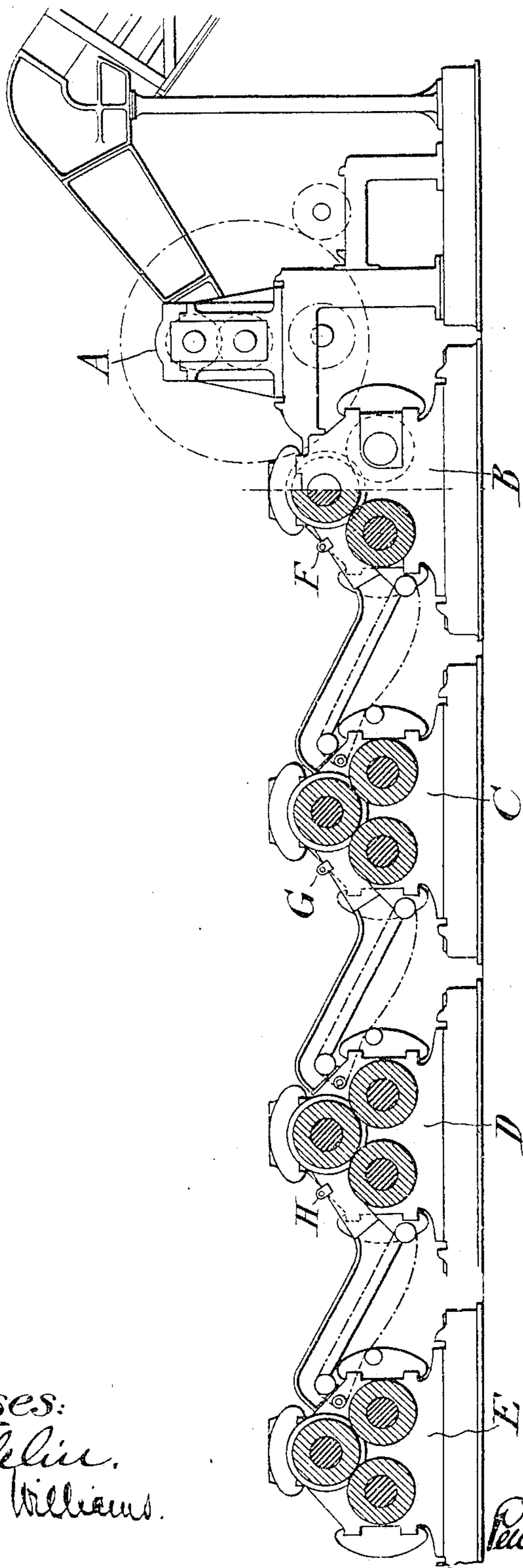


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M. LORENZ.
PROCESS OF MACERATING SUGAR CANE.
APPLICATION FILED NOV. 10, 1904.



Witnesses:
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MAX LORENZ, OF HONOLULU, TERRITORY OF HAWAII.

PROCESS OF MACERATING SUGAR-CANE.

SPECIFICATION forming part of Letters Patent No. 787,102, dated April 11, 1905.

Application filed November 10, 1904. Serial No. 232,107.

To all whom it may concern:

Be it known that I, MAX LORENZ, a subject of the German Emperor, residing at Honolulu, Island of Oahu, Territory of Hawaii, have invented certain new and useful Improvements in Processes of Maceration for Sugar-Cane Mills, of which the following is a specification.

This invention relates to the process of macerating the crushed cane upon discharge from a mill previous to its entering between the rollers of a succeeding mill, the mills being arranged in tandem and connected by intermediate apron conveyers, and has for its object to render the process more efficient and to obtain a higher extraction of the sugar in the cane than has heretofore been obtained without unduly increasing the amount of maceration-water to be evaporated.

Maceration is defined as the process of softening and dissolving by steeping in a fluid. In sugar-cane-mill work water has been used to macerate the crushed cane from a mill previous to its passing through a succeeding mill. Usually the crushed cane immediately upon its discharge from a mill onto the apron conveyer receives a shower of water, preferably heated, thereby softening the crushed cane, diluting the juice left in same, and taking up in solution part of its sugar. The macerated crushed cane is then passed through a succeeding mill, which extracts in the form of diluted juice a larger percentage of the sugar in the cane than would have been obtained without maceration; but maceration with water when repeated between successive mills causes the juices to become so diluted that the quantity of water used for this purpose has to be limited, for this water must be evaporated at the expense of fuel in the process of concentration of the juices, and a larger amount to be evaporated would also necessitate increased tank and boiling capacity, &c. I therefore macerate only once with water and twice with the diluted juices from the last two mills, respectively, employing four three-roller mills in tandem, as will hereinafter more fully appear.

Referring to the accompanying drawing, forming a part of this specification, the figure represents in sectional elevation a milling

plant such as I employ with my process of maceration.

A represents a crusher which may be used to prepare the cane for the first mill B, while C, D, and E are three other mills, all arranged in tandem. Each successive mill extracts in the form of juice a lower percentage of the sugar in the cane than its preceding mill. The bagasse or crushed cane from the third mill D, containing less sugar than the bagasse from the preceding mills, I macerate with water at H, as pure water will take up more sugar in solution than will diluted mill-juices. The juice extracted by the fourth mill E is thereby diluted, and I use this diluted juice to macerate at G the bagasse from the second mill C, and the resulting juice extracted by the third mill D, containing a higher percentage of sugar, I use at F to macerate the bagasse from the first mill B, containing more sugar than the bagasse from its succeeding mill C. In order to accomplish this, I divide the screen of the continuous juice-strainer into three divisions, so that the juice discharged from the third mill D and that from the fourth mill E is strained in separate divisions, while that from the crusher and first and second mills is strained in a third division. I employ a steam-siphon to lift the strained juice from the third mill D to macerate at F and a similar siphon for that from the fourth mill E to macerate at G, the juices being heated and slightly diluted thereby previous to their being used for maceration.

It will now be noted that I apply maceration three times while the juices are diluted but once by maceration with water and that in the three macerations the difference between the percentage of sugar in the bagasse macerated and the percentage of sugar in the liquid used to macerate it is more nearly uniform than by any other arrangement. By my process a high extraction is obtained without materially increasing the water to be evaporated.

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

1. The method of treating sugar-cane, which

consists in passing it through a plurality of mills in succession, and macerating the crushed cane between the first and second mills with the juice from one of the succeeding mills.

5 2. The method of treating sugar-cane, which consists in passing it through a plurality of mills in succession, macerating the crushed cane between the first and second mills with juice from one of the succeeding mills, and
10 macerating between two of the succeeding mills with water only.

3. The method of treating sugar-cane, which consists in passing it through a plurality of mills in succession, macerating the crushed
15 cane between the first and second mills with juice from the third mill, macerating between the second and third mills with juice from the fourth mill, and macerating with water only between the third and fourth mills.

20 4. The method of treating sugar-cane, which consists in passing it through a plurality of mills in succession, conducting the juices away from the mills separately, and delivering said

separated juices at different points in the train of mills for macerating the crushed cane. 25

5. The method of treating sugar-cane, which consists in passing it through a plurality of mills in succession, heating the juice from one of the mills and delivering it at a point between preceding mills, and macerating the
30 crushed cane at such point with said juice.

6. The method of treating sugar-cane, which consists in passing it through a plurality of mills in succession, heating the juice from one of the mills and lifting it by a steam-siphon
35 and conducting it to and macerating the crushed cane with it, at a point between preceding mills in the train.

In testimony whereof I have signed my name to this specification in the presence of two sub-
40 scribing witnesses.

MAX LORENZ.

Witnesses:

W. J. DYER,

ROBT. J. PRATT.