

*R. Cartwright,*

*Core Barrel.*

*No. 102220.*

*Patented Apr. 26. 1870.*

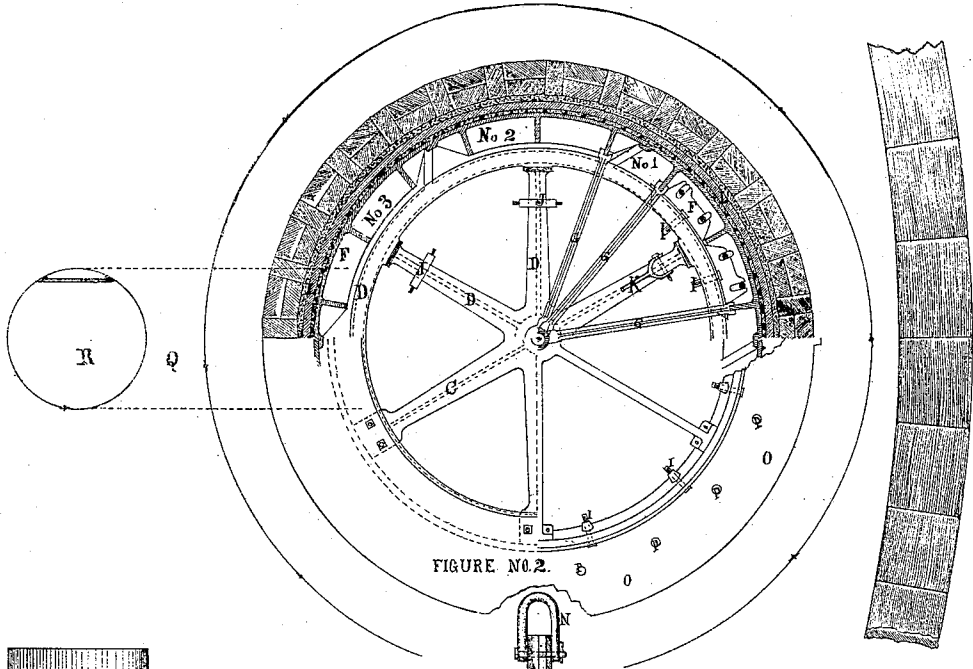


FIGURE NO. 2.

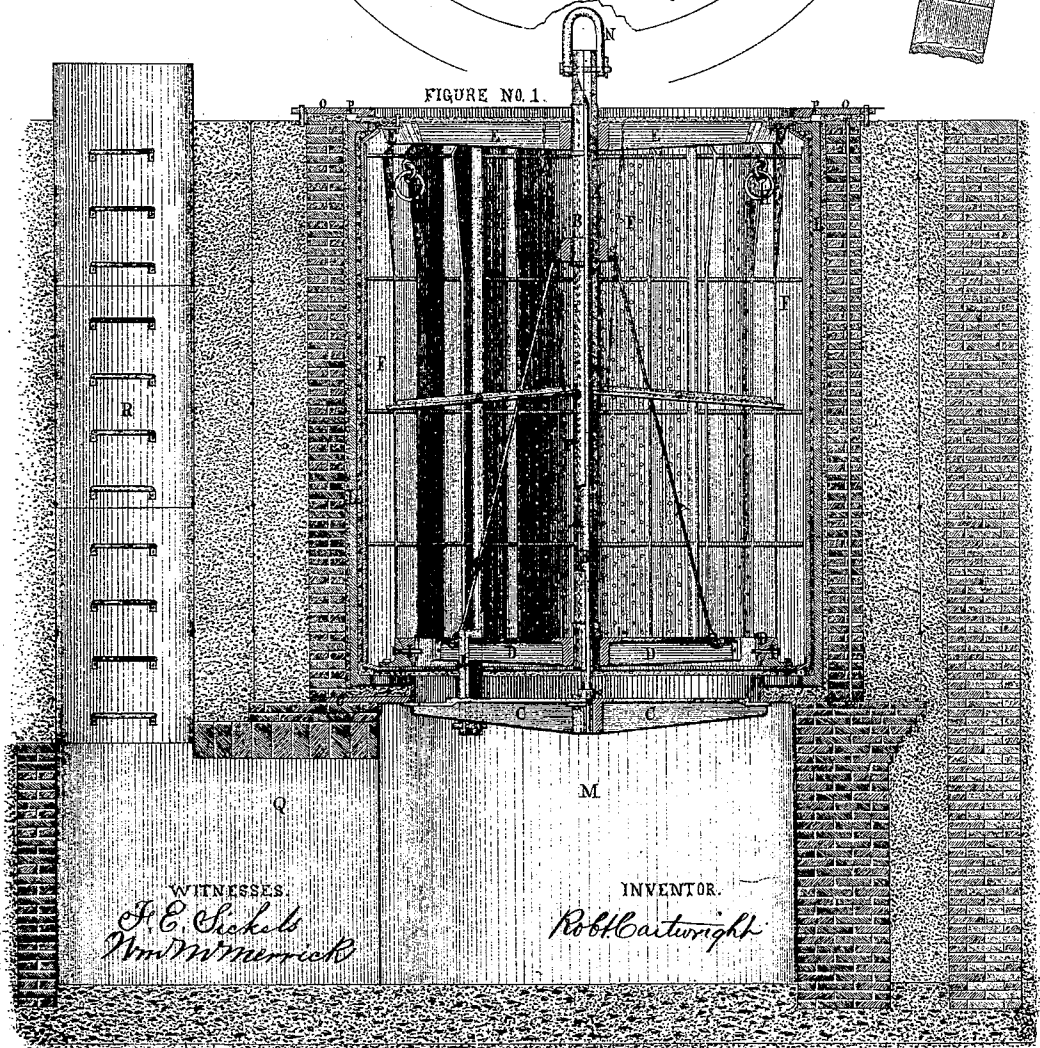


FIGURE NO. 1.

WITNESSES  
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INVENTOR.  
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# United States Patent Office.

ROBERT CARTWRIGHT, OF CHICAGO, ILLINOIS.

Letters Patent No. 102,220, dated April 26, 1870.

## IMPROVEMENT IN CORE-BARREL.

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, ROBERT CARTWRIGHT, of Chicago, in the county of Cook, in the State of Illinois, have invented a new and Improved Core-Barrel for Casting Cylinders or Pipes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in making a core-barrel composed of staves or sections fastened to a center frame, so constructed that it can be readily removed after casting is poured, and also made so that the core can be set central in the mold, producing thereby uniform thickness of metal in the casting.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 is a longitudinal section of core-barrel and mold.

Figure 2 is a plan section of core-barrel in detail.

I construct the center spider by having a hollow shaft, A, bored out at lower end to fit a center spindle or shaft, B, said shaft B being fastened into a base-plate or spider, C, set on brick-work.

At or near the bottom of shaft A is fitted a rim or spider D, having its outer periphery a section of a cone.

At or near the top of shaft A is fitted another rim or spider, E, with its periphery substantially shaped like rim D, though enough larger in diameter so that the smallest diameter of the conic section shall be larger than the largest diameter of the conic section of the rim D, thus allowing the rim D to be drawn out through the seat of the rim E in removing the core from the casting.

I then make sections or staves F, of suitable size to admit of a coat or covering of loam on their outside surface to form the diameter of core required.

The staves F have projections corresponding to the conic section or taper of the rims D and E, either cast or bolted on their internal ends.

The staves F are held to the center spiders by means of bolts I, which, when fastened, hold the staves securely together to the rims, thus forming a barrel or cylinder.

The staves F are strengthened by ribs internally, and are perforated with small holes to allow the escape of the gas consequent to all castings. They also have their external surfaces roughened by means of small teats or projections raised upon them, to serve as holding points for the loam coating.

Intermediate between the two ends of the staves I place a series of braces, G, which are of such length as to wedge or jam between the staves and center shaft

A. These, when placed in position, are set a little the highest at the end, resting against center shaft A, and connected by chains or rods to top spider E.

Being thus attached and at such an angle, they are easily relieved when the center shaft and spiders are withdrawn, after casting is poured, and come away with them, leaving the staves in the casting.

The staves comprising the barrel are made as shown by drawing, fig. 2, with their sides and ends so shaped that it allows of stave No. 1 being first drawn inwardly by means of crane hooked into ring H, and afterwards No. 2, No. 3, &c., until all are removed, leaving the casting to cool and shrink without any danger of its being altered in shape or in soundness, as it is entirely free on its inner surface.

J J are clamps holding the core barrel in the mold to prevent lifting, under the head of ferrostatic pressure.

I I are bolts fastening staves F to rims D and E.

K K are hanging-rods so placed as to transmit the strain due to great weight of staves to the center shaft, thus enabling me to obtain greatest strength with less weight of material.

N is a clevis, by means of which the core-barrel is handled in the operation of making the core and castings.

L L is section of a cylinder in the mold.

In order that my invention may be more readily understood, I will proceed to describe its operation.

To prepare the mold or cope I first place upon the center shaft B, and fitting it nicely, two cross-bars, one near the top and one at the bottom. On the outer end of these, and set to requisite distance for given diameter of mold, I fasten a sweep strike or board. The loam is then daubed on the brick cope, and the sweep is turned around the shaft as a center, said shaft being properly stayed at top to insure its being central and firm. The sweep thus performs its work of striking the loam mold perfectly cylindrical. After this is done the mold is dried by a furnace placed in the well M, at bottom. When dry it is ready for the core. The core is made by placing the barrel upright on a pivot fitted into lower end of shaft A, and being firmly guided at top to admit of being turned around on said pivot. In its revolutions it is set at such a known distance from a sweep strike or board as to give the requisite diameter of core. The loam is then daubed on the barrel as it is slowly revolved, and the strike-board or sweep scrapes it to a uniform surface and diameter. When its surface is all complete the core-barrel is lifted, by means of the clevis N, and placed in core-oven to dry. The mold and core being thoroughly dried and blackwashed, the core is set in place by the shaft A being slipped over shaft B and lowered into its place. As the mold has been struck

from the shaft B as a center, and the core being struck with A as a center, the space between them must, in consequence, be perfectly uniform and equal. When the core is set in place the space between the cope and core (the mold proper,) is covered by a plate, O, covered with loam on its underside, and having a number of holes, P, through which the iron is poured into the mold from a surrounding runner. After the casting is poured the bolts I are driven out of rims D and E, and the clamps J are removed. When this is done the crane is hooked into clevis N, and the center shaft A, with its rims D and E and attached braces G, are drawn out, leaving the staves F in the casting. Stave No. 1, with the parallel end, is first removed, and then, successively, Nos. 2, 3, &c.

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

1. The hollow center shaft A, in combination with the center shaft B, substantially as described, and for the purposes set forth.

2. The spider and rims D and E, in combination with the center shaft A, substantially as described, and for the purposes set forth.

3. The braces G, in combination with the staves F and center shaft A, substantially as described, and for the purposes set forth.

4. The staves F, in combination with the center shaft A and rims D and E, substantially as described and for the purposes set forth.

ROBT. CARTWRIGHT.

Witnesses:

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WM. M. MERRICK.