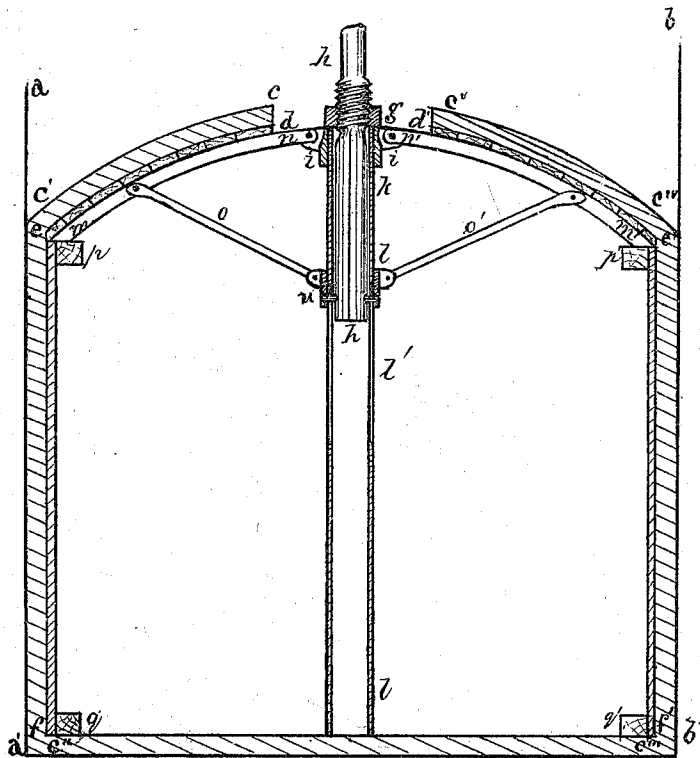


J. KRUGER.
Devices for Building Cisterns.

No. 142,345.

Patented September 2, 1873.



Attest
 In presence
 F. M. McDonald

Joseph Kruger
 Inventor by
 C. E. McDonald atty

UNITED STATES PATENT OFFICE.

JOSEPH KRUGER, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN DEVICES FOR BUILDING CISTERNS.

Specification forming part of Letters Patent No. **142,345**, dated September 2, 1873; application filed January 10, 1873.

To all whom it may concern:

Be it known that I, JOSEPH KRUGER, of the city of Indianapolis, county of Marion and State of Indiana, have invented a new and useful Improvement in Devices for Building Cisterns, of which the following is a specification:

The nature and object of my invention will be fully understood from the following general description.

The accompanying drawing is a sectional view of a cistern with my device in it, the device being also shown in section.

$p q p' q'$ is a cylindrical wooden tube of convenient size to shape the walls of the cistern properly. This is divided longitudinally into three pieces by joints. Two of the joints are so constructed that the exterior part of the piece between them is smaller than the interior part. These pieces may be held in position by means of any convenient device, such as a bolt or button, or the like. This part is used in forming the walls of the cistern, as hereinafter described. $l l$ is a cylindrical tube, within which is fitted, so that it will slide up and down, the rod $h h$. Upon this rod is cut a screw to accommodate the nut g . $m n$ and $m' n'$ are semicircular arms hinged to the block i at n and n' , and hinged near the middle to the radial arms o and o' . These radial arms o and o' are hinged at one end, as aforesaid, to the semicircular segments $m n$ and $m' n'$, and at the other to the block u . The block i is fastened upon the top of the tube $l l$. The block u , which is fastened to the rod h by means of convenient pins passing through proper slots in the tube $l l$ at v , will slide on the tube $l l$ the length of the slot v , and carry with it the rod $h h$, which moves inside of the tube $l l$. Thus the arms o' and o and the segments $m n$ and $m' n'$, of which there are a convenient number standing radially to the tube $l l$, may be opened and closed at pleasure, like an umbrella, by sliding the block u up and down upon the tube $l l$. This part is the arch-support.

To use this device, after a proper excavation has been made in the earth, the cylinder $p q p' q'$ is set up in it, so as to leave room between it and the wall of earth for the building of the wall of the cistern, which may now be built in the annular space thus formed of cement, concrete, or any other convenient material. The tube $l l$ is then set on the bottom of the cistern in the middle, vertically, so that the end containing the rod $h h$ will be uppermost. The arms $m n$ and $m' n'$, of which there are a sufficient number for the purpose, are now extended, as shown in the drawing, for supporting the arch, and are secured in proper place by means of the nut g . Pieces of plank, represented by $d e$ and $d' e'$, are now laid on the segments $m n$ and $m' n'$ to further help in supporting the arch while it is formed. The arch may then be constructed in any of the usual ways. When it is complete and secure the nut g is unscrewed, and the rod $h h$ thrust down, so as to close up the segments $m n$ and $m' n'$. The whole of this arch-support may now be lifted out through the man-hole $c c'$. A workman going down into the cistern may now unloose the cylinder $p q p' q'$ by first taking out the section between the beveled joints, and afterward the others successively, each of which, as well as the planks $d e$ and $d' e'$, may be passed up through the man-hole, leaving the cistern complete.

I claim—

The arch-support herein described, when constructed with the tube $l l$, the rod $h h$, the nut g , the blocks i and u , the segments $m n$ and $m' n'$, the arms o and o' , and the slots v , and used for the purpose and in the manner substantially as set forth.

In testimony that I claim the foregoing specification I have hereunto set my hand this 16th day of July, 1872.

JOSEPH KRUGER.

Attest:

FR. WERBE,

F. M. McDONALD.