C. V. STEVENS.

Grinding-Mill Attachments.

No. 206,905. Patented Aug. 13, 1878.

Fig. 1

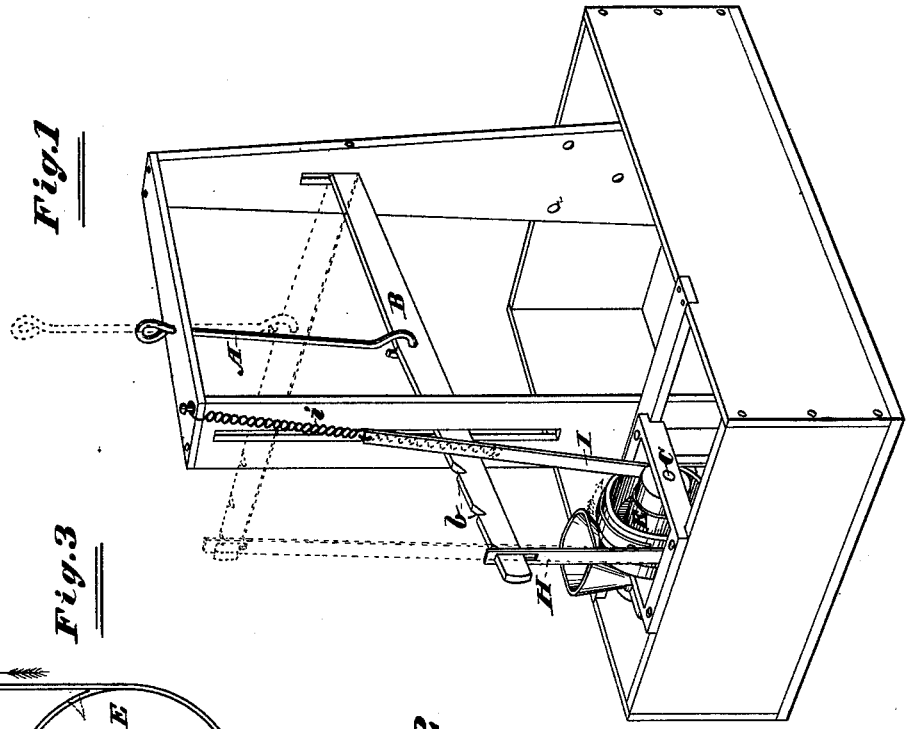


Fig. 3

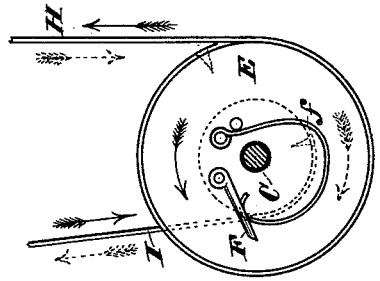


Fig. 4

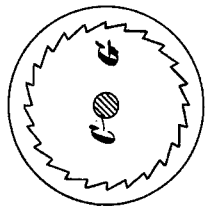
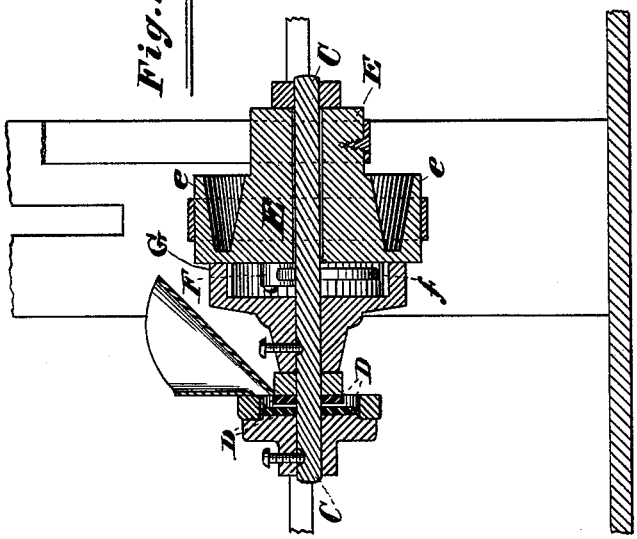


Fig. 2



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UNITED STATES PATENT OFFICE.

CHARLES V. STEVENS, OF SOMONAUK, ILL., ASSIGNOR OF FOUR-FIFTHS OF HIS RIGHT TO JOHN CLARK AND HARRISON WRIGHT, OF SAME PLACE.

IMPROVEMENT IN GRINDING-MILL ATTACHMENTS.

Specification forming part of Letters Patent No. **206,905**, dated August 13, 1878; application filed February 6, 1878.

To all whom it may concern:

Be it known that I, CHARLES V. STEVENS, of Somonauk, in the county of De Kalb and State of Illinois, have invented a new and useful Improvement in Windmill Attachments for Grinding-Mills, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of a grinding-mill and my improvement for communicating motion thereto; Fig. 2, a vertical section on an enlarged scale through the driving-pulley and grinding-disks; Fig. 3, an elevation of the inner face of the clutch-pulley with spring-pawl attached, and Fig. 4 a similar view of the ratchet-wheel on the grinding-disk shaft, both latter views on an enlarged scale.

The invention consists in certain combinations of special devices for accomplishing the above-named purpose, all of which will be hereinafter more fully set forth.

In the drawings, A represents the pitman, which is attached to the crank-shaft of the windmill, (not shown in the drawings,) and is intended to be connected to the piston-rod of the pump. Instead of the pitman itself, this may be a rod connected to the pitman, so as to partake of the reciprocating motion of the latter.

A horizontal lever, B, is pivoted at one end to the frame-work of the mill, or any other suitable support, as shown in Fig. 1 of the drawings, and the pitman or rod A is hinged to this lever at or near its central point, the free end of the latter being extended out beyond the frame at one side thereof.

A shaft, C, is arranged conveniently below the outer end of the lever B, and is supported in suitable bearings, being arranged horizontally.

Grinding wheels or disks D may be arranged in relation to this shaft in the usual manner, one of them being fixed thereon so as to revolve with the shaft, and the other stationary.

A pulley, E, is mounted loosely on the shaft C, being provided with a long hub, somewhat larger at the inner end than the outer, and provided with a rim or flange, *e*, at this end, as shown in Fig. 2 of the drawings. A pawl, F, is pivoted to the inner face of this loose pulley, and is provided with a spring, *f*, operating to throw it outward in a way well known in connection with spring-pawls.

An internal ratchet-wheel, G, is fixed upon the shaft C, adjacent to the face of the pulley E, so that the spring-pawl on the latter will be within the cup of the former, and will be caused to engage with the internal teeth by its spring.

A band, H, is attached at one end to the perimeter of the flange *e*, around which it is wound, and the other end then carried up and fastened to the outer end of the lever B, as shown in full lines in Fig. 1 of the drawings. A second band, I, is fastened at one end to the outer or smaller portion of the hub of the loose pulley, and extended upward and attached at its upper end to the frame-work or any other rigid support, independent of the vibrating lever. This band I should be either of elastic material, or should have an elastic section, *i*, which may be a spring of any suitable construction, or some elastic material like rubber. The two bands or belts are arranged on opposite sides of the pulley, so that when one is wound upon the latter the other will be unwound.

Now, it is evident from the description above that, with every reciprocation of the pitman occasioned by the revolution of the crank-shaft belonging to the windmill, the lever B will be vibrated vertically, its outer end being alternately raised and depressed. When it is raised, as shown in dotted lines in Fig. 1 of the drawings, the band H will be drawn up, thereby giving a rotary movement to the pulley E; and the construction and arrangement of the pawl and ratchet are such that, when the pulley is thus rotated in the direction of the arrow in Fig. 1, the pawl is caused to engage with the ratchet, thereby causing the shaft and grinding-disk to rotate with the pulley. This rotation of the pulley will evidently wind up the band I, thereby stretching the spring or elastic section *i;* and as soon as the lever begins to move in the opposite direction the contractile force of this section will rotate the pulley backward in the opposite direction, and again

wind up the band H. In this movement the pawl slips back over the teeth of the ratchet, as usual in backing-ratchets, and therefore there is very little resistance for the spring to overcome in the backward rotation of the pulley. Of course, the shaft and grinding apparatus will remain stationary during this return movement; but an intermittent motion will be given to the latter, which will answer very well for ordinary grinding-mills upon farms, and for many other similar purposes.

If desired, gearing may be introduced for the purpose of giving such speed and direction to the movement of the machinery as may be desired. Notches *b* may be provided in the outer end of the lever B, and the band H attached to the latter by means of a loop, hook, or any other device adapted to the notches. When thus constructed the leverage may be regulated by changing from one notch to another, thereby changing also the distance to which the driving-band is drawn out.

As already stated, I do not confine myself to the adaptation of this improvement to grinding-mills, for I propose to use it with other machines where light rotary power is required, and thus utilize much of the power of windmills hitherto expended uselessly.

Instead of a spring or elastic section used in connection with the band I, a weight or some other similar device may be employed for turning back the pulley.

In the application of the above-described improvement I obtain the following advantages: First, the leverage on the grinding-shaft is always the same during the entire stroke of the vibrating lever; second, different degrees of motion may be given to the grinding-surfaces with the same windmill by reason of the adjustment of the driving-belt on its lever; third, the power derived from different-sized windmills may be utilized so as to give the grinding-surfaces a partial revolution, a full revolution, or more than a full revolution, to every revolution of the windmill, according to the size of the loose pulley and the length of the driving-band.

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

The vibrating lever B, connected to the windmill-pitman, in combination with the loose clutch-pulley E, driving-band H, retracting-band I, ratchet-wheel G, and grinding-disks D, all arranged and operating substantially as described.

CHAS. V. STEVENS.

Witnesses:

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JAMES T. POWELL.