March 20, 1928. 1,663,266

E. H. DANIEL

CORN HUSKING MACHINE

Filed May 24, 1926 3 Sheets-Sheet 1

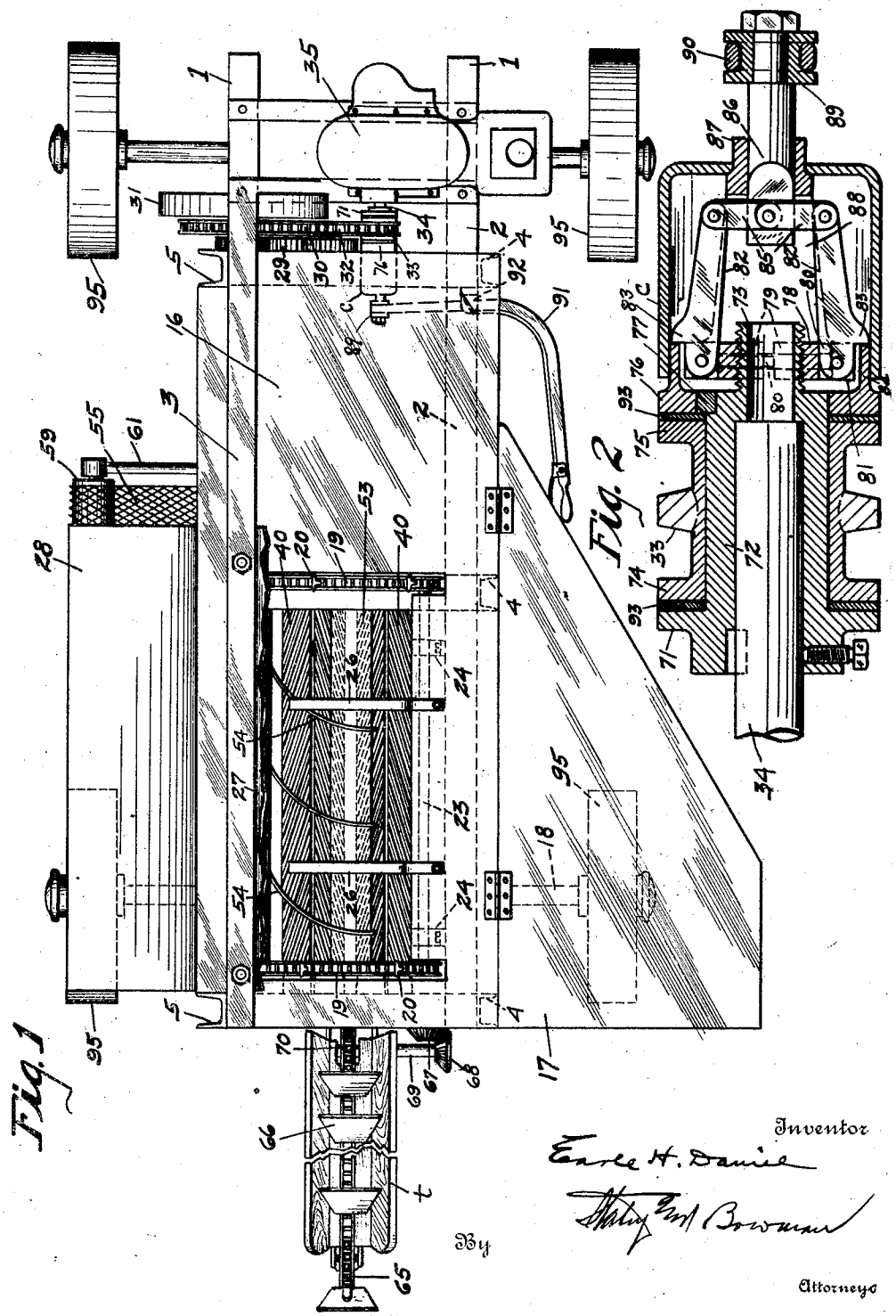

Fig. 1

Fig. 2

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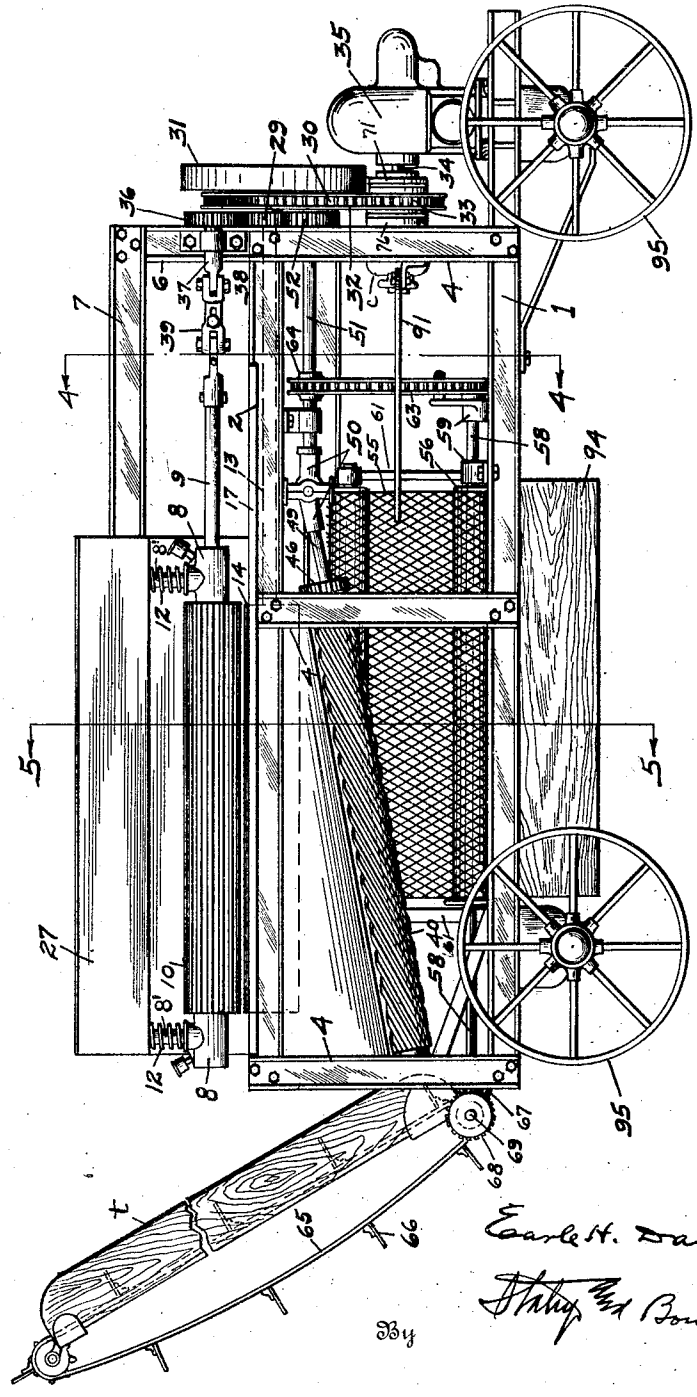

Fig. 3

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Fig. 4

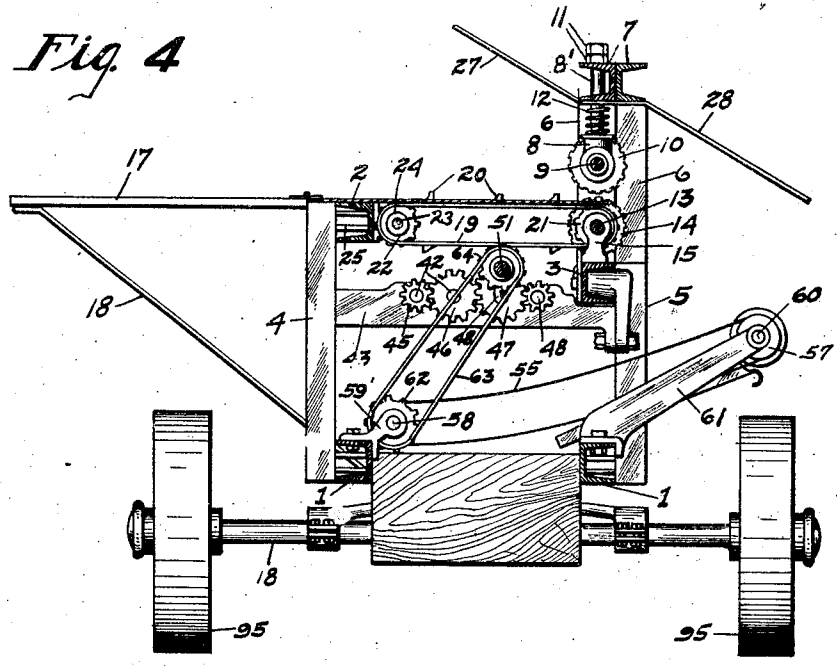
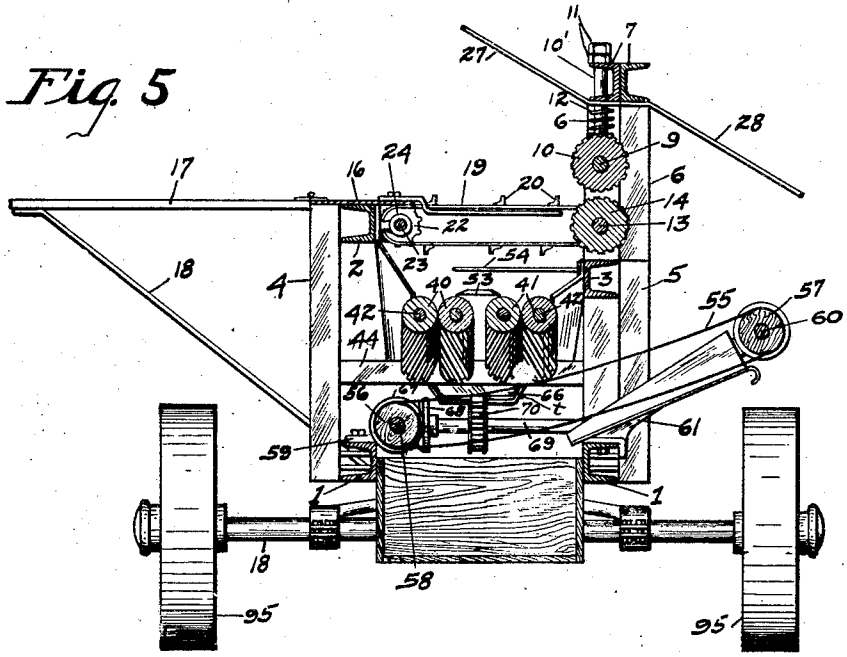


Fig. 5



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UNITED STATES PATENT OFFICE.

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CORN-HUSKING MACHINE.

Application filed May 24, 1926. Serial No. 111,227.

This invention relates to improvements in corn husking machines, it particularly relating to a machine which is portable in character so that it can be moved from shock to shock in the field and snap and husk the ears of corn from the stalks.

An object of the invention is to devise a machine of this character which will be simple in construction, easily manipulated, economical in manufacture and effective for the purpose for which it is designed.

A further object of the invention is to provide a simple and effective arrangement for driving the various operating parts of the machine by an internal combustion engine mounted on the frame of the machine, in conjunction with simple and effective means for connecting and disconnecting the operating mechanism to or from the engine and transmitting the power of the engine to the various mechanisms.

A further object of the invention is to improve the snapping rolls by providing improved means for yieldably supporting one of said rolls and for driving said rolls.

Further objects will appear from the accompanying description and claims.

Referring to the accompanying drawings:

Fig. 1 is a top plan view of a machine embodying the improvements.

Fig. 2 is a longitudinal section of the clutch between the engine and operating mechanism together with the devices for operating the same.

Fig. 3 is a side elevation.

Fig. 4 is a section on the line 4—4 of Fig. 3.

Fig. 5 is a section on the line 5—5 of Fig. 3.

The main frame of the machine is formed of two lower channel beams 1, two upper channel beams 2 and 3. A series of vertical channel beams 4 connect the longitudinal beams 1 and 2 on one side of the machine, a series of vertical channel beams 5 connect the longitudinal beams 1 and 3 on the opposite side of the machine, and pairs of channel-shaped posts 6 are connected to the beam 3 and extend upwardly and are connected at their upper ends by the longitudinal channel beams 7.

Journaled in bearings 8 is the shaft 9 of an upper snapping roll 10. These bearings 8 are carried at the lower ends of rods or stems 8′ which extend loosely through the horizontal flanges of one of the supporting beams 7 and are hung thereon by nuts 11 threaded on the upper ends of the stems, coil springs 12 being inserted between the lower flange of the beam and the bearings 8 so as to hold the upper snapping roll to its work with yielding pressure to permit it to yield upwardly. The shaft 13 of the lower snapping roll 14 is journaled on bearings 15 (Fig. 4) supported by the channel beam 3 and is arranged parallel with and in vertical alignment with the roll 10. Both of these rolls are provided with longitudinal ribs as shown.

The upper portion of the frame has a cover 16 to the forward edge of which is hinged a table 17 provided with a brace 18 upon which the stalks of corn are placed. The cover 16 is formed with an opening between the table 17 and the snapping rolls and carriers in the form of two endless chains 19 having lugs 20 are provided for conveying the stalks from the table to the snapping rolls. These chains pass about sprocket wheels 21 secured to the lower snapping roll shaft 13 and also about the sprocket wheels 22 on a shaft 23 which is carried by bearings 24 at the forward end of adjusting screws 25 which are supported by the longitudinal beam 2 with suitable provision (not shown) for adjusting the screws so as to secure the desired tension upon the chains 19. In addition to the carrying chains 19 there are provided two supporting arms 26 to support the stalks in their travel from the table to the snapping rolls. A forwardly and upwardly projecting deflector plate 27 and a rearwardly and downwardly projecting deflector plate 28 both secured to the under side of the channel beams 7 are preferably employed.

The shaft 13 of the lower snapping roll is extended beyond the front sides of the forward standards 4 as shown in dotted lines in Fig. 3 and has secured thereto a gear 29, a sprocket wheel 30 and a fly wheel 31. A chain 32 connects the sprocket wheel 30 with another sprocket wheel 33 which is arranged to be clutched to the crank shaft 34 of an

internal combustion engine 35 in a manner more fully described hereinafter. The gear 29 meshes with a gear 36 on a short shaft 37 supported in a bearing 38 on the standard 6. This short shaft 37 is connected through a flexible coupling 39 with the shaft 9 of the upper snapping roll 10, these gears being of the same size so that the snapping rolls rotate in opposite directions at the same speed.

Two pairs of husking rolls 40 and 41 are employed in the present machine, the shafts 42 of these rolls being journaled in suitable bearings in cross frame members 43 and 44. The rolls have spiral ribs as shown and are arranged lengthwise of the machine and inclined downwardly toward the rear end of the machine. The forward end of the shaft 42 of each roll immediately forward of the cross-frame member 43 has secured thereto a gear, these gears being represented by 45, 46, 47 and 48, the gears meshing together as shown in Fig. 4. The gear 46 is larger than the gear 45 so that the rolls of that pair corresponding to these gears will rotate at different speeds. The same is true of the gears of the other pair of rolls. The shaft which carries the gear 47 is extended as indicated at 49, and is journaled in a bearing 50 and connects through a suitable coupling (not shown) with a shaft 51 supported in the bearing 50 and in suitable bearings on the front frame member. The shaft 51 has at its forward end a gear 52 which meshes with the gear 29 so that motion is imparted to the husking rolls when the machine is in operation. The two intermediate rolls are bridged by a strip 53 and above the husking rolls is a series of curved fingers 54 projecting forwardly from the channel bar 3.

Beneath the husking rolls is a transversely-arranged endless conveyor 55 formed of wire fabric, this conveyor passing about the rolls 56 and 57. The shaft 58 of the roll 56 is carried by bearing 59 mounted on the channel beam 1 while the shaft 60 of the roll 57 is mounted in bearings at the end of projecting arms 61. The shaft 58 has a sprocket wheel 62 driven by a sprocket chain 63 from the sprocket wheel 64 on the shaft 51. It will be noticed that this carrier projects well beyond the rear side of the machine so as to assist in throwing the stalks away from the machine as they come through the snapping rolls as well as convey the husks from the husking rolls.

At the rear ends of the husking rolls is an elevator of suitable construction consisting of an endless chain 65 carrying buckets 66 which move through a trough *t* and is driven from the shaft 58 of the roll 56, the rear end of this shaft having a bevelled gear 67 meshing with another bevelled gear 68 on the shaft 69 which carries a sprocket wheel 70 about which the chain 65 passes.

The clutch which connects the various mechanisms with the engine is constructed as follows: Referring more particularly to Fig. 2, the crank shaft 34 of the engine, which is of the horizontal type, extends in the direction of the length of the machine. This shaft is extended and has keyed to the extended portion thereof a clutch member in the form of a disk 71 provided with an extended hub or sleeve portion 72 which terminates in a reduced threaded portion 73. The sprocket wheel 33 is loosely mounted upon the sleeve 72 and has at each end thereof an integral disk 74 and 75. Slidably mounted upon the end of the sleeve 72 adjacent the disk 75 is a disk 76 and a key 77 forms a connection to cause the disk 75 to rotate with the sleeve. Secured upon the reduced threaded portion 73 is a split collar 78 which has a pair of ears, shown in dotted lines at 79, to receive a screw, shown in dotted lines at 80, by which the collar may be clamped to the extension 73 after it has been properly adjusted. The collar has two diametrically-opposite pairs of ears 81 and between each pair of ears is pivoted a lever 82 having a nose 83 arranged in close prominity to an extended rim 84 on the disk 76. The free ends of these levers 82 have pivotally connected thereto toggle levers 85 which are pivotally connected to a stem 86 slidably mounted in a bearing 87 formed at the end of a pair of arms 88 integral with and projecting from the collar 78. The stem 86 has secured thereto a grooved collar 89 to receive the forked end 90 of a lever 91 which is pivoted at 92 to the frame and projects to within convenient reach of the operator on the forward side of the frame. Friction disks 93 of suitable material are placed between the respective disks 71, 74, 75 and 76. When the lever 91 is moved in one direction the stem 86 is slid in the bearing 87 and through the toggle joints will swing the levers 82 to cause the noses 83 to engage the cylindrical rim 84 and force all the clutch disks into frictional engagement with each other to cause the sprocket wheel 33 to rotate with the crank shaft. Movement of the lever in the opposite direction disengages the noses 83 from the rim 84 and causes the disengagement of the disks to allow the sprocket 33 to become idle. A cover C is preferably fitted to the rim 84 and collar 86 to enclose the operating mechanism.

The operation is as follows: The operator stands on the forward side of the machine, that side being the one equipped with the table 17, the stalks being placed upon the table and fed by the operator to the carriers 19 which convey the stalks to the snapping rolls, the stalks being fed so that they enter the snapping rolls in substantial parallel relation thereto. These snapping

rolls tear or snap the ears of corn from the stalks permitting the stalks to feed therebetween and drop onto the conveyor 55 by which they are deposited on the ground at the rear side of the machine. The ears of corn drop onto the husking rolls which remove the husks therefrom and feed the husks therebetween so they will drop upon the conveyor 55 and be discharged with the stalks. The husked ears ride down the husking rolls to the elevator by which they are carried to a suitable point of discharge at the rear end of the machine, such as the bed of a wagon. Loose grains of corn which have been removed from the ears pass through the husking rolls with the husks and also pass through the open carrier 55 and drop into a box 94 supported by the channel beams 1. The lever 91 being extended to the position occupied by the operator may at any time be manipulated to stop and start the mechanisms. The machine is mounted upon suitable ground wheels 95 so that it may be readily transported from shock to shock in the field.

By this construction it will be seen that an arrangement is provided whereby the operator may stand at the forward side of the machine and feed the stalks to the snapping rolls; that the stalks and husks are discharged out of the way at the rear side of the machine and that the ears of corn are delivered to an elevator at the rear end of the machine; further, that the engine which furnishes the power is located on the forward end of the machine and that practically all of the transmission mechanism is located in the forward part of the frame in a compact form.

Having thus described my invention, I claim:

1. In a corn husking machine, a pair of snapping rolls, a plurality of husking rolls, one of said snapping rolls being yieldable and the other nonyieldable, shafts for said snapping rolls, the shaft of the nonyieldable roll being extended to the forward end of the machine, a gear, a transmission member and a fly wheel all connected with said latter shaft supported by said frame, a gear on said short shaft meshing with said other gear, a flexible connection between said short shaft and the shaft of the yieldable roll, an internal combustion engine mounted on the forward end of the frame and having a longitudinally-extending crank shaft, a transmission member normally loose on said crank shaft and connected with said first mentioned transmission member, and an operating lever extending to the forward side of the machine for connecting and disconnecting said crank shaft transmission member with said crank shaft.

2. In a corn husking machine, a pair of snapping rolls and their shafts, a plurality of husking rolls, one of said snapping rolls being yieldable and the other nonyieldable, the shaft of the nonyieldable roll being extended to the forward end of the machine, a gear and a power transmission member connected with said latter shaft, means for driving the shaft of the yieldable roll from said gear including a flexible connection, a third shaft supported by said frame, a gear on said third shaft meshing with said first-mentioned gear, means for driving said husking rolls from said third shaft, a carrier beneath said husking rolls, and means for driving said carrier from said third shaft.

3. In a corn husking machine, a main frame, a pair of longitudinally-arranged snapping rolls and their shafts, a plurality of longitudinally-arranged husking rolls beneath said snapping rolls, a transversely movable carrier beneath said rolls, one of said snapping roll shafts being nonyieldable and the other yieldable, the nonyieldable shaft being extended to the forward side of the machine, a power transmission member connected with said nonyieldable shaft, means for driving the yieldable snapping roll shaft from the nonyieldable snapping roll shaft, means for driving said husking rolls and said carrier from said nonyieldable husking roll shaft, an elevator at the rear end of said husking rolls including an endless conveyor, and a connection between said conveyor and said carrier for driving said conveyor.

4. In a corn husking machine, a main frame, a pair of longitudinally-arranged snapping rolls, the shaft of one of said rolls being yieldable and the other shaft nonyieldable, a plurality of longitudinally-arranged husking rolls beneath said snapping rolls, said husking rolls being inclined downwardly in a rearward direction, the nonyieldable snapping roll shaft being extended to the forward side of the machine, a power transmission member connected with said latter shaft, means including a flexible connection for driving the yieldable snapping roll shaft from said nonyieldable snapping roll shaft, an endless carrier movable transversely of the frame of the machine located beneath said rolls, said carrier including a pair of rolls, means for driving said husking rolls and one of said carrier rolls from said nonyieldable snapping roll shaft, an elevator located at the rear end of said husking rolls, said elevator including an endless conveying member and a transversely arranged shaft for operating said conveying member, and means for connecting said transversely arranged shaft with the driven roll of said carrier.

5. In a corn husking machine, a main frame, longitudinally disposed snapping rolls supported on said frame, means for feeding stalks of corn to said rolls from the

forward side of said machine, a plurality of longitudinally disposed husking rolls beneath said snapping rolls, said snapping rolls and husking rolls being located in different vertical planes with the snapping rolls to the rear of the husking rolls, and a single endless carrier extending beneath both the husking rolls and the snapping rolls to receive husks and stalks therefrom to discharge the same at the rear of the machine.

In testimony whereof, I have hereunto set my hand this 22nd day of May, 1926.

EARLE H. DANIEL.