No. 662,344. Patented Nov. 20, 1900.

G. H. BOYD & T. D. WEST.

GEAR BLANK.

(No Model.) (Application filed Feb. 5, 1900.)

FIG. I

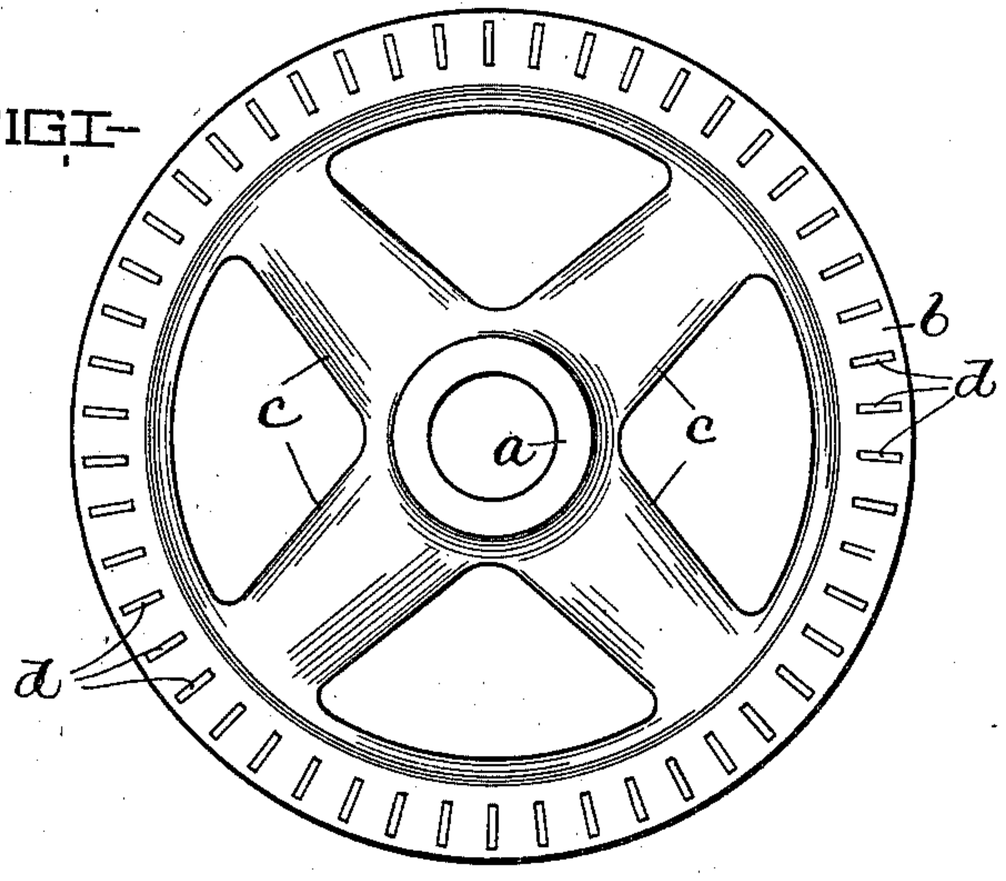


FIG. II

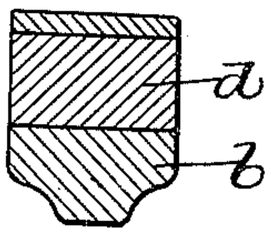
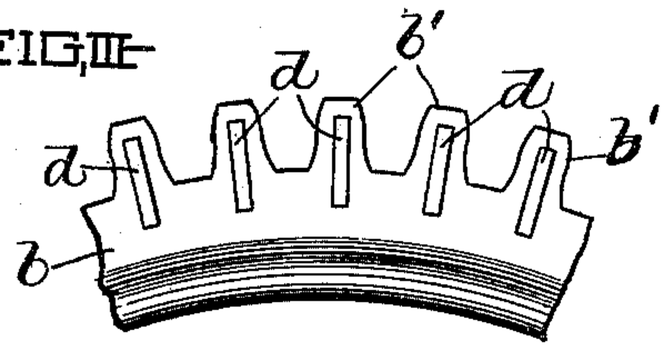


FIG. III



WITNESSES:
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UNITED STATES PATENT OFFICE.

GEORGE H. BOYD, OF SHARON, AND THOMAS D. WEST, OF SHARPSVILLE, PENNSYLVANIA.

GEAR-BLANK.

SPECIFICATION forming part of Letters Patent No. 662,344, dated November 20, 1900.

Application filed February 5, 1900. Serial No. 4,110. (No model.)

To all whom it may concern:

Be it known that we, GEORGE H. BOYD, a resident of Sharon, and THOMAS D. WEST, a resident of Sharpsville, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Gear-Blanks; and we 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.

Our invention relates to improvements in blanks designed for use in the formation or manufacture of gear-wheels.

The object of this invention is to provide a blank that is suitable for use in the formation of a cast-metal gear-wheel reinforced within the toothed rim by metal plates so as to constitute a gear that is cheaper in construction and more durable than a steel gear.

With this object in view the invention consists in certain peculiarities of construction hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is an elevation of our improved gear-blank. Fig. II is a transverse section of the rim of the blank and drawn on a larger scale than Fig. I. Fig. III is an elevation showing a portion of the blank's rim having teeth cut therein.

Referring to the drawings, *a* designates the hub, *b* the rim, and *c* the radial arms, of a cast-iron gear-blank. This blank is converted into a gear-wheel by cutting the teeth *b'* in the rim of the blank. The rim of the blank has metal plates *d* embedded therein and arranged at suitable intervals circumferentially of the blank. The plates *d* are preferably of steel or wrought iron. Each plate *d* extends, preferably, from side to side of the rim and has its side edges visible at the sides of the rim. Each plate *d* extends radially of the rim from within the outer portion to the central portion of the rim. The number of plates *d* embedded within the rim correspond to the number of teeth that are to be cut or formed in the rim in order to convert the blank into a gear-wheel, and the teeth are formed in the blank by suitably cutting away the outer portion of the blank centrally between the plates *d*, as shown in Fig. III, so that when the blank has been converted into a gear-wheel each tooth of the gear-wheel shall have a plate *d* embedded therein, and the said plate *d* shall extend from side to side of the tooth in one direction and shall extend from within the outer end of the tooth radially inwardly into the annular portion of the rim at the base of the tooth. The plates *d* reinforce the blank and the gear-wheel into which the blank is adapted to be converted and are introduced by placing the plates in position within the mold wherein the remainder of the blank is cast—that is, the plates *d* are placed within the mold in any approved manner, so that the molten iron poured or run into the mold shall flow around the plates and embed the said plates within the rim-forming portion of the blank. The presence of the plates *d* within the mold so as to form a part of the cast-iron blank chills and hardens the iron next adjacent to the said plates, and consequently renders the gear-wheel, into which the blank is adapted to be converted, durable without materially interfering with the formation or cutting of the teeth in the blank. In other words, the chilling action of the plates *d* is distributed over the body of iron next adjacent to the plates, so that the desired hardness is obtained next to the plates, where it is required, but the portions of the blank that are to be cut away for the formation of teeth are not overhardened.

What we claim is—

1. A gear-blank consisting of a cast-metal body having metal plates embedded within and extending widthwise and radially of the rim-forming or outer portion of the blank, and arranged at equal intervals circumferentially of the rim.

2. A gear-blank consisting of a cast-metal body having an annular rim, and metal plates extending from side to side of the rim in one direction and extending from within the outer portion of the rim radially inwardly a suitable distance, which plates are cast in and arranged at equal intervals circumferentially of the rim.

Signed by us at Cleveland, Ohio, this 26th day of January, 1900.

GEORGE H. BOYD.
THOMAS D. WEST.

Witnesses:
C. H. DORER,
A. H. PARRATT.