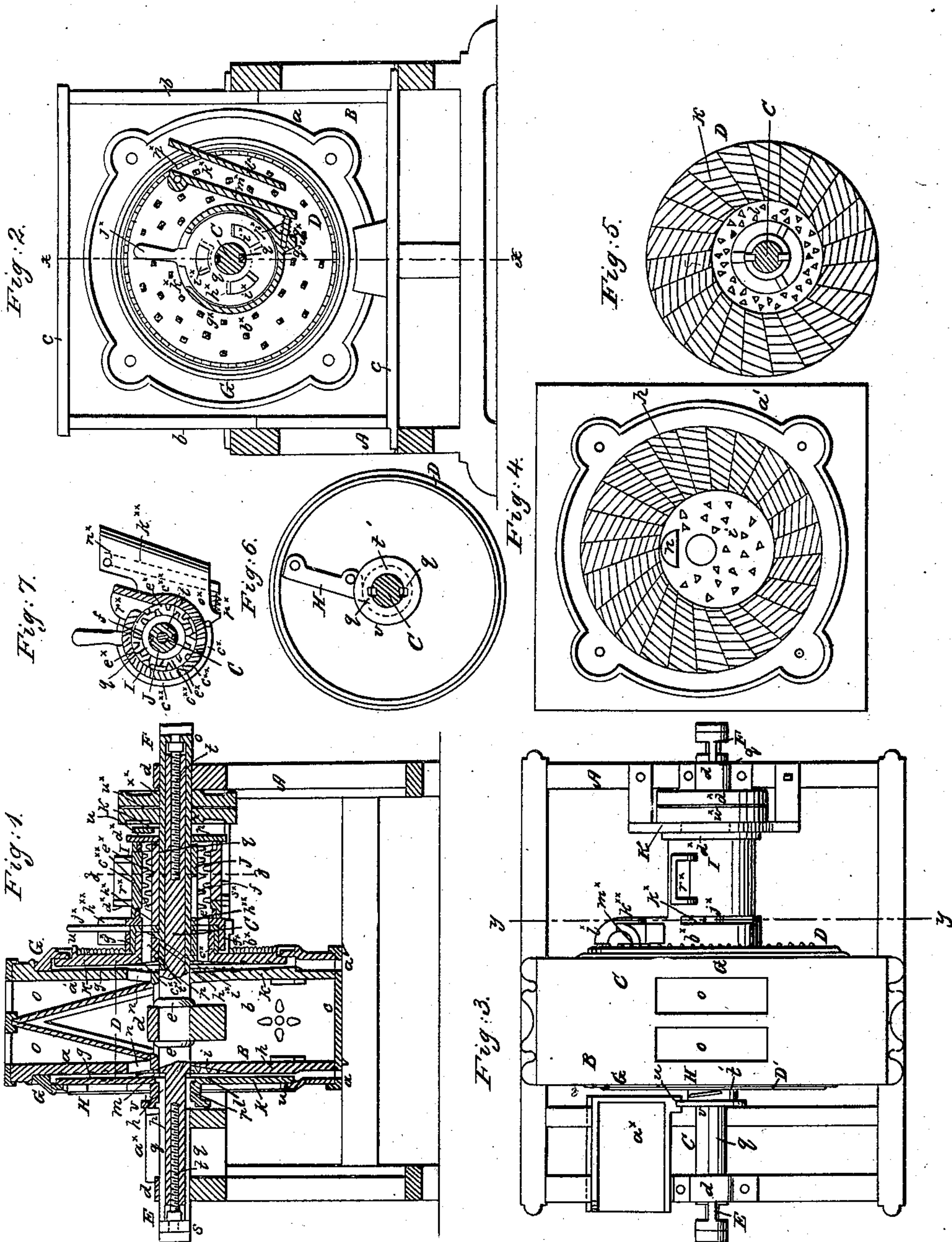


P. PERRY.

Combined Grinding Mill, Corn Sheller, and Straw Cutter.

No. 23,702.

Patented April 19, 1859.



Witnesses:

Amos Shaw
Sevall W. Hall M.D.

Inventor:

John Perry

UNITED STATES PATENT OFFICE.

PHILANDER PERRY, OF TROY, NEW YORK.

MILL FOR GRINDING, CRUSHING, &c.

Specification of Letters Patent No. 23,702, dated April 19, 1859.

To all whom it may concern:

Be it known that I, PHILANDER PERRY, of Troy, in the county of Rensselaer and State of New York, have invented a new and useful Combination of a Grinding-Mill, Cob-Crusher, Corn-Sheller, and Straw-Cutter; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical section of my invention taken in the line *x, x*, Fig. 2. Fig. 2, a vertical section of do, taken in the line *y, y*, Fig. 3. Fig. 3, a plan or top view of do. Fig. 4, a detached face view of a concentric grinding plate with an eccentric concave. Fig. 5, a detached face view of an eccentric grinding plate with a concentric concave. Fig. 6, a detached face view of the external surface of the grinding plate which has the straw cutting knife attached. Fig. 7, is a transverse vertical section of the cob crusher, taken in the line *z, z*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention is designed for the use of farmers and is intended to combine in a compact machine several agricultural implements in one, so that all may work efficiently, either separately or simultaneously, and the cost be far less than the several implements when made separately.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A represents a rectangular frame which may be constructed in any proper way to support the working parts, and B, represents a rectangular box, which is placed in the frame A, and formed of cast metal side plates *a, a'*, end plates *b, b*, and top and bottom plates *c, c*, said plates being connected together by bolts in any proper way.—On the frame A, a shaft C, is placed in proper bearings *d* and the shaft C, passes transversely through said box and is retained in proper position, or, prevented from sliding longitudinally by means of shoulders *e, e*, which are placed one at each side of its central bearing *d*, see Fig. 1.

The outer surfaces of the side plates *a, a'*, of the box B, have circular recesses *g*, made in them, one in each, and these recesses are

formed or have corrugated cutting or grinding surfaces *h*, which may be similar to the grinding surfaces of any mill stone or grinding plate. These corrugated or cutting surfaces are of course formed by casting and the shaft C, passes directly through the center of both of them. Each recess *g*, however, has two grinding surfaces, one beside *h*, there being concave surfaces *i, i*, encompassing the shaft C. These concaves are precisely alike, and have an eccentric position relatively with their plates *h*, and the shaft C, see Fig. 4.

On the shaft C, there are placed two circular disks or metal plates D, D'. These plates D, D', have their inner surfaces corrugated or provided with cutting or grinding surfaces *h*, similar to the cutting portions *h*, of the side plates *a, a'*. One of these plates D, is placed eccentrically on the shaft C, as shown in Fig. 5, and the other D', is placed concentrically on said shaft the outer side or surface of which is shown in Fig. 6, is placed concentrically on the shaft both plates D, D', are provided at their inner sides with concaves *l, m*, the concave *l*, of the eccentric plate D, have a concentric position with shaft C, as shown clearly in Fig. 5, and the concave *m* of plate D', having an eccentric position with said shaft C. All the concaves *i, i, l, m*, are provided with crushing or cracking teeth to form coarse grinding surfaces, see Figs. 1, 4 and 5.

In each side plate *a, a'*, an aperture *n*, is made, said apertures being in the concaves *i, i*, one aperture being seen in Fig. 4, and both in Fig. 1.

In the upper part of the box B, there are placed two conducting passages *o, o*, said passages leading from a suitable hopper and communicating with the apertures *n*.

The plates D, D', are secured on the shaft C, by keys E, F. These keys are formed by attaching projections *p*, to the ends of prongs or bars *q, q*, which are fitted in longitudinal grooves in the shaft C, the outer ends of the prongs or bars *q, q*, being attached to heads *s*, through which screw rods *t*, pass into the ends of the shaft C. There are two projections *p, p*, on each prong or bar *q*, of each key, and these projections fit in the collars or hubs *t'*, of the disks or plates D, D', and therefore not only secure said disks or plates to the shaft, but also

serve as adjusters, for by turning the screw rods t , the plates D, D' , may be moved further in or out from the grinding surfaces h, h' , on the side plates a, a' . This movement of the plates D, D' , is controlled by annular flanches G , which are secured to the side plates a, a' , and overlap and inclose the edges of plates D, D' , as shown clearly in Fig. 1. The edges of the flanches abutting against annular flanches u , on the outer surfaces of the plates D, D' .

To the outer surface of the disk or plate D' , a knife H , is attached. This knife has a somewhat tangential position with the hub or collar t' , of plate D' , see Fig. 6. The outer edge of this hub or collar t' , has a flanch v , upon it, and said flanch fits in a recess w , in the inner part of a sliding feed box a^x , which is placed and fitted between guides on the upper part of the frame A , see Figs. 1 and 3.

The outer surface of the plate D , is toothed as shown at b^x , in Fig. 2. This toothed surface b^x , is concentric with the shaft C , and the hub t' , of said plate D , is encompassed by a flanch c^x . On the shaft C , a metal cylinder I , is placed. This cylinder is formed of sections or staves c^{xx} , the ends of which are secured in suitable heads d^x , and the inner surfaces of the sections or staves c^{xx} , are toothed, as shown at e^x , see Fig. 7. Within the cylinder I , and on the shaft C , a cylinder J , is secured. This cylinder is also formed in sections or of staves c^{xx} , and is provided with teeth f^x , as shown clearly in Fig. 7. The cylinder J , however is not quite so long as the hollow cylinder I , which encompasses it, and the cylinder I , therefore is allowed a certain degree of longitudinal adjustment over the cylinder J . At the inner end of the cylinder J , there is a cylindrical box g^x , which encompasses the annular flanch c^x , on the outer surface of plate D , and also encompasses an adjustable cap h^x , which is placed within the box g^x , and has openings i^x , made in it. The partition plate of the box g^x , and cylinder I , is also provided with openings h^{xx} , and the cap h^x , has a handle j^x , attached to it which handle projects through a slot k , in the box g^x , and admits of the openings i^x , and h^{xx} , in the cap and partition plate being thrown in and out of register as may be desired.

At the outer side of the box g^x , there is a spout l^{xx} . This spout is formed of a stationary and movable part l^x, m^x . The part l^x , is cast with the box g^x , and cylinder I , and forms the outer side and end piece of the spout as shown clearly in Fig. 3, and the part m^x , is attached by a pivot n^x , to the inner side and upper part of l^x , and has a guide pin o^x , encompassed by a spring p^x , at its lower end, the pin o^x , working in a socket q^x , attached to the outer side of box g^x .

The cylinder I , is provided with a hopper

r^x , at its upper side and a door s^x , at its under side, and the cylinder is held in proper position so far as turning is concerned by means of pins u^x , which are fitted in holes v^x , in a plate K , attached to the frame A .

On the shaft C , driving and working pulleys w^x, w' , are placed, as shown clearly in Fig. 1.

The operation will be readily seen:—The plates D, D' , and outer surfaces h , of the sides a, a' , of the box B , form eccentric grinding mills, the concaves i, i', l, m , by their action preventing the mill from choking or clogging, and insuring a proper feed and discharge. The flour, meal or ground material is discharged at a , Fig. 1, and the plates D, D' , are actuated so as to grind finer or coarser by turning the screw rods t , the keys E, F , being moved thereby and the projections p , securing the plates to the shaft C , and also serving as a means to move said plates back and forth thereon, the projections p , fitting in recesses in the hubs or collars t' .

When grain is to be ground it is fed between the grinding surfaces of the plates through the spouts o, o' . When corn and cob is to be ground the ears are fed into the cylinder I , and crushed by the action of the teeth e^x, f^x , and if the cap h^x , is so adjusted as to allow the openings i^x, h^{xx} , to register with each other and permit the crushed ears to pass through said openings between the concaves i, l , of the plate D , and side a' . If the ears are to be crushed without being ground the cap h^x , is turned so as to cut off the communication between the cylinder I , and the yielding plates mentioned, and the door s^x , is opened, to allow the crushed ears to pass out. The cylinder I , in consequence of being longer than the cylinder J , is allowed to be adjusted or moved with the plate D , and is graduated to grind coarse or fine without affecting the operation of the crusher. The spout l^{xx} , serves to guide ears of corn down to the outer toothed surface b^x , of the plate D , and retain opposite the center of said surface and in a slightly inclined position as shown clearly in Fig. 2, so that ears may be shelled by the toothed surface b , as the plate D , rotates, the part m^x , of the spout yielding or giving to take in different sized ears. The spout l^{xx} , in consequence of being in the position as shown and described, causes the ear to be acted upon in a peculiar manner, to wit, the surface b^x , rotating the ear and shelling the corn from it, and at the same time feeding it down out of the tube so as to assist their discharge and prevent the possibility of the spout being choked or clogged. It will be seen that when the plate D , is adjusted for grinding purposes the spout l^{xx} , and cylinder I , move with it, so that the relative position of said parts are always the same and

corn may be shelled at any time. In order to produce the forward movement of the cylinder I, on shaft C, the prongs or bars q, q , of the key F, are provided with additional projections p^2 , which are at the outer end of cylinder I, see Fig. 1. The feed box a^x , and knife G, which is at the outer side of plate D', forms a straw cutter and this device may be used at any time, for the adjustment of plate D, is compensated for by the sliding of box a^x , which is effected by the fitting of the flanch v , in the groove u , of the box a^x . The lower part of box B, may serve as a receptacle for tools of various kinds, said box being provided with a door at one end. By having the cylinders I, and J, formed in sections they may be readily repaired and any portion removed

and replaced by new when occasion may require.

I do not claim broadly or irrespective of arrangement the placing of two pairs of grinding stones or plates on one shaft for that has been previously done; but, having thus described my invention,

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

The within specified arrangement for effecting the combination, in one machine, of the within described grinding mill, cob crusher, corn sheller and straw cutter, all for the purpose set forth.

PHILANDER PERRY.

Witnesses:

SEWALL W. HALL,
WM. W. SHAW.