J. URNEY.

Corn Mill.

No. 4,244. Patented Oct. 25, 1845.

Fig. 1

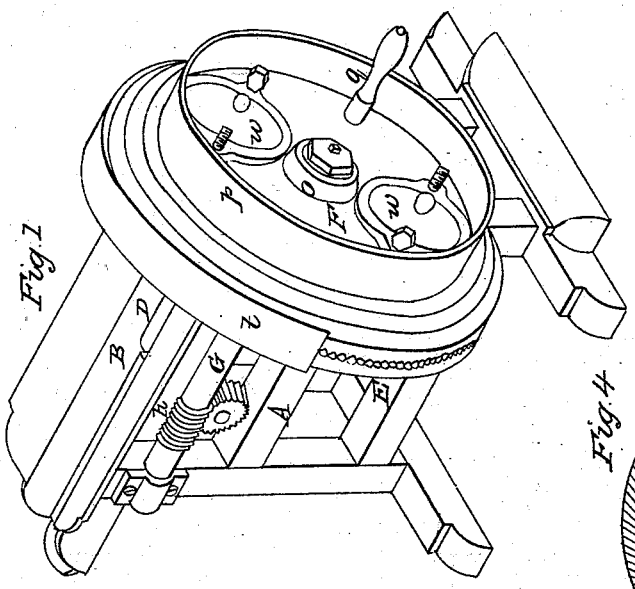


Fig. 4

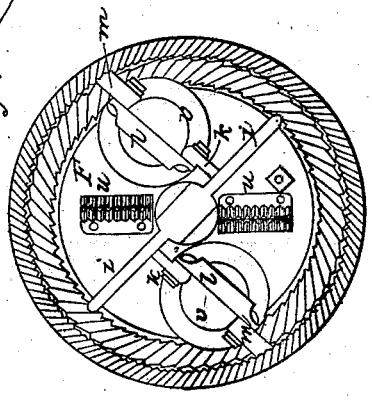


Fig. 3.

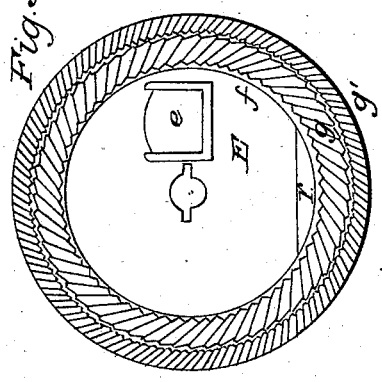
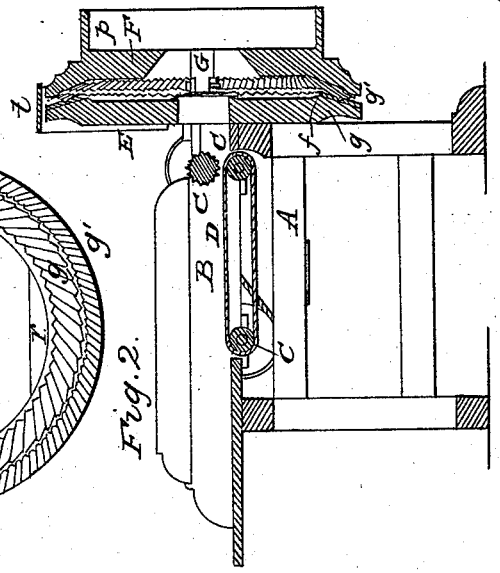


Fig. 2.



UNITED STATES PATENT OFFICE.

JESSE URNEY, OF WILMINGTON, DELAWARE.

CUTTING AND GRINDING CORN IN THE COB.

Specification of Letters Patent No. 4,244, dated October 25, 1845.

To all whom it may concern:

Be it known that I, JESSE URNEY, of Wilmington, in the county of Newcastle and State of Delaware, have invented new and useful Improvements in Machines for Cutting and Crushing or Grinding Fodder, Corncobs, and other Substances, and that the following is a full, clear, and exact description of the principle or character thereof which distinguishes it from all other things before known and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a perspective view of the machine, Fig. 2 a longitudinal vertical section, Fig. 3 a face view of the bed grinder, and Fig. 4, a like view of the runner.

The same letters in all the sections indicate like parts.

The nature of my invention consists in arranging cutters that project from the face of a wheel, called the "runner," at right angles, for slitting, and another set of knives parallel with the face of the wheel, for cutting off, in combination with a beveled edge provided with oblique teeth corresponding with a like set of teeth on a permanent plate, for grinding or crushing the material which has been slit and cut so as to perform continuously the operations of slitting, cutting and crushing or grinding. And also in making the bed or permanent grinding plate with the lower portion of it separate that the material slit and cut by the knives may be discharged without crushing or grinding. And finally in providing the runner, to which the two sets of knives are attached, with holes, opposite the cutting knives, provided with caps so as to form recesses back of the cutting knives to prevent choking and to give access to the nuts that secure the knives that they may be removed for sharpening, &c., without the necessity of altering the set of the runner or removing it.

In the accompanying drawings (A) represents a frame adapted to the operative parts, and provided with a box (B), feed rollers (C, C) and feed belt (D), similar to those used in well known machines for cutting straw, fodder, and other substances used for feeding cattle. To the forward part of this frame is securely attached the bed plate or permanent grinder (E), which is a cast iron disk with two holes, one for the passage of the shaft of the runner, and the other (e), for the passage of the substances to be cut, the bottom and sides of the latter projecting sufficiently from the face of the plate to form square edges against which the knives on the runner act in cutting off the substances submitted to the machine and within a short distance of the outer periphery, and extending entirely around, a bevel rim (f) is formed with the inner periphery thereof projecting sufficiently far from the face of the plate to leave a passage for the cut pieces to move freely until they reach this rim, and forming an inclination of about twenty degrees, more or less, with its plane. The face of this beveled rim is formed into two rows of teeth or furrows (g, g') so inclined as to be on lines tangential to a circle about half the diameter of the plate, the inner row (g) being double the size of the outer row (g). The runner (F) is also made of cast iron, and is hung on the outer end of the shaft (G) that passes through the central hole of the bed or permanent grinder (E), and is supported in appropriate bearings on the frame, and provided with an endless screw or worm (h) which communicates motion to the feed rollers and feed apron in the usual manner. The face of this runner is concave and the reverse of the face of the bed (E), except that the rim of the teeth forms a greater angle to leave a wider space between them at the inner than the outer periphery to receive the cut pieces and gradually reduces them. The face within the rim of teeth is provided with a flange (i) to form a division in the space between the two plates and prevent the pieces, cut by the two knives, from mingling together; and on each side of the middle a short flange (k, k) branches out from it nearly at right angles to receive the screw bolts that secure one end of the two knives (l, l) their outer ends being secured by the screw bolts passing through flanges (m m) projecting from the face of the plate near the inner periphery of the rim of teeth, these flanges (k) and (m) should be so situated as to have the cutting edge of the knives tangential to a circle about double the diameter of the shaft, and their faces, when in place, flush with the face of the projections around the hole (e) in the plate (E).

Forward of the knives (l), there are two sets of teeth (u, u), for slitting the fodder

etc. (preparatory to cutting it off,) that project from plates, attached to the face of the runner by screws, with their points extending out nearly as far as the face of the knives (*l*, *l*), and their forward edges are curved to facilitate their operation. Each set is composed of two rows which are sometimes arranged in the same line, in which case the space between each two teeth should be about three eighths of an inch, but most frequently they are made to alternate, those of the first row being opposite the spaces between those of the second row, and then they should be about three fourths of an inch apart. And as a protection against choking, and to afford the means of adjusting and removing and putting in the cutters, a conical hole (*v*) is made through the plate back of each knife, provided with a cap piece *w*, *w* secured on the outside by thumb screws, so that they can be removed with facility to get at the screw bolts of the knives, and to remove any thing that may choke the machine. The chief object and advantage of this provision, however, arises from the fact that the cutting and grinding instruments make part of the runner and when the grinding part is set for grinding finer or coarser, (which is effected by turning the nut (*o*) that causes the runners to slide on the cylindrical and feathered part of the shaft), it becomes necessary to set the knives also, which would require the entire runner to be removed but for this arrangement which affords the ready means of the double adjustment. The outer face of the runner is provided with a circular flanch (*p*) that forms a pulley for a belt from a horsepower or other first mover, and a winch (*q*) for the hand when it is desired to work it by manual power.

The lower portion (*r*) of the bed (E) is made separate and secured to the other portion by wedge clips, screws, wedges, or other analogous mode of fastening, so that it can be readily removed when it is desired to dispense with the grinding operation, the removal of this part leaving a free discharge for the cuttings.

A circular cap (*t*) of sheet metal is put over the upper part of the grinders to prevent the centrifugal force from scattering the products of the machine.

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

The combination of two sets of knives for slitting and cutting off, with the bevel grinding rims for crushing and grinding fodder and other substances, as herein described.

JESSE URNEY.

Witnesses:

CHS. M. KELLER,

A. P. BROWNE.