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J. M. STEEL.

FEEDER FOR SUGAR CANE MILLS.

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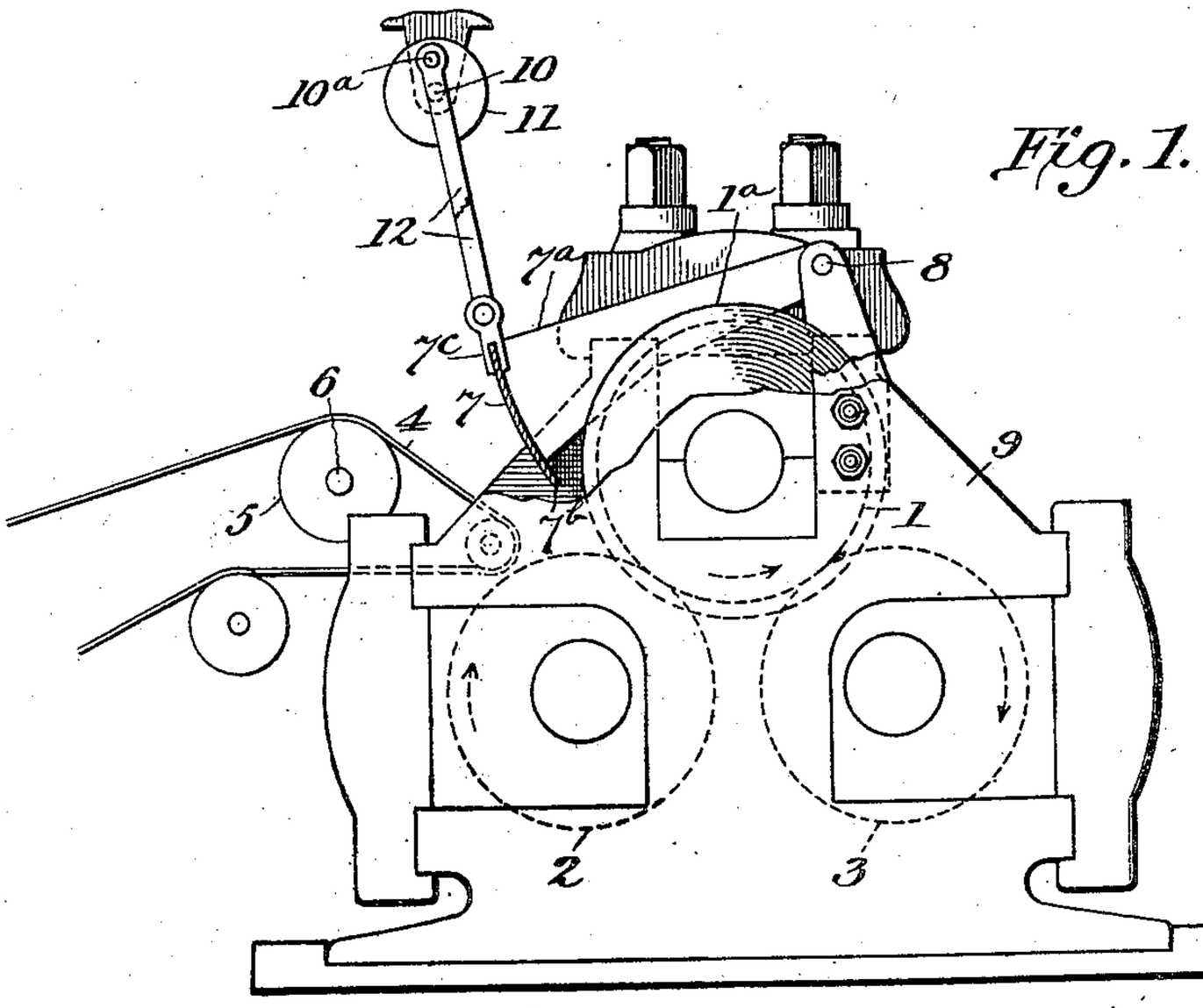

Fig. 1.

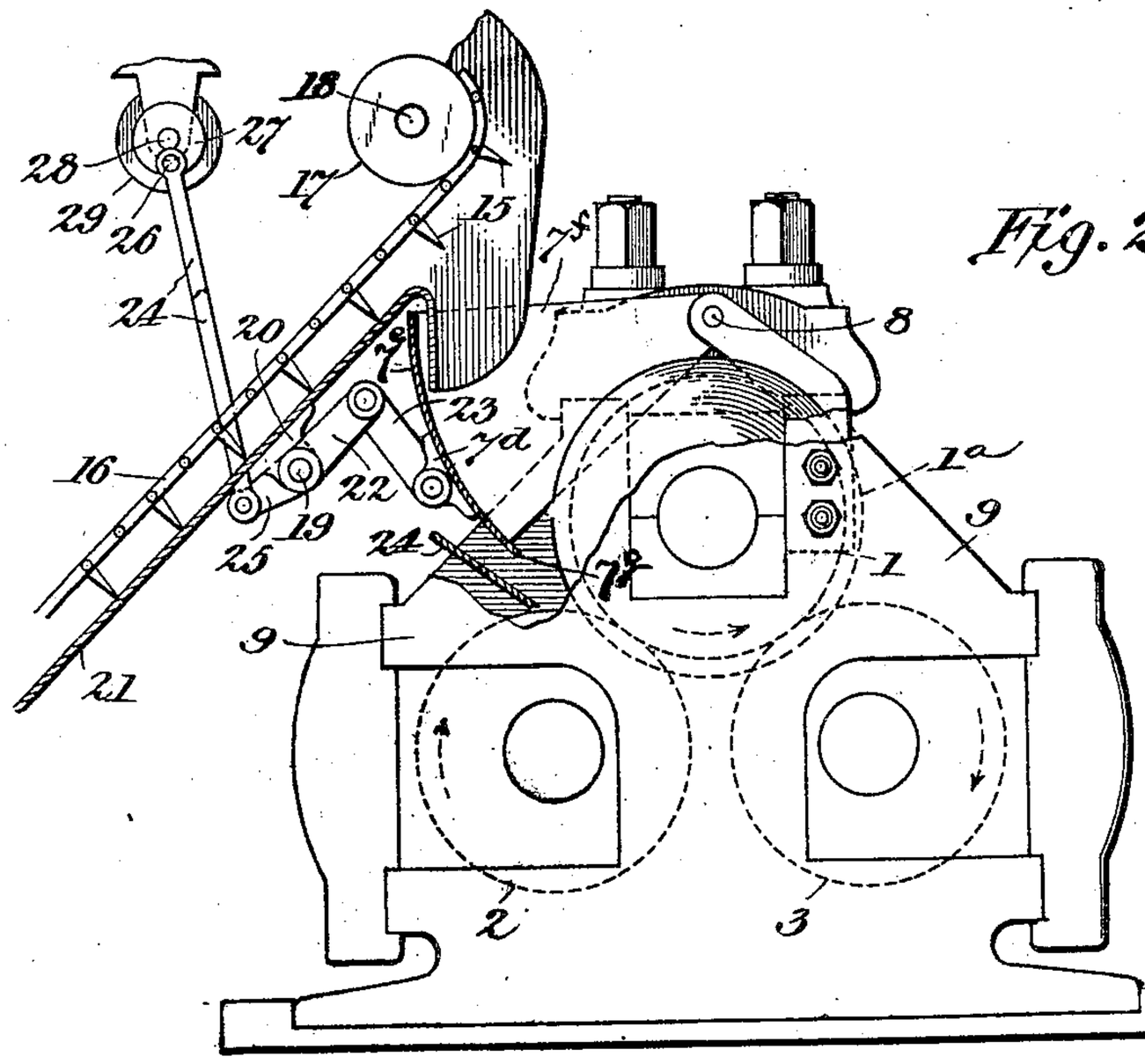

Fig. 2.

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UNITED STATES PATENT OFFICE.

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FEEDER FOR SUGAR-CANE MILLS.

No. 880,832. Specification of Letters Patent. Patented March 3, 1908.

Application filed November 13, 1906. Serial No. 343,241.

To all whom it may concern:

Be it known that I, JAMES M. STEEL, a subject of the King of Great Britain, residing at Waialua, county of Oahu, Territory of Hawaii, have invented new and useful Improvements in Feeders for Sugar-Cane Mills, of which the following is a specification.

This invention relates to devices for forcing the feed of intermediate and final mills of a sugar cane milling plant, and its object is to obtain a more uniform and positive feed, and thereby increase the efficiency of the mills. I accomplish these results by means of a plate mounted so as to have a reciprocating or swinging motion, such that one edge of said plate forms a pusher to automatically force the crushed cane between the rolls of the mill, as will hereinafter more fully appear.

In the accompanying drawings, forming a part of this specification, similar characters of reference indicate corresponding parts in the views.

Figure 1 is a sectional elevation through a three roller mill provided with an ordinary intermediate apron conveyer, showing application of my improved feeder. Fig. 2 is a similar sectional view of a three roller mill provided with an intermediate rake conveyer, showing application of my improved feeder.

Referring to the drawings, 1 represents the top roll, 2 the front or feed lower roll, and 3 the rear or discharge lower roll respectively of a three roller mill, either intermediate or final of a sugar cane milling plant, all of which revolve in the directions as indicated by arrows. The intermediate apron 4 which carries the material to the rolls is propelled in the usual manner by sprockets 5 on the shaft 6, and serves as a guard to prevent the escape of the material from the receiving gap between the rolls 1 and 2. I provide a plate 7, with its ends 7^a bent at right angles to the body of the plate. The lower edge 7^b of the plate 7 is substantially the same length as the rolls 1 and 2. Two clips 7^c are attached to the upper edge of the plate 7 near the ends 7^a respectively. The ends 7^a clear the flanges 1^a of the top roll 1, and are pivoted on pins 8 to the mill cheeks or housings 9. A shaft 10 is journaled above the mill and revolved in any suitable manner, for example, it may be driven from the crank-shaft of the mill engine by a belt on the pulley 11. The shaft 10 is provided with a long crank 10^a over the plate 7. Two connecting-rods 12 connect the crank 10^a and the clips 7^c. The pins 8 are preferably located so that the plate 7 swings approximately tangential to both the top roll 1 and the front roll 2.

When a rake conveyer is used instead of an apron conveyer, the arrangement is modified, as shown in Fig. 2, a hopper 7^e being provided for receiving the material and feeding the same between the rolls. The sides of the hopper, indicated at 7^f, are pivoted at 8 to the housings 9, and at the lower end of said hopper is a projecting plate 7^g, which is substantially the same length as the rolls 1 and 2, and serve to force the material, contained in the hopper, between the rolls as the hopper is vibrated. The chains 16 of the rake conveyer, provided with the rakes 15, are propelled by the sprockets 17 on the shaft 18. A rocker-shaft 19, journaled in boxes 20 attached to the bottom plate 21 of the conveyer, is provided with two levers 22. Clips 7^d are attached to the hopper 7^e near the sides thereof. Links 23 connect the ends of the levers 22 with clips 7^d. A retaining plate or guard 24 is secured between the mill cheeks 9 above the feed roll 2. The rocker-shaft 19 receives its motion in any suitable manner, for example, by means of a connecting-rod 24 connecting a lever 25 on the rocker-shaft 19 with a crank-pin 26 carried by a disk 27 on the end of a shaft 28 journaled above the rake conveyer and driven from the mill engine crank-shaft by a belt on the pulley 29.

In operation, the crushed cane discharged from the previous mill is elevated by the intermediate apron 4 (Fig. 1) and is dropped upon the front or feed roller 2 in the usual way. Instead, however, of depending as heretofore entirely upon the rolls to draw the crushed cane through the mill, the edge 7^b of the plate 7 in swinging, by the action of the crank-shaft 10, as in Fig. 1, engages and pushes the crushed cane toward the opening between the top roll 1 and the feed roll 2, thereby insuring a positive feed. When a rake conveyer is employed, the crushed cane elevated by the rakes 15 (Fig. 2) first falls into the hopper 7^e, and then upon the top of the feed roll 2, the plate 24 preventing it from dropping off the front of said roll. The projecting plate 7^g of the hopper 7^e in swinging, by the action of the rocker-shaft 19, acts as a pusher or feeder in a similar manner to that previously described.

I claim:

1. A feeding attachment for sugar cane roller mills, comprising means for feeding the material to the rolls of said mill, and a plate pivoted to swing approximately tangential to the rolls and adapted to force the material between said rolls.

2. A feeding attachment for sugar cane roller mills, comprising a vibrating hopper for receiving the material and feeding the same to the rolls of said mill, the lower edge of the hopper serving to force the material between the rolls.

3. A feeding attachment for sugar cane roller mills, comprising a vibrating hopper for receiving the material and feeding the same to the rolls of said mill, and a plate carried by said hopper and adapted to force the material between the rolls as said hopper is vibrated.

4. A feeding attachment for sugar cane roller mills, comprising a vibrating hopper for receiving the material and feeding the same to the rolls of said mill, a plate carried by said hopper and adapted to force the material between the rolls as said hopper is vibrated, and a guard mounted adjacent said rolls and serving to prevent the escape of the material from the receiving gap between the rolls.

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