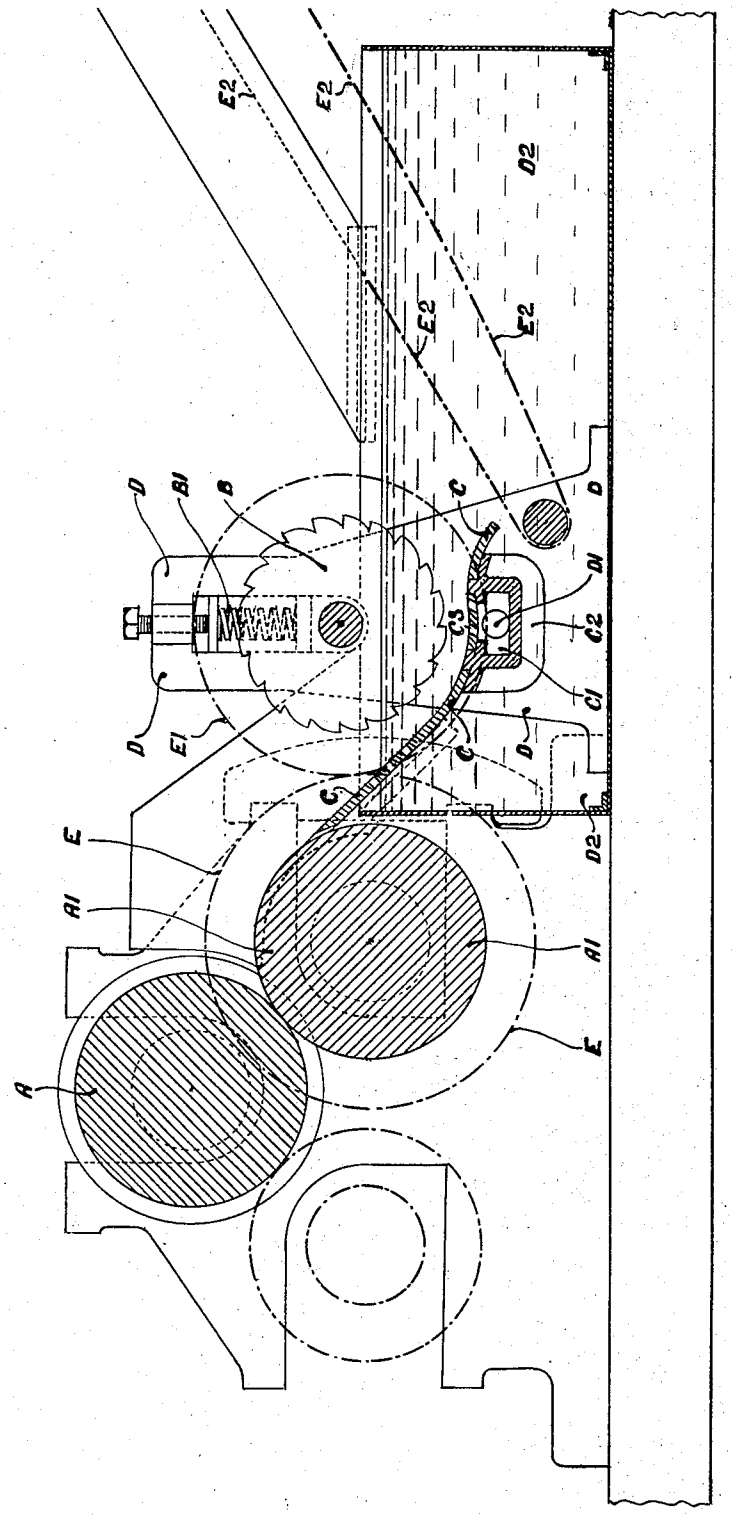
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PROCESS FOR MACERATING CRUSHED SUGAR CANE.

APPLICATION FILED APR. 22, 1918.

1,328,090. Patented Jan. 13, 1920.



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PROCESS FOR MACERATING CRUSHED SUGAR-CANE.

1,328,090. Specification of Letters Patent. Patented Jan. 13, 1920.

Application filed April 22, 1918. Serial No. 230,075.

To all whom it may concern:

Be it known that I, CHARLES McNEIL, B. Sc., a subject of the King of Great Britain and Ireland, and a resident of Govan, in the city and county of Glasgow, Scotland, have invented a certain new and useful Improved Process for Macerating Crushed Sugar-Cane, of which the following is the specification.

In the modern process of crushing sugar cane, the cane is passed through a number of mills in succession, the megass being carried from one mill to the next by an endless conveyer or the like, and after it falls from the megass roller of one mill onto the conveyer, it is macerated by being either sprayed with water or weak juice or pulled by the conveyer through water or juice in a trough.

In this known process, as the cane, when it is freed from the pressure of the rolls of any one mill, immediately expands in bulk and in doing so occludes a large amount of air which prevents the cane from properly absorbing the water or weak juice, the process has thus to be unduly repeated before all the juice is effectively extracted from the cane. Thus the total volume of water required in carrying out the process is much in excess of that which gives the most economical working of the subsequent evaporating plant, and considerable unnecessary expense is thereby incurred in evaporating this excess water.

To overcome this objection, according to the present invention, the cane, after it has passed between the upper and back or megass rollers of each mill, or after it has passed the preliminary crushing rollers of any one mill where such preliminary rollers are used, is again subjected to pressure and at the same time sprayed with water or weak juice applied to it under such a head that it absorbs the full amount of liquid before it can expand to its full bulk and draw in air. Preferably the pressure liquid is forced into the cane at the point in its travel where the maximum pressure applied to it is just released, and further the cane is also preferably moistened before being subjected to this additional pressure so that the pressure does useful work in extracting juice from the cane.

The improved process may be carried out in various ways; for example the cane may be subjected to the combined pressure and spraying by being passed between a fluted or serrated roller, the bearings of which are loaded, and a box perforated on the side adjacent to the roller, liquid under pressure being forced into this box and through the perforations onto the cane at the point where the maximum pressure between the roller and the box is on the point of release. The box and part of the roller may be submerged in liquid in a trough, so that the cane is soaked before being subjected to this additional pressure which thus also acts to extract juice from the cane. The fluted roller may be driven in any suitable manner from the mill gearing.

An example of the improved apparatus for carrying out the invention is shown somewhat diagrammatically in sectional side elevation on an accompanying sheet of explanatory drawings.

As shown in this drawing, the cane, after it has passed between the upper and back or megass rollers A, A^1 of a mill, is again subjected to pressure and at the same time sprayed with water or weak juice by being passed between a serrated roller B,—the bearings of which are loaded by springs B^1—and a plate C part of which forms the upper side of a box C^1, supported beneath the roller B, by flanges C^2 on it bolted to the end housings D. The plate C is perforated at C^3, and liquid under pressure passes into the box C^1 through the inlet D^1 and through the perforations C^3 onto the megass at the point where the maximum pressure between the roller B and the box C^1 is at the point of release. The megass therefore absorbs the full amount of liquid before it is free to expand to its full bulk and draw in air. The box C^1 and part of the plate C and roller B are submerged in liquid in a trough D^2, so that the megass is soaked before being subjected to the additional pressure hereinbefore described between the roller B and plate C. This pressure therefore does useful work in extracting juice from the megass.

The roller B is driven by gear wheels shown by chain lines E, E^1, and when the serrated roller has pulled the megass through between it and the plate C, the megass then falls from the forward end of the plate on

to the usual endless conveyer E^2 which conveys it to the next mill, as hereinbefore described.

What I claim is:—

1. Macerating apparatus for sugar cane, comprising a pressure roll, a pressure plate between which and said roll the cane is passed, and means for introducing liquid under pressure through said plate into contact with the compressed cane, for the purpose described.

2. Macerating apparatus for sugar cane, comprising a pressure roll, a pressure plate between which and said roll the cane is passed, a pressure trough on the outer face of said plate, and means for leading to said trough liquid under pressure, said plate being apertured in register with said trough to admit the pressure liquid into contact with the compressed cane, for the purpose specified.

3. Macerating apparatus for sugar cane, comprising a liquid treating tank, means for subjecting the crushed cane to pressure while submerged therein, and means for applying liquid under pressure to the cane mass at the point of its release from pressure in the tank.

In testimony whereof I have signed my name to this specification.

CHARLES McNEIL.