

C. F. WILSON.
CONSTRUCTION OF SEWERS AND SIMILAR STRUCTURES.
APPLICATION FILED FEB. 6, 1908.

961,380.

Patented June 14, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

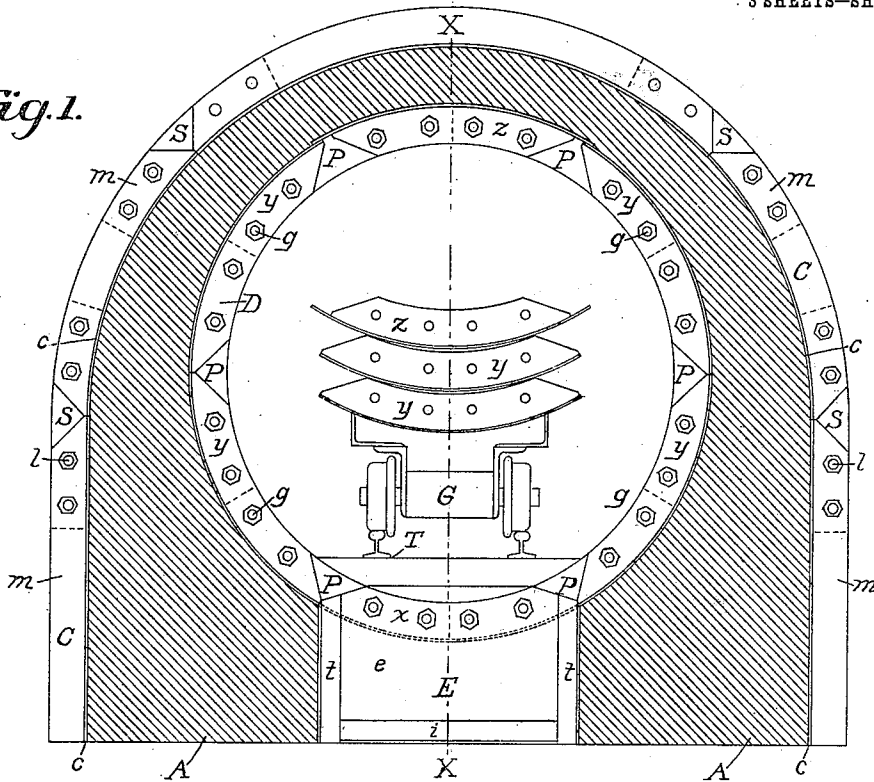
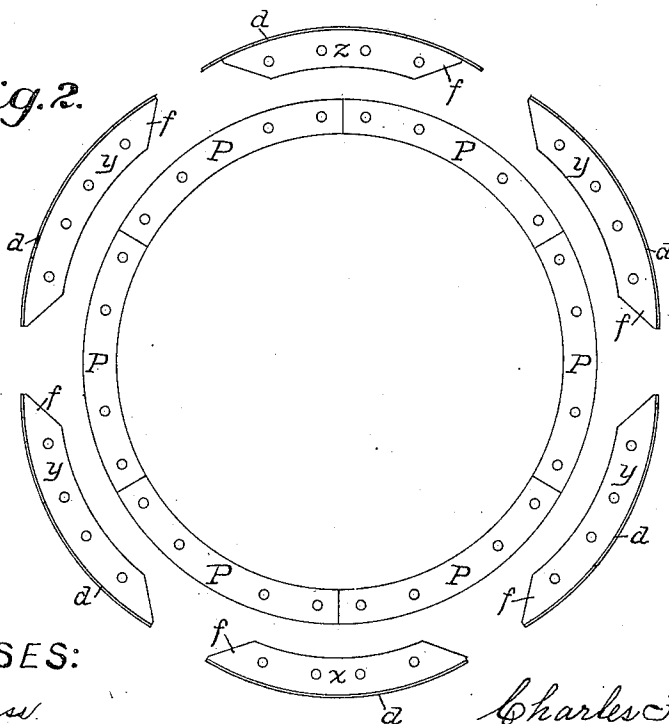


Fig. 2.



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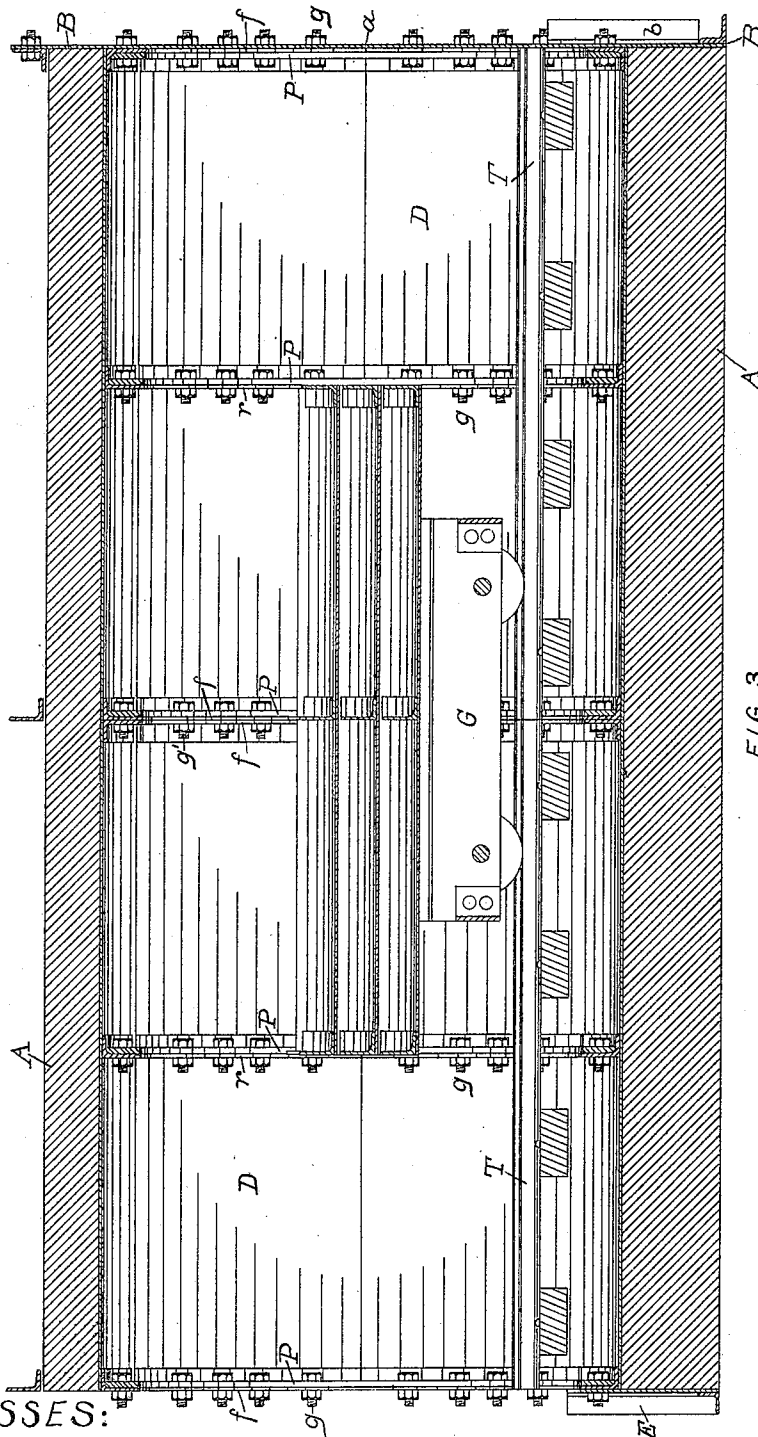


FIG. 3.

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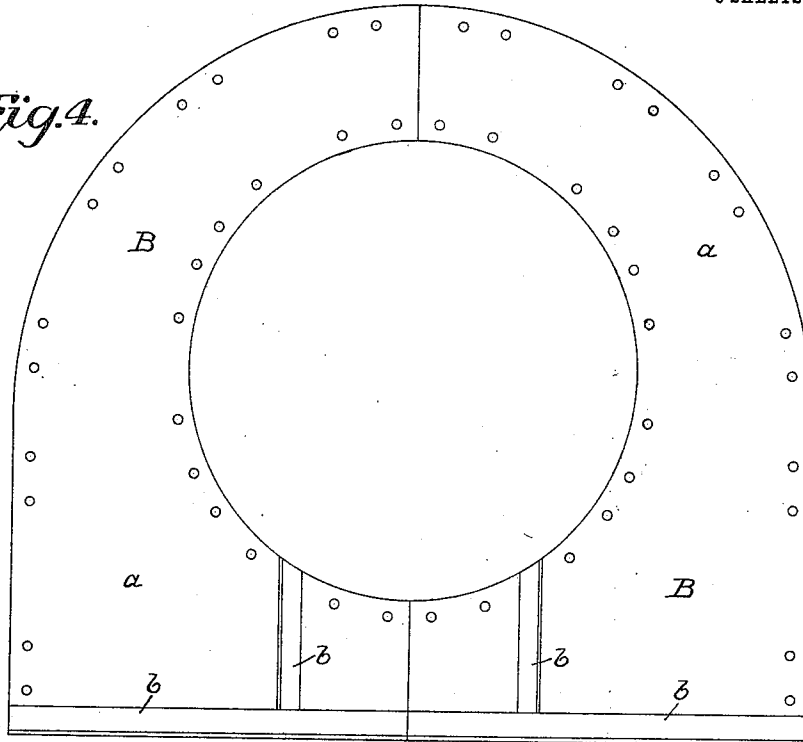
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3 SHEETS—SHEET 3.

Fig. 4.



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CONSTRUCTION OF SEWERS AND SIMILAR STRUCTURES.

961,380.

Specification of Letters Patent. Patented June 14, 1910.

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To all whom it may concern:

Be it known that I, CHARLES F. WILSON, a citizen of the United States, residing at Ottawa, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in the Construction of Sewers and Similar Structures, of which the following is a specification.

The objects of my invention are to provide a sewer mold, consisting of a series of detachable elements which may be readily put in place, piece by piece, as the work progresses and which may be as readily taken apart after the cement has set, to provide means for supporting said forms in their correct position during the progress of the work and to provide means for moving said forms forward rapidly and easily.

My invention includes outside forms and end forms in addition to the inside forms, so that the work can be built in exact conformity to any chosen design.

One of the features of my invention as hereinafter described permits of the inside form being taken down without bending or flexing the segments in any way. Therefore the use of flexible material is not necessary and the irregularities of construction due to the use of flexible forms are thus avoided.

Another feature of my invention consists in making the lower central portion of the inside form in a comparatively narrow segment and in providing a support which may be temporarily attached to the end flange of each successive section of this lower segment in such a manner as to support said section in its proper position while the concrete is being placed beneath the same and thoroughly compacted. This support is removed before the concrete is placed in the next section and thus all rough surfaces are avoided and the structure is built up continuously in a solid mass without seam or joint.

Other objects and advantages of my invention will be fully understood from the following description and claims when taken in conjunction with the accompanying drawings, in which,—

Figure 1 is a cross section of a circular sewer constructed by the use of my invention, showing the arrangement of the several segments of the outside and inside forms, the means used for supporting the inside form in its proper position and the method used in moving forward the segments of the in-

side form from the rear of the completed work to the front of the work in progress. Fig. 2 shows the end elevations of the several segments of the inside form, slightly separated, also the splice plates used in joining said segments together. Fig. 3 is a longitudinal section on line X—X in Fig. 1. This figure shows two sections or lengths of the inside form joined together by bolts passing through holes in the flanges of said sections at the transverse joint shown in the center of this figure. Fig. 4 shows the end forms used in starting and finishing the work and for making transverse joints at any point.

The outside and inside forms are built up of sections separated by transverse joints as shown in Fig. 3. Each of said sections is divided into segments by longitudinal joints as shown in Figs. 1, 2 and 3. At these longitudinal joints the edge of the plate in one segment abuts directly against the edge of the plate in the adjacent segment so as to present a continuously smooth surface next to the masonry, excepting in the case of one segment of the inside form which is provided with lap joints as hereinafter described. The ends of each of these segments are provided with flanges *m* or *f* projecting at right angles from the face of the masonry. For large sizes of forms additional flanges or intermediate ribs *r* are provided. When in use the several segments comprising one section are joined together in a rigid tubular form by splice plates secured to said flanges and overlapping said longitudinal joints. The flange on the end of one section is adapted to abut against the flange on the adjacent end of the next section. When in use the several sections of either the outside or inside form are joined together end to end in proper alinement by bolts passing through holes in said flanges. These bolts may be the same ones that fasten the splice plates to the flanges.

Referring by letter to the drawings A represents a circular concrete sewer built with a flat base. B represents the end form for this construction and may be built in one piece or in two or more sections, as represented in Fig. 4. This end form consists of plates *a* strengthened by angles *b*. C is the outside form for the same structure and is built in sections, of plates *c* having flanges *m*. The several segments of the outside form abut at the edges and are joined to-

gether by splice plates S fastened to the flanges *m* by bolts *l* and the several sections are joined together end to end in exact alinement by bolts passing through the flanges *m*.

5 D is the inside form consisting of the lower or base segment *x*, the abutting side segments *y*, *y*, etc. and the upper segment *z*. Each of these segments consists of a curved plate *d* having flanges *f* at each end and intermediate ribs *r*. The several segments of this inside form are joined together by splice plates P fastened to the flanges *f* or to the intermediate ribs *r* by bolts *g*. The several sections of the inside form are joined together end to end by bolts *g'* passing through the flanges *f*. One segment of the inside form, being segment *z* in Figs. 1 and 2, is constructed so that the edges of the curved plate *d* overlaps the outside of the adjacent segments *y* and *y*.

20 G is a car placed on a track T which is built in sections and placed within the inside form.

25 E is a support for holding the outer end of segment *x* in position while the concrete or other masonry is being put in place. It consists of plate *e* and base flange *i* and is generally provided with stiffeners *t* along its vertical edges.

30 In using my invention the end form B is set up at the point where the structure is to commence. The lower segment *x* of the inside form D is then placed in its proper position conforming to the line and grade of the structure to be built. One end of this segment is secured to the end form B and the other end is temporarily fastened to the support E. The concrete or other masonry is then placed beneath and around said segment and thoroughly compacted. The support E may then be removed and other sections of the lower segment added in succession. The lower portions of the outside form C, if required, are then set in position, one end being secured to the end form. The lower side segments, *y* and *y* of the inside form are next set up and secured to the lower central segment by means of the splice plates and bolts as shown. More concrete or other masonry is then placed between said outside and inside forms and thoroughly compacted. The upper side segments and the top segment *z* of the inside form and the remainder of the outside form are then placed in position and secured by splice plates to the other segments and to the end form by bolts as shown in the drawings. The placing of concrete or other masonry is then continued until the structure has been completed. The upper central portion of the outside form is preferably left open. In this manner the work is carried forward until all the forms have been set in place and the concrete or other masonry has been placed beneath, around, between and over

the same. The track is placed within the inside form in sections and the car or carriage is placed upon the same. As soon as the cement has sufficiently set, the end form first set up is removed, the splice plates and bolts are removed from the first section of the inside form and the upper segment of the form is removed by sliding it out horizontally, the other segments are then removed from their position and moved forward by means of the track and carriage to the front of the work where they are erected in like manner. The several segments being constructed of similar shape and dimensions are readily nested one within another upon the carriage so that several segments may be moved forward at one time. In this way the work is conducted with a minimum length of forms and without any interruption of the work. At the completion of the work or at regular intervals, as may be required, the end form is set up and the work finished off with a square face.

In many cases, where the structure is to be built in a trench, the outside forms may be omitted or restricted to simply the upper curved portions.

Thus far I have described my invention chiefly as it is applied to a medium sized circular structure. It is obvious that the same principles and improvements may be applied to the construction of sewers, arches, culverts, tunnels and similar structures of any shape or dimensions required, and I therefore do not wish to be limited to the exact details shown and described but

I claim and desire to secure by Letters Patent the following:—

1. For constructing sewers and similar structures of concrete, brick and other masonry, an inside form consisting of a series of sections each made up of separable rigid metallic segments having fixed flanges at their ends projecting inwardly, and splice plates detachably bolted to said flanges and breaking joints therewith, said flanges and splice plates forming together internal supporting rings for supporting the segments in a rigid tubular form leaving the interior of the form free.

2. For constructing sewers and similar structures of concrete, brick or other masonry, an inside form consisting of a series of sections, made up of separable segments having flanges at their ends projecting inwardly from the face of the masonry and said segments being detachably joined together in a rigid tubular form by splice plates bolted to said flanges, combined with an end support adapted to rest upon the bottom of the trench and to be temporarily fastened to the end flange of each of the several sections of said inside form as they are successively put in place.

3. A sewer mold consisting of a series of

detachable elements comprising an end form conforming to the cross section of the masonry, an outside form and an inside form, each made in separable segments and detachably fastened to said end form, and an end support adapted to rest upon the bottom of the trench and to be temporarily fastened to the end flange of each of the several sections of said inside form as they are successively put in place.

4. A sewer mold consisting of a series of detachable elements comprising an end form having a base flange adapted to rest upon the bottom of the trench and a vertical plate conforming to the cross section of the masonry, an outside form and an inside form, each made up of separable segments having flanges at their ends projecting at right angles from the masonry and adapted to be put in place piece by piece as the work progresses, and to be detachably joined together by splice plates bolted to said flanges and to be detachably fastened to said end form by bolts passing through one of said flanges and through said end form.

5. For constructing sewers and similar

structures of concrete, brick or other masonry, an improved support for sustaining the free end of the lower segment of the inside form, consisting of a base flange resting upon the bottom of the trench and a vertical plate rigidly fastened to said base flange and detachably fastened to the free end of said lower segment by bolts passing through said vertical plate and through the inwardly projecting flange on the end of said segment.

6. For constructing sewers and similar structures of concrete, brick or other masonry, an end form consisting of a base flange resting upon the bottom of the trench and a vertical plate conforming to the cross section of the masonry and rigidly fastened to said base flange and adapted to be bolted to the end flange of the outside and inside forms at any place along the line of work where it is required to finish off the end of the masonry with a square face.

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Witnesses:

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