

(No Model.)

J. P. WARNER.

CHILL FOR CHILLING METAL.

No. 256,257.

Patented Apr. 11, 1882.

Fig. 1.

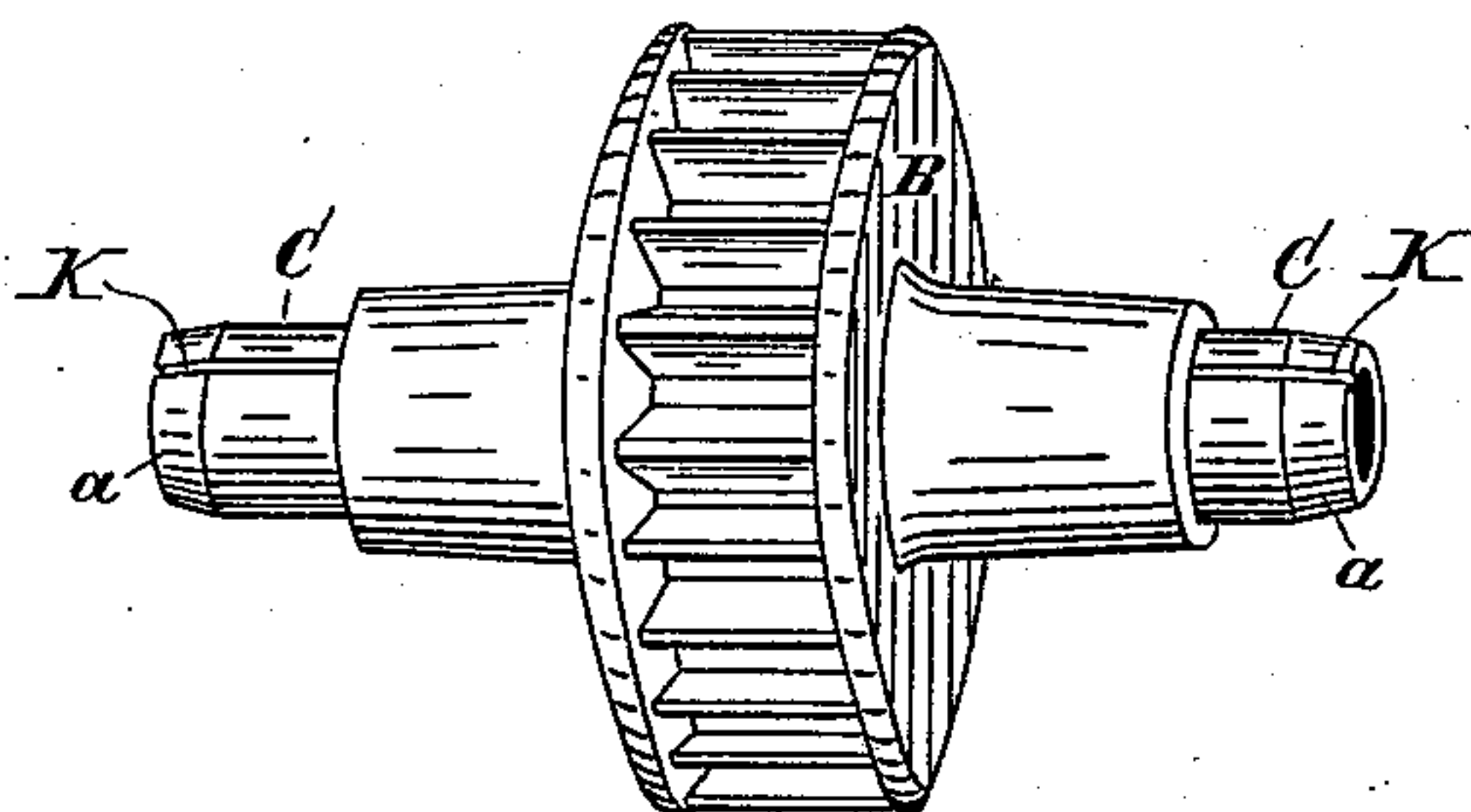


Fig. 2.

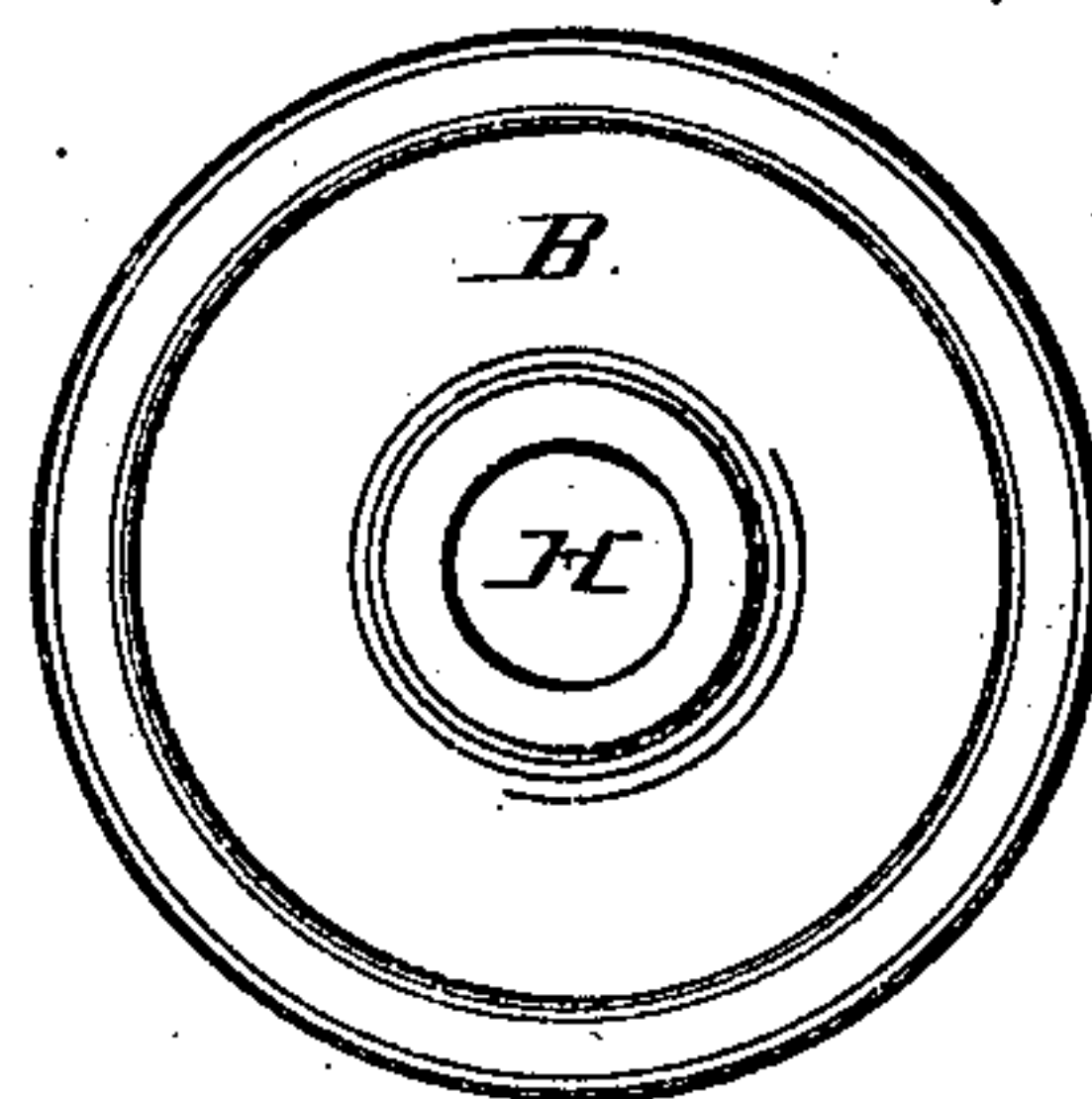


Fig. 3.

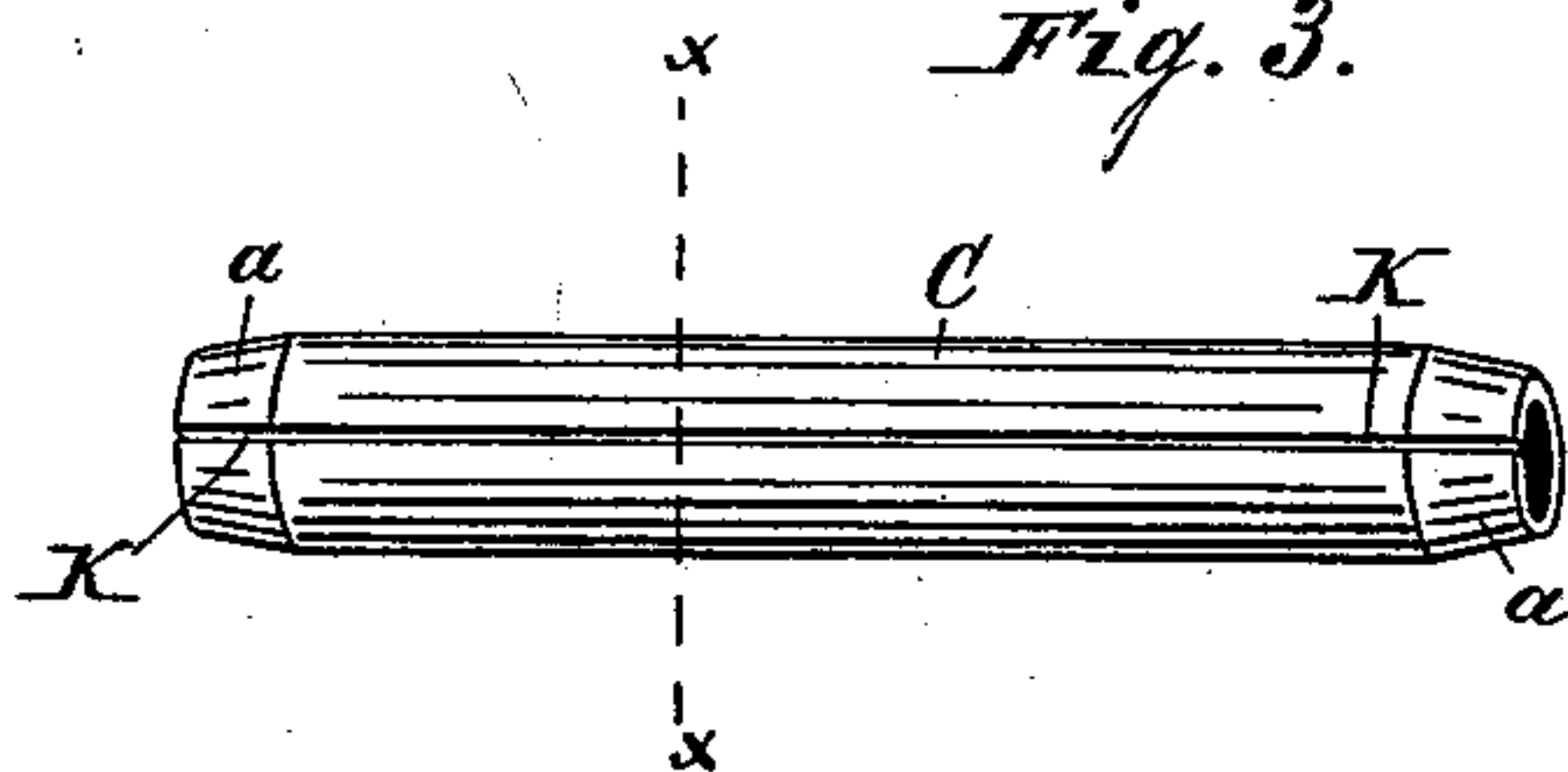


Fig. 4.

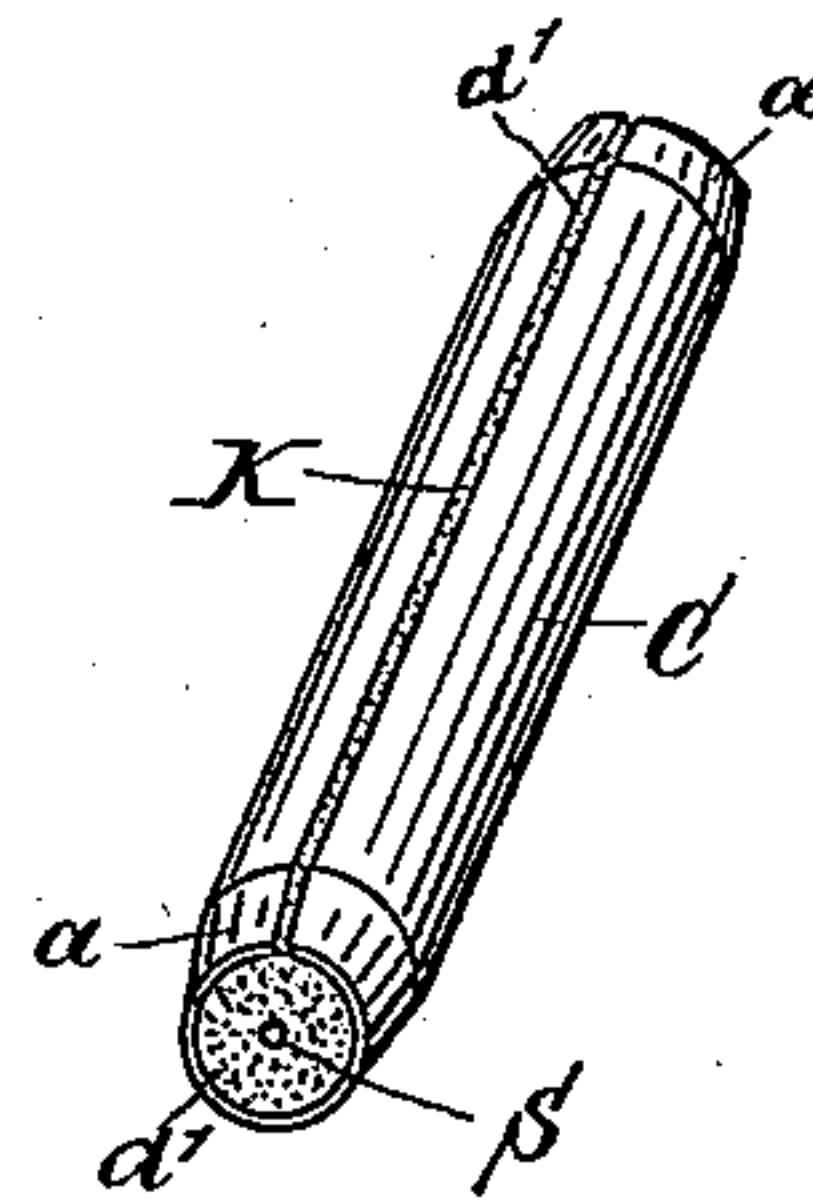
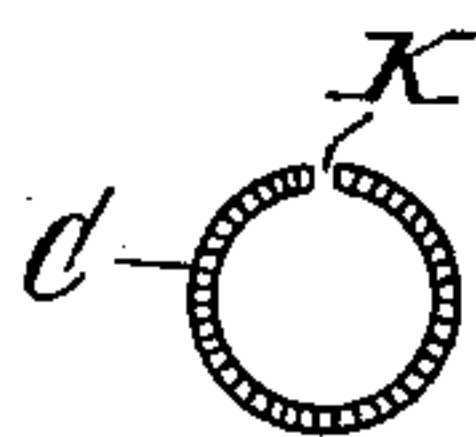


Fig. 5.



WITNESSES:

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JASPER P. WARNER, OF DOWAGIAC, MICHIGAN.

CHILL FOR CHILLING METAL.

SPECIFICATION forming part of Letters Patent No. 256,257, dated April 11, 1882.

Application filed July 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, JASPER P. WARNER, of the city of Dowagiac, county of Cass, and State of Michigan, have invented a certain Improvement in Chills for Chilling and Forming Straight Holes Through Metal, of which the following is a specification.

The nature of my invention relates to that class of chills used for forming and chilling straight holes through metal castings when poured in the mold, hardening the wearing parts in castings—such as the hubs of wheels and the like—whereby they are made more durable, stronger, and cheaper than in the usual way.

In order to aid others skilled in the art to which my invention belongs to make and use the same, I will describe its construction and operation, with reference to the several drawings, as lettered respectively.

Figure 1 is a view of a wheel-hub, B, when removed from the mold, showing the chill C projecting through the wheel-hub, showing the longitudinal slot or opening *k* and the tapering ends *a a*. Fig. 2 is a face view of the hub, showing the hole H formed by the chill C. Fig. 3 is a view of the chill when removed from the hub or casting, showing the hollow center and longitudinal opening *k*. Fig. 4 is an end and longitudinal view of the same, showing the sand filling *a'* in the hollow and slot or opening. Fig. 5 is a cross-section of Fig. 3 on the line *x x*.

When the mold is formed in the sand the chill C is placed in the core-print, which locates the place for the hole, forming the bearing upon which the part or parts may turn. The molten metal is then poured in, forming the casting, flowing around the chill forming the hole H. The chill is made of piping of about double strength, and the diameter of the chill should be a trifle larger than that of the hole desired in the casting. Through the chill longitudinally a slot or opening is cut. The slot *k* leaves it in the form of an open ring, as best shown in Fig. 5. Before placing the chill in the core-print the hollow of the chill and the

opening *k* are filled with molding-sand *a'*, as shown in Fig. 4. In the center of the sand is a vent-hole, *s*, which forms an escape for the steam and gases that may generate. Each end of the chill C is tapered or made cone shape, so that it will be self-centering as it enters the core-print. The sand filling *a'* in the chill, being green or wet, has a cooling tendency on the chill, which hardens or chills the castings more effectually. The main trouble in casting straight holes and chilling them in metal is that when cast around a solid chill, in the usual way, as the metal cools it contracts or shrinks, thus closing upon the chill, making it very difficult to remove, and the castings are frequently broken, as a solid chill will not yield to the contracting metal as it cools. To overcome these difficulties I use the tubular chill having a longitudinal slot, *k*, filled with sand *a'*, so that as the metal contracts around the chill it will yield to the pressure, thus closing the opening *k* and making the diameter of the chill smaller, when it can be readily removed from the metal casting, forming a straight and chilled hole for wheel-spindles and the like. The slot *k* is filled with sand flush with the exterior of the chill C. This prevents the molten metal from flowing in and forming a ridge or bead within the hole H; and by using this tubular chill with opening *k* and sand filling *a'*, I am able to successfully cast and chill straight holes through metal castings, thus making them much more durable and cheaper, a saving of labor of having them bored out by machinery, as is the common way.

Having thus described my invention in the most exact terms that I can give, what I claim as new, and desire Letters Patent for, is—

A metallic cylinder-chill having a longitudinal opening and tapering end and a green-sand filling for forming and chilling holes in castings, substantially as shown and described, for the purposes set forth.

JASPER P. WARNER.

Witnesses:

ROSCOE B. WHEELER,
R. F. KELLOGG.