

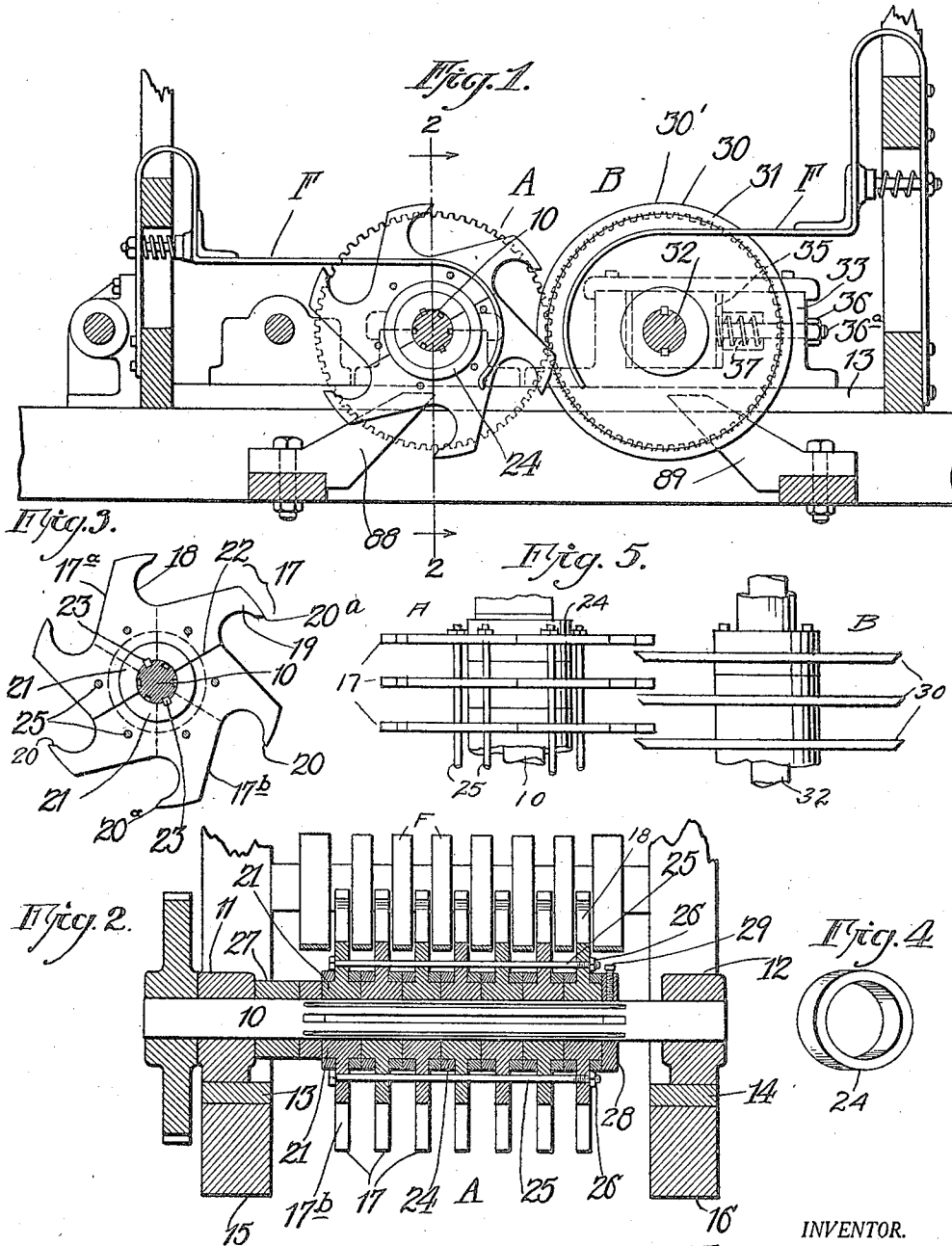
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COAL BREAKER

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COAL BREAKER.

Original application filed August 11, 1921, Serial No. 491,389. Divided and this application filed March 14, 1922. Serial No. 543,715.

To all whom it may concern:

Be it known that I, FRANK PARDEE, a citizen of the United States, and a resident of Hazleton, Pennsylvania, have invented certain new and useful Improvements in Coal Breakers, of which the following is a specification.

This application is a division of my pending application Serial Number 491,389 filed August 11, 1921, and relates to coal breakers and particularly to the construction of the cutting rolls thereof.

One embodiment of the invention is illustrated in the accompanying drawings in which—

Fig. 1 is a section through a coal breaker showing one of the cutting rolls constructed according to the present invention;

Fig. 2 is a section on the line 2—2 of Fig. 1 illustrating in detail one cutter roll assembly;

Fig. 3 is a detail of a sectional cutter roll detached from the coal breaker;

Fig. 4 is a detail of a locking collar.

Fig. 5 is a fragmentary plan showing the cooperating rolls.

Referring to the drawings the coal breaker includes a pair of opposed cutting rolls A and B arranged to break or cut the lumps of coal fed thereto by any suitable feeding device. The feeding device employed will preferably be a rotary spiral drum such as disclosed in the application above referred to. This is not shown nor will it be further described, as the particular feeding arrangement forms no part of the present invention.

The cutter roll A is carried on a shaft 10 mounted in bearings 11 and 12 secured to bed-plates 13 and 14 which are carried on timbers 15 and 16. The cutter roll is composed of a plurality of discs 17 having cut away portions 18 forming hook-like teeth 19 the ends of which are bevelled at 20 at an angle to a radial line so as to form a comparatively sharp cutting edge 20^a at the outer end, which extends in a direction substantially parallel to the axis of the disc. The discs 17 are preferably made in a plurality of sections so that in the event of one or more of the teeth 19 being broken, a section can readily be removed and replaced by a new one. As illustrated in Fig. 3 the disc comprises two half sections 17^a and 17^b, each

formed with a hub 21, the sections abutting along the line 22. Located perpendicularly to the line 22, keys 23 are secured in the hubs 21, which keys fit in suitable key seats cut in the shaft 10. Locking rings 24 are provided having internal diameters of such size as to permit them to be snugly fitted over the hubs 21 of the discs. The several discs 17 are arranged alongside one another on the shaft 10 as shown in Fig. 2. The ends of the several hubs 21 bear against each other and the several discs are secured against relative longitudinal displacement by means of long tie-bolts 25 having nuts 26 on the ends thereof. The several discs 17 are split along different radial lines as indicated by the dotted lines in Fig. 3. A spacing collar 27 is secured at one end to the shaft 10 adjacent the end disc and at the other end of the shaft a collar 28 is adjustably secured by means of a set screw 29. As thus constructed it will be clear that in order to remove a broken section of any given disc it is merely necessary to remove the tie-bolts 25 and loosen the set screw 29 and slip the collar 28 laterally on the shaft and slide the discs 17 along the shaft a sufficient distance to permit the rings 24 to be slipped off of the hubs 21 of the broken disc. A new section can be inserted and the parts assembled in reverse order to that above stated as will be understood.

From the foregoing it is clear that in order to replace the disc it is not necessary to remove the shaft 10 from its bearings 11 and 12. Yielding fingers F, and stripper fingers 88 and 89, to be hereinafter described, are located between the discs in some instances and at the time of replacing broken discs, it is of course necessary to remove any of these fingers F which interfere with the lateral movement of the discs. These parts, however, are comparatively light and are easily disconnected, and it is a much simpler operation to effect their removal than it would be to remove an entire heavy cutting roll having a great number of cutter discs mounted thereon.

Located opposite the cutter roll A is a co-operating roll B which comprises a plurality of circular discs 30 bevelled at 31 to form a comparatively sharp circular cutting edge 30'. These discs may also be formed in sections the same as the toothed

discs illustrated in Fig. 3 and held together by similar locking rings 24 as above described.

In the drawings, however, they are shown as being formed of one piece, and in practice will usually be built in that way as the circular discs are not as liable to be broken as are the toothed discs above described. The discs 30 are arranged alongside of one another on a shaft 32 carried in bearings 33 mounted on the above mentioned base plates 13 and 14. The bearings 33 each have a journal 35 slidably mounted therein to permit adjustment of the position of the shaft 32 with relation to the shaft 10, a suitable adjusting nut 36 being provided on a bolt 36^a which is secured to the journal in each bearing. A heavy spring 37 mounted on each bolt 36^a is adapted to yieldingly hold the shaft in a predetermined forward position.

From the above description it will be seen that the cutter roll A is made up of a plurality of detachable sections which can be readily dismantled in the event of breakage merely by removing the bolts 25 and slipping the discs 17 longitudinally on the shaft 10. This will permit the locking ring 24 on any broken disc to be slipped off of the hub portions 21 to free any broken section or sections of said discs. A new section can similarly be inserted and the parts reassembled. This arrangement permits repairs to be made in breaker rolls in a much quicker and simpler manner than is possible with breaker rolls formerly used. While I have shown each disc 17 composed of only two separable sections it is to be understood if desired each disc may be made up of any number of sections depending on the diameter of the roll and also to

some extent upon the class of material to be handled by the breaker.

While I have described with great particularity the details of the embodiment of the invention herein illustrated, it is not to be construed that I am limited thereto as changes in arrangement and substitution of equivalents may be made without departing from the invention as defined in the appended claims.

What I claim is:

1. In an apparatus of the class described a cutting roll comprising a number of discs arranged alongside each other on a shaft, each disc being formed of separable sections each having an integral hub formed thereon and rings arranged to fit over said hubs to hold the sections together, the hubs of the adjacent discs abutting one another to space the discs.

2. In an apparatus of the class described a cutting roll comprising a number of discs arranged alongside each other on a shaft, each disc being formed in separable sections each section having a hub formed thereon and rings arranged to fit over said hubs to hold the sections together, the hubs of the adjacent discs abutting one another to space the discs, a supporting shaft to which the hubs are keyed and tie rods passing through the several discs at points beyond said hubs and rings to clamp them to each other, the discs being so arranged on the shaft that by disconnecting the tie rods and moving the discs laterally, said rings can be slipped off of the hubs to permit sections of any of the discs to be removed and replaced by a new section in the event of breakage.

In witness whereof, I have hereunto signed my name.

FRANK PARDEE.