J. A. WHITFORD.

Corn Sheller.

No. 1,946. Patented Jan'y 23, 1841.

Fig. 1.

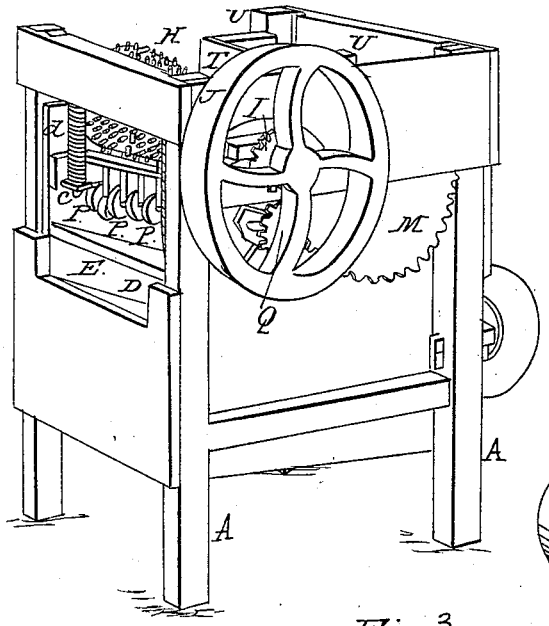


Fig. 2

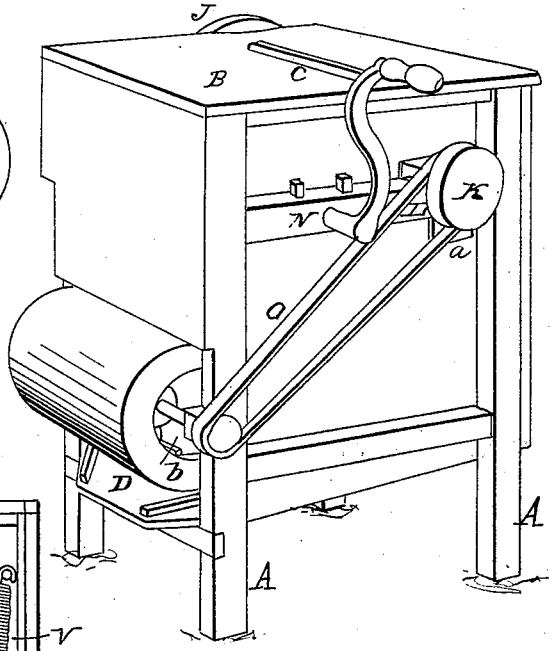


Fig. 3.

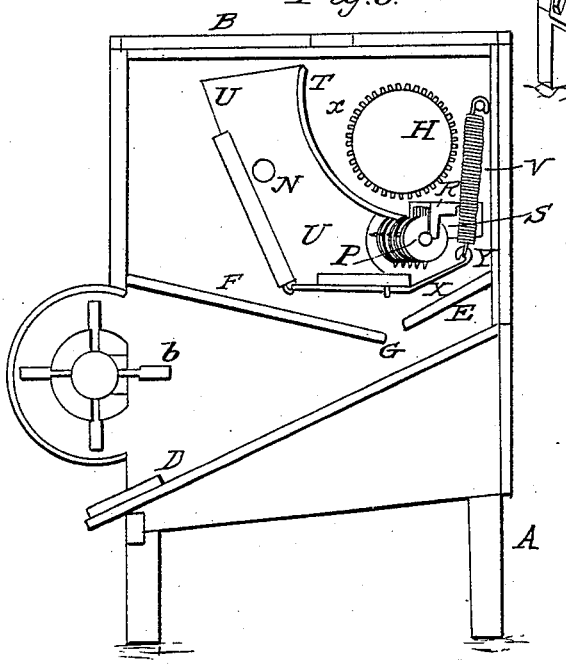
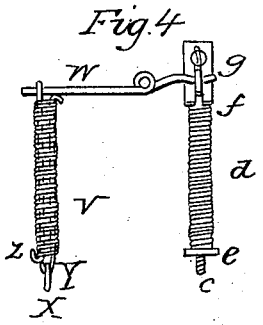


Fig. 4



UNITED STATES PATENT OFFICE.

JOHN A. WHITFORD, OF SARATOGA SPRINGS, NEW YORK.

CONSTRUCTION OF CORN-SHELLERS.

Specification of Letters Patent No. 1,946, dated January 23, 1841.

To all whom it may concern:

Be it known that I, JOHN A. WHITFORD, of the village of Saratoga Springs, in the county of Saratoga and State of New York, have invented a new and useful Improvement in Machines for Shelling Corn, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the front end and right side of the machine. Fig. 2 is a perspective view of the rear end and left side of the machine. Fig. 3 is a vertical longitudinal section of the machine through the center thereof. Fig. 4 is a section showing the vibrating beam, vertical rods and spiral springs.

Similar letters refer to similar parts in the figures.

This machine consists of the following parts which are hereafter described namely: 1 the frame; 2 the upper or main sheller; 3 the lower or oblique sheller; 4 the stationary bed with its fingers or comb; 5 the concave and its springs; 6 crank shaft; 7 the gearing; 8 the fan; 9 inclined boards.

The frame A is rectangular, resembling generally a wheat-fan-frame, of suitable length, breadth, and height, composed of four posts, four side rails and cross girts, and boxed up on the sides and ends with thin boards, except the openings in the sides for the axles; another opening for the discharge of the cobs; and an opening in the rear end for a fan; and another opening below it for the discharge of the shelled grain, and an opening in the front end for the discharge of chaff, &c., blown out by the fan. The top is covered by a lid B which is perforated with an oblong opening C through which the ears of corn are fed. The bottom is an inclined board D for conducting the shelled corn to the rear end of the frame below the fan. About 3 inches above said bottom is another inclined board E extending parallel to the bottom from the front of the frame about one third its length. About 2 or 3 inches from the lower edge of the last mentioned inclined board there is placed another inclined board F which rises in a contrary direction toward the rear end of the machine. The shelled corn drops through the space G between the lower edges of the last mentioned inclined boards.

The upper or principal sheller for stripping the kernels of corn from the cob is a frustum of a cone H fixed on a horizontal shaft lying across the frame near the top and turning in boxes on the upper side rails and near the front end of the frame, having a pinion I and fly wheel J on one end and a double pulley K L on the other end, the pinion working into a large cog wheel M on the crank shaft N. The said frustum of a cone is surrounded with pins, plates, or spikes set in spiral rows. The power is applied to the large part K of the double pulley just mentioned. The band O for the fan is put around the small parts L of said pulley. The surface of the said upper sheller from end to end may be made somewhat concave. The lower oblique sheller is placed below the main sheller and nearly touching it and is composed of a series of small wheels P armed with teeth on their peripheries arranged and secured upon a shaft about half an inch apart leaving spaces between them of that distance to admit the teeth of an oblique bed plate arranged in front of and near to the two shellers said shaft lying parallel with the surface of the main sheller or frustum of a cone and turning in boxes fixed on the spring concave and having on its end which projects through the side of the frame a small pinion Q and which also works into the large cog wheel M on the crank shaft.

The bed or comb consists of an obliquely placed plate R with a flange at each end screwed to the insides of the boxing of the frame having teeth S projecting downward therefrom extending into the spaces between the armed wheels P for the purpose of keeping the ear of corn between and against the two shellers (H and P) until completely shelled. The bed plate is arranged as near as possible to the upper sheller so as not to touch it or to interfere with its rotary motion. Its teeth may be slightly concave on the sides toward the spring concave.

The spring concave T Fig. 3 in which the axle of the lower sheller turns is composed of metal and extends from the top of the frame around the main sheller till it nearly touches the lower or oblique sheller. It is arranged so as to leave a space between it and the shellers sufficient to admit a common sized ear of corn. It is fastened to a wooden concave bed V composed of two parallel concave bars U united by suitable cross bars which concave is hung on the horizontal

crank shaft N which passes through it and the frame and at its lowest part it is suspended by a connecting rod X to a spiral spring V hung from the extremity of a vibrating beam W attached to the upper front cross-girt for the purpose of allowing the concave T to recede from the shellers in the passage of a large ear through the machine or any hard substance. The attachment of the lower edge of the concave to the spiral spring is effected by means of a nearly horizontal connecting rod X projecting from the concave to which it is fixed and attached to the lower extremity of a vertical rod Y hung to the upper coil of the spiral spring V, the lower coil of said spring resting upon the turned up end of another vertical rod Z which is suspended to the long end of the vibrating beam W before mentioned which vibrates on a pin inserted into the upper front cross girt of the frame. In order to lengthen the spring and render it adjustable another vertical rod *c* is suspended to the other or short end of the vibrating beam W around which rod is coiled another spiral spring *d* resting on a nut *e* screwed on the lower extremity of said rod *c* having its upper end or coil bearing against the under side of the horizontal part of the knee plate *f*, the vertical part of which plate is perforated with an oblong slot which allows it to move up or down over the shank of a horizontal screw *g* for adjusting the spring. The crank shaft N to which the concave is suspended passes through the upper side rails of the frame near the middle thereof and has the large cog wheel M fixed on its end which projects through the frame which cog wheel meshes into the pinions I and Q on the axles of the shellers H and P causing them to turn simultaneously in the same direction, the pinions I and Q of said shellers being geared to the large cog wheel for that purpose and when the concave is depressed the axle of the lower sheller with its pinion Q is likewise depressed the pinion being kept in gear with the large cog wheel M because the center of the axle of the pinion Q is always at the same distance from the center of the axle of the large cog wheel M to which axle the concave is suspended carrying the aforesaid axle of the pinion Q which moves in the arc of a circle of a radius equal to the distance of one axle from the other.

The opening at which the cobs are discharged is covered with a swinging drop *a* which usually hangs over the discharging opening to prevent the escape of the kernels of corn, but which is moved outward from said opening by the discharge of the cob which is caused to protrude through said opening after the corn is shelled therefrom by the spiral arrangement of the teeth on the main sheller which screws the cob out at said opening, said opening being at the lower end of the bed. The fan *b* is made like a common wheat fan and is arranged a little above the lower edge of the inclined bottom D. It is turned by the band *o* leading from the smaller part of the double pulley on the axle of the main sheller H and passed around a small pulley on the axle of the fan.

The power to propel the machine may be applied to the crank shaft or it may be applied to the double pulley on the axle of the frustum of a cone or main sheller as before stated. The oblique plate R is placed at an angle with the horizon of about 2 or 3 degrees, the lower end being toward the aperture through which the cob is discharged for the purpose of discharging the cob more freely and also to correspond with the outer surface of the frustum of a cone.

The operation of the machine is as follows: Being in motion from any convenient power introduce an ear of corn at the opening in the top. It is met by the spirally set teeth of the upper sheller and carried around between it and the lower sheller till it is arrested by the teeth of the bed or comb against which it is held until the corn is entirely stripped from the cob by the simultaneous movement of the shellers, the cob escaping at the discharging aperture and the corn falling through the space between the two upper inclined boards into the space below them where it is met by the current of air from the fan which separates the chaff and blows it out at the front end of the machine while the corn is conducted by the inclined bottom to the rear end of the frame.

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

Arranging the lower sheller P in the lower part of the concave T so that they shall yield together, to the different sized ears; in the manner described; and this I also claim in combination with the upper sheller H and comb S in the manner and for the purpose specified.

JOHN A. WHITFORD.

Witnesses:
WM. P. ELLIOT,
E. MAHER.