

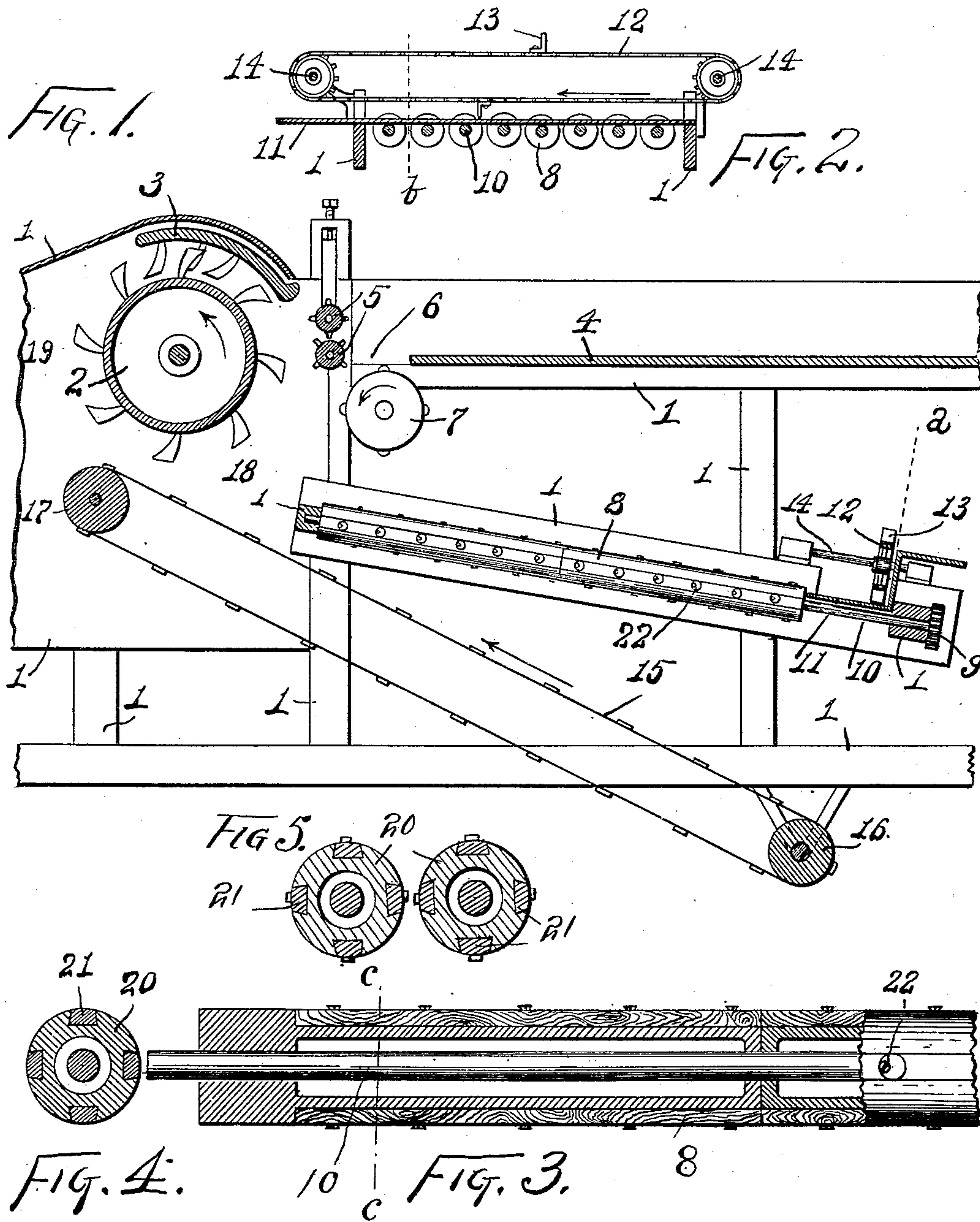
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Patented July 2, 1901.

F. M. TEEGUARDEN & J. B. HIMES.
CORN HUSKER AND SHREDDER.

(Application filed Aug. 10, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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CORN HUSKER AND SHREDDER.

SPECIFICATION forming part of Letters Patent No. 677,386, dated July 2, 1901.

Application filed August 10, 1900. Serial No. 26,468. (No model.)

To all whom it may concern:

Be it known that we, FREEMAN M. TEEGUARDEN and JOSEPH B. HIMES, citizens of the United States, residing at Newcastle, Henry county, Indiana, (post-office address Newcastle, Indiana,) have invented certain new and useful Improvements in Corn Huskers and Shredders, (Case C,) of which the following is a specification.

10 This invention pertains to improvements in machines for husking and shredding corn, and the improvements will be readily understood from the following description, taken in connection with the accompanying drawings, 15 in which—

Figure 1 is a vertical longitudinal section in the plane of line *b* of Fig. 2 of the main portions of a corn husking and shredding machine embodying our present invention; Fig. 20 2, a transverse section of the series of husking-rolls in the plane of line *a* of Fig. 1, showing in end view the series of husking-rolls; Fig. 3, a vertical longitudinal section, part side elevation, of one of the husking-rolls; 25 and Fig. 4 a vertical transverse section of the husking-roll in the plane of line *c* of Fig. 3. Fig. 5 is a vertical transverse section of the pair of husking-rolls, taken on line *E E* of Fig. 3.

30 In the drawings, 1 indicates various fixed frame or casing parts about the machine and requiring no special description, as their office is simply to give support or casement to the working parts; 2, a toothed beating-cyl- 35 inder, the same being of the construction usual in threshers and corn-shredders, except that the disposition of the teeth and the direction of motion are such that the upper surface of the cylinder moves away from the 40 receiving side—in other words, the cylinder turns in a direction opposite the usual one, and thus becomes an overrunning cylinder; 3, a toothed concave of usual construction and having the usual relationship to the beat- 45 ing-cylinder, except that it is placed above instead of below the cylinder; 4, a feed-table disposed in front of the beating-cylinder and adapted to support corn while being fed to the cylinder, this feed-table to be either a 50 plain table or a movable-surface table, ac- cording to whether the machine is to be ar-

ranged as a hand-feeder or a self-feeder, the drawings illustrating a plain table, our present invention not being concerned with special feed devices; 5, a pair of snapping-rolls 55 arranged, as usual, in front of the beating-cylinder, these rolls presenting no peculiarities so far as the present invention is concerned; 6, a gap between the snapping-rolls and the inner end of the feed-table and serving 60 to permit ears of corn to drop from the snapping-rolls to below the feed-table; 7, a gap-roll disposed parallel with the snapping-rolls and just below the gap 6 and serving, while sufficiently filling the gap, to support the fodder on 65 its way to the snapping-rolls to permit and urge downwardly the ears of corn tending to fall through the gap, the gap-roll being preferably of ribbed, star-shaped, or other non-circular cross-section; 8, a series of parallel husk- 70 ing-rolls disposed, as usual, below the table at an inclination and with their higher ends below the snapping-rolls, these husking-rolls being geared together in pairs, as usual, so that a given pair of contiguous rolls will op- 75 erate on an ear of corn lying in the gutter-like space formed between the rolls and grip the husk and strip it from the ear; 9, the usual intermembering series of gears at one end of the husking-rolls to serve in transmitting mo- 80 tion between them; 10, reduced portions or stems at the lower ends of the rolls; 11, a thin shield extending across the machine just over the stems 10 and serving as the floor of a chan- 85 nel for the conveyance outwardly sidewise from the machine of the ears of husked corn which come down the incline of the husking-rolls; 12, a belt, preferably a chain belt, dis- 90 posed across the machine over the shield 11; 13, drag-fingers carried by belt 12 and serving to traverse shield 11 endwise, our present practice being to provide the belt with two of these drag-fingers; 14, the shafts and wheels 95 at the ends of belt 12 for supporting and giving motion to the belt; 15, a conveying-apron, preferably slatted, disposed below the husk- 100 ing-rolls and beating-cylinder and so inclined that its upper end will be near the lower portion of the beating-cylinder; 16 and 17, the end rolls for the support and actuation of apron 15; 18, the space at the inner end of the husking-rolls and the upper end of apron

15 and the front lower portion of the beating-cylinder; 19, the space or location rearwardly beyond the beating-cylinder and representing what might be called the "discharge-chamber" of the beating-cylinder; 20, the body of one of the husking-rolls, the same being formed of metal; 21, a circumferential series of wooden ribs disposed in longitudinal grooves in the body of the husking-roll, the periphery of the ribs being flush with the periphery of the body of the roll, and 22 the usual teeth upon the husking-rolls, formed, preferably, in the usual manner by means of headed screws or pins projecting from the rolls, the surfaces of the rolls being provided with recesses to permit the passage of the teeth of the contiguous rolls, our present practice being to provide the teeth and recesses in the inserted wooden ribs 21.

20 The general operation of the machine, considered apart from the present improvements, is not unusual and may be briefly described as follows: The stalks, with the attached ears, are fed in between the snapping-rolls, which pass the stalks onward to the beating-cylinder. The ears become stripped off by the snapping-rolls and fall to the upper ends of the husking-rolls. The downwardly-running surfaces of the contiguous rolls of a given pair of the husking-rolls catch the husks and strip them from the ears, the husks falling from the husking-rolls and the ears moving down the incline of the husking-rolls to the foot of the incline. The stalks and leaves without ears go on through the snapping-rolls to the beating-cylinder, which bends and breaks them and carries them through the concave, breaking and shredding them and discharging them as shredded material into discharge-space 19, from whence they are to be carried away by the usual conveying appliances.

One feature of our improvement relates to the construction of the husking-rolls, which have been described in connection with Figs. 3 and 4 as being formed of metal and provided with inserted wooden ribs. In connection with Fig. 3 we will explain that we form each roll of two pieces joining at the mid-length of the roll, the two parts being held in proper relationship by the shaft on which they are mounted. This facilitates construction and permits the grooves containing the wooden ribs 21 to be closed at their outer ends and prevents endwise displacement of the ribs. The husking is primarily performed by the action of the teeth 22 of the husking-rolls. As the ear of corn lies in the gutter formed between a pair of contiguous coacting rolls the teeth catch the husks and pull them away from the ear, the husks so caught being gripped and pulled upon by the coacting pinching-surfaces of the rollers, the effect being to complete the stripping of the husk from the ear and pull it loose from the ear and pass it down be-

tween the rolls, the ear proceeding on down the incline to the foot of the husking-rolls. The teeth of the husking-rolls do not with certainty at once aggressively attack the husk on the ear, several attacks being often necessary, and during this operation the ear is moving down the incline of the husking-rolls, and if it reaches the foot of the rolls before the husking teeth and rolls have done their work then the ear escapes from the machine unhusked. It is therefore of importance that the husking-rolls be of such character as to take a gripping advantage of any projecting portion of the husk, and thus retain the ear and prevent it from going down the incline before time has been given for the completion of the husking operation.

Husking-rolls have frequently been formed of wood, it being found that the wooden surfaces of the rolls are best adapted for the desired gripping of such husk projections as may present themselves; but there is a hard knob attached to the husk where it joins the ear, the breaking of the husk from the ear taking place at this knob and the rolls drawing the knob down through between them with the husk. These knobs do not pass readily between the rolls, but are drawn forcibly down against the rolls while the rolls are turning and seriously groove the rolls, thus quickly unfitting them for their work. To avoid this rapid cutting out of the rolls, it has been common to form the rolls of metal or to jacket them with metal. This avoids the wear, but results in metal gripping-surfaces not satisfactory in connection with the husks, the result being that much unhusked corn goes to the foot of the incline of the husking-rolls and out of the machine and requires to be husked by hand. With the best machines of which we have any knowledge prior to our invention when working with corn in dry condition, and about two-thirds of the corn operated upon by husking-machines is in such condition, it becomes necessary to have two or three men in the wagon to which the machine delivers its so-called "husked corn," it being the duty of these men to husk by hand the ears coming out of the machine unfinished, about one-fourth of the discharged ears requiring hand-husking.

Our improved machine delivers a perfect product to the receiving-wagon and would require and put no husking men in the wagon.

It will be observed that our husking-rolls are formed with metal bodies provided with flush longitudinal ribs of wood, in which are provided the aggressive teeth 22. The metal of these rolls entirely prevents the grooving which has been referred to, and the flush wooden surfaces of the inserted ribs provide gripping-surfaces of maximum efficiency. As soon as an ear of corn falls to the rolls some fragment or projecting husk is gripped by the wooden ribs of the rolls, and the ear is thereby held against going down the in-

cline until the teeth of the rolls have attacked the husk and brought more of it away from the ear and to within range of the grip of the rolls. The ears reach the foot of the incline of the husking-rolls in perfectly-husked condition. Wooden ribs have been before provided in metallic husking-rolls, but they projected from the surface of the roll and were intended to make the attack on the husks on the ears, there being no teeth on the rolls and there being no continuity of roll-surface, the coacting surfaces of ribs being the only active roller-surfaces. In construction, mode of operation, and result this was quite different from our present arrangement of toothed rolls with continuous composite surfaces of wood and metal.

In huskers and shredders as heretofore constructed the stalks were shredded by passing through the beater and concave, while the husks stripped from the ears by the husking-rolls were discharged unshredded and required to be re-fed to the cylinder and concave if they were to be shredded. In our present arrangement the husks stripped from the ears by the husking-rolls are carried up to the beating-cylinder by the apron 15, the beating-cylinder catching these husks and carrying them up its front and then through the concave, shredding them and discharging them along with the other shredded material. If the concave instead of being placed above the cylinder were placed below it, as usual, then it would be impossible for the cylinder to pick up these husks and carry them to the concave. The action of the cylinder-teeth, whether the concave be above or below, is an onward one toward point of discharge, and the husks if they are to go through the concave must be delivered in front of the concave. This seems impossible of accomplishment with the concave disposed below the cylinder. In our construction we utilize the backwardly-running lower portion of the cylinder to catch the husks and carry them to

the concave by a retreating motion followed by an upward and forward motion.

We claim as our invention—

1. In a corn husker and shredder, the combination, substantially as set forth, of a series of inclined parallel husking-rolls having metallic bodies provided with longitudinal grooves, ribs of wood secured within said grooves and having their outer surfaces flush with the peripheral metallic surfaces of the rolls, and teeth projecting outwardly from said ribs, whereby husks projecting from the ears are gripped between said ribs and the ear held to the rolls while the teeth attack the husks clinging to the ears and pull them to position to be gripped by the ribs and stripped from the ears and drawn downward between the metallic surfaces of the rolls.

2. In a corn husker and shredder, the combination, substantially as set forth, of a toothed cylinder arranged to have its upper surface move in the direction of entry of the stalks to the machine, a toothed concave disposed over said cylinder, a pair of snapping-rolls disposed in front of said cylinder and serving to feed stalks to the cylinder and to snap the ears therefrom, a series of parallel husking-rolls disposed below and adapted to catch the ears falling from said snapping-rolls, and a carrier disposed below said husking-rolls and cylinder and adapted to receive the husks passing through said husking-rolls and to carry the same within reach of the outwardly-moving teeth upon the lower portion of the beating-cylinder, whereby said teeth attack said husks and carry them upwardly and thence onwardly through the concave to shred and discharge said husks along with the stalks.

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