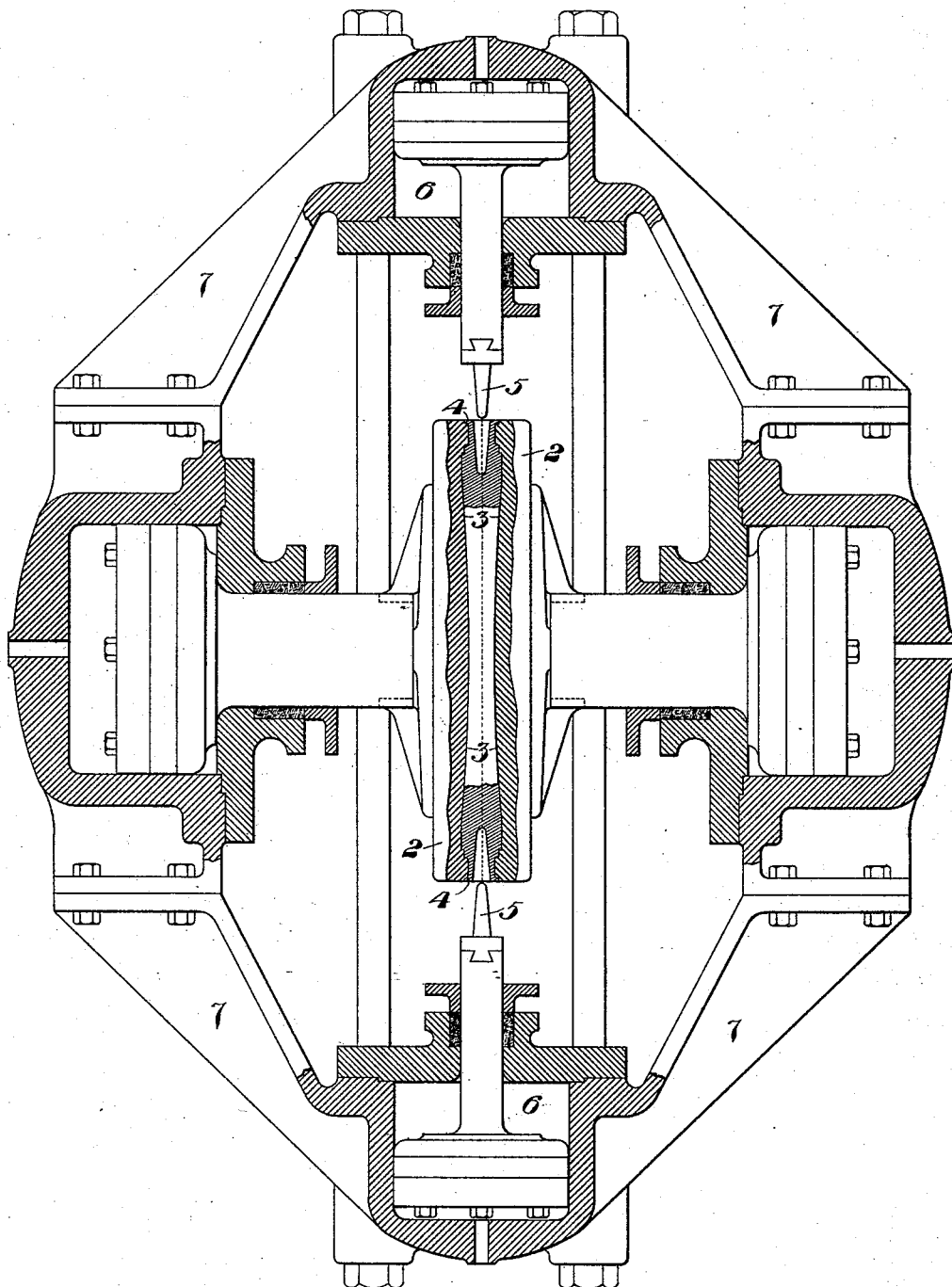


(No Model.)

C. MERCADER.  
MACHINE FOR MAKING AXLES.

No. 524,092.

Patented Aug. 7, 1894.



WITNESSES

*A. M. Corwin*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

CAMILLE MERCÀDER, OF BRADDOCK, PENNSYLVANIA.

## MACHINE FOR MAKING AXLES.

SPECIFICATION forming part of Letters Patent No. 524,092, dated August 7, 1894.

Application filed July 6, 1893. Serial No. 479,711. (No model.)

*To all whom it may concern:*

Be it known that I, CAMILLE MERCÀDER, of Braddock, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Axles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, which show a horizontal sectional view of my improved machine.

My invention relates to the manufacture of axles, having enlarged portions or collars, and it consists in an improved machine employed in manufacturing such axles, all as herein-  
after more fully described and set forth in the claim.

In the drawings, 2, 2, indicate the forming-dies, having registering matrices 3, which together compose the mold-cavity within which the axle is formed. These matrices extend the entire length of the dies, the mold-cavity being open at each end and having near the ends annular recesses 4, 4, to form collars upon the finished axle. At the ends of the mold-cavity are located the piercing plungers 5, 5, having rounded ends which are adapted to pierce the ends of the blank and force the metal laterally into the annular recesses of the matrix dies. The two sets of plungers are carried by hydraulic cylinders 6, supported in a framework 7, and the method which I employ in connection with this apparatus is as follows:

A heated blank, consisting of a bar of iron or steel, of proper length, and, if desired, re-

duced to or approximately to the shape desired for the middle portions of the axle, being placed between the forming-dies, they are forced together, thus forming the intermediate portion of the axle and at the same time clamping the blank securely in place. The plungers are then forced inwardly, and piercing the ends of the blank, force the metal outwardly into the recesses of the mold-cavity, forming the end collars upon the blank and making an axle with hollow ends.

The advantages of my invention will be appreciated by those skilled in the art, since a light and strong axle is formed and but little endwise flow of the metal is necessitated. The hollow journals formed on the axle are of material advantage, since the weight is decreased without diminishing the effective strength.

I claim—

In a machine for making axles, the combination with a pair of matrix dies for forming and clamping the axle blank, of two piercing dies at right angles to the matrix dies and arranged to enter the open ends thereof, and force the metal laterally to form the collars, and mechanism for operating said dies; substantially as described.

In testimony whereof I have hereunto set my hand.

CAMILLE MERCÀDER.

Witnesses:

F. P. SPROUL,  
H. M. CORWIN.