T. A. EDISON.

CRUSHING ROLL.

APPLICATION FILED SEPT. 7, 1906.

962,822

Patented June 28, 1910.

Fig. 1

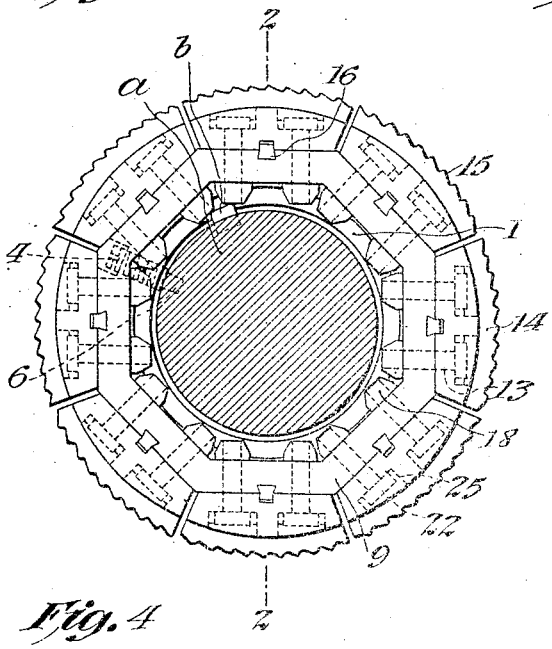


Fig. 2

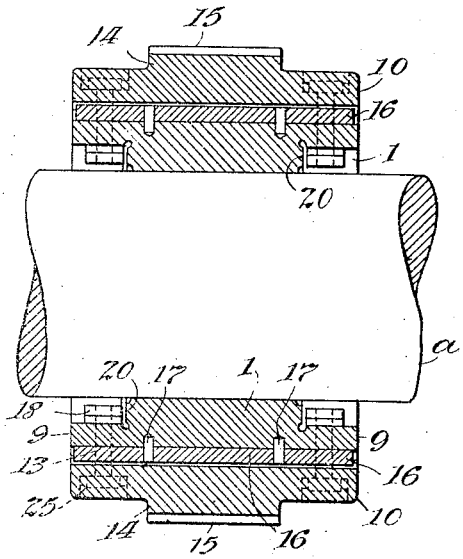


Fig. 4

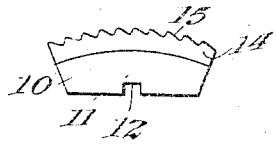


Fig. 3

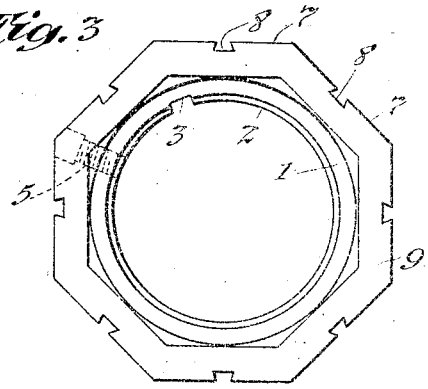
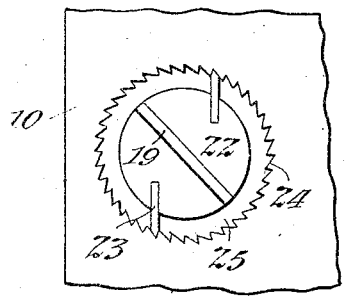


Fig. 5



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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, ORANGE, NEW JERSEY.

CRUSHING-ROLL.

962,822. Specification of Letters Patent. Patented June 28, 1910.

Application filed September 7, 1906. Serial No. 333,607.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Crushing-Rolls, of which the following is a description.

My invention relates to crushing rolls and more particularly to crushing rolls of very massive construction known as giant rolls, and which may be used for crushing or breaking large masses of rock such as cement rock and limestone used in the manufacture of Portland cement. In the construction of a roll of this character it is necessary to provide the body of the roll with roughened wearing surfaces which may be renewed from time to time as they become worn, and means must be provided for securing said wearing blocks to the body of the roll in such a way as to enable them to resist the enormous stresses to which they are subjected during the crushing operations without becoming loosened, and at the same time to permit them to be readily removed from the body of the roll and replaced whenever desired.

My invention has for its object the production of a roll having the above characteristics and more particularly the production of a roll of this character wherein the parts can be readily manufactured, and my invention consists in the features hereinafter described and claimed.

Reference is hereby made to the accompanying drawing of which—

Figure 1 is a side elevation of a crushing roll constructed in accordance with my invention and applied to a driving shaft which is shown in section; Fig. 2 is a section on line 2—2 of Fig. 1; Fig. 3 is a side elevation of the body of the crushing roll; Fig. 4 is a similar view of one of the removable segments or wearing blocks which is adapted to be applied to the exterior of the said body; Fig. 5 is a detail view showing the means for locking the head of one of the holding bolts against rotation.

In all of the views corresponding parts are designated by the same reference characters.

The body of my improved crushing roll is a massive casting 1 of the form shown, having a circular bore 2 adapted to fit upon a driving shaft *a* and held against rotation by a key *b* which occupies the keyway 3. Longitudinal movement of the crushing roll with respect to the shaft *a* is prevented by a heavy screw 4 threaded in the hole 5 and having an extension 6 which engages a corresponding recess in the shaft *a*. The exterior of the body 1 is provided with a series of flat faces 7, preferably forming an octagon as shown. Each of these faces is provided with a keyway 8, which may be in the form of a dovetail.

Each end of the casting 1 is formed with a continuous flange 9 through which the bolts for holding the removable wearing blocks are adapted to pass. The said blocks are in the form of segments 10 each of which is provided with a flat surface 11 having a keyway 12. The ends of each segment are bored and countersunk to receive the holding bolts 13 and the intermediate portion is thickened or elevated as shown at 14, Fig. 2, said elevated portion being formed with corrugations 15.

Each of the segments 10 is firmly clamped to the body 1 by a set of holding bolts 13, four being sufficient for each segment, and a key 16 which is separate from both the segments and body, is used for resisting the shearing stress. Heretofore the shearing stress has been carried by a rib on the segment adapted to engage a groove in the body, but such construction is objectionable on account of the difficulty of machining and lapping the under surface of the segment, as the rib interferes with these operations. By forming the segment with a keyway and using a key on the body or core, this objection is avoided, thereby cheapening the cost of manufacture. This is of great practical importance since it is necessary that there should be an exact fit between the segments and the body of the roll. If there is the slightest looseness of fit the enormous shocks to which the segments are subjected in practice would quickly work them free and cause the holding bolts to be sheared off.

In assembling the device the keys 16 are first placed in the seats 8 and secured against longitudinal movement by pins 17 which pass through said key into sockets drilled in the casting 1. The segments 10 are then applied so that the keyways 12 engage the keys 16 and the flat surfaces 11 rest upon the corresponding surfaces 7. The holding

bolts 13 are then passed through the segments 10 and flanges 9, and square nuts 18 are threaded on the ends of the said bolts.

The head 22 of each bolt (see Fig. 5) is milled with a notch 19 by which the same may be turned so as to be tightened, the nuts 18 being held against rotation by the flat surface 20 of the body 1. The head 22 is also provided with one or more metal strips or keys 23 preferably of steel and set into recesses therein and projecting therefrom in such a manner as to engage the teeth 24 with which the walls of the circular recess 25 of the segment is formed. These keys are inserted in position to engage the teeth 24 after the bolts have been screwed home, being held in place within the bolt head by being peined over, as is common.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. In a crushing roll, the combination of a body provided at each end with overhanging flanges, and having an exterior longitudinal keyway provided with one or more sockets or depressions, a segment having a keyway adapted to register with said first keyway, means for clamping said segment to said body by clamping means passing through said flanges, a key inserted in said keyway, and pins engaging said sockets to prevent longitudinal movement of said key, substantially as set forth.

2. In a crushing roll, the combination of a body having a series of external flat surfaces and provided at each end with overhanging flanges, each of said flat surfaces being provided with a keyway, a series of segments, each of which has a flat surface provided with a key-way, means for securing said segments to said body and a key occupying the keyways of said body and segments, and pins for securing said key to the said body, substantially as set forth.

This specification signed and witnessed this 4th day of Sept. 1906.

THOMAS A. EDISON.

Witnesses:

FRANK L. DYER,

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