Jan. 27, 1948. J. L. LATTURE 2,434,938

OPPOSED ROLL CRUSHER WITH COMPLEMENTARY DOUBLE-CURVATURE DRESS

Filed Oct. 9, 1944

FIG. 1.

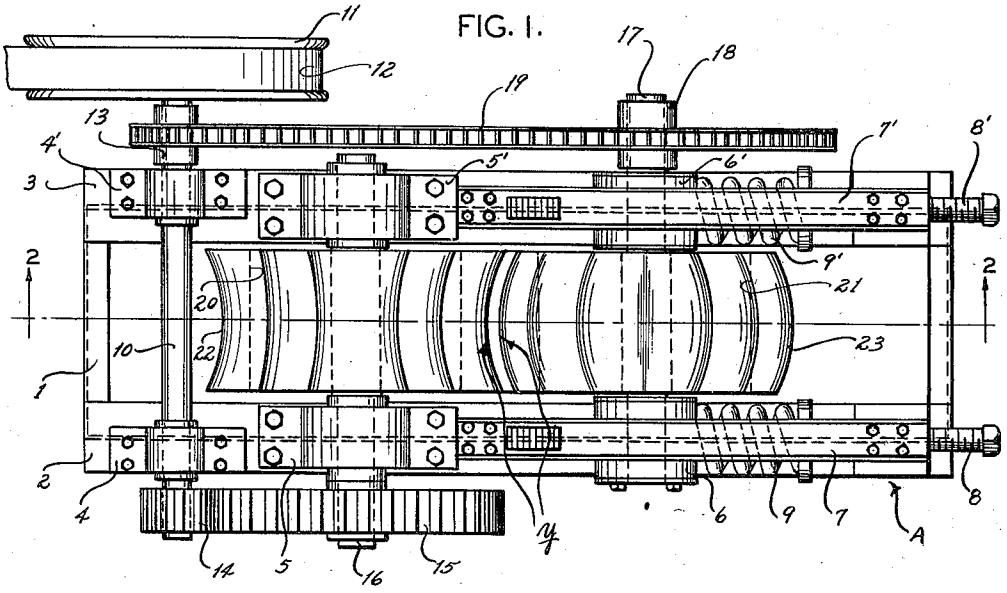


FIG. 2.

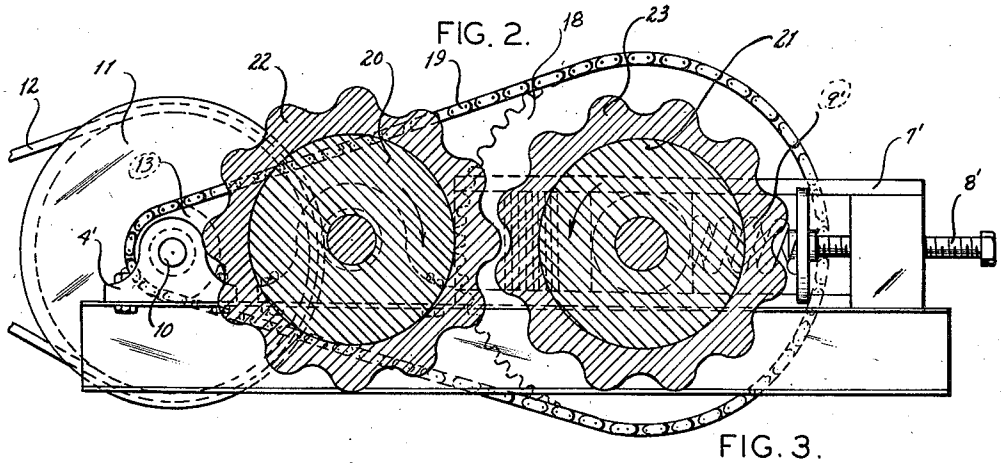
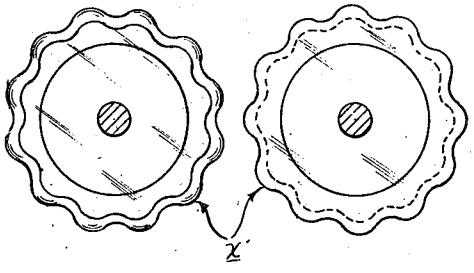


FIG. 3.



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OPPOSED ROLL CRUSHER WITH COMPLEMENTARY DOUBLE-CURVATURE DRESS

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4 Claims. (Cl. 241—236)

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This invention relates in general to certain new and useful improvements in rock crushers, and more particularly to a roll type rock crusher which is capable of grinding rock to relatively small particles without the production of long or prismatically shaped fragments.

In crushing rock for various purposes, and particularly for use in road surfacing operations, various types of roll crushers have been utilized because of the high speed volume and capacity which roll crushers ordinarily have, as compared with other types of crushing equipment. The difficulty with such crushers, however, has been the tendency to produce long, flat, flake-like or prismatic fragments of rock which do not remain in place on the road.

The present invention has for its primary object an improved type of roll crusher which is efficient and economical in construction and operation and which is capable of grinding or crushing rock without the production of elongated, flake-like or prismatic fragments, and will crush rock to a fine state of subdivision in which the fragments are uniformly cubical or near-cubical in shape.

It is a further object of the present invention to provide a roll crusher of the type stated in which the roll surface can be readily removed and replaced when worn or damaged.

Numerous other objects, advantages and inherent functions of the present invention will become apparent as the same is more fully understood from the following description which, taken with the accompanying drawings, discloses a preferred form of the present invention.

In the drawings (one sheet),

Fig. 1 is a top plan view of a crusher constructed in accordance with and embodying the present invention;

Fig. 2 is a longitudinal sectional view taken along line 2—2 of Fig. 1; and

Fig. 3 is an end elevational view of a pair of complementary crusher rolls constructed in accordance with and embodying the present invention.

Referring now in more detail and by reference characters to the drawings, A designates a crusher comprising a conventional rectilinear frame 1 having spaced parallel side rails 2 and 3 provided upon their upper faces with aligned pairs of shaft bearings 4, 4', 5, 5', and a lengthwise adjustable pair of shaft bearings 6, 6', shiftably mounted in pairs of conventional slide ways 7, 7', for tensioning adjustment by means of the

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adjustment screws 8, 8', and the spiral tension springs 9, 9'. Mounted in and extending transversely between the bearings 4, 4', is a main drive shaft 10 provided at its one extended end with a pulley 11 which is driven through a belt 12 by a suitable prime mover (not shown). Between the bearing 4' and the pulley 11, the shaft 10 is provided with a sprocket wheel 13 and at its opposite end, outwardly from the bearing 4, is further provided with a pinion 14 having meshing engagement with a main driving gear 15 pinned or otherwise fixed upon the extending end of a roll shaft 16, which is, in turn, rotatably mounted in the bearings 5, 5'. Similarly mounted in and extending between bearings 6, 6', is a second roll shaft 17 extending at one end outwardly from the bearing 6' and provided at such extended end with a suitably keyed or pinned sprocket 18, which is connected by means of a roller chain 19 to the sprocket 13. It will, of course, be apparent in this connection that the tooth ratio between the gears 14 and 15 and the sprockets 13 and 18 are identical so that the shafts 16 and 17 will be both driven at identically the same speeds.

Intermediate the bearings 5, 5', and 6, 6', the shafts 16 and 17 are respectively provided with crusher rolls 20, 21, and wedged or otherwise suitably secured upon the rolls 20, 21, are companion shaped external shells 22, 23, having axially extending corrugations as at x in Fig. 3, and being respectively convex or concave in longitudinal contour as in y in Fig. 2.

As the rock is fed into the crusher A from above, the rolls 20, 21, are rotated in the direction of the arrows as shown in Fig. 2 and the rock will be crushed and broken as it is pulled between the complementary surfaces of the roll shells 22, 23. By reason of the unique shape of such outer surfaces, there will be no straight lines of any appreciable length and the space between the shells 22, 23, will itself have a substantially arcuate contour in all directions. As a result, any large pieces of rock which tended to cleave or break in large flake-like fragments or elongated prismatic rod-like shapes will be broken up as they progress into the arcuate space between the rolls inasmuch as this arcuate space will not permit flake-like or prismatic shapes to pass through. In addition to this, the corrugated shape of the shells 22, 23, tends to drag the rock into and through the rolls more rapidly and more efficiently and accentuate grinding action.

It should be understood that changes and modifications in the form, construction, arrangement,

and combination of the several parts of the rock crusher may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a roll crusher, a pair of rolls having cooperable outer grinding surfaces, one of which is axially convex and the other of which is axially concave, said rolls having peripheral crushing faces provided with axially extending intermeshing corrugations.

2. In a roll crusher comprising a pair of spaced parallel rolls having outer shells secured thereon, said shells having complementarily shaped outer grinding surfaces, one of which surfaces is axially convex and the other of which surfaces is axially concave, said surfaces being provided with axially extending intermeshing corrugations.

3. In a roll crusher comprising a pair of spaced parallel rolls having outer shells secured thereon, said shells having complementarily shaped outer grinding surfaces, one of which surfaces is

axially convex and the other of which surfaces is axially concave, said surfaces further having intermeshing circumferentially spaced length-wise extending corrugations.

4. In a roll crusher, a pair of rolls having cooperable outer grinding surfaces, one of which surfaces is axially convex and the other of which surfaces is axially concave, said convex and concave surfaces of the rolls being provided with axially extending intermeshing corrugations.

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