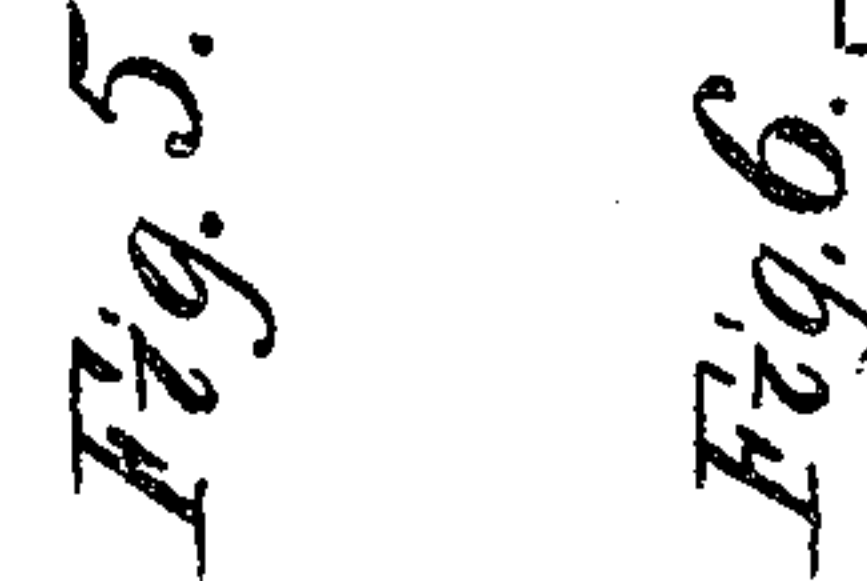
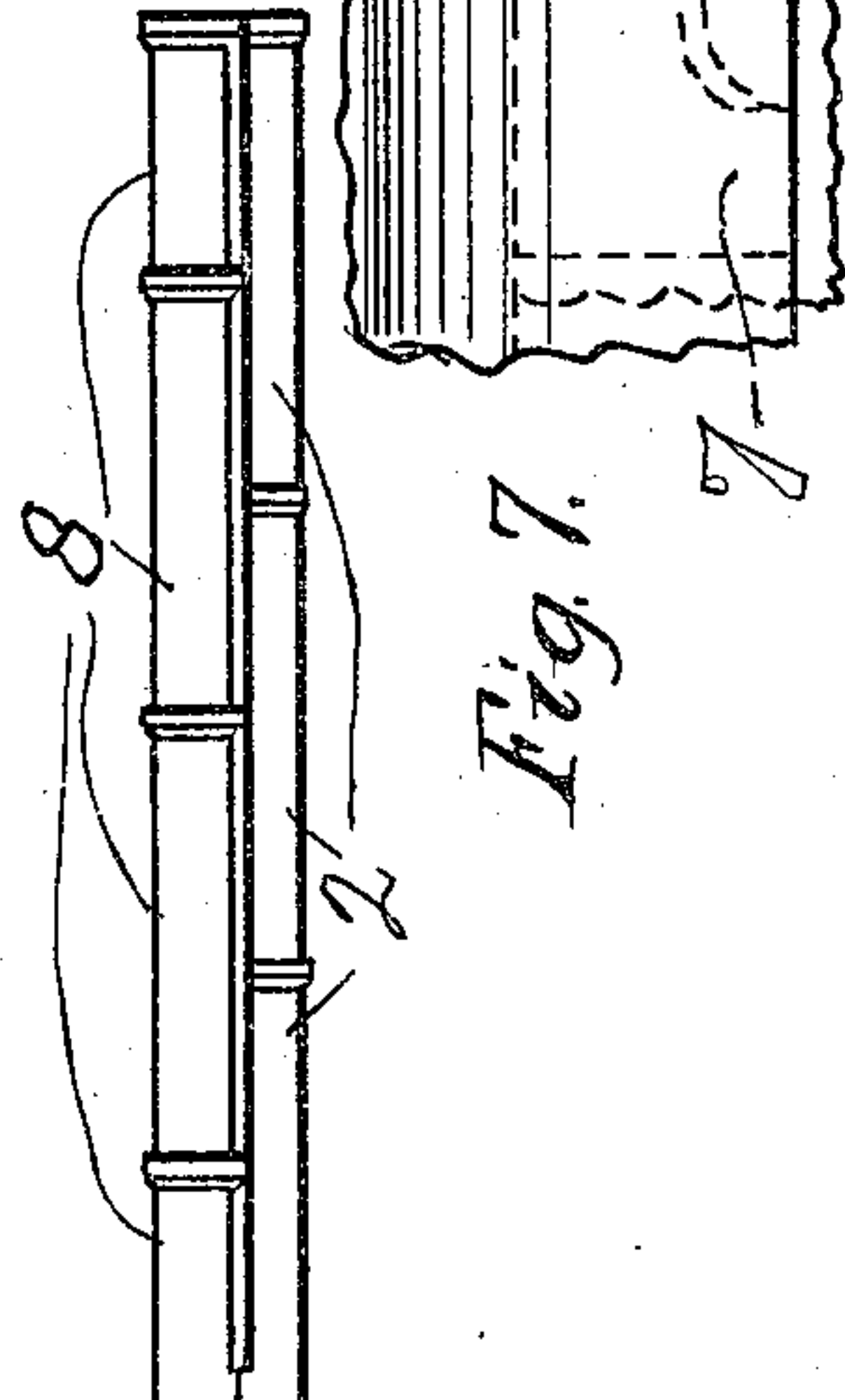
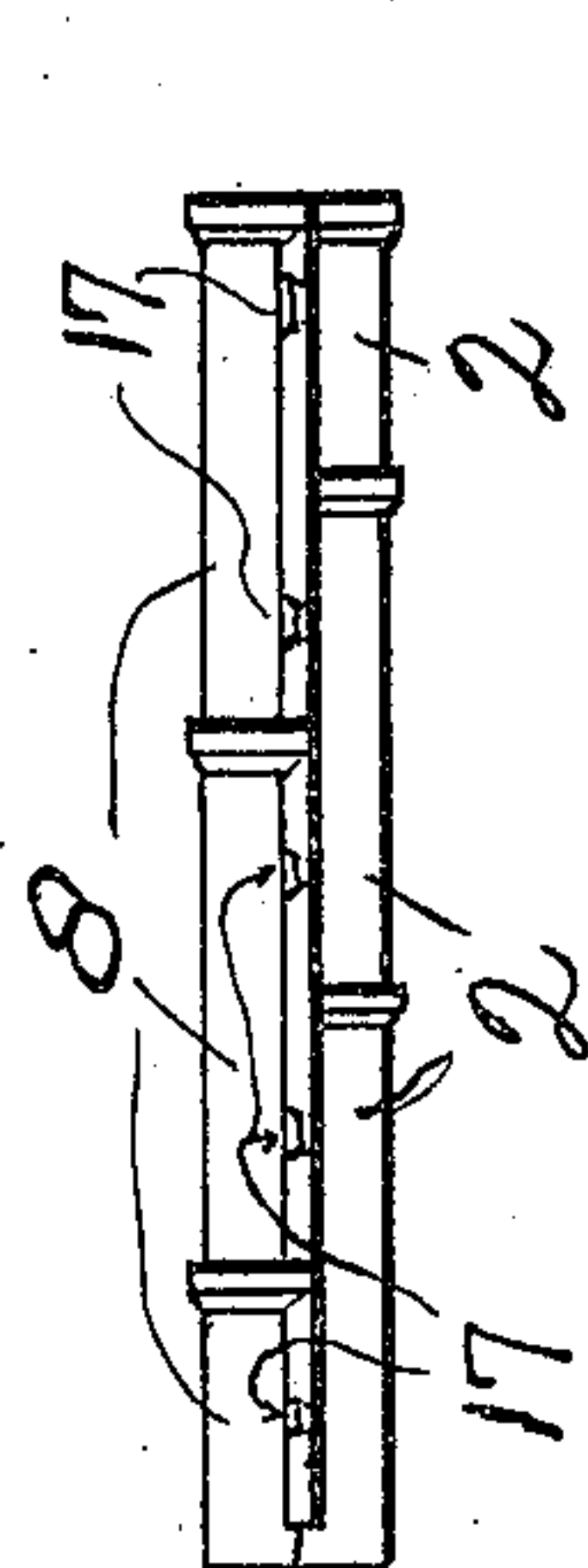
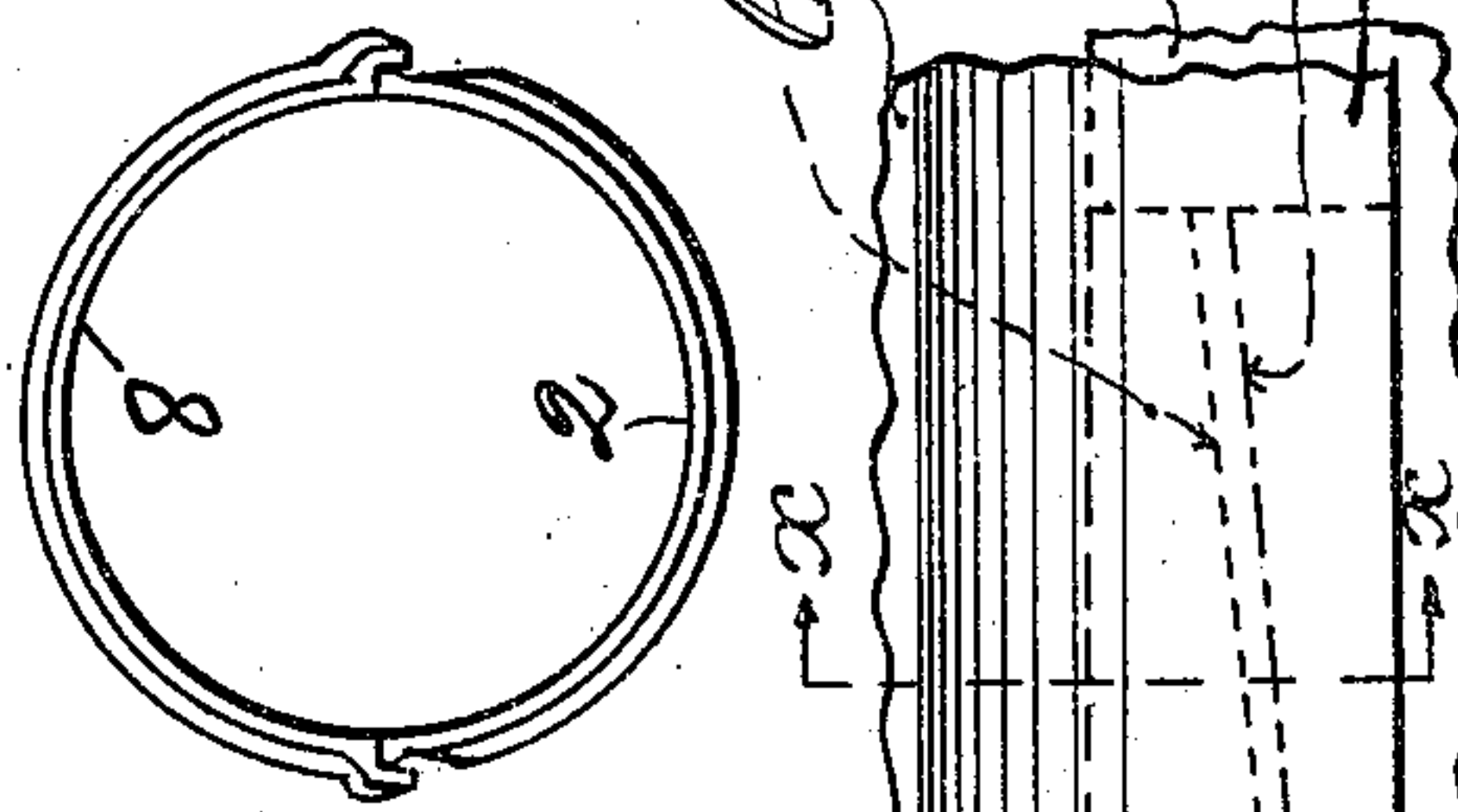
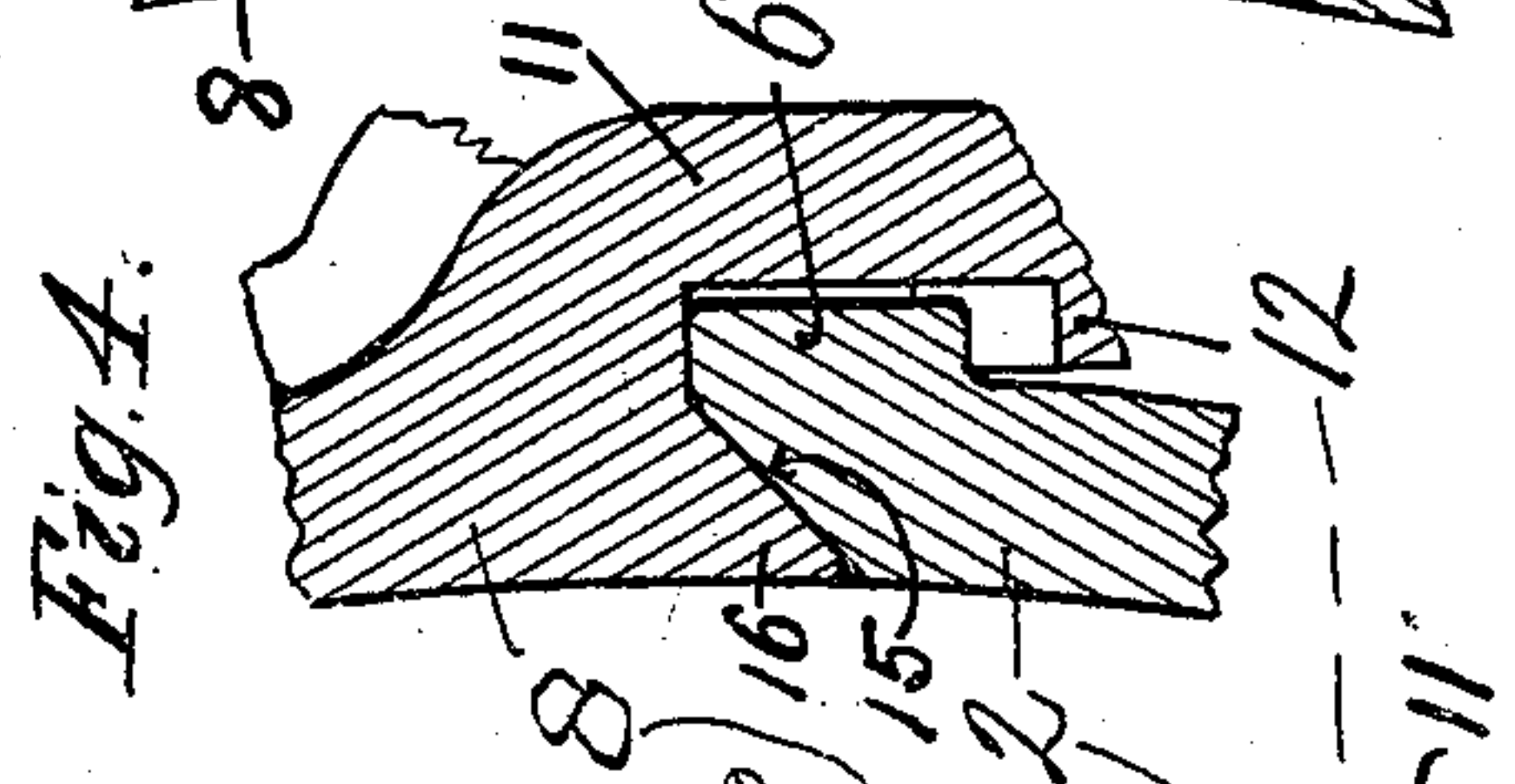
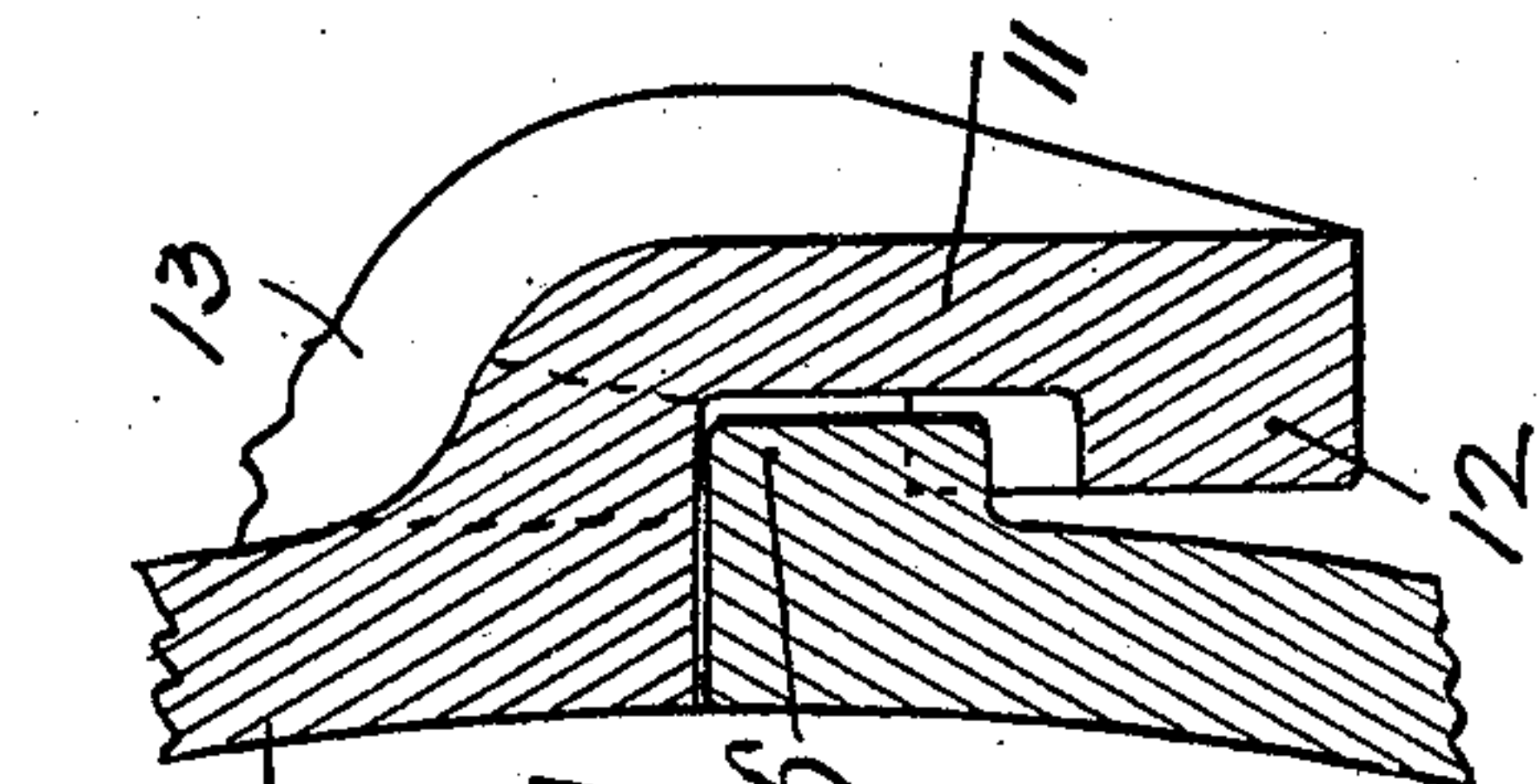
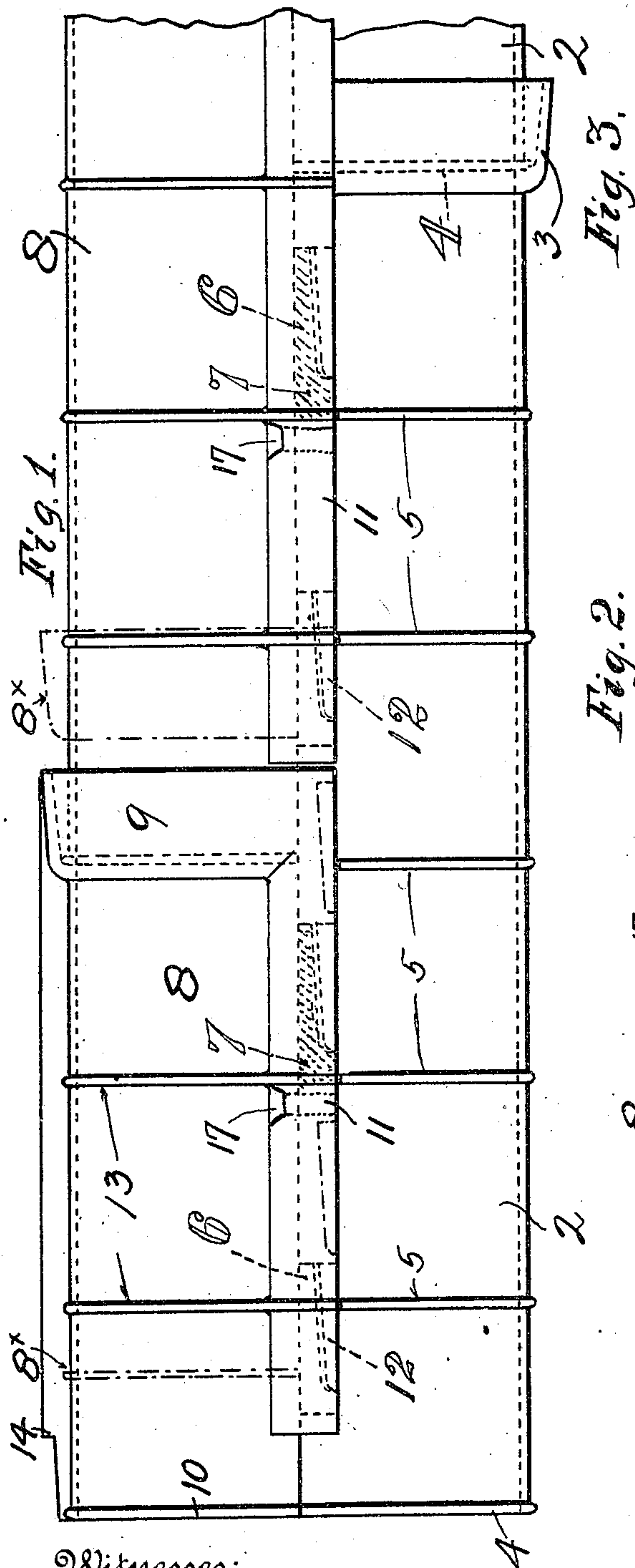


960,379.

Patented June 7, 1910.



Witnesses:
 J. H. Lewis
 C. H. Hunsicker

Inventor
 R. C. McWane,
 By his Attorney R. W. Barkley.

UNITED STATES PATENT OFFICE.

ROBERT C. McWANE, OF RIDGEWOOD, NEW JERSEY.

CULVERT-PIPE.

960,379.

Specification of Letters Patent.

Patented June 7, 1910.

Application filed April 10, 1909. Serial No. 489,129.

To all whom it may concern:

Be it known that I, ROBERT C. McWANE, a citizen of the United States, and a resident of Ridgewood, in the county of Bergen and State of New Jersey, have invented a certain new and useful Improvement in Culvert-Pipes, of which the following is a specification.

This invention relates to pipe intended for drains, culverts and the like, and has for its object the provision of segmental pipe of shape and dimensions such that they may be readily put or assembled in place and be locked together in and by the act of assembling them, whereby the use of bolts, nuts and all other means independent of the sections themselves may be dispensed with, though, as will appear hereinafter, the use of one or more pins or keys, in order to prevent relative endwise motion, would involve no departure from this invention.

The invention consists of sectional or segmental pipe hereinafter described and more particularly pointed out in the appended claims.

The invention is embodied in the pipe illustrated in the accompanying drawing, forming part hereof, in which—

Figure 1 is a side elevation; Fig. 2 is an end elevation; Fig. 3 is a sectional view on the plane indicated in Fig. 7 by the line $x-x$; Fig. 4 is a view of a modified form; Figs. 5 and 6 are side elevations showing different arrangements; and Fig. 7 is a detail view.

In the drawing, the reference symbol 2 designates a lower half-pipe, which is preferably semi-circular in cross-section, and which is, or may be, provided with a bell 3 and a spigot 4. It is also preferred that the section 2 shall be provided externally with circumferential ribs 5 in order to give it greater strength and also to give it a better grip on the earth. Along its horizontal longitudinal edges, the section 2 is provided, preferably on the outside, with longitudinal lock-members 6, which may terminate at one end thereof in stops 7. The under sides of the members 6 may be inclined to the horizontal, and their upper edges may be flush with the longitudinal edges of the section, as shown. The lower sections 8 may be made in any convenient length, but it is preferred to make them in two different lengths, at least, so that culverts of different lengths may be formed with the minimum of pipe,

as indicated in Figs. 5 and 6. Thus, in Fig. 5, two long sections and one short section 2 are shown, while, in Fig. 6, three long sections 2 are shown. It is obvious that more or fewer sections may be used, according to the length of the culvert or drain.

Above the sections 2 are placed the upper half-pipes, which also may be in different lengths for similar reasons. The sections 8 are shown as being provided with bells 9 and spigots 10, and also with longitudinal flanges 11 along their longitudinal edges. In the instance illustrated, the flanges 11 are on the outside of the sections 8 and are provided with lock members 12 on the insides thereof, which lock-members are so placed and arranged that, when the section 8 is placed on the lower section, as indicated at 8 \times by the "dot and dash" lines, and the section 8 is then slid into place, said members 12 are brought underneath the said lock-members 6 and vertical displacement of either of sections 2, 8, is prevented. The stops 7 serve to bring the sections, 2, 8, into the desired relation without much attention on the part of the workmen placing them. The sections 8 may also be provided with external circumferential ribs 13, which may also extend around to the edges of the flanges 11 as shown. The lock-members 6 and 12 project radially from the sections 2 and 8, respectively, and the upper and lower sections of the pipe are assembled and disassembled by the endwise movement only of a section.

The upper and lower sections may "break joints" as shown, thus giving a practically continuous pipe through the fill or ground, while the overhanging external flanges 11 and the bells 3 exclude dirt. The upper sections 8 may have longitudinal ribs 14, or their known equivalents, thereon at their tops for the purpose of receiving the shock of vehicle wheels where there is not plenty of earth above the culvert.

In the arrangement shown in Fig. 4, the lower section 2 is beveled along its longitudinal edges at 15 and the upper section 8 is provided with a longitudinal fin or rib, 16, to fill such bevel, as shown. While I prefer cast iron as the material for the sections, 2, 8, I do not limit myself to the use of such metal.

The method of assembling has been indicated hereinbefore, but it may not be amiss to say that the lower sections are first put in

place, after which the upper sections are put on one by one (beginning at the left in Fig. 1). The bells should be at the upstream end of the culvert. Keys 17 may be inserted through holes cored in the flanges 11 of the upper sections, said keys extending down in line, and coacting with the stops 7, so as to prevent the lower sections from being forced out of the positions thereof relative to the upper sections. It will be noted that stop-members 12 are separated somewhat from the members 6; this is to allow for expansion in the case the culvert should freeze full of ice, or should be choked and should fill with water under a head.

What I claim as new and desire to secure by Letters Patent of the United States is—

1. A pipe-section consisting of a semi-cylindrical ribs, with a bell at one end thereof, and with hanging longitudinal flanges at each longitudinal edge thereof, and locking devices on said longitudinal flanges.

2. A sectional pipe for drains and culverts consisting of a lower half-section provided with a bell at one end and with locking-members near the longitudinal edges thereof, combined with an upper half-section provided with a bell at one end thereof and with hanging longitudinal flanges at each longitudinal edge thereof and locking-members on said longitudinal flanges adapted to be engaged with and disengageable from the first named locking-members by relative endwise motion only of said upper and lower sections.

3. A pipe for drains and culverts consisting of a pipe split longitudinally into halves, interlocking devices on said halves for preventing separation thereof by transverse motion of either half, and keys for preventing relative longitudinal movement of said halves.

4. A pipe for drains and culverts consisting of a pipe split longitudinally into sections provided respectively with short external horizontal lugs and internal short horizontal lugs adapted by a relatively short

endwise movement of the sections to be engaged one above another and to be disengaged therefrom by endwise movement only of the upper section.

5. A pipe for drains and culverts comprising a lower half-pipe provided near each longitudinal edge thereof with short horizontal flanges ending in vertical stops, combined with an upper half-pipe provided near each longitudinal edge with short horizontal lugs adapted to engage under said horizontal lugs and to abut against said stops thereof.

6. A sectional drain and culvert pipe comprising upper and lower semi-cylindrical half-pipes provided with permanent immovable short locking members interlocked and disengaged by endwise motion only.

7. A cylindrical drain and culvert pipe split longitudinally into halves, radial lock members on one half near the longitudinal edges thereof, and flanges on the other half extending outside of said radial members and provided with radial members adapted to engage with a radial side of the first named radial lock members by an endwise motion of a pipe-member or section.

8. A pipe for drains and culverts consisting of a plurality of longitudinal half-pipe sections provided with bell and spigot ends and with short radial lock-members along the longitudinal edges thereof, and a plurality of longitudinal half-pipe sections provided with bell and spigot ends, with longitudinal flanges external to their longitudinal edges and with short radial lock-members inside said flanges and adapted to be engaged with and disengaged from the first named lock-members by short endwise relative movements of said half-pipe sections.

Signed at New York in the county of New York and State of New York this first day of April, A. D. 1909.

ROBERT C. McWANE.

Witnesses:

ROBT. H. HIBBARD,
R. W. BARKLEY.