J. OGG.

FEED ROLLER MECHANISM FOR SUGAR MILLS.

APPLICATION FILED APR. 16, 1914.

1,108,780.

Patented Aug. 25, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

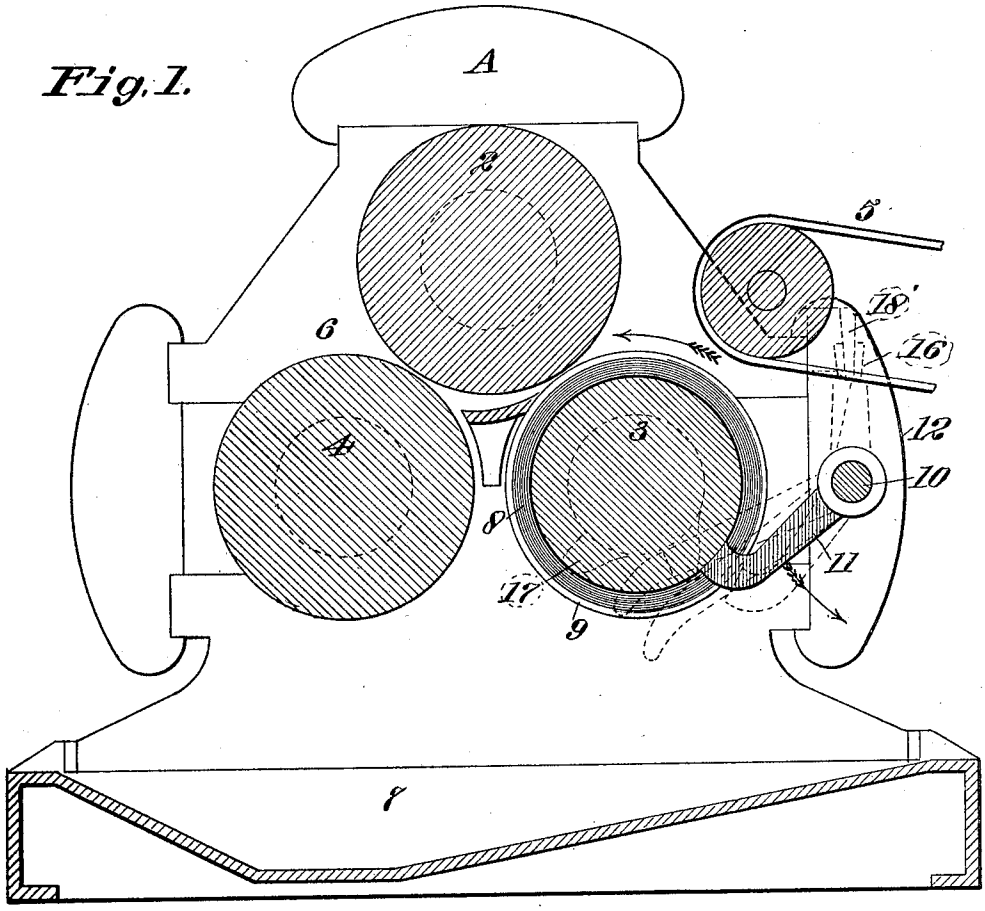
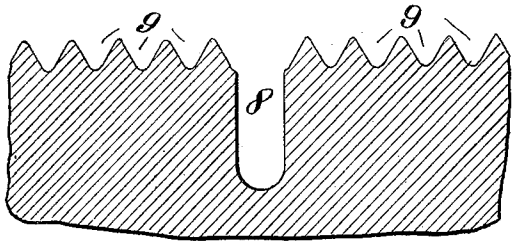


Fig. 2.



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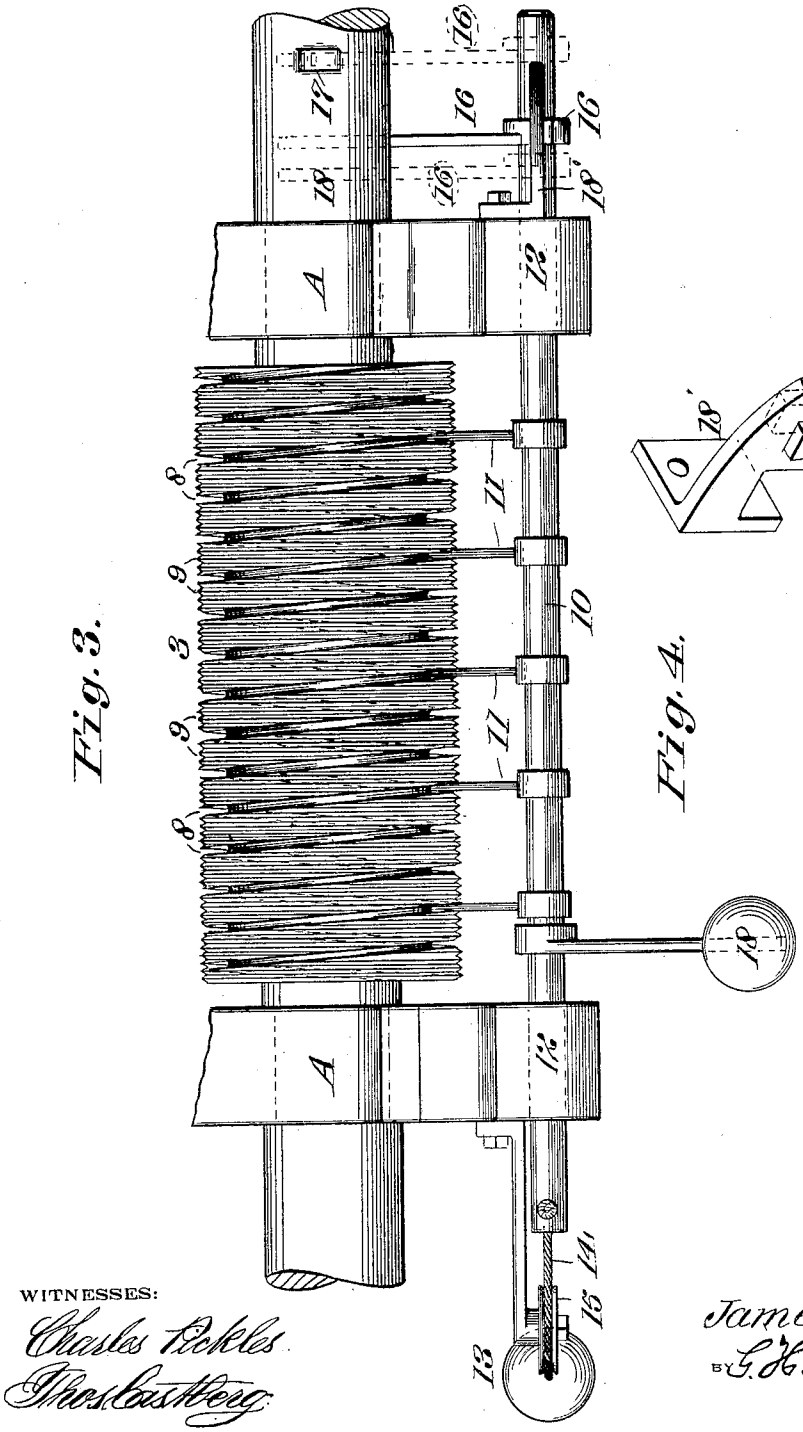

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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FEED-ROLLER MECHANISM FOR SUGAR-MILLS.

1,108,780. Specification of Letters Patent. Patented Aug. 25, 1914.

Application filed April 16, 1914. Serial No. 832,149.

To all whom it may concern:

Be it known that I, JAMES OGG, a subject of the King of Great Britain, residing at Pahala, in the county of Kau and Territory of Hawaii, have invented new and useful Improvements in Feed-Roller Mechanism for Sugar-Mills, of which the following is a specification.

This invention relates to sugar mills and pertains especially to the feed and crusher roller mechanism.

The invention consists of the parts and the combination and construction of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a vertical transverse section of a sugar mill. Fig. 2 is an enlarged detail of one of the rolls. Fig. 3 is a detail plan view showing the shifting device. Fig. 4 is a detail perspective view of the switch cam.

A is a suitable frame in which the three coöperating rollers 2—3—4 are suitably journaled and operated in appropriate fashion, so that the material to be crushed which is fed in from the conveyer 5 will be delivered at the opposite side of the machine at the point 6; the expressed juices being collected in a suitable underneath trough or tank 7.

The invention in the present case resides in the peculiar construction of the roller 3. Also in connection with this roller 3 may be employed a special form of scraper mechanism, which latter however is not always essential to the successful operation of the roller. The peculiar feature in regard to roller 3 is the deep spiral peripheral groove 8, which it possesses in addition to the usual shallow annular grooves 9. It has been found that with the deep groove the expressed juice will pass along with the roller instead of flowing back over the front side of the roller. With finely powdered bagasse this flowing back of the juice carries along with it a good deal of the finer bagasse and also hinders the mill from feeding properly; there being formed in the absence of the deep groove a trough of dilute juice causing the whole quantity to float. Thus the mill would refuse to feed if a heavy dilution of water was added to the bagasse, which is very necessary to good work. The use of a single deep spiral groove overcomes the difficulty formerly experienced of this back flow, and interference with feed, and at the same time the spiral groove does not weaken the shell of the roller. The groove 8 preferably has a pitch of one in 10 or 12 inches and approximately $\frac{3}{8}''$ wide, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches deep.

In connection with the spiral groove 8 I may employ a scraping device which will keep the grooves clear and add to the efficiency of the machine. This scraping device comprises a sliding scraper bar 10 carrying a series of scraping fingers 11 engaging in the groove 8 as a guide track; the bar being reciprocated periodically by appropriate means, first by the groove in one direction and then returned by automatic means in the opposite direction; the fingers 11 thus traveling back and forth a limited distance endwise of the roller 3; being in the groove when traveling in one direction and temporaraily lifted out of the groove when returning to initial position.

The means shown for reciprocating the scraper bar 10, are as follows: The bar 10 is mounted for reciprocation in suitable guides 12 and normally tends to reciprocate in one direction by means of a balance weight 13 attached by a rope 14 passing over a groove sheave 15, to one end of the bar 10. Whenever the fingers 11 are lifted out of the groove 8 and held down the weight 13 will naturally shift the bar 10 and fingers 11 to that end of the machine adjacent to the weight 13. When the fingers 11 drop back into the groove the rotation of the roller will carry the bar and fingers along after the fashion of a worm gear. The release of the fingers 11 from the groove is effected by means of a crank 16 on bar 10 engaging a boss 17 on shaft 18 of roller 3 at the moment that the fingers 11 have traveled their desired limit of movement in a direction opposite from the weight 13; the boss 17 then depressing crank arm 16 thereby causing fingers 11 to move out of groove 8 whereupon weight 13 immediately pulls fingers 11 and bar 10 in an opposite direction; the fingers 11 being held out of the groove during this return movement by means of a cam bar 18′ against which the crank 16 rides as it leaves the boss 17. Riding off of the rear end of the cam 18′, crank 16 rises under the force of a counter-weight 19, immediately causing the fingers 11 to drop into the groove 8. The two positions of crank 16 are represented in dotted lines; these positions being the positions assumed at the end of the respective strokes; the crank 16

riding against cam 18′ when traveling in one direction and passing across it when traveling in the other direction.

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

1. In a cane crusher, the combination of a pair of coöperating crushing rollers one only of said rollers having a deep spiral peripheral groove forming a channel whereby the expressed juices will pass along with the roller instead of back-flowing over the front side of the roller, substantially as described.

2. In a feed roller mechanism for sugar mills, a roller having its surface provided with shallow annular grooves and in addition thereto a deep peripheral spiral groove.

3. In a feed roller mechanism, the combination of coöperating crushing rollers, one of said rollers having a peripheral spiral groove, and a scraper finger operative in said spiral groove.

4. In a feed roller mechanism, the combination of coöperating crushing rollers, one of said rollers having a peripheral spiral groove, a scraper finger operative in said spiral groove, and means for periodically lifting the finger from the groove and returning it to initial position for re-insertion into the groove.

5. In a cane crusher, the combination of a plurality of feed rollers, one of which is provided with a peripheral groove, a reciprocating scraper bar having fingers engageable with the groove, means for periodically lifting the fingers, and means whereby on the fingers being lifted the scraper bar and fingers are returned to initial position.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES OGG.

Witnesses:
DAVID JAMIESON,
LAURENCE C. PALMER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."