June 18, 1929. G. E. KRIDER 1,718,050

ROLL CRUSHER TEETH

Filed May 2, 1927

Fig. 1.

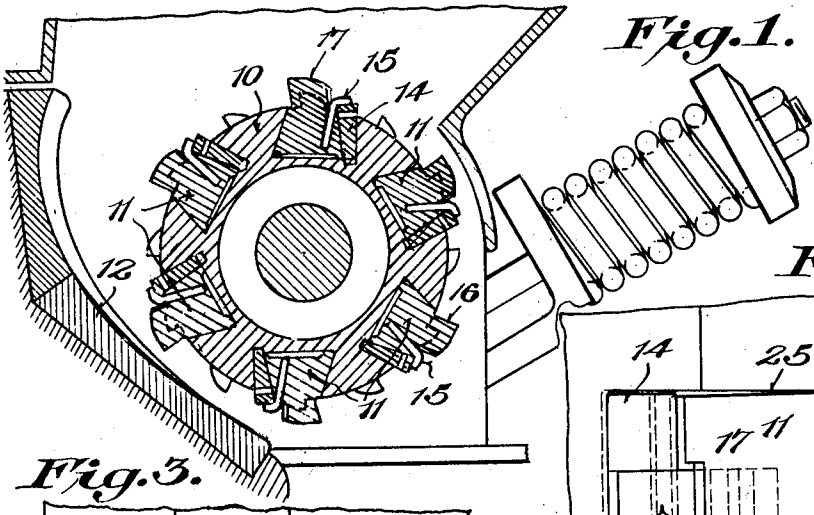


Fig. 5.

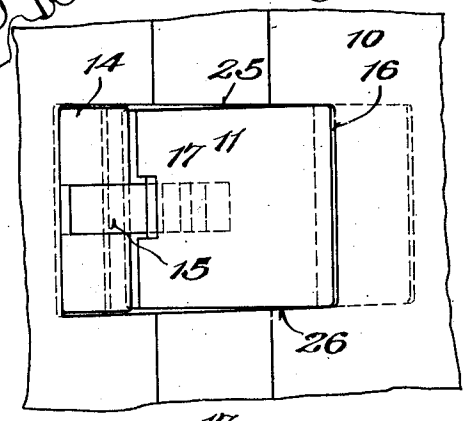


Fig. 3.

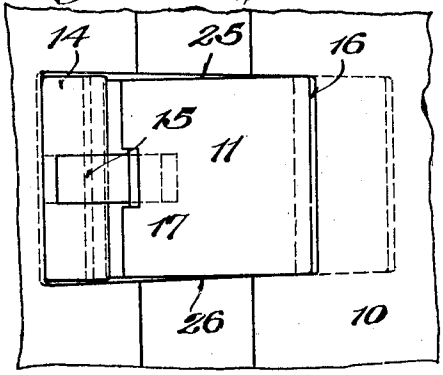


Fig. 4.

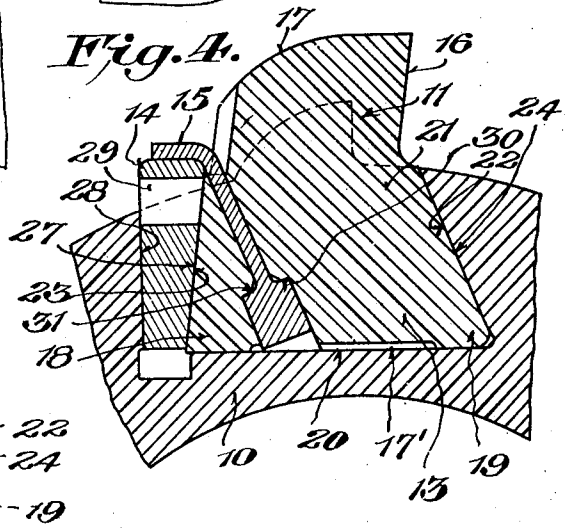
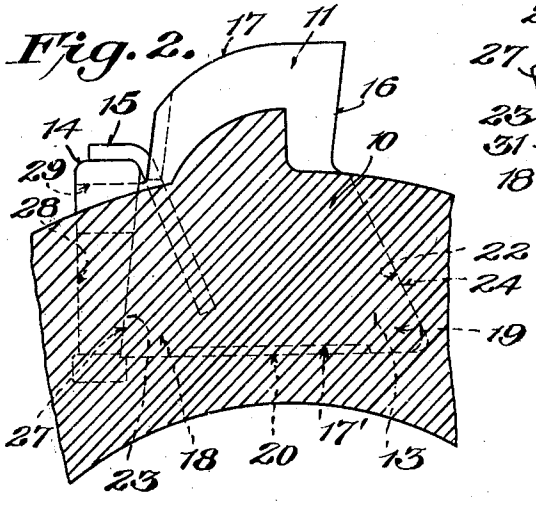


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ROLL-CRUSHER TEETH.

Application filed May 2, 1927. Serial No. 188,209.

This invention relates to improvements in the construction of single roll crushers, and has for its primary object an improvement in the construction, means for attaching and removing the knobs or teeth which are adapted to be fitted to the roll of the crusher.

Another object of this invention is to provide an improved receptacle cavity in the roll of the crusher, adapted to hold the knobs or teeth in operative relation with reference to the anvil of the crusher, such that pieces of stone, ore or similar substances can be readily crushed or reduced in size, gradually until the same passes down between the roll and the anvil where the crushing action is completed.

A further object of this invention is to provide means for holding the teeth or knobs in place on the revolving roll of the crusher, such that the teeth are rigid in the roll, but having facilities for being readily removed.

A still further object of the present invention is to provide an efficient tooth locking means, whereby the teeth or knobs can be removed from the roll and replaced without injury to the roll of the crusher, together with means for replacing the locking elements should they become damaged prior to the destruction of the teeth.

With these and several other objects in view which will be more readily apparent as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts, as will be hereinafter fully pointed out, illustrated, and claimed.

It will be quite readily understood by those skilled in the art to which this invention belongs that the same is susceptible to variety of changes in design and construction, without departing from the spirit or scope of the invention, but a preferred and practical embodiment of the invention is shown in the accompanying drawings in which:—

Fig. 1 is a cross sectional view of a crusher roll showing the same fitted with a plurality of teeth illustrative of the present invention.

Fig. 2 shows a cross section of the roll illustrating an integral tooth and the manner of applying the removable tooth as well as illustrating the means for locking the same in position in the roll.

Fig. 3 is a plan view of the tooth shown in Fig. 2 and illustrates further the manner of locking the crusher roll teeth in the roll.

Fig. 4 shows a cross section of a portion of the crusher roll together with removable means for holding the locking key in place, preventing the tooth from pulling out of the tooth cavity in the roll, while rock or ore is being crushed.

Fig. 5 shows a plan view of the parts shown in Fig. 4 of the drawings.

Similar reference numerals refer to similar parts throughout the several figures of the drawings.

In carrying out this invention, no change is contemplated in the usual anvil construction, method of driving the roll, or the usual resilient means introduced between the crusher roll and the anvil, but the present invention contemplates the design and construction of an improved roll, designated by the numeral 10, and adapted to be provided with a plurality of pockets or tooth receptacles 11, preferably spaced 120° apart, around the circumference of the roll as shown in Fig. 1 of the drawings.

The removable teeth 11, are adapted to project above the surface of the roll, and are so located therein, with reference to the anvil 12, that primary destruction of huge pieces of rock or ore, which is admitted to the crusher, is effected by the constant hammer action of the teeth on the substance to be crushed, as the same rests by gravity on the top of the rotating roll 11. Further reduction is accomplished by the direct nipping and crushing of fragments removed from the mass, as they pass between the anvil and removable teeth positioned in the roll.

Single roll crushers in which the material is crushed directly between the roll and anvil have heretofore been constructed wherein the crusher roll is provided with a plurality of removable teeth, but all these have been found defective in that the teeth could not be held in the roll with sufficient rigidity to withstand the constant hammer action of the same on the substance to be crushed, and the primary object of my invention is to provide a crusher roll having a plurality of cavities in each which is positioned a removable tooth that is not effected by the sledging action which the tooth has upon the substance to be crushed, while each tooth is so positioned on the roll that the same can be totally worn out or worn even with the surface of the roll before it is removed from its cavity in the roll, thus greatly increasing the life and

usefulness of the roll, as well as eliminating as far as possible repairs to rolls.

The tooth 11 is provided with a base portion 13 which is adapted to be interlocked with the roll 10 through the medium of a locking key 14, and a key keeper 15, as clearly indicated in Fig. 4 of the drawings.

That portion of the tooth, which is adapted to extend above the surface 15 of the roll, is provided with a forwardly inclined cutting edge 16, while the top edge 17 rapidly recedes from the cutting edge, such as to provide proper rake for the tooth as it passes through the throat of the crusher between the roll and anvil.

The base portion 13, is preferably made rectangular in shape, with a recess 17′, heel and toe portions 18 and 19, respectively, which are adapted to engage the bottom surface 20 of the tooth receptacle 21 as shown positioned in the roll 10.

The tooth 11, is provided with front and back diverging base lines 22 and 23, respectively. The inclined surface, defined by the base line 22 is adapted to coact with a corresponding inclined surface 24, which defines one surface cavity 21 in the roll 10. The side walls 25 and 26 of the tooth 11 are preferably made parallel, while the back wall 23 diverges to form a wedge like surface which is engaged by the forward surface 27 of the locking key 14 as shown in Fig. 4 of the drawings. The surface 27 on the key 14 is inclined, while the surface 28 of the key is straight. The straight surface 28 of the key is adapted to fit against a corresponding surface of the tooth receptacle in the roll 10.

The key 14 is likewise made rectangular in shape with one inclined surface, and further provided with an opening 29, through which the toe of a pinch bar can be placed for extracting the key.

The tooth 11 is further provided with a wedge key locking means, designated by the numeral 15. This locking means or key keeper is preferably made of a different grade of steel than that of which the tooth is made, in order to provide means for bending the key keeper down over the end of the wedge, after the same is driven down into place, as clearly shown in Fig. 2 of the drawings.

In order to provide means for removing the key keeper 15, I have provided as shown in Fig. 4, a tooth with a rectangular opening through which the keeper is adapted to pass, the keeper 15 is further provided with a shoulder 30 which coacts with a ledge 31 in the tooth. In the assembly of the tooth and keeper the keeper being straight is placed in the keeper opening, and pushed up into place until the shoulder 30 engages the ledge 31, the tooth is then placed in the receptacle provided for same, the wedge driven into place and the top of the key keeper 15 is bent down over the wedge 14 as shown in Figs. 2 and 4 of the drawings.

By providing single roll crushers with this design of tooth the life of the roll is greatly extended while the utility of the roll is likewise extended due to the added provision of being able to use a variety of tooth forms in a single roll.

Having thus described my invention which I claim and desire to be secured by Letters Patent is—

In a roll crusher, a roll, a plurality of teeth carried by said roll, locking wedges adapted to be inserted between said teeth and roll, and locking keys mounted in and projecting through said teeth and engaging said wedges for locking the same and the teeth in fixed position.

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