

No. 853,481.

PATENTED MAY 14, 1907.

F. P. SNOW.
CRUSHING ROLLS.
APPLICATION FILED MAY 9, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

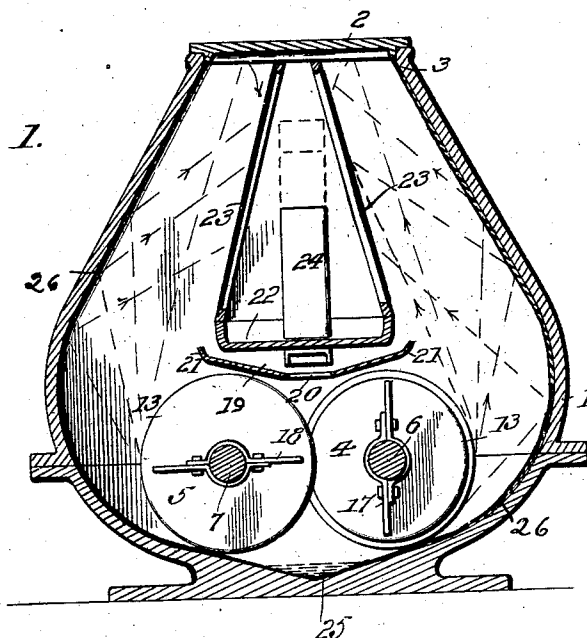
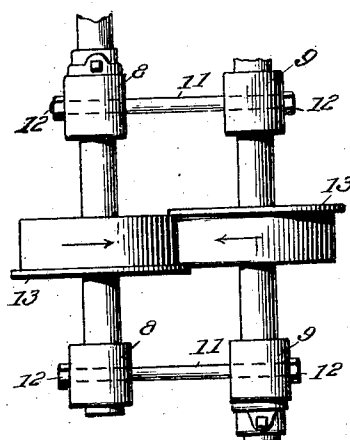


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 2.

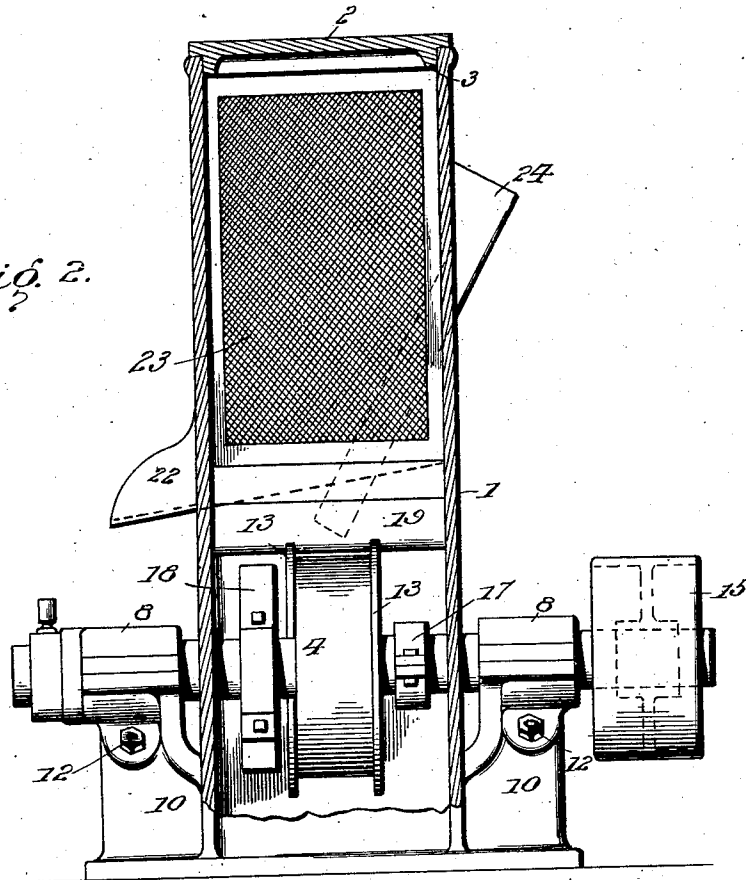
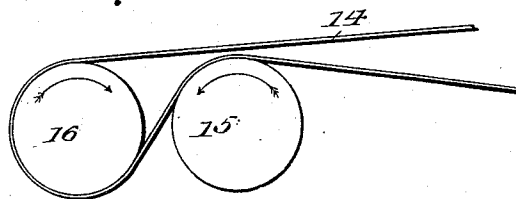


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANK P. SNOW, OF LOS ANGELES, CALIFORNIA.

CRUSHING-ROLLS.

No. 853,481.

Specification of Letters Patent.

Patented May 14, 1907.

Application filed May 9, 1906. Serial No. 315,931.

To all whom it may concern:

Be it known that I, FRANK P. SNOW, 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 Crushing-Rolls, of which the following is a specification.

This invention relates to certain new and useful improvements in crushing rolls, and it has for its objects among others to provide an improved apparatus comprising a pair of rolls with a screen or screens so disposed and arranged that the crushed material is thrown by the action of the rolls against said screen or screens, and any material not passing through the same is automatically returned to be again acted upon by the rolls, one or more times, until it is finally fine enough to pass through the screen or screens.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention, in its preferred form, is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification and in which

Figure 1 is a side elevation with the casing and parts in section. Fig. 2 is an end elevation with the casing or housing in section and a portion broken away. Fig. 3 is a detail in plan showing the rolls and their bearings. Fig. 4 is a detail in end elevation showing the means for driving the rolls.

Like numerals of reference indicate like parts throughout the several views.

Referring now to the details of the drawings 1 designates a suitable housing which may be made in sections if desired and provided with a suitable cap or top 2, shown in this instance as having a depending flange 3 fitting tightly within the top of the casing to render the same practically dust-tight. Mounted to revolve within this housing are the rolls 4, 5, carried by the shafts 6 and 7 respectively which shafts are mounted in suitable bearings 8, 8 and 9, 9 as seen clearly in Fig. 3. These bearings are supported in the upper ends of suitable standards 10 rising from the base, as seen in Fig. 2, suitable brace rods 11, 11 being provided and having upon their ends nuts 12, 12, as shown, for an obvious purpose. One of these shafts may be adjustable to and from the other to allow for wear and also to gage the fineness of the

product. Each roll 4, 5 is preferably provided with some means, such for instance as a flange 13 seen best in Figs. 2 and 3, there being a flange upon one end of each roll, and by keeping the flange of each roll in close contact with the end of the other roll a pocket is formed, as will be understood best from Fig. 3, which prevents the substance being operated upon from falling out at the ends, and as the rolls revolve toward each other the substance is drawn downward between the rolls and is crushed thereby. It is evident, however, that these flanges need not always be present and may sometimes be dispensed with.

The rolls may be both driven by a single belt 14, as seen in Fig. 4, passing around pulleys 15 and 16 on the shafts of the rolls in the manner illustrated in said Fig. 4, or by any other suitable method.

On the shafts of the rolls are paddles 17 and 18. These paddles serve to assist the rolls in impelling the crushed material against the screens.

Disposed within the casing or housing 1 above the rolls is an apron 19 having its opposite sides inclined downwardly and toward the center at which latter point is the discharge opening 20, the opposite sides of the said apron being preferably upturned, as shown at 21, for an obvious purpose.

Above the apron 19 is a discharge chute 22, the discharge end of which extends through one side of the housing, as seen in Fig. 2, and above the discharge chute, and fitting closely thereto are two oppositely inclined screens 23, the disposition of which parts is best seen from Fig. 1. It is to be noted that the opposite portions of the apron 21 extend beyond the plane of these screens, so that any material not passing through the screens and falling down therefrom will be caught by said apron and falling down the same will be conveyed through the opening 20 to the action of the rolls.

24 is the feed chute which passes through the discharge chute with a tight joint and terminates directly over the opening 20 in the apron 19, as seen clearly in Fig. 1.

With the parts constructed and arranged substantially as above described the operation is as follows:—The material fed into the chute 24 is conducted to the rolls 4, 5 through the opening 20 in the apron 19, and by said rolls is crushed, and the crushed material falls to the bottom of the housing. Though

the device can be operated dry it is preferable in most cases to introduce water with the material operated upon, which will then accumulate inside the chamber or housing until the rolls and the paddles strike it and throw it upward, as illustrated by the dotted lines in Fig. 1, the material being thrown against the screens 23, and if said material is sufficiently fine it will pass through the screens and be received in the discharge chute 22 and is discharged from the machine. That portion of the crushed material which is not fine enough to pass through the screens rolls or slides downward over the surface of the latter and is caught by the apron 19 and returned through the opening 20 to the rolls where it is again acted upon.

In the case of the material being free gold-bearing quartz the housing may be lined with copper plate 26. Quicksilver also may be introduced into the chamber, as shown at 25 in Fig. 1, to assist in the proper amalgamation of the same.

It will be understood that the material not sufficiently fine to pass through the screens will be automatically returned to the action of the rolls, one, two, or more times as may be necessary.

What is claimed as new is:—

1. In a device of the character described, a pair of crushing rolls, a housing therefor, a screen above the rolls within the housing, and horizontally disposed means independent of the screen interposed between said screen and rolls, said rolls being constructed to throw the crushed material, by centrifugal force, up past said interposed means and against said screen, said means being constructed to automatically return to the action of the rolls material not passed through said screen.

2. In a device of the character described, a housing, a pair of crushing rolls, paddles on the shaft thereof, a screen above the rolls, and means interposed between said screens and rolls, said rolls and paddles being constructed to throw the crushed material, by centrifugal force, up past said interposed means and against said screen, said means being constructed to automatically return to the latter material not passed through the former.

3. In a device of the character described, a housing, a pair of crushing rolls, a screen above said rolls, a horizontally disposed apron interposed between the screen and rolls and independent of the screen, a discharge chute upon which the screen is mounted and a feed chute passed through said discharge chute.

4. In a device of the character described, a housing, a pair of rolls, inclined screens above the rolls, said rolls being constructed to throw the crushed material, by centrifugal

force, up against said screens a discharge chute upon which said screens are mounted, and a horizontally disposed apron interposed between said chute and rolls.

5. In a device of the character described, a housing, a pair of rolls, inclined screens above the rolls, said rolls being constructed to throw the crushed material, by centrifugal force, up against said screens a discharge chute upon which said screens are mounted, a horizontally disposed apron interposed between said chute and rolls and having an opening above and between said rolls, and a delivery chute emptying into said apron.

6. In a device of the character described, a housing, a pair of rolls, inclined screens above the rolls, a discharge chute upon which said screens are mounted, a horizontally disposed apron interposed between said chute and rolls, and a feed chute passed through said discharge chute in line with an opening in the apron centrally over said rolls.

7. In a device of the character described, a housing, a pair of crushing rolls therein, paddles on the shafts of said rolls, a screen above the rolls, and a horizontally disposed apron above the rolls and extended laterally beyond the lower end of the screen with its opposite sides upturned and having a discharge opening over said rolls, said rolls constructed to throw the crushed material by centrifugal force, up against said screens.

8. In a device of the character described, a housing, a pair of crushing rolls therein, paddles on the shafts of said rolls, a screen above the rolls, and a horizontal apron above the rolls and extended laterally beyond the lower end of the screen and having a discharge opening over said rolls, said rolls constructed to throw the crushed material by centrifugal force, up against said screens, a discharge chute above said apron and forming a support at the bottom of the screens.

9. In a device of the character described, a housing, a pair of crushing rolls therein, paddles on the shafts of said rolls, a screen above the rolls, and a horizontal apron above the rolls and extended laterally beyond the lower end of the screen and having a discharge opening over said rolls, said rolls constructed to throw the crushed material, by centrifugal force, up against said screens, a discharge chute above said apron, and a feed chute passed through said discharge chute with a tight joint and terminating above the opening in the apron.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

FRANK P. SNOW.

Witnesses:

H. C. MILLSAP,
E. C. BOWER.