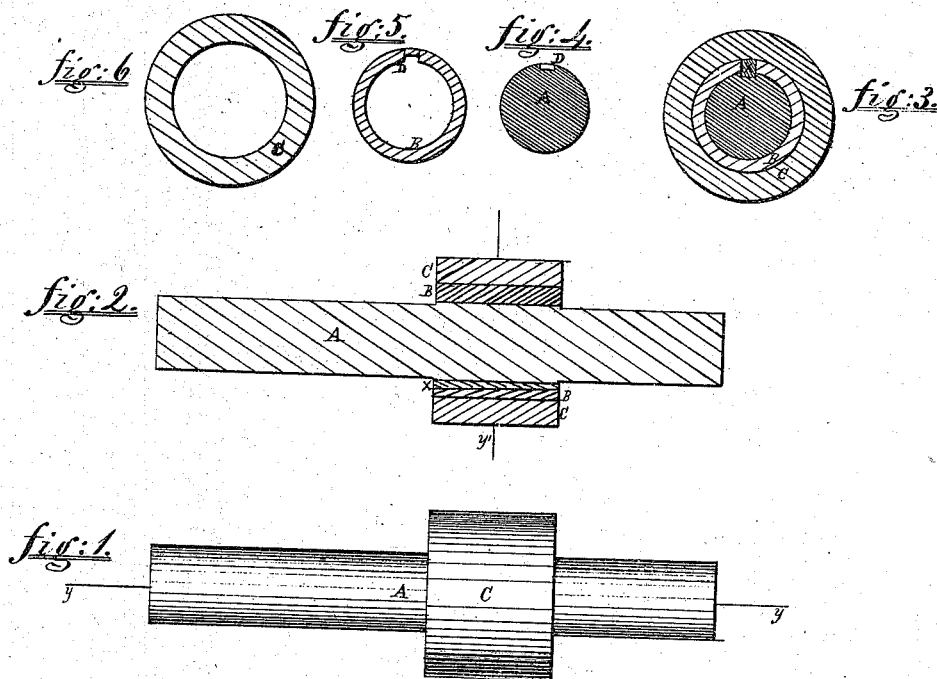


E. S. Blake,

Ore Mill.

No. 107,358.

Patented Oct. 4, 1870.



Witnesses.

A. C. Johnston
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United States Patent Office.

EDWARD S. BLAKE, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 107,858, dated October 4, 1870.

IMPROVEMENT IN ROLLS FOR CRUSHING AND PULVERIZING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EDWARD S. BLAKE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rolls for Crushing and Pulverizing-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in the method hereinafter described for fitting and securing a detached surface on the body or axis of the rolls of crushing or pulverizing-machines.

To enable others skilled in the art to make and use my invention, I will proceed to describe more fully its construction.

In the accompanying drawing, which forms part of my specification—

Figure 1 is a side view of a roll of a crushing and pulverizing-machine, said roll being provided with a detachable surface.

Figure 2 is a longitudinal section of the same when cut through at line *y* of fig. 1.

Figure 3 is a transverse section of the same when cut through at line *y'* of fig. 2.

Figure 4 is a transverse section of the axis or body of the roll at line *y'*.

Figure 5 is a transverse section of the filling used for securing the detachable surface to the axis or body of the roll at line *y'*.

Figure 6 is a transverse section of the detached surface of the roll at line *y'*.

In the accompanying drawing—

A represents the axis or body of the roll.

B represents the filling, which is placed between the inner surface of the detached surface C and the axis or body A of the roll.

D represents a "key-seat," a part of which is made in the axis or body A of the roll, and the other part being in the filling B.

The method of constructing, arranging, and securing the several parts together are as follows:

The axis or body A of the rolls is placed in a turning-lathe, and turned to the desired size. It is afterward provided with the key-seat D; or the axis or body A may be cast with the key-seat formed by the "coring" process, and the axis or body A thus made may be used without the labor and trouble of manipulating and turning it in a turning-lathe.

The detached surface C may be cast of hard cast-iron or cast-steel, or it may be formed of cast-steel by the forging process, and afterwards tempered to the desired degree of hardness.

The parts A and C being constructed as described, they are then arranged concentric to each other. The key *x* is placed in the key-seat D of the axis or body

A, having the parts A and C arranged concentric to each other in a mold or on a block, prepared for the purpose of holding the parts A and C in juxtaposition.

The space between the inner walls of the detached surface C and the axis or body A is filled with molten metal, or a melted alloy. Experience has demonstrated that zinc will be very suitable for this filling, and will, therefore, recommend its use; but I wish it clearly understood that I do not confine myself to a single metal or alloy for filling the space between the detached surface C and axis or body A.

After the filling B has become sufficiently congealed, the surplus part of the filling (the "pouring gate," or other projecting part or parts,) is cut away. The roll is then ready for use.

It will be readily observed that, by making the axis or body A of the roll of a uniform size, a short mandrel or core could be used for coring out the filling B, and thereby fit it properly on the axis or body A.

The advantage of the hereinbefore described method for fitting and securing a detached surface on the rolls of a crushing and pulverizing-machine consists in the saving of labor, time, and expense in fitting and securing the surface C on the axis or body A, it being almost impossible, by the old method, to make a close and proper fit in the joint between the parts C and A.

Another and very great advantage of fitting the parts A and C together in the manner hereinbefore described, consists in avoiding the liability of the detached surface breaking when a pressure is brought to bear on it in the crushing process, for it is very apparent that an imperfect joint between the parts A and C will tend to weakness on the part of the detached surface C, and that a perfect joint will add to its strength.

A further advantage of my improvement consists in being enabled to fit and adjust the parts A and C together with great ease and facility, and also being enabled to keep on hand a supply of detached surfaces, C, which will perfectly fit the axis or body A, and which may be removed and replaced on it with the greatest ease and facility.

Having thus described the nature, construction, and advantages of my improvement,

What I claim as of my invention is—

The combination, in the rolls for crushing and pulverizing-machines, of the body A and surface C, when secured by a filling, B, substantially as herein described, and for the purpose set forth.

EDW. S. BLAKE.

Witnesses:

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JAMES J. JOHNSTON.