

(No Model.)

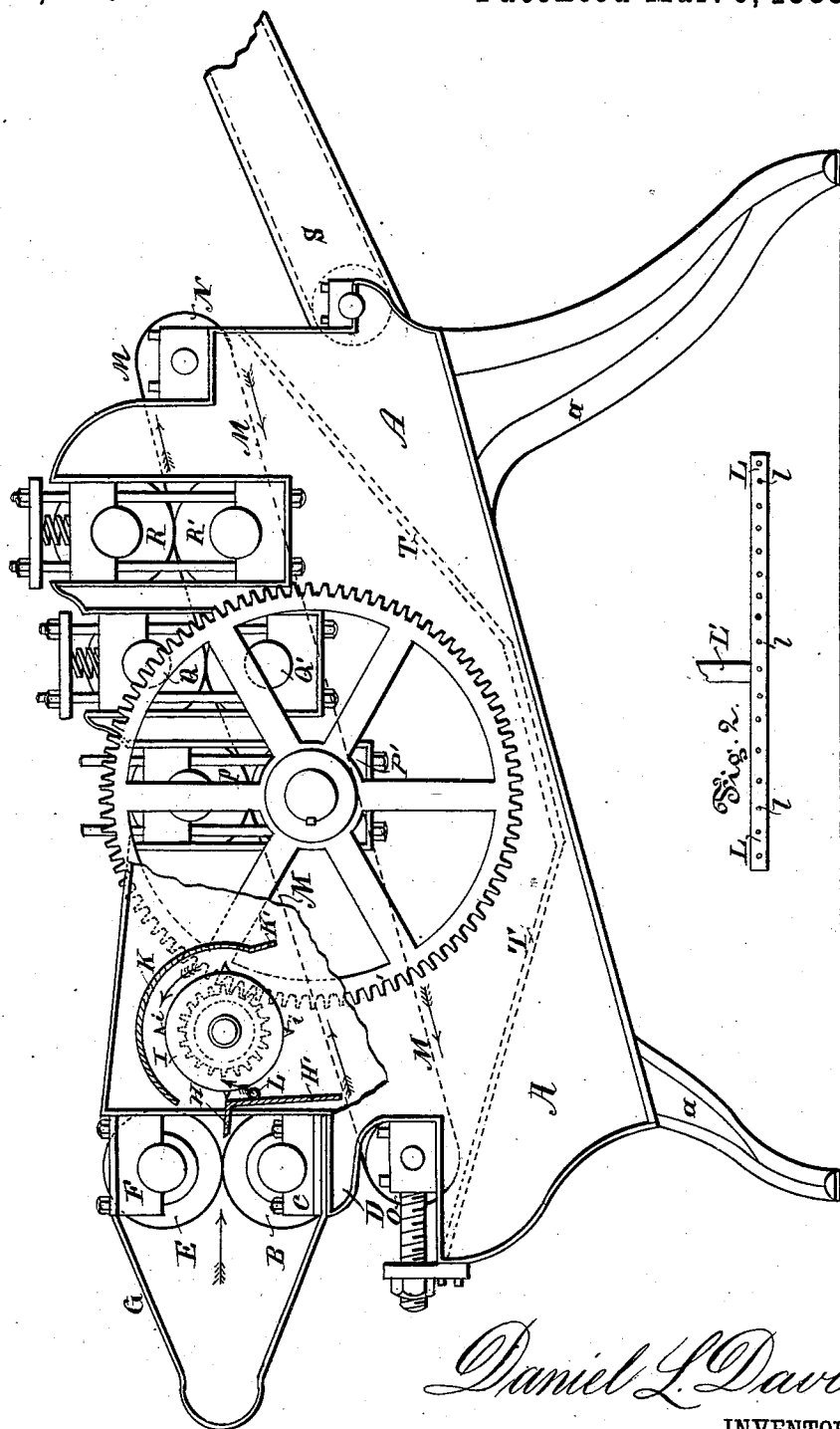
D. L. DAVIS.

CANE MILL.

No. 273,472.

Patented Mar. 6, 1883.

Fig. 1



WITNESSES:

*Wm. S. Dieterich*  
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# UNITED STATES PATENT OFFICE.

DANIEL L. DAVIS, OF HARVEYSBURG, ASSIGNOR OF ONE-HALF TO BENJAMIN BUTTERWORTH, OF CINCINNATI, OHIO.

## CANE-MILL.

SPECIFICATION forming part of Letters Patent No. 273,472, dated March 6, 1883.

Application filed January 5, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL L. DAVIS, of Harveysburg, in the county of Warren and State of Ohio, have invented certain new and useful Improvements in Cane-Mills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation, partly in section, of my improved cane-mill; and Fig. 2 is a detail view of the steam-tube with its apertures for emitting the jets.

Like letters of reference indicate corresponding parts in both the figures.

My invention has relation to sugar-mills, adapted to express the juice from sugar-cane and sorghum, of that class in which the cut-up cane is subjected to the action of a jet of steam, which melts the sugar-crystals contained in the cane or sorghum stalks, thereby greatly increasing the yield of expressed juice by dissolving sugar-crystals which would otherwise be carried off in the bagasse; and it consists in the improved construction of a cane-mill of that class, as hereinafter more fully described and claimed.

In the accompanying drawings, A denotes the frame or casing of the mill, which is open at the bottom and mounted at a suitable height upon feet or supports *a*.

B is the lower feed-roll, which is journaled in boxes C, fixed on a bearing, D, projecting from the front part of the machine; and E is the upper feed-roll which is journaled in boxes F, fastened to the upper leaf of two bent steel springs, G—one at each end of the roll. As the figure in the drawings is a side elevation, only one of these springs and one each of the boxes C and F are seen.

As the cane is fed into the mill between the rolls it is received upon a throat-piece, H, by which it is conducted to cutting-cylinder I, which may be of any suitable material, either solid or hollow, and in which are fixed the knives or cutters, *i*, by which the cane is chopped up. These cutters are continuous lengthwise of the cylinder, and may be arranged either

straight, parallel to one another, or spirally, as desired. The cutting-cylinder, which receives the cane from the throat-piece, and which is rotated in the direction of the curved arrow, is provided with a hood, K, of sheet metal or other suitable material, which has a tail-piece, K', extending downwardly to within a short distance of the apron M. The throat-piece H has a downward extension, H', which, in connection with the hood K and its tail-piece K', forms a steam-chamber, into which steam is injected in the form of numerous jets through apertures *l* in a tube or pipe, L, which extends transversely across the front part of the machine, from side to side, and is fed through a pipe, L', leading to a suitably-located boiler or steam-generator. Where steam is used to run the mill, the steam-pipes L' L may be fed conveniently from the same boiler which runs the engine. The jets of steam pass in an oblique upward direction from pipe L into the hood K, as indicated by the small arrow in Fig. 1, so as to thoroughly impregnate the cane as it is being fed to and cut up by cylinder I; and as the steam being confined within the hood or steam-chamber K cannot escape until it has reached and passes under the tail-piece K', it will be seen that the cut cane is subjected to the action of the steam while it is confined in the steam-chamber, and even for some time after, inasmuch as the steam, after it escapes from the steam-chamber, will follow the incline of the apron M, by which the cut cane is carried between the three sets of presser-rolls. The endless apron M is hung between and works upon rolls N and O, one of which is provided with an appliance for adjusting its box or bearing to take up slack. I do not confine myself to any particular construction of this apron, but have found by experience that it may be made advantageously of tempered steel bands, like those used in the manufacture of the blades for so-called "band-saws." This apron passes in an upward direction from the front end to the rear of the machine, between its drums or rollers O and N, and, receiving the cut-up and steam-saturated cane as it drops from the cutting-cylinder, carries it up between three sets of pressure-rolls, P P', Q Q', and R R', the upper roll of each set being journaled in adjustable spring-actuated boxes,

the springs of which may be adjusted to give the required degree of pressure to thoroughly express the juice from the steam-saturated cane. After it has passed between the last  
5 set of rolls the bagasse is delivered from the apron M over its roll N upon the bagasse-carrier S. The expressed cane-juice flows through the apron M down into a screen or sieve, T, arranged in the bottom of the machine, through  
10 which it is strained or filtered into a box or reservoir placed on the floor below, but not shown in the drawings.

Having thus described my invention, I claim and desire to secure by Letters Patent of the  
15 United States—

1. In a cane-mill, the combination of the cutter-cylinder I, hood K, throat-piece H, having downward extension H', and steam-pipe L' L,

having a series of jet-apertures, l, substantially as and for the purpose herein shown and set  
20 forth.

2. In a cane-mill, the combination of the feed-rolls E B, throat-piece H, having downward extension H', cutting-cylinder I, hood K, having tail-piece K', endless apron M, and  
25 presser-rolls P P', Q Q', and R R', all constructed and arranged substantially as and for the purpose herein shown and described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature  
30 in presence of two witnesses.

DANIEL L. DAVIS.

Witnesses:

LOUIS BAGGER,  
WM. LECHER.