

No. 681,343.

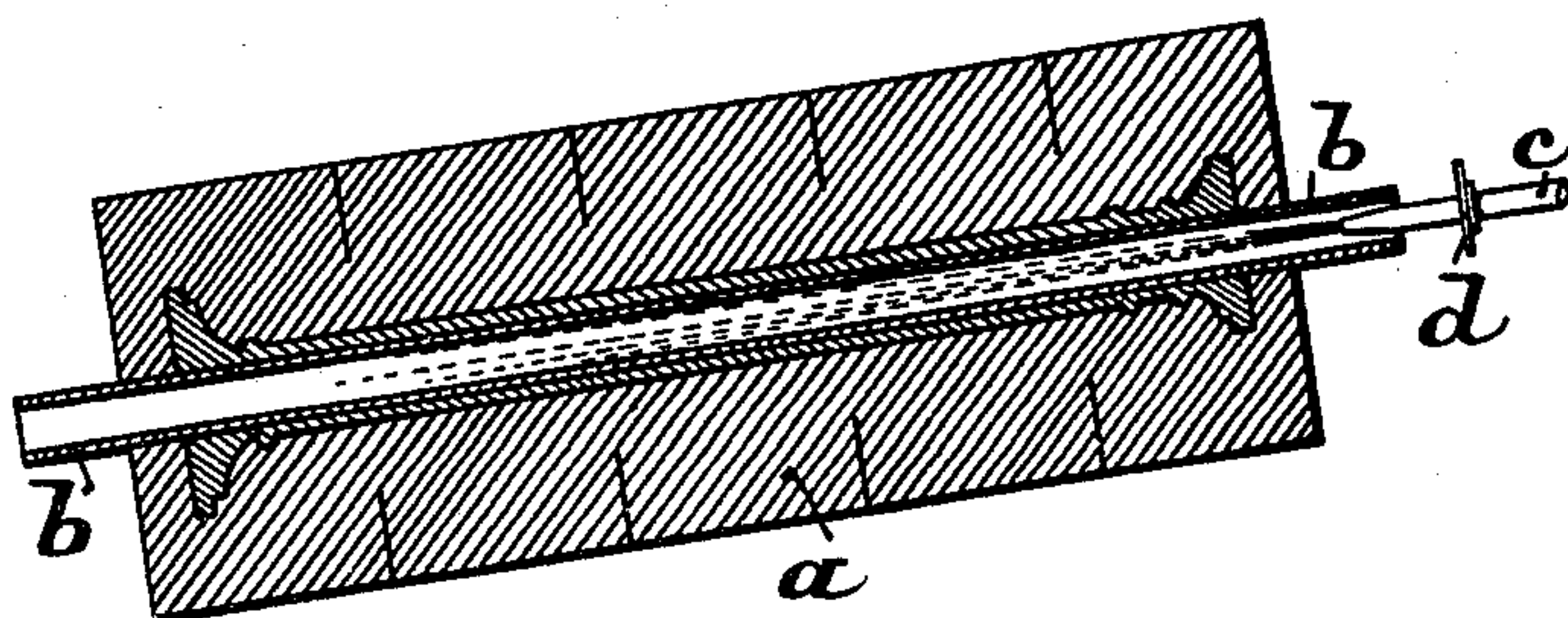
Patented Aug. 27, 1901.

R. RAU.

PROCESS OF MANUFACTURING IRON COLUMNS

(Application filed May 25, 1900.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

RODOLPHE RAU, OF SCHILTIGHEIM, GERMANY.

PROCESS OF MANUFACTURING IRON COLUMNS.

SPECIFICATION forming part of Letters Patent No. 681,343, dated August 27, 1901.

Application filed May 25, 1900. Serial No. 17,927. (No specimens.)

To all whom it may concern:

Be it known that I, RODOLPHE RAU, engineer, a citizen of the Swiss Republic, residing at Schiltigheim, near Strasburg, 7 Rue Kuhn, Alsace, Germany, have invented certain new and useful Improvements in Processes of Manufacturing Iron Columns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

When cast-iron columns of more than a certain length are cast in one piece, they are not sufficiently strong, because, in consequence of the sagging of the core, unequal strains are set up in the outside and the moment of resistance is varied. Furthermore, cast-iron columns offer only slight resistance to transverse blows or pressure and may very easily be broken thereby. In many cases, therefore, especially when heavy loads are in question, riveted malleable-iron columns are being used instead of cast-iron columns. They are considerably dearer than cast-iron columns and generally need a special costly decorative covering.

The present invention relates to a process for manufacturing a column which combines the advantages of a malleable-iron column with the architectural exterior of a cast-iron column. For this purpose in casting the column there is used instead of the core a malleable-iron tube, which remains in the finished column and gives it the requisite strength, while the cast-iron sheath may be fashioned to any architectural design, so that special decoration is not necessary.

In carrying out the invention the mold is placed somewhat obliquely, care being taken that the lower end of the tubular core is some centimeters above the floor.

In the accompanying drawing is shown a vertical longitudinal section of a mold and a column cast therein in accordance with this invention.

Into the mold *a* is introduced the malleable-iron tube *b*, which is to serve as a core. This tube is open at both ends, so that it is free for looking through it. Before the casting operation the core must be heated as much as possible, and for this purpose a current of superheated steam or hot air is admitted into the upper end of the tube. In this manner the mold can be heated to about 400° centigrade. The column is then cast and the color

of the core-tube is observed. After about two minutes it is cherry-red, and so soon as the color becomes brighter a current of saturated steam, or a mixture of saturated steam and air, is admitted. This becomes superheated in the tube and by absorbing heat serves to keep the tube at a constant temperature, not too high. For the purpose of such cooling a small nozzle *c*, provided with a disk *d*, is introduced into the upper opening of the tube *b*. By this nozzle the saturated steam is admitted to the tube. If the nozzle is introduced into the tube so far that the disk *d* closes the tube *b*, only steam is admitted. If, however, the nozzle is somewhat withdrawn, the steam-jet will also suck in air, the purpose of which is to regulate the temperature of the steam. When the casting is solid, the cooling of the tube is interrupted and the whole is allowed to cool slowly.

By keeping the color of the tubular core between cherry red and yellow during the casting by means of steam or steam and air two objects are attained—first, the tubular core can not burn nor its molecular structure become altered, and, secondly, the cooling of the cast sheath is not too irregular and the casting is not too brittle. In this manner there are obtained columns which in respect of compressional strength and resistance to transverse strains are considerably stronger than cast-iron columns.

Having now particularly described and ascertained the nature of my said invention and the manner in which the same is to be performed, I declare that what I claim is—

1. The process of manufacturing iron columns which consists in casting an iron sheath around a malleable-iron tube as a core, and passing a current of saturated steam through such tube during the casting operation, as and for the purpose set forth.

2. The process of manufacturing iron columns which consists in casting an iron sheath around a malleable-iron tube as a core, and passing a current of saturated steam and air through such tube during the casting operation, as and for the purpose set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

RODOLPHE RAU.

Witnesses:

A. WOOD,
MAX ADLER.