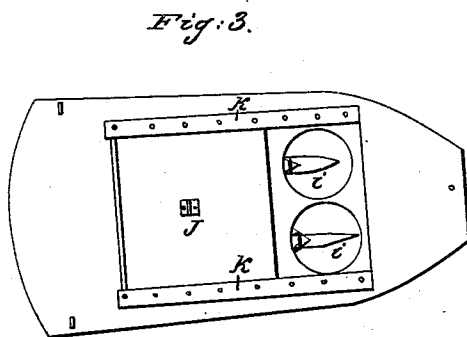
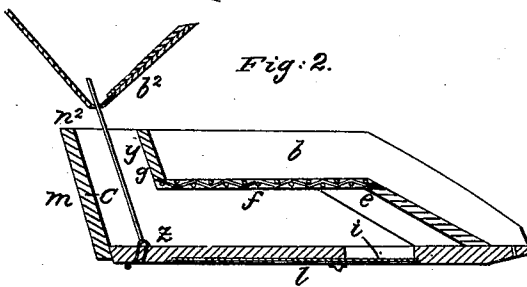
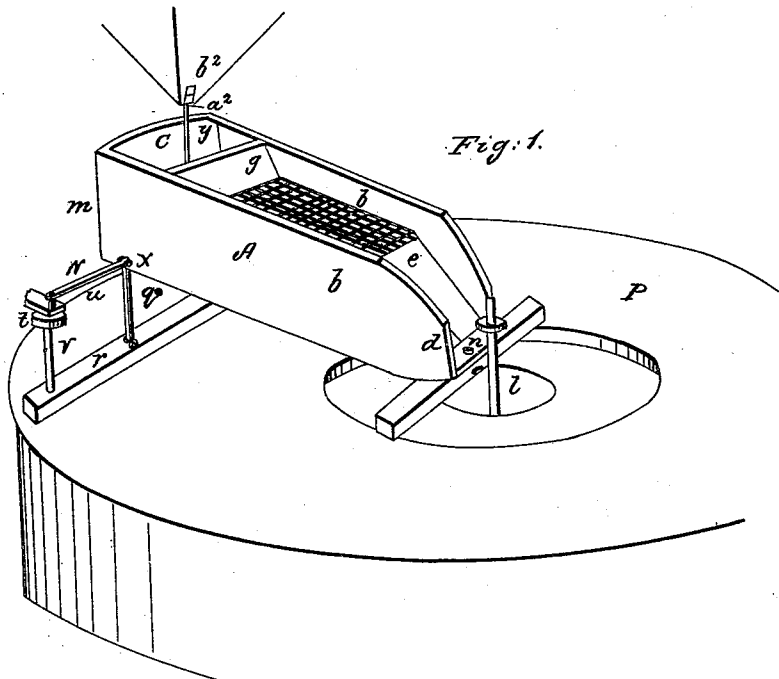


H. MELLISH.  
Shoe for Grain Mills.

No. 12,959.

Patented May 29, 1855.



# UNITED STATES PATENT OFFICE.

HENRY MELLISH, OF WALPOLE, NEW HAMPSHIRE.

## SHOE FOR GRAIN-MILLS.

Specification of Letters Patent No. 12,959, dated May 29, 1855.

*To all whom it may concern:*

Be it known that I, HENRY MELLISH, of Walpole, in the county of Cheshire and State of New Hampshire, have invented a new and useful mode of constructing a separating shoe for grain-mills to prevent substances harder and heavier than grain from passing through it with the grain to be ground as it passes into the mill; and I hereby declare that the following is a full and exact description thereof, reference being had to the annexed drawings and the letters of reference thereon marked.

The nature of my invention consists in arranging inside the shoe through which the grain passes into the mill, a pointed or zigzag barrier between its discharging and receiving ends, which barrier runs from the bottom obliquely upward and backward toward its receiving end; and also a screen with meshes sufficiently large for the grain to pass through is suspended from the top of the barrier above the bottom of and across the shoe, extending toward its receiving end to a partition near the same, so as to allow the grain to pass in beyond the partition under the screen, and up through its meshes, and over the barrier; while the heavier and larger substances are arrested by the operation of the same, and detained in the shoe.

Figure I is a perspective view of the shoe suspended over a curb covering a run of stone with the delivering end over the eye of the runner and its receiving end under the hopper. Fig. II is a vertical longitudinal sectional view of the shoe. Fig. III is a plan view of the under side of the shoe.

A, Fig. I, is the shoe, made open at the top, and open and tapering at its discharging end *a*, and is made by substantially fastening together the two side pieces *b b* the curved end *c* and the bottom *d*. To the bottom and sides inside the shoe, between the discharging end *a* and its center is confined a pointed or zigzag barrier *C* its points running obliquely backward and upward toward the center of the shoe, to a wire or other suitable screen *p*, which extends from the top of the barrier to a partition *g* which divides the upper part of the shoe, the screen being confined to its sides by any suitable means. Through the bottom of the shoe beneath the barrier there should be one or more openings *i* which may be closed or opened by the sliding gate *j* moving the

cleats *k k*, for the purpose of emptying the shoe when required.

To apply the separating shoe to the purpose for which it is designed, it should be suspended with its discharging end over the eye on the receiving opening *j* and a vibratory motion given to its receiving end *m*, all of which may be effected by pressing a pin *n* through its discharging end into the bar *o* across the opening in the curb *p*, or by any other suitable means. The opposite of receiving end *m* should be elevated fifteen to twenty degrees more or less as the case may require, to cause the grain to pass upward through the screen *f* and over the barrier *e*, in which position it is sustained by the upright sweeps *q* there being one under each side and hinged to its bottom, but only one is seen in the drawing, their lower ends being attached with each a hinged joint to the bar *r*, to admit of a vibratory motion being given it by means of a belt from the pulley *s* on the mill spindle and the pulley *t* to operate the crank *u* in the upper end of its shaft *v* and the sweep *w* communicating from the crank to the shoe, to which it is attached by a staple joint *x*. In the bottom of the shoe at its receiving end there is a rod *y* attached by a staple joint *z*, which passes up through an eye or opening *a*<sup>2</sup> in the bottom of the hopper, just back of the gate-way *b*<sup>2</sup>, for the purpose of agitating the grain and passing it from the hopper into the shoe.

Operation: Give the shoe a vibratory motion by passing a belt over the pulleys *s* and *t* as above described, with the gate-way *b*<sup>2</sup> open, to let the grain into the shoe, which will soon be filled to the screen *f*. Now it will be seen that, by the agitation of the grain caused by the vibratory motion of the shoe, substances of a greater specific gravity than the grain would settle to the bottom and be arrested by a barrier of any form and be prevented from passing over the same, if it were not for the force of the current of grain as it passes along; but such current does force along substances heavier than grain over barriers of most forms; therefore to prevent that effect, I make use of a pointed or zig zag oblique barrier between the discharging and receiving ends of the shoe, which in its lateral vibrations gives the grain when it comes in contact with its zig zag oblique

under surface, at each vibration, a side-way, downward and backward stroke, thus causing substances of a specific gravity greater than grain to sink into it, and a corresponding quantity of grain to rise in its stead; another effect tending to the same result is, that the pointed or zig zag oblique barrier drives the grain back from its walls at each vibration, so as to produce a space between them and the grain thrown back, so that in the filling up of which, substances heavier than the grain, settle farthest toward the bottom of the shoe. And it should be observed that it is important that the vibratory motion should be communicated to the receiving end of the shoe, for the reason, that the centrifugal force thereby communicated to the barrier and the contents of the shoe cause a greater space between the barrier and the grain, and consequently a greater chance for heavy substances to settle toward the bottom of the shoe. And it will be further seen, that the grain will pass up through the meshes of the screen, while substances larger than the meshes will be prevented from passing through, and that by the position of the screen above the

current of the grain long articles that would pass through a screen beneath, will be prevented from passing through upward, for if the end of a long article is pushed through upward it is immediately reared above its surface, and will sink endwise in the current, which will sweep its lower end downward in the shoe past the point of its passage through the screen, and will be borne along with the current until it drops from the screen into the shoe, and yet the grain passes over the barrier and out of the shoe,

I do not claim the invention of a vibratory shoe as such, through which to pass grain from the hopper to the mill.

What I claim and desire to secure by Letters Patent is—

The separating shoe for grain mills, as herein described having an inclined barrier *e* arranged and operating below the screen *f*, constructed substantially in the manner set forth.

HENRY MELLISH.

Witnesses:

JAMES WM. MELLISH,  
CHARLES A. WHITNEY.