

No. 679,326.

Patented July 30, 1901.

J. NEDERLAND.

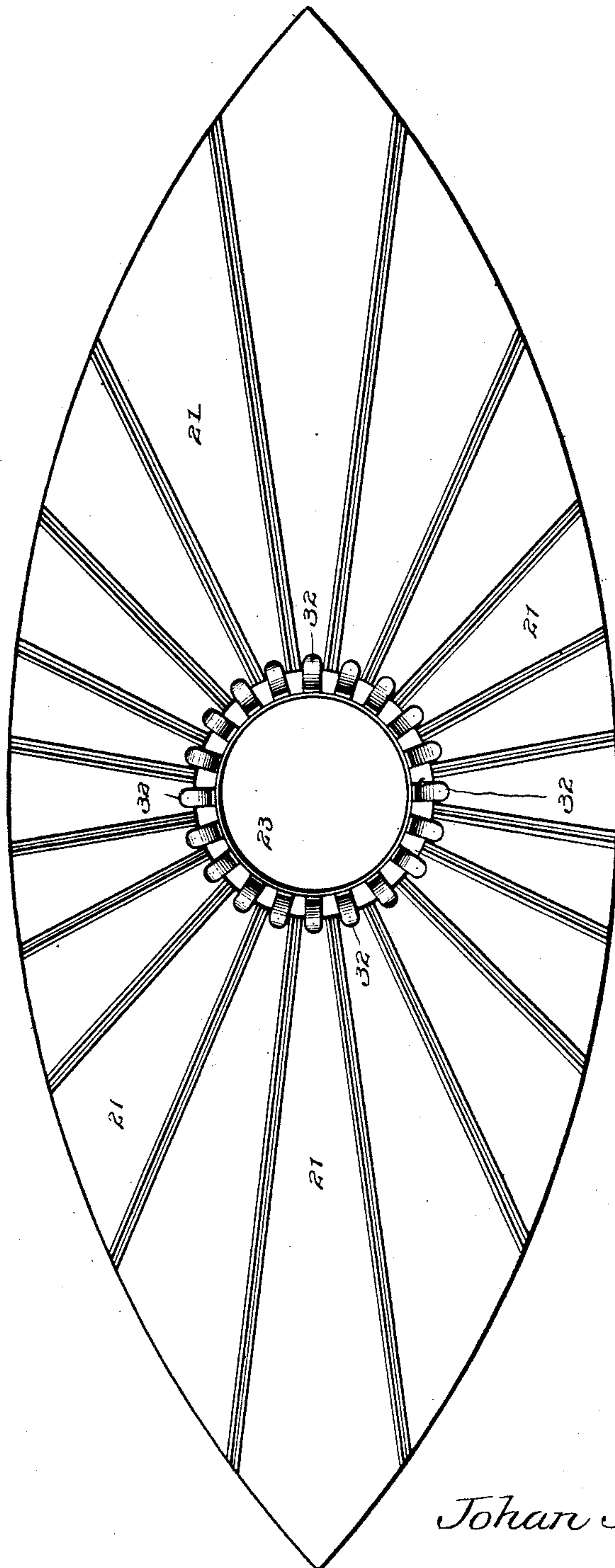
ARMOR PLATE.

(Application filed Oct. 13, 1900.)

(No Model.)

5 Sheets—Sheet 2.

Fig. 3.



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Fig. 1.

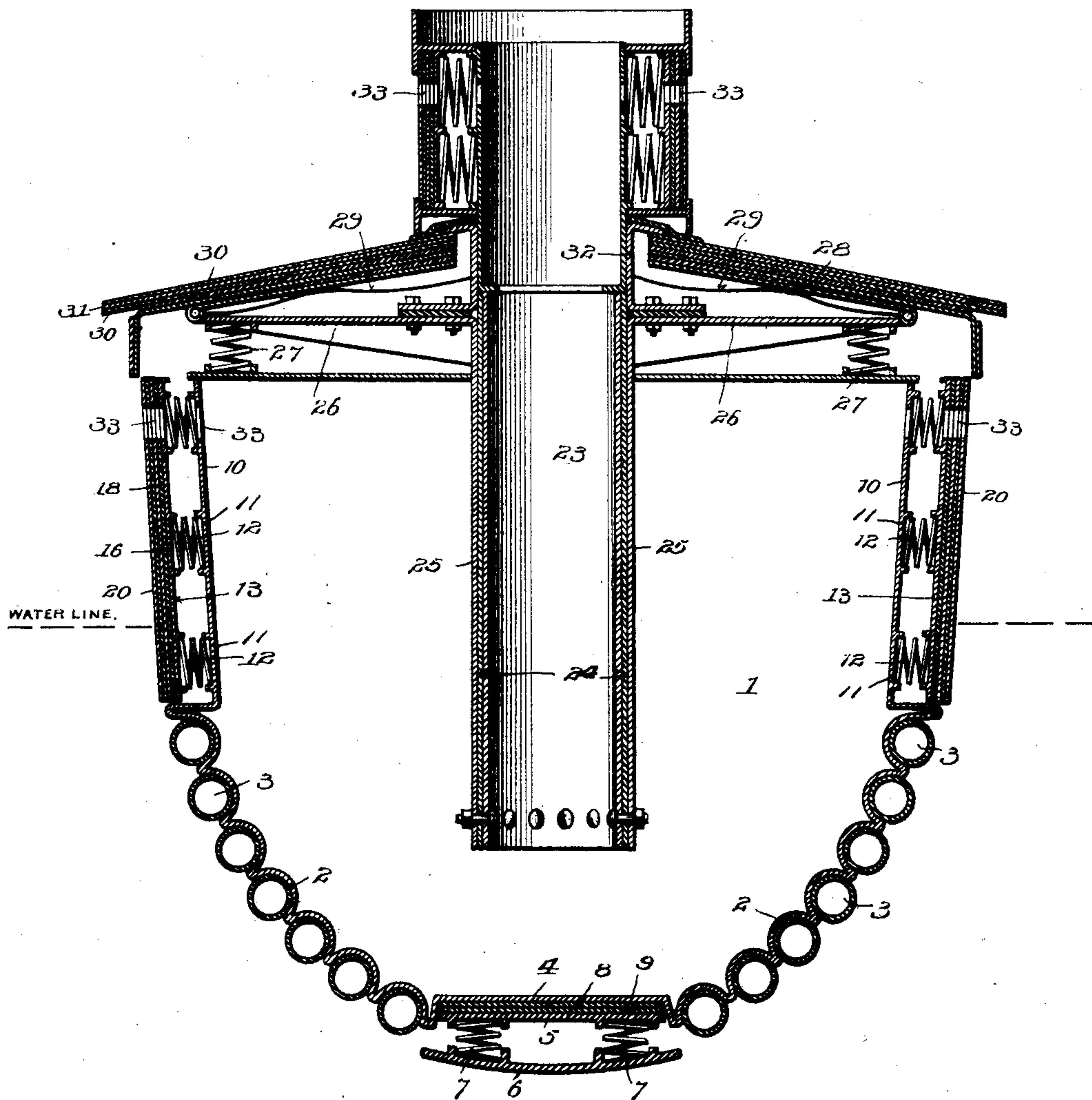
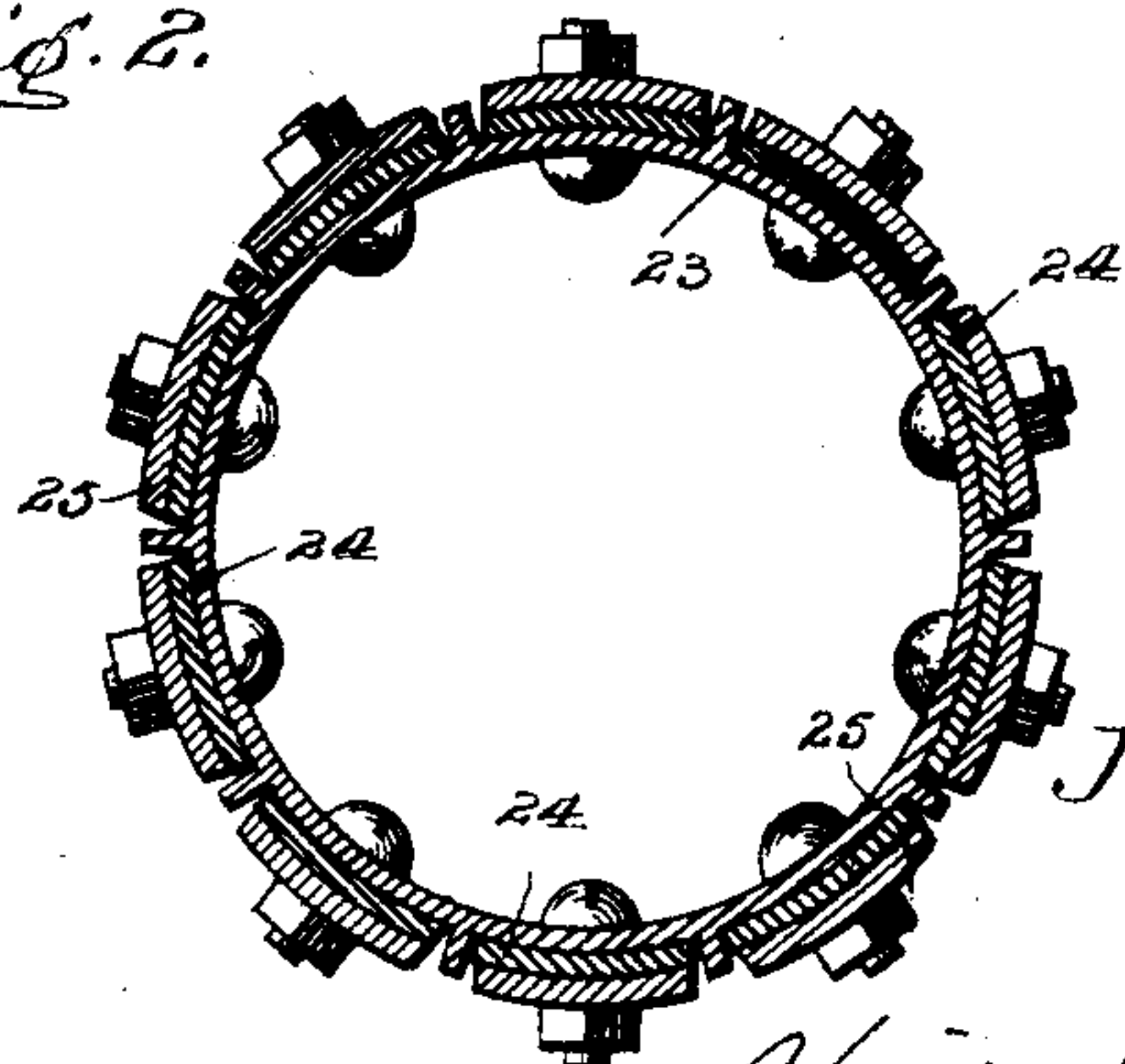


Fig. 2.



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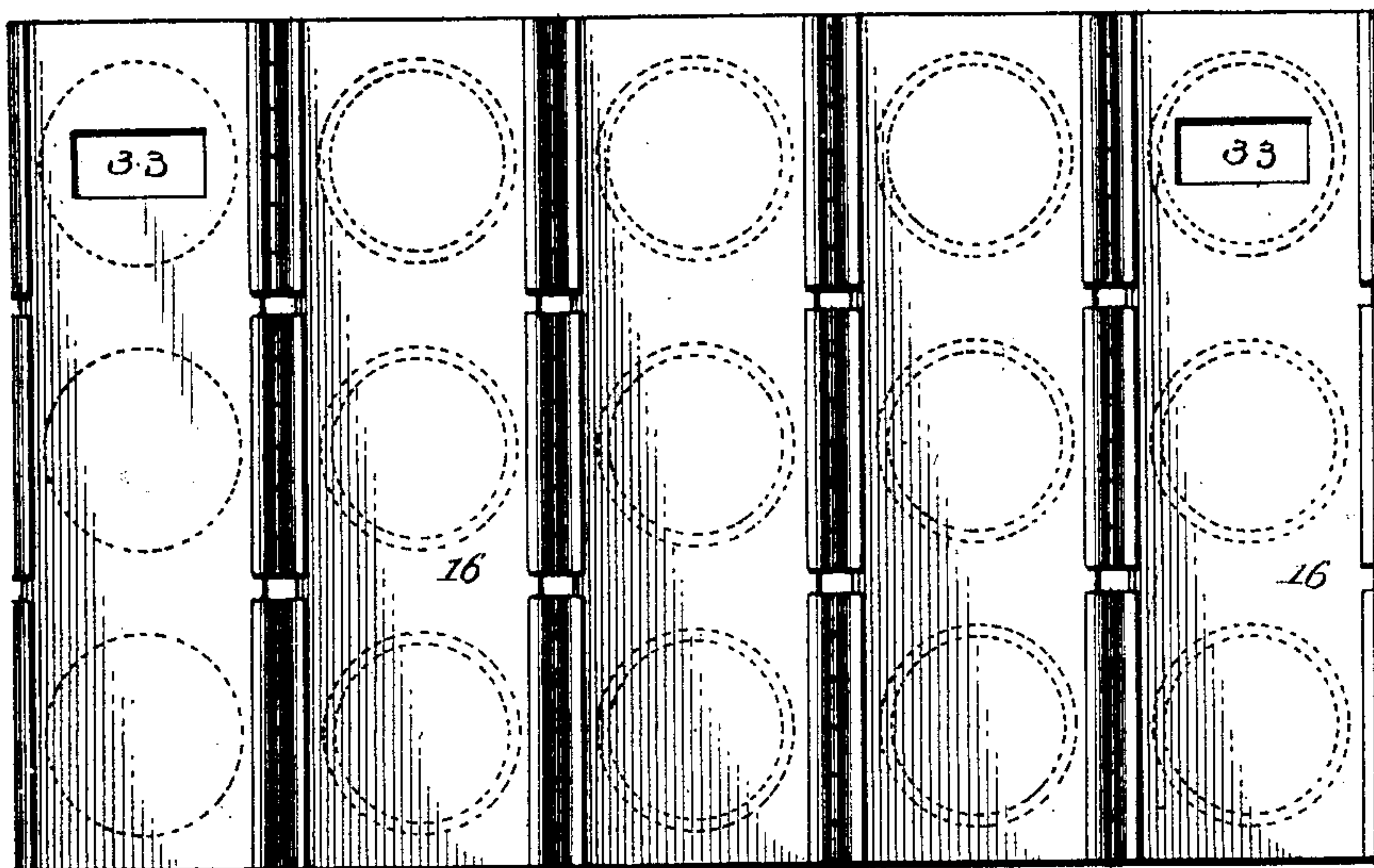
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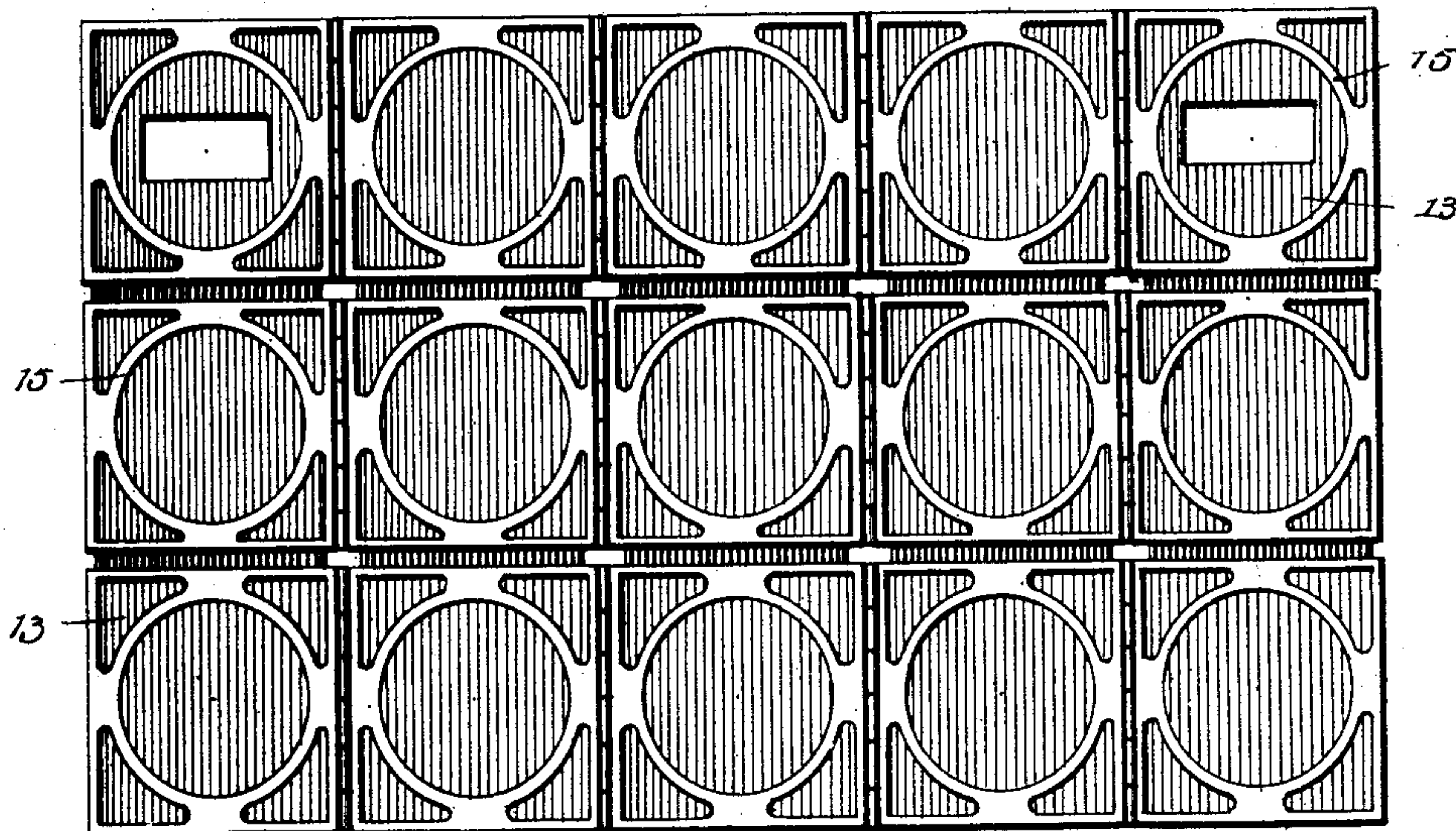
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*Fig. 4.*



*Fig. 5.*



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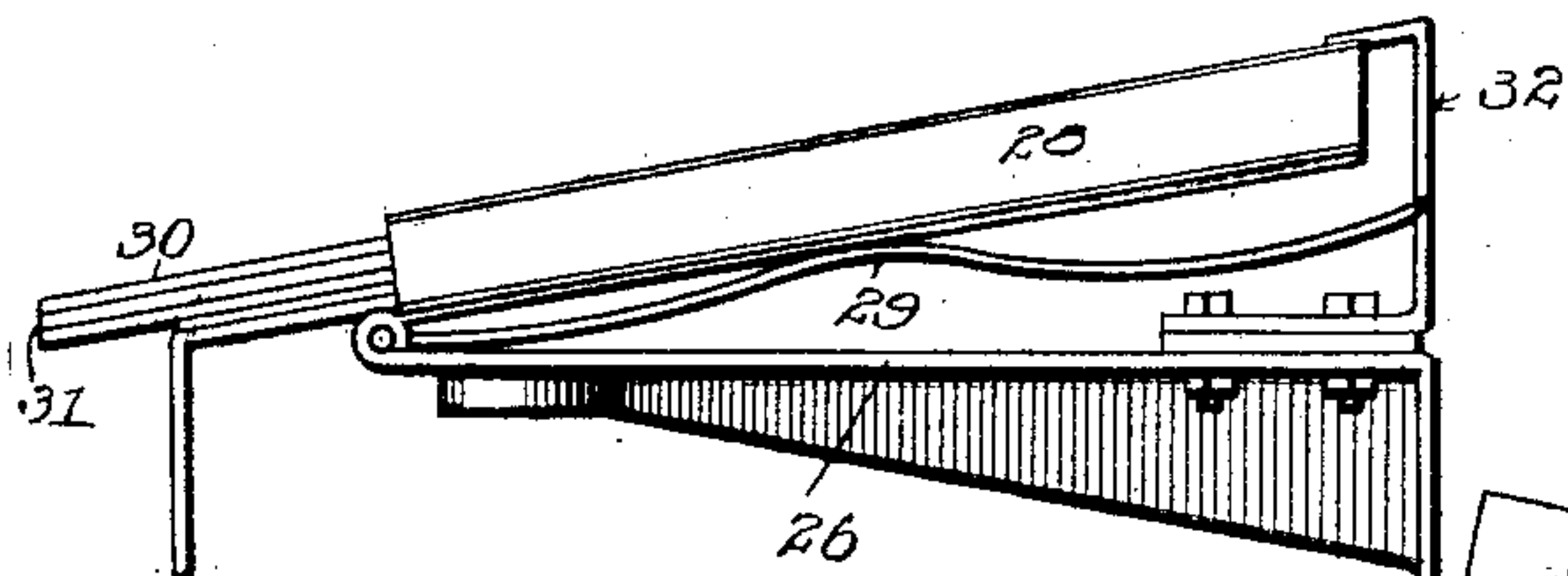
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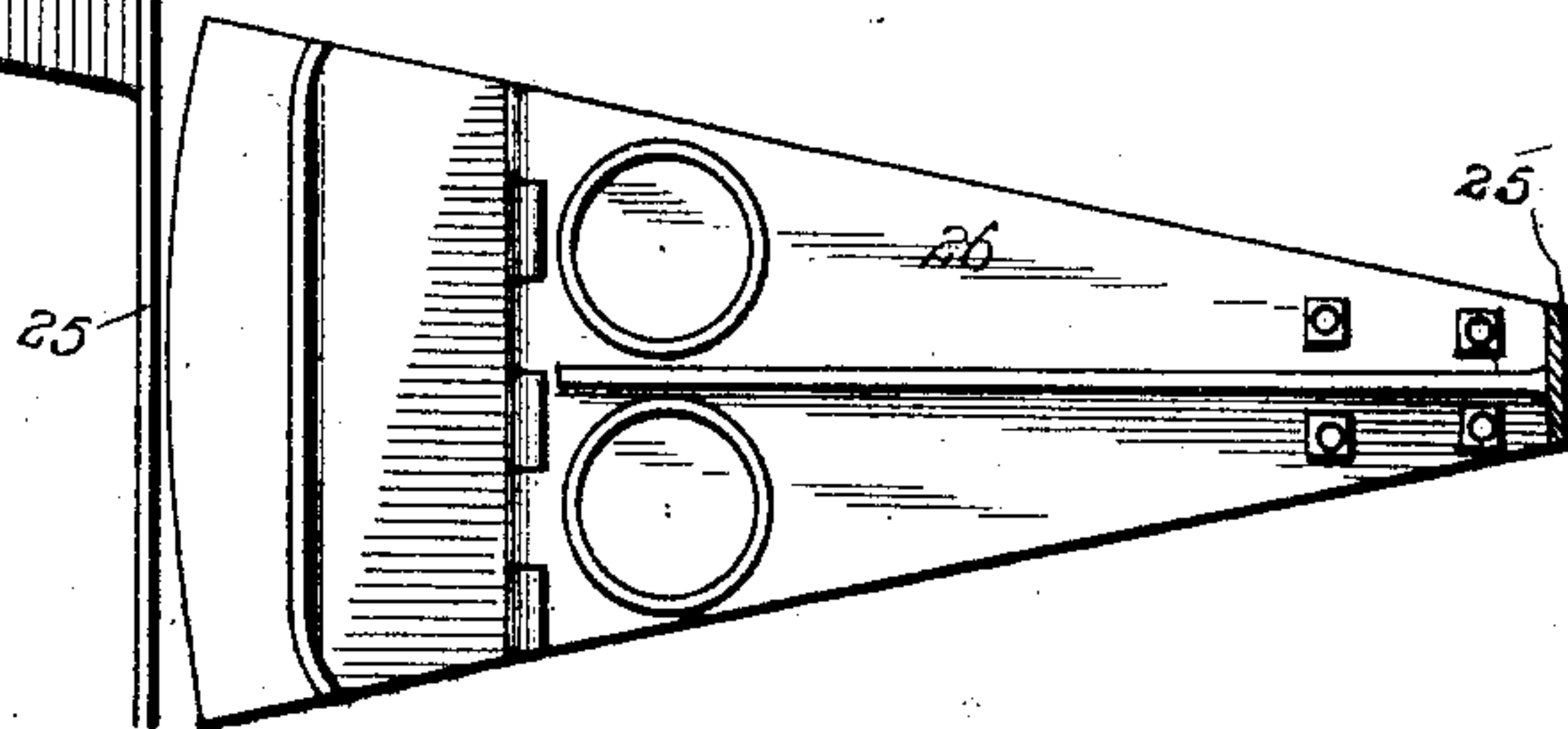
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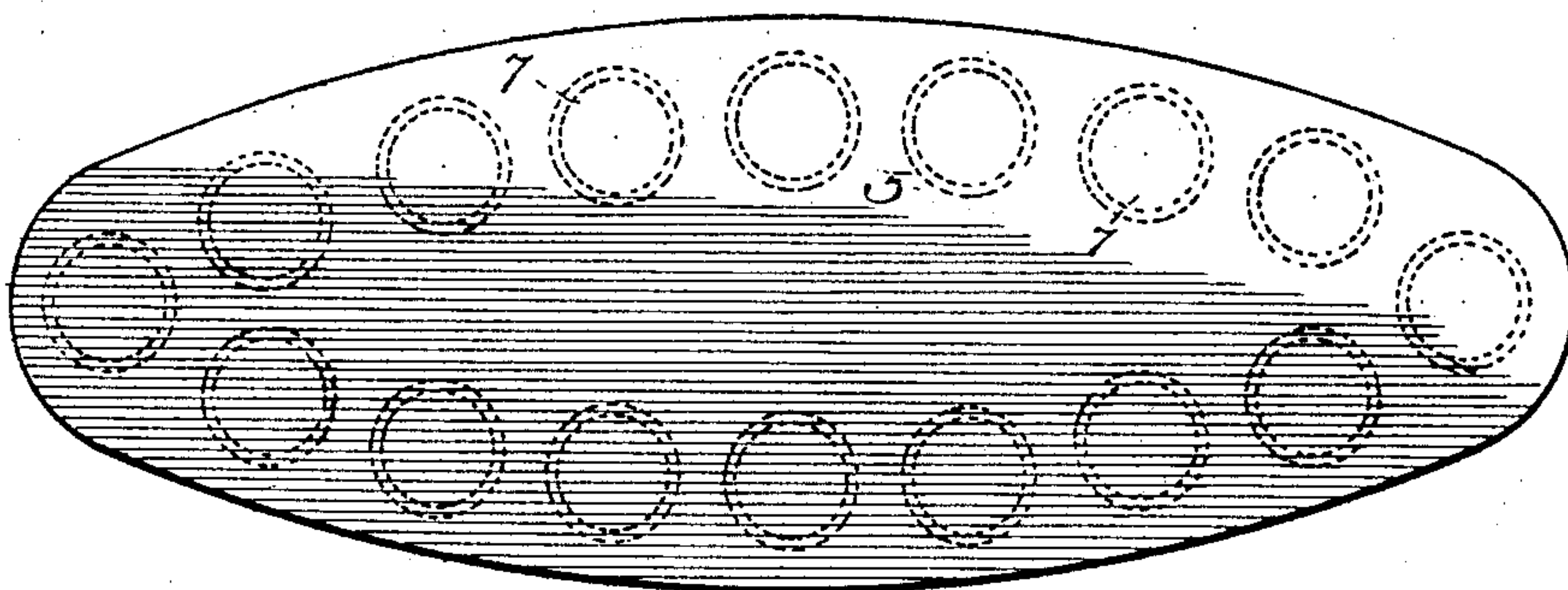
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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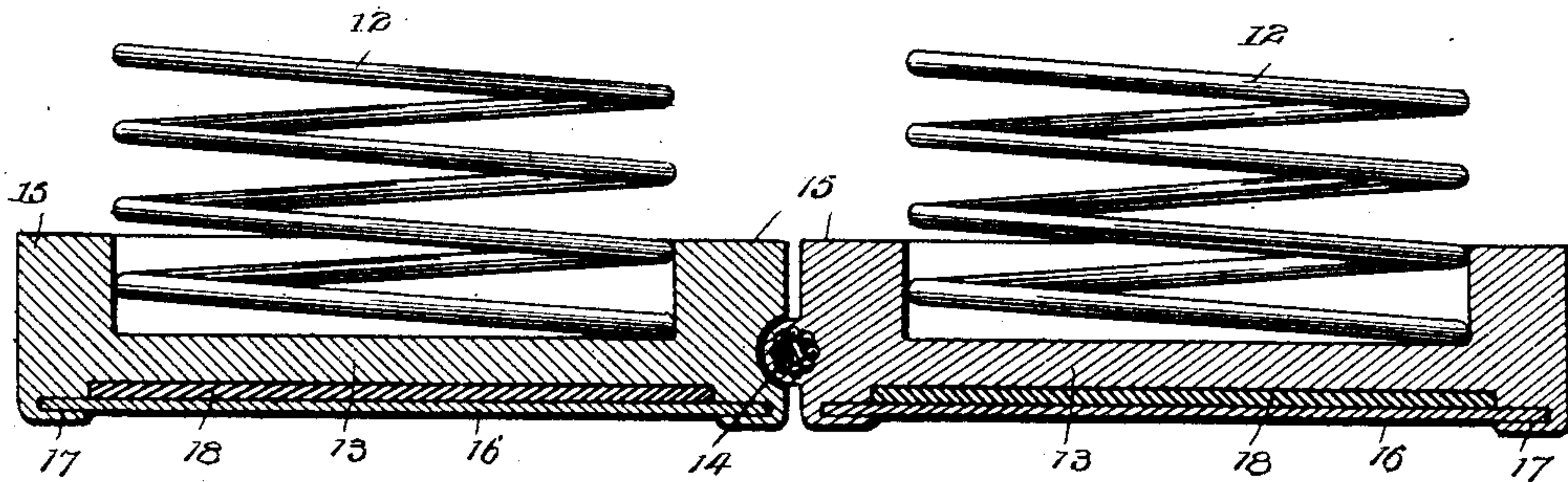
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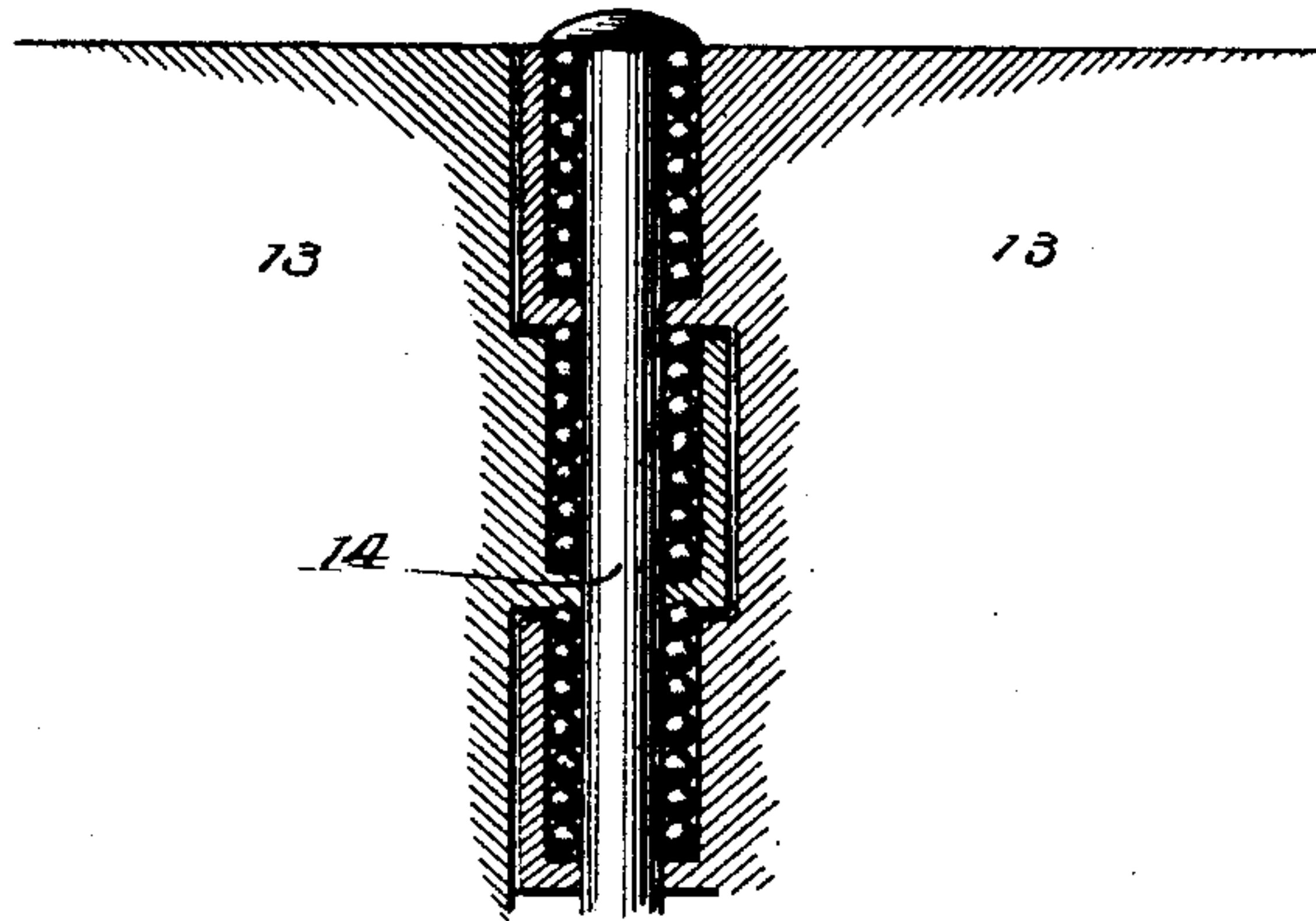
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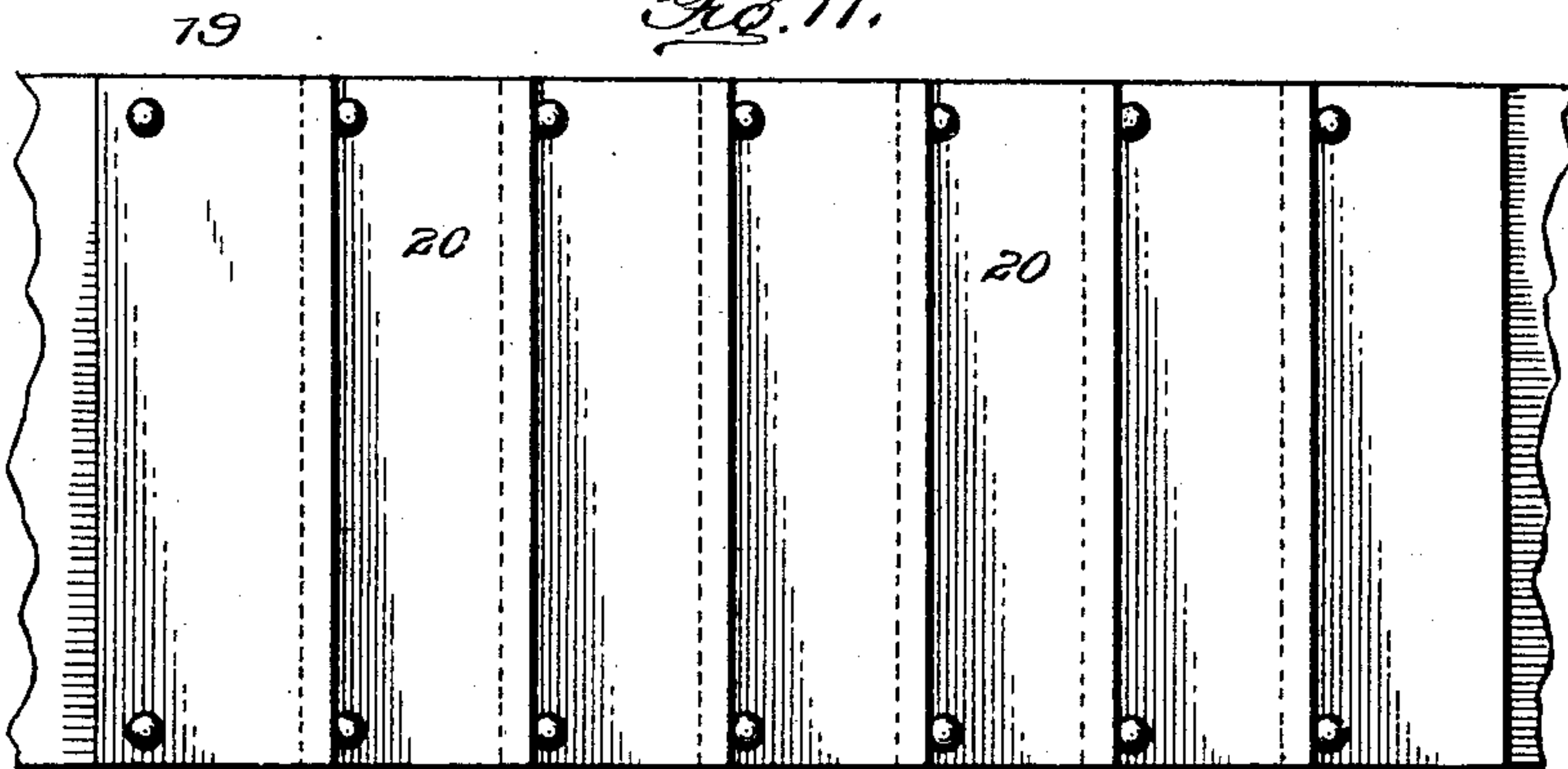
*Fig. 9.*



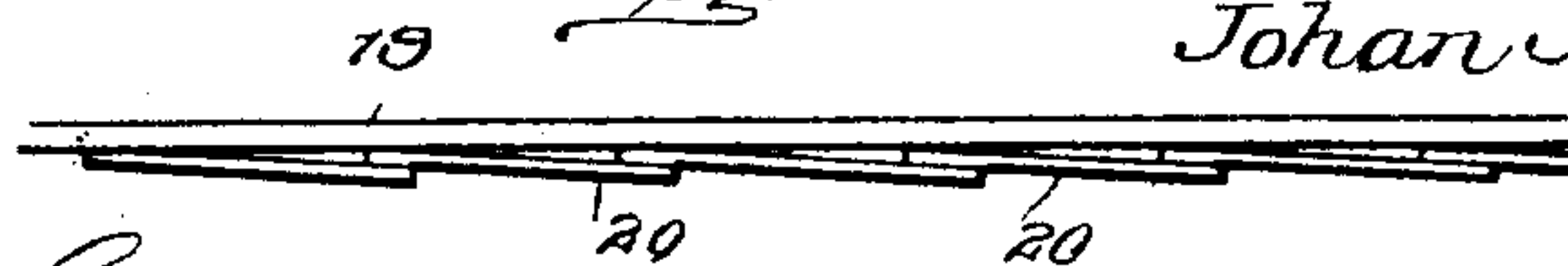
*Fig. 10.*



*Fig. 11.*



*Fig. 12.*



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# UNITED STATES PATENT OFFICE.

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## ARMOR-PLATE.

SPECIFICATION forming part of Letters Patent No. 679,326, dated July 30, 1901.

Application filed October 13, 1900. Serial No. 32,981. (No model.)

*To all whom it may concern:*

Be it known that I, JOHAN NEDERLAND, a subject of the Czar of Russia, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Armor-Plate, of which the following is a specification.

This invention relates to a protective armor for ships, forts, &c.; and the primary object thereof is to provide a more efficient protection against armor-piercing projectiles than any means heretofore produced.

The peculiar manner of accomplishing the desired result, as well as the novel details of construction which constitute the essential features of this invention, will be clearly set forth in the following description, defined in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical transverse sectional view of a ship equipped in accordance with my invention. Fig. 2 is a horizontal cross-section through one of the turrets. Fig. 3 is a top plan view of the ship to which my invention has been applied. Fig. 4 is a front elevation of the inner side sheathing. Fig. 5 is a reverse view of the same. Figs. 6 and 7 are enlarged detail views of the units of the protected deck. Fig. 8 is a bottom plan view of the bottom. Fig. 9 is an enlarged detail view of two of the units or plates comprising the inner side sheathing. Fig. 10 is a longitudinal vertical sectional view of the same, and Fig. 11 is an elevation of the outer sheathing. Fig. 12 is a detail view of a series of plates, showing their relative arrangement.

Referring now to the drawings by reference-numerals, 1 designates the hull of a vessel, provided at a suitable point below the water-line with a plurality of longitudinal corrugations or concave recesses 2, in which are arranged a corresponding number of resilient and inflatable tubes or pipes 3. These pipes are provided for the purpose of preventing the ship from sinking in case her sides should be pierced by a projectile or from any other cause. A longitudinal elongated recess 4 is provided intermediate the lines or pipes 3 and adjacent to the longitudinal center of the bottom of the ship. This recess is de-

signed to receive a spring-keel comprising two metallic plates 5 and 6, interposed between which are a plurality of coil-springs 7, so arranged that should the ship strike upon a rock or any hidden obstruction the resiliency of the keel would prevent any harm befalling the vessel. Packing-strips 8 and 9 are provided between the bottom of the ship and the plate 5 to provide further resiliency.

10 designates one of the sides of the vessel, which may be constructed in any well-known manner, except that I provide a plurality of circular flanges at proper distances apart to form recesses 11 to receive the ends of the coil-springs 12, the purpose of which will be presently explained.

The inner sheathing will be made of "armor-proof" material—for instance, "Krupp armor"—and will be arranged in a series of hinged sections or plates 13, connected by ball-bearing pintles 14 to reduce the friction between the meeting edges of said plates. The respective plates are provided with circular flanges 15 adjacent to those on the sides of the hull of the vessel and receive the remaining ends of the springs 12, so as to form a spring resistance to any destroying agent which might be hurled against the sides of the ship.

Tempered plates 16 are arranged in grooves 17 in the respective sections of the inner sheathing, so as to be easily removable in case of deterioration, and between the plates 16 and the sections 13 I provide strips of resilient packing material 18, preferably of rubber. After the sides are thus arranged an outer covering or sheathing 19 is provided over all. This outer sheathing consists of a plurality of overlapping steel plates 20 to add a finished appearance to the sides of the vessel, as well as to further resist the impact of the projectile.

The deck is composed of a series of radiating sections 21, converging toward a common center which surrounds a turret 22, the sides of which are constructed in a similar manner to the sides of the ship, as above described.

The inner wall of the turret 22 is constructed in the form of an elongated cylinder arranged vertically of the boat and comprises



an inner lining 23, of metal, surrounded by a covering of packing material 24, on the outside of which is arranged a number of equidistant vertical spring-bars 25, having right-angular extensions 26, the free ends of which bear against coil-springs 27 to support the same. Grooved plates 28 are hinged to the free ends of the extensions 26 and are supported thereon on an incline and by means of a leaf-spring 29. These plates are provided along their longitudinal edges with upwardly and inwardly projecting flanges which form grooves. Alternate layers of steel and packing 30 and 31 are secured to the plate 28 by means of the grooves therein to offer resistance to the projectiles. The flanged bars 32, which are bolted to the extensions 26, are designed for the purpose of limiting the upward movement of the deck-sections, it being apparent that the springs 29 will have a tendency to force the same upward. However, when a shot or other missile is dropped upon the deck the section upon which it strikes will yield sufficiently to break the force of the same, and thus modify or lessen its destructiveness.

The port-holes 33, through which the guns will project, will in actual practice be somewhat smaller than the coil-springs, so that the guns will be surrounded by said springs as they protrude through the same preparatory to being discharged. The springs will thus be free to expand and contract without in any way interfering with the successful operation of the ordnance on the ship.

While I have specifically described what to me appears the very best means of accomplishing the desired result, I would have it understood that I do not limit myself to the exact details of construction shown, but hold that slight changes might be made from time to time without departing from the spirit of this invention.

What I claim, and desire to secure by Letters Patent, is—

1. In a device of the character described the combination with a plurality of hinged sections provided with grooves, of alternate layers of packing and metal in said grooves, and a covering of metal over the whole.

2. In a device of the character described the combination with a plurality of resiliently-secured hinged sections of alternate layers of removable packing and metal carried thereby and a covering over said packing and metal layers.

3. In a device of the character described; the combination with an inner sheathing-section provided with grooves, and alternate lay-

ers of packing and metal secured to said section and lying within the grooves.

4. In a device of the character described; the combination with the hull of the ship of a plurality of sheathing-sections, coil-springs connecting the sheathing to the ship, said hull and sheathing being provided with openings to form port-holes surrounded with the coil-springs, and an outer sheathing over the first-named sheathing.

5. In a device of the character described; the combination with the plurality of hinged sections resiliently secured to a base to form a protected deck, alternate layers of metal and packing carried by each section and means for limiting the upward movement of the free end of each section.

6. In a device of the character described, the combination with a plurality of hinged sections and an inner sheathing; of recesses formed in the respective sections and sheathing; coil-springs seated in the recesses; of alternate layers of packing and metal secured to said sections; and a hardened covering on the outer wall of said sections.

7. In a device of the character described, the combination with the hull of a vessel having spring-retaining seats secured thereto; of a plurality of hinged sections on the outer walls of the sheathing and also provided with spring-retaining seats in alignment with those first named, and springs interposed between the sheathing; and hinged sections having their respective ends resting in said seat.

8. In a device of the character described, the combination with a plurality of hinged sections resiliently secured to a base to form a protective deck; alternate layers of packing carried by each section; a covering of metal over the whole; and stops for limiting the upward movement of the respective sections.

9. In a device of the character described, the combination with a suitable base; of a plurality of bars arranged above the same; coil-springs interposed between the bars and the base; hinged plates arranged on the outer ends of the bars, provided with upwardly and inwardly projecting flanges secured on the longitudinal edges thereof to form grooves in the plates, and a plurality of alternate layers of metal and packing arranged in the grooves for the purpose set forth.

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

JOHAN NEDERLAND.

Witnesses:

MARCUS LAUDE,  
BENJAMIN KLEIN.