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W. SKINNER & C. LINDSEY.

MEANS FOR CONSTRUCTING CISTERNS OR THE LIKE.

APPLICATION FILED APR. 25, 1903.

NO MODEL.

Fig. 1.

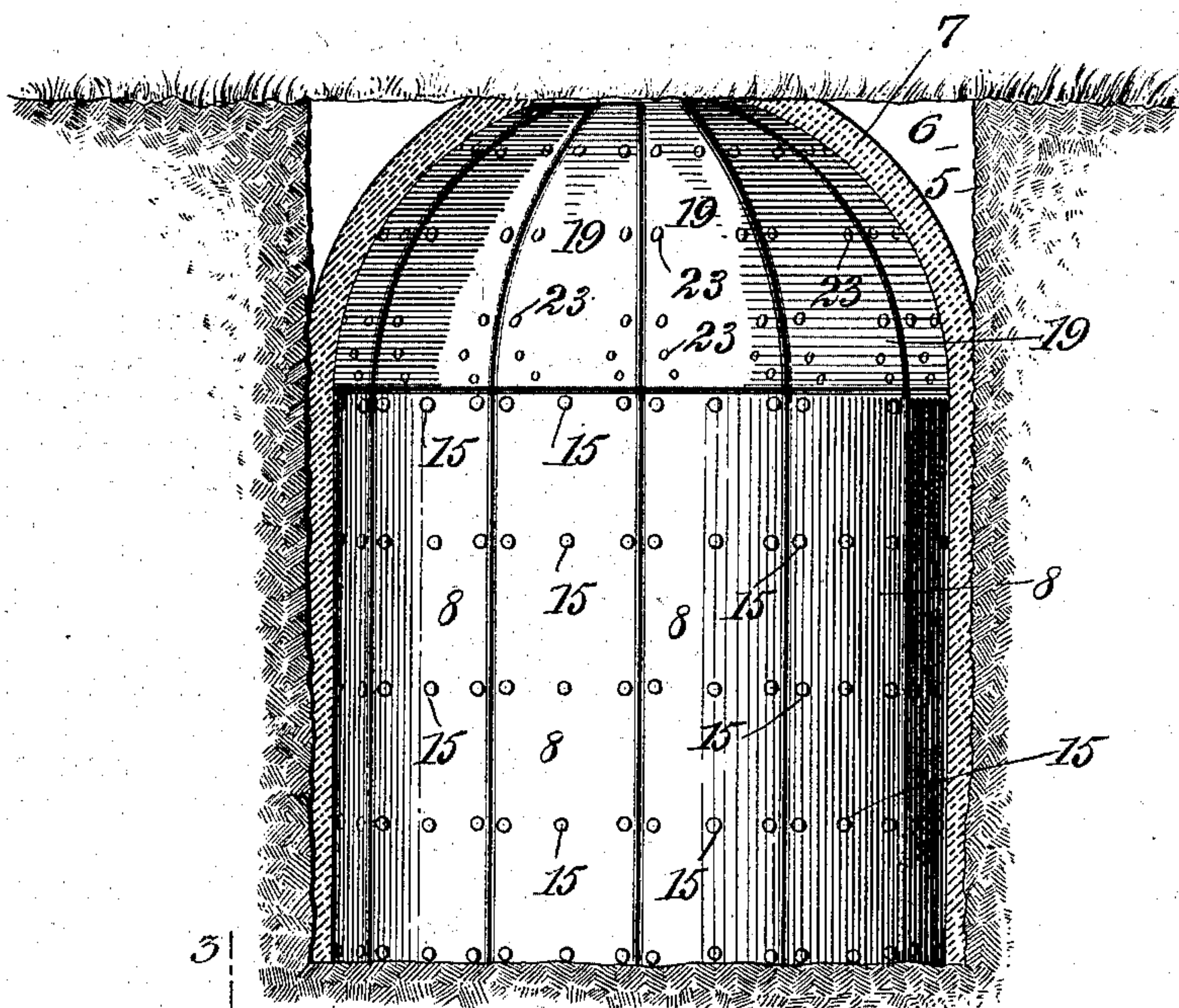


Fig. 2.

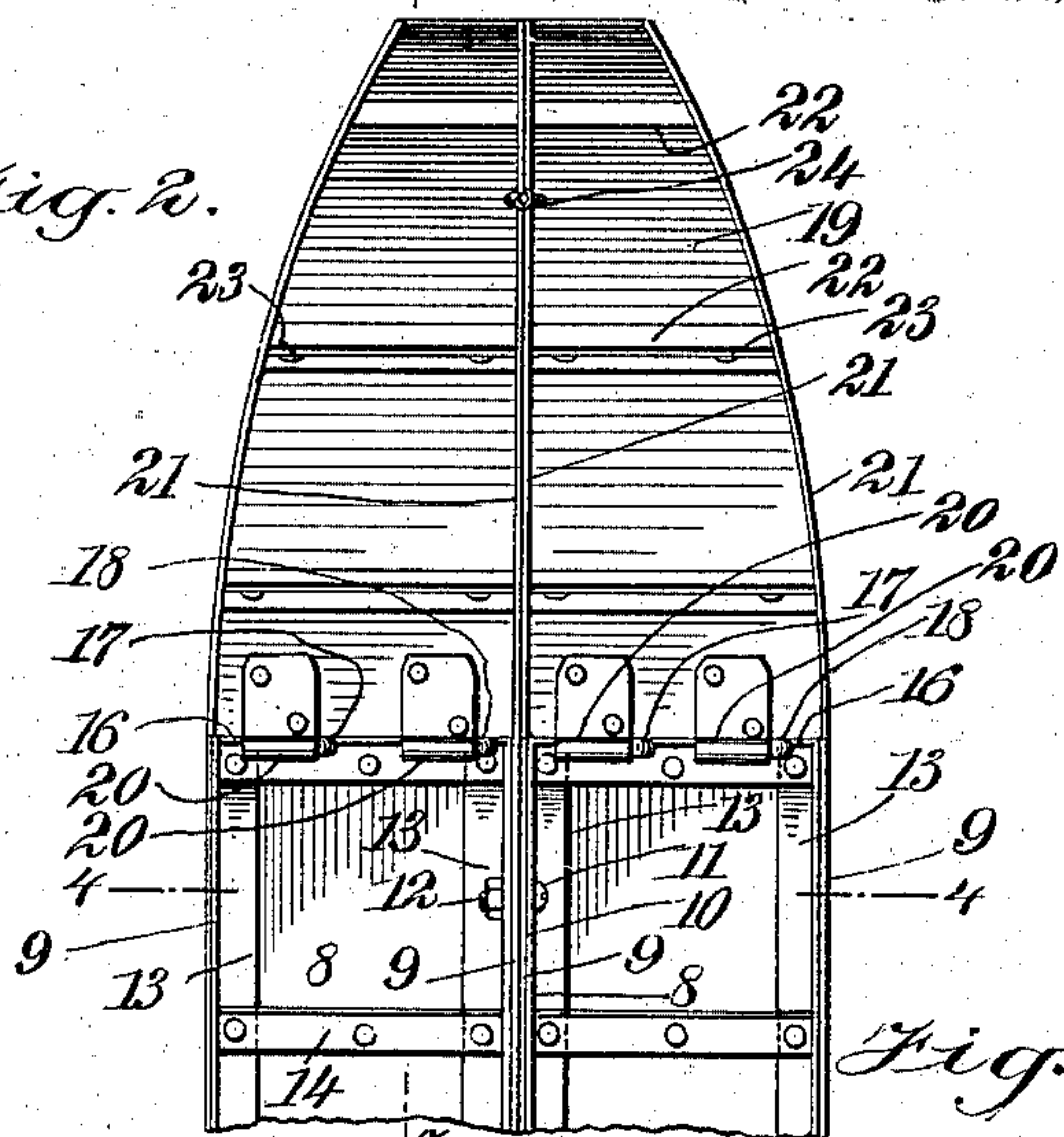


Fig. 3.

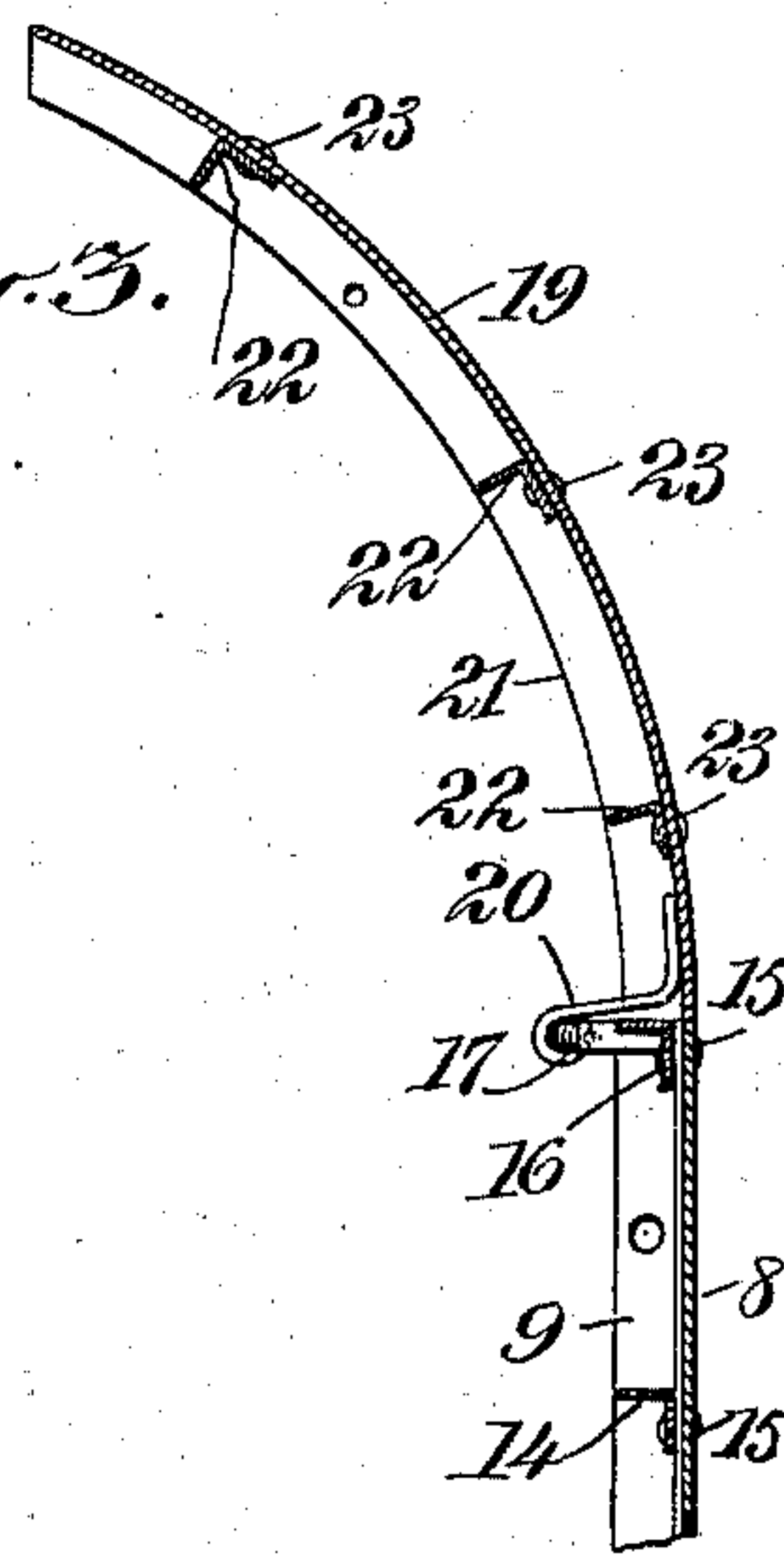
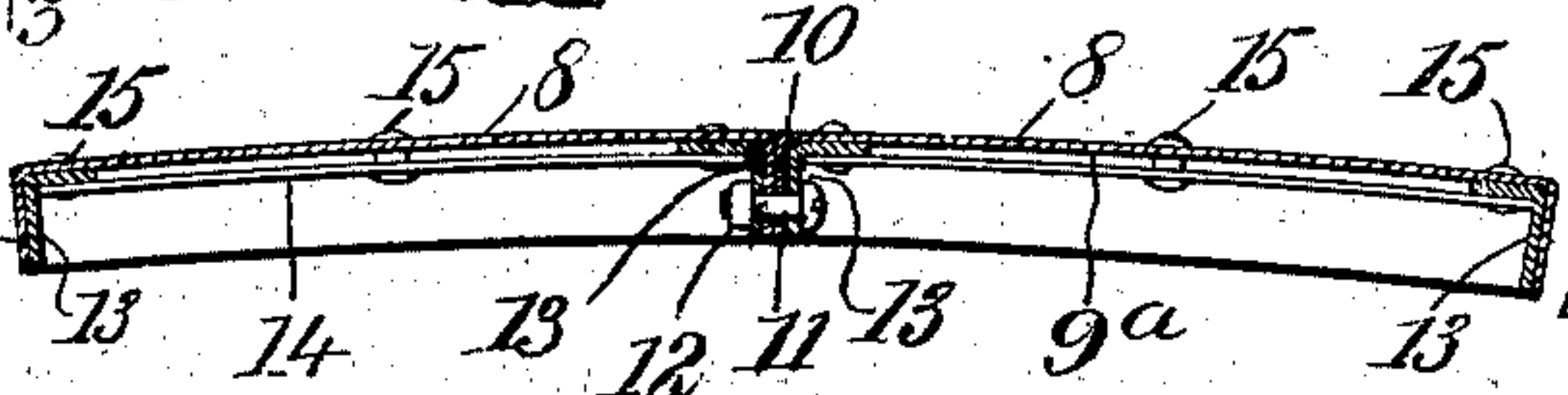


Fig. 4.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM SKINNER AND CHARLES LINDSEY, OF WELLINGTON, KANSAS.

## MEANS FOR CONSTRUCTING CISTERNS OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 748,224, dated December 29, 1903.

Application filed April 25, 1903. Serial No. 154,263. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM SKINNER and CHARLES LINDSEY, citizens of the United States, and residents of Wellington, in the county of Sumner and State of Kansas, have invented new and useful Improvements in Means for Constructing Cisterns or the Like, of which the following is a full, clear, and exact description.

This invention relates to masonry construction; and it consists, substantially, in the improvements hereinafter described, and pointed out in the claims.

Though applicable to the building or erection of various structures of masonry, our improvements are intended more especially for use in the construction of cisterns, sewers, caves, and the like; and the principal object of our invention is to provide simple and economical means for this purpose which are both effective and reliable in use or operation besides being easily and quickly applied and removed and also possessing the capacity for long and repeated service.

A further object of the invention is to provide means of the character referred to which may be readily packed for shipment or storage without occupying much space and also whereby the building of cisterns and the like may be effected with rapidity and security.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional view showing the application of our improved means in the building or erection of an underground cistern or sewer, the said means being represented in elevation in the completed form thereof. Fig. 2 is an inner side view of two of the body or side sections of our improvements, together with two arch-sections thereof, and showing one form of movable and detachable connection of the latter with the former. Fig. 3 is a vertical sectional view taken on the line 3 3 of Fig. 2, and Fig. 4 is a horizontal sectional view taken on the line 4 4 of Fig. 2.

Before proceeding with a more detailed description it may be stated that in the embodiment of our improvements herein shown we preferably employ a plurality of metallic

body-sections of any desired height, said sections being of special construction and so united or joined together in use as to constitute a hollow cylindrical body of external diameter substantially equal to the internal diameter of the cistern or other structure to be built, and movably and detachably connected to the upper edges of said body-sections are a plurality of convergent or arch sections, also of special construction and co-operatively organized in such manner as to be practically self-sustaining in the position it is intended they shall occupy relatively to said body-sections in the formation of a convergent or arched roof of the cistern or similar structure, all as will be more fully explained hereinafter.

While we have herein illustrated a certain preferred embodiment of our improvements, it will be understood, of course, that we do not limit ourselves to the precise details thereof in practice, since immaterial changes therein may be resorted to coming within the scope of our invention.

Specific reference being had to the drawings by the designating characters thereon, 5 represents the inner side surface of an excavation 6 in which the cistern is to be built or erected, the diameter between the walls of such excavation being somewhat in excess of the diameter between the walls of the cistern or similar structure when completed, and, as shown in Fig. 1, our improved means are represented as having been put together for the purpose of placing around the same a cement, plaster, concrete, or other wall 7, constituting the wall of the completed cistern. Said means comprise or are made up of a plurality of vertical body-sections 8, preferably of metal, each section being slightly curved horizontally, as indicated at 9<sup>a</sup> in Fig. 4, so that when put together the said sections constitute practically a hollow cylinder, as is apparent. Said sections 8 are also each constructed at each vertical edge thereof with an inwardly-projecting flange 9, these flanges of successive sections being brought together at 10 and firmly but detachably connected by means of screw-bolts 11, passing therethrough at suitable intervals, each bolt being tightly secured by means of a nut 12. (See Fig. 2.) In order to strengthen each body-section 8, we may ap-



ply a metallic angle-strip 13 in the inner angle formed with the section by each flange 9, and likewise we may also apply across the innersurface of each body-section at suitable intervals thereof an angle-strip 14, connecting said angle-strips 13, as shown, the said several angle-strips being secured to the material of the body-section by means of rivets 15 or in any other suitable way. Each body-section 8 is also formed or provided at its upper edge with a flange (or similar angle-strip) 16, having secured thereto and projecting inwardly therefrom, preferably, two hooks 17 and 18, and movably and detachably connecting with the said upper end of said body-section is the lower end of an upwardly-tapering arch-section 19, having secured to its inner surface duplicate eyes or loops 20, which are slipped over or upon said hooks, as shown. Each of said arch-sections is of the desired curvature and is formed or provided at the edges thereof with strengthening-flanges 21, which match the corresponding flanges of adjacent similar sections, and these said arch-sections are also each formed or provided on their inner surfaces with horizontally-disposed strengthening angle-strips 22, secured to the material of the section by means of rivets 23 or in any other preferred way. In this manner it will be seen that the arch-sections converge together at their upper ends, and in virtue of the construction and organization thereof described they each tend to support the others, so as to render the entire or united arch structure to be self-sustaining against collapsing under the weight of the cement or concrete which may be applied upon the same in the formation of the cistern. After such cement or concrete has sufficiently hardened the arch-sections may be turned down and then removed by slipping the eyes or loops 20 from the hooks 19 of the different body-sections, and these latter sections may also be readily removed one by one, as is apparent, leaving the cement or concrete structure intact. If desired, we may employ a temporary fastening 24 between flanges 21

of adjacent arch-sections to assist in maintaining said sections against collapse, and we may sometimes also use a temporary inner prop, (not shown;) but the use of these two said elements is not essential.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In the construction of arched cisterns and the like, the combination of a plurality of body-sections detachably joined together in correspondence with the side walls of the cistern to be formed, arch-sections mounted upon the upper ends of the body-sections, and hook-and-eye connections between said body and arch sections, the latter being provided with means to prevent collapse thereof from weight imposed thereon, and said means consisting of horizontally-disposed strips secured to the inner surfaces of the said sections.

2. In the construction of arched cisterns and the like, the combination of a plurality of body-sections detachably joined together in correspondence with the side walls of the cistern to be formed, arch-sections mounted upon the upper ends of the body-sections, and hook-and-eye connections between said body and arch sections.

3. In the construction of arched cisterns and the like, the combination of a plurality of body-sections detachably joined together in correspondence with the side walls of the cistern to be formed, arch-sections mounted upon the upper ends of the body-sections, and hook-and-eye connections between said body and arch sections, the arch-sections being constructed to prevent collapse thereof from weight imposed thereon.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM SKINNER.  
CHARLES LINDSEY.

Witnesses:

CLEO D. BURNETTE,  
MORA BARNES.