J. C. Parry,

Casting Chilled Rolls.

No. 7,125. Patented Feb. 26, 1850.

Fig. 2.

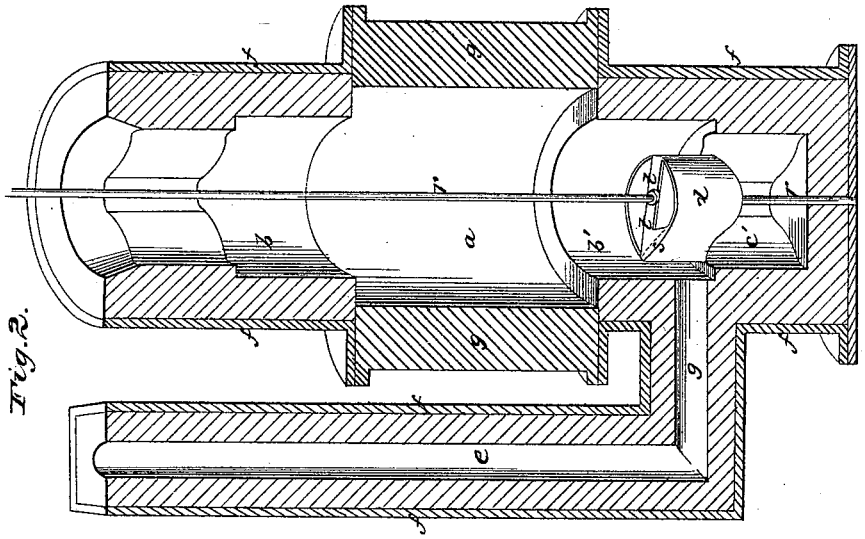


Fig. 1.

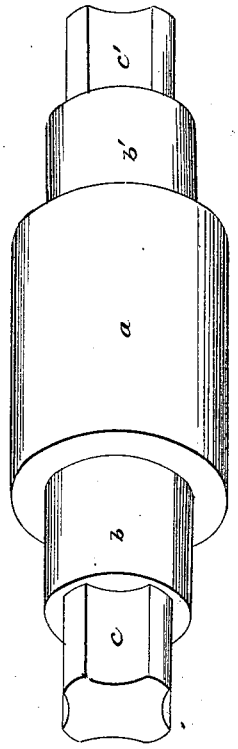
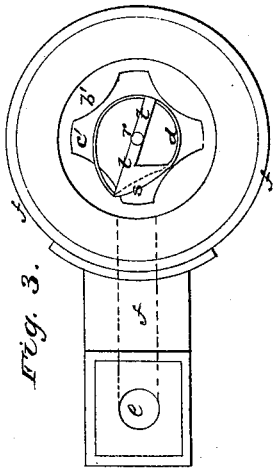


Fig. 3.



UNITED STATES PATENT OFFICE.

JOHN C. PARRY, OF PITTSBURG, PENNSYLVANIA.

METHOD OF GIVING A ROTARY MOTION TO METAL IN CASTING CHILLED ROLLS.

Specification forming part of Letters Patent No. 7,125, dated February 26, 1850.

To all whom it may concern:

Be it known that I, JOHN C. PARRY, of Pittsburg, Pennsylvania, have invented a new and useful mode of giving a circular motion to the metal in casting chilled rollers and other metallic rollers and castings; and I do hereby declare that the following is a full and exact description thereof.

My invention consists in the insertion into the mold in which a roller is cast of a small cylinder of iron or other metal of a peculiar shape, hereinafter described, which is attached to a rod and placed in such a position inside of the mold and pouting the mouth of the gate through which the melted metal enters the mold that the melted metal, after leaving the gate, and when it has entered the mold, is diverted from the straight direction with which it entered, and being unable, by the position of the small cylinder, with a wing attached to it, (which I shall call a "wing-dam,") from running otherwise in the mold than in a circular direction around its circumference, it receives a strong circular motion, which continues until the process of casting is finished.

In the annexed drawings, which are desired to form a part of this specification, Figure 1 represents a perspective view of a chilled roller, *a* being the main part or body of the roll; *b*, the upper, and *b'* the lower, journal; *c*, the upper, and *c'* the lower, coupling. The body of the roll *a* is cast in a metallic cylinder or chill, and the journals and couplings at either end of the body are cast in molds of sand made in flasks, which are clamped to the chill.

Fig. 2 represents a perspective view of a perpendicular section through the center of the mold and chill. *g* is the chill in which the body of the roll *a* is cast. *f f* are the flasks containing the sand mold of the journals *b b'* and couplings *c c'*. *e* is the pipe or runner through which the metal is poured. *g* is the gate through which the metal enters the mold, and which is placed horizontally at right angles to the axis of the cylinder, no inclination in that direction being necessary in my mode of casting. *r* is a rod which holds the dam, which is secured to it by cross-strips *t t* passing from the rod to the circumference of the dam. *d* is the dam, which is a strip of sheet-iron or other metal curved so as to form a cylinder of the shape shown in the drawings, or more perfectly shown in section in Fig. 3. The curve resembles a snail-curve. This dam is at such a height on the rod *r* that when let down into the mold it is opposite to the mouth of the gate *g*, which enters the mold in the lower journal, *b'*, and is of such a diameter as to allow the metal to pass round between the outer circumference of the dam and the inner circumference of the mold. The dam and rod are firmly secured (so as not to turn on their axis) in any convenient manner. The point of the wing of the dam (where the two ends of the strip of iron unite to form the cylinder) is placed to one side of the opening of the gate, and that point being farther from the center of the mold than that part which is immediately opposite the mouth of the gate, as will be seen by observing Fig. 3, the metal, on entering the mold and after leaving the gate, passes round in the direction in which there is most room, and as the space between the dam and the circumference of the mold gradually contracts, owing to the shape of the dam, the metal is thus forced upward, leaving space for the particles of metal following afterward with a circular motion. The lip *s* of the dam is a slight covering extending over the upper edge of the cylinder *d* from the point of the wing-dam along about one-fourth of its circumference, and is designed in some degree to prevent the metal from rising immediately upward without passing round between the dam and the circumference.

Fig. 3 represents a plane view of a horizontal section through the lower journal, showing the shape and position of the dam *d* with respect to the gate *g* and journal *b'*.

The similar parts in the several figures are designated by the same letters.

Having thus described the several parts of my invention, I will proceed to explain its use and effect. In casting chilled rolls it is all important to have an even and good surface of the best metal at the circumference of the roll, and, as the ordinary mode of casting (which is precisely the same as the method hereinbefore described if the dam *d* and rod *r* were not used) has the effect to throw the lighter portions of the metal and the dross and slag to the circumference, when the reverse ought to be the case, it has for many years

been customary to produce a circular motion of the melted iron in the mold during the process of casting. This was originally effected by stirring the melted metal, by hand with a rod or stick, as it is rising in the mold, which plan was objectionable, not only on account of its danger, but because it did not produce the effect with sufficient uniformity or certainty. My invention produces the effect without any change in the shape or kind of mold originally used, the only additional thing requisite being the rod *r* and dam *d* hereinbefore described, which are inserted in the mold from the top, the lower end of the rod being sunk in the sand at the bottom of the mold, and the upper end projecting out of the mold at the top may be steadied and stayed in any convenient manner. The melted metal being poured down the runner *e*, passes through the gate *g*, and after entering the mold runs round its circumference, between the dam and the inner surface of the mold, with a circular motion, which it is the object of my invention to attain.

When the roller is cast, and before the metal chills, the rod *r*, with the dam *d* attached to it, is drawn up out of the casting at the top, and, while it leaves the casting perfect, the rod and dam may be repeatedly used again in making other castings; or, if it is preferred, it may be left in the casting, and becoming part of it will not impair it in any way.

Having thus described my invention, while I disclaim any exclusive right to the use of the circular motion in casting chilled rolls, inasmuch as that has been for many years known and used, what I do claim as my invention, and desire to secure by Letters Patent, is—

The use of the dam *d*, attached to the rod *r*, placed inside the mold in chilled rollers and similar casings, as hereinbefore described, for the purpose of producing a circular motion in the melted metal.

JOHN C. PARRY.

In presence of—
R. A. BAKEWELL,
WM. BAKEWELL.