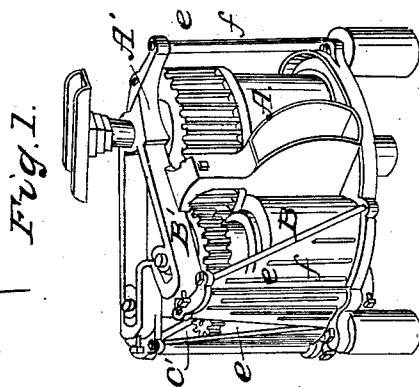
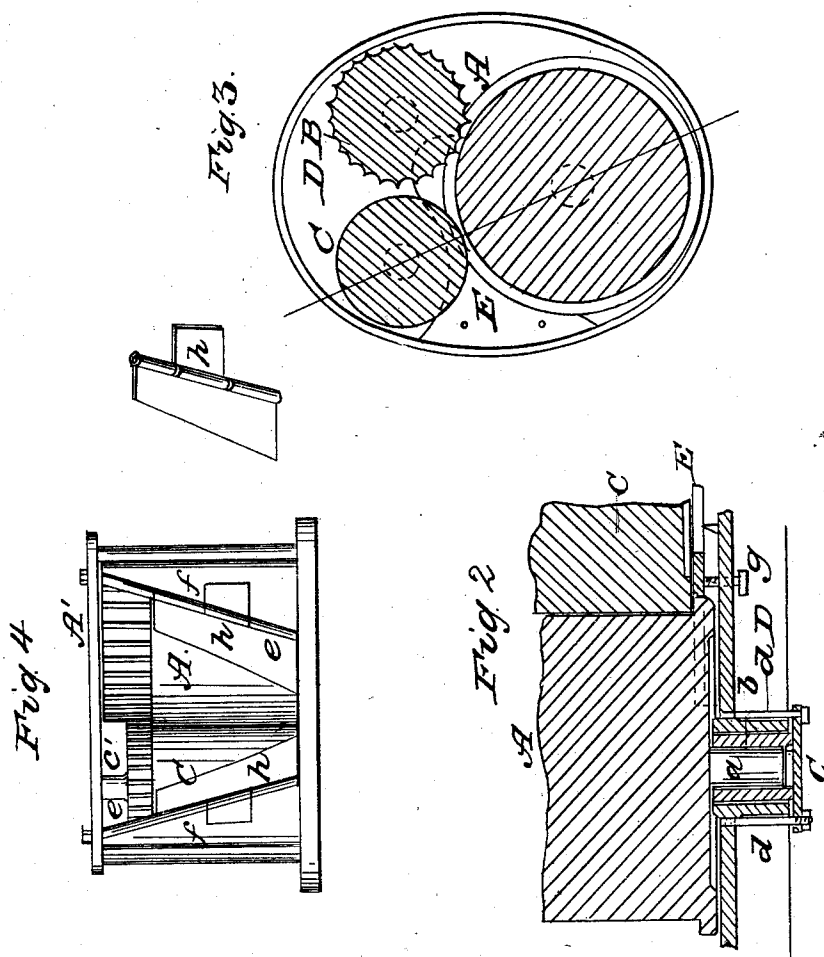


CLARK & EDGERTON.

Sugar Cane Mill.

No. 41,680.

Patented Feb. 23, 1864.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN SUGAR-CANE MILLS.

Specification forming part of Letters Patent No. 41,680, dated February 23, 1864.

To all whom it may concern:

Be it known that we, WILLIAM H. CLARK, of Cincinnati, in the county of Hamilton and State of Ohio, and WALTER EDGERTON, of Spiceland, in the county of Henry and State of Indiana, have invented certain new and useful Improvements in Sugar-Cane Mills; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings and letters of reference marked thereon, forming part of this specification.

Our invention relates to the arrangement of the rolls and connecting-gearing of three-roll mills; also, to supporting the ends of the rolls of vertical mills, or, more properly, the lower ends of the shafts thereof, in oil-tight adjustable step-boxes; also, to staying the mill with diagonal or oblique bolts extending from the top to the bottom plate; also, to the use of a false plate, forming a table upon which the pressed stalks as they leave the mill pass out beyond the rim of the bed-plate without being allowed to dip into and reabsorb any portion of the expressed juice from the pan or lower plate; also, to the mode of constructing and applying scrapers to the rolls for removing therefrom adhering fragments of cane.

In mills of ordinary construction, where three rolls are used, the connecting-gearing is all arranged in one plane. This requires the two minor rolls to be set a short distance apart to accommodate the gear-wheels, the diameter of which to the outer ends of the cogs is greater than the diameter of the rolls. It then becomes necessary to employ a plate, called a "conductor" or "dumb return," to detach the partially-pressed stalks from the feed-roll and conduct them along for a considerable distance to the entrance between the main and delivery rolls. This conductor is difficult of adjustment, easily deranged, and is the source of much annoyance in cane-mills. In our improved mill the use of the conductor is dispensed with, for by a peculiar construction and arrangement of the gearing the two minor rolls are allowed to work close together, so that the cane cannot pass out between them, and is deprived of all exit, except in an appropriate direction through between the main and delivery rolls.

Referring now to the accompanying drawings, Figure 1 is a perspective view of a cane-mill in which our improvements are illustrated. Fig. 2 is an axial section of the lower end of the main roll, a portion of one of the minor rolls; and also of the bed-plate. Fig. 3 is a horizontal section of the mill through the rolls. Fig. 4 is a partial elevation of the mill, being a rear view.

Like letters of reference indicate like parts so far as represented in the different figures.

The machine here represented has its rolls arranged in a vertical position. A part of our improvements refer exclusively to mills of this style, while others apply to either vertical or horizontal mills. The main roll in this mill is flanged, and is twice the diameter of the minor rolls.

A is the main roll; B, the feed-roll; C, the delivery-roll. A' is the main gear-wheel; B' and C', the minor gear-wheels, respectively. The face of the main gear-wheel A' or the length of the cogs is twice as great as the cogs of the minor wheels, and the latter are so arranged on their respective shafts as to work one in gear with the upper part of wheel A' and the other in gear with its lower part, and being thus in different planes they are permitted to lap by each other and allow the two minor rolls to be brought very close together. The rolls work in appropriate bearings in the top and bottom plates; but in order to avoid all unnecessary friction produced by the weight of the rolls resting upon the lower plate, and for the convenience of adjustment, we support the lower ends of the roll-shafts in adjustable oil-tight cup-boxes, as will now be explained by reference to Fig. 2. In this drawing, *a* represents the lower end of the main-roll shaft. *b* is an oil-tight cup-box surrounding the shaft and fitted to an appropriate opening in the lower plate, D. *c* is a plate supported by rods *d*, upon which the cup-box *b* rests. This plate is adjustable vertically by screw-nuts applied to the lower ends of rods *d*, by which the cup may be so elevated as to support the roll free from contact with the lower plate, D. *ee*, &c., are rods or bolts connecting the top and bottom plates, vertical plates *ff* being used between, as represented. In our improved mill these rods or bolts are arranged, not vertically,

as has been common, but obliquely in opposite directions, as shown, thus giving to the frame great firmness and rigidity, causing the gearing to work more smoothly, with less risk of breaking cogs.

E is a false plate resting upon the bottom or bed D. (Shown in outline in Fig. 3.) One edge of this plate is formed to fit the circumference of the flange of A. The other part of the plate extends under the rolls B and C, and is supported up in contact with their lower ends by one or more set-screws, *g*.

h h, Fig. 4, represent scrapers applied to the rolls A and C. They are made each in one piece, as represented, a portion of one edge being turned to form an eye through which one of the stay-bolts *e* passes, while another part of the same edge is formed to press against the stay-plate *f* or against a spring of elastic substance, which may, if necessary, be interposed. The opposite edge of the plate is formed to fit the surface of the roll against which it rests, the arrangement of the whole being such that the edge of the plate resting against the roll is pressed and held in contact therewith, and operates to remove therefrom any adhering fragments of cane.

What we claim as new, and desire to secure by Letters Patent, is—

1. So arranging the connecting-gearing of three-roll cane-mills that the minor rolls may be placed and worked with their faces nearly in contact, for the purpose herein described.

2. Supporting the lower ends of the roll-shafts in oil-tight cup-boxes adjustable vertically, substantially as described.

3. Arranging the stay rods or bolts *e e*, &c., obliquely in opposite directions, as and for the purpose specified.

4. The construction and arrangement of the scrapers *h h* in reference to the rolls A and C, for the purpose described.

5. The false plate E, adjustable to the lower ends of the unflanged rolls B and C and resting against the circumference of the flange of the roll A, in combination with the adjustable rolls A B C, substantially as described.

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