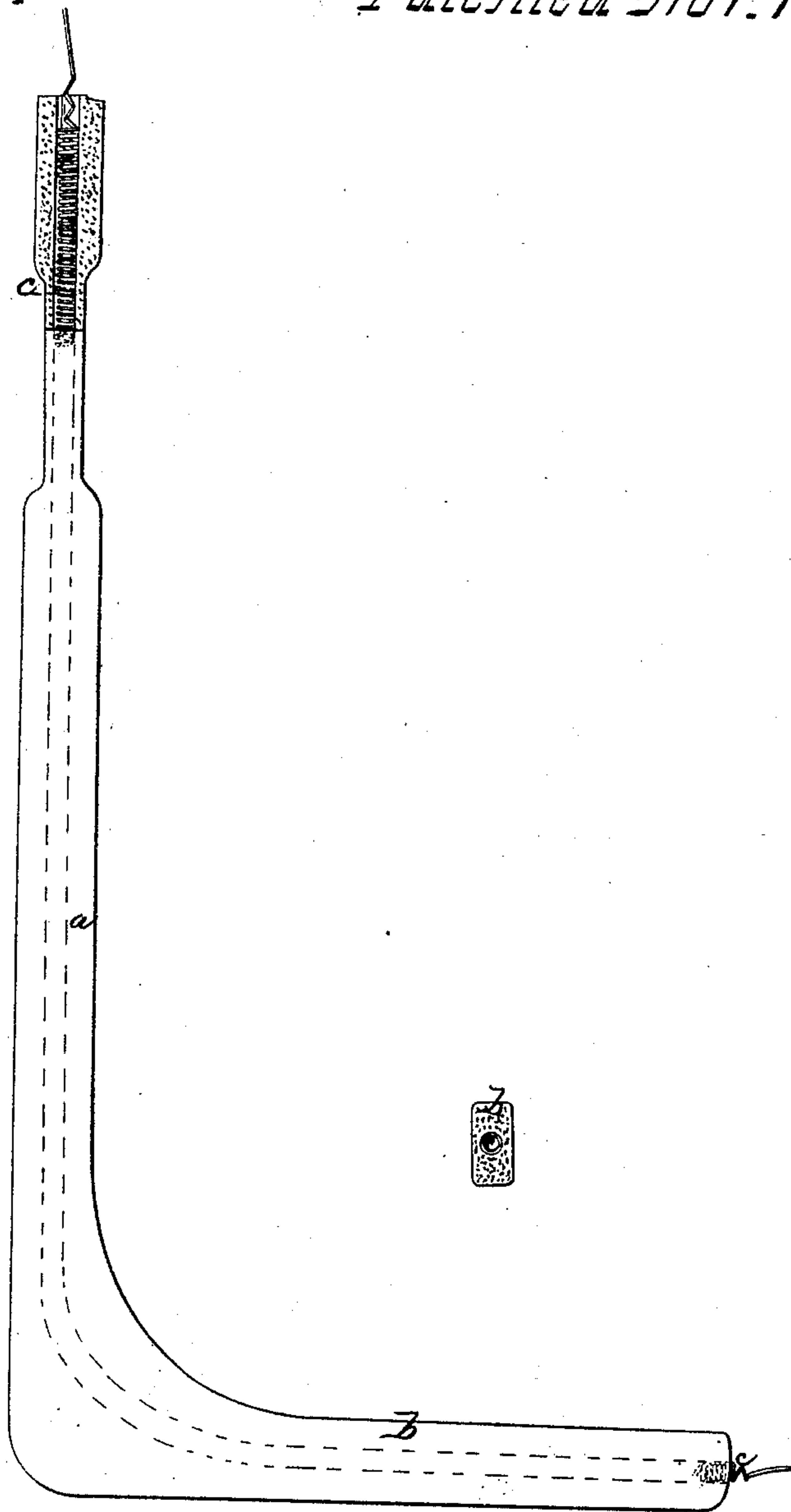


*H. Tucker,*

*Casting Curved Pipe.*

*No. 59,684.*

*Patented Nov. 13, 1866.*



*Witnesses.*

*S. B. Kidder,  
M. W. Frothingham*

*Inventor  
Hiram Tucker  
by his Attys  
Crowley & Fower*

# UNITED STATES PATENT OFFICE.

HIRAM TUCKER, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO THE TUCKER MANUFACTURING COMPANY.

## IMPROVEMENT IN VENTING-CORES FOR FOUNDRY PURPOSES.

Specification forming part of Letters Patent No. 59,684, dated November 13, 1866.

*To all whom it may concern:*

Be it known that I, HIRAM TUCKER, of Newton, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Venting-Cores for Foundry Purposes, and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In casting cored metal work it is often difficult to properly vent the cores necessarily used—that is to say, to form passages therein through which the gases generated by the heat of the molten metal can escape. In practice, where the cores are thick and stout such passages are easily formed, the cores being made in halves or parts, so that a groove or grooves can be scooped out of each part, and into which grooves the metal cannot flow when the parts are joined together. In other large cores, where it is not convenient to make them in parts or in halves, for the purpose of forming vent-grooves, as described, the cores are packed upon rods or stiff wires, which are afterward drawn out from within them, leaving the necessary vent passages or channels, and in other cases the cores are packed or built upon foraminous pipes or tubes.

But cores are often needed where none of these methods of venting them can be applied with facility—as, for example, such cores as are thin and curved, angular or crooked; and it is with such cores more particularly that my invention will be found very useful in securing perfect vent-passages, so as to produce sound smooth castings.

My invention consists in the employment of spiral springs within the bodies of cores, these being formed of any of the usual core-making materials.

In practicing my invention I use common iron wire, preferably soft or annealed, and of a diameter or gage so proportioned to the diameter of the coiled spring that it may be easily unwound by a direct pull upon the wire in the general direction of the length of the spring, which I wind with the coils not closely in contact, nor so far apart as to permit entrance into the body of the spring, through the

spaces between the coils thereof, of the sand and meal or other matter of which the core material is made. This, it will be obvious, makes a tube through the core wherever such a spring is located, and it will also be seen that while the spaces between the coils will not admit between them into the interior of the spring the core material, said spaces will be ample to freely admit the generated gases, which then find free vent out of the mold through the interior of the spring. It will also be seen that such springs can be bent and curved in any direction, so as to be properly located in a core of any form.

The drawing represents, partly in central section, a core, in which one part, *a*, is at right angles with the other part, *b*, and having within it, for the purpose of venting the core, a spiral spring, *c*. This, it will be observed, is continuous through the entire length of the core, so that the whole of the wire can be removed by drawing upon either end of it, bringing out with it from the casting a portion of the core-sand. A solid continuous rod or large wire could not be used to form the vent-passage, because it could not be withdrawn from the core. If a continuous foraminous tube should be employed it would be difficult to remove it from the casting made around the core, which is too thin, as will be seen in the drawing of the cross-section of the core, to be practically made in halves, so as to have a groove or grooves scooped out therein.

The coils of the spring *c* may be wound more openly or farther apart than I have before described, if desired; and in such case the interior of the spring is to be filled with a string or rope, or other suitable flexible material which can be withdrawn from the spring, the object of such flexible filling being to prevent the core-forming material from admission to the interior of the spring.

I claim—

The described improvement in the art of casting molten metals, by which the cores are better and more easily vented than heretofore.

HIRAM TUCKER.

Witnesses:

J. B. CROSBY,  
FRANCIS GOULD.