No. 767,111. PATENTED AUG. 9, 1904.

W. D. KELLEY.

SEWER CENTER.

APPLICATION FILED JAN. 12, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

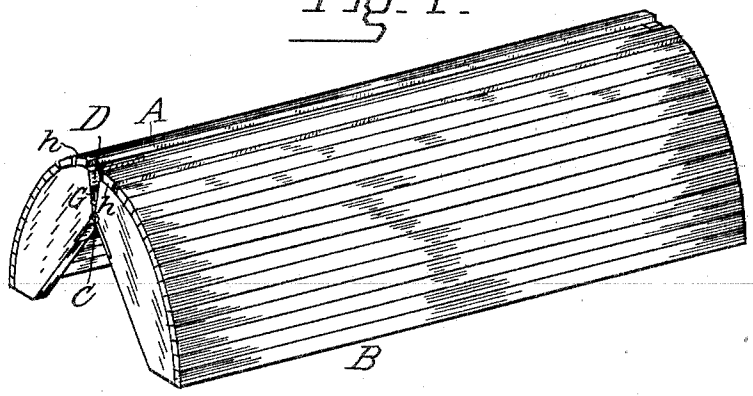
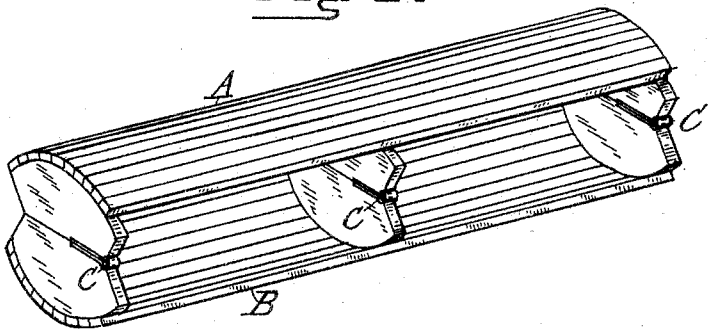


Fig. 2.



Witnesses:
Edward J. Murphy.
Samuel W. Balch

Inventor:
William D. Kelley
by Thomas Ewing, Jr.
Attorney.

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APPLICATION FILED JAN. 12, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

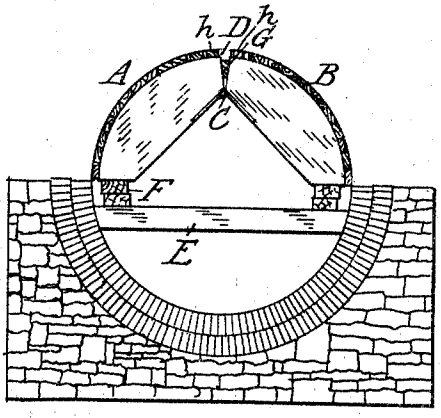


Fig. 4

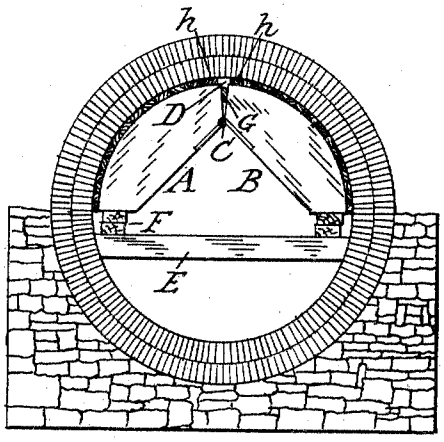


Fig. 5.

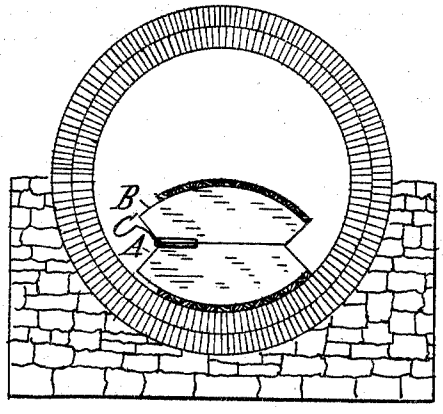
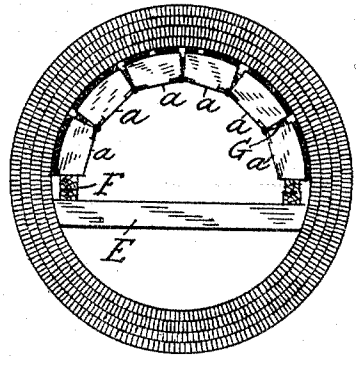


Fig. 6.



Witnesses:
Edward J. Murphy.
Samuel W. Balch

Inventor:
William D. Kelley
by Thomas Ewing, Jr.
Attorney.

No. 767,111. Patented August 9, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM D. KELLEY, OF YONKERS, NEW YORK.

SEWER-CENTER.

SPECIFICATION forming part of Letters Patent No. 767,111, dated August 9, 1904.

Application filed January 12, 1903. Serial No. 138,691. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. KELLEY, a citizen of the United States of America, and a resident of Yonkers, Westchester county, New York, have invented certain new and useful Improvements in Sewer-Centers, of which the following is a specification.

This invention relates to centers for sewers or tunnels, and more particularly to those of small diameter; and its objects generally are to provide a center that is not only readily removable, but which is adjustable, so that the work of constructing a sewer is facilitated and the structure rendered more perfect. Usually in constructing sewers bricklayers work too close to the line or hug the line too closely, thus causing a lip or break in the joint on both sides of the "spring-line" where the centers join the invert. To overcome this requires removal and planing down of the sewer-centers. This is avoided by the present invention, in which the arched brickwork is enabled to be built rapidly and exactly flush with the invert brickwork and a smooth connection or joint to be made whether the invert brickwork be larger or smaller than the theoretical invert. Although the ribs for false work of sewers or tunnels have heretofore been made up of hinged sections in part, the ribs are, so far as I am aware, complete closed curves, to remove which it is absolutely necessary that a workman enter the sewer, which is often full of debris and interferes with the removal of the ribs. If the sewer be, say, two feet and six inches in diameter, this is all the more the case, and particularly where solid stiff ribs are used, as customary, which ribs require that the workman crawl through the sewer and lying on his back chop out the wooden center. An important object of my invention is avoid this breaking up and complete destruction of centers and the necessity of one entering the sewer, involved as it is with considerable danger, it only being required for removing the centers that the blocking which supports the centers be knocked out by a pole, whereupon the arched false work immediately collapses, drops down, and is easily removed.

A further object of my invention is to enable the center to remain in the sewer during the process of construction for a week or a month, if desired, as the consequent swelling of the wood or the setting of the cement, which adheres to the lagging, does not preclude their easy and safe removal.

A still further object of my invention is to gain the enumerated advantages and at the same time leave the entire bottom of the sewer unobstructed for the ready flow of water, so that the sewer as fast as completed may be made use of for receiving the trench-water which may be pumped into it.

Still further objects are to reduce both the cost of making and the cost of putting in sewer false work to a minimum and to simplify the manufacture of sewer-centers possessing the advantages enumerated.

With these objects in view my invention resides in an arched center for sewers and tunnels consisting of certain details of construction and combinations of parts to be hereinafter described and then claimed.

In the accompanying drawings, Figure 1 is a perspective view of the preferred form of my improved sewer-center opened for use, three being shown, for example, connected by suitable lagging. Fig. 2 is a perspective view of the same collapsed. Fig. 3 is a cross-section of an invert of a sewer or tunnel, showing my sewer-center in position to receive the arch. Fig. 4 is a cross-section of a sewer, showing my sewer-center in use after building the arch. Fig. 5 is a similar section showing the blocking removed and the center down ready for removal; and Fig. 6 is a sectional view of a sewer, showing a modified form of center.

The sewer-center shown is a unitary structure consisting of arcuate or segmental members A B, preferably hinged together at the inner corners of the adjacent ends of the members by a hinge C, which permits the members to fold and their inner faces to close upon each other. In effect, this manner of joining the folded members forms a gore D between their adjacent ends, which increases or decreases in width according to the increase or decrease in the span of the outer extremities of the members. The "gore" allows the mem-

bers to extend to a greater diameter than that of the sewer, so as to be adjustable at the spring-line of the arch. Specifically each member of the preferred form of the invention forms a leg to the sewer-center, which thus consists of two legs hinged together. From the modification shown in Fig. 6 it is clear that there may be a number of hinged members *a* greater than two. The members of the sewer-center are made, preferably at a sawmill, of wood in quantities and hinged properly, there being no carpenter-work or the like required at the field of operation of sewer construction.

It is evident that the invention is not limited to the form of hinge-joint, as various forms of hinges joining or pivoting the members of the sewer-center will readily suggest themselves to those skilled in the art. Neither is the invention restricted to the formation of gaps in a perfect semicircle; but by forming them in that way the center may be spread, as well as drawn in or collapsed. The outer edges of the sections are preferably, but not necessarily, formed as segments of a circle.

Given now, say, a set of twelve of the folding sewer-centers, the bricklayer may start to work on a sewer of average length. The invert is laid, and then when the spring-line is reached a beam E, of any suitable material at hand, is placed in position, as shown, a couple of blocks F, of wood, or two bricks laid upon each end of the beam, and the sewer-center then supported by the lower ends of the legs or members thereof resting upon the blocks. The brick-mason is now enabled, due to the gore formed at the adjacent ends of the members A B and the small wedge G inserted in it, to enlarge or decrease the diameter of the center or false work at will without loss of time, the planing down of the center, or injury thereto, thus allowing a smooth perfect joint to be made at the spring-line in case the invert has not been brought up exactly true. In fact, the invert is seldom brought up true. Hence the described sewer-center may generally be resorted to. Having adjusted the center, the work of building up the arch of the sewer or tunnel is proceeded with. The lagging is nailed to the centers, as usual, before the ribs are set in place, except the two top strips *h*, which are preferably left loose, so that the opening formed can be used as a hand-hole for adjusting the interior ribs. The arch having been completed and the cement set, the centers may be removed, this being done either by going into the sewer, if of sufficient diameter and practically free of debris, or, if the sewer be of small diameter—say two feet six inches—by taking a pole and pushing out the blocks and beam from under the centers, allowing the two halves, legs, or members of the centers to be folded together or collapsed into a smaller space.

By my improved construction of sewer-center and the manner of supporting the same the entire bottom of the sewer-tunnel is left unobstructed for the flow of water.

All parts of the device described are combined in one unitary stucture and cannot be lost or separated from each other, and they can be stored always in a small compass.

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

A sewer-center, consisting of a unitary semicircular rib formed of hinged members, and having gores or gaps between the ends of the members, substantially as described.

Signed at Yonkers, New York, this 30th day of December, 1902.

WILLIAM D. KELLEY.

Witnesses:

JAMES K. CUDDY,

SAM M. HITCHCOCK.