

C. C. LANE.  
ORE CRUSHING MACHINE.  
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930,198.

Patented Aug. 3, 1909.

Fig. 1

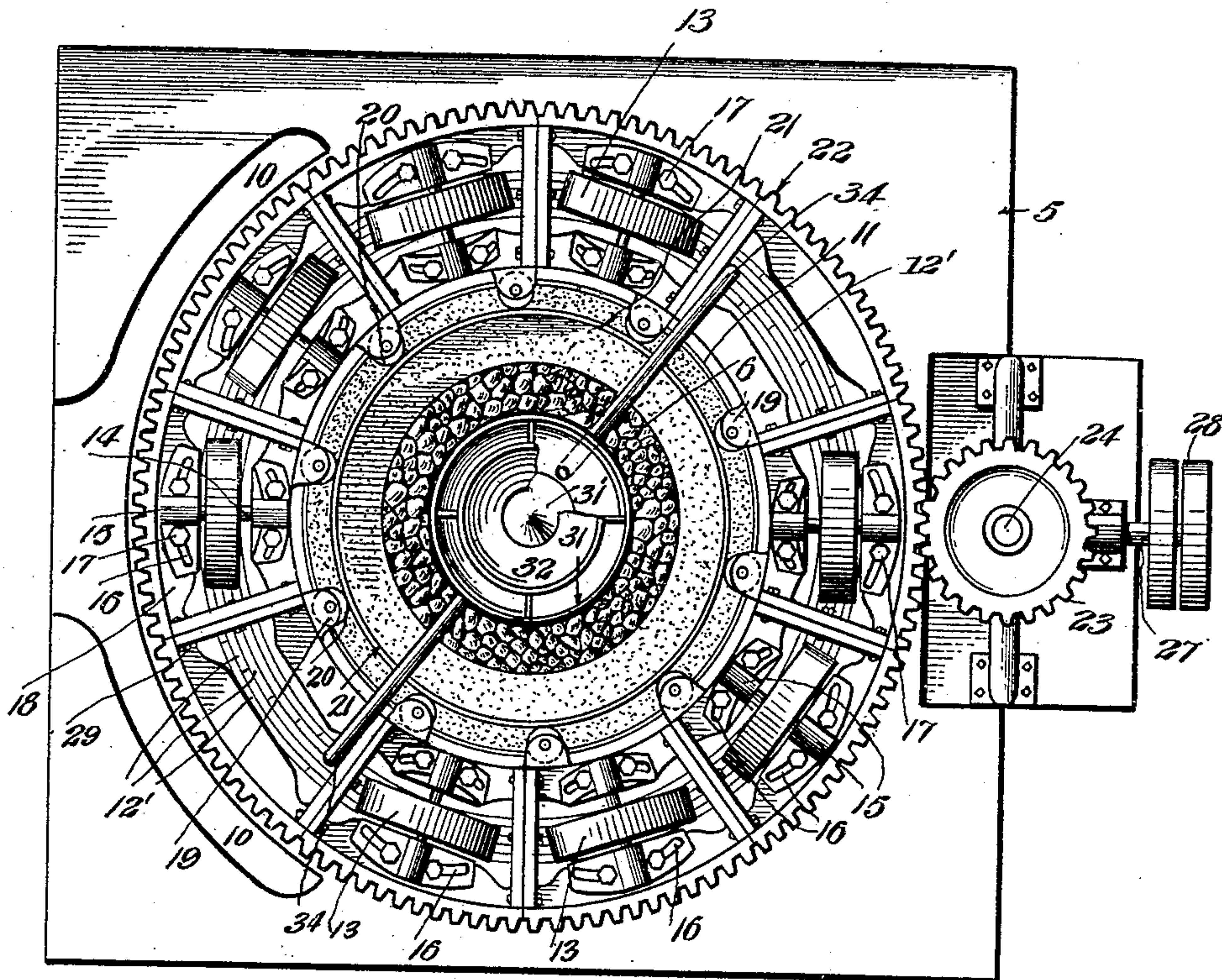
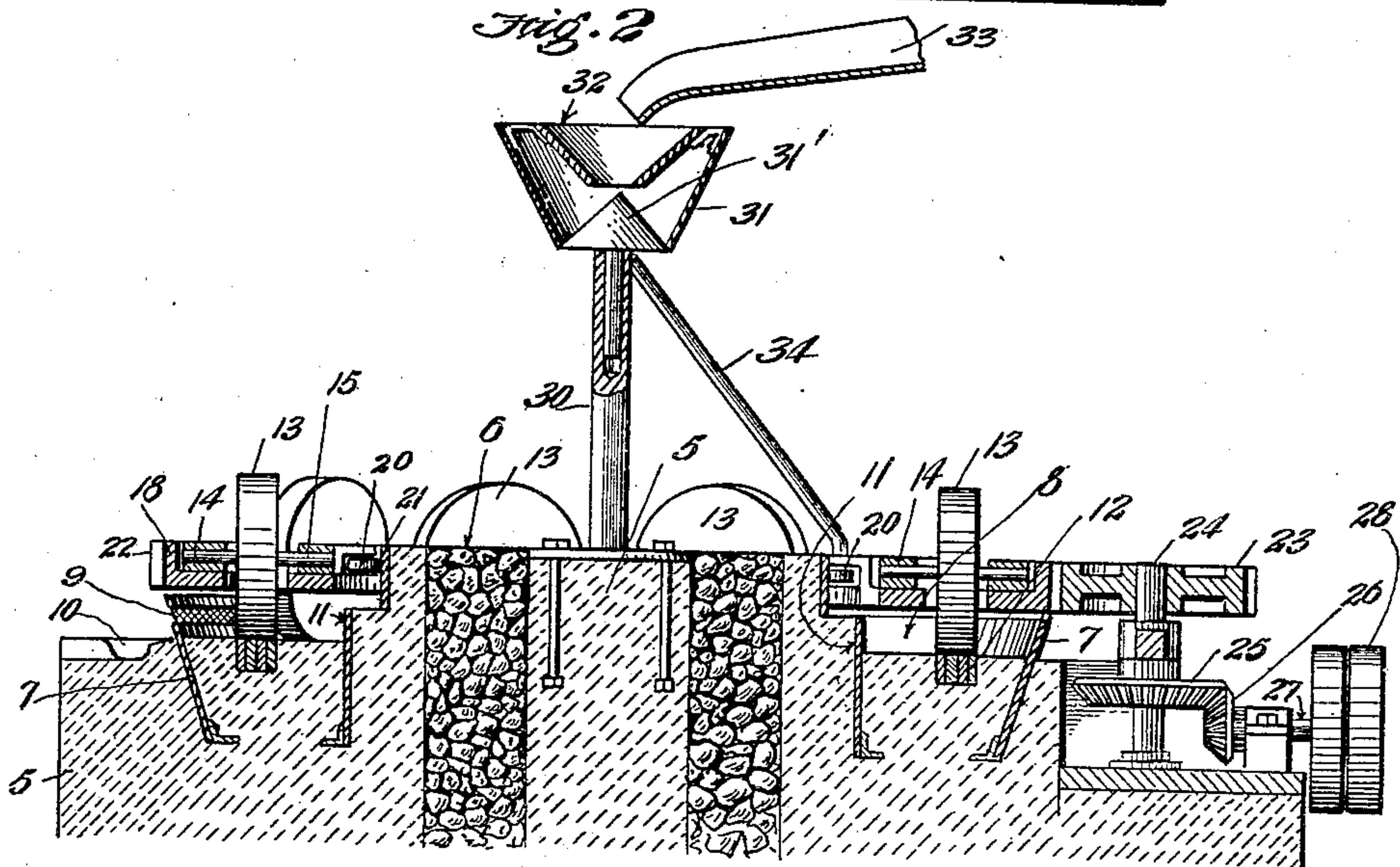


Fig. 2



Witnesses

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# UNITED STATES PATENT OFFICE.

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## ORE-CRUSHING MACHINE.

No. 930,198.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed September 25, 1905. Serial No. 280,084.

*To all whom it may concern:*

Be it known that I, CHARLES C. LANE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Ore-Crushing Machines, of which the following is a specification.

My invention relates to an ore crushing machine in which traveling crushing rolls travel over a tread of concentric steel rings cut into sections and in which the foundation and bearings are embedded in, or supported by a base made of concrete; and the object thereof is to produce a mill of large capacity made up of parts of medium weight that can be assembled together to form a large mill of great capacity, and which can be quickly and easily cleaned up without the removal of any parts, and in which when any portion has become worn out the same may be removed and a new section placed therein without detriment to the other parts of the mill.

A further object is to provide an improved means of mounting the crushing rolls in the mill.

I accomplish these objects by the mechanism described herein and illustrated in the accompanying drawings in which:—

Figure 1 is a plan of my improved ore crusher. Fig. 2 is a vertical central section taken on the line of the driving pulley with the feeding spout shown in central section.

In the drawings the foundation is preferably constructed of fine concrete 5 where considerable strength is required and coarse concrete 6 where less strength is required. An annular tapering ring of sheet metal 7 is embedded in the concrete and forms the outer side of the trough or pan 8 of the machine. Suitable openings are cut in the top portion of this ring 7 for the insertion therein of the usual screens 9 through which the pulp is discharged into a trough 10 which discharges them into a suitable receptacle or conduit (not shown). An annular sheet metal ring 11 is embedded in the concrete and forms the inner side of the pan of the machine. The bottom of the pan is principally composed of concrete in which is embedded the metal tread 12 upon which the crushing rolls 13 travel. This tread is composed of annular hardened steel rings which for convenience in handling are divided into

short sections 12' as best shown in Fig. 1. The crushing rolls are provided with axles 14 which are revolubly mounted in boxes 15. These boxes are provided with adjusting slots 16 through which pass bolts 17, which bolts also pass through the segmental crushing roll frame 18 so that the face of the wheel may be adjusted on the tread to keep an even wear on the face thereof.

Each segment of the frame is provided with a bearing 19 on the inner face thereof in which is mounted a roller 20 which bears against an annular sheet metal ring 21 which is held in place by the central portion of the foundation. On the outer edge of the crushing roll frame are teeth which form a gear 22 which meshes with a pinion 23 mounted on a vertical shaft 24, which shaft also carries a miter gear 25 which meshes with a smaller miter gear 26 on the horizontal shaft 27 on which is mounted the pulley 28 to which power is applied to drive the machine.

The crushing roll frame is preferably composed of an even number of sections which are secured together by bolts 29. Two of these sections on opposite sides of the machine are not provided with crushing rolls, thereby permitting the pulp in the pan to settle back on the tread to a greater extent than it would do if every section were provided with a crushing roll. Leaving out these crushing rolls from the oppositely disposed sections also gives ample room to clean out the trough without removing any of the parts of the machine. I leave out one crushing roll on each side in order to balance the draft, thereby forming the rolls into two series. Any other number of series of rolls may be used, so long as a proper balance is maintained.

On a central standard 30 secured to the foundation is revolubly mounted the feed hopper 31 which is preferably provided with an upwardly extending cone shaped bottom 31'. In order to better distribute the pulp on the conical shaped bottom of the feed hopper I secure to the top thereof a funnel 32 into which the feed spout 33 discharges the pulp. From the feed hopper extend the feed spouts 34 of which there are preferably two which lead down to and discharge the pulp upon the metal tread of the crushing rolls in the spaces which are not provided with crushing rolls. The lower ends of these feed



spouts are engaged by the frame and are carried around by it so as to distribute the pulp on all parts of the tread.

By this construction a large mill of great capacity can be installed at mines in the mountains which are very difficult of access, as each of the parts are of such size and weight that the same can be transported on the backs of pack animals, and by using concrete foundations with metallic faces when necessary a very cheap construction is provided. It will also be observed that by forming the crushing rolls into two oppositely disposed series with vacant roll space therebetween, pulp settling spaces and cleaning up spaces are provided. By providing adjustable boxes for both ends of the axle of the crushing rolls the angle of inclination of the face of the crushing roll to the tread can be changed so as to provide an even wear of the face of the roll.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In an ore crushing machine of the character described herein an annular trough having the bottom thereof composed of concrete in the top of which is embedded a metallic tread composed of sectional rings, said trough having its sides composed of metal plates projecting downwardly and embedded in the concrete forming the bottom of the trough; in combination with revolving traveling crushing means arranged in a plurality of balanced series traveling on said tread whereby the ore on said tread is crushed.

2. In an ore crushing machine a crushing roller frame composed of an even number of sections removably secured together, said sections forming a circle; crushing rolls

mounted in said sections except two thereof, said vacant sections being on opposite sides of said frame; an annular trough in which said rolls travel, said trough having metallic sides and a concrete bottom with a metallic tread therein; and means to drive said crushing rolls.

3. In an ore crushing machine of the character described herein, an annular trough composed of metallic sides and a concrete bottom having a metallic tread therein, said tread being composed of annular rings in detachable sections; in combination with revolving traveling means for crushing ore in said trough.

4. In an ore crushing machine a crushing roller frame composed of an even number of sections removably secured together, said sections forming a circle and having gear teeth in the outer edge thereof; bearings secured to the inner edge of said sections; horizontal rollers in said bearings; a metallic track against which said rollers bear; a concrete support for said track; crushing rolls mounted in each section of the frame except two thereof, said vacant sections being on opposite sides of said frame; an annular trough in which said rolls travel, said trough being composed of metallic sides and a concrete bottom having a metallic tread therein, said tread being composed of annular rings in detachable sections; and means to drive said roller frame.

In witness that I claim the foregoing I have hereunto subscribed my name this 19th day of September, 1905.

CHARLES C. LANE.

Witnesses:

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