O. E. WOODBURY.

Cane Mill.

No. 50,978. Patented Nov. 14, 1865.

Fig.

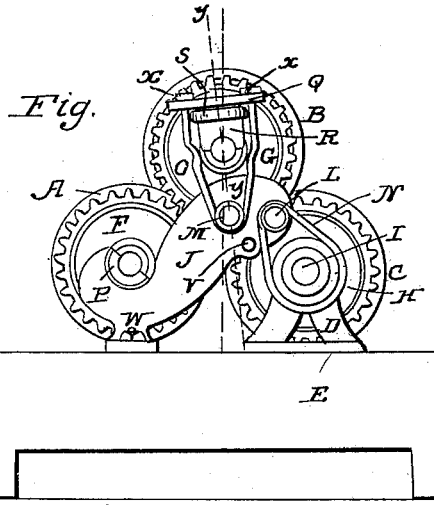


Fig. 2.

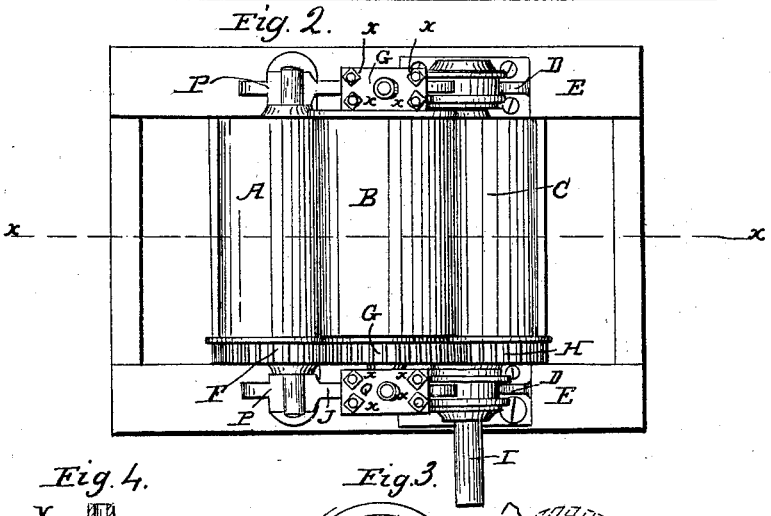


Fig. 4.

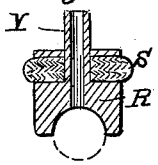
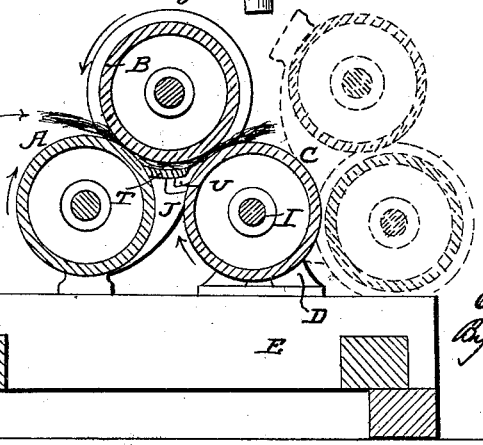


Fig. 3.



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UNITED STATES PATENT OFFICE.

O. E. WOODBURY, OF MADISON, WISCONSIN.

IMPROVEMENT IN CANE-MILLS.

Specification forming part of Letters Patent No. **50,978**, dated November 14, 1865.

To all whom it may concern:

Be it known that I, ORSON E. WOODBURY, of Madison, in the county of Dane and State of Wisconsin, have made new and useful Improvements in Sorghum-Crushers; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the invention, sufficient to enable one skilled in the art to which it appertains to construct and use the same, reference being had to the accompanying drawings, which are made part of this specification, and in which—

Figure 1 is a side elevation. Fig. 2 is a plan or top view. Fig. 3 is a vertical section on the line *x x*, Fig. 2. Fig. 4 is a section on the line *y y*, Fig. 1.

The invention consists in the mode of hanging and journaling the rollers, as will be more particularly explained, and in the arrangement for lubricating the upper roller and for scraping the surface of the primary roller.

A is the first or primary roller; B, the second or upper roller, and C the third, lower, or back roller. The latter is journaled in standards D, which are supported on and attached to the frame or sill E, upon which the crushing-mill is mounted.

The rollers are provided with gear-wheels F G H, respectively, and these receive their motion through power applied to the shaft I of the roller C. The rollers A and B are respectively mounted upon side lever-frames, J J. These levers are each furnished with two lugs, L M, which project on each side of the levers, and by means of the former, L, the levers are attached by links N to bosses upon the standards D D, while by means of the stirrups O and lugs M they are suspended from the boxing of the upper roller, B. The roller A is journaled in the bearing P of the lever, and forms a weight, by which the crushing-pressure is maintained as between the impinging surfaces of the rollers, for drawing down upon the levers they depress the lugs M, which, by means of the stirrups O, throw the weight on the journals of the roller B, whose surface rests upon that of the roller C.

Between the plate Q, upon which the upper ends of the stirrups O are secured and the journal-box R of the upper roller are springs S, which permit a certain amount of independent vertical motion to the roller B when it is lifted by the crushing material between it and each of the neighboring rollers.

The method of supporting the levers by means of the described stirrup and link connection to the upper and lower back rollers dispenses with the heavy sides and standards ordinarily used, and also with the weights and levers used in some mills.

Upon introducing cane between the rollers A B at the point and in the direction indicated by the black arrow, Fig. 3, and revolving roller C in the direction of the arrow near it the upper roller rises upon the lower roller, C, describing the arc of a circle whose center is the center of the lugs, to which the stirrups O are attached. The distance upon the lever from the journal of the roller A to the lugs M being greater than the distance between the said lugs M and the lugs L, the pressure of the roller B upon the roller C is proportionately greater than the pressure upon the front roller, A, and when an amount of cane is fed between the rollers A and B sufficient to raise the latter and condense the springs S two-thirds of the pressure of the roller B is imposed upon the roller C and one-third upon the roller A, when, as in the illustration, the distance from P to M is twice as great as that from M to L, and the deflection of the upper roller from its position relative to roller A (due to its being pushed away by the cane) causes the vibration backwardly of the roller B and tends to lift the end P of the levers, the deflecting force which causes the said backward vibration being utilized between the rollers B and C.

The weight of two rollers, two gear-wheels, and the levers is utilized as weights, dispensing with mere springs, levers, or heavy masses, which are mere adjuncts for the purpose of pressing the rollers together.

A scraper, T, is placed between the rollers A C, so as to scrape with its front edge the surface of the front roller, A, and turn the cane upward in the proper direction to pass through between the rollers B C to receive its final pressing. This scraper is furnished at each end with a crank, U, upon the outer ends of which its rests in holes V, Fig. 1, through each of the levers, thus allowing it to press with its front edge upon the front roller, as shown in the drawings.

By unscrewing the bolts W, which fasten down the front ends of the levers J J, the levers and their rollers A B may be tilted over into the position shown in red lines in Fig. 3, affording an opportunity to clean out the pan under the mill.

By means of the nuts X X on the ends of the stirrups O and resting upon the plates Q any desired pressure may be obtained upon the cane. The journal of the upper roller, B, is lubricated by means of a tube, Y, Fig. 4, which extends from the box R through the spring S and plate Q, so as to reach a convenient position for the introduction of the lubricator.

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

1. The combination of the levers J, stirrups O, and links N, connected to the standards D, as and for the purpose described.

2. The arrangement of the rollers A B with their respective gear-wheels F G and side levers, J J, forming, by means of the tension-links N and the impingement of the rollers B C, a crushing-weight upon the cane between the rollers B C.

3. Attaching the journals of the roller B by the stirrups O to the levers J at a point between vertical lines passing through the axes of the rollers B C.

4. The arrangement of the rollers A B upon the levers J J, which are connected by links N N to the standards concentrically with the axes of the roller C, permitting the revolution of the levers J and their attached rollers backwardly, as and for the purpose described.

5. The combination of the roller B with a connecting stirrup, rod, or frame, upon whose pivotal point it has a vibratory motion.

The above specification of my improvements in sorghum-crushers signed this 13th day of September, 1865.

O. E. WOODBURY.

Witnesses:

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