R. C. NEWHOUSE.

CRUSHING ROLL.

APPLICATION FILED JULY 18, 1914.

1,203,901. Patented Nov. 7, 1916.

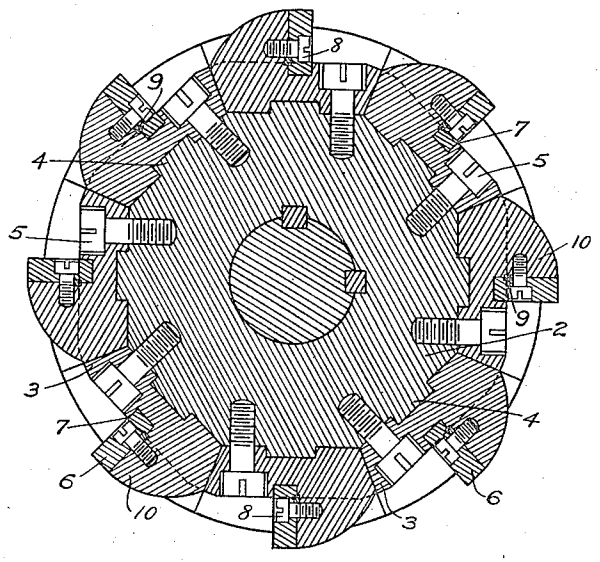


Fig. 2

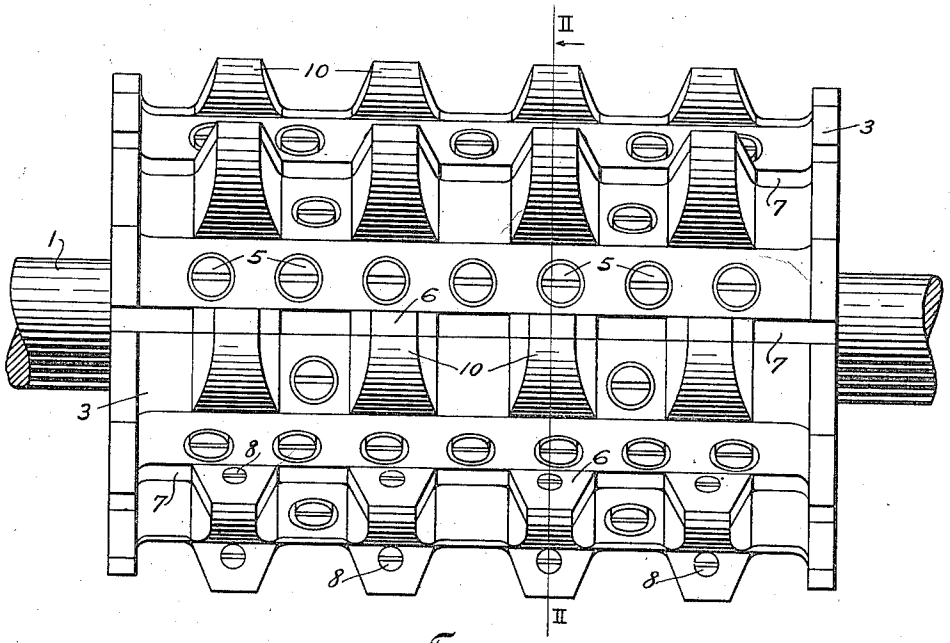


Fig. 1

Witnesses
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UNITED STATES PATENT OFFICE.

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CRUSHING-ROLL.

1,203,901. Specification of Letters Patent. Patented Nov. 7, 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 crusher rolls of the type in which a plurality of breaker knobs or lugs project from the periphery of the normally rotating roll.

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 removable wearing plates for the portions of the crushing roll which are subjected to excessive wear, thus prolonging the life of the main body of the roll to a maximum extent by permitting ready renewal of the worn portions only.

The invention is especially applicable to crushing rolls in which a central roll core is provided with a series of plates each having a plurality of breaker lugs thereon, the plates forming an inclosing protecting shell or lining for the core.

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 several views.

Figure 1 is an elevation of a crushing roll and a fragment of the main shaft thereof. Fig. 2 is a transverse vertical section through the crushing roll and shaft, the section being taken along the line II—II of Fig. 1 looking in the direction of the arrow.

In the embodiment of the invention disclosed in the drawing, the roll core 2 is octagonal in shape and is secured to the main shaft 1 by means of keys. The periphery of the core 2 is provided with a series of longitudinal projections 4, there being one central projection for each of the eight outer flat portions of the core 2. The lug plates 3, which in the present embodiment are eight in number, are formed with longitudinal recesses on their inner sides which coact with the longitudinal projections 4 on the roll core 2, thus providing tongue and groove connections between the plates and the core. The lug plates 3 are secured to the roll core by means of clamping screws 5 which pass through openings in the plates 3 and are screwed into the body of the core 2.

Each of the lug plates 3 is provided with a longitudinally extending series of projections or breaker lugs 10, the leading ends of which are in alinement with each other. A recess 7 is formed in each of the plates 3 adjacent the leading ends of each series of the lugs 10 and extends along the entire length of the plate 3. A wearing plate 6 coacts with and covers the entire leading end of each of the lugs 10 and has a portion extending into the adjacent recess 7. Each wearing plate 6 is secured to the leading end of the adjacent lug 10 by means of a fastening screw 8 which is accessible from the leading end of the lug. Outward displacement of each wearing plate 6 is further prevented by means of a transverse key 9 which is fitted into adjacent recesses in the hub 10 and wearing plate 6, see Fig. 2.

The wearing plates 6 are detachable by removal of the fastening screws 8 and retaining keys 9, thus permitting ready renewal of the plates 6 when they become excessively worn. The lug plates 3 are imperforate at the portions thereof adjacent the wearing plates 6 and recesses 7, thus preventing access of the material being crushed to the roll core in case one of the wearing plates 6 should become displaced during operation of the crusher. As the plates 6 and the lug plates 3 are subjected to the greatest wear, it will be noted that the life of the roll core may be extended to the maximum, by merely renewing the wearing plates 6 or the lug plate 3 as they become excessively worn. By making the plates 3, 6, replaceable, these plates may be made of any suitable material which will best withstand the wear to which the plates are subjected, while the remaining portions of the roll may be made of any other material suitable for its purpose. It will also be noted that if for any reason one or more of the lug plates 3 becomes excessively worn, these individual plates may be renewed without disturbance of the remaining elements of the roll.

By making the lug plates 3 imperforate

except for the penetration thereof by the clamping screws 5, the core 2 is effectively protected against injury by the material being crushed even if one or more of the wearing plates 6 should become dislodged. The formation of the recesses 7 throughout the entire lengths of the plates 3, permits ready formation of these recesses by means of a planer or similar machine, thus permitting reduction of the cost of manufacture of the plates 3 to a minimum. It will also be noted that the wearing plates 6 are located at the portion of the plate 3 which is directly opposite the portion thereof which coacts with the projection 4 on the roll core. This disposition of the wearing plates 6 together with the location of the clamping screws 5 directly in front of the leading ends of the lugs 10, produces a crushing roll of maximum strength to withstand the crushing impact.

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 a crushing roll, a roll core, a plurality of lug plates forming a shell for said core, a plurality of lugs projecting from each of said plates, each of said plates having a longitudinal recess therein adjacent the leading ends of the lugs thereon, and a wearing plate secured to the leading end of each of said lugs and having a portion extending into the adjacent recess.

2. In a crushing roll, a roll core, a plurality of lug plates forming a shell for said core, a plurality of lugs projecting from each of said plates, each of said plates having a longitudinal recess therein adjacent the leading ends of the lugs thereon, and a wearing plate removably secured to the leading end of each of said lugs and having a portion thereof extending into the adjacent recess, said lug plates being imperforate at the portions thereof adjacent said recesses.

3. In a crushing roll, a roll core having a series of projections, a plurality of lug plates each having a recess engaging a projection on said core, said lug plates forming a shell for said core, a plurality of lugs projecting from each of said plates, each of said plates having a second longitudinal recess therein adjacent the ends of said lugs and directly opposite the portion thereof in which said first mentioned recess is formed, and a wearing plate secured to the leading end of each of said lugs, said wearing plates having portions extending into said second mentioned recesses and said lug plates being imperforate at the portions thereof adjacent said recesses.

4. In a crushing roll, a roll core having a series of longitudinal projections, a plurality of lug plates each having a longitudinal recess coacting with a projection on said core, said lug plates forming a shell for said core, a plurality of lugs projecting from each of said plates, each of said plates having a second longitudinal recess therein adjacent the leading ends of said lugs and directly opposite the portion thereof in which said first mentioned recess is formed, and a wearing plate detachably secured to the leading end of each of said lugs, said wearing plates having portions extending into said second mentioned recesses.

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.