E. A. WILLIAMS.

Sugar Cane Mill.

No. 46,743. Patented March 7, 1865.

Fig. 1

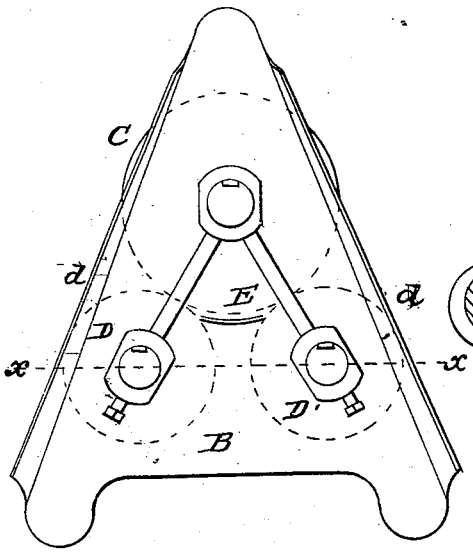


Fig. 2

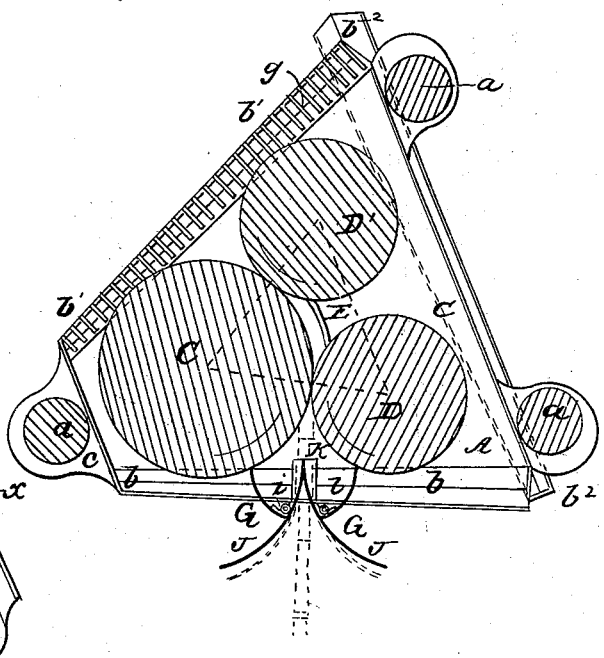


Fig. 3

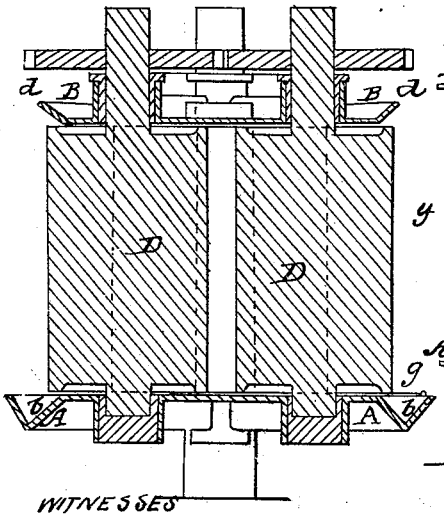
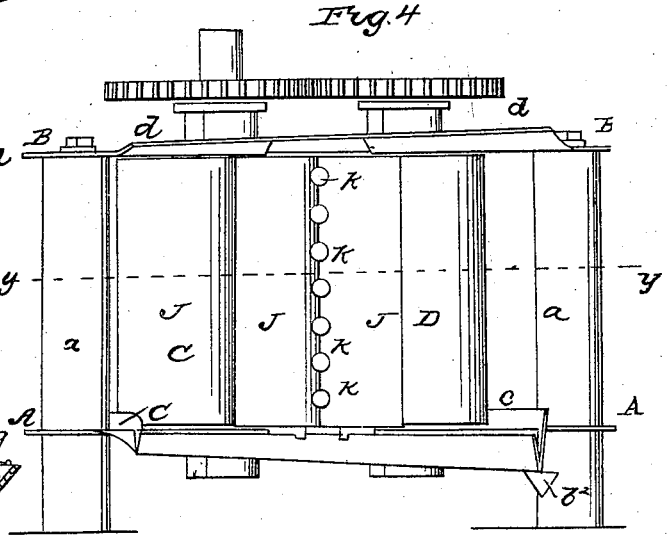


Fig. 4



WITNESSES
R. T. Campbell
Eschafer

INVENTOR
E. A. Williams
by his atty
Mason Fenwick & Bruce

UNITED STATES PATENT OFFICE.

E. A. WILLIAMS, OF COLUMBUS, OHIO.

IMPROVEMENT IN SUGAR-CANE MILLS.

Specification forming part of Letters Patent No. **46,743**, dated March 7, 1865.

To all whom it may concern:

Be it known that I, E. A. WILLIAMS, of Columbus, Franklin county, State of Ohio, have invented a new and Improved Sugar-Cane Mill; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view of the improved mill. Fig. 2 is a horizontal section through the mill. Fig. 3 is a vertical section through the mill, taken at the point indicated by the red line *x x*, Fig. 1. Fig. 4 is a front elevation of the machine.

Similar letters of reference indicate corresponding parts in the several figures.

One of the most important objects of my invention and improvements in sugar-cane-crushing machines is to so construct the bottom plate of a vertical machine that the juice expressed from the stalks will flow directly off into troughs or conduits adapted for receiving it, as will be hereinafter described.

Another object of my invention is to prevent the bagasse or fine cane-trash, &c., from clogging the crushing-rollers or accumulating at the ends of the same, and at the same time to provide for the ready removal of any foreign substances which may get between the ends of said rollers and their bearing-plates, as will be hereinafter described.

Another object of my invention is to prevent the fine cane-trash from escaping with the juice into the juice-receivers, as will be described.

Another object of my invention is to prevent the juice from being ejected from the machine at the point of entrance for the cane; and also to provide for feeding the cane-stalks between the rollers by self-adjusting guides or fenders, all as will be hereinafter explained.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

The frame-work of my machine consists, essentially, of two triangular plates, A B, connected together at their angles by means of posts *a a a*. The two plates A B may be arranged parallel to each other, and cast or otherwise formed with strengthening-ribs and journal-boxes, as shown in Figs. 1, 3, and 4, which latter are arranged and adapted for receiving the shafts of the three crushing-rollers C D D′. The lower or base-plate, A, is formed with two troughs or conduits, *b b′*, on its longest sides, and two ledges or flanges, *c c*, projecting up from its surface, and arranged as clearly shown in Figs. 2 and 4. The troughs *b b′* are intended for receiving the juice flowing from the surface of the bottom plate, A, and conducting the juice into another conduit or trough, b^2, which finally conducts the juice into receivers placed under its lower end. The troughs *b b′* may be cast with the plate A, cast separate, and bolted on this plate; or they may be made of sheet metal, or of any material found best suited to the purpose, and secured along or beneath the edges of plate A in any convenient manner. The upper plate, B, is provided with side flanges, *d d*, which turn up, as represented in Figs. 1, 3, and 4, and serve to stiffen said plate, besides performing another office, which will be hereinafter described.

The three crushing-rollers are arranged in such relation to each other that the cane-stalks entered between the large and small rollers C D will be carried around and passed out between the rollers C and D′; and while this is the case these rollers C D D′ are so arranged with respect to the plates A B that a portion of the end of each roller projects over those sides of said plates which are furnished with troughs and flanges, as shown clearly in Figs. 1, 2, and 3. The object of thus arranging the three rollers is to allow anything which might get under or over the ends of the same to freely escape at the exposed or uncovered points. This arrangement of the conduits *b b′* enables me to practically carry out my invention in this respect, for it will be seen that while the trash, &c., will freely escape at the ends of the rollers the juice will be collected into the troughs *b b′* and conducted off into receptacles. The rollers C D D′ may be formed with cupped or concave ends, as shown in Fig. 3, and if it is found desirable a hooked rod may be introduced between the ends of said rollers and their plates A B, and any trash, &c., found there readily removed. Thus it will be seen that the machine can be prevented from clogging and working hard and kept clean and in good working order with very little care and attention, and without the necessity of removing the rollers or any other part of the machine for this purpose.

In Fig. 2 I have represented the trough *b′*

covered by a screen or fender, *g*, consisting of a number of bars or thin plates or strips, secured at one end to a rock-shaft or turning-rod, so that the screen can be thrown up whenever it is desired to clean the trough. The object of the screen *g* is to prevent the crushed cane or bagasse and the fine cane-trash from falling into the trough *b'*, and at the same time to allow the bagasse and the juice to freely escape from the machine in their respective channels. The usual scraper, E, is applied between the two rollers D D', for the purpose of keeping the surfaces of these rollers clean, and also for the purpose of directing the cane-stalks between the rollers C D. This scraper E may be so applied to the machine as to be susceptible of ready removal when it is desired to clean out any trash, &c., which may accumulate between the three rollers in the space inclosed thereby.

On the "front" side of the machine a semi-cylindrical fender, G, is secured, which is fitted snugly to the rollers C D and the upper and lower plates, A B, to which latter it is secured. This fender has a vertical slot through it, extending from top to bottom, which slot is closed by two curved plates, J J, that are pivoted at *i* to the fender and acted upon by suitable springs, so that their inner ends or edges will be kept closed. These inner edges of the flaring guides J J are cast or otherwise formed with tubular openings *k*, through which the cane-stalks pass on entering the machine, and while said openings freely admit the stalks to pass into the machine between the two rollers C D they prevent the juice from escaping at these points from the machine. The spring-guides also accommodate themselves to stalks of different sizes, and properly distribute and guide the stalks between the rollers C D—*i. e.*, the several openings in plates J J, through which the stalks pass on entering between the rollers C D, keep these stalks separated, and thus prevent them from falling together and passing through the machine in bundles. The juice which is ejected from the two rollers C D as the stalks enter between them is received by the fender G and conducted into the trough *b*. Thus it will be seen that all the juice is finally collected into the pans, and that very little, if any, is wasted. In other respects the machine above described may be constructed and operated in any convenient manner.

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

1. The application of one or more screens to the troughs or side conduits of the bottom plate of a cane-mill in such manner that the juice flowing over the angles formed by the said plate and the troughs into the troughs *b b'* will be deprived of cane-trash, substantially as described.

2. The flaring spring-guides J J, in combination with the side fenders, G G, substantially as described.

3. The combination of the bottom plate with side troughs, crushing-rollers partly overhanging the troughs, and the screens, substantially as and for the purpose set forth.

4. Providing for the removal of the cane-trash from both ends of the crushing-rollers when the top and bottom plates of the mill are brought in close proximity to the ends of said rollers, substantially as described.

5. The arrangement of guides and fenders, as described, or their equivalents, directly over the front trough, *b*, substantially as described.

E. A. WILLIAMS.

Witnesses:
WM. L. HEYL,
I. L. GILL, Jr.