(No Model.)

O. J. ZIEGLER.

MEANS FOR TRUING CASTINGS.

No. 312,693. Patented Feb. 24, 1885.

Fig. 2.

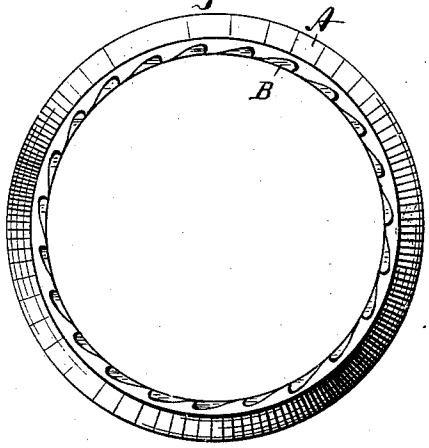


Fig. 5.

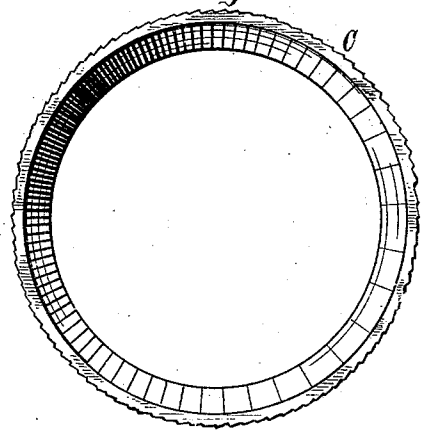


Fig. 1.

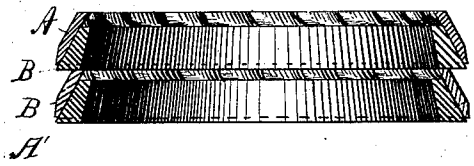


Fig. 4.

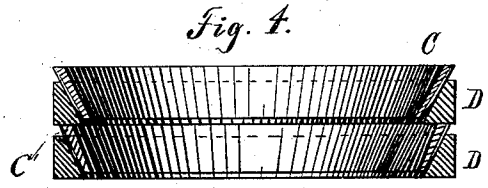


Fig. 3.

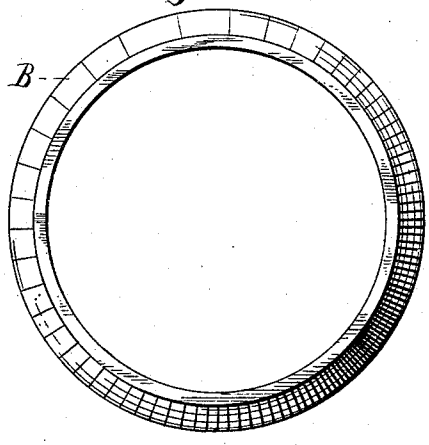
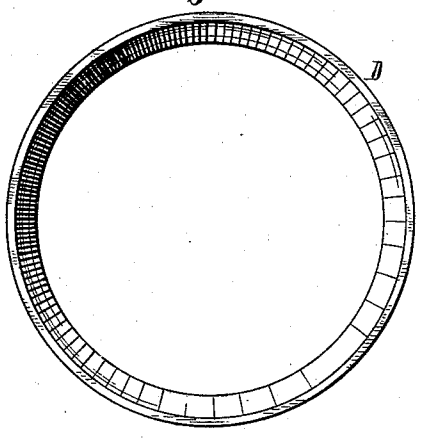


Fig. 6.



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UNITED STATES PATENT OFFICE.

OSCAR J. ZIEGLER, OF FREEPORT, ILLINOIS, ASSIGNOR TO THE STOVER MANUFACTURING COMPANY, OF SAME PLACE.

MEANS FOR TRUING CASTINGS.

SPECIFICATION forming part of Letters Patent No. 312,693, dated February 24, 1885.

Application filed March 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, OSCAR J. ZIEGLER, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Means for Truing Grinding-Rings and other Castings of Similar Form; 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 pertains to make and use the same.

My invention relates to improvements in means for truing or perfecting grinding-rings and other castings of similar form.

The means constituting the invention and the application thereof to the truing of grinding-rings are fully described and explained in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a central vertical section of two outer grinding-rings, (internally toothed,) each resting on a form, one of said forms being superposed on the ring and form beneath it; Fig. 2, a top plan of the ring and form shown in Fig. 1; Fig. 3, a top plan of the form alone; Fig. 4, a central vertical section of two internal rings (externally toothed) resting in suitable forms, one of said forms being superposed upon the ring and form below; Fig. 5, a top plan of the ring shown in Fig. 4; Fig. 6, a top plan of one of the forms shown in section in Fig. 4.

The means which I employ for truing grinding-rings, and which are illustrated in the figures above enumerated, consist of a series of forms, either inwardly or outwardly conical, adapted to receive the grinding-rings when hot, together with any practical device for applying pressure to the rings and forms while in contact, and thereby forcing the rings to take the shape of the forms. The conical faces of the forms have the same taper as the perfected rings for truing which they are designed, and they are made inwardly or outwardly conical, as they are to be used for truing outwardly or inwardly toothed grinding-rings, respectively. The rings should be taken from the sand, if possible, as soon as the iron has "set," and while still red-hot, and subjected to pressure immediately.

For truing the outer grinding-rings, whose grinding-teeth are on the inner surface, an outwardly-conical form, B, Fig. 1, is used, the grinding ring surrounding and resting upon the form. For the inner grinding-rings, whose grinding-teeth are on the outer surface, an internally-conical form, D, Fig. 4, is used, the grinding-ring lying within the form. In either case pressure may be applied directly to the grinding-ring to force it to take the shape of the form as it cools. I have found it most convenient to secure the necessary pressure by piling the rings and forms one upon another, making each sustain the weight of those above it. The form of the rings and forms is such that each grinding-ring when placed on a form serves as a stable base on which to place the next form. As it is usual to pour a number of rings at each heat, this is the simplest and easiest way of obtaining the necessary pressure; but any other means may be employed, if found desirable. In the case of the outer grinding-rings, which rest on the outside of the form, as in Fig. 1, the contraction of the ring aids in bringing it to the shape of the form. As the ring contracts it must either become a true cone and conform to the surface on which it rests, or slip upward on the form, lifting up the superincumbent weight. In the case of either the inner or outer rings, however, there is no difficulty whatever in bringing the ring to an exact circle, provided it is placed on the form promptly and properly weighted.

By means of the simple apparatus shown perfect grinding-rings may be invariably secured, while ordinarily, and without some means such as is herein described, the making of such rings is exceedingly difficult. They are of large diameter and very thin, and have an almost irresistible tendency to warp in cooling. At the same time it is especially important that they be perfectly true, since any variation from a circular form, however slight, renders them unfit for grinding, and consequently of no value. This same means may

be used in straightening other castings of the same general form as grinding-rings. I have shown and described it as applied to grinding-rings, because it is for that purpose that I have used it, and to that purpose it is peculiarly adapted; but I do not on that account limit its application to the perfecting of grinding-rings alone.

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

1. The combination of a conical form and a grinding-ring at its casting heat, substantially as and for the purpose set forth.

2. The combination of an outwardly-conical form and a grinding-ring at its casting heat, arranged upon and outside of said form, substantially as and for the purpose set forth.

3. The combination of suitable superposed forms, each form carrying a conical grinding-ring in its casting heat, the weight of the superior forms being arranged to bear upon the inferior rings, as and for the purpose set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

OSCAR J. ZIEGLER.

Witnesses:
J. A. CRAIN,
WM. B. THOMAS.