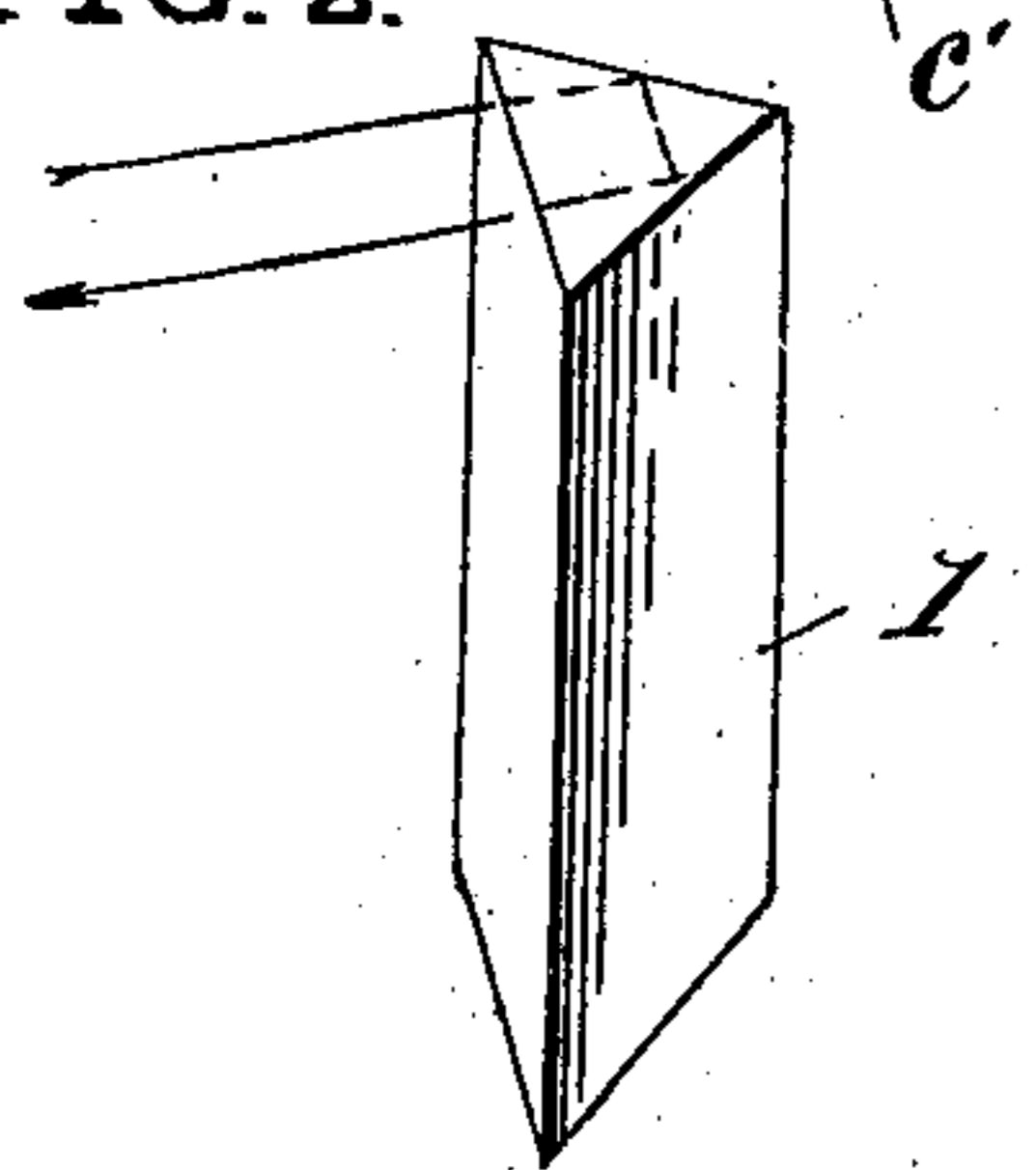


FIG. 4.

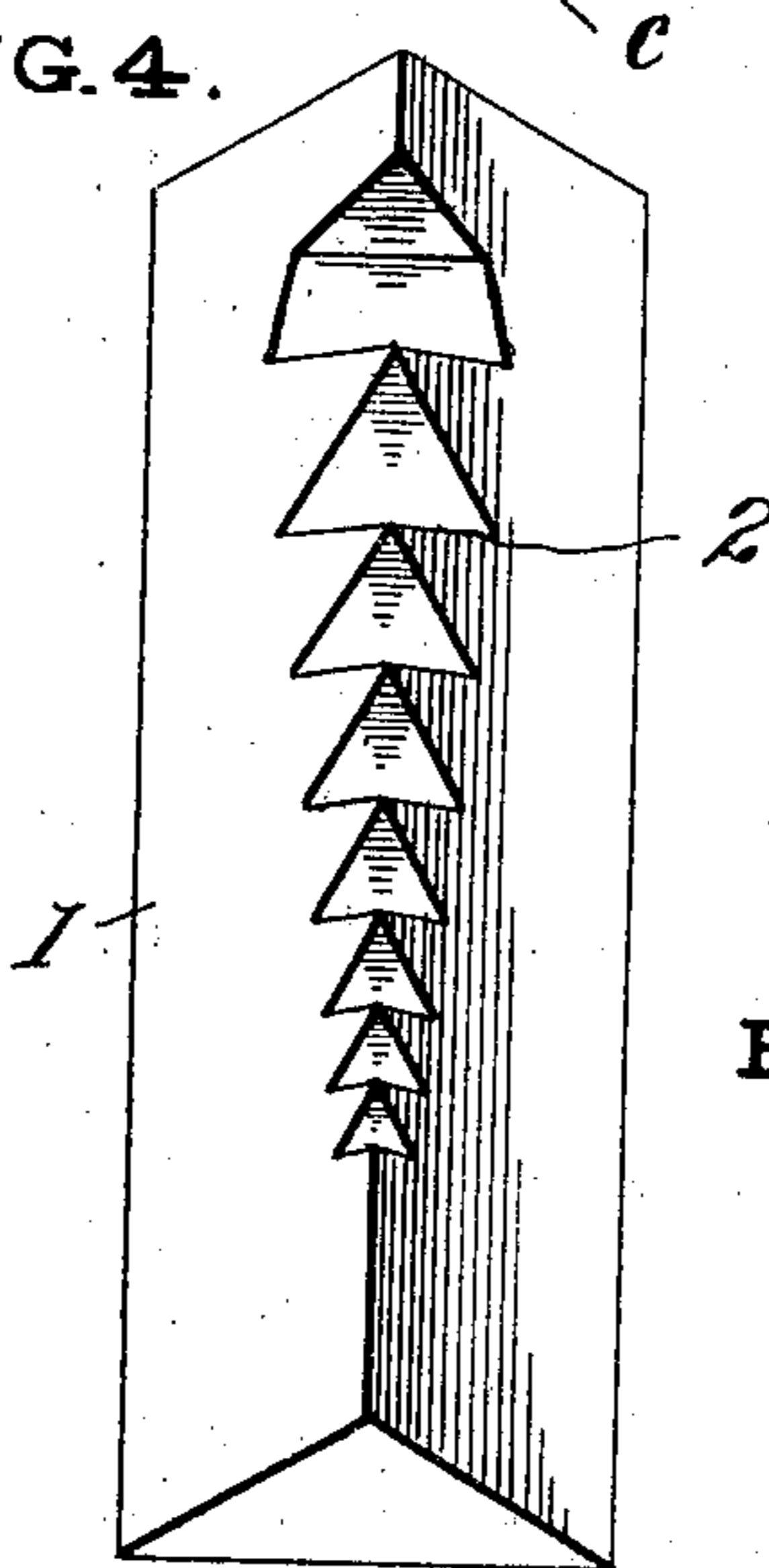


FIG. 3.

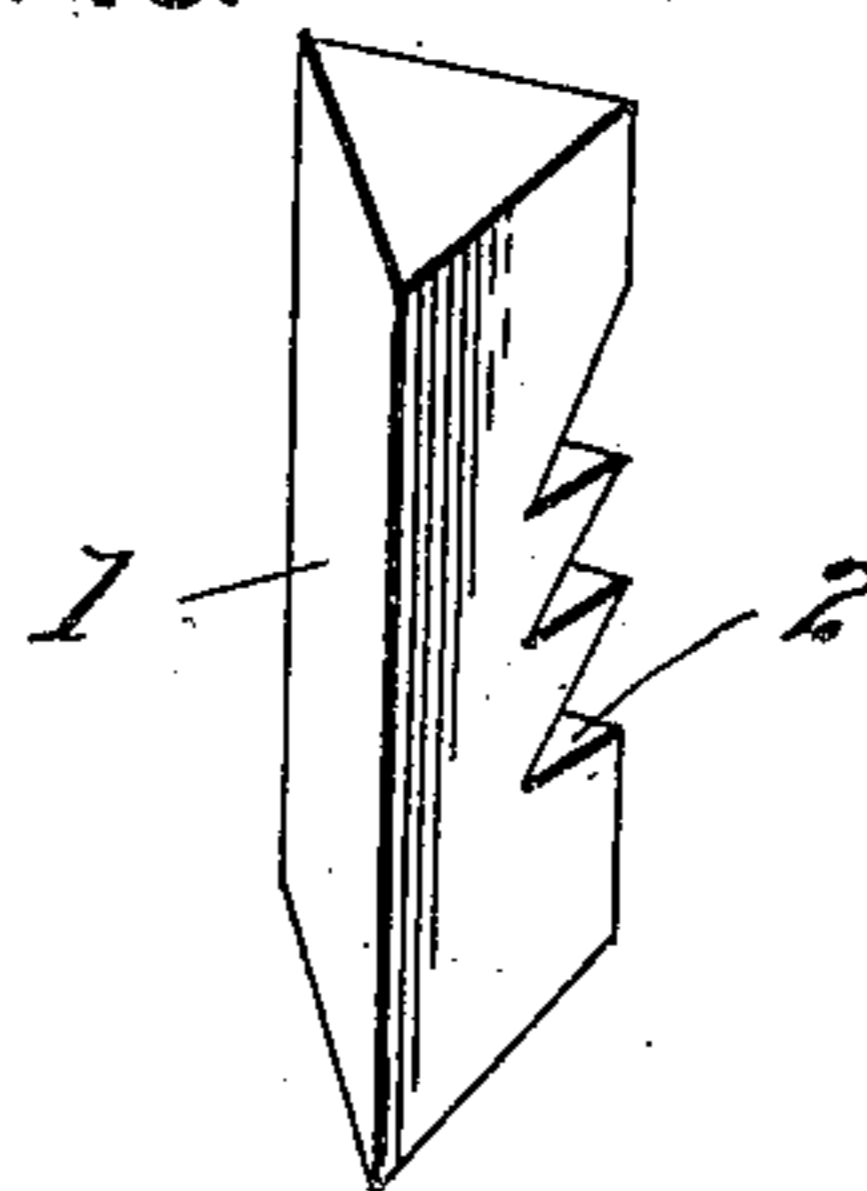


FIG. 5.

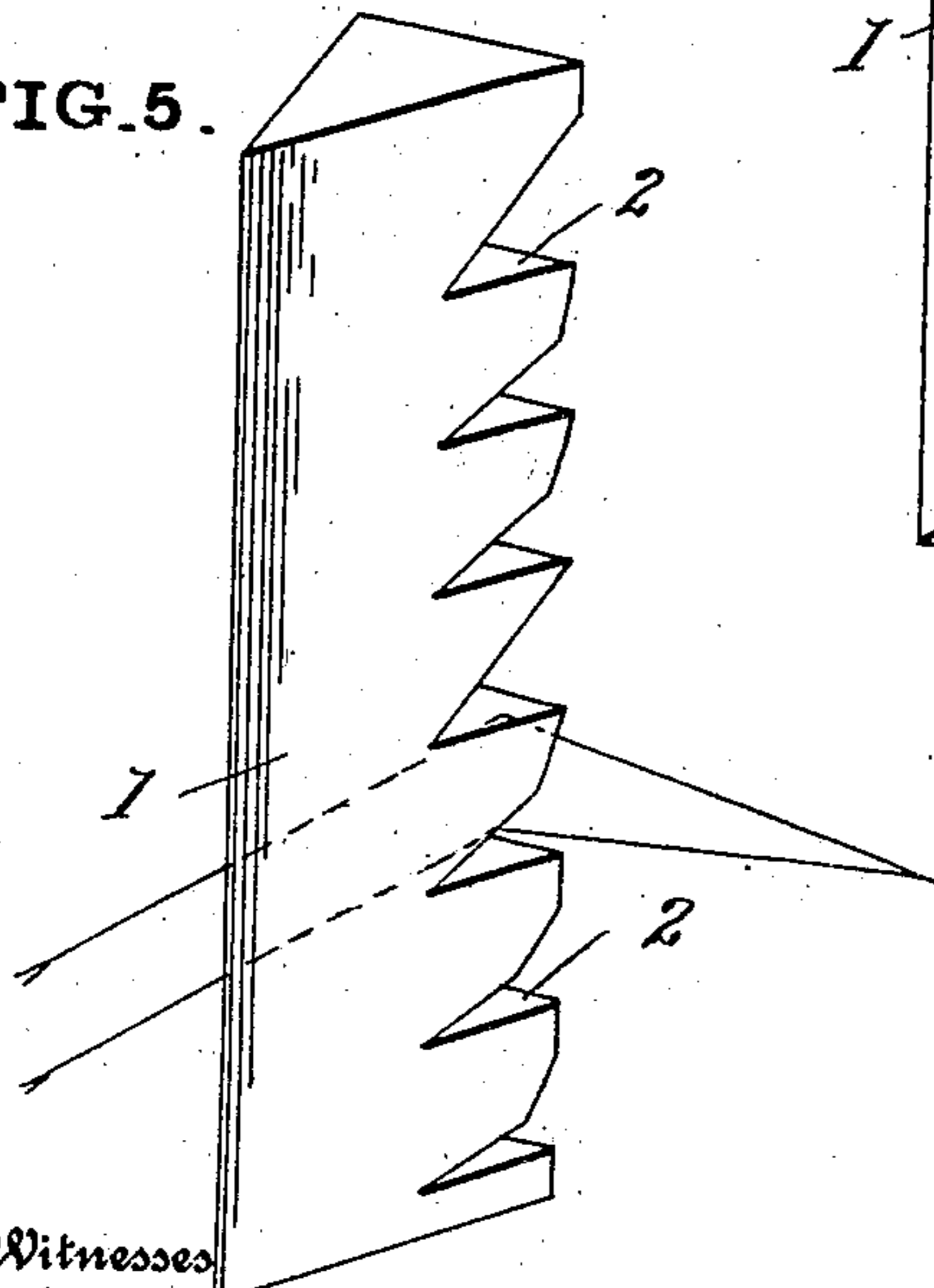
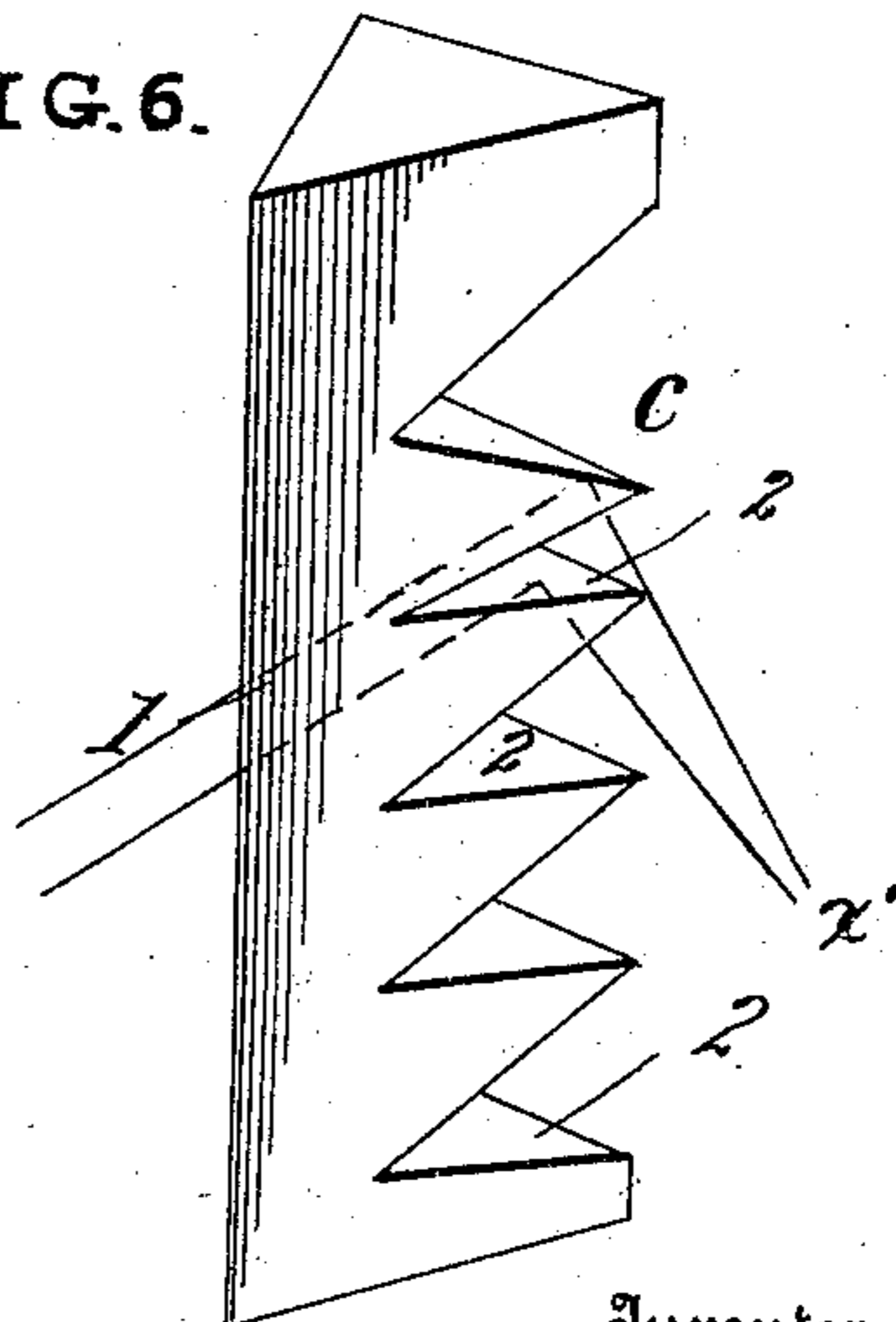


FIG. 6.



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No. 821,306.

PATENTED MAY 22, 1906.

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2 SHEETS—SHEET 2.

FIG. 7.

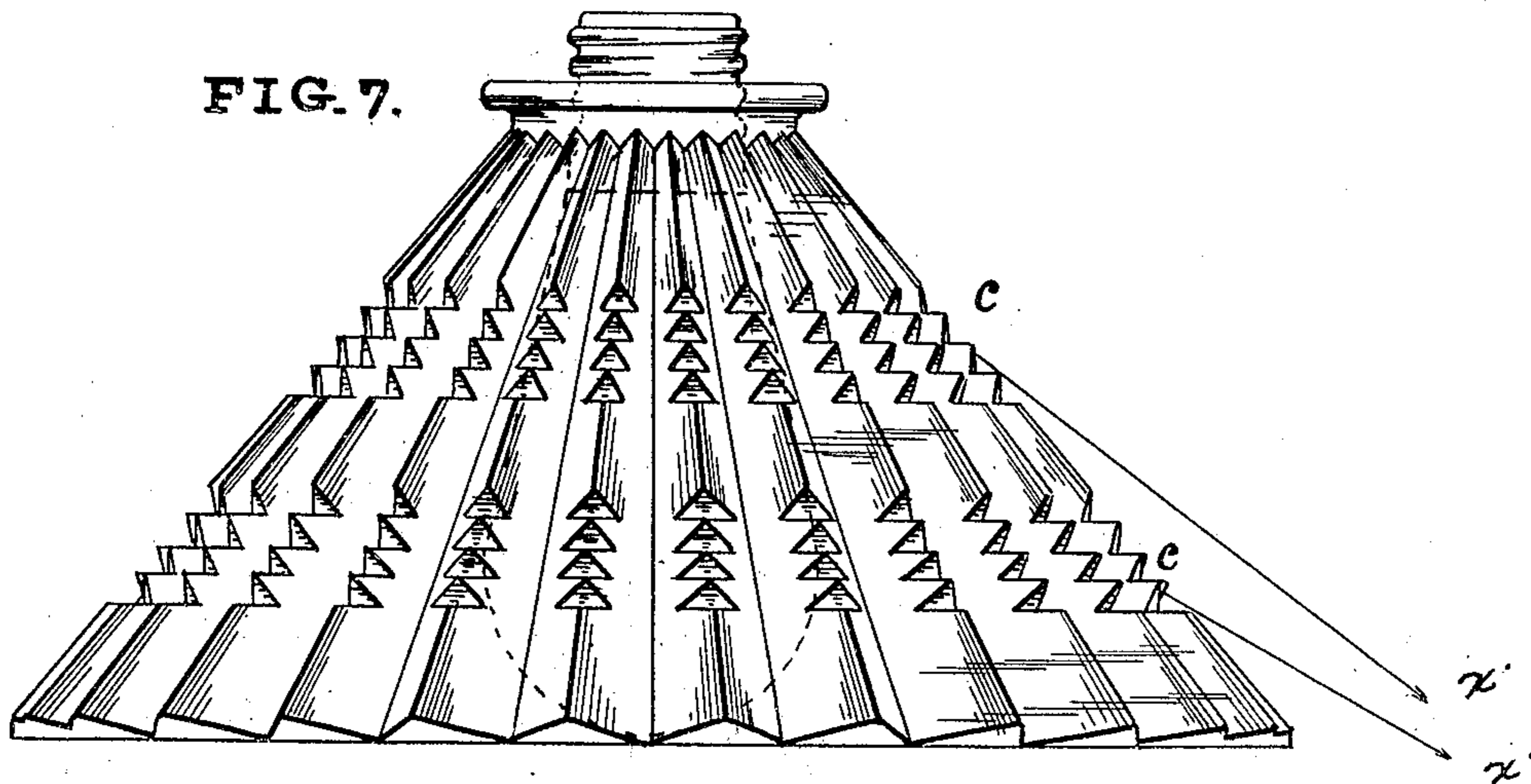


FIG. 8.

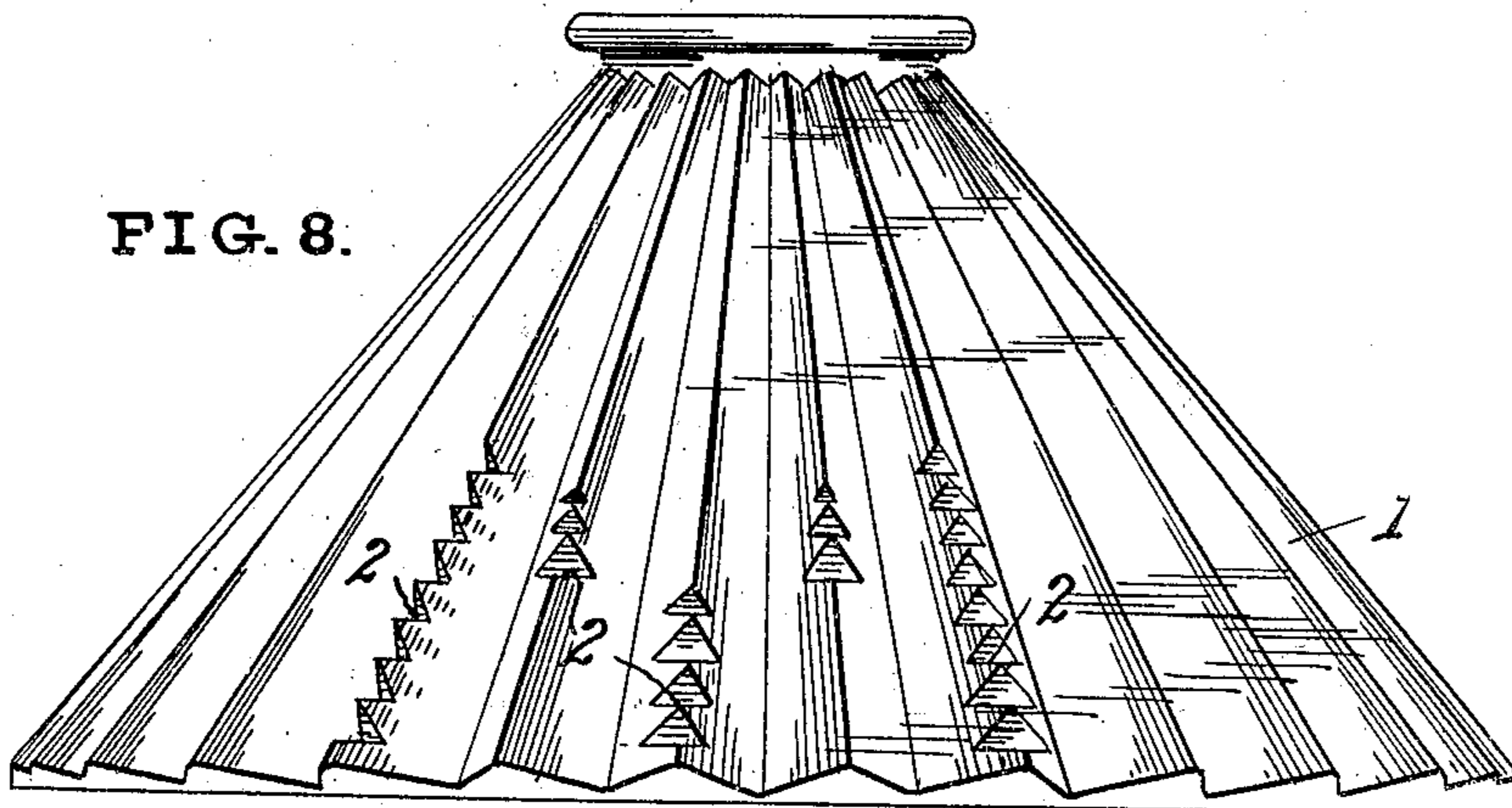
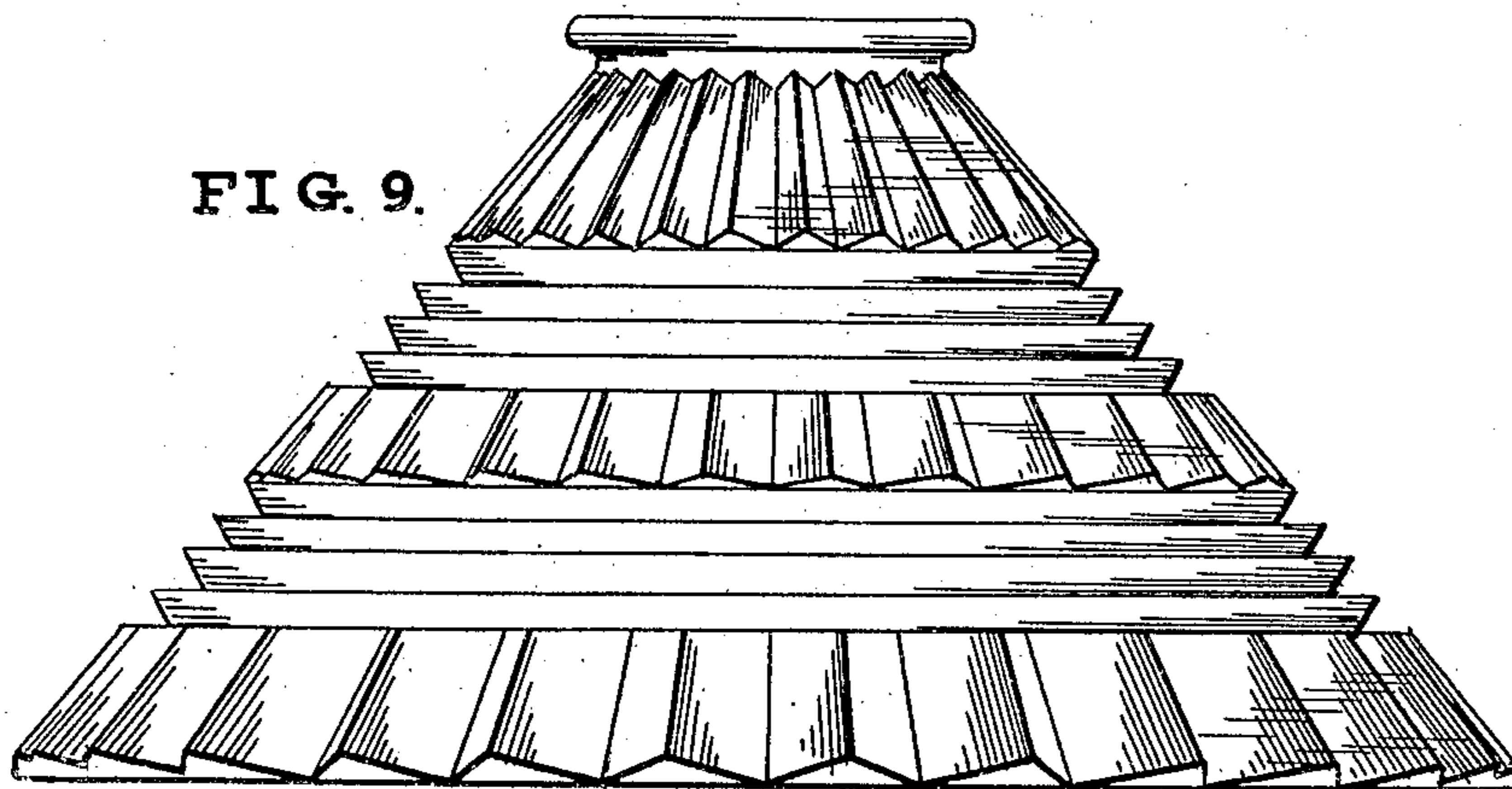


FIG. 9.



Witnesses
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UNITED STATES PATENT OFFICE.

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PRISMATIC REFLECTOR.

No. 821,306.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed December 14, 1903. Serial No. 185,125.

To all whom it may concern:

Be it known that I, OTIS A. MYGATT, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Prismatic Reflectors, of which the following is a specification.

This invention relates to prismatic-glass reflectors for artificial lights.

The object of the invention is to produce a reflector composed of glass in which reflection is accomplished by external prisms, but with the prismatic surface modified by the omission of parts of the reflecting-prisms, the portions from the reflecting-prisms which are omitted permitting the passage of light. Where the reflecting-prisms are omitted, the outer surface of the reflector may have light-directing facets, so that the light-rays which pass through the glass are directed in determined directions.

As I have explained in my Patent No. 736,535, of August 18, 1903, the most complete reflection of light-rays by a prismatic-glass reflector is accomplished when the light-rays from within the reflector encounter the outer planes of the prisms at angles of forty-five degrees. As artificial lights are most frequently arranged to throw the light-rays downwardly, I will for convenience describe my reflector with reference to such an arrangement; but of course this arrangement may be varied.

In the drawings, Figure 1 is a diagram illustrating an incandescent lamp, a prismatic reflector, and the course of some light-rays. Fig. 2 is a detached perspective view of a reflecting-prism, showing direction of reflected light-ray. Fig. 3 is a similar view of an interrupted prism. Fig. 4 is a front view of such a prism. Figs. 5 and 6 are perspective views of interrupted prisms, showing course of some light-rays. Fig. 7 is a side elevation of a reflector embodying a modification of the invention. Fig. 8 is a similar view of another modification, and Fig. 9 still another modification.

A prismatic-glass reflector of proper form externally covered with prisms of the character shown in Fig. 2 is capable under favorable circumstances of reflecting as much as eighty-five per cent. of the light-rays which reach the prisms from within the reflector. The most effective reflecting-prisms are arranged radially. A spiral arrangement of prisms, such as disclosed by me in former patents, can be used, but is less effective.

By mutilating or removing parts of some of the prisms light-rays will be permitted to pass through the reflector at these parts, thus illuminating outside the reflector. By forming the outer surface of these parts of the reflector into light transmitting and directing facets or prisms instead of light returning or reflecting prisms the light-rays which pass through the reflector will be directed or distributed as desired. Such external illumination will be of course at the expense of the device as a complete reflector.

In Fig. 1 let the section A represent a frusto-conical body externally provided with reflecting-prisms 1. As seen from the viewpoint A' the reflector appears dark. This is because the light-rays have been mainly reflected back by prisms 1 in the general direction indicated by lines abc or $a'b'c'$. The small percentage of light which passes through or between prisms 1 continues upward in the direction ay . Now if a prism 1 be interrupted or modified for part of its length and the outer face of the reflector which would be otherwise occupied by such prism 1 be cut up into approximately horizontal planes 2, arranged so that light from within the reflector shall strike these planes at such an angle that such light shall not be reflected back into the reflector, the rays will pass through and will thence be directed by the planes 2. The lines acx , $a'cx$ indicate directions such rays may take. At the angle illustrated in Fig. 1 surfaces 3 are substantially inert. It is apparent that by arranging the surfaces 2 in such planes as to direct the light-rays according to known optical laws the rays which pass through the reflector can be either concentrated or diffused. The transverse prisms produced by the mutilation of prisms 1 may have several sides, so as to have one or more directing, one or more refracting, and the necessary neutral surfaces. (See Fig. 5 and see patent of Blondel *et al.*, No. 563,836, for explanation of such prisms.) In Fig. 1 the lines cx , indicating light-rays, are parallel, while in Figs. 6 and 7 the lines cx' converge and reach a focus at a distance depending on the inclination of surfaces 2.

In Figs. 4, 5, and 6 the horizontal surfaces 2 on the vertical prisms 1 are of various sizes. Of course a large surface 2 will permit the passage of more light-rays than a smaller one. In Fig. 9 these light-directing surfaces form bands extending around the reflector. The

surfaces 2 may thus be made to appear as bright bands or as rows of bright bead-like brilliants, or they may be made to represent characters. Thus in Fig. 8 the letter "M" is shown composed of triangular light-transmitting facets. The side of the reflector so constructed will of course have a very different effect, both as to distribution of light and as to light reflection, from that side which is covered with unmutated reflecting-prisms.

In my reissued Patent No. 12,358, dated June 13, 1905, I describe an invention having some resemblance to the present invention. In that invention, however, the radiated light-rays are taken entirely from the upper part or "neck" of the shade-reflector, and substantially all the light-rays from that part are transmitted. The distribution of light, therefore, must be equal in all radial directions. My present invention is an amplification and improvement. By the present invention I may take transmitted light-rays from any part of the reflector-body and may take more or less such rays from one side or the other. The distribution, therefore, of both transmitted and reflected rays may be very unequal.

Highly-ornamental decorative effects may be produced by the present invention, as well as more complete control of the light-rays. By permitting more or less light-rays to pass through the reflector almost any distribution of light may be effected without changing the form of the reflector-body.

What I claim is—

1. A reflector composed of a single piece of

glass in form of a frustum and having an open mouth, the outer surface having approximately vertical reflecting-prisms by which light-rays are returned and directed out at the open mouth, said reflecting-prisms interrupted in parts in definite patterns, whereby definite portions of light, from definite parts of the reflector-body, are permitted to pass through the reflector.

2. A reflector composed of a single piece of glass, having its outer surface provided with reflecting-prisms with their axes extending in a generally vertical or radial direction, some of said prisms mutilated by the introduction therein of plane surfaces calculated to transmit and direct light-rays.

3. A reflector composed of a single piece of glass and having its body in form of a frustum with an open mouth, and having on its outer surface reflecting-prisms arranged to return light-rays from within the reflector back and out at said mouth, certain of said prisms varied in parts by surfaces arranged to transmit light-rays through the reflector and to direct the rays after passage.

4. A reflector composed of a single piece of glass having on its outer surface reflecting-prisms, certain of said prisms being mutilated by the introduction of light-transmitting surfaces varying in size.

In testimony whereof I affix my signature in presence of two witnesses.

OTIS A. MYGATT.

Witnesses:

W. A. DOREY,
GEO. A. COTA.