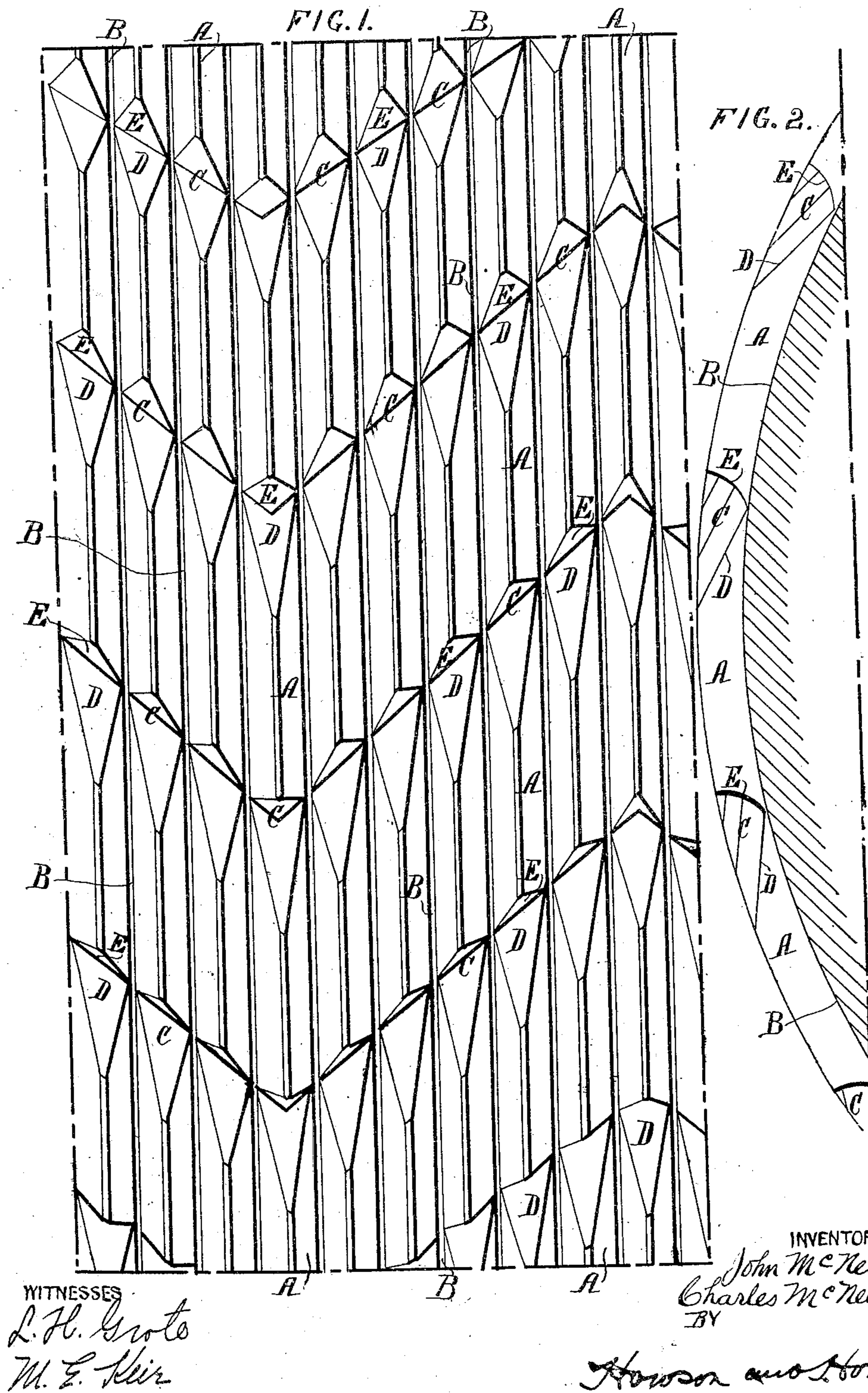


SUGAR CANE MILL.

Patented Mar. 9, 1909.

2 SHEETS—SHEET 1.

915,036.

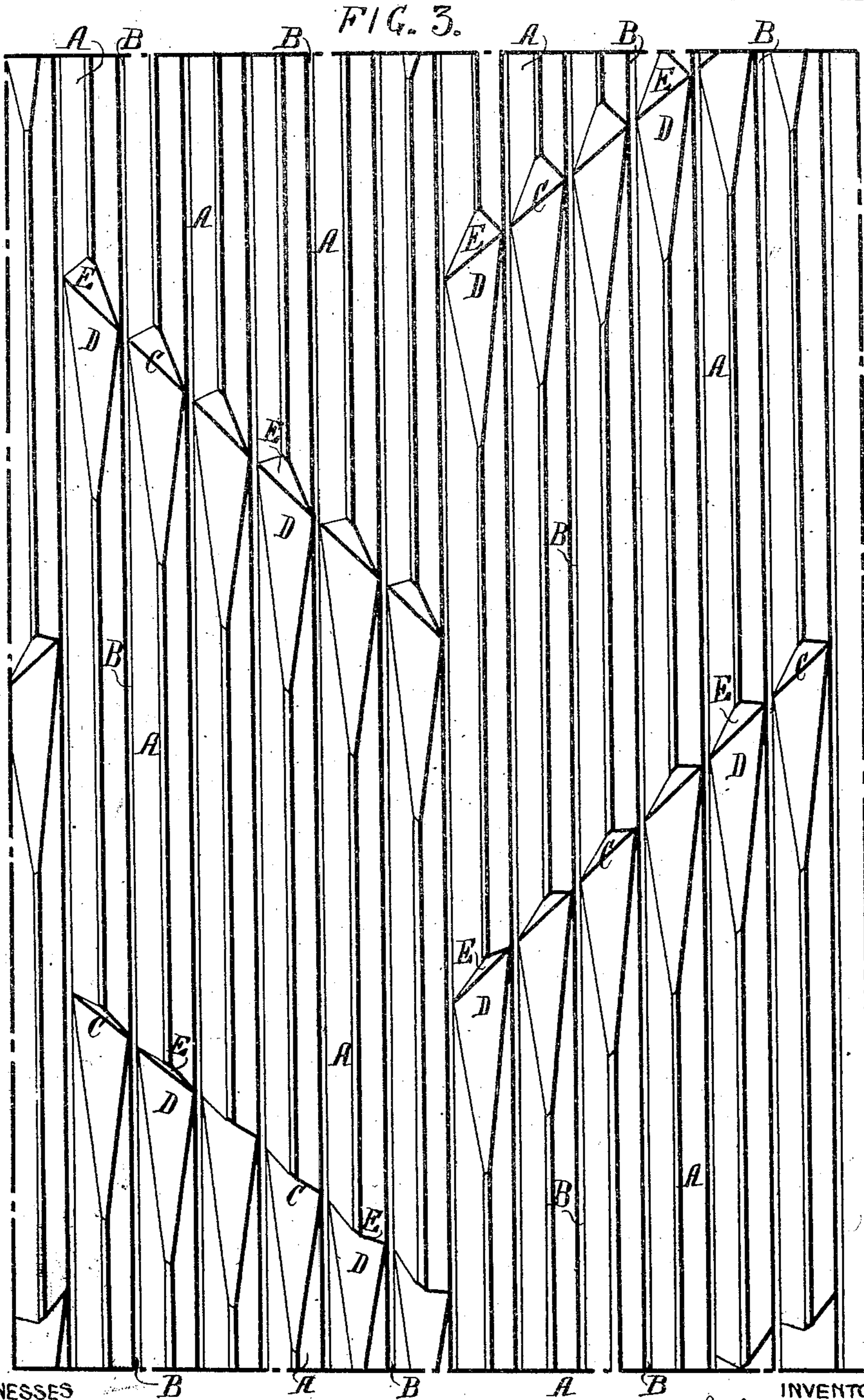


J. & C. McNEIL.
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APPLICATION FILED JUNE 12, 1908.

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2 SHEETS—SHEET 2.



WITNESSES
L. H. Grote
M. E. Kerr

INVENTORS
John McNeil
Charles McNeil
BY
Hudson and Hudson
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN McNEIL AND CHARLES McNEIL, OF GOVAN, SCOTLAND.

SUGAR-CANE MILL.

No. 915,036.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed June 12, 1908. Serial No. 438,137.

To all whom it may concern:

Be it known that we, JOHN McNEIL and CHARLES McNEIL, B. Sc., subjects of the King of Great Britain and Ireland, and residents of Govan, in the county of Lanark, Scotland, have invented certain new and useful Improvements in Connection with Sugar-Cane Mills, and of which the following is the specification.

10 This invention relates to sugar-cane mills of the type in which some of the rolls have formed on their surface ridges or teeth with intervening channels so arranged circumferentially around the rolls that when the
15 rolls are geared together the circumferential teeth on one roll project into the circumferential channels in the other roll with which it engages. This type of roll is efficient in that it effectively splits, breaks and crushes
20 the cane and also allows for a free escape of the juice down the circumferential channels of the lower roll on the side of the intermeshing rollers from which the canes enter, and further as the channels are circular the possi-
25 bility of their becoming clogged by portions of the broken cane or megass sticking therein is prevented by scrapers so carried that they project into the channels; but these rolls are not so efficient as they might be in that
30 the teeth are apt once they have split the portion of cane between them to slip through it without dragging it forward. In order therefore to overcome this objection and obtain an efficient biting effect on the cane,
35 which will insure a regular forward movement thereof, the roll, according to the present invention, has formed upon its surface series of short zig-zag grooves extending longitudinally from end to end of the roll
40 and so spaced apart around the circumference of the roll that there is always a portion of one of the series of grooves opposite the point where the rolls intermesh.

In order that the invention and the manner of performing the same may be properly understood there are hereunto appended
45 two sheets of explanatory drawings showing in Figure 1, Sheet 1, an elevation and in Fig. 2, an end elevation of a sufficient portion of a roll to illustrate one example of the im-
50 provements; Fig. 3, Sheet 2, being an elevation similar to Fig. 1 illustrating a second example.

According to the example shown in Figs.

1 and 2, the roll is of the type in which ridges 55 or teeth A with intervening channels B are arranged circumferentially around its surface, so that when two of these rolls are geared together the circumferential teeth A on one roll project into the circumferential
60 channels B in the other roll with which it engages.

In order to obtain an efficient biting effect on the cane which will insure a regular forward movement thereof, the roll, according
65 to the present invention, has formed upon its surface series of short zig-zag grooves C extending longitudinally from end to end of the roll, the ends of the oppositely angled sides of each series of zig-zag grooves all
70 merging into each other so that each groove is continuous from end to end of the roll. The grooves C are so spaced apart around the circumference of the roll that there is
75 always a portion of one of the series of grooves opposite the point where the rolls intermesh. The number of zig-zag grooves in each of the series in the length of each roll depends, of course, on the length of each side
80 of the zig-zag and the angle at which each side is set to the other and both the length and angle, also the distance the grooves C are spaced apart around the circumference of the roll may be varied within such limits
85 as will insure that no portion of the grooves on both rolls are opposite the point where the rolls intermesh at the same time. These zig-zag grooves C are preferably formed with what is the forward side D, in the direction
90 of rotation of the roll, more nearly tangential to the surface of the roll than the other and rear side E which approaches the radial, so that this latter side of each groove may be said to act as an upstanding tooth extending
95 more or less transversely to the direction of the length of the cane; and this portion E, of each groove C, when at the point where the rolls intermesh, bites into the cane but does not shred it, as the circumferential teeth A are apt to do. The action of these grooves C
100 therefore insures that the cane is pulled through between the rolls with the regular forward movement desired.

The example of the invention shown in Fig. 3 differs from the example hereinbefore
105 described with reference to Figs. 1 and 2 only in that the portions of the grooves C, in each series, angled in one direction, are so ar-

ranged that their ends are opposite the sides of the portions angled in the opposite direction.

What we claim is:—

5 1. A roll for sugar cane mills having circumferential teeth with intervening channels formed on its surface, in combination with zigzag grooves extending longitudinally of the roll and arranged to intersect said
10 circumferential teeth at all points circumferentially of the roll, substantially as described.

15 2. A pair of intermeshing rolls for sugar cane mills having circumferential teeth with intervening channels formed on their respective surfaces, in combination with a series of short zigzag grooves extending longitudinally from end to end of each roll, the length and angle of each side of each
20 zigzag groove and the distance the grooves are spaced apart around the circumference of each roll being such that no portion of the grooves in one roll is opposite the groove in the other roll at the point where the rolls
25 intermesh, substantially as described.

30 3. A roll for sugar cane mills having circumferential teeth with intervening channels formed in its surface, in combination with a series of short zigzag grooves intersecting said circumferential teeth and extending from end to end of the roll, the ends of the

oppositely angled sides of each series all merging into each other, substantially as described.

35 4. A roll for sugar cane mills having circumferential teeth with intervening channels formed in its surface, in combination with a series of short zigzag grooves intersecting said circumferential teeth and extending
40 from end to end of the roll, the position of the grooves angled in one direction being so arranged that their ends are opposite the sides of the portions angled in the opposite direction, substantially as described.

45 5. A roll for sugar cane mills having circumferential teeth with intervening channels formed in its surface, in combination with a series of short zigzag grooves intersecting said circumferential teeth and extending
50 from end to end of the roll, the forward side of the zigzag grooves being more nearly tangential to the surface of the roll than the other and rear side which approaches the radial, as described.

In testimony whereof we have signed our
55 names to this specification, in the presence of two subscribing witnesses.

JOHN McNEIL.

CHARLES McNEIL.

Witnesses:

DAVID FERGUSON

WILFRED HUNT