(No Model.) 2 Sheets—Sheet 1.

# S. M. SCHINDEL.

## CORN HUSKING AND CLEANING MACHINE.

No. 307,339. Patented Oct. 28, 1884.

Fig. 1.

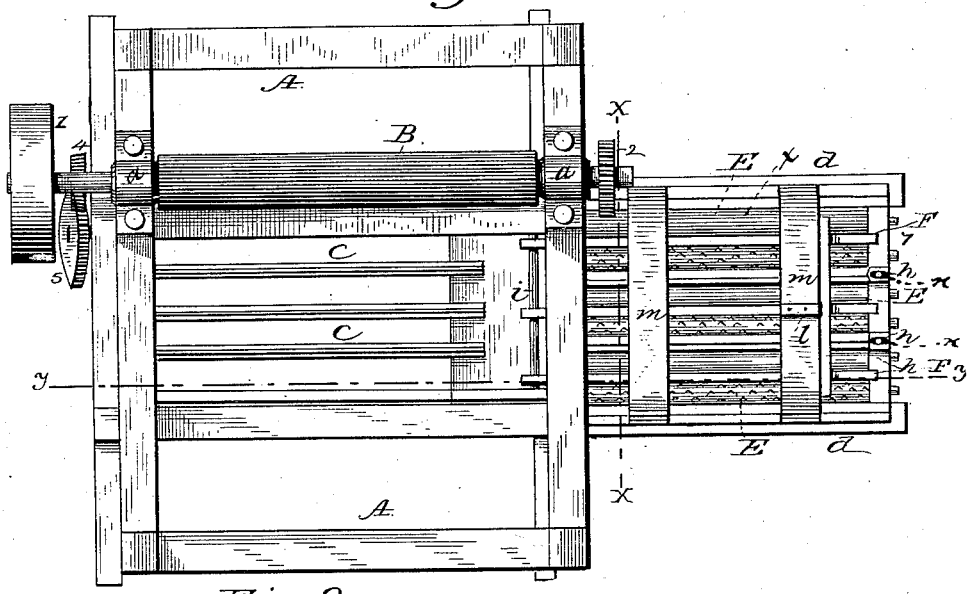



Fig. 8.

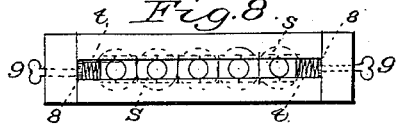
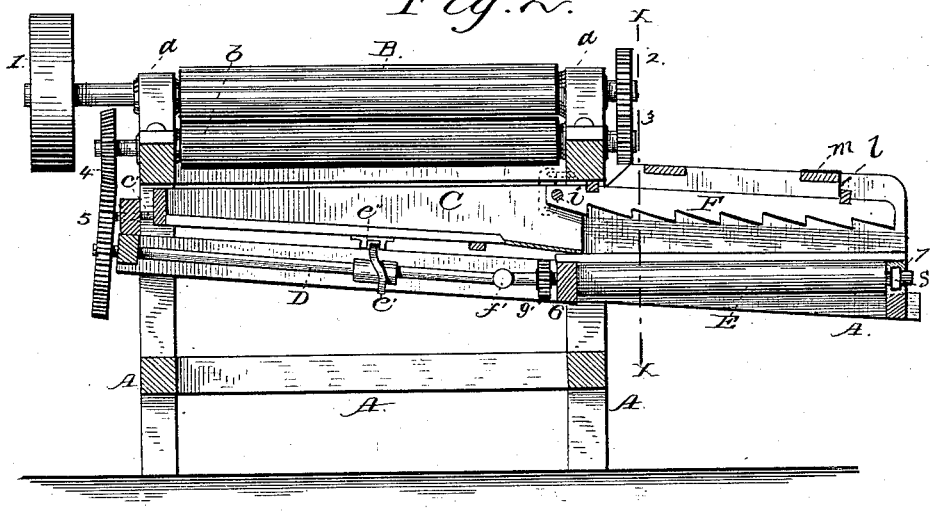



Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

# S. M. SCHINDEL.

## CORN HUSKING AND CLEANING MACHINE.

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Fig. 3.

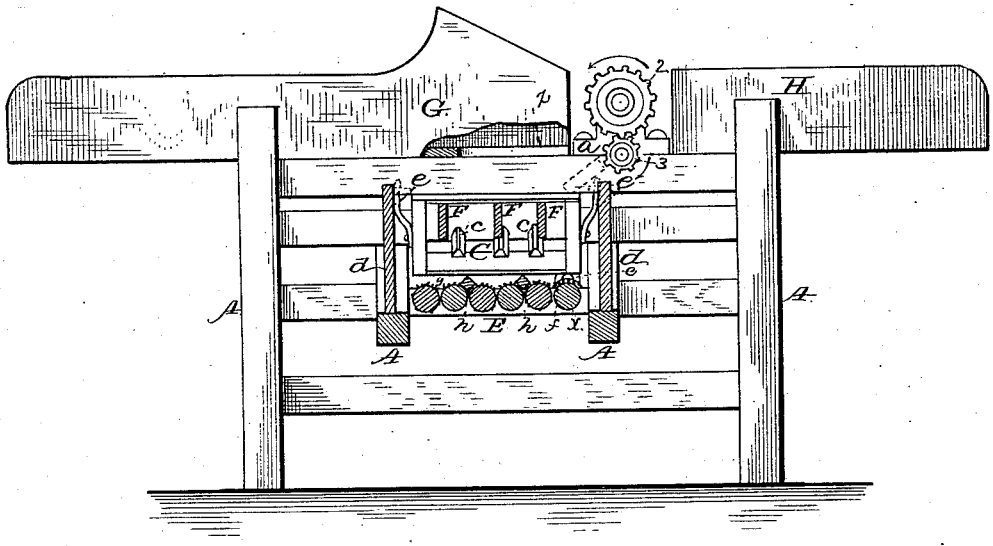



Fig. 4.

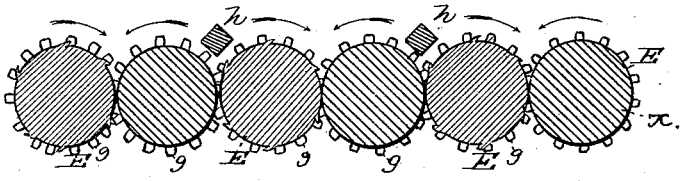



Fig. 5

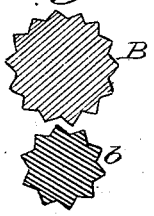



Fig. 6.

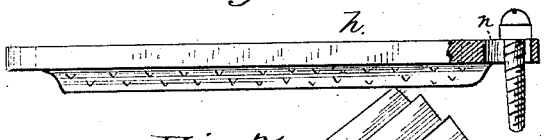
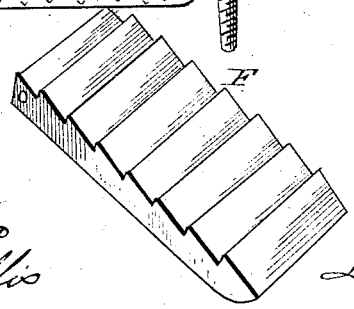



Fig. 7.

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# UNITED STATES PATENT OFFICE.

S. MILFORD SCHINDEL, OF HAGERSTOWN, MARYLAND, ASSIGNOR OF ONE-HALF TO DANIEL HUYETT, OF SAME PLACE.

## CORN HUSKING AND CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 307,339, dated October 28, 1884.

Application filed March 20, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, S. MILFORD SCHINDEL, of Hagerstown, in the county of Washington and State of Maryland, have invented certain new and useful Improvements in Corn Husking and Cleaning Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My improvements relate to that class of inventions known as "corn husking and cleaning machines," and have for their object to supply an apparatus possessing in a much simplified manner all the attributes necessary to a full and free operation, and one that produces with greatest rapidity and effectiveness the most practical results. Prominent among results is that the husking is accomplished so thoroughly as to prevent to a greater extent than heretofore the escape of husks and other débris to the cleaning-rolls, thus permitting such rolls to operate more satisfactorily in picking or removing the silk that naturally adheres to the ear than otherwise has been done. Further, the means by which the delivery of the corn from the husking-rolls to the cleaning-rolls is accomplished renders the husking and cleaning continuous and perfect.

With the advantages set forth in view, my invention consists in the construction and combination of parts, substantially as hereinafter described, and pointed out in the claims.

Referring to the annexed drawings, Figure 1 represents, with the feed and delivery boards removed, a top plan view of an apparatus embodying the features of my improvement. Fig. 2 is a side sectional elevation thereof on the line *y y*, Fig. 1. Fig. 3 is an end elevation showing in section on the line *x x*, Fig. 1, the picking-rolls and cleaning devices therefor and the sides of the frame inclosing such rolls, also showing the feed-board in elevation, with its forward end partly broken away and in section to more clearly illustrate its construction. Figs. 4 and 5 are detail views, respectively, of the picking-rolls and husking-rolls. Fig. 6 is a detail of one of the cleaning devices for the picking or cleaning rolls. Fig. 7 is an inverted perspective of a modification of the serrated impelling devices for the corn while being subject to the action of the picking-rolls. Fig. 8 is a detail of the sliding journal-boxes.

Reference being had to the several parts by letter, A represents the frame-work of the machine, the same being of any approved construction. Mounted on such frame-work across the top, and in suitable bearings, *a a*, are corrugated differentially-rotated rolls B *b*, their points of support being in the same vertical line, and the one of largest circumference being preferably uppermost.

To one end of the shaft of the upper corrugated roll is a drive-wheel, 1, by which the machine is driven from any suitable power, while at the opposite ends of the shafts of both are different-sized cog-wheels 2 3, which mesh with each other, and by which the motion communicated to roll B is transmitted to the lower one, *b*.

Carried on that end of the shaft of rollers *b* corresponding to that end of the shaft of the upper roll that carries the drive-wheel is a beveled gear-wheel, 4, which meshes with a similar wheel, 5, on the end of a rotating shaft located beneath, for a purpose to be described hereinafter.

Situated beneath the husking-rolls B *b*, and somewhat beyond one side thereof, is an inclined vibrating trough, C, which receives the corn as it is torn from the stalk and delivers it to the cleaning or picking rolls.

It is very desirable in machines of this character, where the picking-rolls are parallel with the husking-rolls, to have the corn delivered to said picking-rolls lengthwise therewith, so as to permit the corn to be more readily received by them and cleaned. If the ears are delivered thereto in a jumbled mass, the working of the rolls is retarded, and breakage of some of the operative parts is the consequence. This is a common defect in many machines now in use, and I propose to overcome the same by forming the bottom of the inclined trough C with slats *c*, so that the corn, when it falls therein, is induced to take a di-

rection coincident with the length of the picking-rolls, and thus be received into their working-bite and thoroughly cleaned. This trough C is supported at its upper end in a hole in the frame A (see Fig. 2) by a pin, *c'*, which moves in and out of said hole as the trough is vibrated. The lower end of the trough is loosely supported from the frame or sides *d d* of the boxing inclosing the picking-rolls by straps or pendants *e e*, thus permitting a free vibrating motion. This motion is obtained by means of a cam, *c'*, that is carried by a rotating shaft, D, located in and borne by the frame beneath and at a point near the center of the trough. The shaft D is supported in line with the bottom of the trough, and carries at its outer end the beveled gear-wheel 5, that receives its motion from wheel 4, and is thus rotated. The ends of the cam *c'* come in contact successively with lug *c''* on the bottom of the trough. It is evident, however, that other means than those just described could be employed for the same result. The inner end of shaft D carries a cog-wheel that is permitted to rotate in a true vertical plane by virtue of a joint, *f'*, in said shaft. This wheel is also secured to the shaft of the outer picking-roll, (represented by *x*, Figs. 1 and 4,) and constitutes one of and meshes with another one of a train of cogs, *g*, carried by the inner ends of the shafts of the picking-rolls E, and by which they are operated to revolve in pairs in opposite directions, as indicated by the arrows, Fig. 4. One roll of each pair of picking-rolls is preferably provided with pins, or "bearded," as it is commonly called, and the other is of smooth surface in order to move effectually clean the ears. They are made of any suitable material, and have their bearings in boxes *s*, that slide in slots or grooves in cross-beams 6 and 7. (See Fig. 8.)

Extending between the non-working bites of the picking-rolls above and lengthwise of the same are square strips *h*, of iron or other suitable material, which constitute cleaning devices for said rolls. They are loosely secured at their ends by pins or screws that pass through elliptical slots *n* in the cross-beams 6 and 7 of the frame, or in the cleaners themselves, (see Fig. 1,) which allow them to turn and rise slightly at either end to yield to masses of silk and husks that might accumulate and retard the working of the rolls. Their function is to gather the surplus silk from the rolls as the corn is operated upon between their working-bites, and cause it to be precipitated between said rolls to the ground beneath. In addition to this function, however, should the corn as it is fed to the rolls strike upon them, it is caused to glance off to one side or the other by virtue of their contour, and thus assist to prevent the non-cleansing of a single ear. They are preferably square in cross-section, and an angle formed by two of their sides rests between the rolls, as shown in Fig. 4. Their two under sides are preferably "bearded," as shown in detail, Fig. 6. This figure shows a slight deviation from the cross-section shown in Fig. 4; but I consider such form clearly within the scope of my invention.

Connected to the trough C at its lower end by a rod, *i*, passing therethrough, are two, three, or more devices, F, that are caused to vibrate with each vibration of the trough. Their outer ends are loosely suspended by straps *l*, that are secured to strips *m*, extending across to the sides *d d*, in order to allow said ends to rise and fall. These devices serve two functions, to wit: First, being serrated or otherwise roughened on their under surfaces, and having imparted to them a vibrating motion, they act to gradually impel the corn forward to the delivery end of the picking-rolls, while it is rotated by their cleaning action; second, in the event of an ear of corn, while passing over the picking-rolls, being thrown upon end, these devices at first slightly yield upward by virtue of their flexible support at the outer ends, and then by their continuous vibrations they act to again force it down without breakage or stoppage of any part of the machinery. In Fig. 7 I have shown these devices as being one solid apron, which would serve with good results in some instances; but in practice I prefer to use them in the form just described.

G represents the feed-board for the stalk to the husking-rolls, which is formed at its end nearest such rolls with an opening, *Z*, extending entirely across for the passage or drop of the corn as it is pinched off. An inclined board (see dotted lines, Fig. 3) is situated just beneath the lower husking-roll, to guide or direct the corn, as it falls, upon the trough C.

H represents the delivery-board for the stalk after its passage through the husking-rolls.

In Fig. 8 are represented in dotted lines boxes *s*, for the shafts of the picking-rolls, which slide in longitudinal grooves or slots in the cross-beams 6 and 7. At each end of the beams is a spring, *t*, which bears between the sides of the end boxes and a small disk, 8, and whose tension is regulated by a set-screw, 9. The purpose of these sliding boxes is to allow the picking-rolls to break gear and yield either way to any obstacle that otherwise would retard their operation, and after such obstacle has passed through to be again forced into gear by the resiliency of the springs. In this figure a nest of but four rolls is shown, which would only require a spring at each end of the supports in which their bearings are held; but of course in a nest of six, as in Fig. 1, a spring would have to be located and arranged intermediate of these. In said Fig. 1 these sliding boxes are not illustrated, in order that the other connections of my apparatus may be shown.

The operation is as follows: The stalk containing the ear of corn to be husked is placed upon the feed-board "butt" foremost and advanced against the husking corrugated rolls B *b*. The rolls seize the stalk, rolling it through

upon the delivery board H. The ears of corn, upon reaching these rolls, strike the larger one butt first, and are bent or turned downward at an angle, while the pull upon the stems is in a straight line, and is a gradual, even, and thorough tearing one. The husked ears drop into the vibrating trough C, where they are made to assume a direction coincident with the length of the picking-rolls by falling into the spaces between slats *c*, and are delivered to such rolls with the results hereinbefore given of their action, together with the action of the other operative constituents of the apparatus. It will thus be seen that in the employment of this apparatus the husking and cleaning of corn are most effectually accomplished; and it will further be seen that in the employment of the corrugated rolls operated at differential speeds I obtain with a much smaller expenditure of power greater results in a given time than are accomplished by many machines now in use.

Having thus described my invention, what I claim is—

1. The combination, in a corn-husking machine, with the corrugated husking-rolls and means for revolving the same, of the inclined slatted trough and the means by which it is vibrated, the picking-rolls, and the serrated devices F, all constructed and arranged substantially in the manner described.

2. The combination, in a corn-husking machine, of the corrugated husking-rolls having at their inner ends intermeshing cogs, and at their outer opposite ends a drive-wheel and a beveled gear-wheel, of the inclined slatted trough movably supported at its ends, and having at its under side the lug *e''*, the shaft D, having at its outer end a gear-wheel, by which motion is received from the husking-rolls, and provided with the cam *e'*, the picking-rolls, and the serrated devices F, pivotally secured at their inner ends to the trough, with their outer ends flexibly supported, all substantially as described.

3. The combination, in a corn-husking machine, of the inclined slatted trough, supported at its ends as described, and the means by which it is vibrated, of the picking-rolls, their sliding boxes, slotted supporting cross-beams in which said boxes are held, the serrated devices F, the rod *i*, pivotally supporting their inner ends, and the flexible straps supporting their outer ends, substantially as shown and set forth.

4. The corrugated husking-rolls B *b* and means for revolving the same, said roll *b* carrying the beveled gear-wheel 4, in combination with the rotating shaft D, bearing cam *e'*, and carrying at its outer end a beveled gear-wheel that meshes with wheel 4, and the slatted inclined trough, substantially as and for the purpose described.

5. The combination, with the husking-rolls B *b*, shaft D, having the joint *f'*, and the vibrating trough C, supported as described, of the picking-rolls arranged parallel with the husking-rolls, bearings therefor, and the cogs at the inner ends of the picking-roll shafts, the outer one of which is connected to the inner end of shaft D, whereby on the rotation of said shaft the picking-rolls are operated to revolve in pairs in opposite directions, substantially as set forth and shown.

6. The combination, with the frame, of the inclined slatted trough having pin *c'* at its upper end, flexible pendants at its lower end, and lug *e''*, the shaft D, bearing cam *e'*, and means for rotating said shaft, substantially in the manner herein shown and described.

7. The combination, with the inclined slatted trough and means for vibrating the same, of the picking-rolls E and the serrated vibrating devices F, pivotally secured to the trough at their inner ends, and flexibly supported to the frame at their outer ends, substantially as described.

8. In a corn-husking machine, the combination, with the picking-rolls, of the cleaning devices *h*, extended above and lengthwise therewith, said devices being square in cross-section, and having the angle formed by two of their sides bearded, and resting between the rolls, substantially in the manner set forth and described.

9. The combination, with the picking-rolls, of the cleaning devices *h*, pins for loosely holding their ends, and the cross-pieces formed with elongated slots, substantially as described, and for the purpose set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

S. MILFORD SCHINDEL.

Witnesses:
R. LEE HARNE,
J. D. SIMMONS.