

No. 695,804.

Patented Mar. 18, 1902.

S. L. DUNLAP.
FORM OR PATTERN FOR CEMENT CISTERNS.

(Application filed Oct. 25, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

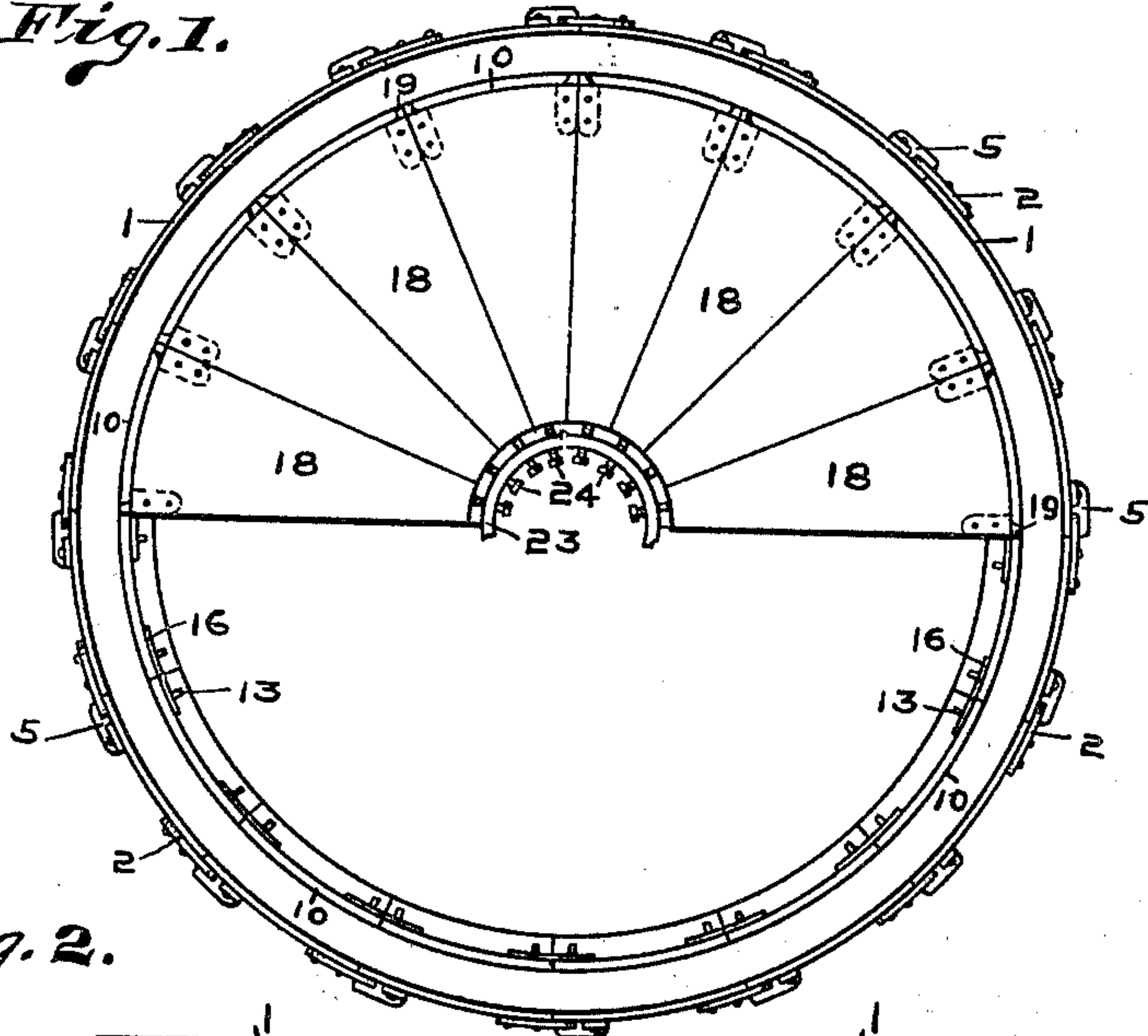
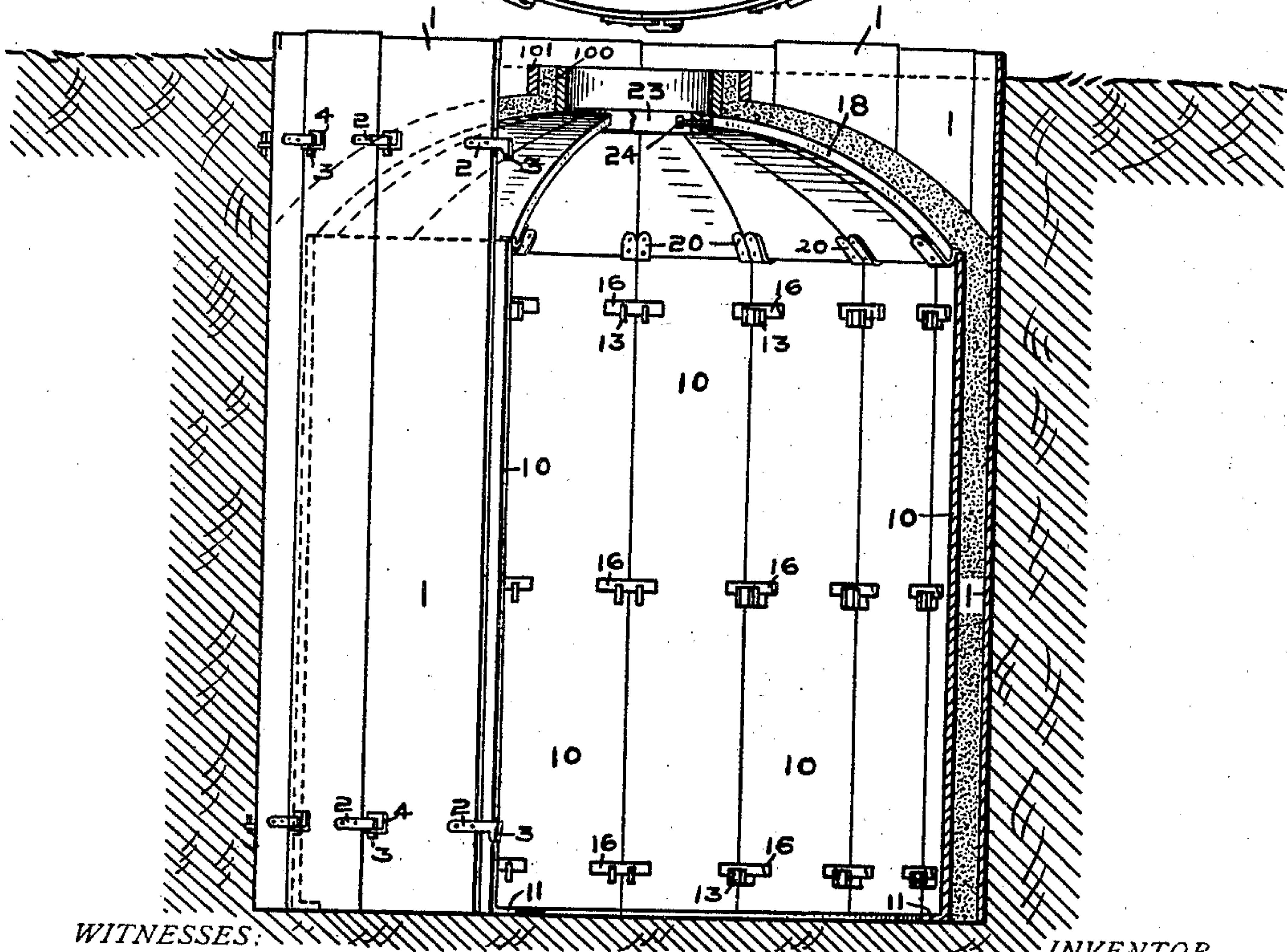


Fig. 2.



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2 Sheets—Sheet 2.

(No Model.)
Fig. 3.

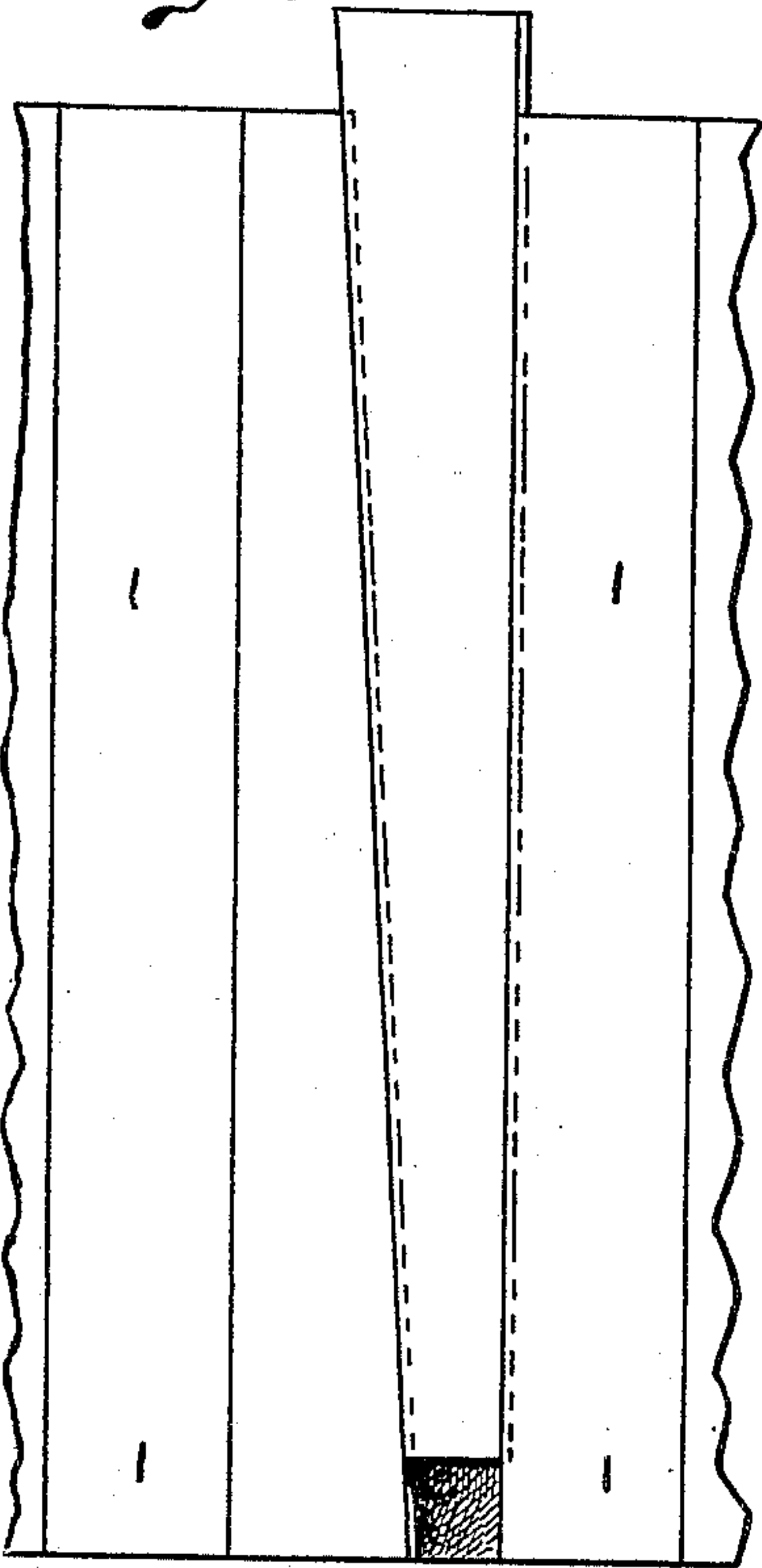


Fig. 5.

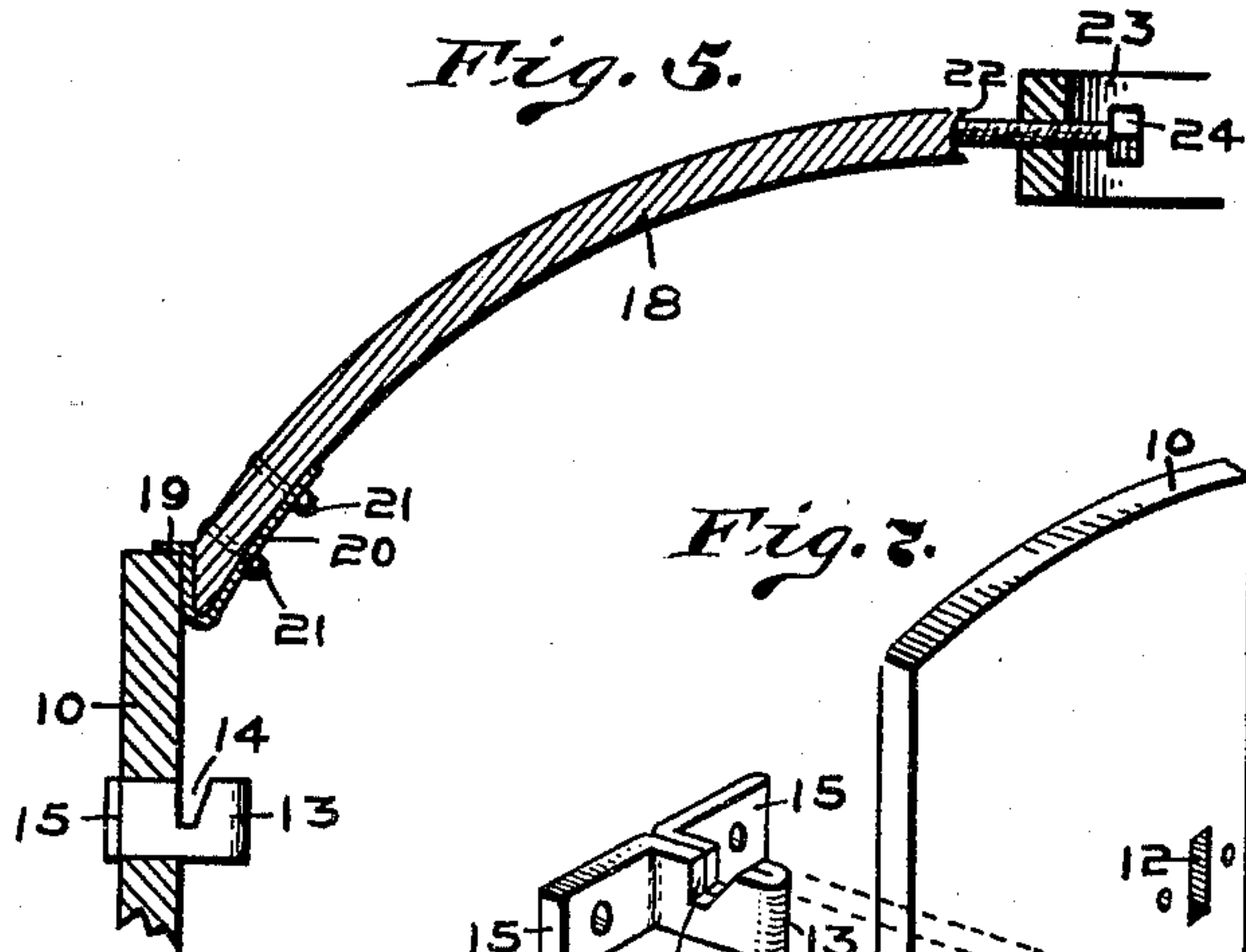


Fig. 7.

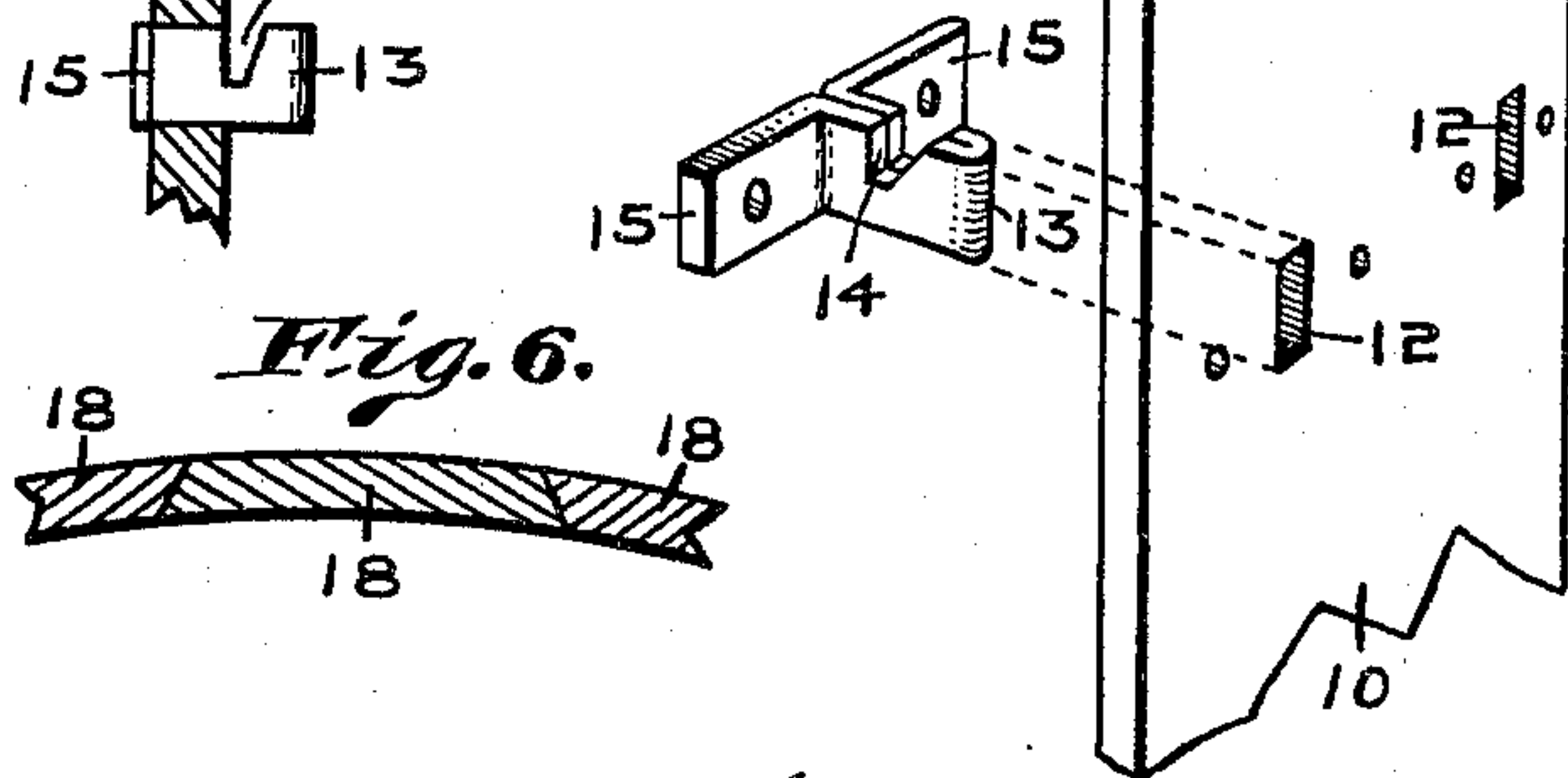


Fig. 6.

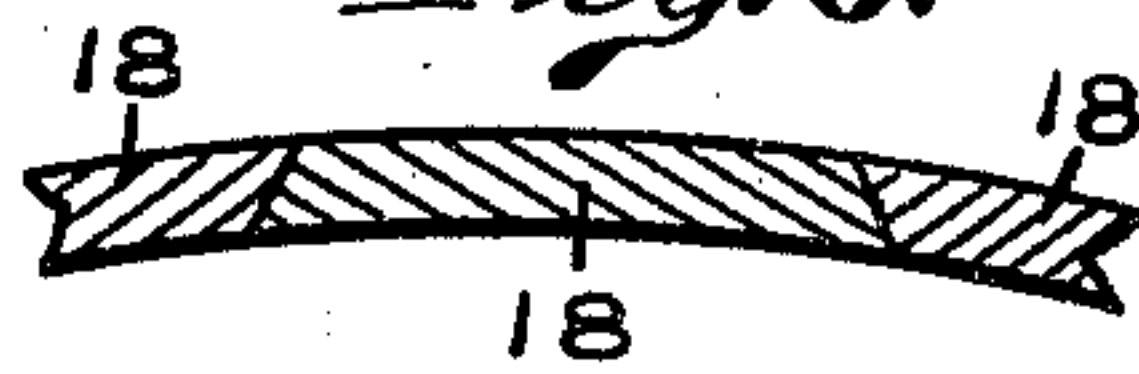


Fig. 8.

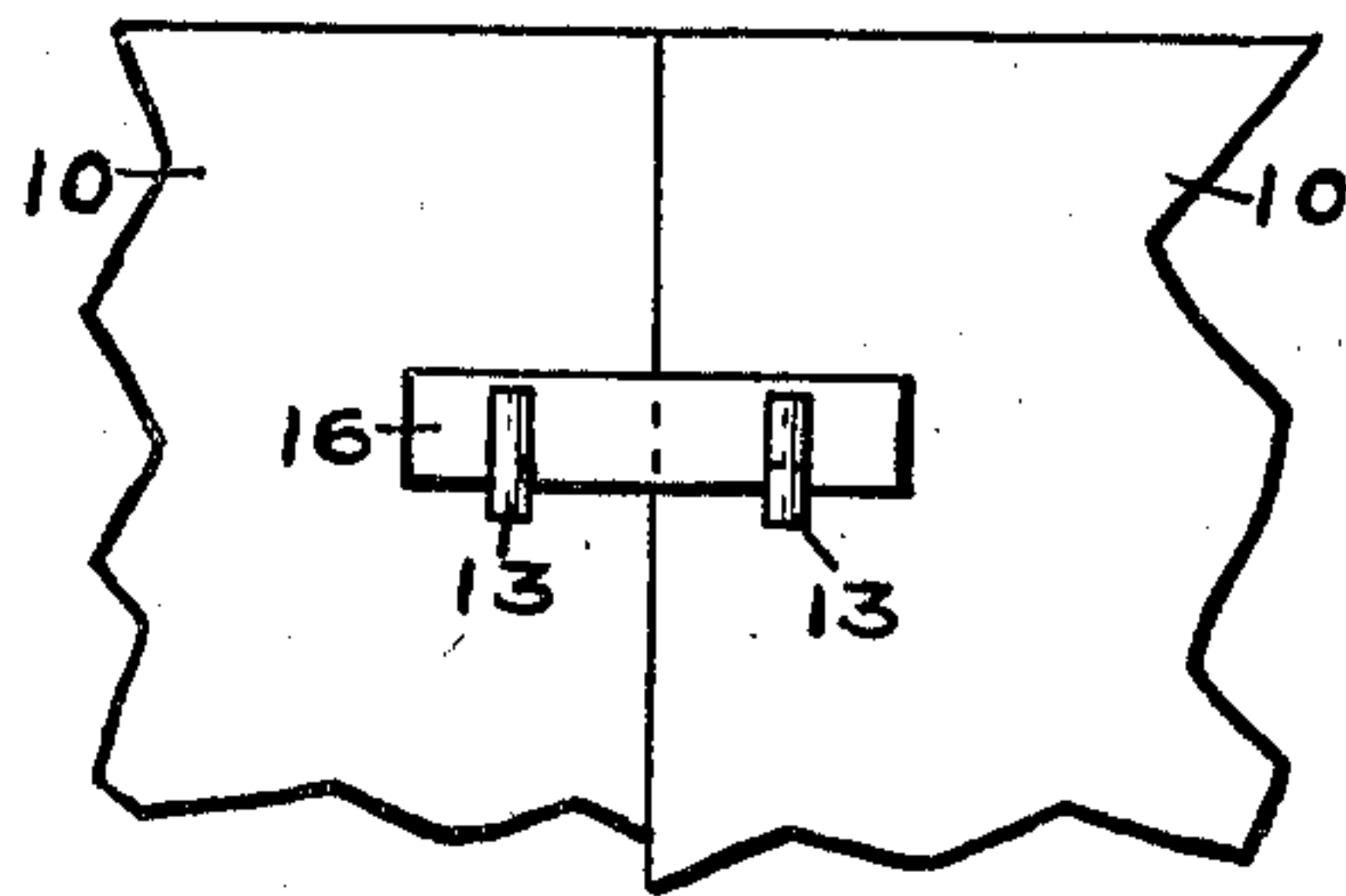


Fig. 4.

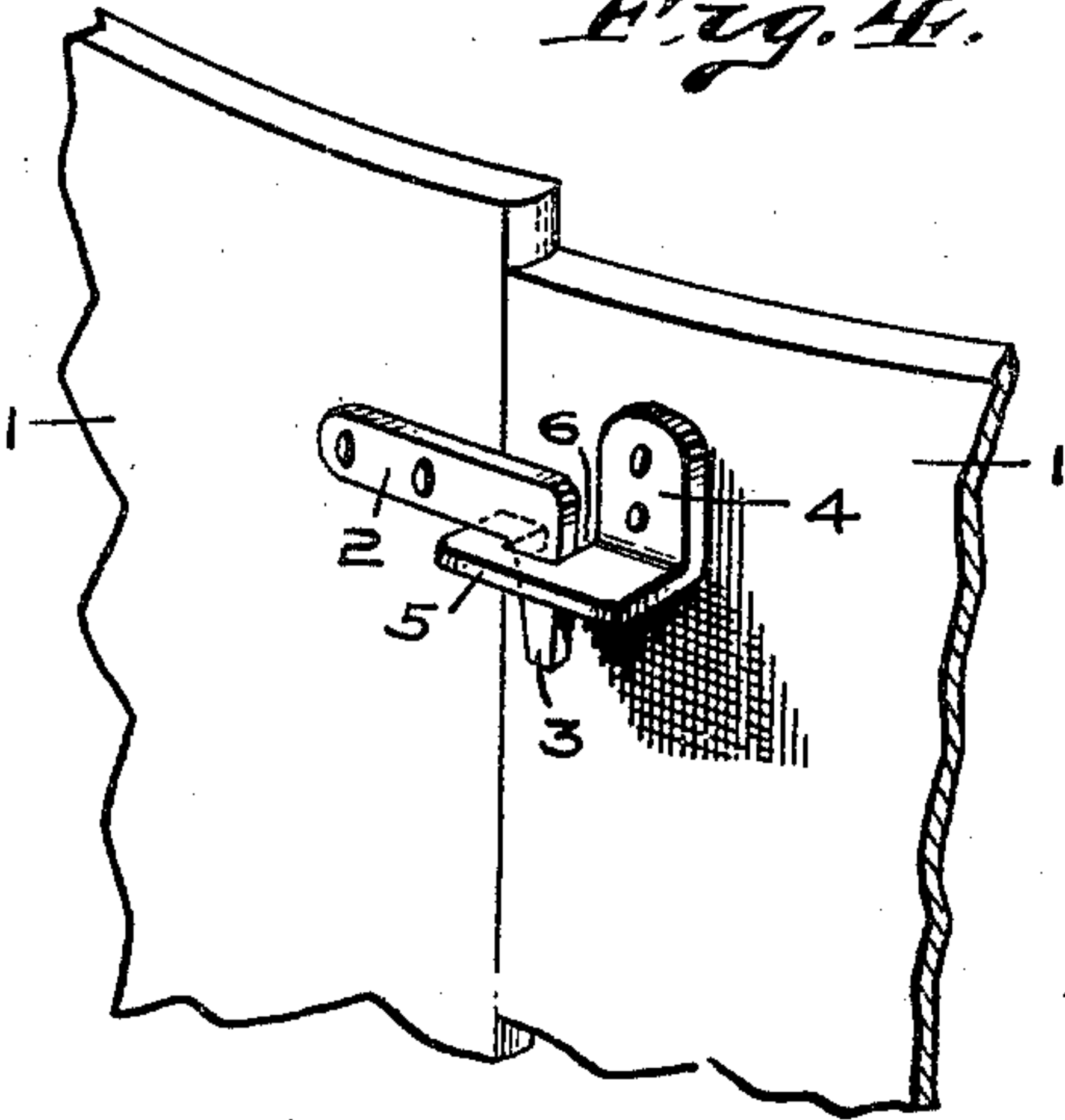
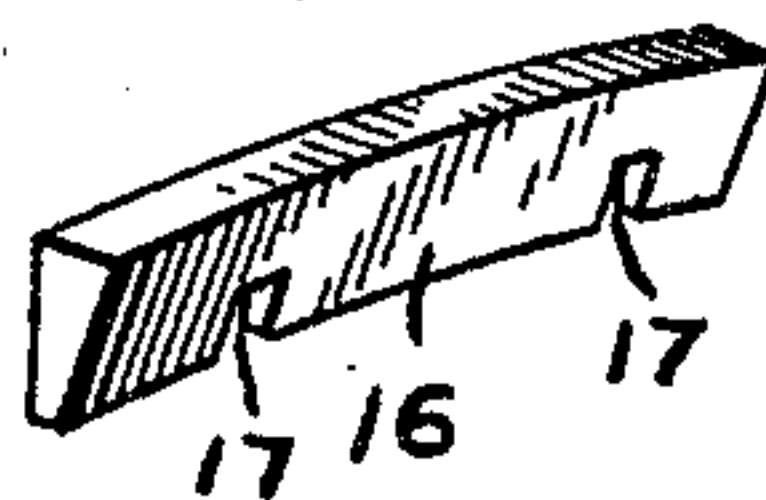


Fig. 9.



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UNITED STATES PATENT OFFICE.

SIMON L. DUNLAP, OF INDIANAPOLIS, INDIANA.

FORM OR PATTERN FOR CEMENT CISTERNS.

SPECIFICATION forming part of Letters Patent No. 695,804, dated March 18, 1902.

Application filed October 25, 1901. Serial No. 79,945. (No model.)

To all whom it may concern:

Be it known that I, SIMON L. DUNLAP, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Forms or Patterns for Cement Cisterns, of which the following is a specification.

The object of my invention is to provide a temporary form or pattern for the side walls and domes for cisterns which are constructed wholly of concrete or cement.

The object further consists in the construction of such a pattern which can be easily placed into position or taken down. As the pattern is composed of segments, it enables me to construct a cistern of any desired capacity by simply adding or reducing the number of segments employed. The tying of the segments that compose the form or pattern, the manner of temporarily supporting the segments that form the dome, together with the construction and arrangement of the different parts will be hereinafter more particularly described and then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar numerals of reference indicate similar parts, Figure 1 is a partial plan and section of a cistern and shows the relative position occupied by the various parts to one another. Fig. 2 is a partial side elevation and section of a cistern in which the relative positions of the casings and the cement wall are shown. Fig. 3 is a detail side elevation of a portion of the outer casing, with the hooks and ears omitted, and shows the two wedge-shaped segments used to tighten the said casing. Fig. 4 is a fragmentary detail perspective view, on an enlarged scale, of the upper ends of a portion of the outer casing and shows the manner of fastening the segments together. Fig. 5 is an enlarged detail in section of the upper end of the inner casing and the segments that form the dome and shows the manner in which the segments are supported. Fig. 6 is a detail in cross-section of a portion of the dome-segments and shows the manner in which the edges of those segments are beveled. Fig. 7 is an enlarged fragmentary detail in perspective of the up-

per ends of the inner casing and shows the manner of fastening the said segments together. Fig. 8 is a fragmentary detail in elevation of the wedge and its support, and Fig. 9 is a perspective view of the wedge.

In the drawings I have shown two casings, an inner and an outer. The outer casing 1 is employed only when excavating in a sandy soil and is to prevent the earth from caving or where a cistern is built on the surface of low ground where the surrounding area is subsequently filled. The outer casing will be briefly described.

The outer casing is composed of a series of segments 1, which are secured together by means of the hooks 3, formed on the straps 2, which straps are secured to the segments 1. On the opposite side of the segments and in line with the straps 2 is a thin piece of sheet metal formed L-shaped, the upright portion 4 forming the support by being bolted to the segment. The horizontal portion 5 carries an eye 6, the hook 3 on the adjacent segment engaging with eye, and as the inner edges of the hooks 3 are inclined they have a tendency of drawing the segments together when the hooks 3 are forced down into the eyes 6. In Fig. 3 I have shown two wedge-shaped segments in the outer casing. These segments are the last ones to be inserted, and the driving of the segment which is narrowest at its bottom tightens the joints of the remaining ones.

In excavating in soil composed of clay or the like and after the usual excavation for the cistern is completed the inner casing can at once be placed in position. The excavating for the cistern's capacity is previously determined, so that when the casing is placed in position there remains sufficient space surrounding the casing and the earth wall for the cement wall which forms the cistern proper.

The inner casing, like the outer, is composed of the segments 10. The segments 10 are formed of sheet metal, each of which has its lower end turned inward and forms the foot 11. The segments 10 vary in width, so that any size circle can be produced. Each of the segments 10 is provided with two or more series of slots 12, in which two slots usually constitute a series. One of the slots 12 is located near each margin of the seg-

ment 10. As shown in Fig. 7, a piece of sheet metal is bent to form a nose 13, which carries a wedge-shaped notch 14, the right-angle wings 15 forming a support and where-
 5 by the same is secured to the segments 10. The nose 13 is inserted through the slot 12 in the segment from the rear side, while the rear side of the notch 14 is cut at a point to be flush with the inner wall of the segment
 10 10, (see Fig. 5,) which construction allows a free and unobstructed insertion of the wedge 16. As the segments are placed side by side, it becomes essential to maintain the projections 13 as near a horizontal line as possible,
 15 for the more irregularities that exist it reduces the tightening qualities of the wedge 16. A wedge 16, carrying the notches 17, is inserted into the notches 14. The notches 17 on the wedge register and overlap the neck
 20 formed by the notches 14 in the projections 13. It will be seen that this construction prevents both lateral and longitudinal movement of the segments; besides it provides a mode for readily and effectually tying them
 25 together, and so the process is carried forward until the circular form for the main body of the cistern is completed. I will now describe the manner of placing and securing the segments employed to form the dome and
 30 which is one of the main features of this invention.

The segments 18, employed to form the pattern for the dome, are of a peculiar construction, in that they are both convex and
 35 wedge-shaped. The edges of the segments 18 are beveled, as shown in Fig. 6, and thus every second segment has the bevel cut in the same direction. This construction allows a slight perpendicular movement caused
 40 by contraction and expansion without affecting the symmetry of the dome. Then, too, the segments are constructed as to form a wedge, which adds stability to the whole structure. An ear 19 is formed out of the sheet-
 45 metal strap 20, which is secured to the base-corners of the segments 18 by means of the bolts 21. The sheet-metal straps 20 are bent around the ends of the segments and terminate into the aforesaid ears, which stand hori-
 50 zontally when the segments 18 are in their normal position. The ears 19 form the support for the segments 18 and rest on the upper edge of the casing 10, while the outer ends of the segments abut the inner side of
 55 the casing-wall 10. The front ends of the segments carry the groove 22, which engages with the screw-bolts 24 in the collar 23, and which collar will now be described.

A collar 23, which eventually forms the
 60 egress or manhole for the cistern, is supplied with a series of horizontal radiating screw-bolts 24. The bolts 24 are sufficiently numerous to supply each of the segments 18 with at least one of these bolts, and this connec-
 65 tion forms the support for the inner ends of the segments. By driving the screw-bolts 24 any desired tension can be applied to the

supported segment. It will be readily seen that this construction provides a simple and effective mode for temporarily securing the
 70 segments until the upper cement-work of the dome is completed and sufficiently hardened to become self-sustaining, and by simply loosening the screw-bolts 24 one segment at a
 75 time may be removed by giving the segment a downward movement at its apex, which withdraws the ears 19 from the wall 10. It might be mentioned here that the supporting-ears 19 are of small area and are but slightly embedded in the cement wall, from which
 80 they can be easily withdrawn.

The upper neck of the cistern is formed by the use of two collars 100 and 101. The collar 100 extends down and rests on the segments 18, while the collar 101 rests on the cement-
 85 work, as shown in Fig. 2 of the drawings.

Thus it will be seen that I have a form or pattern for cisterns in which any desired capacity can be procured, one that can be easily placed in position or taken down, one that is
 90 simple in construction, light in weight, and still have sufficient stability to withstand the strain to which such a form is naturally subjected.

Having thus fully described my said inven-
 95 tion, what I desire to secure by Letters Patent is—

1. In a form or pattern for cisterns, the said casings being composed of an inner and an outer casing, each of said casings being
 100 composed of a plurality of segments, the outer casing carrying a series of rigidly-secured hooks the nose of which having its edge next the segment cut on an inclination, the foot of said inclination being at the bottom of the
 105 nose, eyes formed in the ears which are rigidly secured to the adjacent segments which eyes register and engage with the inclined nose of the hooks, thereby providing a means for drawing and securing the segments to-
 110 gether, substantially as shown and for the purposes set forth:

2. In a form or pattern for cisterns, of an inner casing composed of a plurality of segments having a multiplicity of widths, the
 115 lower ends of the segments being turned inward and form the foot therefor, two or more series of slots cut through each segment which receive the inward extensions 13, a wedge-shaped notch cut into the upper edge of the
 120 extensions, a wedge 16 carrying the notches 17 which engage with the notches 14 in the projections 13, thereby providing a means for uniting and securing the segments, substantially as shown and described.

3. In a form or pattern for cisterns, a plurality of convex and wedge-shaped segments which form the dome for the cistern, straps terminating into ears secured to the base-corners of the segments, the said ears resting
 130 on the upper edge of the side wall, a groove cut into the inner ends of the segments which receive the ends of the horizontal screw-bolts in the collar, thereby providing a support for

the inner ends of the segments, substantially as shown and described.

4. In a form or pattern for cisterns, a centrally-located collar 23, carrying the screw-
5 bolts 24, the bolts adapted to engage with the inner grooved ends of the dome-segments and whereby said segments are supported, a collar 100 adapted to rest on the dome-seg-
10 ments, the inner surface of the said collar being flush with the aperture formed between the inner ends of the segments 18, an outer collar 101, having a greater radius than the

collar 100, surrounds the same, the intervening space between the collars adapted to receive the cement that forms the neck for the cistern, substantially as shown and described. 15

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 27th day of September, A. D. 1901.

SIMON L. DUNLAP. [L. S.]

Witnesses:

F. W. WOERNER,
C. C. TAPP.