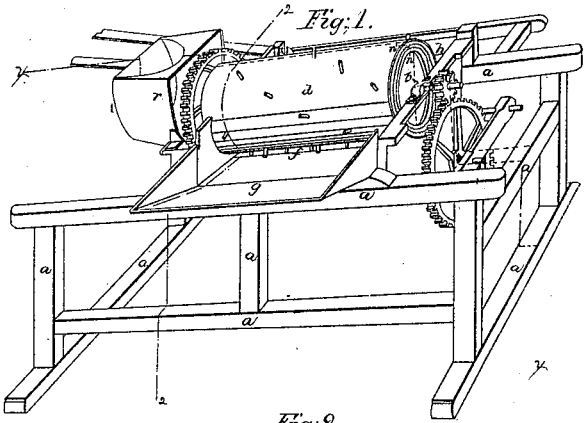
L. B. FISHER.

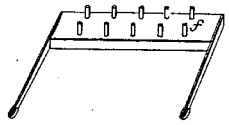
MACHINE FOR CUTTING VEGETABLES, &c.

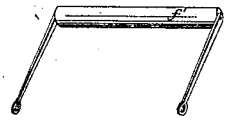
No. 6,593 **Patented July 17, 1849.**

Fig; 1.

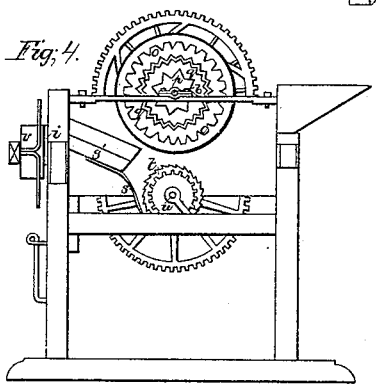


Fig; 5.

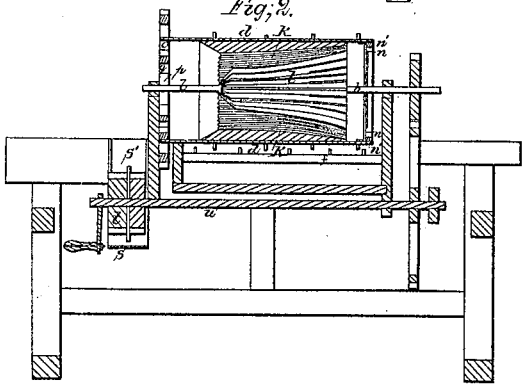




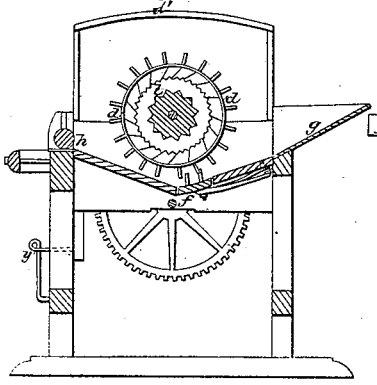
Fig; 4.



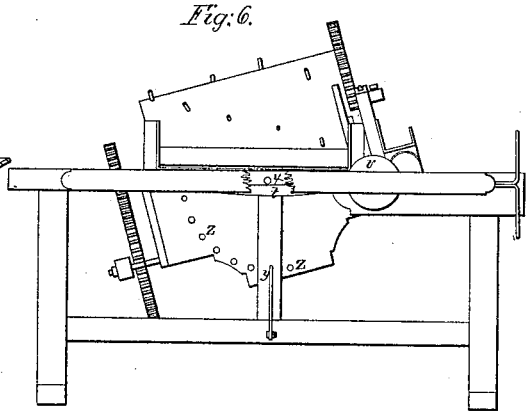
Fig; 2.



Fig; 3.



Fig; 6.



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UNITED STATES PATENT OFFICE.

LUTHER B. FISHER, OF FREEPORT, ILLINOIS.

CUTTING, CRUSHING, AND GRINDING VEGETABLES.

Specification of Letters Patent No. 6,593, dated July 17, 1849.

To all whom it may concern:

Be it known that I, LUTHER B. FISHER, of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Machinery for Breaking, Cutting, Slicing, Crushing, Grating, and Grinding Vegetable Substances, of which the following is a full and exact description, reference being had to the annexed drawings of the same, making part of this specification, in which—

Figure 1 is a perspective view showing the several parts in connection and ready for operation; Fig. 2 is a vertical section through the line *x x* of Fig. 1; Fig. 3 is a vertical section through the line 2 2 of Fig. 1. Fig. 4 is an elevation of the right end. Fig. 5 is a view of the fixed spiked, and of the smooth revolving concaves detached from the machine; Fig. 6 shows the cylinder in an inclined position, suited for the operation of grinding by means of an apparatus in its interior.

The same letters indicate the same parts in all the figures.

In the accompanying drawings *a* is the frame upon which the several devices for performing the different operations of cutting, breaking, crushing, grating and grinding, are mounted; it may be made of wood, framed together as represented, or of any other form and material which the constructor may deem expedient to use.

b is a shaft mounted upon suitable bearings, and having a pinion *c* upon one end by which it is revolved, this shaft carries the cylinder *d* which turns upon it on hollow axes formed in its ends. This cylinder is armed with a series of spikes on its outer, or convex surface, for the purpose of breaking up vegetables into coarse lumps, preparatory to subdividing them more finely by grinding. The cylinder *d* receives motion from a wheel placed beneath it, and gearing into the pinion *c* placed upon one of its ends. Beneath the cylinders an adjustable spring concave *f* (Fig. 5) armed with teeth, is placed, to hold the vegetables up against the cylinder, for the purpose of submitting them more fully to the action of the teeth of the latter. A smooth roller *f'* supported by springs, may sometimes be substituted with advantage for the toothed concave. On one side of the cylinder is an inclined feeding apron *g* and on the other a press roller *h*, to hold such vegetables as may be submitted to the action of the revolving knife *i* for the purpose of being cut or sliced. To prevent the substances being acted upon by the cylinder *d*, from being thrown off too far by centrifugal force, a cap or cover *d'* is placed over it, as represented in Fig. 3.

A portion *k* of the interior of the cylinder *d* is made of a conical form, and fluted to form a grinding surface; within this concave surface of the cylinder, a conical fluted block of metal or stone *l* is secured upon the axis *b* in such a manner that it may be moved longitudinally for the purpose of adjusting it to the requisite distance from the grinding surface of the cylinder. The disk *n* is for the purpose of subdividing such fibrous lumps as may escape through between the concave and convex cones, without being reduced to the average size. This disk *n* is provided with fine teeth on its periphery, and is placed closer than the grinding block *l* to the surface *n'* of the interior of the end of the cylinder, which is also finely toothed. By the passage of the vegetable matter between this disk *n* and the cylinder it is reduced to the requisite degree of minuteness of division, and as it is discharged falls into any suitable receptacle placed to receive it.

The opposite end of the cylinder where the vegetables are first admitted, has a coarsely toothed surface *o* on its inner periphery, and concentric therewith is placed a similarly toothed pinion *p* on the axis *b*. Between the pinion *p* and toothed surface *o*, and concentric with both, is placed a stationary ring *q*, which is toothed on both its interior and exterior periphery. This ring is secured firmly to the frame by bolts as represented in Fig. 4 or may be secured in any other suitable manner.

r is a hopper into which substances to be passed through the cylinder are placed in such quantities as are most suitable for furnishing a regular supply to the crushing and grinding apparatus. The vegetables broken into coarse lumps by the spikes on the exterior of the cylinder *d*, are thrown into the hopper *r* and entering the interior of the cylinder *d* are crushed in their passage between the toothed surface *o* of the cylinder, the ring *q* and pinion *p*. If the velocity of the grinding surfaces is re-

quired to be increased, it can very readily be done by causing the shaft *b* and the cylinder *d* to revolve in contrary directions.

Upon one end of the frame the spring grater *s* is placed with a spout *s'* to supply the substances to be grated, immediately above the grater, and almost touching it, a series of cog wheels or saws *t* are placed for the purpose of seizing the vegetables and rubbing them over the surface of the grater, the saws or pinions are mounted upon the driving shaft *u* placed beneath the concave, upon which are mounted the cog wheels which turn the axis *b* and cylinder *d*. The knife *i* is secured to a revolving shaft, which is turned by the pulley *v* also fastened upon it, which receives motion from a belt, which belt as well as the rest of the moving parts are propelled by animal, water, or steam power, or other available source of motion.

It is obvious that different parts of the apparatus will have to be made of different kinds of material, to adapt them to the proper performance of their several functions, but as it is well known to those who are skilled in the construction of such machines what material is most suitable for making the different parts, a particular specification of them here will be unnecessary.

When it is required to break up vegetables into coarse lumps, say of the size of walnuts, they are placed upon the inclined apron *g* whence they roll down until struck by the spikes of the cylinder *d* which break, and at the same time carry them through and discharge them at the opposite side of the machine, into any vessel which may be placed there to receive them. If these lumps are required to be more finely subdivided they are next placed in the hopper *r* and allowed to pass through the grinding apparatus in the interior of the cylinder, which, for this purpose, is placed in a more or less inclined position (as shown in Fig. 6) as the vegetables are required to be more or less finely ground, because the velocity with which the vegetable matter passes through the cylinder, and therefore the amount of grinding to which it is submitted, will be directly proportioned to its degree of inclination. This degree of inclination is obtained by supporting the frame to which the cylinder *d* is attached on trunnions (*x*) which work in the main frame *a a;* a series of holes (*z*) are made in the cylinder frame all at equal distances from the axis of the trunnions; a spring pin —*y*— is attached to the frame *a* and passing through its middle standard enters the holes *z* and secures the cylinder in any position in which it may be placed.

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

The adjustability of the cylinder *d* and its parts as shown in Fig. 6 for aiding the feeding in combination with the cutting and grinding apparatus within said cylinder as set forth.

In testimony whereof I have hereunto signed my name.

LUTHER B. FISHER.

Witnesses:

CHAS. A. CLARK,

JOHN A. CLARK.