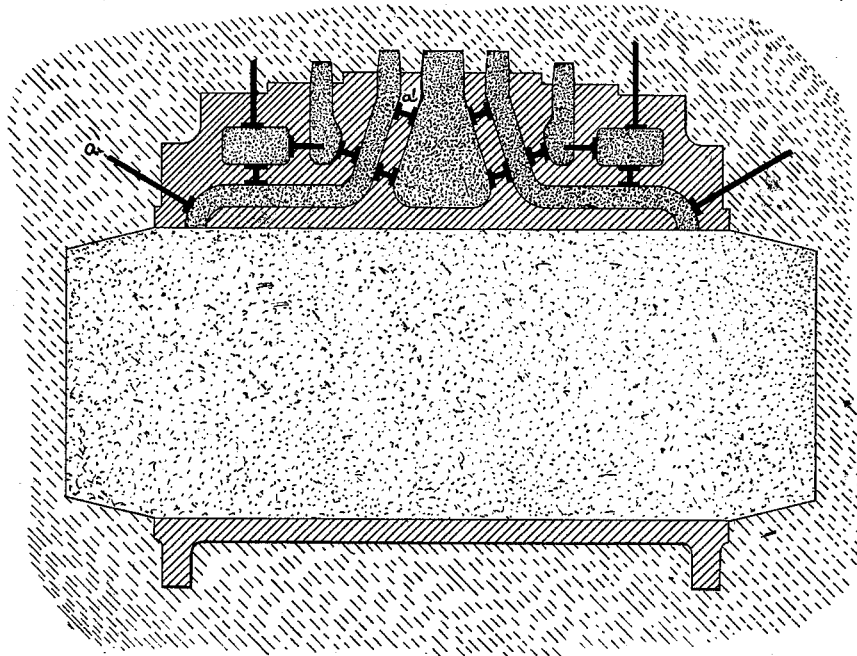


C. D. WOODRUFF.
Core Anchor and Stud.

No. 214,270.

Patented April 15, 1879.



Witnesses:

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CHARLES D. WOODRUFF, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF HIS RIGHT TO DAVID H. HANSELL, OF SAME PLACE.

IMPROVEMENT IN CORE ANCHORS AND STUDS.

Specification forming part of Letters Patent No. **214,270**, dated April 15, 1879; application filed
March 3, 1879.

To all whom it may concern:

Be it known that I, CHARLES D. WOODRUFF, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Core Anchors and Studs, which improvement is fully set forth in the following specification and accompanying drawing, in which the figure, which is a vertical section, shows a well-known method of casting a piston-cylinder and base or port portion of the steam-chest, with core anchors and studs in position.

For supporting and retaining sand-cores in molds for iron or steel castings, anchors or studs of wrought and cast iron and steel have been used.

Cast-iron anchors or studs are often melted by the molten metal poured into the mold before the mold is full, and the cores are washed from their proper places by the inflowing metal, and an imperfect casting is the result.

When the mold is filled without melting the anchors or studs the latter are held in the casting by the contraction of the molten metal around them.

When wrought-iron or steel anchors or studs, when oxidized, are surrounded with molten metal and their surfaces are brought by the inflowing metal to a welding temperature, they will not unite with the metal surrounding them; but cavities are formed around such anchors or studs, making the casting defective.

Various substances have been employed as coatings for anchors or studs to remedy the aforementioned defects, among which may be mentioned red lead, pulverized coal and plumbago, clay-washes, and tin.

Tin melts at a temperature less than the ovens in which loam molds are dried, and thus does not prevent the oxidization of the anchors or studs used in such molds. Steel, when not oxidized and having its surface

raised to a welding temperature, will unite with the molten iron or steel surrounding it.

In molds formed of damp sand or loam, the anchors or studs supporting and retaining sand cores in such molds, unless protected by a coating, become oxidized before the molds are filled with the molten metal.

The object of my invention is to make a perfect union of the metal anchors or studs with the metal cast around them; and the invention consists of anchors or studs of steel coated with silver.

Referring to the drawing, in which I illustrate a well-known method of casting a piston-cylinder and the base or port portion of the steam-chest, the cores for the cylinder, live-steam and exhaust ports, and weight-lessening cavities are shown by dots, the sand or loam of the mold is represented by dashes, and the cylinder and base or port portion are illustrated in section.

The cores of the aforesaid ports and cavities are sustained by anchors and studs, as required, *a* representing one of the anchors, and *a'* one of the studs.

In carrying out my invention, I coat or plate the anchors or studs with silver, in any proper manner, and it will be seen that the silver, forming a perfect coating for the steel anchors and studs, does not oxidize, it melts at a temperature a little less than molten iron or steel, and acts as a solder, making a perfect union of the anchor or stud with the molten metal surrounding it.

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

As a new article of manufacture, a silver-coated steel core anchor or stud.

CHARLES D. WOODRUFF.

Witnesses:

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