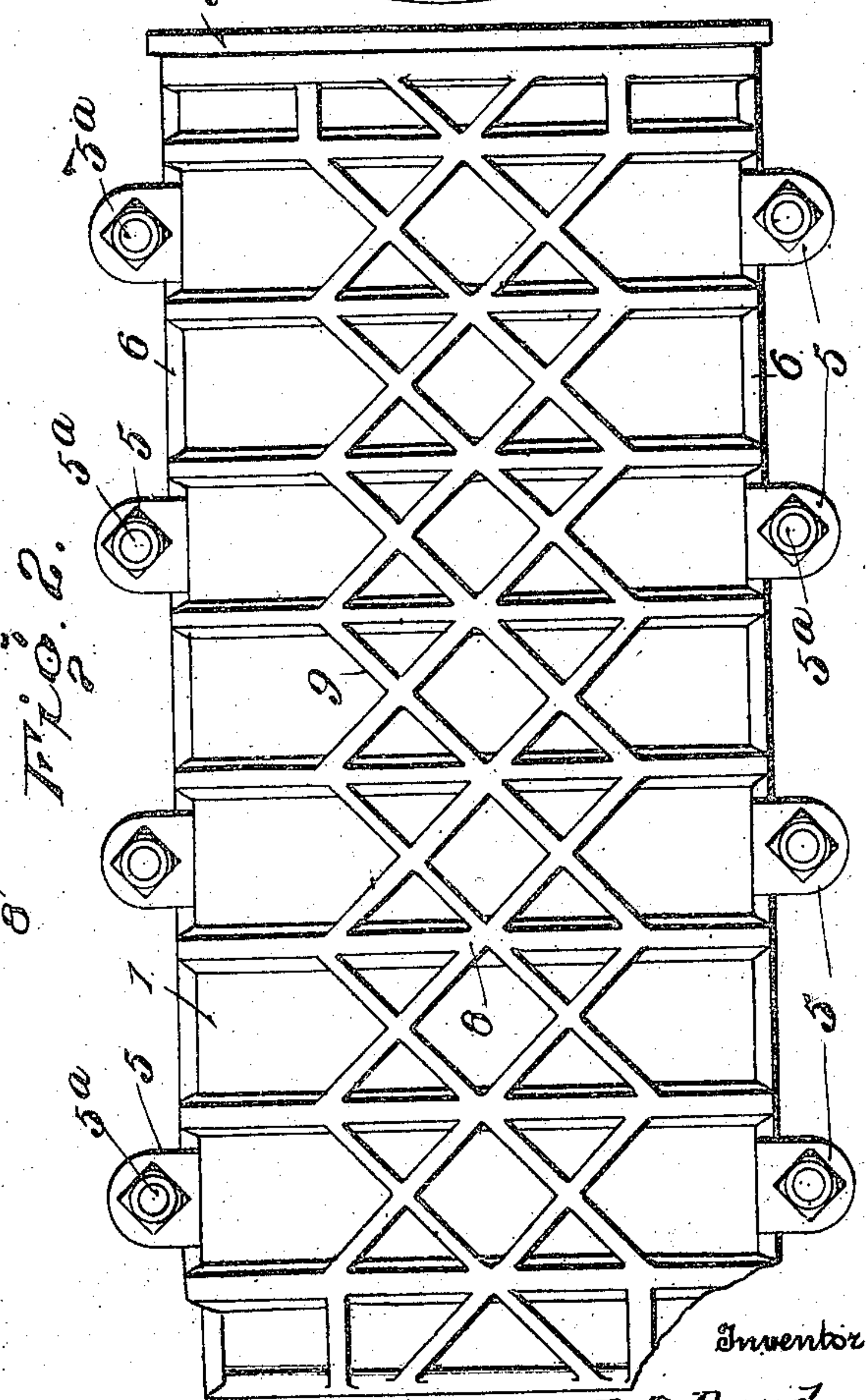
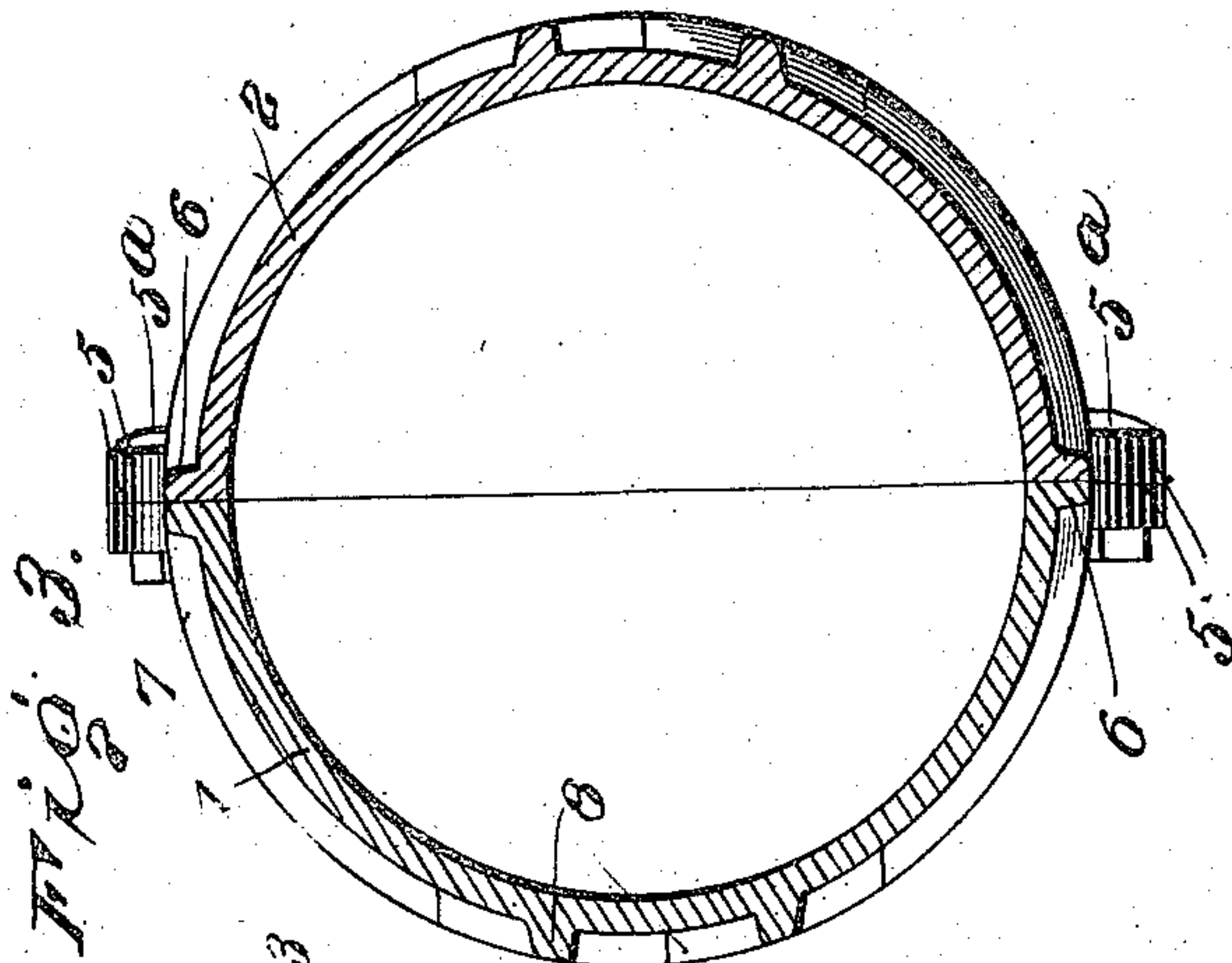
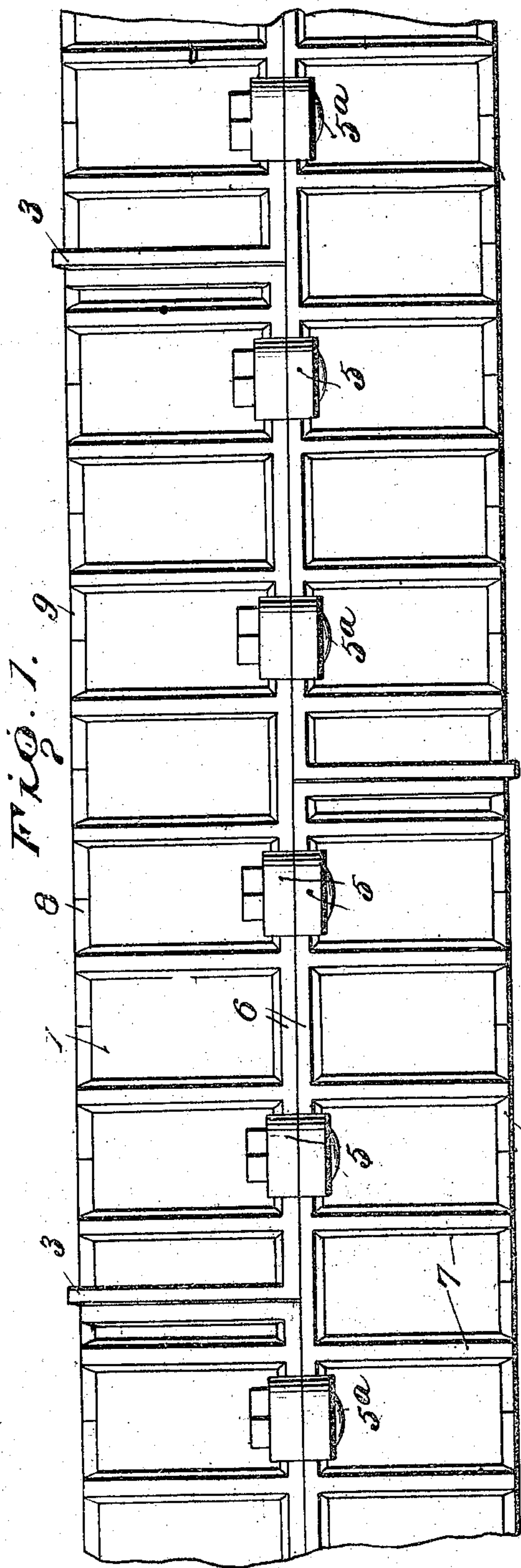


No. 881,770.

PATENTED MAR. 10, 1908.

D. C. BOYD.
CULVERT.

APPLICATION FILED JULY 8, 1907.



Witnesses

W. H. Johnson

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UNITED STATES PATENT OFFICE.

DAVID C. BOYD, OF GALION, OHIO.

CULVERT.

No. 881,770.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed July 8, 1907. Serial No. 382,758.

To all whom it may concern:

Be it known that I, DAVID C. BOYD, a citizen of the United States, residing at Galion, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Culverts, of which the following is a specification.

This invention contemplates certain new and useful improvements in culverts, and the invention consists in certain, constructions and arrangements of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of my invention; Fig. 2 is a face view of a section; and, Fig. 3 is a transverse sectional view of the culvert.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

My improved culvert is constructed in sections of any desired length and diameter, said sections, designated 1 and 2, being preferably of semi-cylindrical shape so as to form a completed cylindrical culvert when assembled and each section is provided at one end with a collar 3 designed to engage the reduced end of the next adjacent section when the culvert sections are assembled. The halves or sections 1 and 2 are provided along their edges and at intervals with outstanding ears 5 designed to register, said ears being apertured for the reception of attaching bolts 5^a or the like. Each section is also formed along its side edges with beads 6, the said beads in the completed cylindrical culvert forming longitudinal ribs, as clearly illustrated in the drawings.

In addition to the longitudinal ribs, the culvert sections are provided with preferably registering transverse ribs 7 of any desired number and at any desired intervals apart. In addition, also, to the transverse ribs, the uppermost section of each culvert is provided with a series of obliquely extending ribs 8 extending in opposite directions and intersecting each other, as shown, so as to form on what may be termed the tread portion of the culvert or the uppermost portion thereof, a longitudinally extending ridged surface 9

to strengthen the culvert materially at the point where the most strain occurs, thereby enabling the culvert to be formed of comparatively light or thin cast metal or other material without detracting from its strength. As illustrated in the drawing, this ridged surface may extend over only a portion of the exterior of the uppermost sections of the culvert, preferably on both sides of a line extending longitudinally of the section at the uppermost point thereof. In the present instance this ribbed or ridged reinforcing surface 9 is made up, by the construction of the various ribs, of a series of triangular and lozenge-shaped figures. By the provision of this ridged surface at this portion of the culvert, the wheels of a wagon or other vehicle when cutting through the ground to the culvert will always be received upon this surface, the main or body portion of the culvert being thereby protected from injury.

In the preferred arrangement of the ears 5, such ears are located at equal distances from each other, and the end ears are located distances from the ends of the culvert sections (the collars omitted) equal to one-half of the distance between the several ears of the section. By this means, the main portion of the culvert constructed in accordance with the principles of my invention may be put up with the sections breaking joint as illustrated in the drawings, the culvert being started and finished at the ends by one section of half the size of the standard sections. For instance, if each section is four feet long, five ears to each section, each joint may be started with the section two feet in length, and the section four feet in length and the balance of the culvert being laid with four foot sections, breaking joint until the culvert is finished and finishing at the last with a two foot section. This feature enables me to make what is practically a solid pipe up to any length that may be desired, having a bolt say every one foot on each side of the pipe. These measurements, however, are merely used by way of example, as I wish it understood that my invention is not limited to any particular length of the section, or number of ears, or distances between them.

Having thus described the invention, what is claimed as new is:

1. A culvert section of the character described, provided with a series of obliquely disposed ribs, the series extending longitudinally on the exterior of the culvert section

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and along its uppermost portion and also provided with a series of transverse ribs which intersect the oblique ribs and extend beyond the same to the side edges of the section.
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2. A culvert section of the character described arched in cross section and provided on its exterior along both sides of a longitudinal line extending through its uppermost
10 portion with a ridged surface embodying intersecting oblique and transverse ribs, said

ridged surface terminating on both sides short of the side edges of the section and lying entirely above the main exterior surface of the section.
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In testimony whereof, I affix my signature in presence of two witnesses.

DAVID C. BOYD. [L. s.]

Witnesses:

CHARLES E. FOX,
CLARENCE L. MORKEL.