ANSELL & GALLERY.

Grist Mill.

No. 3,711. Patented Aug. 21, 1844.

Fig. 1.

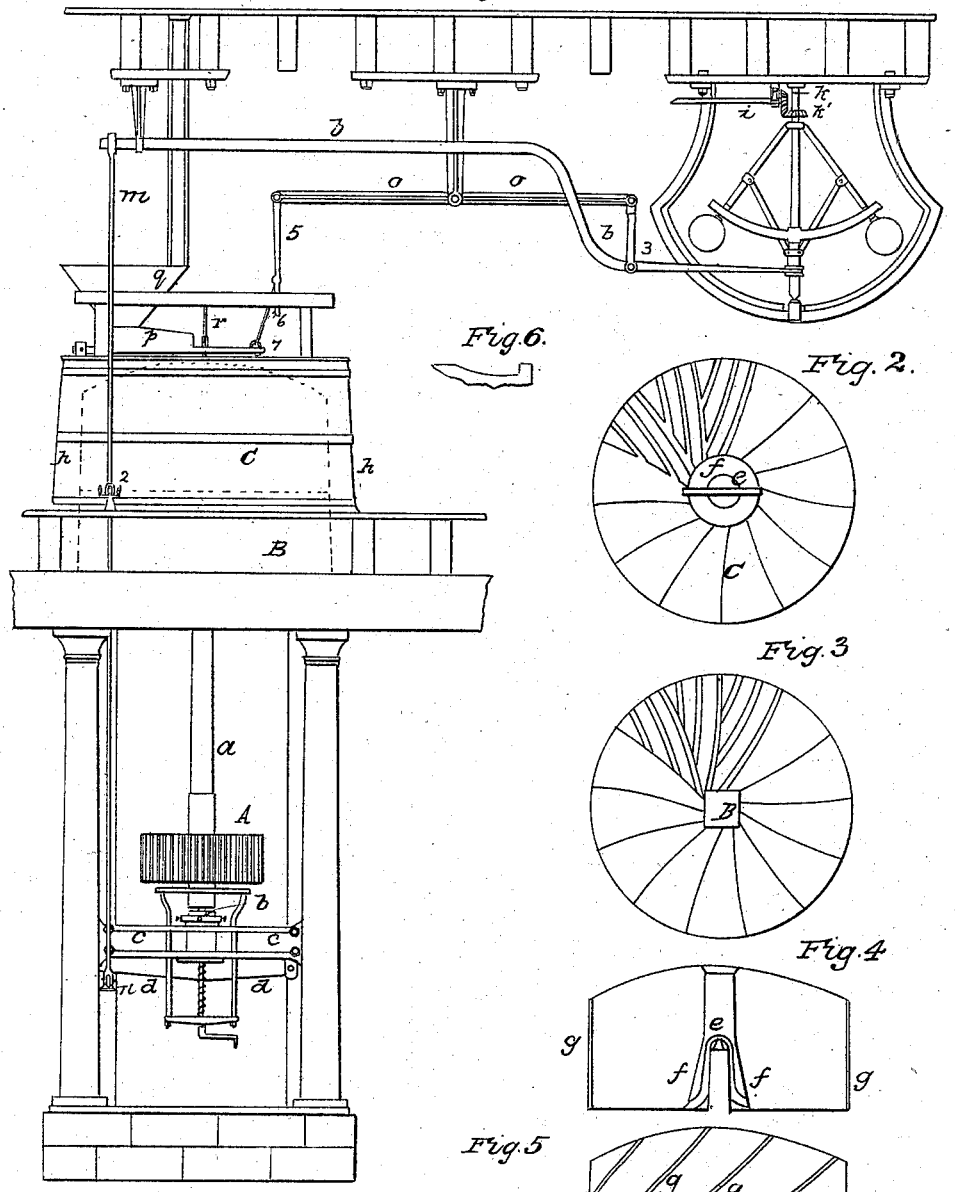


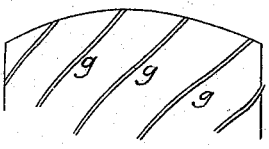
Fig. 6.

Fig. 2.

Fig. 3

Fig. 4

Fig. 5



Witnesses
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UNITED STATES PATENT OFFICE.

JNO. ANSELL AND JAMES GALLERY, OF BROOKLYN, NEW YORK.

GRIST-MILL.

Specification of Letters Patent No. 3,711, dated August 21, 1844.

To all whom it may concern:

Be it known that we, JOHN ANSELL and JAMES GALLERY, now of the city of Brooklyn, in the State of New York, late of Clinton, Lenawee county, State of Michigan, millers, have invented and made and applied to use certain new and useful improvements in the mode of constructing, fitting, facing, mounting, feeding, governing, and using common millstones for grinding grain and other substances of any kind, such improvements being intended to effect the performing of more work of equal quality in the same time, the keeping the meal cooler, and the governing the supply of grain to the stones by the simultaneous operation of mechanical means connected to a governor-frame in all respects the same as those used with steam-engines, for which improvements we seek Letters Patent of the United States, and that the said improvements and the mechanical means by which the said mechanical or intended purposes are effected are fully and substantially set forth and shown in the following description and in the drawings annexed to and making part of this specification, wherein—

Figure 1 is a general elevation of a single pair of stones. Fig. 2 is a plan of the upper or running stone. Fig. 3 is a plan of the lower or bed stone. Each shows as we fit and prepare them. Fig. 4 is a section of the runner with its bail eye and spindle. Fig. 5 is an elevation of the runner stone as placed for use, and the same letters and numbers as marks of reference apply to the same parts in all the figures.

A is the driving pinion on the spindle shaft *a* connected as usual to the motive power. The shaft *a* is sustained on an adjustable step piece *b* which goes through the flanched bridge *c* and rests on a bridge *d;* this has at one end a fulcrum point to the main frame. The other end of the bridge *d* is controlled by the governor, as is hereafter described and the bridge piece *c* is to be fitted with the means of lifting and holding the pinion A out of gear with the motive power in any usual or convenient manner.

B is the lower or bed stone set in the frame as shown by dotted lines in Fig. 1 and in face in Fig. 2.

On inspection and comparison it will be seen that the furrows on the faces of these stones are dressed and cut in curved lines from the eye in both stones in the reverse direction to any hitherto used; all the furrows in the running stone are to be made hollowing or fluted from the front or feather edge to the vertical or back edge as shown in Fig. 6 instead of beveling sectionally to an inclined edge as heretofore usually done. Each furrow is narrower at the verge than at the eye. The depth, size, and number of these furrows must be varied according to the size and quality of the stones, but we have found practically that with stones of four feet six inches diameter the stone may have thirteen sections or quarters with three furrows in each section and that each main furrow may be about one inch and five eighths ($1\frac{5}{8}$) at the eye and about one inch and one eighth ($1\frac{1}{8}$) at the verge and the two short furrows in the same proportions in their respective places. The depth of the furrows must be according to the quality of the stones and the quantity to be ground in a given time of which the dresser must judge in working them but in all cases they should be as much deeper as they are wider at the eye in proportion to their general depth. The furrows in the bed stones are to be made in the corresponding lines and proportions but beveling to an angular edge instead of hollowing or fluted and not quite as deep as in the runner except near the eye. We have found with stones fitted in the usual way a difficulty in the wheat riming up in the eye by the centrifugal force; to obviate this we make the eye of the runner stone either conical or bell mouthed from the top of the bail to the face of the stone and either conical or perpendicular from the top of the bail to the top or back of the stone making the eye about twice as large at the face as at the back or top of the stone which allows us to run our stones at any motion we please without any trouble.

In any convenient position above the mill stone we place a horizontal shaft *i*, one end of which is to be geared or belted in any convenient way that will connect it to the main upright shaft or any other that will drive it at a proper speed the other end is fitted with a miter wheel *k* that gears into and drives a second wheel *k*, fitted on the top of a governor shaft, the governor itself constructed in all respects the same as that adapted to the steam engine with a main lever *l* with a forked end connected to the lifting side collar on the lower end of the shaft. Near the other end of the lever *l* it

is set or hung on a fulcrum 1 and beyond the fulcrum the lever is notched on the upper side to adjust the point of suspension and receive the vertical connecting rod *m*, made with a loop or eye to take the proper notch in the lever *l*. The rod *m* is made adjustable in its own length by a swivel loop and screw as shown at 2, the lower end is connected by a fork and sling joint to the outer end of a cross bar *n* (seen endwise only in the drawing,) having its fulcrum in the back part of the mill frame and carrying at its center of weight the outer end of the bridge *d*, already described as sustaining the mill spindle and runner stone. On the lever *l* is a forked joint at 3 taking a perpendicular motion piece connected to this end of the lever *o* having a fulcrum at 4. The other end is jointed to the vertical parallel slide piece 5 which has a connecting rod or cord 6 to the end of the shoe *p;* this fits under the hopper *q*, which is fitted and fed in the usual way. The shoe *p* is jointed at 7 to the rod or cord 6, so as to lie and work under the hopper *q*, and is shaken by the damsel R which is driven by any usual or convenient connection with the bail on the eye of the running stone.

We have already stated that we made the stones with furrows variant from the usual mode of dressing—and form the eye conical or bell mouthed from the top of the bail downward and apply a governor thereto and by these conjoined means we practically grind a much greater quantity of grain in a given time than has hitherto been ground by any stones that we know of that are fitted in the now usual way, and as will be seen on inspection the operation of the governor through the levers and rods that are connected with it are such that if the feed of grain becomes so much as to check or reduce the speed of the stones or the power becomes temporarily insufficient the governor balls fall and lift the stone to allow the motive power to regain its full effect while at the same time the feed of grain is reduced or checked by lifting the shoe *p* until it finds its proper motion. The reverse of these operations takes place when the speed and power is too great for the feed and weight by the governor balls opening and increasing the pressure of the runner stone and the feed and by these combined means we prevent any clogging or running down of the stones and preserve them for long and effective working.

We do not intend to limit ourselves to the sizes or proportions of the parts described herein and shown in the drawings, but to vary these as may be needful by particular circumstances in mills for some kinds of work or of small size we may make the bridge piece *c* do its own work and that of the lever or bridge *a* by putting the step piece *b* on the bridge *c* supported by the cross lever *n* attached to the governor connecting rod *m* as before described, and we intend to use a set wheel and screw or any other similar means of mechanically adjusting the rod *m* to its working length. And we intend to vary the positions and plans of the parts used and shown in any way that will not involve a substantial departure from the arangements herein described and set forth.

We are aware that nearly all the parts we have here described have been before used by others for various purposes, but we do not know that the manner of dressing and furrowing the faces of the stones, the shape of the eye, or the application of a governor to raise the stones and regulate the feed at the same time have ever been so attempted or used before, we therefore state our claims as follows.

We claim as new and of our own invention and discovery and desire to secure by Letters Patent—

1. The mode described of dressing the stones with curved furrows with the circle cut in the reverse direction from those hitherto used such furrows being widest and deepest near the eye and the furrows of the runner being hollowing or fluted from the front or feather edge to the back while those of the bed stone are cut in an angular form from the front to the back, in combination with the mode described of forming the eye of the runner conical or bell mouthed below the upper part of the bail when such mode of dressing and combination are employed with stones made and driven as herein described and applied to any description of stones in which they may be equally available.

2. We claim in like manner the mode described of applying the action of a governor similar to that used with the steam engine to operate through the lever *l* rod *m* and cross lever *n* to act on the runner and feed when any variation occurs in the speed through the action of the lever *o* slide 5 and rod 6 to raise or lower the shoe *p* on its joint 7 substantially as herein described.

In witness whereof we have hereunto set our hands and seals in the city of Brooklyn aforesaid this sixth day of July one thousand eight hundred and forty-four in presence of the witnesses subscribing hereto.

JOHN ANSELL. [L. S.]
JAMES GALLERY. [L. S.]

Witnesses:
J. J. TUCKER,
E. D. CRANE.