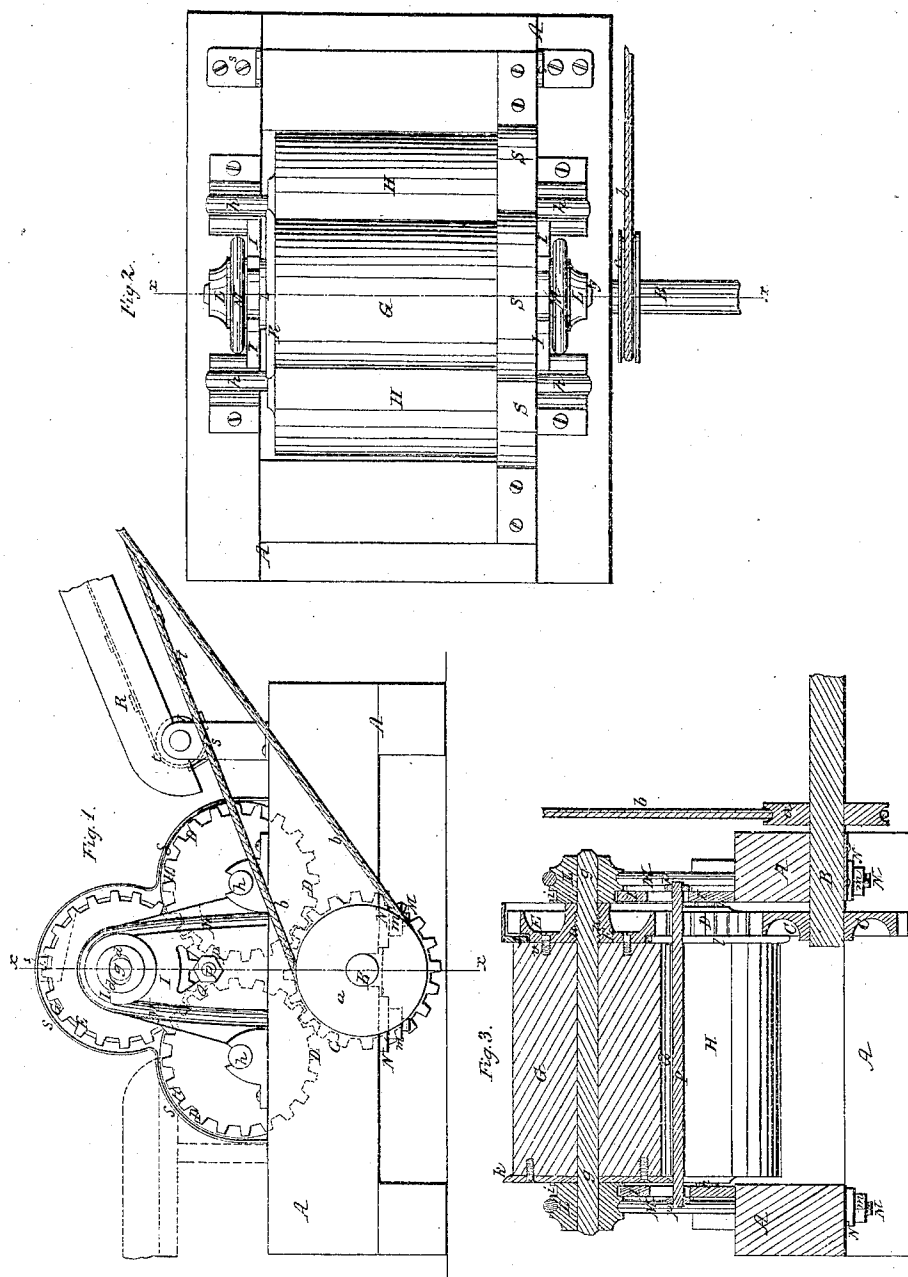


D. J. POWERS.  
SUGAR CANE MILL.

No. 62,499.

Patented Feb. 26, 1867.



Witnesses

J. B. Woodruff.  
H. J. Harwood.

Inventor:

D. J. Powers.  
By his atty.  
J. L. Brown

# United States Patent Office.

D. J. POWERS, OF MADISON, WISCONSIN, ASSIGNOR TO BUFFALO AGRICULTURAL MACHINE WORKS, OF BUFFALO, NEW YORK.

Letters Patent No. 62,499, dated February 26, 1867.

## IMPROVEMENT IN SUGAR-CANE MILLS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, D. J. POWERS, of Madison, in the county of Dane, and State of Wisconsin, have invented a new and improved Mill for Expressing the Juice from Sugar Cane or Sorghum Stalks; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a side elevation of the mill.

Figure 2, a plan of the same.

Figure 3, a transverse vertical section thereof, in a plane indicated by the line *x x*, figs. 1 and 2.

Like letters designate corresponding parts in all of the figures.

The canes or stalks are passed between three pressure rollers, *G*, at the top, and *H H* at the bottom, all mounted in a strong frame, *A*. The two bottom rollers, *H H*, are situated side by side, a little distance from each other, and the top roller, *G*, is situated centrally over the two, so as to be in contact, or nearly so, with both. It has on one end a cog-wheel, *E*, which gears into a cog-wheel, *D*, on each of the bottom rollers, *H H*. Into both of these latter cog-wheels, below, also gears a driving cog-wheel, *C*, on a shaft, *B*, which connects with the horse power or other driving power. The shaft *B* has a single bearing in the bottom of the frame, allowing it to have some angular adjustment. This gearing of the driving-wheel into the wheels of both of the bottom rollers, and these roller-wheels both into the single top roller-wheel, divides the strain upon the gears, and equalizes the action of the rollers, and is, therefore, very advantageous. The gear-wheels on the rollers are attached thereto by having screw-threads cut in their shaft apertures, and corresponding screw-threads on the hubs or journals of the shafts of the rollers, so that the wheels are secured upon the rollers, closely against their ends, as indicated at *u*, in fig. 3. The screw-threads are cut right or left, as the case may be, so that the motion of the rollers shall always have a tendency to screw the wheels on tighter. And to prevent the wheels from ever unscrewing, fastening screws, *v v*, fig. 3, may pass through them into the ends of the rollers; or keys may be driven into grooves in the shafts and wheels, in the usual manner of preventing wheels from turning on their shafts. The journals *h h* of the two bottom rollers *H H*, turn in bearings, resting immediately upon the frame of the machine in the ordinary manner. But the journals *g g* of the top roller *G* rest in movable bearings, *L L*, which slide vertically in standards *I I*, (attached to the frame,) by means of grooves *i i*, fig. 3, fitting over the inner edges of the forked tops of the standards, substantially as shown in the drawings. Then, over these movable bearings strap bolts, *M M*, pass, fitting into grooves in their surfaces, and thence extend down through the strong frame timbers, and are fastened by nuts, *m m*, below said timbers. These bolts being made of wrought iron, give great strength to the bearings, so as to resist any upward pressure or strain against the top roller *G*, to which it may be subjected, while the standards *I I*, being little more than guides to keep the bearings in place, may be of cast iron, and of comparatively little weight and strength. This method of mounting, also, allows the bearings to be adjusted up and down, as desired. It also affords an excellent means of giving elasticity to the bearings, which is required, in order that the top roller *G* may yield to the various sizes or amounts of the canes passing through, and yet press down upon the bottom rollers with all the force requisite. This elasticity is produced by inserting India-rubber washers *N N* between the nuts *m m* and the timbers of the frame, as represented, or the equivalent of said washers. By turning the nuts *m m* any desired degree of force may be given to the pressure of the India-rubber springs. It is desirable, if not necessary to the best action of the rollers, that the top roller *G* should have liberty to adjust itself to the bottom rollers *H H*, sometimes being closer to one, and sometimes to the other, according as the material may vary between the two sets of pressing surfaces, and equalize the pressure on the rollers, and also throughout the length of the rollers. This is accomplished in the most simple manner by widening the journal apertures *d d* of the bearings *L L* in a lateral or horizontal direction, so as to allow the journals *g g* of the roller *G* to have a lateral play, as shown in fig. 1. The extent of this widening is about proportionately indicated in the figure. The turn plate or "dormer rest" *Q*, situated in the space between the bottom rollers *H H*, under the top roller *G*, to prevent the canes or stalks from passing down between the bottom rollers, is here secured in place by an improved means. It is attached to a rod, *P*, the ends of which extend out through apertures in the standards *I I*, at the sides of

the machine, large enough to allow all the necessary play or adjustment of the rod for the purpose. The rod is secured in any fixed position, by tightening up nuts *p p* on the screw ends of the rod, against the standards *I I*. By loosening the nuts, the turn plate may be adjusted, or may adapt itself to the proper position, where it is held by again tightening the nuts against the standards. The gear-wheels *D D E* are covered above with a strip, *S*, of sheet iron, to keep them from becoming clogged with the stalks, and to prevent any accident by their being so close to the working part of the mill. This strip is secured to the frame at the ends, and the middle is kept in position and supported, if necessary, by a guide, *f*, extending down from the top of the strip into a groove at the end of the roller *G*, where the flanges *l l* of the rollers *H H* run. This guide, also, has a projection or tooth at the side, to clear out any obstructions that might get into the groove. The pressed cane or bagasse, as it comes from the rollers, is conveyed away on an endless belt-carrier, *R*, as indicated in fig. 1.

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

1. The combination of strap bolts *M M*, and India-rubber blocks or springs, when applied to the journals of the pressure rollers, substantially as and for the purpose herein specified.

2. I also claim the laterally widened journal apertures *d d*, of the bearings *L L*, in combination with strap bolts *M M*, and India-rubber springs, for the purpose of allowing a side play to the top roller *G*, substantially as herein specified.

3. I also claim the adjustment of the turn plate *Q*, by the means substantially as specified.

The above specification of my improved mill for expressing the juice from sugar cane or sorghum stalks, signed by me this 31st day of May, 1864.

D. J. POWERS.

Witnesses:

CHAS. W. ASKEW,  
GEORGE GILLATT.