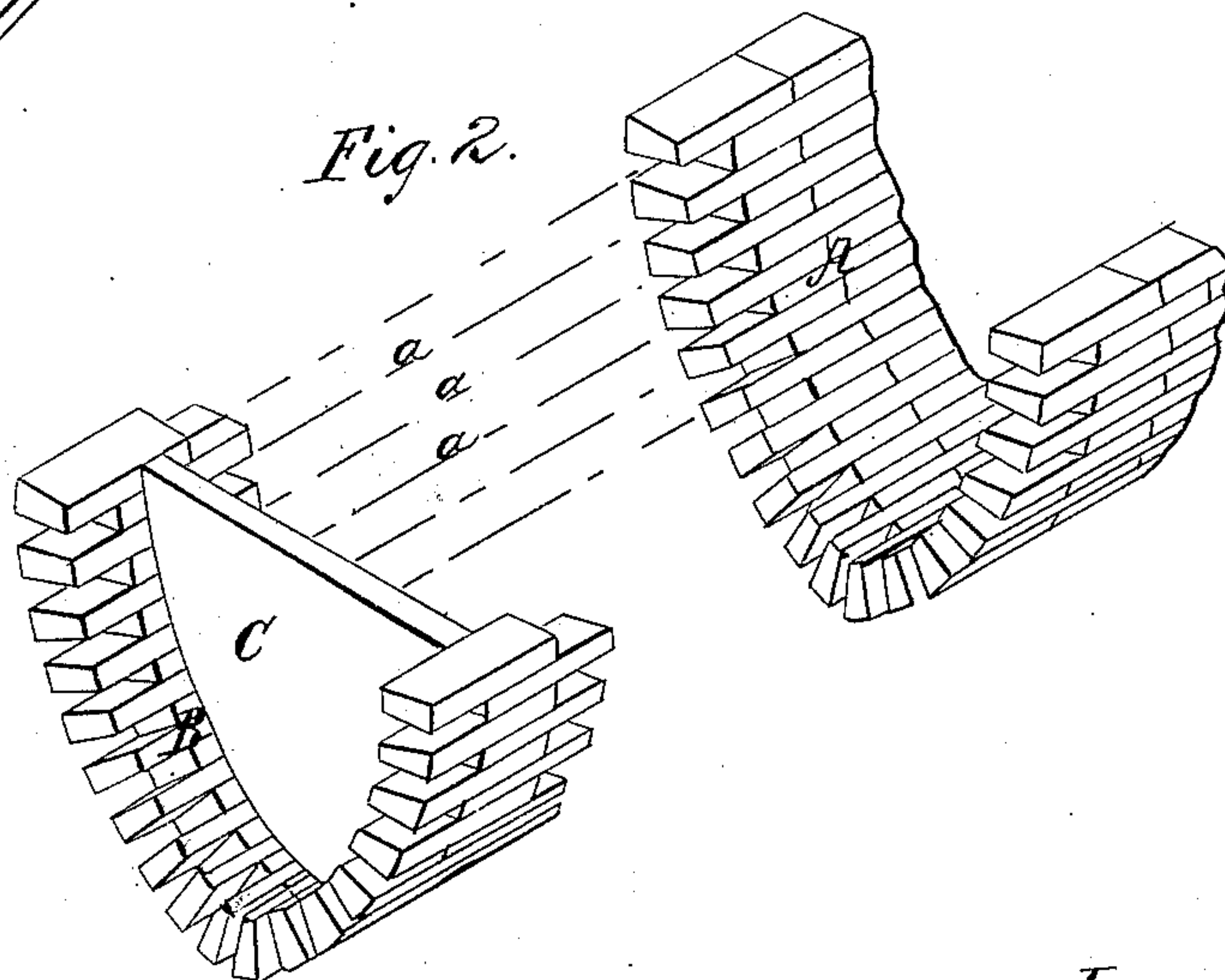
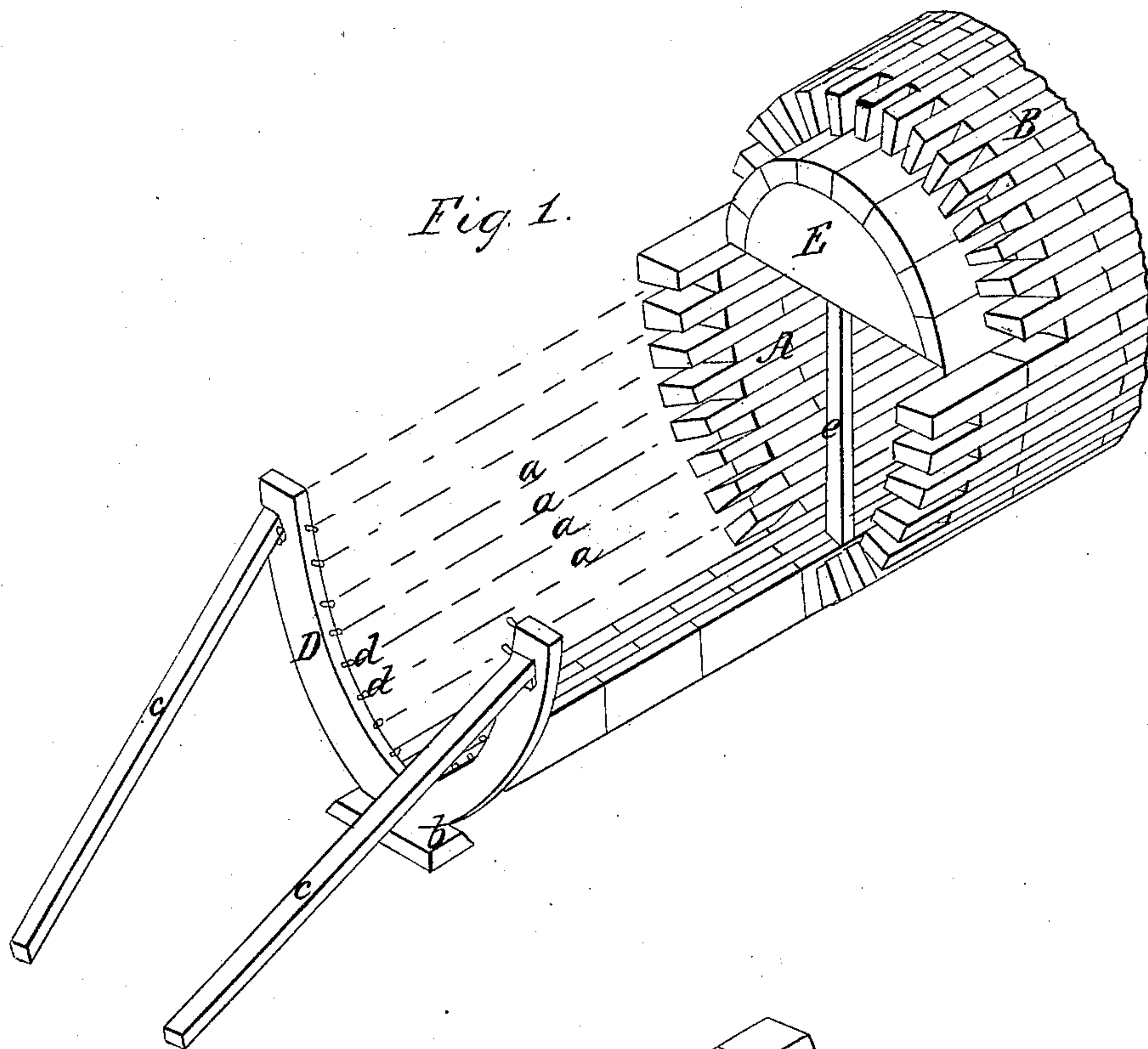


D. H. Fernald,

Sewer,

N^o 65,363.

Patented June 4, 1867.



Witnesses;
Isabel Dodge
J. H. Dodge

Inventor;
Daniel H. Fernald
By T. W. Porter His Atty

United States Patent Office.

DANIEL H. FERNALD, OF BANGOR, MAINE.

Letters Patent No. 65,363, dated June 4, 1867.

IMPROVEMENT IN CONSTRUCTION OF SEWERS AND DRAINS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DANIEL H. FERNALD, of Bangor, in the county of Penobscot, and State of Maine, have invented a new and useful Improvement in Making Sewers and Drains; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my invention and a sewer in process of construction; and

Figure 2 is a perspective view of a sewer in process of construction by the usual method.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists in a movable and adjustable former, corresponding in its shape to the inner and outer circumferential lines of the lower half of the sewer, and spaced and indexed in such manner upon its inner line as to serve as a ready and certain guide for determining the alignment of each course of brick in the lower half of the sewer.

In the drawings A represents the lower half of the sewer in process of construction of brick; the method of constructing sewers being to commence at some point, and then build by sections of such lengths as convenience may dictate, the lower half being first laid, and the upper half or arch being afterwards constructed. In the usual method, the lower half being completed to A, fig. 2, the workmen having determined that the next section reach to B, and having also determined the direction and relative level of the lower bricks at B, and laid the same, they then proceed, course after course, to build a short section at B, as shown, to the height of the lower half of the sewer. In building this short detached section, a forming-board, C, is used as a guide or pattern which determines the form of the sewer; and this former must be applied to the work and removed as often as each brick is laid in order that the form of the sewer be uniform in size and shape, which consumes much time and labor. After the short section B is completed, then by drawing lines from the mortar seams in A to those in B, the alignment of each course of brick is determined, and this section is completed by extending the lower half from A to B, which process is repeated for each and every section of sewer constructed. But by my method, the lower half of the sewer being completed as far as A, fig. 1, and having determined the distance and direction of the next section, I then place my former D at the proper point. This former rests upon a small base, *b*, and is held in an upright position by stays *c c*. By placing a spirit-level upon the top of the two arms of the former, it can be readily levelled, and when once placed in position it remains so until removed for another section. When placed in position, then by extending lines *a a* from the points or index-knobs *d d*, fixed in frame D, to the mortar-seams in A, a guide is furnished for the courses of brick as they are successively laid, these knobs being placed upon the inner line of the former, and the distance occupied by a course of brick, one from another. I usually employ but one line at a time, changing the same upon the index-knobs as each course of bricks is completed. In constructing the upper or arch part F of the sewer, I use the shield or forming-board E, as shown in fig. 1, the same being held in position by props *e*. This shield and method of forming the arch is that usually employed.

By the use of my former D, owing to its ready adjustment, and its requiring but one adjustment for each section of sewer built, and it being also a certain guide for the courses of brick by reason of the index-knobs *d d*, I am enabled to save a large percentage of the cost of making sewers and drains, and have, in its practical use, been enabled to perform this class of work at prices distancing all competition, and yet affording a satisfactory profit to myself.

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

The adjustable indexed former D, substantially as and for the purposes specified.

DANIEL H. FERNALD.

Witnesses:

H. L. MITCHELL,

A. J. CHAPMAN.