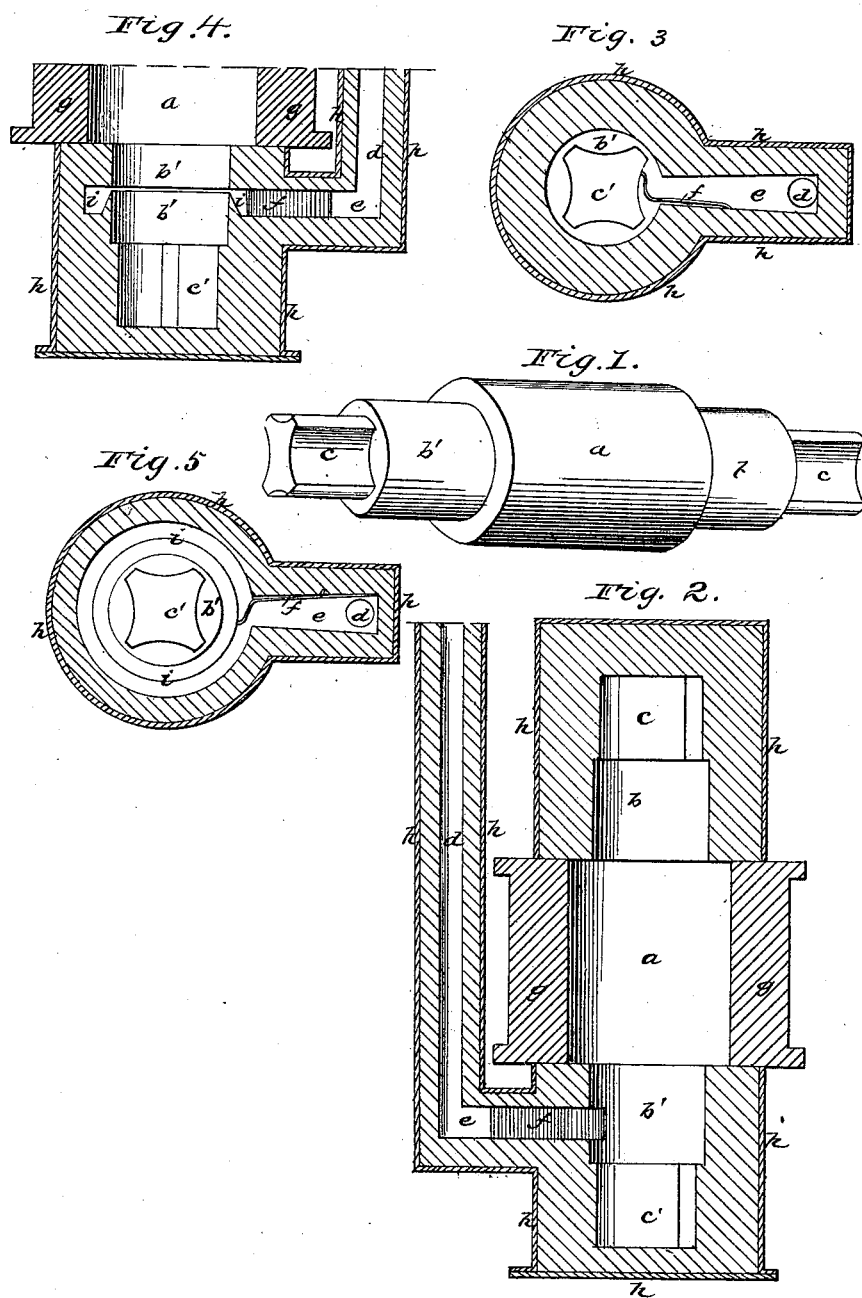


J. C. Parry,
Casting Chilled Rolls.
N^o 6,805. Patented Oct. 16, 1849.



UNITED STATES PATENT OFFICE.

JOHN C. PARRY, OF PITTSBURG, PENNSYLVANIA.

IMPROVED METHOD OF GIVING A ROTARY MOTION TO THE MELTED IRON IN CASTING CHILLED ROLLS.

Specification forming part of Letters Patent No. 6,805, dated October 16, 1849.

To all whom it may concern:

Be it known that I, JOHN C. PARRY, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Mode of Casting Chilled Rollers and other Metallic Rollers, Cylinders, or other Similar Castings; and I hereby declare that the following is an exact description thereof.

My invention consists in an improved method of giving to the melted metal as it rises in the mold and chill in which the roller is cast a rotary or swirling motion, the effect of which motion is to throw any foreign matter, slag, or dross, and the lighter particles of the melted metal to the center, so that the heavy and best portions of the iron are at the outside or surface of the roller or other casting.

Those who are acquainted with the mode of casting chilled rollers are aware that the middle part of the roll (that is, all but the coupling-piece and journal at each end) is cast in a metallic cylinder, called a "chill," and the couplings and journals are molded in sand in flasks clamped to each end of the chill. A runner or hollow pipe to conduct the melted metal communicates with a gate at the bottom of the mold, and the metal rises in the mold as it is poured down the runner; but the natural effect of the metal rising in the chill when no rotary motion is given it is to throw the worst parts to the surface. To communicate this rotary motion two plans have been in use—namely, stirring the metal as it rises in the chill, and making the gates (or pipes which admit the metal into the mold) to enter the mold either slanting into the bottom or horizontally in the direction of a tangent to the cylinder. For the latter mode a patent was granted to James Harley; but the former mode is dangerous and uncertain, and the latter is liable to the objections that if the gates are small enough to give the requisite swirl they are apt to choke with slag, and that the metal is apt to chill before it gets in the mold, and the force of the metal is weakened, and if the gates are too large the swirl is injured.

In the annexed drawings, which I desire to form a part of this specification, Figure 1 represents a chilled roller, *a* being the main part of the roll, *b b'* the journals, and *c c'* the couplings.

Fig. 2 represents a vertical section through the center of the mold and chill in which the

chilled roller is cast, forming an intaglio impression of the roller, *a* being the main part of the roll, *b b'* the journals, and *c c'* the couplings. *d* is the runner or conductor, *e* the gate, *f* the guide-piece, *g* the chill, the whole of the mold, excepting the chill *g*, being surrounded with flasks (marked *h h*) and in the usual manner.

Fig. 3 is a horizontal section of the mold through the gate and lower journal, representing more plainly the shape and position of the guide-piece *f*.

Fig. 4 is a vertical section of the lower part of the mold when the roller is cast with a collar, as described in the specification. *i* is the mold for the collar, showing the guide *f*.

Fig. 5 is a horizontal section of the mold shown in Fig. 4 through the guide and collar, similar parts in the several figures being represented by the same letters.

In my method the chill and mold and runner or conductor are made as usual, and the runner (marked *d*) connects with a gate (marked *e*) which enters the mold at right angles to the axis of the roll below the main part of the roll in the lower journal, *b'*. At the mouth of this gate is fixed a plate of iron, (marked *f*), which I call a "guide," of the width of the mouth of the gate, which is bent so as to cover the mouth inside of the mold, not closing it, however, but leaving a sufficient opening or channel for the metal to pass in. The metal, receiving an impulse as it passes through the gate in a direct line toward the center or axis of the roll, strikes forcibly against the guide, which meets it inside the mold, (see Fig. 3,) and causes it to pass off with violence to one side, round the circumference of the mold, thus communicating a complete and forcible swirl to the metal. When the roll is cast, the guide *f*, being in the mold, is firmly cast into the journal of the roll, if it has not been burned away by the heat of the melted metal, and the projecting portion by which the guide was attached to the gate is cut off when the journal *b'* is dressed and turned.

A slight modification of my method thus described may be found better to answer the end desired, as it obviates the necessity of leaving the guide-piece in the casting. This is effected by giving the melted metal a rotary or swirling motion before it enters the chill, as follows:

Instead of the gate *f* entering immediately into the mold, it enters at right angles to the axis of the roller into a circular collar (see *i*, Figs. 4 and 5) molded into the sand, which collar passes all round the journal *b'* of the roller. The collar is molded with a pattern, as if it were designed to be a part of the casting. The communication between this collar and the main mold is not by pipes, but by a narrow opening all round at the upper edge of the collar where it unites with the mold. (See Figs. 4 and 5.) The guide is fixed at the mouth of the gate *e* where it enters into the collar *i*, and the metal receiving a violent swirling motion in the collar enters through the narrow opening at all points of the circumference of the mold without losing the swirl. The connection between the collar and the journal of the roll is so fine that it is knocked off with ease, (as if it were a gate,) and the journal *b'* is dressed as usual.

The advantages of my invention and improvement are that the swirling motion neces-

sary to be given to the metal to make a good casting is fully accomplished, while the gates are of sufficient size to prevent the metal getting chilled or the passage choked up, and the use of the collar, by admitting the iron into the mold simultaneously at all parts of the circumference, makes the casting more even and better.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The application of a guide to the mouth of a gate entering the mold horizontally in direction at right angles to the axis of the cylinder, for the purpose of producing the swirling motion of the iron.

2. In connection with the guide, the use of the collar connecting at all parts of its circumference with the mold, so as to admit the iron in a steady stream at all parts at the same time.

JOHN C. PARRY.

Witnesses:

JOHN H. PAGE,
WM. BAKEWELL.