July 5, 1932. E. H. KEIPER 1,865,860

RENEWABLE TEETH OR SEGMENTS FOR CRUSHER ROLLS

Filed May 31, 1930

Fig.2.

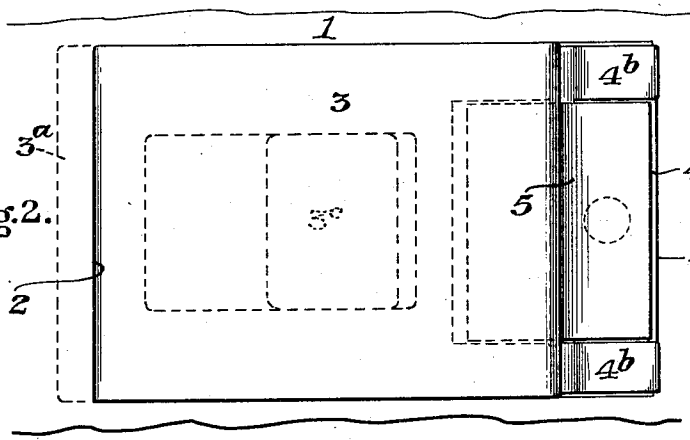


Fig.4.

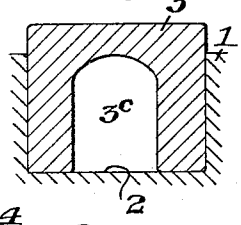


Fig.1.

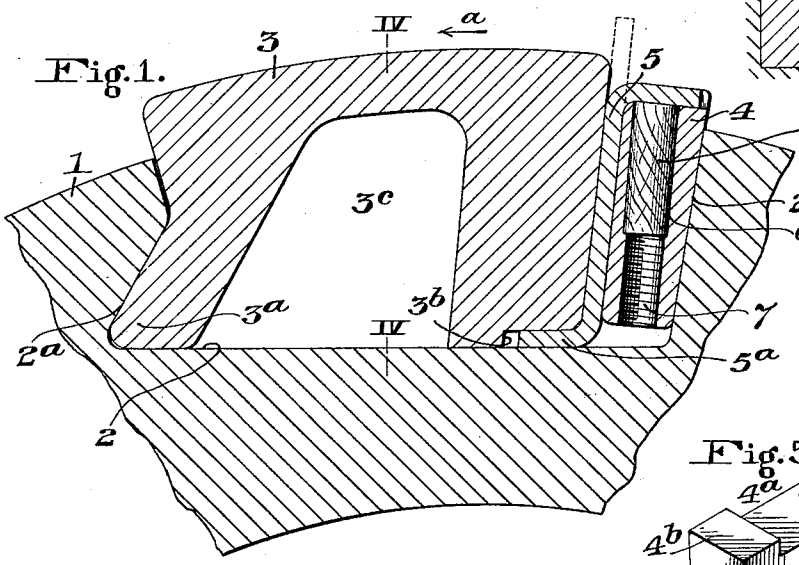


Fig.5.

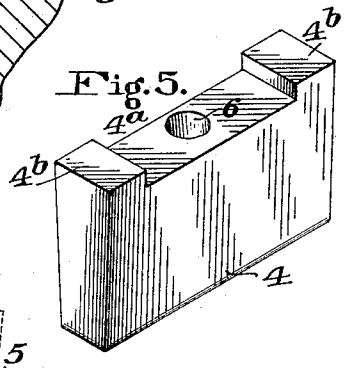
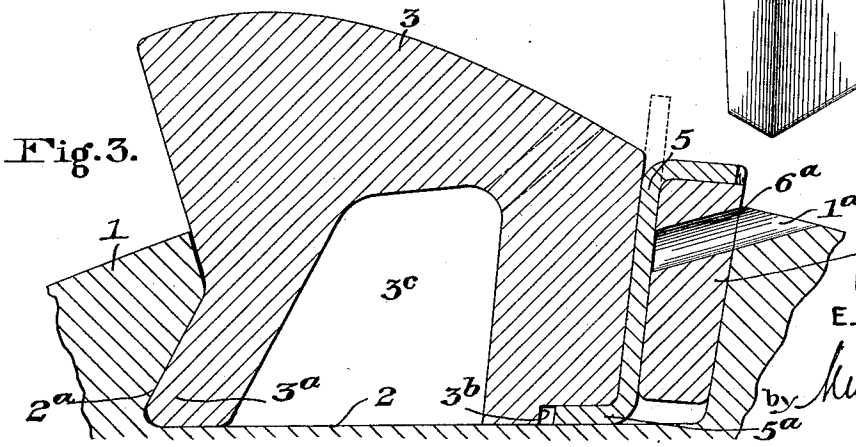


Fig.3.



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UNITED STATES PATENT OFFICE

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RENEWABLE TEETH OR SEGMENTS FOR CRUSHER ROLLS

Application filed May 31, 1930. Serial No. 458,335.

My invention relates to crusher rolls employed in the reduction of large rock masses, coal, and the like, and one object of my invention is to provide an improved form of renewable teeth for such rolls; such teeth occupying preformed recesses in the wall of the crusher roll.

A further object of my invention is to provide efficient means for holding such teeth in place that will permit removal and replacement of the same.

These and other features of my invention are more fully set forth hereinafter; reference being had to the accompanying drawing in which:

Figure 1 is a fragmentary sectional view illustrating one form of renewable tooth and its holding means in position in the roll, within the scope of my invention.

Fig. 2 is a plan view of the tooth shown in Fig. 1.

Fig. 3 is a view similar to Fig. 1 illustrating a modification within the scope of my invention.

Fig. 4 is a sectional view on the line IV—IV, Fig. 1, on a smaller scale, looking in the direction of the arrow *a*, and

Fig. 5 is a perspective view on a reduced scale of the wedge employed with the tooth shown in Fig. 1.

In the drawing, 1 represents a portion of a crusher roll or similar body, having a recess 2, with an undercut wall 2^a. Within the recess 2 is an inserted tooth 3, having a toe 3^a, which substantially fits the undercut wall 2^a. At the opposite end of this tooth whose surface may be radially disposed with respect to the axis of the roll, securing means therefor are provided in the form of a wedge 4, and a key 5; the latter lying between the wedge and the tooth and having a portion 5^a underlying the heel of the tooth which is recessed at 3^b for the purpose of receiving the same.

After the tooth has been inserted, together with the key, and the toe of the tooth has been jammed against the undercut wall 2^a of the recess, the wedge 4 is driven home between said key and the wall 2^b of the recess 2, and then the upper portion of the key, indicated by dotted lines Fig. 1, is bent over on top of the wedge, as clearly indicated by full lines in said figure. The key is of such metal and construction as to retain its bent over condition during use.

The wedge may be of the shape illustrated in Fig. 5, having a recessed top portion as indicated at 4^a with end projections 4^b; the bent over portion of the key lying in the recess between said projections 4^b. Preferably the wedge is driven into its seat until its outer end is nearly flush with the surface of the crusher roll or other body and as the turned over portion of the key fits into the recessed end of said wedge it will also lie in the same plane as the top of the wedge.

When a tooth becomes worn to such an extent as to make replacement desirable, the wedge is to be removed. To facilitate removal I may provide the wedge with a through opening 6, threaded near its lower end at 7 for the reception of a screw member forming part of suitable removing means. As this through opening is liable to become clogged with stone or coal dust, rust and the like, when the roll is in use, the removal of which would be difficult if not impossible, I may close this hole with an easily destroyed plug of wood or suitable non-metallic material, as indicated at 8.

The tooth 3 may be cored out as indicated at 3^c to lighten the discard. As these teeth may rust fast to the roll in use, the coring permits the application of a torch to burn the same away when unduly worn.

The form of tooth illustrated in Fig. 3 is slightly larger than that illustrated in Figs. 1 and 2, but otherwise of the same construction. I have illustrated with this tooth a slightly different form of wedge in that it is provided with a transverse opening 6^a for the reception of a prying tool, when it is desired to remove the same. This hole may be at an angle as indicated and the roll may be recessed or grooved opposite the same, as indicated at 1^a, for the ready insertion of a prying tool. This hole may be filled with removable material after it has been driven home. This tooth is also shown as cored and to assist the action of the cutting flame it may be provided with a small bore 3^d open-

ing from the rear of its outer face. The tooth shown in Figs. 1 and 2 may be provided with a similar bore.

It will be further understood that my improved locking means for teeth and/or similar abutments or impact members employed with crusher rolls may be applied to other elements of crushing machinery wherein a renewable part or member performing similar or substantially similar work may be held in place by similar locking means.

It will be understood, of course, that the crusher roll may be provided with a complete set of inserted teeth extending circumferentially as well as longitudinally of the same and that such teeth may be in alignment or staggered as may be desired.

While I have illustrated single teeth set in recesses formed in the wall of a crusher roll or similar body, these teeth may be of any width desired and I may employ similar securing means for holding segments in place and/or blades extending the full length of a roll or other form of rotating carrier.

I claim:

1. In crushing machinery, the combination of a supporting member having a recess with an undercut wall, an insertable impact member disposed in said recess and having a portion underlying said undercut wall, a wedge applied to said recess at the heel of the insertable member for holding the latter in said recess, and a key disposed between the insertable member and wedge and having its lower end retained by the insertable member and its opposite end bent over the top of the wedge to hold the latter in place; said insertable impact member being recessed for the reception of the inner end of the key.

2. In crushing machinery, the combination of a supporting member having a recess with an undercut wall, an insertable impact member having a portion underlying said undercut wall and having a portion of its rear wall undercut, a wedge applied to said recess at the heel of said insertable impact member for holding the latter in said recess, and a key retained by the insertable impact member and having one end bent over the top of the wedge to hold the latter in place; said key being disposed between the insertable impact member and the wedge and having a portion lying within the undercut portion of said insertable impact member.

3. A crusher roll having a recess with an undercut wall, a tooth having a projecting toe portion fitting beneath said undercut wall, a wedge applied to said recess at the heel of the tooth for holding the latter in place; the rear wall of said tooth being undercut at its base portion, and a key having one end retained in the undercut portion of said tooth and having its opposite end bent over the top of the wedge to hold the latter in place; said key being disposed between the tooth and wedge.

4. A crusher roll having a recess with an undercut wall, a hollow tooth having a projecting toe fitting said undercut wall, a wedge applied to said recess at the heel of the tooth for holding the latter in said recess, a key disposed between the tooth and wedge and having its lower end retained in an undercut portion of the tooth and its opposite end bent over the top of the wedge to hold the latter in place, and means carried by said wedge for laterally retaining the bent over edge of said key.

5. In a structure such as set forth in claim 3, providing the upper end of the wedge with a recess flanked by projections for the reception of the bent over portion of the key.

6. In a structure of the character set forth in claim 3, providing the wedge with an opening for the insertion of a removing tool, and a plug of readily destructive non-metallic material substantially filling said opening.

7. In a structure of the character set forth in claim 3, providing the wedge with an opening for the insertion of removing means; said opening having a threaded portion for engagement with a threaded portion of such removing means.

In witness whereof I have signed this specification.

EDWIN H. KEIPER.