

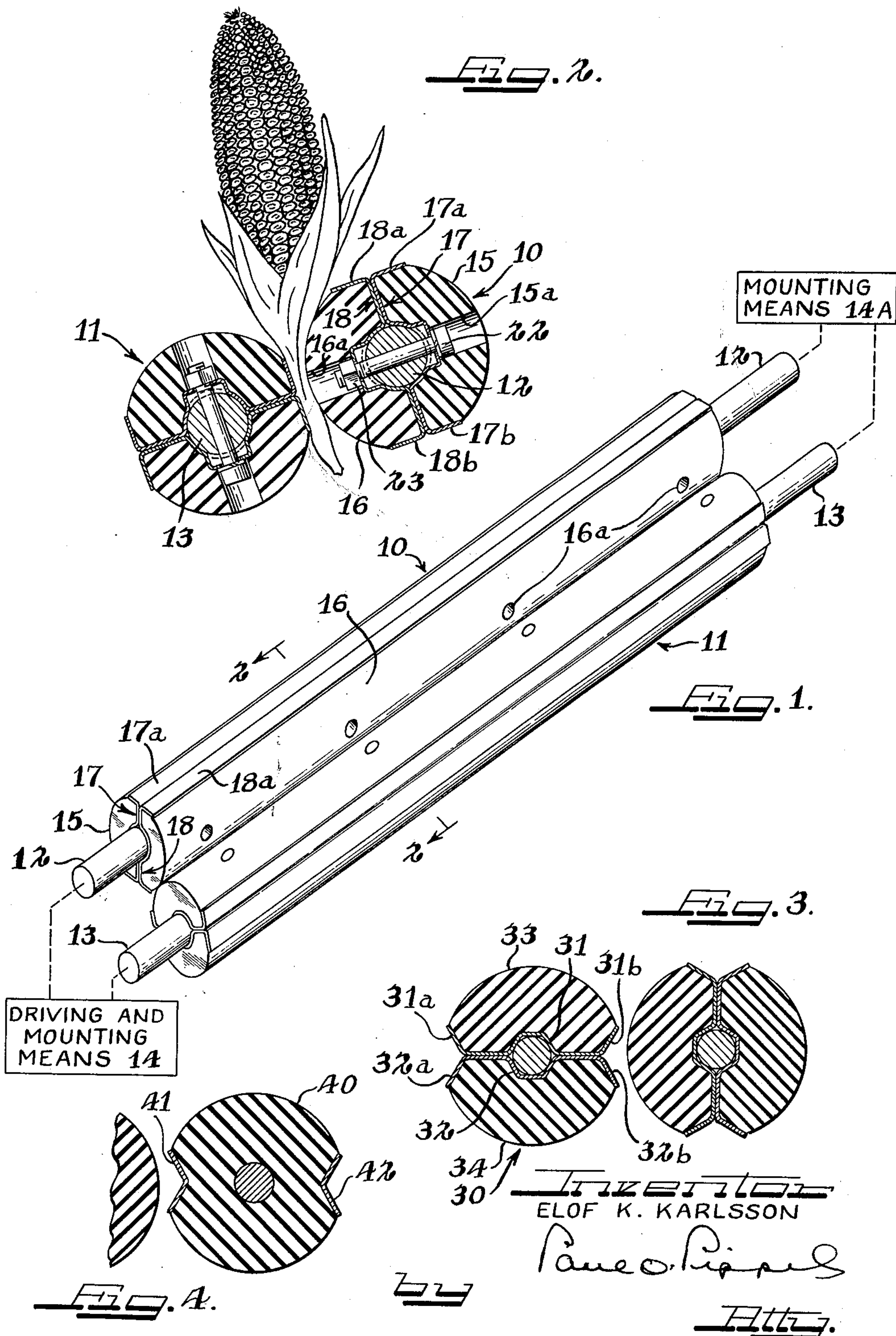
Aug. 27, 1963

E. K. KARLSSON

3,101,720

HUSKING ROLL CONSTRUCTION

Filed Oct. 25, 1961



1

3,101,720

HUSKING ROLL CONSTRUCTION

Elof K. Karlsson, Moline, Ill., assignor to International Harvester Company, Chicago, Ill., a corporation of New Jersey

Filed Oct. 25, 1961, Ser. No. 147,516

3 Claims. (Cl. 130-5)

This invention is directed to the removal of undesired waste portions from crop material, and more particularly to a novel construction for the husking rolls of a corn picker unit in which the efficiency and life-expectancy of the rolls are substantially enhanced by providing peripheral surface areas of different gripping characteristics on each husking roll, together with different spacings of such areas from the center of the roll.

In the manufacture of corn pickers, husking rolls have been provided in parallel, spaced-apart relation, with an aggressive surface (e.g., of rubber) over at least a portion of one roll. As such rolls are rotated in opposite directions, the aggressive surface frictionally engages the corn husks and pulls the husks into the aperture defined between such rolls. Because the ear is too large to pass through such aperture, it normally lies in the groove between the rolls and is subsequently forwarded by other well-known mechanisms to a processing unit, such as a shelter, or to a storage area. The husks are passed downwardly through the aperture between the husking rolls, and either dumped onto the ground or processed through other machinery. If the surfaces of the husking rolls are too aggressive, that is, if the frictional engagement is such that a very positive and forceful engagement is made with the ear as the stalk is pulled through, there is a tendency to bite into and damage a portion of the heel, or the end on the ear. However, this tendency cannot be completely avoided by the obvious expedient of making the rolls less aggressive, inasmuch as rolls which are not sufficiently aggressive will fail to engage the husks with the force requisite to effect removal of the husks from the ears.

One form of husking unit utilizes a husking roll constructed of rubber spaced from a roll formed of grey iron or a similar non-aggressive material, with a pair of smooth peripheral portions separated by toothed or corrugated peripheral areas. In an attempt to improve the effectiveness of the husking, units having both husking rolls formed of rubber have been constructed and utilized. However, although more husks or leaves are sucked through the rolls, ears of corn also stand on end and burn, eventually abrading the rubber down to the central shaft. This undesirable abrading or wearing reduces the husking efficiency below that which would otherwise be obtained with the use of two rubber husking rolls.

It is therefore a primary object of the present invention to provide a husking roll construction in which the major surface area of the roll is comprised of aggressive material, and at least a portion of the roll surface is comprised of non-aggressive material to release trapped ears and prevent the burning or abrading of the aggressive material.

A more particular object of the invention is to provide a husking roll construction such that ears caught between adjacent aggressive portions of the husking rolls can be released and free themselves for movement under the impetus of the ear-forwarding mechanism to avoid damage to the husking rolls.

The foregoing and other objects of the invention are realized, in a preferred embodiment of the invention, by providing a pair of adjacent husking rolls each of which is generally circular in cross section, and which includes a pair of chordal or flattened portions formed of

2

non-aggressive material. The remainder or arcuate portion of the husking roll is comprised of aggressive material along its surface. The two husking rolls are positioned in parallel, spaced-apart alignment, and connected to be driven in an intercalated manner so that the midpoint of a non-aggressive surface segment of one husking roll passes adjacent the midpoint of an aggressive area of the other husking roll. As will become apparent from the subsequent description, the described husking roll construction facilitates the release of ears which are caught between adjacent aggressive portions of the two husking rolls as a non-aggressive, depressed surface segment of one roll passes the point at which the ear is trapped. Both the non-aggressive character of the chordal segment and the reduced diameter or depressed surface conformation at this point contribute to the effective release characteristics.

The best mode contemplated for carrying out the invention will now be described. To enable those skilled in the art to make and use the invention, such description is set forth in connection with the accompanying drawing, in the several figures of which like reference numerals identify like elements, and in which:

FIGURE 1 is a perspective illustration, partly in schematic form, depicting a preferred embodiment of the invention;

FIGURE 2 is an enlarged sectional view, taken along the line 2-2 of FIGURE 1, illustrating the construction of the embodiment of FIGURE 1;

FIGURE 3 is a sectional view, similar to that of FIGURE 2, illustrating another embodiment of the invention; and

FIGURE 4 is a partial sectional view showing an embodiment related to that illustrated in FIGURE 3.

As shown in FIGURE 1, a husking arrangement constructed in accordance with the inventive teaching includes a pair of husking rolls 10 and 11. A central mounting and drive shaft 12 extends from roll 10, and roll 11 has a similar shaft 13. Because the drive means and bearing support means can be conventional in form and operation, they are represented schematically as driving and mounting means 14, and mounting means 14A.

Husking roll 10 is comprised of a pair of generally semi-circular outer members 15 and 16, which may be formed of rubber or a similar aggressive material, and a pair of inner or central members 17 and 18, each formed of a metallic or other non-aggressive material, and each comprising (as viewed in section in FIGURE 2) a generally semi-circular interior formed to fit around shaft 12 and a pair of right-angle leg portions, such as legs 17a and 17b of member 17, which cooperate with the leg portions, such as legs 18a and 18b, of the abutting non-aggressive member to form a non-aggressive surface along the outer periphery of the husking roll. Legs 17a and 18a are disposed in substantially the same plane and together form what is, in effect, a single non-aggressive chordal segment along a portion of the husking roll periphery, with the center of this segment depressed or positioned at a distance of the center of the husking roll which is less than the radial distance from the center of shaft 12 to the outer periphery of the aggressive surface portions of members 15 and 16. These aggressive surface members 15 and 16 include a plurality of bores (e.g., bores 16a in member 16) to provide for the entry of fastening means utilized to unite and maintain in position the various elements of each husking roll.

Because the physical construction and assembly of each of the husking rolls are identical, only the formation of husking roll 10 will be described with reference to FIGURE 2. As there shown, the aggressive members

15 and 16, which may be formed of rubber, are held in position with respect to non-aggressive members 17 and 18, which may be produced of steel, by a plurality of bolts 22, only one of which is shown, which passes through bore 15a in member 15, through a corresponding bore in member 17, through a similar bore in the center of shaft 12, through a related bore in the other non-aggressive member 18, and into the bore section 16a of member 16, where a nut 23 is threaded onto the extremity of bolt 22 to provide an integral husking roll assembly. The described assembly provides a husking roll configuration which in cross section exhibits a pair of aggressive arcuate surface segments (on members 15 and 16) separated by the effective diameter of the husking roll. Interposed between these aggressive segments are a pair of diametrically opposite non-aggressive chordal segments, one of which is comprised of legs 17a, 18a and the other of which is effectively formed by legs 17b, 18b. These non-aggressive surface segments are separated by a distance less than the effective diameter of the husking roll. It is possible to provide only a single husking roll of the configuration shown in FIGURES 1 and 2, for use with another husking roll formed entirely of rubber or other aggressive material. In such event, the relief or release of the ears which are trapped between the rolls would occur only as one of the non-aggressive segments of the novel husking roll passed adjacent the ear. It has been found convenient, however, to form two identical husking rolls and position and synchronize the two husking rolls in intercalated manner as indicated in FIGURE 2, so that the midpoint of a non-aggressive surface segment of one roll passes adjacent approximately the midpoint of an aggressive segment on the surface of the adjacent roll. With this arrangement, release of a trapped ear can be effected at four different angular positions for each revolution of the husking rolls.

FIGURE 3 illustrates another embodiment in which a husking roll 30 includes a pair of inner members 31 and 32 of which at least their leg portions 31a, 31b and 32a, 32b are comprised of non-aggressive material, and a pair of outer, generally semi-circular members 33 and 34, each formed of aggressive material or at least having an aggressive material affixed to the outer surface thereof. Thus, in lieu of the chordal segment formed by leg portions 17a, 18a in FIGURE 2, leg portions 31a, 31b in FIGURE 3 cooperate to define a V-shaped non-aggressive segment, which effects the release of trapped ears in the manner explained in connection with FIGURES 1 and 2.

The embodiment of FIGURE 4 is similar to that of FIGURE 3, except that the construction of FIGURE 4 is more economical, in that a rubber (or other aggressive material) husking roll 40 is first mounted on the central shaft, and then a pair of non-aggressive channel members 41 and 42 are vulcanized to member 40.

It is noted that, in each embodiment, the extremities of the leg portions of the non-aggressive members extend slightly beyond (or outwardly of) the periphery of the adjacent aggressive surface, thus to provide added husk-catching ability.

While only particular embodiments of the invention have been described and illustrated, it is evident that

modifications and alterations may be made therein, and it is intended in the appended claims to cover all such modifications and alterations as may fall within the true spirit and scope of the invention.

What is claimed is:

1. For use with a corn picker, a husking roll comprising: a central shaft; a pair of inner members each having outer leg portions of non-aggressive material, and each having a central portion formed to abut said shaft, said inner members being disposed on either side of said shaft; a pair of generally semi-circular outer members, comprised of aggressive material, formed to fit adjacent said inner members; and fastening means for securing said shaft, said inner members and said outer members in an integral husking roll assembly having a generally circular periphery with a pair of V-shaped segments defined by the leg portions of said inner members, the V-shaped segments of non-aggressive material effecting the release of any ears of corn which would otherwise be trapped adjacent said husking roll.

2. For use with a corn picker, a husking roll generally cylindrical in conformation and comprised of aggressive material, and at least one non-aggressive longitudinal member, V-shaped in cross section, embedded in the outer periphery of said husking roll to effect the release of any ears of corn which would otherwise be trapped adjacent the aggressive surface of said husking roll.

3. In a corn picking unit in which the corn husks are to be separated from the ears of corn, a husking mechanism comprising:

a pair of husking rolls formed with a generally circular periphery each of which includes;

a pair of oppositely positioned arcuate segments of aggressive material, said pair of arcuate segments defining a major portion of said circular periphery; and

a pair of oppositely positioned chordal segments of non-aggressive material for the purpose of enabling the release of ears during the husking operation, said chordal sections defining the remaining minor portion of said circular periphery;

said pair of husking rolls being 90° out of phase with each other;

said major portions, of said circular periphery defined by said arcuate segments, being of a magnitude such that there is considerable interaction between the peripheral surfaces of the arcuate segments of said pair of husking rolls, such that the husks are effectively removed from the ears of corn; and

means for effecting relative movement of said husking rolls in the removal of the husks from the ears.

References Cited in the file of this patent

UNITED STATES PATENTS

2,737,185 Siemen _____ Mar. 6, 1956
3,001,527 Jones _____ Sept. 26, 1961

FOREIGN PATENTS

1,004,348 France _____ Nov. 28, 1951