No. 110,882. PATENTED JAN. 10, 1871.

H. WHITESTONE.

CURBING FOR EXCAVATIONS.

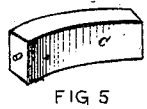


FIG 5

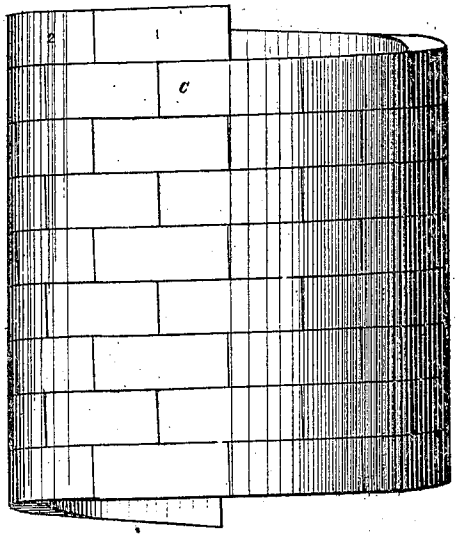


FIG 2

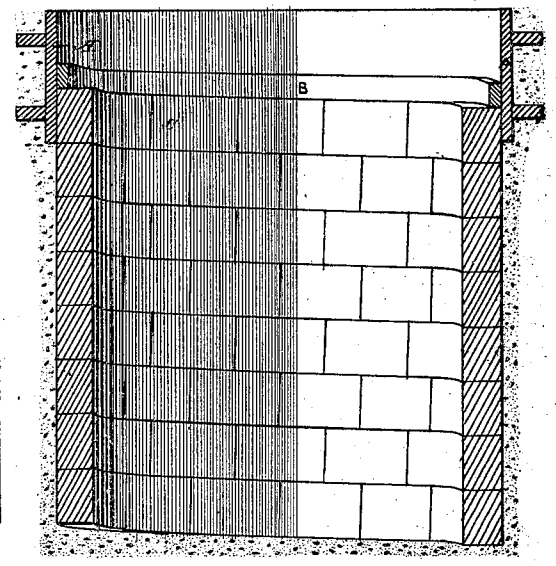


FIG 4

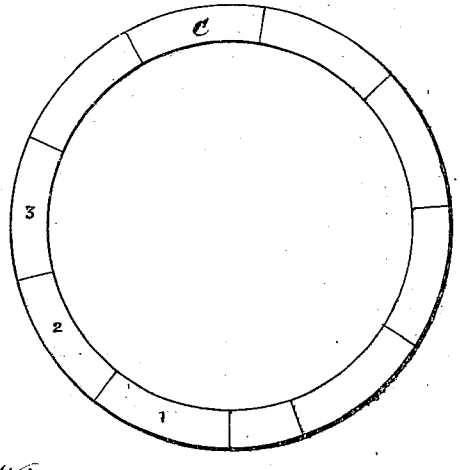


FIG 1

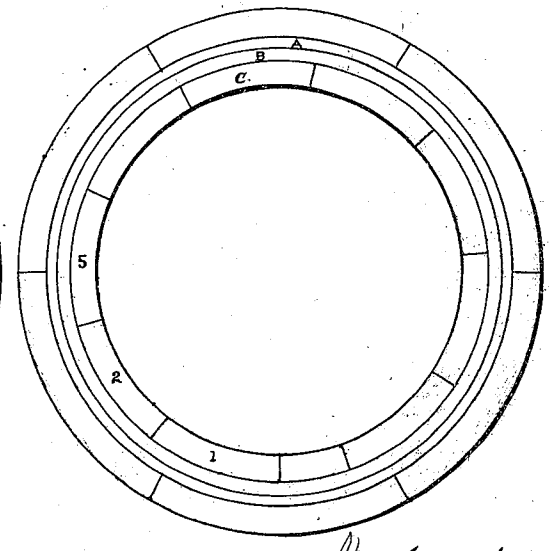


FIG 3

Witnesses,
John Grove
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# United States Patent Office.

HENRY WHITESTONE, OF LOUISVILLE, KENTUCKY.

Letters Patent No. 110,882, dated January 10, 1871.

## IMPROVEMENT IN CURBING FOR EXCAVATIONS.

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

I, HENRY WHITESTONE, of the city of Louisville, county of Jefferson and State of Kentucky, have invented a new and useful Method of Curbing for Maintaining the Banks of Excavations in Sandy and Loose Soils, capable of being applied and removed without injurious disturbance of the banks, of which the following is a specification.

The nature of this invention consists in the use of a curb of wood, or any suitable material, made of spiral sections of an annulus, with radiated end-joints, the sections to be of the thickness necessary to form arch-joints sufficient to resist the pressure of the banks, and the depth and length of each section to be proportioned to the nature of the soil and the ability of handling the same, the sections to be made small in very loose sand and larger in stiffer soils, the sections to be made so as to break joints at ends, and may or may not have dowels in the ends.

These sections are inserted one at a time, beginning at the top, as the excavation progresses, and when the required depth is obtained they are removed one by one, commencing at the bottom, the space being filled in with masonry as each section is taken out, as will be hereinafter fully described.

Having thus fully described the nature of my invention, a more complete understanding of which may be had by reference to the drawing, in which—

Figure 1 is a plan of the curbing with the guide-drum omitted.

Figure 2 is a side elevation of the same.

Figure 3 is a plan, showing the curbing inclosed in the guide-drum A.

Figure 4 is a vertical section through curbing, showing guide-drum A and guide-strip B.

Figure 5 is a perspective view of one of the sections of curb *c*.

To enable others skilled in the art to make and use my invention, I will proceed to describe its operation, which is as follows:

The guide-drum A, which is a hollow cylinder sufficiently long to contain at least one full course of the spiral sections C, and provided with the guide-strip B, is first taken and set with its axis truly vertical, and sunk in the sand or soil at the point where the excavation is to be made until its upper edge is on a level with the surface of the ground, as shown in fig. 4. The sand or soil is then closely packed all round the outer surface of the drum.

The workman next proceeds by excavating under the drum, making only room enough to receive a single section, (which may be that marked 1 in the drawing,) and places said section under and close up to the bottom of the guide-strip B, on the inside of the drum, and packs and rams the soil under it to maintain it in position.

He next excavates a place for another section, (No. 2,) and sets it in the same manner, with its end in close contact with that of the first section; and each succeeding piece is inserted in the same manner until the desired depth is attained, the sand or soil being excavated down to the bottom line of the curbing and removed from the well.

Each successive excavation is only of such capacity as to receive a single block, and the latter is inserted as soon as a place has been prepared for it.

When the desired depth is reached, the last section put in is removed and masonry is substituted, filling the place formerly occupied by the section. This is continued to the top, in spiral courses, the process being the reverse of putting in the curbing.

In case of building piers or in underpinning walls, where the restoration of the ground, except in places occupied by masonry, is important, the curbing is put in as above described; and as masonry is carried up the sections are removed from the bottom upward, as before explained, and sand or soil is filled in the vacant places and well rammed, leaving the ground around the masonry as solid as it was before the commencement of the excavation. The curbing, when removed, is ready for use again.

This method of curbing gives great security to workmen, and allows work to be carefully executed. In using it for building cisterns, it allows the brick to be laid touching the banks, which gives the support required to resist the pressure of the water and prevent displacement of the brick.

What I claim as new, and desire to secure by Letters Patent, is—

Spiral curbing, composed of sections C, the guide-drum A, and guide-strip B, made and employed substantially in the manner and for the purposes described.

HENRY WHITESTONE.

Witnesses:

JOHN GROVE,

CLINTON MCCLARTY.