

W. VAN NOSTRAND.
MILLSTONE DRESSING.
APPLICATION FILED APR. 27, 1908.

968,818.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

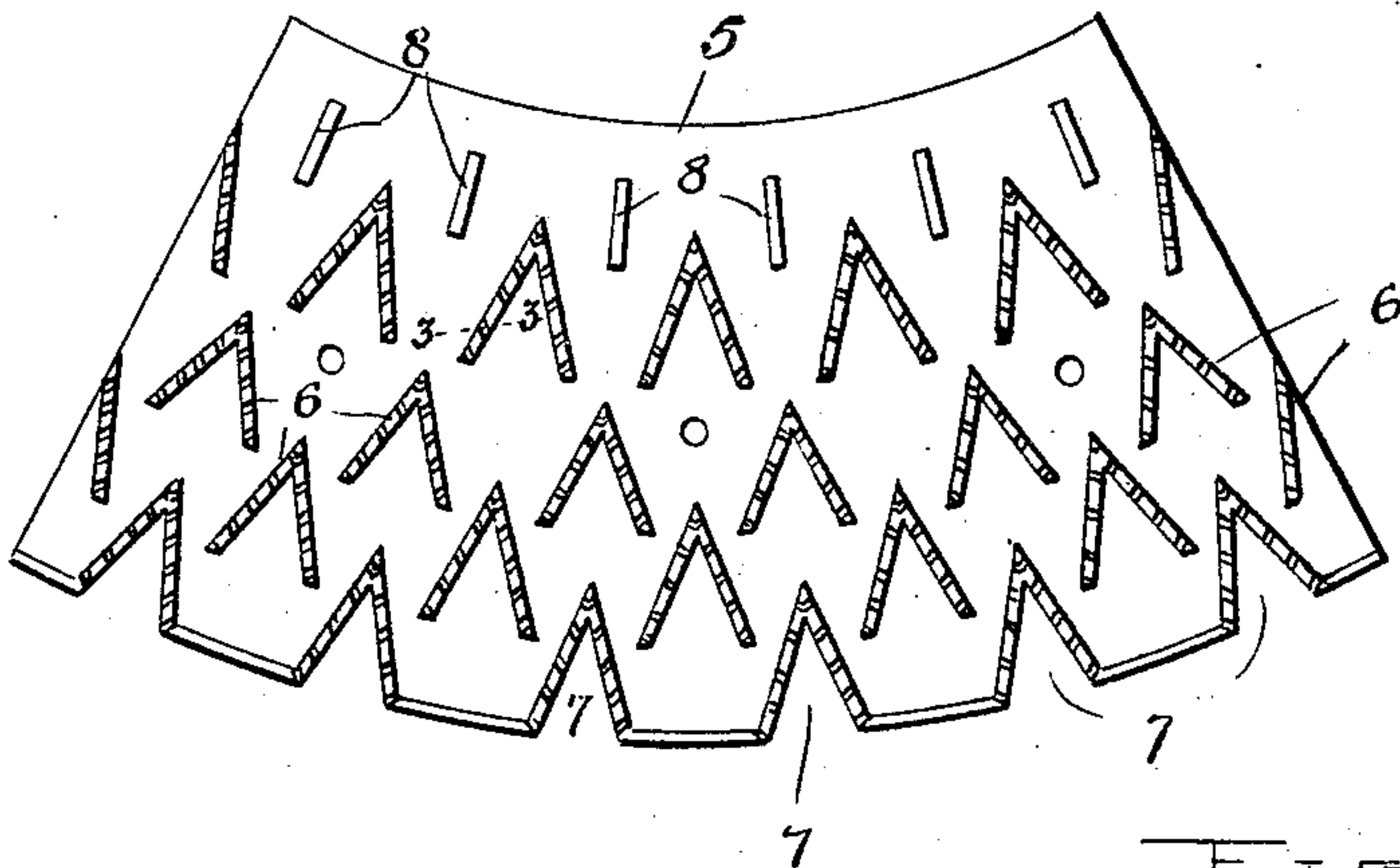


Fig. 2.

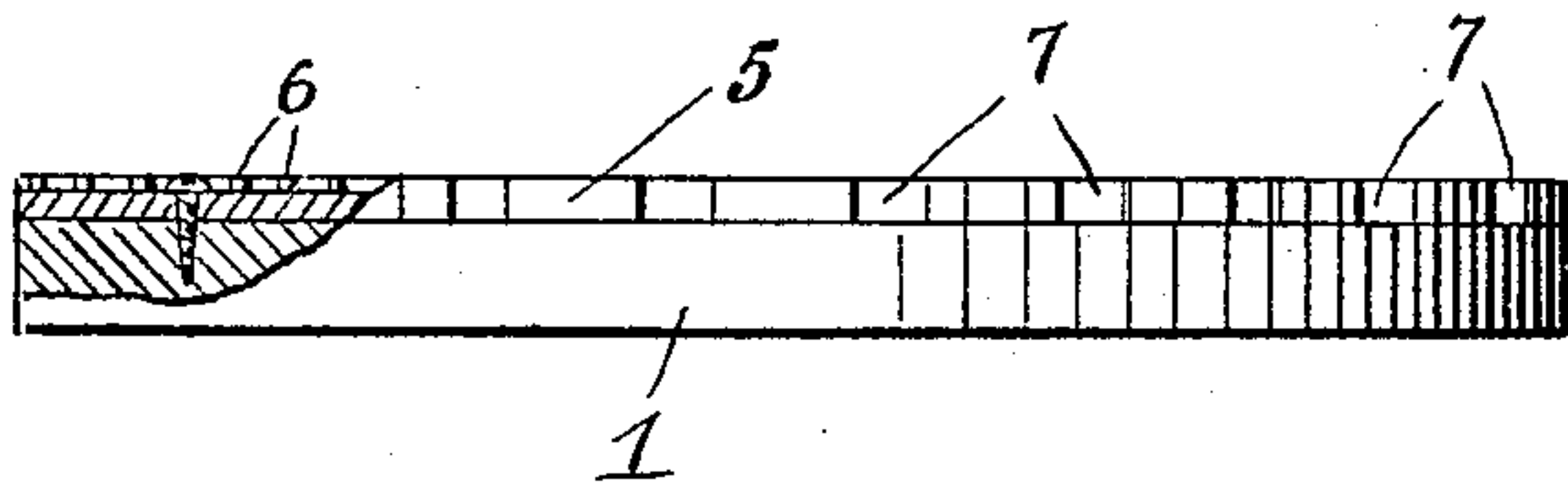


Fig. 3.

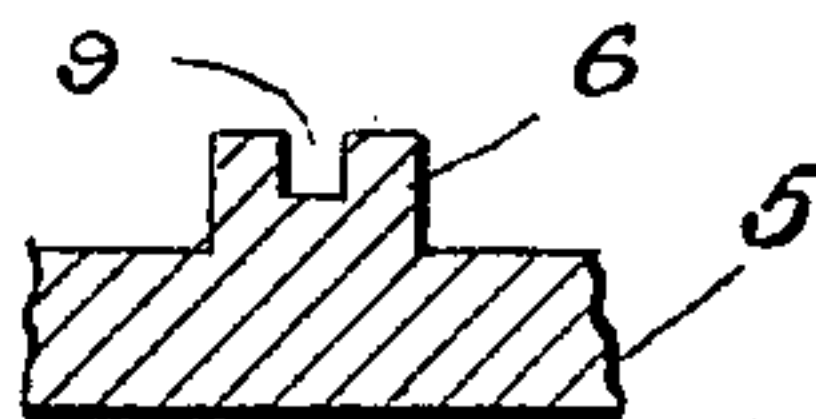


Fig. 5.

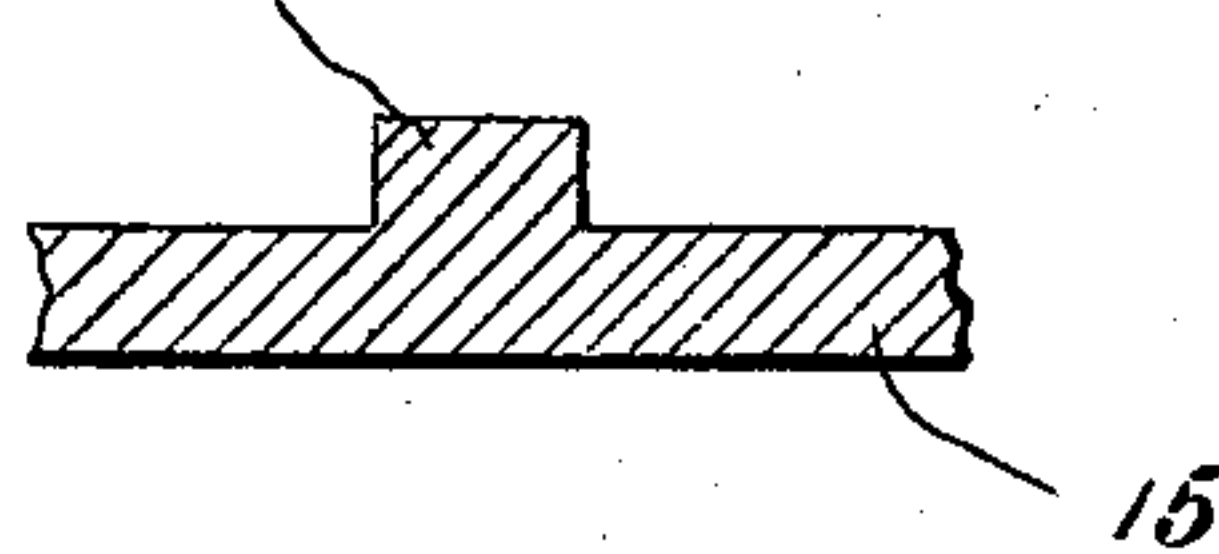
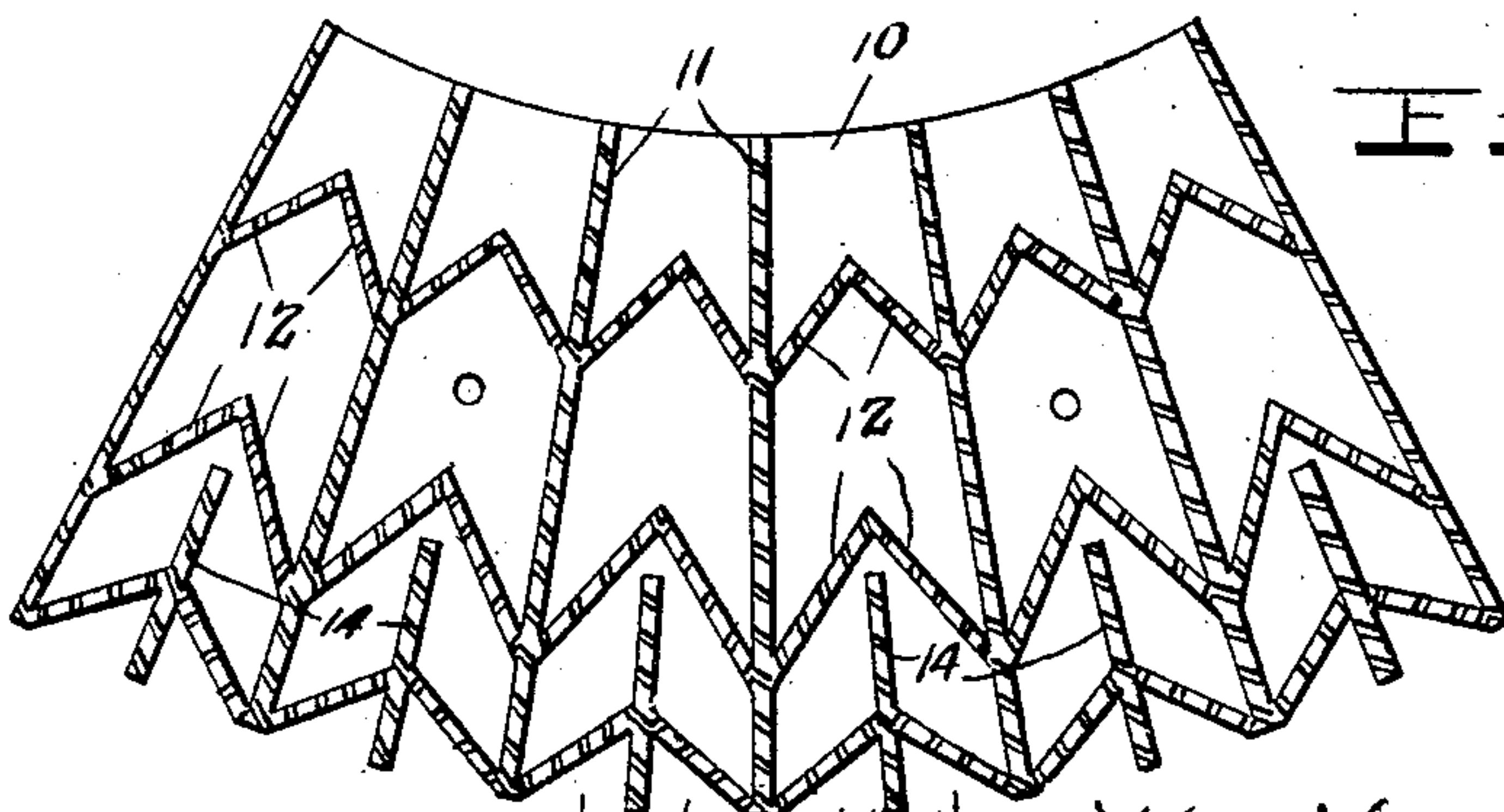


Fig. 4.



Witnesses
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2 SHEETS—SHEET 2.

FIG. 6.

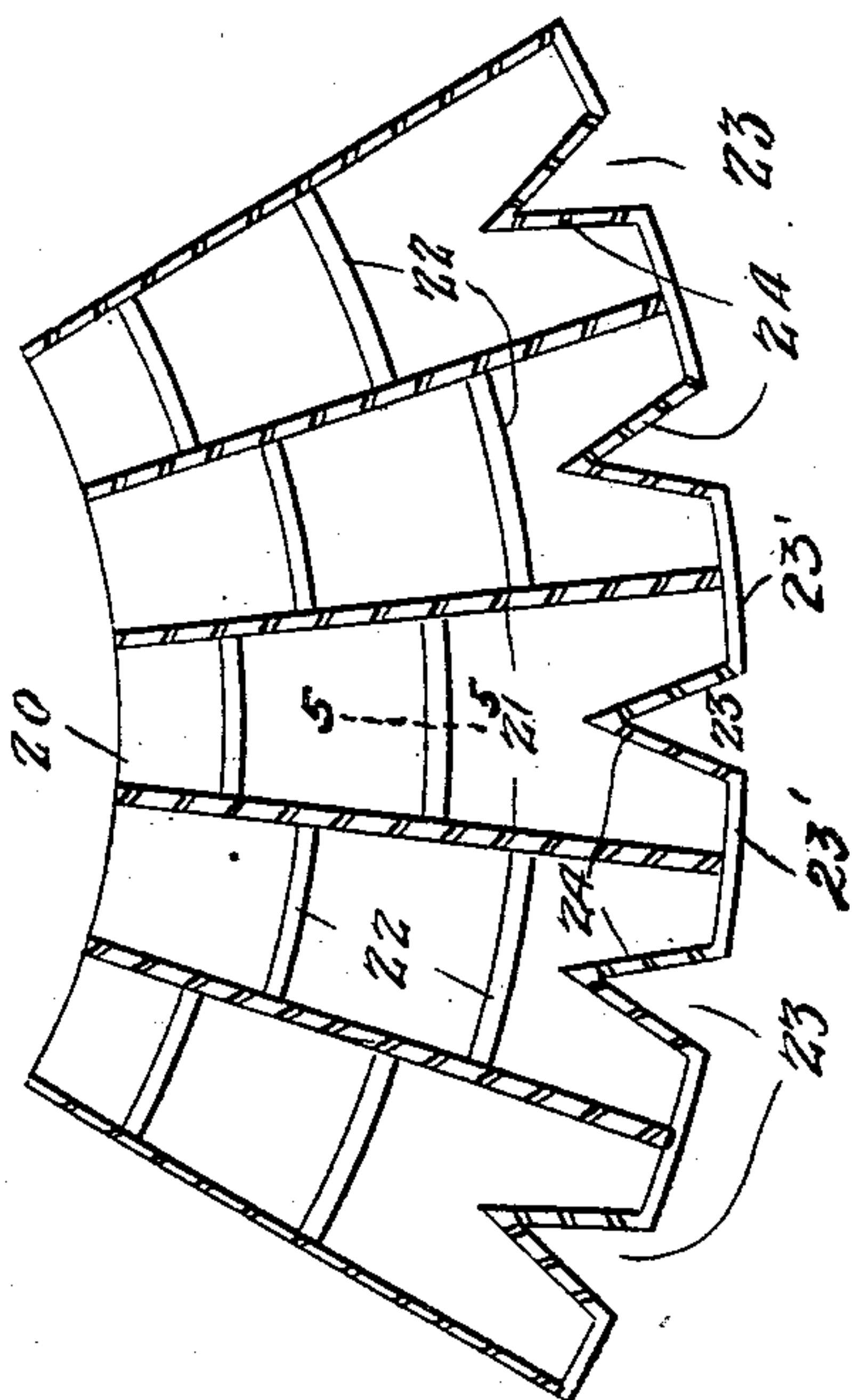
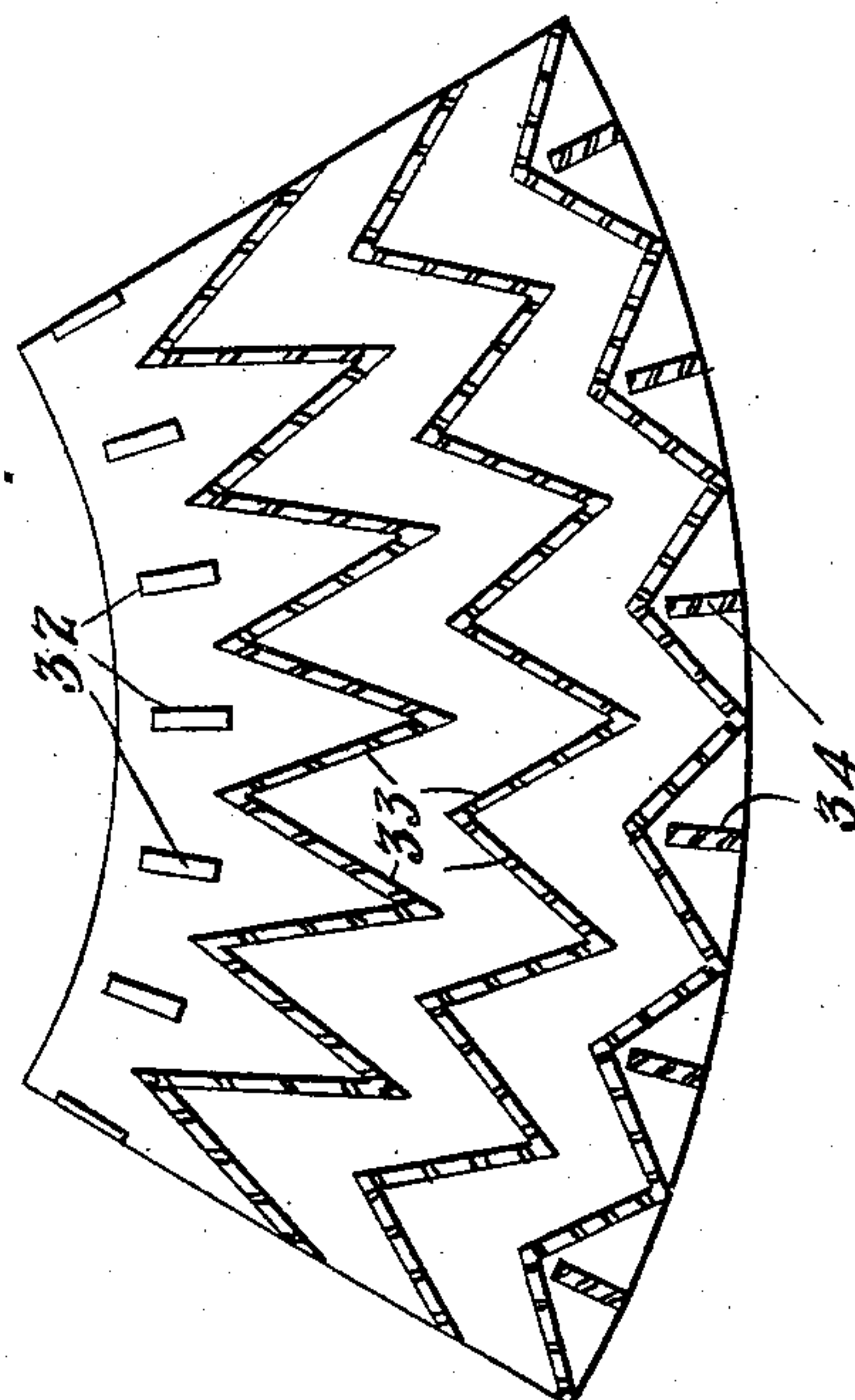


FIG. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM VAN NOSTRAND, OF DALTON, NEW YORK.

MILLSTONE-DRESSING.

968,818.

Specification of Letters Patent.

Patented Aug. 30, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM VAN NOSTRAND, a citizen of the United States, residing at Dalton, in the county of Livingston and State of New York, have invented certain new and useful Improvements in Millstone-Dressing; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to grinding plates especially adapted for use in attrition mills in which it is customary to employ a pair of plates each revolving rapidly and in opposite directions.

The object of the invention is to provide plates of this class with grinding and retaining ribs so arranged as to grind the grain with a minimum of friction and power and with a maximum output and by means of which the opening of the plates is avoided.

With this and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

Figure 1 is a plan view of one form of one of the grinding plates adapted to be located opposite each other; Fig. 2 is an elevation of the plates shown in Fig. 1 assembled upon a disk; Fig. 3 is a detail sectional view through one of the grinding ribs taken on line 3—3 of Fig. 1; Fig. 4 is a plan view of another form of plate; Fig. 5 is a detail cross sectional view taken through one of the retaining ribs on line 5—5 of Fig. 6; Fig. 6 is a plan view of another form; and Fig. 7 is a similar view of still another form.

The grinding disks as 1, are each provided with a plurality of these improved plates, six being preferably used and secured to the disks by means of screws or in any other suitable manner as shown in Fig. 2. In the form shown in Figs. 1 to 3 the plates as 5 are each constructed with a plurality of inverted V-shaped ribs 6, adapted to perform the function of retaining and grinding ribs and thereby dispenses with the use of the ordinary retaining ribs with the consequent friction and loss of power caused by said retaining ribs. Any desired number of these ribs 6, may be employed

according to the quality of the grinding required, whether fine or coarse, few ribs being used when coarse ground material is required, and they are correspondingly increased according to the degree of fineness required. This plate is also provided with a retaining rib 7' arranged at its outer edge or periphery and having spaced discharge openings as 7 with a rib as 7'' arranged around the inner edges of each opening, said ribs 7'' being preferably inverted V-shaped in form, and which also form additional grinding ribs. The inverted V-shape of said ribs 7'' presents a sharp apex or point to the outgoing ground material and avoids any danger of clogging of the material, which would tend to force the plates apart. Short receiving and crushing ribs 8 shown may or may not be used as desired. The grinding ribs are preferably constructed as shown in Fig. 3 having flat faces provided with diagonally extending recesses as 9 to form a roughened surface to adapt them to thoroughly grind the material operated on. These recesses may be spaced any desired distance apart as desired.

In the form shown in Fig. 4 the improved plate 10 is provided with a plurality of laterally spaced radially extending grinding ribs as 11 extending from the inner to the outer edge of said plate 10. Angular or inverted approximately V-shaped retaining and grinding ribs as 12 are arranged in concentric rows between the ribs 11 and also at the outer edge of the plate, those at the outer edge forming discharge openings as 13. A plurality of short grinding ribs as 14 are shown arranged between the ribs 11 at the outer edge of the plate but these may be dispensed with if desired.

In the form shown in Fig. 6 the plates as 20 are each provided with a plurality of laterally spaced grinding ribs 21 extending from the inner to the outer edge of the plate having short retaining ribs as 22 arranged in alternate relation between the ribs 21 and having discharge openings 23 covered by inverted V-shaped ribs as 24 which ribs 24 provide improved grinding means in addition to improving the discharge outlet for the grinding material. Retaining ribs 23' are arranged between the openings 23 at the periphery or outer edges of the plate 20.

In the form shown in Fig. 7 a plate 31 is shown having short radially extending

laterally spaced receiving and crushing ribs as 32 arranged around its inner end and with a plurality of circular rows of zigzag grinding ribs, each row being formed of connected approximately inverted V-shaped ribs, as 33. Short radially or longitudinally extending grinding ribs 34 are arranged around its outer end, and openings are formed in its outer edge or periphery and surrounded by inverted V-shaped ribs 35. In this form of plate the retaining ribs shown in the other forms are entirely dispensed with and the consequent friction and loss of power. The connected inverted V-shaped ribs perform the double function of retaining and grinding ribs. The inverted V-shaped or angular ribs of the inner row, it will be observed, are constructed and connected to form acute angled members to provide for the ready passage of the grain as there is less speed at this portion of the plate. The second or intermediate row shows members connected to form obtuse angles to provide a more extended grinding surface and prevent the grain from passing rapidly as there is more surface and greater speed at this point than at the inner end or eye of the plate, and the angles of the ribs of the outer row are still more obtuse as the speed at the periphery of the disk is greater and the grinding surface is more extended. This arrangement of the grinding ribs in concentric rows provides for the maximum grinding capacity with a minimum consumption of power.

The disks may if desired have one each of the different forms of plate arranged thereon or they may be formed entirely of one form.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation. Various changes in the form, proportion

and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

I claim as my invention:

1. A grinding plate having a plurality of grinding ribs arranged on its inner face, and a plurality of discharge openings at its periphery, with an inverted V-shaped rib arranged around the inner edges of each opening.

2. A grinding plate having a plurality of concentric rows of grinding ribs arranged on one face thereof the ribs of one row being arranged to form acute angles and those of the other row obtuse angles.

3. A grinding plate provided on its inner face with concentric rows of grinding ribs, the inner row being arranged to form a series of connected acute angled elements and the outer row to form a series of connected obtuse angled elements.

4. A grinding plate having a plurality of concentric rows of grinding ribs, the inner row being arranged to form a series of connected acute angled elements and the outer row to form a series of connected obtuse angled elements, and a row of inverted V-shaped elements arranged between said inner and outer rows.

5. A grinding plate having a plurality of concentric rows of grinding ribs, the inner row being arranged to form a series of acute angled elements and the outer row to form a series of obtuse angled elements, and a row of inverted V-shaped elements arranged between said inner and outer rows.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM VAN NOSTRAND.

Witnesses:

SARAH B. LOWELL,
JAY E. LYON.