R. C. NEWHOUSE.

CRUSHING ROLL.

APPLICATION FILED JULY 18, 1914.

1,205,474. Patented Nov. 21, 1916.

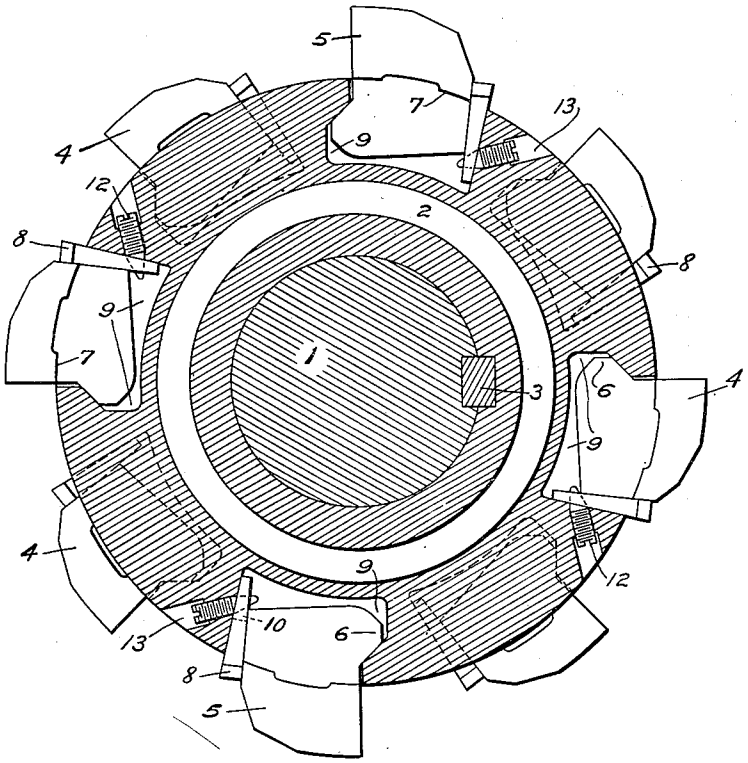


Fig. 1

Fig. 3

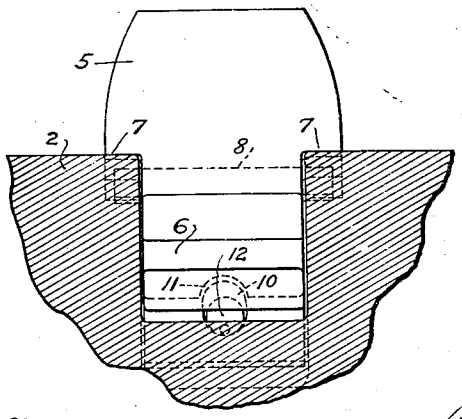
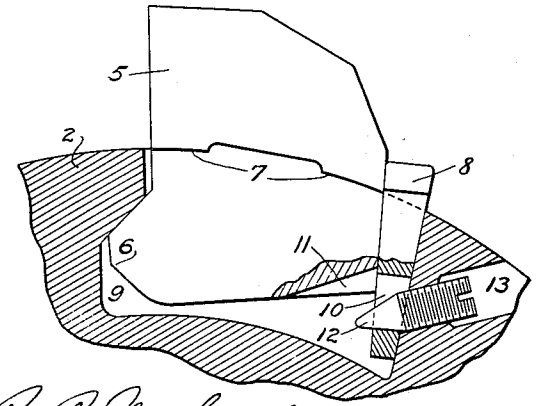


Fig. 2



Witnesses

W. H. Lieber

Rob. E. Stoll.

R. C. Newhouse Inventor

By G. P. Goepel

Attorney

UNITED STATES PATENT OFFICE.

RAY C. NEWHOUSE, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS MANUFACTURING COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF DELAWARE.

CRUSHING-ROLL.

1,205,474. Specification of Letters Patent. Patented Nov. 21, 1916.

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To all whom it may concern:

Be it known that I, RAY C. NEWHOUSE, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Crushing-Rolls, of which the following is a specification.

This invention relates to improvements in the construction of crushing rolls of the type in which a plurality of detachable breaker knobs are secured to the shell of a roll which is normally rotated.

An object of the invention is to provide a crushing roll which is simple in construction and efficient in operation.

One of the more specific objects of the invention is to provide a crushing roll having the portions thereof which are subjected to excessive wear, removable, thus permitting ready removal of these portions for inspection and renewal of the parts as they become excessively worn.

In the specific embodiment of the invention disclosed in the drawing, the crushing roll is provided with a plurality of detachable breaker knobs which may be readily removed and renewed as they become worn.

Another object of the invention is to provide a simple and effective means for securing the breaker knobs to the roll.

A clear conception of an embodiment of the invention may be had by referring to the drawing accompanying and forming a part of this specification in which like reference characters designate the same or similar parts in the various views.

Figure 1 is a transverse vertical section through a crushing roll and its shaft, the section being taken through a number of the recesses in which the breaker knobs are mounted. Fig. 2 is an enlarged fragment of a sectional portion of a crushing roll showing a side elevation of one of the breaker knobs. Fig. 3 is an enlarged fragment of a sectional portion of a crushing roll showing a front view of one of the breaker knobs.

In the embodiment of the invention disclosed in the drawing, the body 2 of the roll is formed as a continuous imperforate shell which is mounted upon the main shaft 1 and is secured to the said shaft by means of a key 3. The roll body 2 is provided with a plurality of pockets or recesses 9 which are arranged in circular series having four recesses to a series, the adjacent series of recesses being staggered. The breaker knobs 4, 5, have projections 6 at their leading ends which coact with the forward portions of the recesses 9 along surfaces which are inclined relative to the leading faces of the knobs 4, 5. The majority of knobs 4 secured to the roll are of less height than are the slugger breaker knobs 5, the latter being arranged in two longitudinal series approximately 180 degrees apart. The present invention is not, however, limited to the use of different types or forms of knobs, as disclosed. Each of the knobs 4, 5, has its inner end portion insertible within a recess 9 and is provided with laterally extending side portions 7 which normally coact with the adjacent portion of the roll periphery. A wedge 8 coacts with the trailing end of each of the knobs 4, 5, and with the adjacent wall of the corresponding recess 9. Each wedge 8 is provided preferably at or near its inner end, with a recess or opening 10 into which the point of a wedge operating and locking means or set screw 12 extends. The set screw 12 has screw-thread coaction with the roll body 2, and is accessible for manipulation through a cavity 13 extending into the roll body from the outer periphery thereof. The wedge locking means or set-screw 12 is entirely embedded in the roll shell, thus protecting the same against mutilation by the material being crushed. The adjacent portion of each breaker knob 4, or 5, has a recess 11 to prevent contact of the set screw 12 with the lower portion of the knob. Each wedge 8 is provided with one or more abutments at its projecting end and facing the roll periphery, whereby the wedge may be withdrawn with the aid of a suitable implement upon removal of the set-screw 12. The abutments in the present case are formed as projections, one at each end of the wedge 8.

The breaker knobs 4, 5, are of such formation that their inner end portions are freely insertible within the recesses 9 of the roll body 2 when the wedges 8 are removed. After a knob 4, or 5, has been inserted and pushed forward so that the inclined surface of the projection 6 at its leading end coacts with the adjacent surface of the recess 9,

the wedge 8 may be inserted within the gap adjacent the trailing end of the knob after which the set screw 13 may be inserted and adjusted to properly force the wedge firmly in place. The downward forcing of the wedge 8 causes the knob 4, or 5, to move forward, thus causing the coacting surfaces of the knob and roll at the projection 6, to pull the knob inwardly toward the roll center. This inward pull exerted upon the knob causes the extended portions 7 thereof to move firmly into contact with the adjacent surfaces of the roll body 2.

In order to remove any one of the knobs 4, or 5, it is necessary only to remove the corresponding adjusting and locking set screw 12, after which the corresponding wedge 8 may be readily withdrawn by means of a suitable bar employed as a lever and coacting with the wedge abutments. It should be noted that the set screws 12, in addition to providing easily accessible means for adjusting the wedges 8, form effective locks for preventing displacement of the wedges 8. The means for securing the knobs 5 in place including the wedges 8 and set screws 12, are moreover located adjacent the trailing ends of the knobs in order to secure protection for the adjusting devices. With this arrangement, the knobs guard the adjusting devices during crushing. As the breaker knobs are the portions of the roll which are subjected to greatest wear, it is apparent that with the present invention these knobs may be readily renewed without disturbing other portions of the crusher. While the present disclosure shows a roll with a single hollow cylindrical shell, it will be understood that some features of the invention are also applicable to other types of rolls having sectional or other types of shells.

It should be understood that it is not desired to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

It is claimed and desired to secure by Letters Patent,—

1. In combination, a roll, a breaker knob, one of said elements having a recess therein and the other of said elements having a projection engaging said recess, a wedge for securing said knob to said roll, said wedge having a projecting end provided with an abutment facing said roll, and means for locking said wedge.

2. In combination, a roll having a recess therein, a breaker knob engaging said roll at said recess, a wedge having an end projecting beyond the periphery of said roll, said projecting end being provided with an abutment facing said roll, and means for locking said wedge.

3. In combination, a roll, a breaker knob, a wedge for securing said knob to said roll, said wedge having a projecting end provided with an abutment facing said roll, and wedge locking means coacting with the inner end of said wedge at a point beyond the base of said knob.

4. In combination, a roll, a breaker knob, a wedge for securing said knob to said roll, said wedge having an opening therethrough and having a projecting end provided with an abutment facing said roll, and wedge locking means engaging said wedge at said opening.

5. In combination, a roll, a breaker knob having a recess in its base, a wedge for securing said knob to said roll, said wedge having a projecting end provided with an abutment facing said roll, and wedge locking means embedded in said roll and engaging the inner end of said wedge at a point beyond said recess.

In testimony whereof, the signature of the inventor is affixed hereto in the presence of two witnesses.

RAY C. NEWHOUSE.

Witnesses:
W. H. Lieber,
G. F. De Wein.