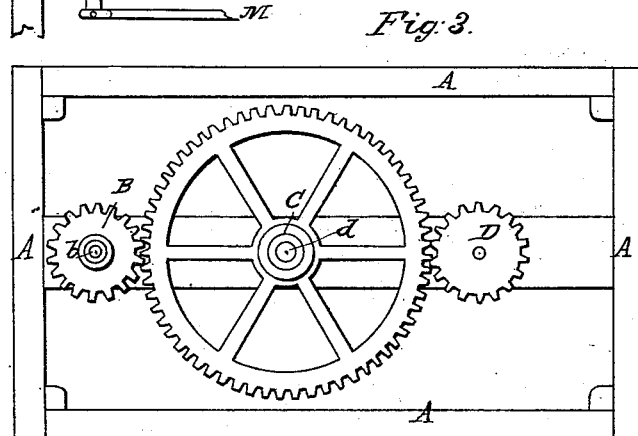
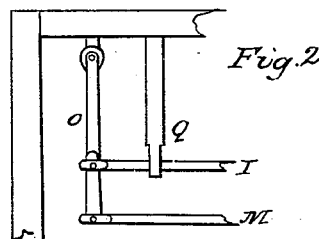
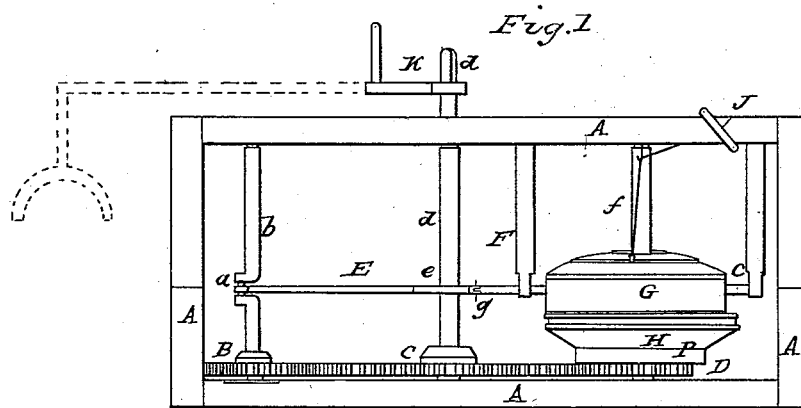


F. PRICE.

Flour Mill.

No. 2,962.

Patented Feb. 20, 1843.



*Witnesses*  
*J. P. Mahan*  
*M. L. Small*

*Inventor*  
*Francis Price*

# UNITED STATES PATENT OFFICE.

FRANCIS PRICE, OF NEW YORK, N. Y.

MILL FOR GRINDING GRAIN, &c.

Specification of Letters Patent No. 2,962, dated February 20, 1843.

*To all whom it may concern:*

Be it known that I, FRANCIS PRICE, of the city, county, and State of New York, merchant, have invented and made and applied  
5 to use certain new and useful improvements in the construction of mills, called the "American mill," for hulling and grinding grain and corn, or for grinding other substances, by which improvements any such  
10 substances are subjected to a compound action of the millstone, that breaks and pulverizes them, at the same time in a different and more effective manner than by the mode now in use, for which improvements I seek  
15 Letters Patent of the United States, and that the said improvements and the mode of constructing and using the same are fully and substantially set forth and shown in the following description and in the drawings annexed to and making a part of this  
20 specification, wherein the first part, or No. 1, is an elevation and the second part or No. 2 is a plan of the parts of a mill as arranged and used by me.

25 To effect these objects, the same letters, or marks of reference applying to the same parts, in both the drawings.

A, A, are the frames, on which the working parts, are mounted.

30 K, is either a gear wheel, a crank, or a lever on the vertical shaft *d*, to connect the mill to any competent and convenient motive power. At the foot of the shaft *d*, in the main driving wheel C, gearing into the  
35 pinion D, on the shaft wheel carries the lower stone H, as this in my arrangement, is the running stone. At the opposite side of and gearing into the wheel C, is a second pinion, B, at the foot of a vertical shaft *b*,  
40 in which is a small crank, *a*, and connected to this is a shackle bar E, made with an eye at *e* to pass the shaft *d*, through. And next this is a knuckle joint at *g*, to allow of the remainder of the bar, working parallel in  
45 the lower end of the vertical guide slide F, the bar E, finishes by any effective attachment to the upper millstone G, and a second guide bar *c*, projects from the opposite side of the stone G, into the lower end  
50 of a second vertical guide slide I. A balance screw J, or any convenient fixture in the frame above is to be connected by a chain or cord *f*, in any convenient manner to the center of the stone G, to suspend  
55 the stone. The length or radius of the chain or cord *f*, is to be made adjustable between

the screw *j*, and the stone G. The effect of the arrangement is, that the substances between the stones are broken by the horizontal motion given by the crank *a*, and bar E while the stone is suspended by  
60 the chain *f*, and this motion may be increased and changed so as to produce different effects by shortening the radius of the chain, *f*.

As a general rule for the proportions of these parts when grinding grain, the radius of the crank *a*, being from one and a half to two inches to a two feet stone, the radius of the chain *f*, must not be less than four  
65 feet. The chain or cord further serves to regulate the distance between the stones, or lift the upper stone when starting, and also to raise and remove the stone when needful. In the drawing the shaft of the runner stone  
70 H, is shown as projecting upward through the eye of the stone G, but in practice this may be dispensed with, which will leave the stone G, more easily accessible for any needful purpose, as the stone H, can be effectively  
75 secured in any convenient way to the top of the shaft which carries that, and the pinion D.

In this arrangement the pinions D, and B, being of the same size, the stone G has one  
80 short horizontal alternate or shogging motion for every rotation of the runner stone H. The effect of these motions is, that the substances under operation are broken by the shogging motion of the upper stone G,  
85 and rendered more readily susceptible of being pulverized by the rotary motion of the runner stone H. The consequence is, that in proportion to the size of the stones and the power employed a much larger quantity  
90 of any given substance is ground than by any other arrangement with which I am acquainted. The speed of the stones need not be so great as in the common mode. There is less wear and tear, less risk and  
95 expense or injury by heat either to the stones or to the substances ground between them. The upper stone should be made concave on the face from about one-seventh of the whole diameter within the edge, so as  
100 to rise about one and a half inch to the eye. This stone must be about one-tenth less in diameter than the running stone, and to accommodate the peculiar motion, must be made with an eye of about ten inches, or  
105 suitable to the length of the crank. The face of the lower stone should be flat—for

the purpose of dispatch in grinding or hulling. Weights of metal or other substances may be placed in any convenient manner on the top of the upper stone which should be flat, and otherwise calculated to receive them. Several small mills can be placed around the large or driving cog-wheel, and at the same time be moved by the same, and so arranged as to be thrown in and out of gearing, and thereby use a great extent of power. In this way weight can be substituted in lieu of speed, generally performing the work better than a high speed, and at a great saving of power and expense in construction.

The part of the drawing marked No. 3 represents a variation in the means of giving the shogging or alternating motion to the upper stone. In this the shackle bar M is to be connected at one end to an eccentric cam P, beneath the runner stone (see No. 1,) and at the other end, to a vertical lever O. Jointed at the top to the frame above and on this lever a second shackle bar L, is jointed at one end and passing through a guide slide Q, is connected at the other end to the stone G. This arrangement gives the stone a similar motion and effect to the former mode.

In some cases it may be proper to change the relative rotary speed of the runner stone, and shogging motion of the upper stone by making the pinions D, and B, of different sizes—instead of making them equal in size—as shown in the drawing. Although I have represented the use and proportion of common burr stones in the drawings—and so far as my experience goes I prefer them in practice—I do not mean to confine myself to their use, but to employ disks, of metal or any other suitable substitute for burr-stones according to the quality of the substances to be operated on thereby—nor

do I intend to limit myself to the sizes or proportions shown in the drawings, of any of the parts to be used in this arrangement—but to vary the same, as may be needful in use, according to the articles to be operated on, and the amount of power to be employed.

Mills have been variously constructed, as for instance the general mode, and that most extensively in use, is to give a rotating motion to the under stone, while the upper one is stationary—and some have been so arranged as to make the two stones run at the same time and in opposite directions, or both in the same direction, one having a greater velocity than the other; but I never have known of any mill, before my invention, in which one of the stones has been made to move with an alternating reciprocating motion on its axis, and therefore,

What I do claim as my invention and desire to secure by Letters Patent, is—

1. Giving to one of the stones of a mill a reciprocating rotary motion on its axis for the purpose described whether said motion be given to the stone in the manner described or in any other manner substantially the same.

2. I further claim the combination of the shogging pinion B, crank *a*, shackle bar E, and guide C, to give the upper stone G, an alternating horizontal motion, above the runner stone H, and the combination with these parts thus combined, of the balance screw J, and radius, chain or cord *f*, when such application and combination are employed to give a compound motion to mill stones for the purpose and in the manner described.

FRANCIS PRICE.

Witnesses:

HENRY HOWISON,  
F. MORRIS.