

Sept. 2, 1958

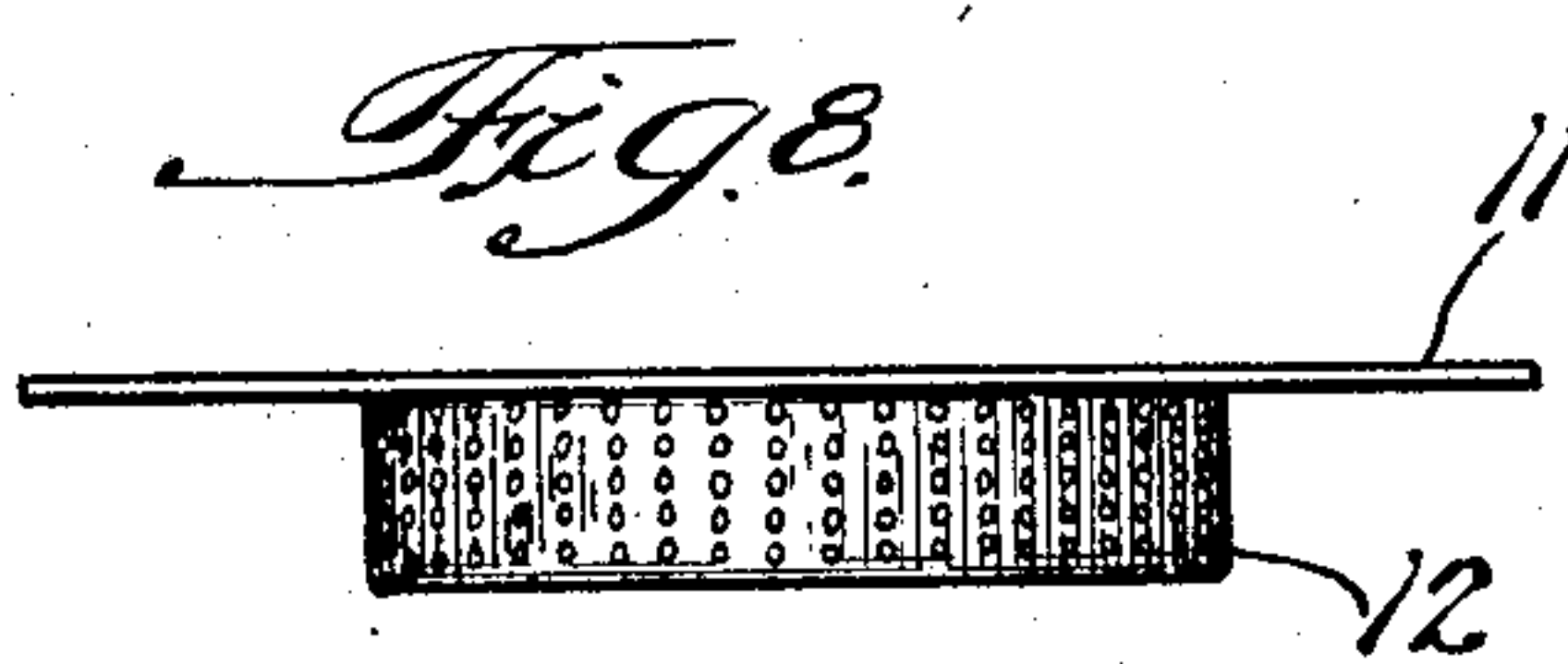
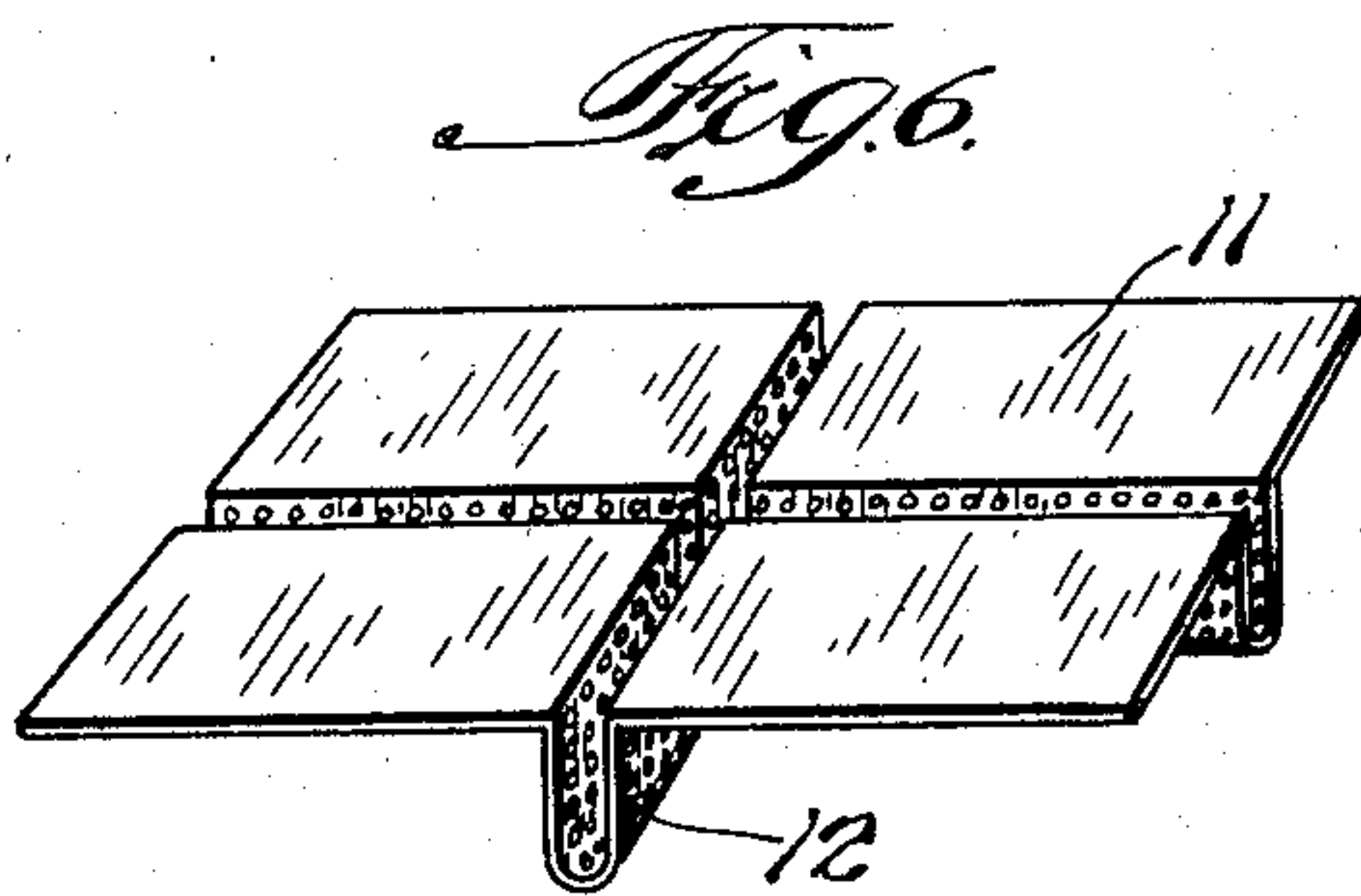
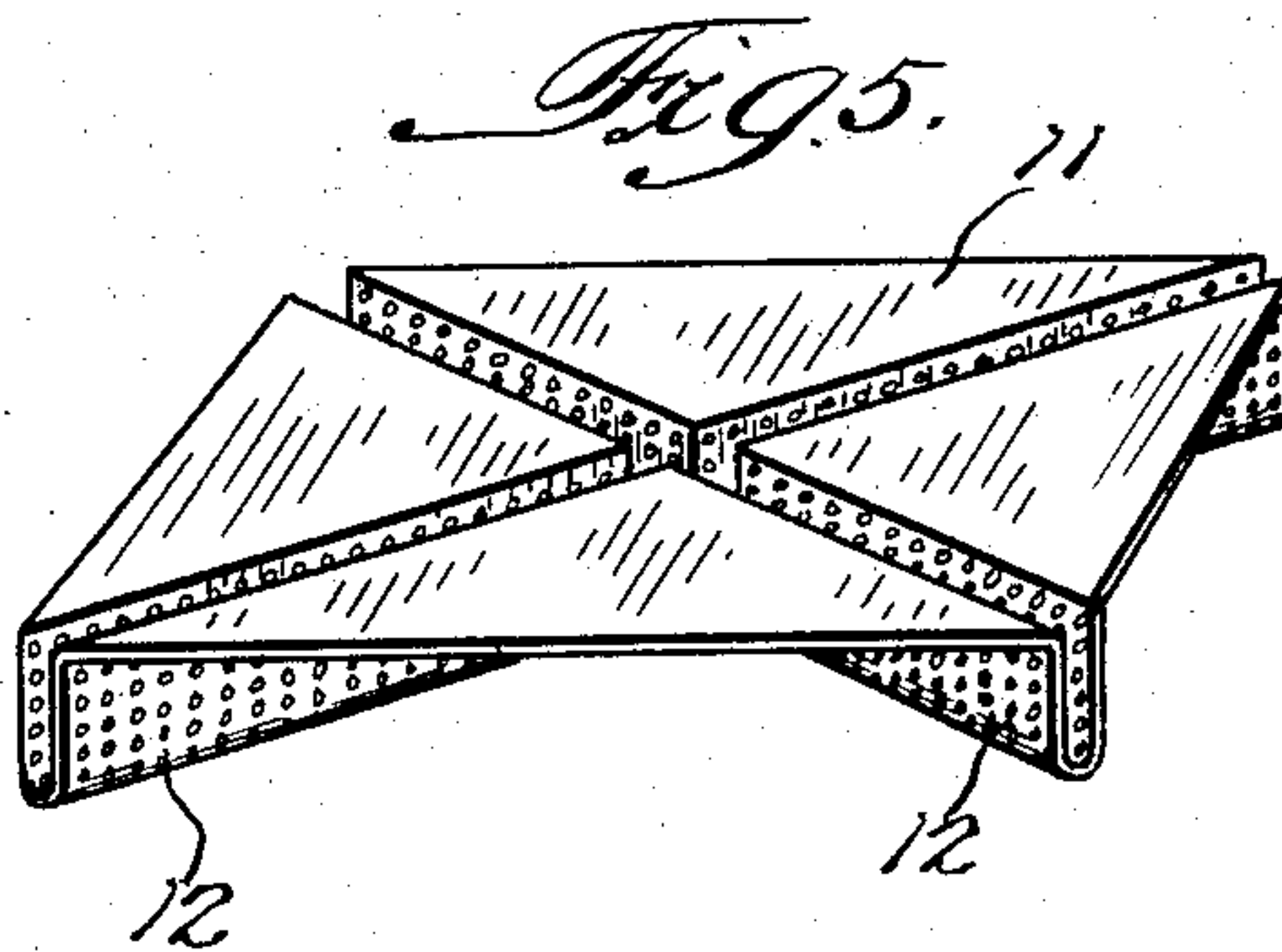
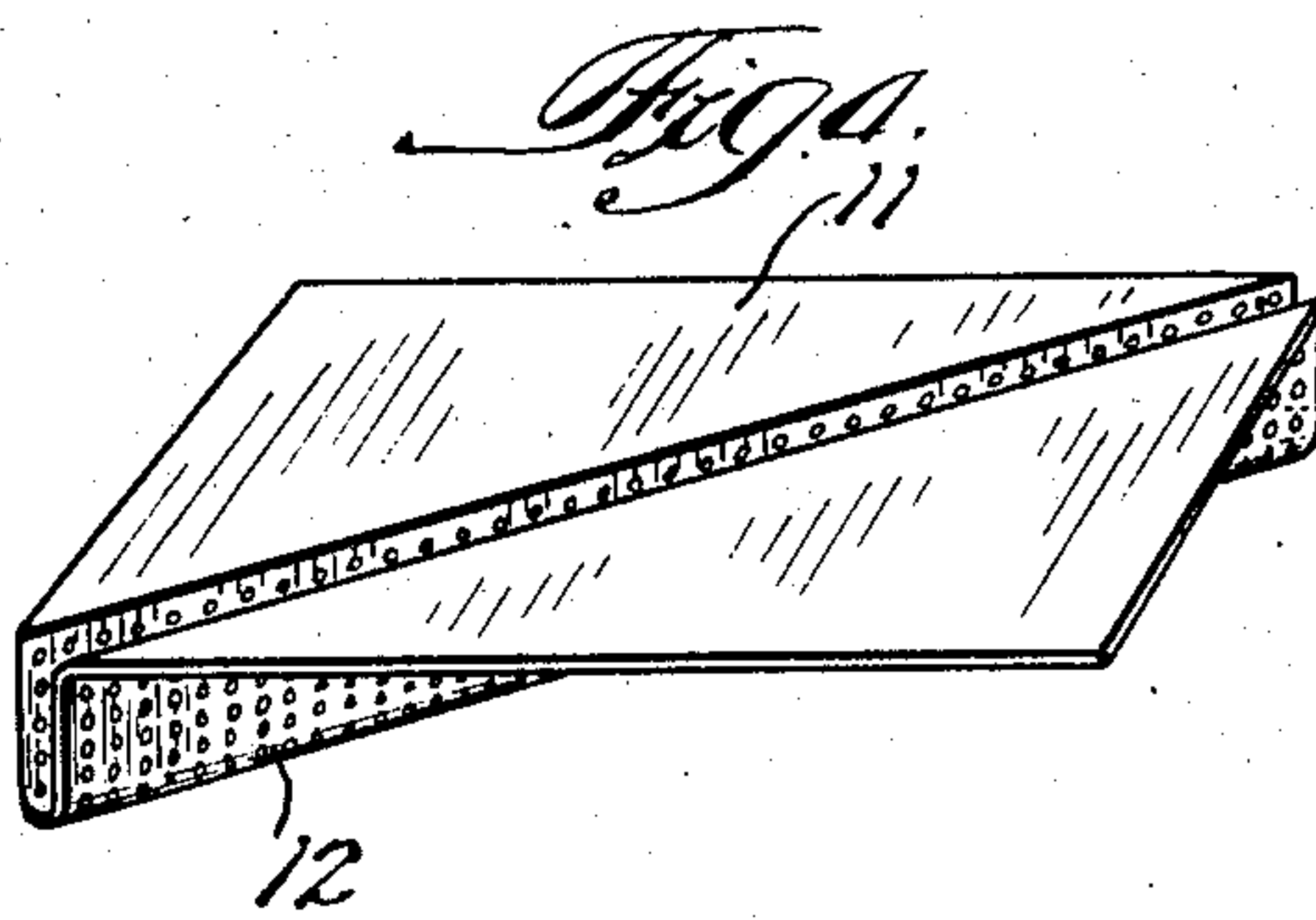
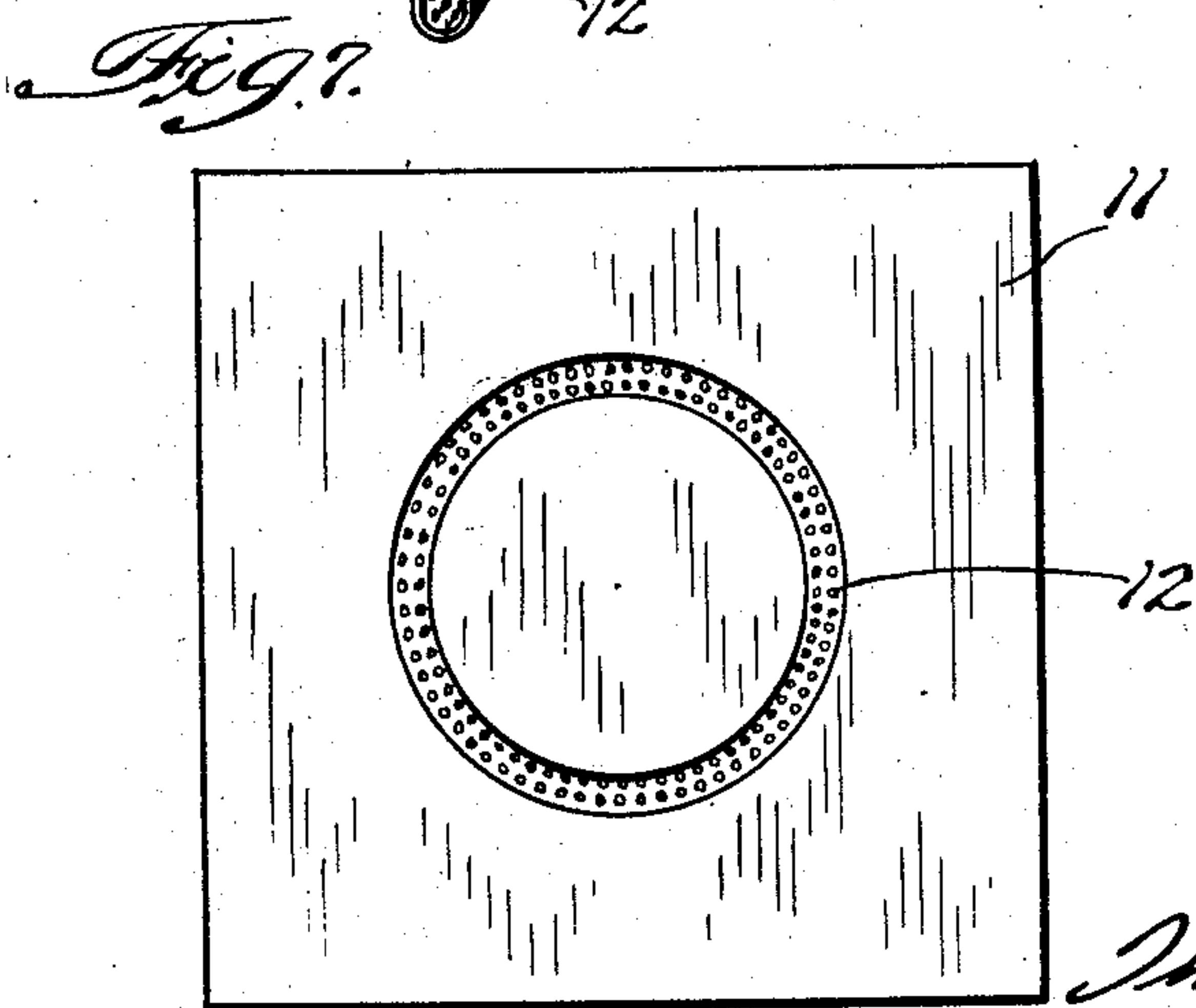
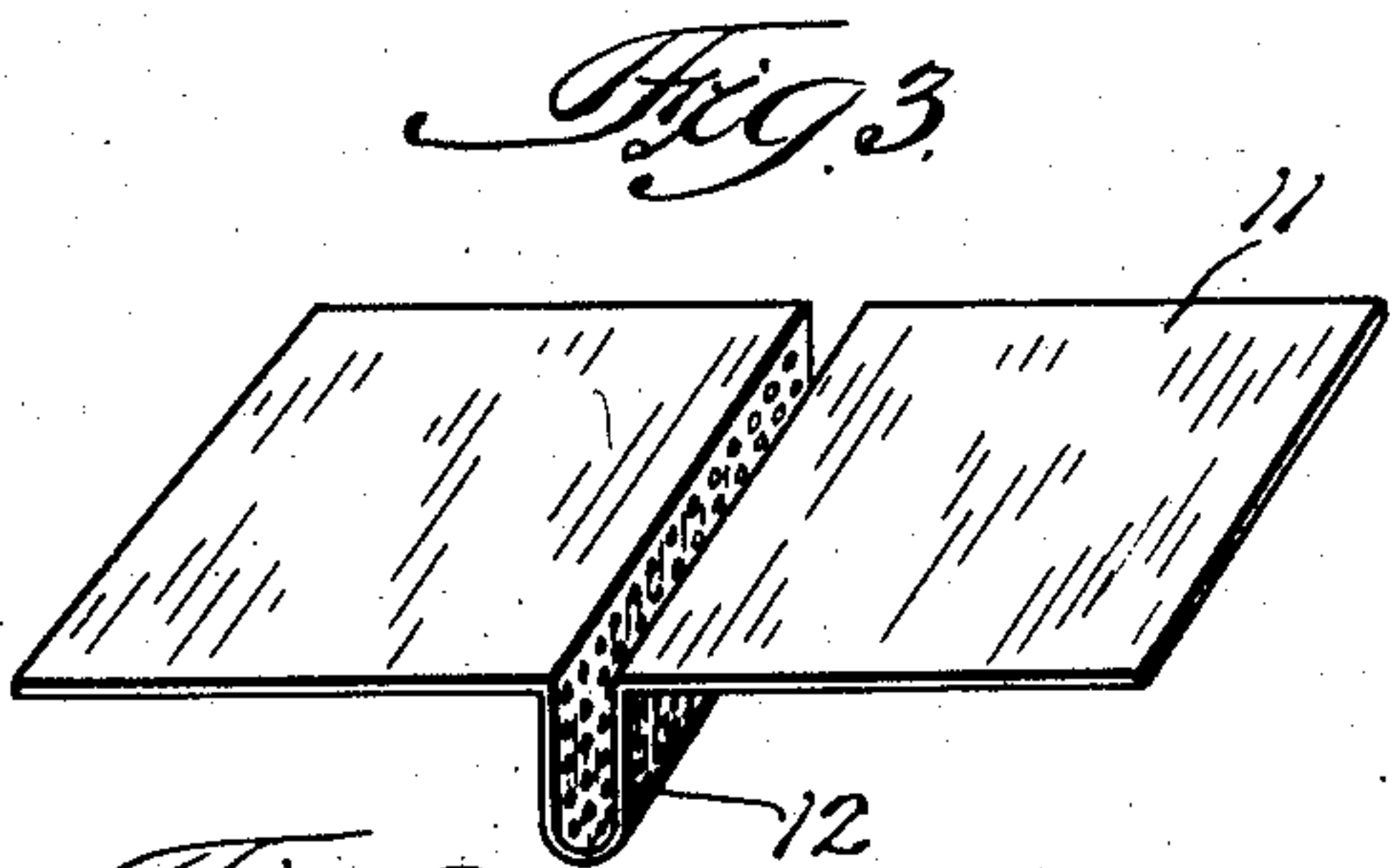
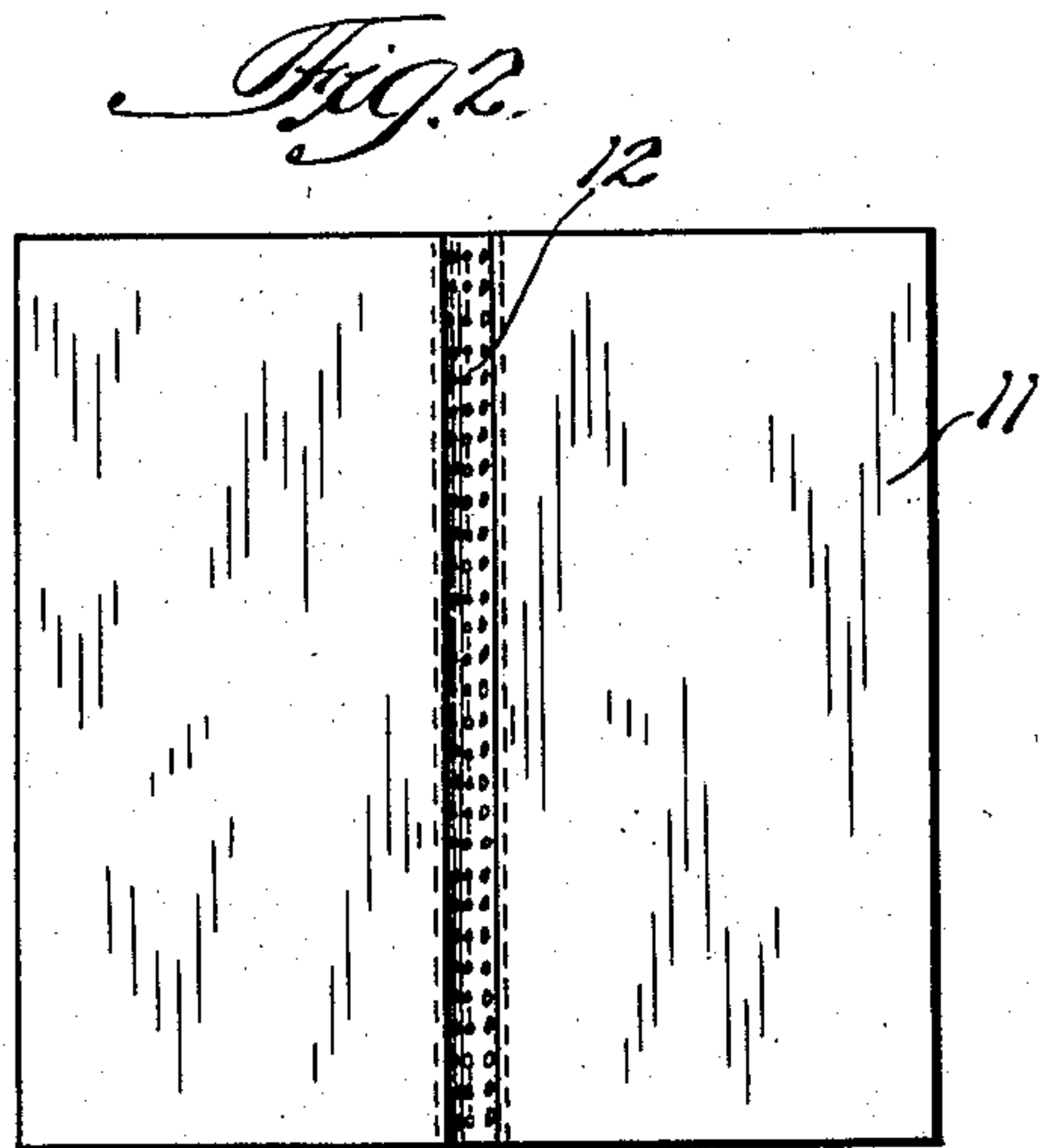
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2,850,110

TRANSLUCENT ACOUSTICAL CEILING PANELS

Filed Sept. 7, 1954

2 Sheets-Sheet 1



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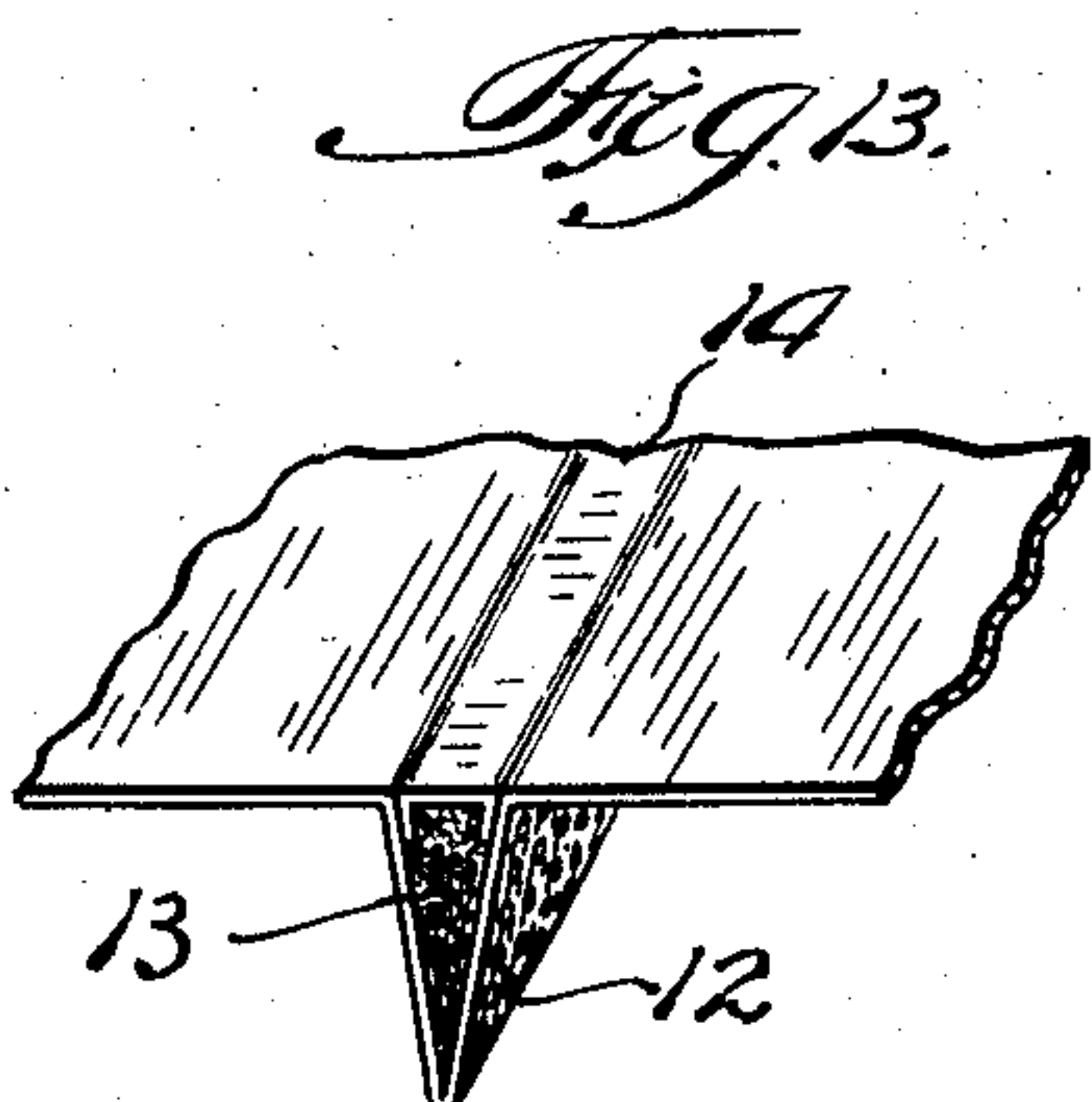
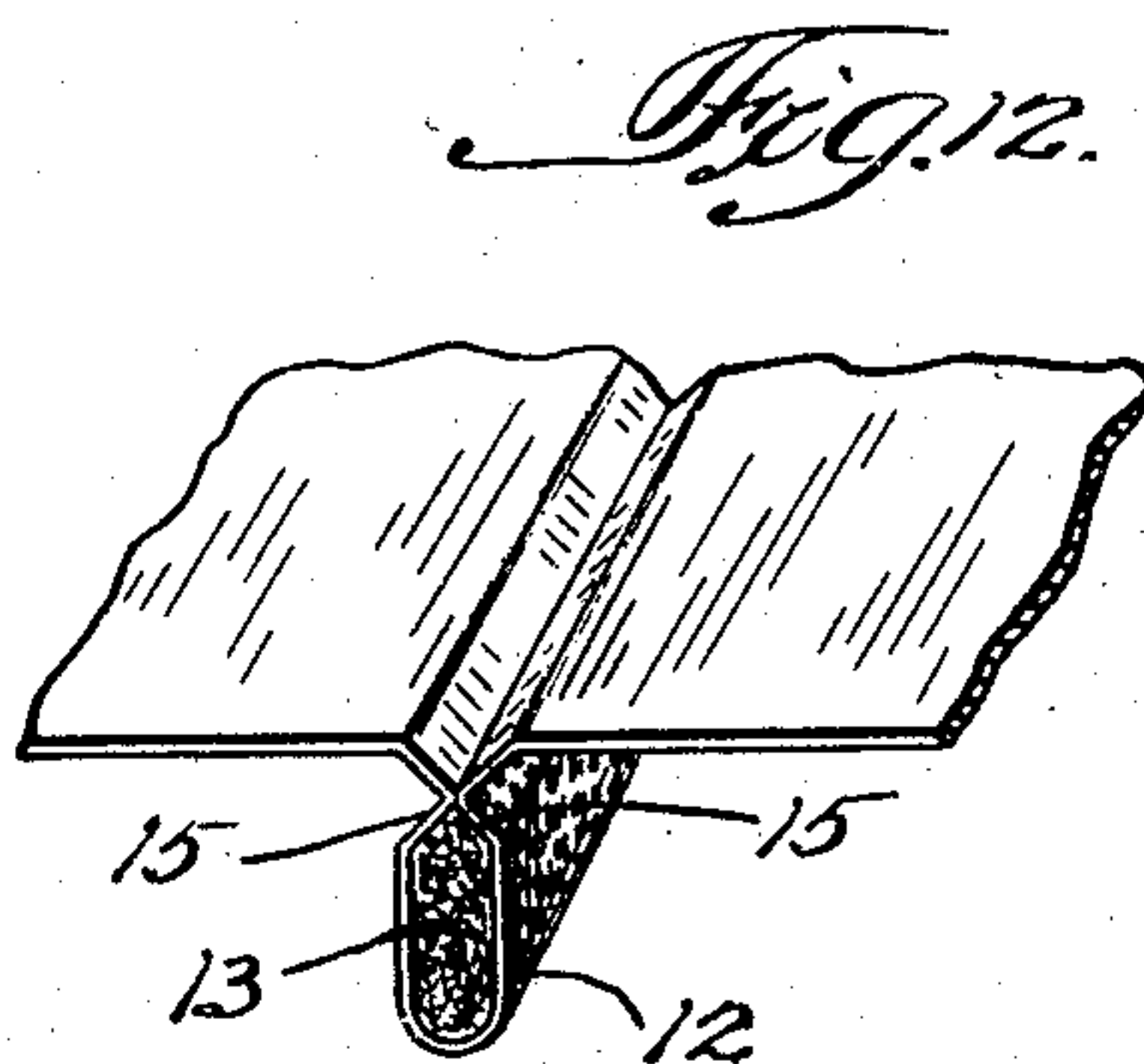
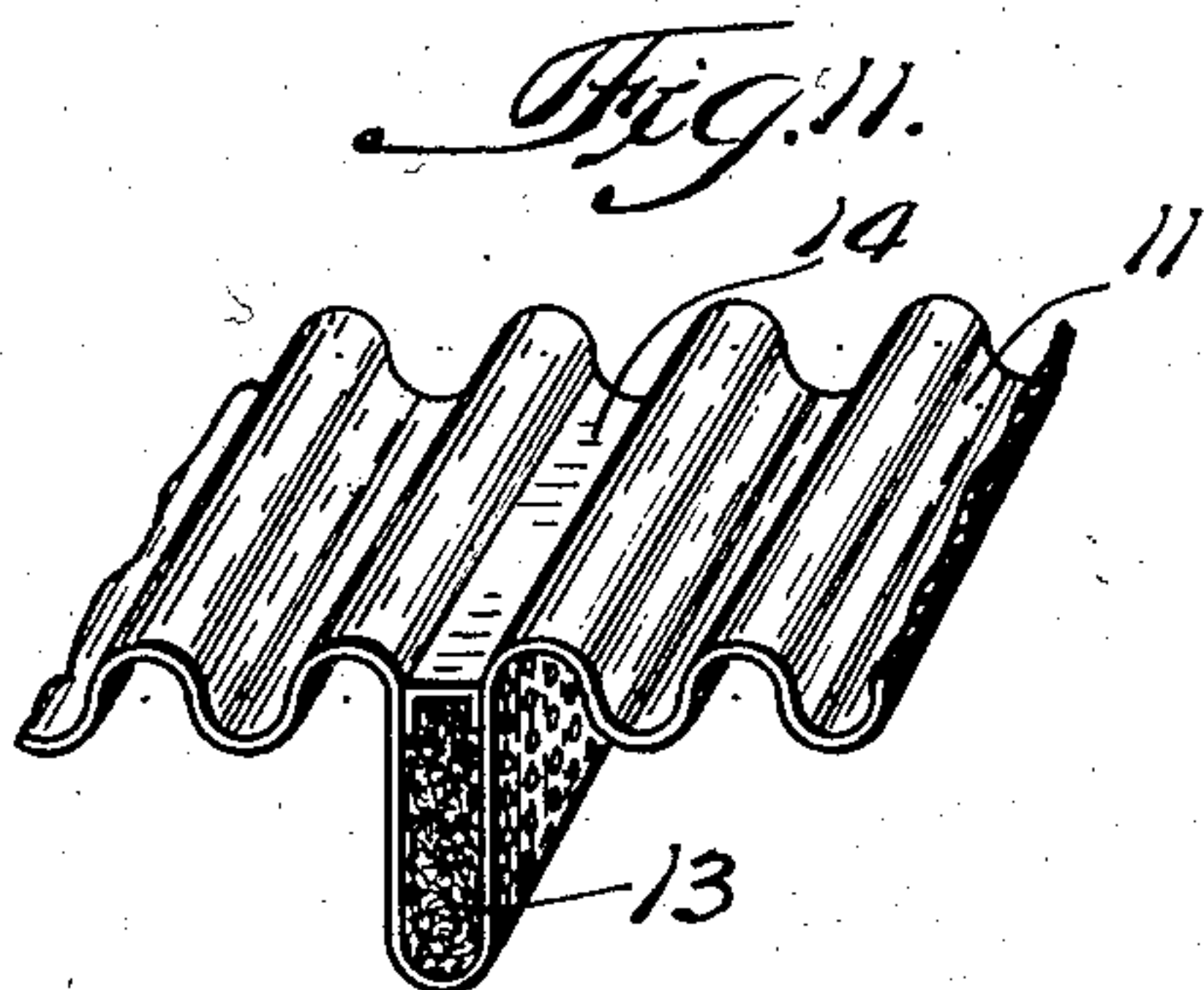
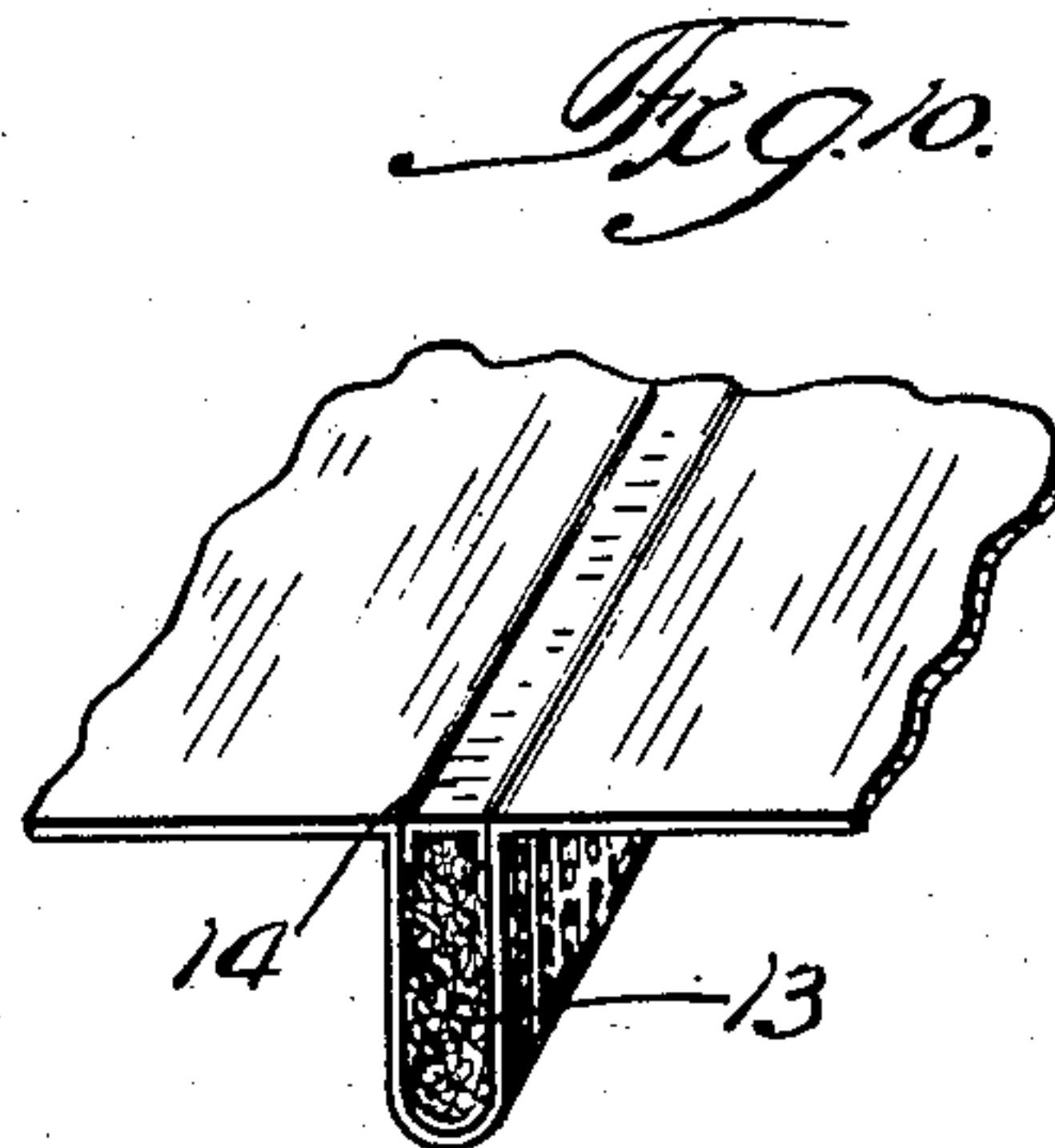
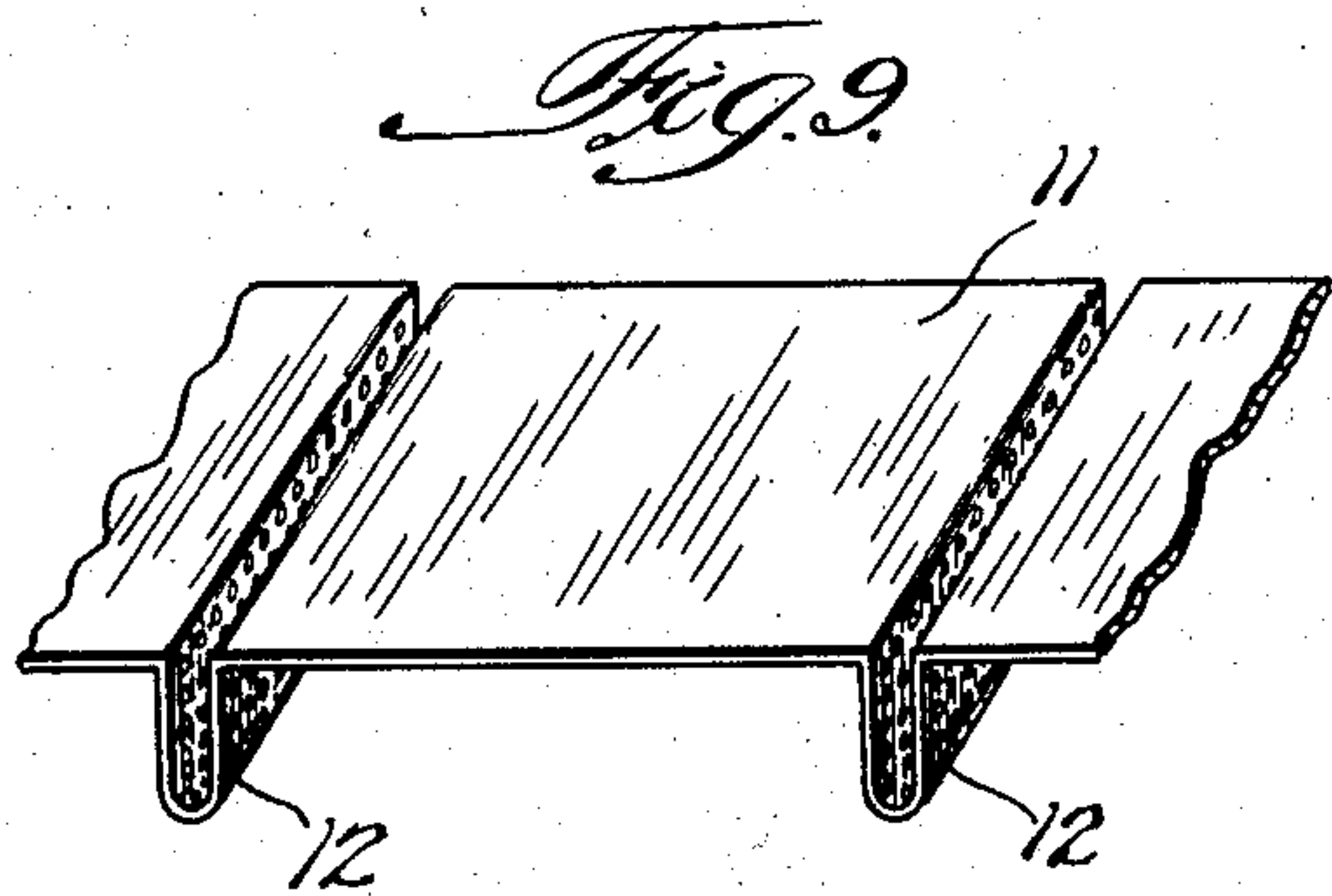
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TRANSLUCENT ACOUSTICAL CEILING PANELS

Filed Sept. 7, 1954

2 Sheets-Sheet 2



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2,850,110

TRANSLUCENT ACOUSTICAL CEILING PANELS

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Application September 7, 1954, Serial No. 454,458

7 Claims. (Cl. 181—33)

The present invention relates to a light-transmitting ceiling construction and has special reference to plastic, lightweight, translucent panels for use below a light source such as a fluorescent lighting system. Such panels, while permitting the transmission therethrough of diffused light, conceal the light source from view.

More particularly this invention relates to luminous ceiling panels having downwardly projecting ribs of sound-absorbing construction. The ribs preferably are channel-shaped with small openings in the walls thereof and are filled with sound-absorbing material. These ribs not only materially reduce reverberation of sound in the rooms in which they are used but also greatly rigidify the panels themselves.

Another advantage of the present construction is that the downwardly projecting ribs serve as baffles and reduce glare by hiding the luminous portions of the panels from view at angles approaching the horizontal. By the selection of panels having different arrangements of ribs, the ceiling formed thereby may have a wide variety of attractive designs.

An object of the present invention is to provide strong, light, translucent plastic ceiling panels.

Another object is to provide such ceiling panels which are sound absorbing.

A further object is to provide panels of the above type that are attractive in appearance.

Still another object is to provide panels which will be substantially free from glare when seen at normal viewing angles.

Further objects and advantages will be apparent from the following description and claims when considered with the accompanying drawings in which

Fig. 1 is an end elevational view of a ceiling panel embodying the present invention having a single transverse rib thereon of sound-absorbing construction;

Fig. 2 is a top plan view of the panel shown in Fig. 1;

Fig. 3 is a perspective view of the panel shown in Fig. 1;

Fig. 4 is a perspective view of another form of panel having a diagonally extending rib;

Fig. 5 is a perspective view of a further form of panel having a pair of intersecting ribs extending diagonally thereof;

Fig. 6 is a perspective view of a further form of ceiling panel having intersecting ribs extending substantially transversely of the panel;

Fig. 7 is a bottom plan view of a panel having a circular rib thereon;

Fig. 8 is a side elevational view of the panel shown in Fig. 7;

Fig. 9 is a perspective view of a portion of an elongated or continuous panel having spaced transverse ribs extending downwardly from the lower side thereof;

Fig. 10 is a perspective view of a portion of a panel having a transverse rib with sound-absorbing material positioned in the rib and a cover over the top of the rib opening;

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Fig. 11 is a partial view of a corrugated panel showing a rib construction with sound-absorbing material therein similar to that shown in Fig. 10;

Fig. 12 is a view of a modified form of panel having a sound-absorbing rib, and

Fig. 13 is a partial view of another panel construction showing a substantially V-shaped rib filled with acoustical material and a top cover therefor.

Referring more particularly to the drawings, there are shown a number of acoustical panels 11 embodying the present invention preferably of plastic, although glass or other suitable translucent material may be used. These panels may be employed to form a subceiling below the lighting system of a room, particularly where fluorescent lighting is used, to conceal the light sources while permitting the passage of diffused light therethrough.

While various plastics may be employed to form the panels of the present invention, they are preferably made from sheets of thin vinyl chloride acetate, commonly known as Vinylite. The sheet, and the panels made therefrom, may have a thickness of approximately .015 inch. To facilitate handling and installation, the sheets are preferably made square and of any suitable size such, for example, as 3 feet on a side. However, the panels may be of other desired shapes and may be formed in substantially continuous strips of any desired length. Panels formed of Vinylite are white, odorless and nontoxic. They have a light transmission factor of approximately 43% and a reflection factor of approximately 55%. In many instances it is desirable to corrugate the panels to provide additional strength.

Panels embodying the present invention are highly sound absorbing. In their preferred form they are shaped to provide preferably U-shaped channels or ribs 12 projecting downwardly therefrom. These ribs are preferably formed integrally with the panels by molding the plastic sheets to the desired shape with the downwardly extending channels after they have been softened by heating. Some of the possible channel or rib arrangements are shown in the drawings. Thus, in the construction shown in Figs. 1 to 3 a single channel is formed transversely and centrally of the panel. In Fig. 6 a pair of intersecting centrally arranged transverse ribs are employed. In Fig. 4 a single diagonally arranged rib is utilized, while in Fig. 5 a pair of intersecting diagonal ribs is shown. In Fig. 8 the downwardly projecting rib is formed in the shape of a circle. These different figures are illustrative of the many possible rib arrangements, all of which strengthen and rigidify the panels.

The walls of the ribs are provided with openings which, although of sufficient size to permit the passage of sound waves therethrough, are preferably so small as to be substantially nondiscernible when the panels are installed. Openings having diameters of from 0.125 to 0.25 inch are very satisfactory although, if desired, they may be made larger or smaller, and are preferably uniformly distributed throughout the area of the channel wall about 1/2 inch to about 1 inch apart on centers. The openings may be other than round, if desired, but should have such shape and dimensions as to be hardly discernible while still permitting the passage of sound waves therethrough.

Suitable sound-absorbing material 13, such as mineral wool, glass wool, felt, etc., having a high sound-absorbing efficiency, is placed in the channels 12, preferably filling them. A cover 14 may be positioned over the top of the channel, as shown in Figs. 10, 11 and 13, to maintain the sound-absorbing material 13 in place and provide a cover therefor.

Instead of employing a separate cover 14, the plastic sheets may be shaped, as shown in Fig. 12, with projecting ridges 15 contacting each other at the upper portion

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of the channel 12. Moreover, while the channels are preferably substantially U-shaped, they may be of other shapes, such for example, as the V-shape illustrated in Fig. 13. Moreover, they may be of any suitable size.

Instead of employing square, or substantially square, panels, they may be formed in strips of any desired length, such as the full width of the room in which they are to be employed (Fig. 9). The panels are first formed complete with the sound-absorbing material 13 positioned in the channels 12 and covers 14 placed thereover. They are then installed in the ceiling with other panels having similarly or differently arranged ribs or having no ribs at all to form any attractive design desired.

The panels of the present invention may be employed to form a subceiling spaced below the regular permanent ceiling and the lighting system thereon. The resulting ceiling may be made with innumerable attractive designs, is strong, lightweight, and efficiently absorbs sound. The light from the light source is diffused and prevented from causing glare at normal viewing angles by the ribs acting as baffles.

While particular embodiments of this invention have been illustrated and described, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. A translucent panel having an integral strengthening and sound-absorbing rib construction projecting downwardly from the lower side thereof, said rib being generally centrally located and having a length not substantially less than that of one dimension of said panel and comprising an outer perforated shell portion with sound-absorbing material therein.

2. A translucent panel having an integral strengthening and sound-absorbing, substantially channel-shaped rib being generally centrally located and extending downwardly therefrom, said rib having openings in the walls thereof, and sound-absorbing material positioned in said rib.

3. A translucent panel having an integral substantially centrally arranged strengthening rib projecting downwardly

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ly from the lower side thereof, said rib being substantially channel-shaped and having a multiplicity of small substantially nondiscernible openings in the walls thereof, and sound-absorbing material positioned within said rib.

4. A translucent panel having an integral substantially centrally located strengthening rib projecting downwardly from the lower side thereof, said rib being substantially channel-shaped and having a multiplicity of small openings with diameters not substantially exceeding .25 inch in the walls thereof, and sound-absorbing material positioned within said rib.

5. A translucent panel having an integral substantially centrally located strengthening rib projecting downwardly from the lower side thereof, said rib being substantially channel-shaped and having a multiplicity of small openings spaced not substantially less than about 0.50 inch apart on centers and having diameters not substantially exceeding 0.25 inch, and sound-absorbing material positioned within said rib.

6. A translucent plastic panel having an integral substantially centrally located strengthening rib projecting downwardly from the lower side thereof, said rib being substantially channel-shaped and having a multiplicity of uniformly arranged small openings spaced not substantially less than about 0.50 inch apart on centers and having diameters not substantially exceeding 0.25 inch, and sound-absorbing material positioned within said rib.

7. A translucent panel having integral intersecting strengthening and sound-absorbing ribs projecting downwardly from the lower side thereof, said ribs being substantially hollow and generally centrally located and having openings in the walls thereof, and sound-absorbing material positioned in said ribs.

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