No. 889,796. PATENTED JUNE 2, 1908.

B. LOWTHER.

CONCRETE SEWER CONSTRUCTION.

APPLICATION FILED MAR. 3, 1908.

Fig. 2

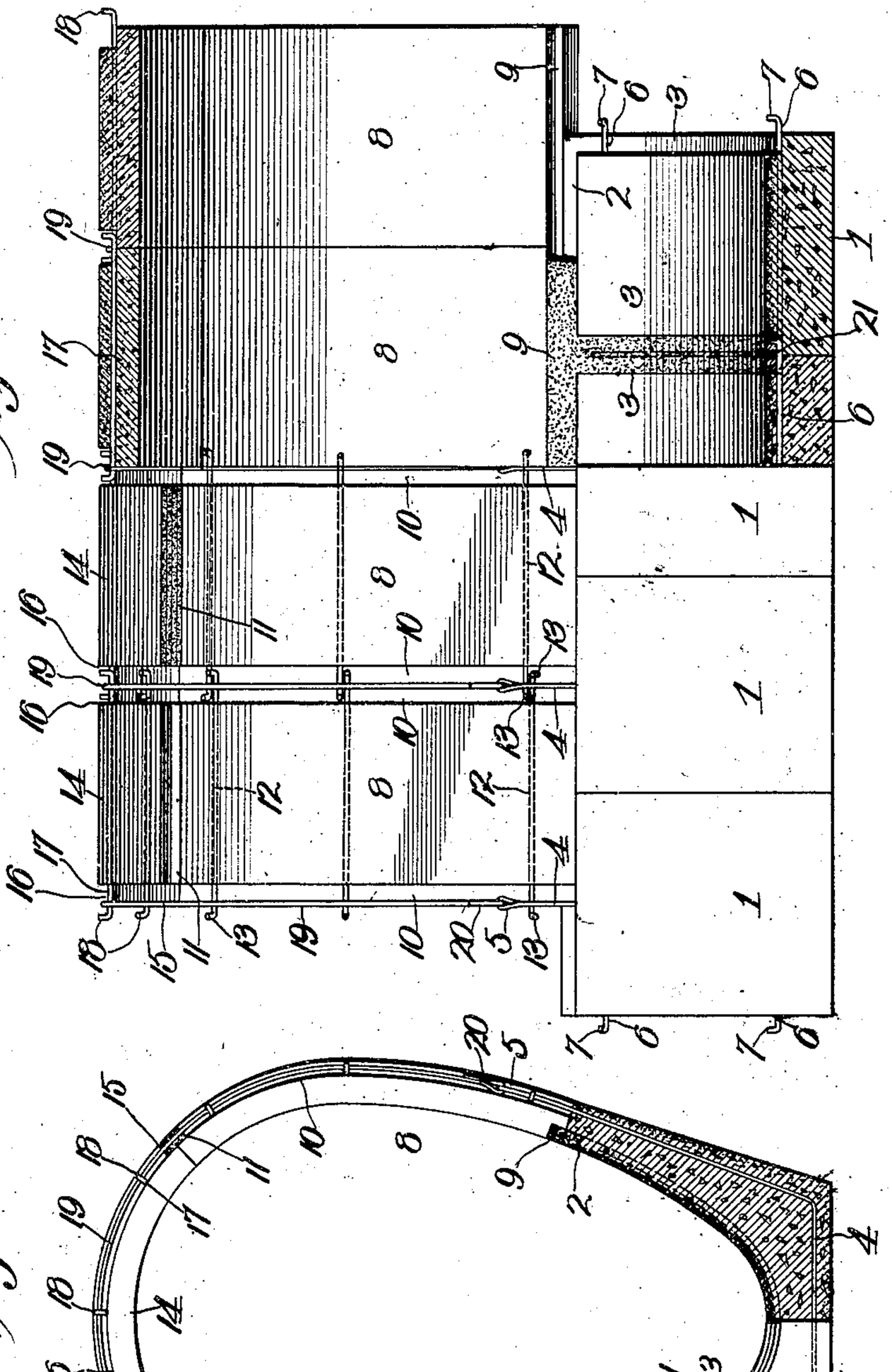
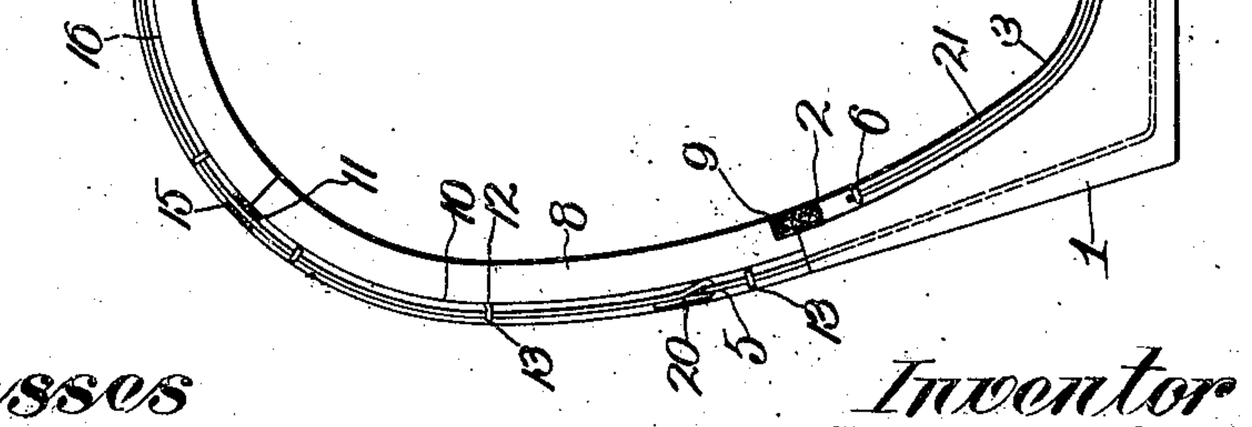


Fig. 1



Witnesses
Frank P. Glover
H. L. Rodgers.

Inventor
Burton Lowther.
By George H. Thorpe Atty

UNITED STATES PATENT OFFICE.

BURTON LOWTHER, OF KANSAS CITY, MISSOURI, ASSIGNOR TO MOECHEL & LOWTHER ENGINEERING CO., OF KANSAS CITY, MISSOURI, A CORPORATION OF MISSOURI.

CONCRETE SEWER CONSTRUCTION.

No. 889,796. Specification of Letters Patent. Patented June 2, 1908.

Application filed March 3, 1908. Serial No. 419,053.

To all whom it may concern:

Be it known that I, BURTON LOWTHER, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Concrete Sewer Construction, of which the following is a specification.

This invention relates to concrete sewer construction of that type in which previously molded sections are set up and bound together by means of cement or equivalent material and series of reinforce rods, and my object is to produce a simple, strong, durable and comparatively inexpensive construction of the type mentioned expeditiously and at a minimum expense.

To this end the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which:—

Figure 1, is an end view of a section of sewer construction embodying my invention, one of the bases or invert sections being shown in central vertical section. Fig. 2, is a view of the sewer section partly in side elevation and partly in central vertical section.

Referring to the drawings in detail, 1 indicates a series of similar inverted arch shaped sections of concrete or equivalent material arranged end to end and provided at their inner upper edges with longitudinally alined grooves 2 and with transverse grooves 3 opening at their upper ends into grooves 2.

Each section is provided with a substantially U-shaped reinforce rod 4 projecting beyond the upper edge of the section and bent back at its ends to form loops or eyes 5. Each section is also provided with longitudinal reinforce rods 6 in the planes of grooves 3, the rod 6 of each section being sufficiently long to project into the registering groove 3 of the adjacent sections and terminating in hooks 7 which preferably are disposed substantially radially of the section, the said hooks being disposed inwardly by preference.

8 indicates the side sections, the same being arranged edgewise together with their lower ends resting upon the invert sections, it being further noticed that the sections 8 break joint with sections 1.

Sections 8 at their inner lower corners are provided with longitudinal grooves 9 opening into grooves 2 and at their side edges and outer sides are provided with grooves 10, the upper ends of grooves 10 communicating with grooves 11 in the upper, outer corners of said sections, the grooves 11 extending parallel with the similar grooves 9 hereinbefore described.

The sections 8 are reinforced by a plurality of rods 12 paralleling grooves 9 and 11 and arranged in the planes of grooves 10, and of such length as to project into the proximate grooves 10 of the adjacent sections, the ends of said rods terminating in outwardly projecting hooks 13, it being further noticed in this connection that by this arrangement the hooks 13 of the lower series of adjacent rods 12, project outwardly at opposite sides of the upper ends of reinforce rods 4.

14 indicate cap sections connecting and supported by the opposite sections 8, and provided in their outer corners with grooves 15 parallel and communicating with grooves 11 of sections 8, and also provided with transverse grooves 16 connecting the transverse grooves 10 of sections 8.

17 are parallel reinforce rods extending through sections 14 in the planes of grooves 16 and provided like rods 12, with outwardly projecting hooks 18 to occupy the grooves 16 of the contiguous sections 14.

19 indicates reinforce rods occupying the transverse grooves formed by grooves 10 and 16 and fitting against rods 12 and 17 between the outwardly projecting hooks 13 and 18 thereof, the lower ends of rods 19 terminating in loops 20 engaging the eyes 5 of rods 4.

To bond the sections permanently together as a monolith the communicating grooves 2 and 3 are filled with cement, grout or an equivalent binder, it being preferred, however, to reinforce this binding material by first securing U-shaped reinforce bars 21 in the grooves 3 and between the hooks 7 of adjacent rods 6.

The grooves formed by the communicating grooves 11 and 15 and the grooves formed by the communicating grooves 10 and 16, are also filled with a similar or equivalent binder.

When the binder material is set the sections are bound irrevocably together, it being obvious that unskilled labor can be

utilized in constructing the sewer and that the work can be carried on with great rapidity.

From the above description it will be apparent that I have produced a sewer embodying the advantages enumerated as desirable and which is obviously susceptible of modification as regards its form, proportion, detail construction and arrangement without departing from the principle and scope of the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is,—

1. Concrete sewer construction, comprising invert sections arranged endwise together and provided with reinforce rods projecting upwardly beyond the upper edges of said sections, side sections resting edgewise upon the upper edges of the invert sections and provided in their adjacent edges and outer sides with grooves receiving the upwardly projecting reinforce rods of the invert sections, cap sections between and resting on the upper ends of the side sections and provided with grooves in their meeting edges and outer sides registering with the grooves of the side sections, and arch-shaped rods occupying the registering grooves of the side and cap sections and secured at their lower ends to the upper ends of the reinforce rods of the invert sections.

2. Concrete sewer construction, comprising invert sections arranged endwise together and provided with reinforce rods projecting upwardly beyond the upper edges of said sections, side sections resting edgewise upon the upper edges of the invert sections and provided in their adjacent edges and outer sides with grooves receiving the upwardly projecting reinforce rods of the invert sections, cap sections between and resting on the upper ends of the side sections and provided with grooves in their meeting edges and outer sides registering with the grooves of the side sections, arch-shaped rods occupying the registering grooves of the side and cap sections and secured at their lower ends to the upper ends of the reinforce rods of the invert sections, and a binder material filling the grooves occupied by said arch-shaped reinforce rods.

3. Concrete sewer construction, comprising invert sections arranged endwise together and provided with reinforce rods projecting upwardly beyond the upper edges of said sections, side sections resting edgewise upon the upper edges of the invert sections and provided in their adjacent edges and outer sides with grooves receiving the upwardly projecting reinforce rods of the invert sections, cap sections between and resting on the upper ends of the side sections and provided with grooves in their meeting edges and outer sides registering with the grooves of the side sections, arch-shaped rods occupying the registering grooves of the side and cap sections and secured at their lower ends to the upper ends of the reinforce rods of the invert sections, a series of reinforce rods extending longitudinally of the sewer construction through the side and cap sections and underlying the arch-shaped reinforce rods and terminating in outwardly projecting hooks within the grooves occupied by said arch-shaped reinforce rods, and binder material filling the grooves occupied by said arch-shaped rods and the hook ends of the longitudinal rods.

4. Concrete sewer construction, comprising invert sections arranged endwise together and provided with reinforce rods projecting upwardly beyond the upper edges of said sections, side sections resting edgewise upon the upper edges of the invert sections and provided in their adjacent edges and outer sides with grooves receiving the upwardly projecting reinforce rods of the invert sections, cap sections fitting on and connecting the upper ends of the side sections and provided with transverse grooves alined with the grooves of the side sections receiving the reinforce rods of the invert sections and with longitudinal grooves communicating with the longitudinal grooves of the side sections, longitudinal rods extending through the side and cap sections and terminating in outwardly projecting hooks, arch-shaped rods e[illegible]aging the longitudinal rods within the grooves receiving the invert section rods and having their lower ends interlocked with the upper ends of the latter, and binder material filling the last-named grooves and the longitudinal grooves.

5. A concrete sewer construction, comprising invert sections fitting endwise together and provided at their meeting edges and inner sides with transverse grooves and at their upper edges and inner sides with longitudinal grooves communicating with the transverse grooves, side sections arranged endwise together and resting upon and breaking joint with the invert sections and provided at their lower edges and inner sides with longitudinal grooves communicating with the grooves of the invert sections and provided in their outer sides and meeting edges with transverse grooves, and with longitudinal grooves in their outer sides and upper edges, cap sections resting upon the side sections and provided with transverse grooves connecting the opposite transverse grooves of the side sections and with longitudinal grooves opening into the longitudinal grooves of the side sections and into their own transverse grooves and the transverse grooves of the side sections, arch-shaped rods occupying the transverse grooves of the cap and side sections, substantially U-

shaped reinforce rods embedded in the invert sections and interlocked at their upper ends with said arch-shaped rods, longitudinal rods extending through the side and cap sections and lying between the bases of the transverse grooves and said interlocked rods and provided at opposite sides of the latter with outwardly projecting hooks, and binder material filling the various grooves to bind the sections firmly together.

6. A concrete sewer construction, comprising invert sections fitting endwise together and provided at their meeting edges and inner sides with transverse grooves and at their upper edges and inner sides with longitudinal grooves communicating with the transverse grooves, side sections arranged endwise together and resting upon and breaking joint with the invert sections and provided at their lower edges and inner sides with longitudinal grooves communicating with the grooves of the invert sections and provided in their outer sides and meeting edges with transverse grooves, and with longitudinal grooves in their outer sides and upper edges, cap sections resting upon the side sections and provided with transverse grooves connecting the opposite transverse grooves of the side sections and with longitudinal grooves opening into the longitudinal grooves of the side sections and into their own transverse grooves and the transverse grooves of the side sections, arch-shaped rods occupying the transverse grooves of the cap and side sections, substantially U-shaped reinforce rods embedded in the invert sections and interlocked at their upper ends with said arch-shaped rods, longitudinal rods extending through the side and cap sections and lying between the bases of the transverse grooves and said interlocked rods and provided at opposite sides of the latter with outwardly projecting hooks, U-shaped rods occupying the transverse grooves of the invert sections, longitudinal rods extending through the invert sections into said grooves and provided with inwardly disposed hooks at their ends at opposite sides of the U-shaped rods in said grooves, and a binder material filling all of the grooves formed by and between the various sections to bind the latter firmly together.

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

BURTON LOWTHER.

Witnesses:
H. C. RODGERS,
G. Y. THORPE.