

I. STRAUB.
Sugar Cane Crushing Mill

No. 39,182.

Patented July 7, 1863.

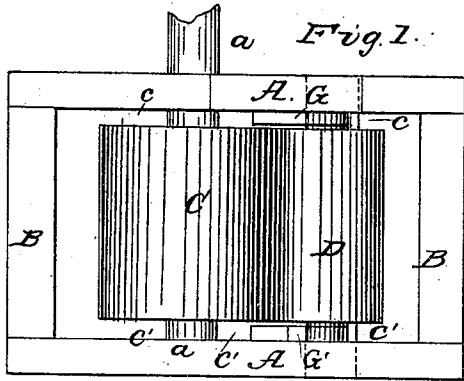


Fig. 2

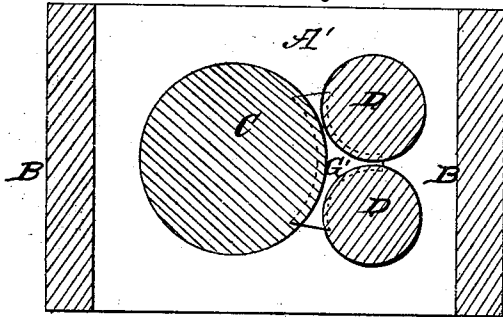
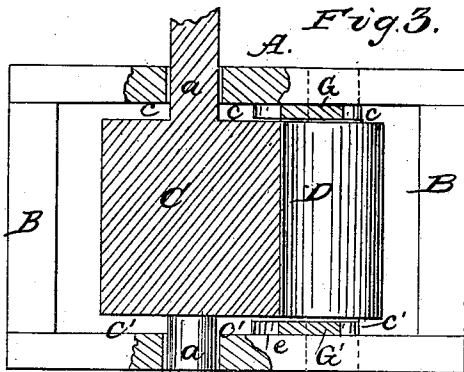
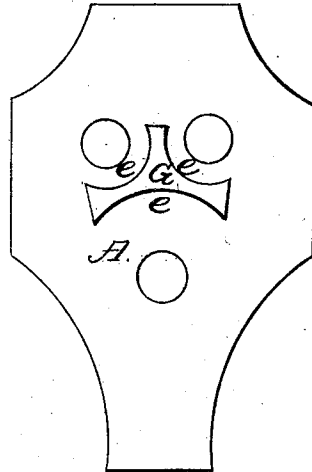


Fig. 4



R. J. Campbell
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witnesses

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by his atty
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UNITED STATES PATENT OFFICE.

ISAAC STRAUB, OF CINCINNATI, OHIO.

IMPROVEMENT IN SUGAR-CANE-CRUSHING MILLS.

Specification forming part of Letters Patent No. 39,182, dated July 7, 1863.

To all whom it may concern:

Be it known that I, ISAAC STRAUB, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Sugar-Cane-Crushing Mills; 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 vertical elevation of the framework and the crushing-rollers of an upright mill with my invention applied to it. Fig. 2 is a horizontal section through Fig. 1, taken at the point indicated by red line *x x* thereon. Fig. 3 is a section through the mill, taken in the vertical plane indicated by red line *y y* in Fig. 2. Fig. 4 represents the top guard on the upper plate of the frame.

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

In all cane-crushing mills of the upright class it is necessary to provide against the stalks getting out at the ends of the crushing-rollers during the operation of the latter in expressing the juice from the stalks of cane, and thereby clogging up the machinery. To this end the upper and lower journal-plates have been fitted in close contact with the ends of the rollers; and in another case annular grooves have been made in the ends of the rollers, into which were fitted corresponding projections or rings cast on the plates of the frame; and other plans have been essayed for this purpose, all of which are found more or less objectionable from the fact that the crushed cane will in time work its way between these contiguous surfaces, clog and derange the machinery, beside rendering it difficult of operation. The nicely-fitting joints soon become choked with dirt, oil, and cane-juice, and the mills require frequent cleaning and repairing.

The object of my invention is to remedy these evils in a sugar-cane mill, by dispensing with all closely-fitting joints or surfaces at the ends of the crushers, which would be liable to get clogged with crushed cane, &c., and to provide a means which, while it serves to keep the cane from escaping at the ends of the crushers to any material extent, will not create any injurious friction nor permit the accumulation of cane or other matters at these points.

The nature of my invention consists in leaving wide spaces at the ends of the crushing-

rollers and between them and the top and bottom plates of the supporting-frame, and in interposing directly above and below the bite of these rollers curved guards or fenders, which project over or beyond the ends of all the rollers short distances, and operate as will be hereinafter described.

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

My invention being especially applicable to the upright mills, I have shown it applied to such a mill in the accompanying drawings, in which—

A A' represent, respectively, the top and bottom plates of the supporting-frame, in which the crushing-rollers have their bearings.

B B are two upright side supports for the plates A A', which, with these horizontal plates, constitute the frame of the machine.

C is a large cylindrical drum or roller, the shaft *a* of which passes through and has its bearings in the plates A A'; and to the upper-projecting end of this shaft *a* the sweep, to which the animals are attached for driving the machine, is usually applied.

D D are twin-rollers, the axles of which also have their bearings in the plates A A'; and these latter rollers are arranged in such relation to the large roller C that the stalks of cane are subjected to a double crushing action in passing between the large and small rollers, the juice, being collected and drawn off at the lower ends of the rollers in the usual manner common to machines of this class. The upright rollers or crushing-drums are all of an equal length; and between the ends of these rollers and the top and bottom plates, A A', wide spaces *c c'* are left, of sufficient capacity to prevent anything which might get in at these points from clogging the rollers. I cast or otherwise secure to the lower surface of the plate A, and to the upper surface of the plate A', curved fenders G G', whose vertical curved edges may, if desirable, be formed concentric with the axes of the respective rollers over which the edges of the fenders slightly project, as shown in Fig. 2 in dotted lines. These fenders or guards should project from their respective plates sufficient distances to fit snugly over and against the ends of the rollers, and prevent as much as possible the escape

outward from the rollers of crushed cane. The length of the curved surfaces or arcs of the fenders should be such as to extend around the bite or acting-points only of the rollers, and to guard these points, so as to keep the cane between the crushing-surfaces of the rollers as it is passed between them. The curves *e e e* of the fenders may, therefore, extend around the distance of about one-quarter the circumference of their respective rollers. This leaves about three-fourths of each roller uncovered and free to discharge any substance which might get between the ends and the plates *A A'*. The fenders will not, therefore, be liable to collect under them the crushed cane-stalks, even should such substances get in at these points, for it will be seen that the surface covered by the fenders is so very small that the rotary motion of the rollers would at once force out the substance again. The fenders *G G'* also act as scrapers for the circumference of the rollers at the ends thereof, and remove therefrom all adhering substances which would be liable to choke up the rollers. Then, again, it will be seen that in the use of my fenders arranged directly over and under the bite of the rollers, every part of the mill is accessible, and every part can be readily got at for cleaning or oiling.

In the class of mills to which my invention belongs it is desirable to use the entire length of the rollers for crushing the cane, and in the operation of feeding the mill the stalks of cane cannot always be put through it perfectly straight. Some of the stalks will be directed upward and some downward, and without some kind of covering for the ends of the rollers the stalks would escape in large quantities only partially crushed; and should the ends of the rollers be covered by the plates *A A'*, as in other mills, although the stalks will in a great measure be prevented from working out at the ends of the rollers, still the partially-crushed stalks that do escape and get over or

under the ends, will force the plates *A A'* outward, clog the machine, and, which is frequently the case, force the frame of the mill apart. In my improved mill, there can be no accumulation of crushed cane at the ends of the rollers, nor can there be any clogging at these points.

It will be seen that the upper and lower ends of all of the rollers are supported at the point where the crushing operation takes place, by means of the projections *G G'*, and thus the thrust upon the small journals of the rollers obviated to a very great extent. It will also be seen that the projections *G G'* are a part of the frame *A A'*, and that when the frame is put together, these projections close the spaces where the cane-stalks would be liable to pass off from between the circumference of the rollers, and while these spaces are thus closed, large spaces, *c c'*, are left between the ends of the rollers and the frame outside of the projections. In a word, the projections *G G'* of the frame overhang and underlie a small portion of the ends of all the rollers, as shown, while the greater portions of the ends are uncovered.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of projections *G G'* on the under side of the top plate, *A*, and on the upper side of the bottom plate, *A'*, and so that the ends of the rollers for only a small portion of their extent, and immediately at the point where the crushing is performed, shall abut against them, all substantially in the manner and for the purpose described.

Witness my hand, in the matter of my application for a patent for an improved sugarcane-crushing mill, this 12th day of May, A. D. 1863.

ISAAC STRAUB.

Witnesses:

R. T. CAMPBELL,
DE WITT C. LAWRENCE.