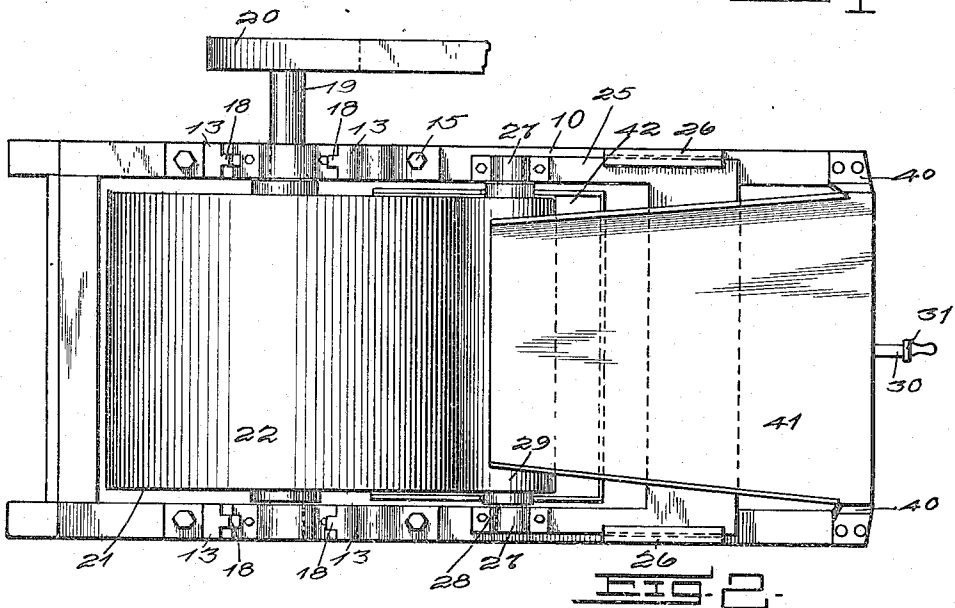
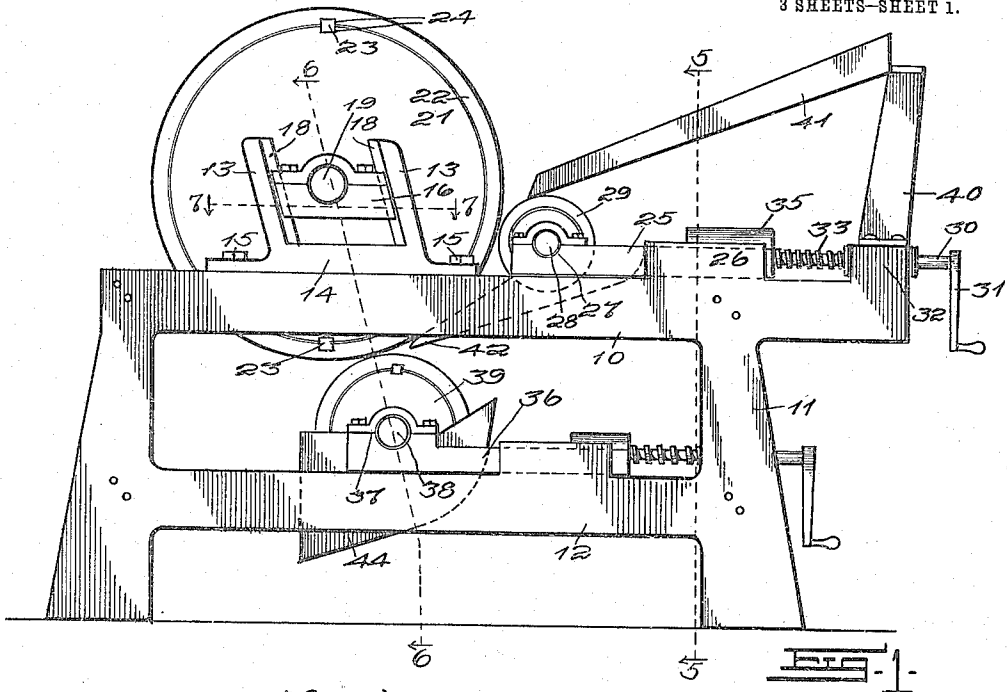


E. P. LE COMPTE & R. COLVIN.
CRUSHER.

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1,135,824.

Patented Apr. 13, 1915.
3 SHEETS—SHEET 1.



Witnesses
M. L. Lyles
A. L. Lyles

384

Inventors
Edward P. Le Compte
Rubin Colvin.
William W. Deane
Their Attorney

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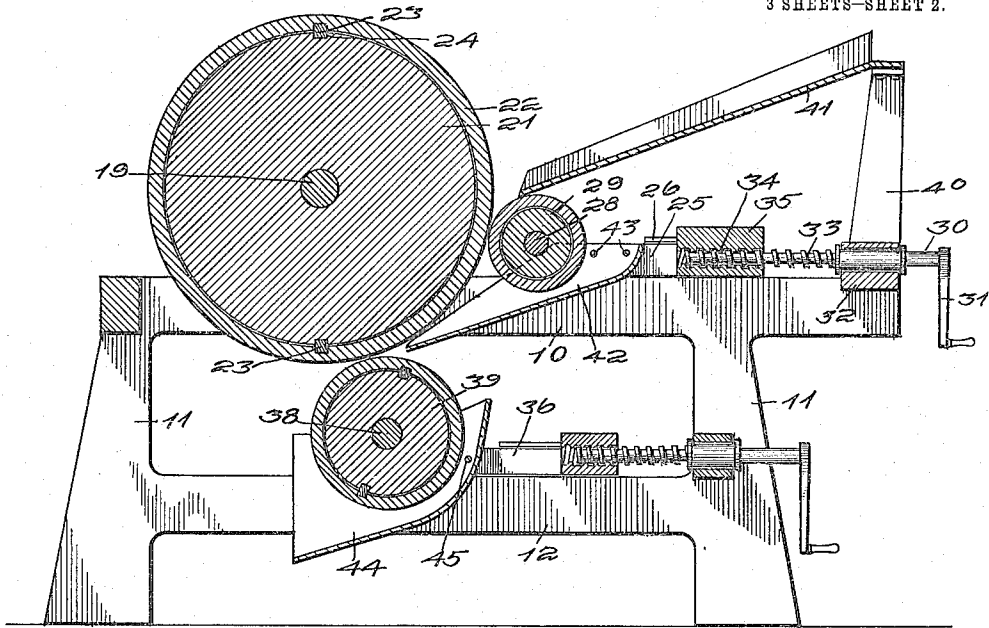


FIG. 3.

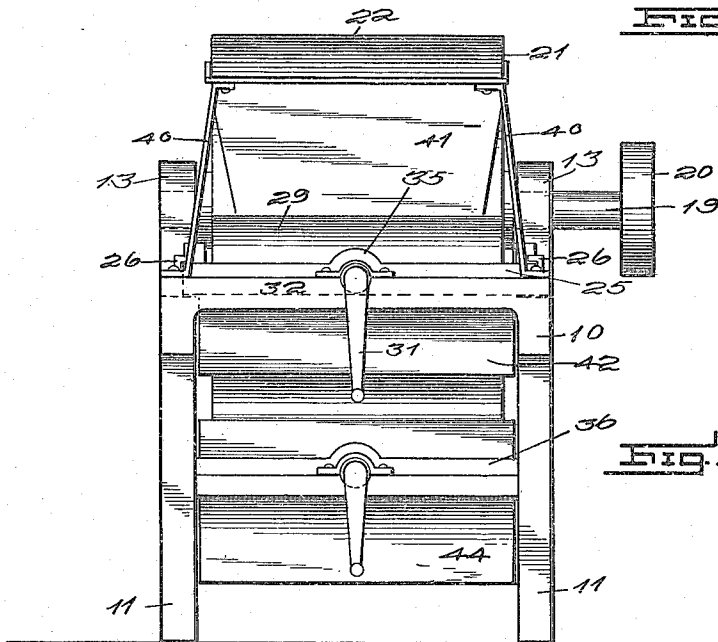


FIG. 4.

Witnesses
A. Lyles
F. Terrell

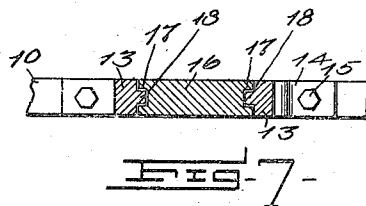
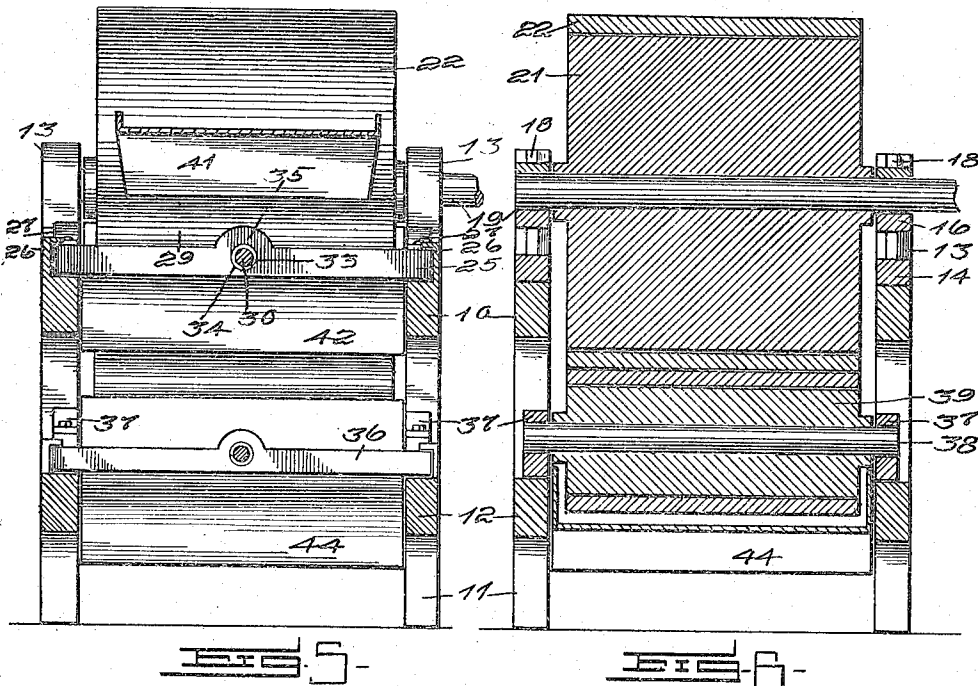
334

Inventors
Edward P. Le Compte
Rubin Colvin
William W. Deane
their Attorney

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 3 SHEETS-SHEET 3.



Witnesses
A. J. Hayes
F. Leroy

By

Inventors
Edward P. Le Compte
Rubin Colvin
William W. Deane
 Their Attorney

UNITED STATES PATENT OFFICE.

EDWARD P. LE COMPTE AND RUBIN COLVIN, OF PARK CITY, UTAH.

CRUSHER.

1,135,824.

Specification of Letters Patent.

Patented Apr. 13, 1915.

Application filed April 4, 1914. Serial No. 829,532.

To all whom it may concern:

Be it known that we, EDWARD P. LE COMPTE and RUBIN COLVIN, citizens of the United States, residing at Park City, in the county of Summit and State of Utah, have invented certain new and useful Improvements in Crushers, of which the following is a specification.

Our invention relates to improvements in machines for crushing material, such as stone, coal, grain, or in fact any material that it is desired to so treat, and has particular reference to a machine of this character embodying a plurality of rolls between which the material to be ground is passed, such rolls having suitable frictional engagement with said material solely by virtue of the weight of one of the rolls.

An important object of the invention is to provide a machine of the above-mentioned character, which is simple in construction, inexpensive to manufacture, free from the employment of springs to urge the rolls toward each other, and reliable in operation. Other objects and advantages of this invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a side elevation of a crusher embodying our invention, Fig. 2 is a plan view thereof, Fig. 3 is a central longitudinal sectional view through the machine, Fig. 4 is an end elevation of the same, Fig. 5 is a transverse sectional view taken on line 5—5 of Fig. 1, Fig. 6 is a similar view taken on line 6—6 of Fig. 1, and Fig. 7 is a detail sectional view taken on line 7—7 of Fig. 1.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 10 designates a horizontal main frame, supported by legs 11. These legs are connected by longitudinal strips 12, as shown.

Arranged upon the frame 10 are upstanding vertically inclined guides 13, (see Figs. 1 and 7) having bases 14, secured to the frame 10 by means of bolts 15, or the like. Mounted to reciprocate within the inclined guides are bearings 16 (Fig. 7) provided upon their edges with grooves 17, to receive ribs 18, which are formed upon the guides, as shown. Journaled through the bearings 16, which move up and down in an inclined

path, is a transverse rotatable shaft 19, which may be driven by a pulley 20, secured to one end thereof, as shown. Rigidly mounted upon the shaft 19, to rotate therewith is a main driving crushing roll 21, provided with a removable annular shoe or rim 22, locked to the roll for rotation therewith by keys 23, mounted in slots 24, as shown.

Mounted to reciprocate upon the frame 10 upon one side of the roll 21 is a carriage 25, operating within guides 26, as more clearly shown in Fig. 2. The inner ends of this carriage are provided with bearings 27, receiving a transverse shaft 28, carrying an upper driven crusher roll 29, to receive its rotation from the roll 21. This roll 29 is identical with the roll 21, except that it is smaller, the same being preferably provided with a shoe or rim, as shown.

Means are provided to move the carriage 25 in either direction, comprising (see Fig. 3) a rotatable shaft 30, turned by a hand crank 31 or the like. This shaft 30 is journaled through a transverse portion 32 of the frame 10, to rotate therein, but the same cannot partake of perceptible longitudinal movement with relation thereto. The inner portion of the shaft 30 is provided with screw-threads 33, operating within a screw-threaded opening 34, in a transverse part 35 of the carriage 25, as shown. It is thus seen that by rotating the shaft 30, the carriage 25 will be moved back and forth with relation to the frame 10.

Mounted to reciprocate upon the lower strips 12 is a horizontal carriage 36, identical in all substantial respects with the carriage 25, as shown. The same guide means are employed in connection with the carriage 36 and the same means are employed to move or reciprocate it, as were described in connection with roll 29. Journaled through bearings 37 is a shaft 38, carrying a lower driven crushing roll 29, preferably identical with rolls 21 and 29, but of a different diameter, as shown.

Secured to one end of the frame 10 are supports or standards 40, to the upper ends of which are connected an inclined feed hopper 41, preferably having its discharge end slidably engaging the roll 29, to discharge material to be treated upon the same. As more clearly shown in Fig. 3, a trough or chute 42 is disposed below the roll 29, and is secured to the carriage 25, as shown at 43.

This chute 42 has its lower end arranged to feed the previously ground material between the rolls 21 and 39, as shown. Arranged below the roll 39 is a chute 44, secured to the carriage 36, as shown at 45.

The operation of the machine is as follows:—The material to be treated is fed into the hopper 41 and passes therefrom between rolls 21 and 29, for the first grinding. It then passes into the chute 42, and is fed thereby between rolls 21 and 39 for the final or second grinding, the same being discharged from between these rolls and collected in any suitable receptacle.

It is obvious that as the roll 21 moves up and down in an inclined path, it will bear against both rolls 29 and 38, due also to their arrangement with relation thereto. In order that this pressure may be evenly distributed upon the rolls 29 and 39, means have been provided to independently move the same toward and away from the roll 21.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to, without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described the invention, we claim:

1. A machine of the character described, comprising a supporting structure, an upper driven roll, a lower driven roll arranged to

one side of the upper driven roll, a common driving roll disposed above the lower driven roll and upon one side of the upper driven roll and engaging both of them to rotate the same, a shaft carrying the driving roll, bearings for the shaft, and guides for the bearings which are vertically inclined away from the two driven rolls whereby the common driving roll when rising and falling will simultaneously move out of and into engagement with both of the driven rolls.

2. A machine of the character described, comprising a supporting structure, an upper driven roll, a lower driven roll arranged to one side of the upper driven roll, a common driving roll disposed above the lower driven roll and upon one side of the upper driven roll and engaging both of them to rotate the same, a shaft carrying the driving roll, bearings for the shaft, guides for the bearings which are vertically inclined away from the two driven rolls whereby the common driving roll when rising and falling will simultaneously move out of and into engagement with both of the driven rolls, and means to horizontally adjust each driven roll with respect to the driving roll.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWARD P. LE COMPTE.
RUBIN COLVIN.

Witnesses:

HENRY SHIELDS,
WILLIAM TREVITHICK.