

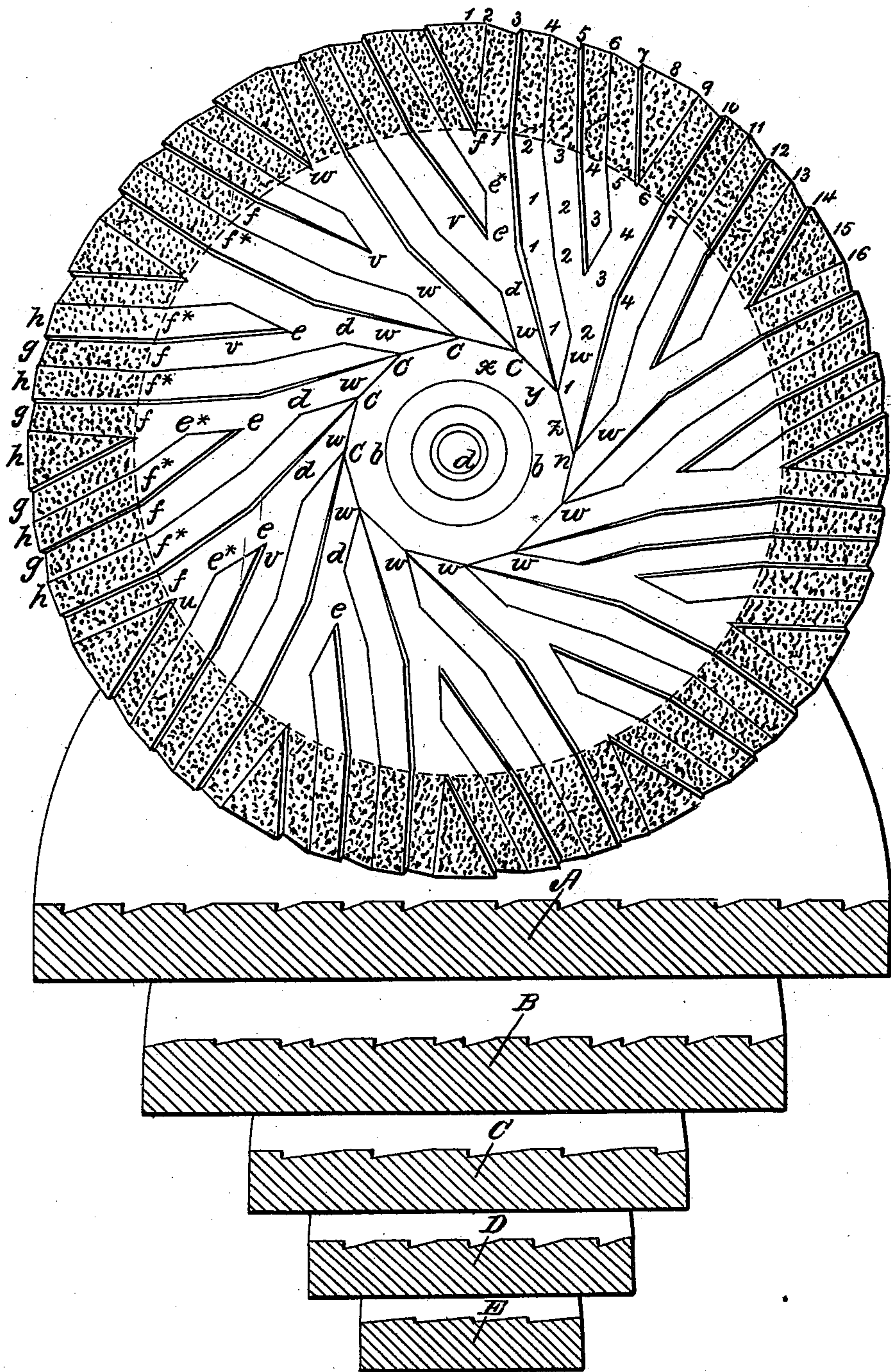
G. L. DULANEY.

Millstone Dress.

No. 13,115.

Patented June 19, 1855.

Fig: 1.





# UNITED STATES PATENT OFFICE.

GEORGE L. DULANEY, OF MOUNT JACKSON, VIRGINIA, ASSIGNOR TO REUBEN ALLEN.

## MILL-DRESS.

Specification of Letters Patent No. 13,115, dated June 19, 1855.

*To all whom it may concern:*

Be it known that I, GEORGE L. DULANEY, of Mount Jackson, in the county of Shenandoah, in the State of Virginia, have invented and made certain new and useful Improvements in the Mode and Manner of Forming Mill-Dresses, which I term the "Elbow Mill Dress;" and I do hereby declare that the following is a full, clear, and exact description of the manner and system of producing the same and the operation thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, represents the face of the mill stone, with the form of mill dress, complete.

Section A, shows shape or form of the edge, of the outskirt of the delivery circle  $g, g, g, g$ , with its land surfaces  $h, h, h, h$ .

Section B, shows the formation of the circle or division  $f, f, f, f$ , with the land surfaces  $f^*, f^*, f^*, f^*$ .

Section C, shows the formation of the leads and land surfaces, of the circle or division  $e, e, e, e$ .

Section D, shows the formation of the leads and land surfaces of the semi-divisional circle  $d, d, d, d$ , between  $c$ , and  $e$ .

Section E, shows form of edge of the feed or slope circle  $c, c, c, c$ , if extended in a longitudinal direction.

*Description.*—To enable others to be skilled in the manner, or mode of forming and producing my system of mill dress, I will herewith give a description thereof, and set forth the advantages attendant thereupon, together with the important results thereby obtained.

It is well known, that of the many essential features attending the process of producing flour, there are none so important as the grinding of the grain in such a way as to promote the greatest possible yield of flour, or meal, with the least possible admixture of the skin, film, hull or coating of the kernel, and at the same time reducing the separation of the flour, and bran, to one simple, or single operation of sifting or bolting, and affording the best quality of product. To accomplish these important desiderata, many experiments and modes of mill dress have been resorted to; but so far, the object aimed at has not been attained to that extent desired, until by the use of my improved elbow mill dress I have entirely succeeded in producing the result, and here-

with will explain the manner hereof in as brief and intelligible a manner as possible.

My elbow mill dress is constructed as follows: Having the mill stone of required size and diameter, and the circle of the circumference true, the area of the surface or face of the stone is divided into four equal portions or circles  $c, e, f, g$ , Fig. 1, reckoning from the center of the eye,  $a$ , toward the periphery of the stone. The space from the circle  $f, f, f, f$ , toward the circle  $c, c, c, c$ , must be dressed down, sloping from  $f$  to  $c$ , forming an annular inclination, about  $\frac{1}{8}$  of an inch lower at  $c$  than at  $f$ . Then divide the space between the circumference of eye  $a$ , and the circle  $c, c$ , into another equal division, or circle,  $b, b$ , thus dividing into equal spaces the surface from outside of eye  $a$ , to  $c, c$ . From  $b, b$ , dress down sloping and regular  $\frac{1}{8}$  of an inch toward  $c, c$ , thus forming another outward sloping annular circle, which may be termed the feed slope. This slope being formed, and the circles or divisional lines,  $d, f$ , being renewed for guidance, divide said space  $d, f$ , into 3 equal parts and indicate the same by circle, at  $e, e^*, e, e^*$ . Next strike a vertical, and a horizontal line through the center of the stone, thus making 4 equal sections, which again divide, each into 3 equal parts, thus making 12 subdivisions of the whole circumference of the stone, which indicate simply by dots. Then divide each of these 12ths into 7 equal parts, which also indicate by dots, and indicate the true vertical point by a pointer thus. Take a straight edge and range a line from point or dot 3, on the right of the pointer  $\rightarrow$ , to the outside of the circumference of the eye  $a$ , forming a line from outskirt circle  $g$ , to circle  $f$ . Next range the straight edge from circle  $f$ , (point of contact of line  $h$ , of said circle,) to the outside of the slope circle  $b$ , and describe, or draw a line from  $f$ , to circle  $e, e$ , in the direction of line  $y$ . Next range the straight edge from circle  $e$ , point of contact of line  $y$ , and describe a line thence to outside of feed slope  $c, c, c, c$ , indicating said line by  $z$ . Thus, these 3 lines, so formed, give the main elbow lead, and, having formed 12 similar lines equidistant over the face of the stone, and the outer circumference of the feed slope, being formed into a dodecahedronal or twelve sided shape; next proceed as follows. Divide the circumference of circle  $f$ , between each 12th



section of the face of the stone, into 5 equal parts, thus, said circle *f*, will then have 60 equal divisions, which, indicate by dots. Next divide circle *e*\*, *e*\*, into 4 equal parts  
 5 between the 12 main elbow leads, thus dividing the whole of said circle into 48 equal parts which indicate by dots. Next divide the spaces between the 12 elbow leads, or lines, on circle *e*, *e*, into 3 equal parts; thus,  
 10 said circle *e*, will be equally divided into 36 parts. Next divide the circumference of circle *d*, *d*, between the elbow lines, into 2 equal parts; thus said circle *d*, *d*, will have 24 equal parts, which indicate by dots.  
 15 Now, in order to obtain the leads, with their branches and mashing surfaces, proceed as follows. From the vertical point, indicated by the arrow, to the right thereof, around the circumference or circle *g*, *h*, are  
 20 described numbers or figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and so on. Circles *f*, *e*, and *d*, are also divided, or marked off by numbers. Having done this, take a straight edge, and range it from Fig 2, of circle *g*, to Fig. 1,  
 25 circle *f*, and describe a line from said dot 2 of circle *g*, to dot 1, of circle *f*. Next range the straight edge from dot Fig. 3 of circle *g*, to dot Fig. 2 of circle *f*, and describe a line. Then range the straight edge  
 30 from dot 2, of circle *f*, to dot 1, circle *e*, and describe a line. Thence, from 1 circle *e*, range straight edge to dot 1, circle *c*, *c*, and describe a line from dot 1, circle *e*, through dot 1, circle *c*, to dot 12, of circle *c*, *c*. Thus  
 35 the three lines formed as set forth, will give the elbows of the main lead. Next range the straight edge from dot 4 circle *g*, to dot 3 circle *f*, and describe a line, thence from dot 3 circle *f*, range straight edge to dot 2  
 40 circle *e*, and describe a line. Then from said dot 2 circle *e*, describe a line to dot between 1, 2, circle *d*. Then from dot between 1, 2, circle *d*, describe a line to dot 1 circle *c*, *c*. Next describe a line from dot 5  
 45 circle *g*, to dot, 4, circle *f*. Thence describe a line from said dot 4, circle *f*, to dot 3 circle *e*. Next, describe a line from dot 6 circle *g*, to dot 5 circle *f*. Thence from said dot 5, circle *f*, describe a line to dot between  
 50 3, 4 circle *e*\*. Then, from said dot between 3, 4, describe a line to dot 3, circle *e*. Next describe a line from dot 7, circle *g*, to dot 6, circle *f*. Then skip dot 8, circle *g*, and instead describe a line from dot 9, circle  
 55 *g*, to dot 6, circle *f*. These lines all being laid off, or described as directed, next proceed to form the gutters or leads by picking down (with the bur pick,) the surface between dots 2, 3—4, 5—6, 7—9—10. The  
 60 said leads, grooves, or gutters, slope from the left toward the right hand, and must not be over  $\frac{1}{8}$  of an inch deep at the end of the slope. The depressed or guttered surface between 9—10 down to 1, 12, of circle  
 65 *c*, *c*, gives the main lead or draft. The de-

pressed surface between 4—5, down to 1—2, circle *d*, gives first branch lead. The depressed surface between 6—7, circle *g*, down to 3—4 circle *e*\* gives the second branch lead. The surfaces left between the leads,  
 70 are the rubbing or land surfaces, and are between 3, 4—5, 6—7, 9 by reference to Fig. 1.

By the peculiar system of laying off the area, or surface of the mill stone, the leads, gutters or grooves of my mill dress, are as  
 75 wide at their bases, as at their terminals, or, of the same width throughout, their courses. This result can not be attained by any other system of drafting mill dress. It will also be observed, that the lines or  
 80 edges of the leads, are not curves nor acutely angulated, but present obtusely shaped lines, the bases of which, do not begin from the great center of the stone (but are thrown  
 85 off, or commence outside of a direct vertical line.

Having described the system or mode of dividing the area of a mill stone in order to produce my mill dress, and having represented the formation thereof, by diagram  
 90 Fig. 1, I will next proceed to describe the operation thereof, as follows. The under stone of the pair, revolves, and the grain to be pulverized, passes down from the hopper, through the eye of the top stone, on to the  
 95 surface *b*, *b*, and is there first cracked, and thence tends toward the feed slope circle *c*, *c*, *c*, *c*, and, as the under stone revolves, the crushed particles, become spread, and escape outward through the main leads *w*, *w*,  
 100 *w*, *w*, *w*, *w*, *w*, *w*, *w*, *w*, *w*, *w*, and again become more spread or diffused and passing on through the branch leads, *u*, *u*, *u*, *u*, *v*, *v*, *v*, *v*, are still further reduced, the crushed mass finally escapes or passes off,  
 105 and is delivered from the stone in a perfectly pulverized and cooled condition.

Owing to the peculiar form of my mill dress, the pulverizing or reduction of the grain, is brought about in such a manner  
 110 as to counteract the undue chopping up, or incorporating the film, or bran part with the flour or meal part, and which entirely dispenses with repeated boltings; one bolting only being necessary to produce the  
 115 finest quality of flour. Again too, owing to the concave or dished center of the area of the mill stone, as described, the usual amount of friction, or abrasion, and the consequent wearing away, of the surface of the  
 120 stone, and the dress thereof are obviated; besides, the bad effect of heating, and gumming of the flour or meal are overcome, and the flour produced, being finer, and more lively, and the yield greater; which yield,  
 125 I have found to be, by actual experiment, as great, as one barrel in 20, or 5 barrels, increase in the hundred.

Deeming the foregoing description, sufficiently explanatory of the principles, and  
 130



operation of my improvements in mill dress, what I claim as new and original with self, and desire to secure by Letters Patent of the United States, is as follows:

- 5 I claim the construction of what I call a compound elbow mill dress, formed by the divisional mode of calculation described; having main elbow leads, gutters, or grooves, formed with secondary, or branch  
10 elbow leads or conveys, communicating directly therewith, instead of being a distinct

or separated series; the said compound elbow dress, being formed upon the face of a mill stone having an inward sloping, or depressed surface, together with an outward 15 sloping feed or supply circle, specifically as described, and for the purpose set forth.

GEORGE L. DULANEY.

Witnesses:

O. C. BILLINGS,  
R. A. BIRD.