July 31, 1923. 1,463,364

F. H. KNAPP

HUSKING MACHINE

Filed Aug. 4, 1919 6 Sheets-Sheet 1.

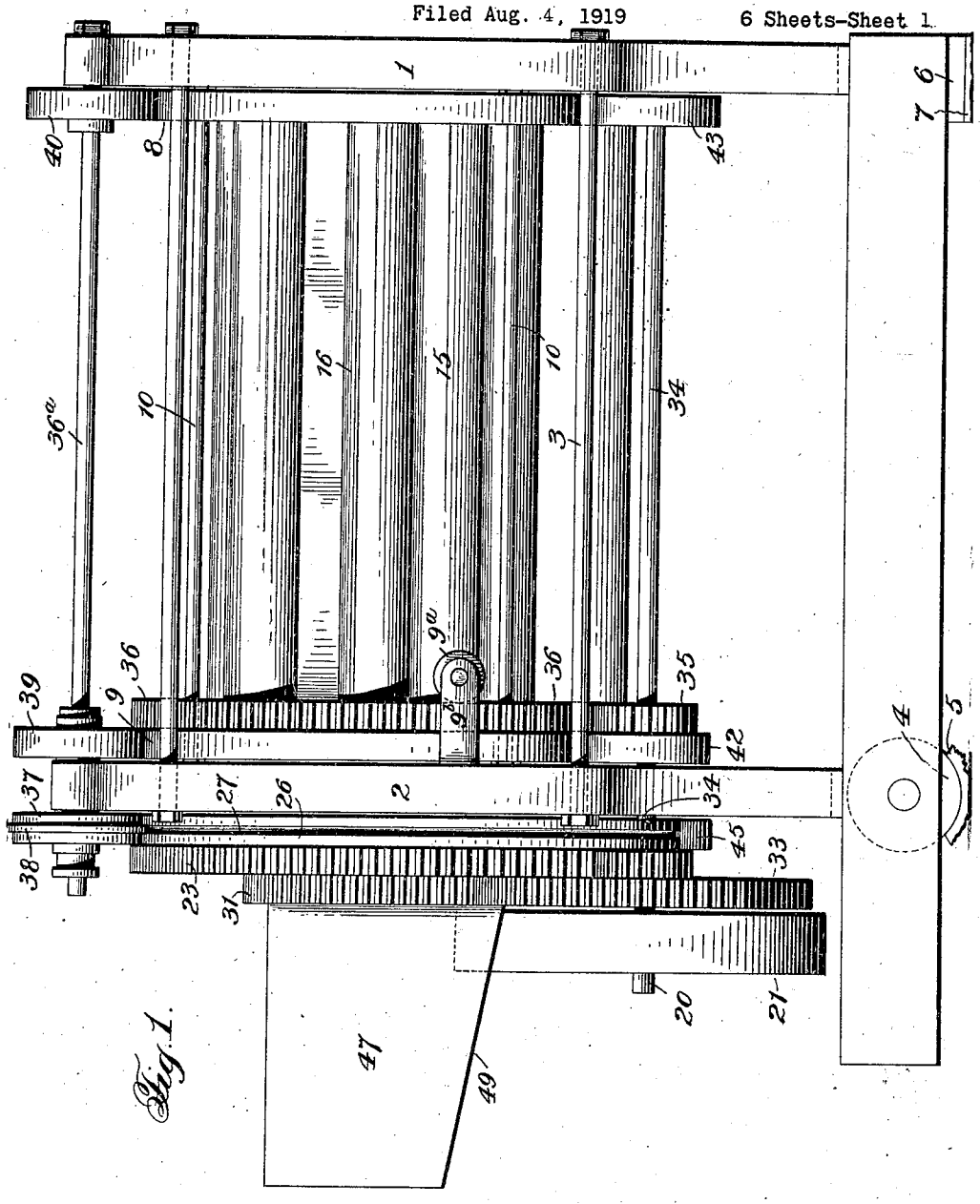


Fig. 1.

Witness:

Jas. E. Hutchinson.

Inventor:

Frederick H. Knapp,

By Milans & Milans Attorneys.

July 31, 1923. 1,463,364

F. H. KNAPP

HUSKING MACHINE

Filed Aug. 4, 1919 6 Sheets-Sheet 2

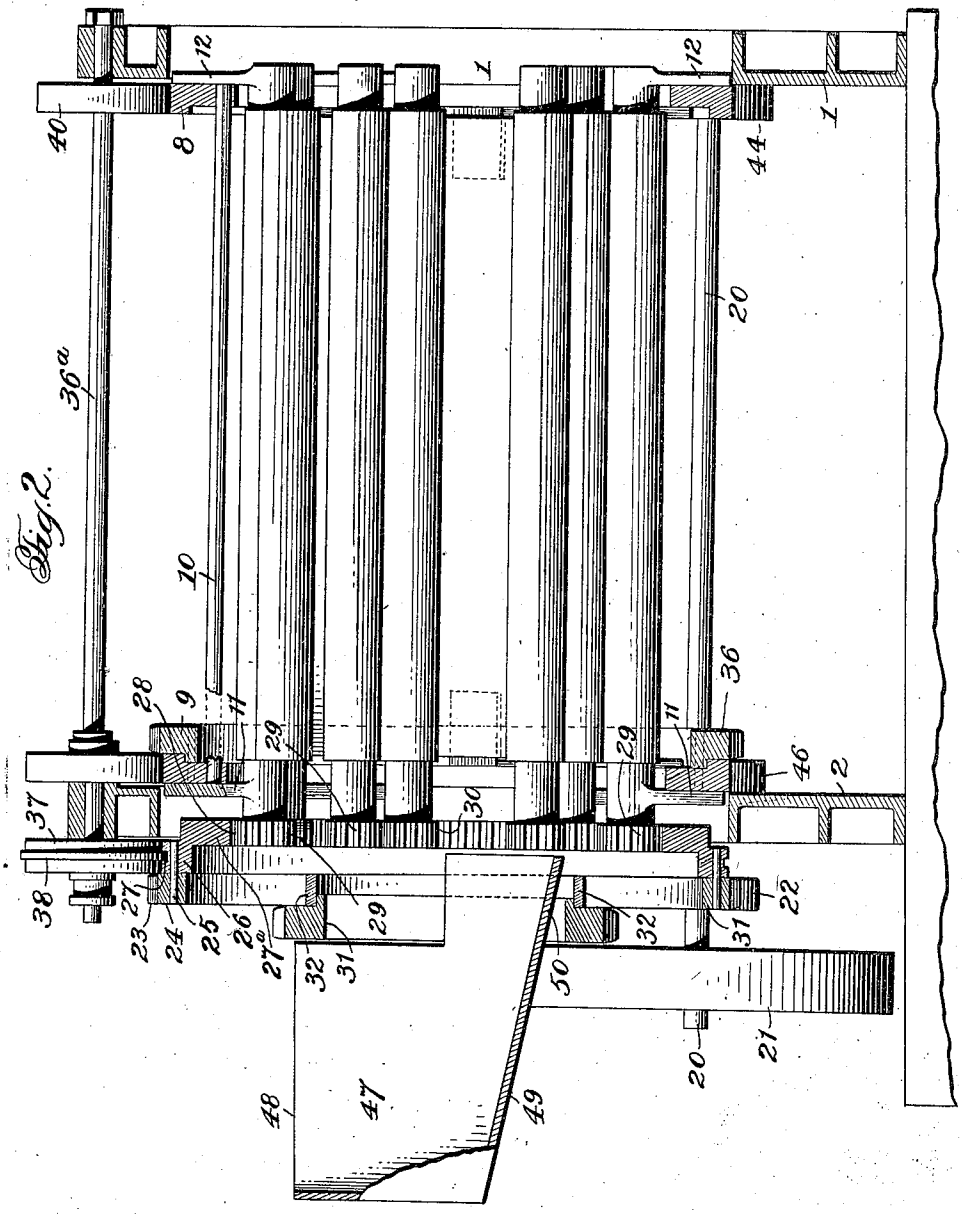


Fig. 2.

Inventor:

Frederick H. Knapp,

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Witness:

Jas. Les Hutchinson.

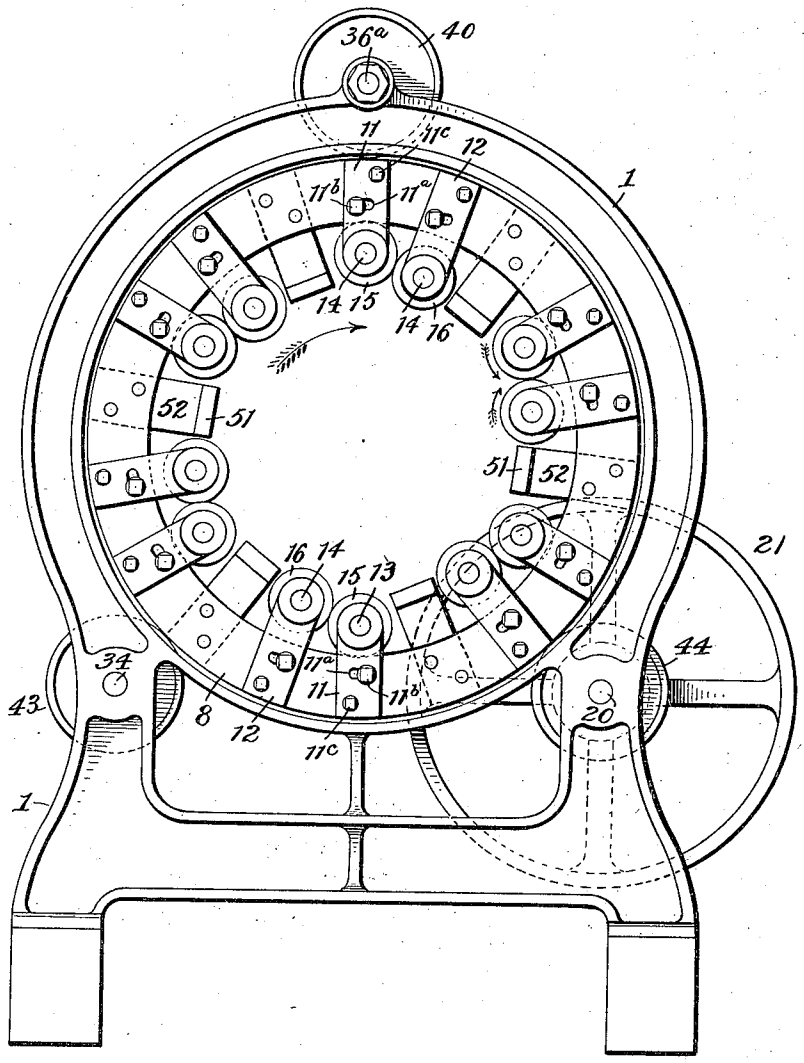
July 31, 1923. 1,463,364

F. H. KNAPP

HUSKING MACHINE

Filed Aug. 4, 1919 6 Sheets-Sheet 3

Fig. 3.



Witness:

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July 31, 1923.

1,463,364

F. H. KNAPP

HUSKING MACHINE

Filed Aug. 4, 1919

6 Sheets-Sheet 4

Fig. 4.

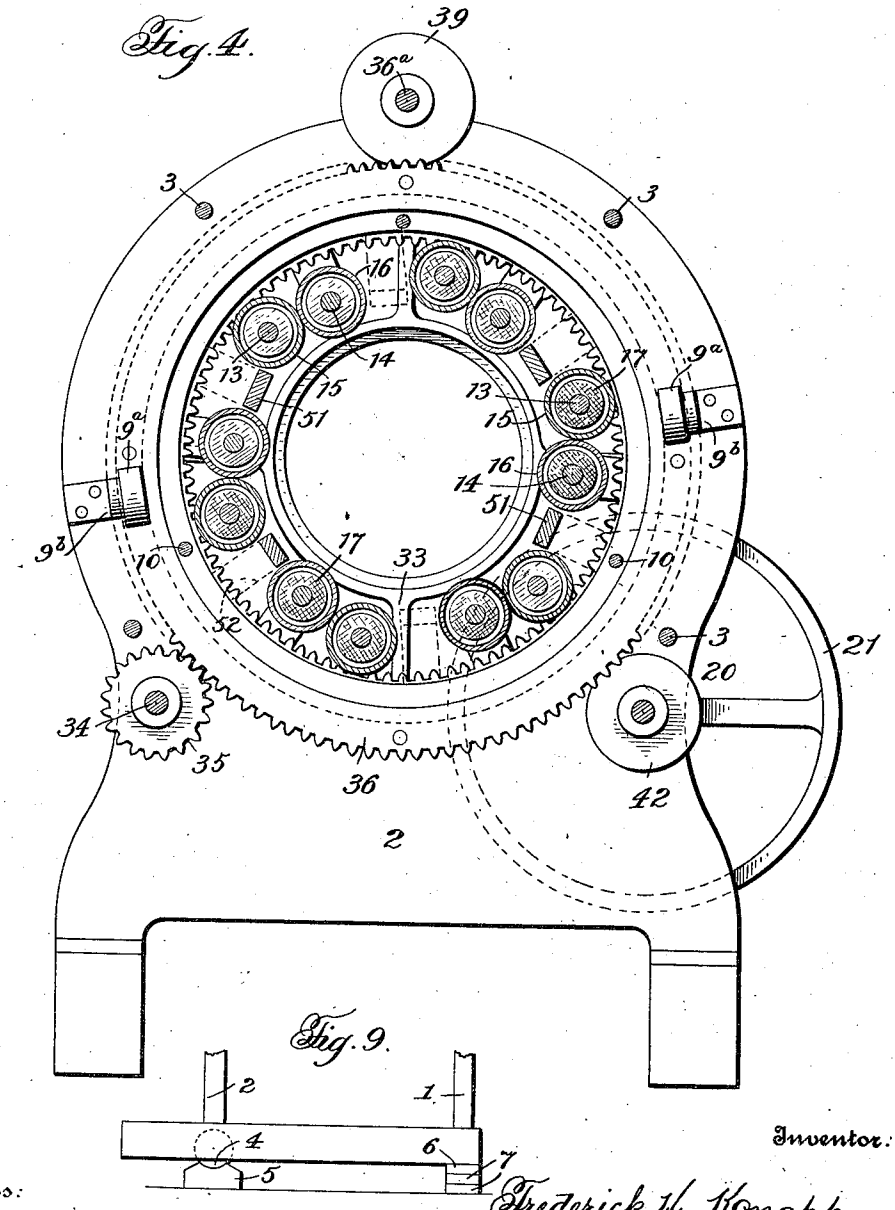


Fig. 9.

Witness:

Jas. E. Hutchinson.

Inventor:

Frederick H. Knapp.

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Wilcox & Wiland Attorneys

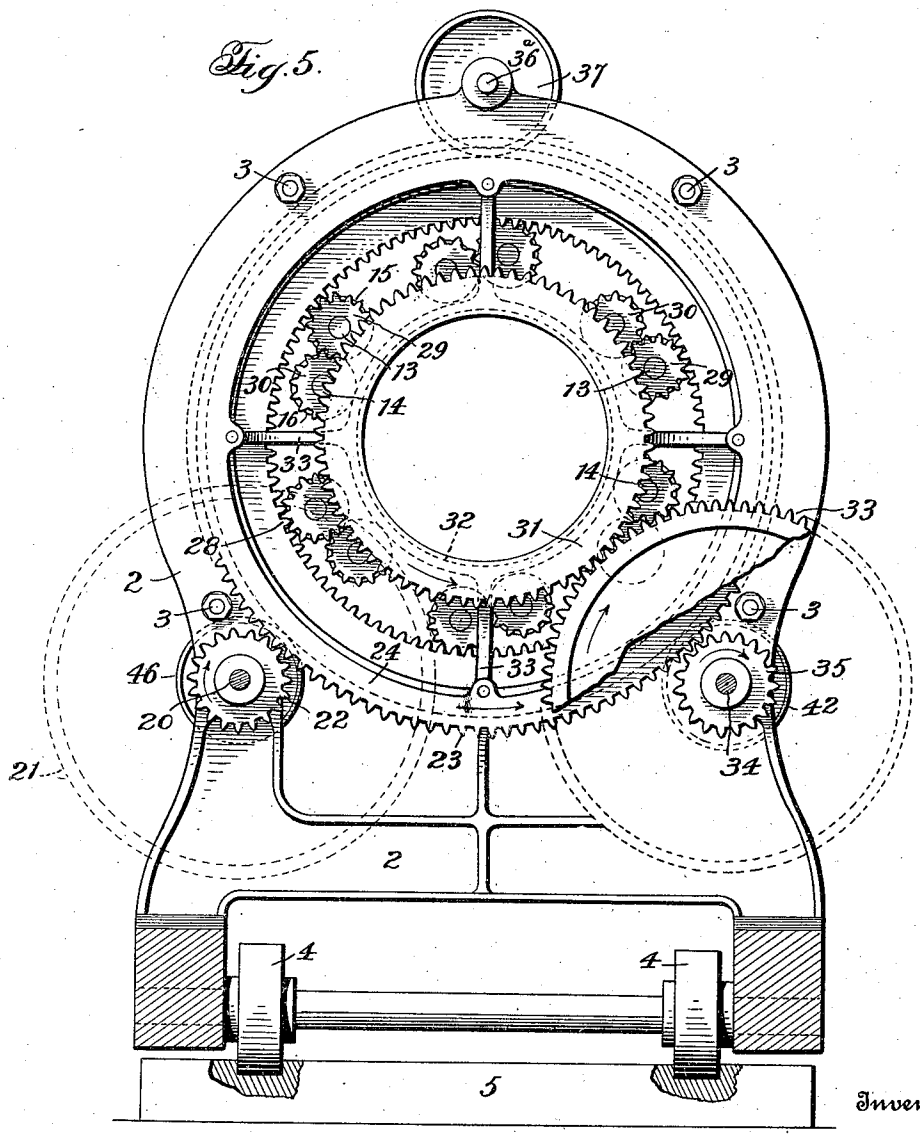
July 31, 1923. 1,463,364

F. H. KNAPP

HUSKING MACHINE

Filed Aug. 4, 1919 6 Sheets-Sheet 5

Fig. 5.



Witness:

Jas. E. Hutchinson.

Inventor:

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July 31, 1923. 1,463,364

F. H. KNAPP

HUSKING MACHINE

Filed Aug. 4, 1919 6 Sheets-Sheet 6

Fig. 6.

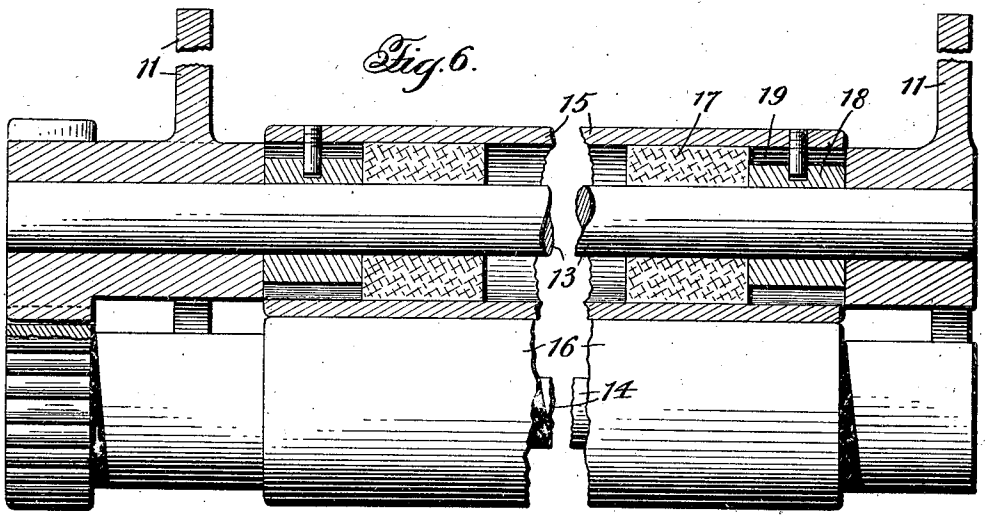


Fig. 7.

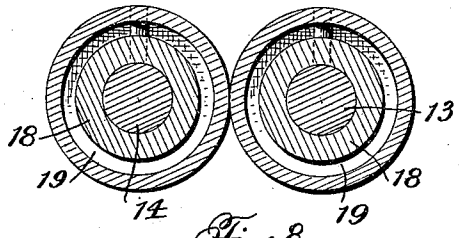
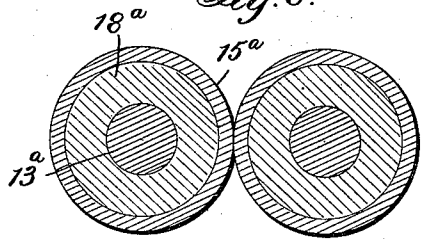


Fig. 8.



Witness:

Jas. E. Hutchinson.

Inventor:

Frederick H. Knapp,

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Attorneys.

Patented July 31, 1923. 1,463,364

UNITED STATES PATENT OFFICE.

FREDERICK H. KNAPP, OF BALTIMORE, MARYLAND.

HUSKING MACHINE.

Application filed August 4, 1919. Serial No. 315,080.

To all whom it may concern:

Be it known that I, FREDERICK H. KNAPP, citizen of the United States, residing at Baltimore, in the county of Baltimore City and State of Maryland, have invented certain new and useful Improvements in Husking Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to husking machines, and more particularly husking machines of the rotary type having a series of pairs of cooperating husking rolls or the like, which, in the movement of the carrier for the rolls about its axis, are adapted to constantly change positions whereby to be brought into proper operative association with the corn to be husked.

In machines of the character under consideration, it has also been ascertained that the initial shock on the corn when contacting with the husking rolls is often-times considerable, and has a tendency to bruise or otherwise damage parts of the corn, and it is a further object of the present invention to provide effective means to overcome the above tendency.

With the above and other objects in view, it is contemplated herein to provide a husking machine having husking rolls of novel construction and associated means whereby the rolls may have the necessary yieldability to protect the corn and at the same time properly and effectively perform their husking function, and in carrying out this feature of the invention it is also proposed to make possible the utilization of husking surfaces of relatively hard or wear resisting properties, thus prolonging the life of the machine and making unnecessary renewal of rolls as frequently as has heretofore been the case.

A further object of the invention is to provide in a rotary type of husking machine a novel and improved form of husking drum or reel, novel and improved driving and supporting means therefor, etc., with a view to the production of a simple and inexpensive machine, the elimination of chains and other noise producing parts where possible, and reduction in the number of gears, with the incident saving in expense and cost of production, to a considerable degree.

It is a further object of the invention to provide a husking drum having an annular series of pairs of cooperating husking rolls, and a rotatable driving head operatively associated with the rolls and adapted to impart the necessary rotatable movement thereto and also being operatively associated with the drum to impart rotatable movement to the latter.

More particularly, the invention includes a circular series of pairs of husking rolls connected to form a reel or drum, a rotatable head taking the form of a gear and having connection with the husking rolls for rotating the latter and connection with the drum for imparting rotary movement to the drum, and novel supporting means for the head and drum, the parts being arranged and constructed with a view to simplicity, higher efficiency and reduction in noise, strains and vibrations of the parts.

Still other improvements, and novel details in the construction and arrangement of parts will be appreciated from the description to follow, though it is to be borne in mind in this connection that I have in contemplation various alterations in details, all in keeping with the spirit of the invention.

The following description is to be considered in connection with the accompanying drawings, which form a part hereof, and wherein is disclosed for the purpose of illustration, a convenient and satisfactory embodiment of the invention.

In the drawings,

Figure 1 is a side elevation of the husking machine, with parts in section.

Figure 2 is a longitudinal section.

Figure 3 is an end elevation, the large arrow indicating the direction of movement of the drum, and the small arrows the direction of movement of the husking rolls.

Figure 4 is a vertical section.

Figure 5 is an end elevation with parts in section.

Figure 6 is an enlarged view of the husking rollers, one being shown in section and the cooperating one in elevation, and both broken away.

Figure 7 is a transverse section of the same.

Figure 8 is a transverse section of a pair of husking rolls, one of which takes the form of a modification.

With more particular reference to the drawings, wherein like reference numerals refer to corresponding parts throughout the several views, a suitable framework is provided, consisting primarily of standards,

taking the form of castings 1 and 2 positioned respectively at opposite ends of the machine and connected to one another as through the medium of supporting rods or bars 3, any number of which may be employed so as to afford a substantial and rigid machine framework. The framework is preferably so constructed that the machine may be moved with regard to the supporting surface, and whereby to permit the husking members proper of the machine to assume an inclination towards the discharge end thereof. With this end in view a convenient means for accomplishing the above object is illustrated herein, and may be briefly described as follows. One end of the machine is mounted upon wheels or rollers 4 supported in any suitable manner from the casting 2 and adapted to normally rest, when the machine is in operation, upon a supporting block or blocks 5, having in the upper surface thereof a segmental recess curved to correspond with the curvature of the wheels 4, whereby to constitute a restraining medium for the wheels and to retain this end of the machine in stationary position. The opposite end of the machine is conveniently provided with a supporting block 6 extending transversely of the casting 1 and secured thereto in any desired manner, and the thickness of said supporting block being preferably less than the diameter of the supporting wheels 4 plus the thickness of the supporting block 5 whereby that end of the machine having the supporting casting 1 will be positioned slightly lower than the opposite or feed end of the machine. In this way the husking rolls, to be hereinafter more particularly described, will assume a slight downward inclination from the feed to the delivery end thereof. This inclination of the rolls may be adjusted as desired, or the delivery end of the machine may be raised to a position so as to cause the rolls to assume a horizontal plane, in the event no inclination is necessary or desirable, by the interpositioning of suitable spacing blocks 7 between the supporting blocks 6 and the surface. It is understood of course that these blocks 7 do not constitute fixed parts of the machine and may be removed as desired or other similar blocks added. Should it be desired to move the machine from place to place the supporting blocks 7 may be taken advantage of as a fulcrum for a suitable tool or bar in the elevation of this end of the machine, and when elevated, the wheels 4 at the other end of the machine may, under force, be readily disengaged from the retaining block 5 whereby to permit the machine to move, through the medium of the supporting wheels 4, to any desired place.

The upright supporting castings 1 and 2 have a substantially circular cutout part as illustrated more particularly in Figs. 3, 4 and 5 of the drawings, whereby to afford a substantially unobstructed opening at opposite ends of the machine to facilitate the entrance and removal of the corn. Positioned between the upright supports 1—2, is a rotatable drum or husking reel having annular end rings 8 and 9 respectively, which may be secured to one another as through the medium of supporting rods or bars 10.

The husking rolls, to be more particularly described in detail, are preferably arranged in pairs, a circumferential series of which are illustrated, and the number of which pairs may vary to obtain the best desirable results, according to existing conditions. These husking rolls are supported from the annular rings 8 and 9, as previously noted, and in order to prevent longitudinal sidewise movement of the drum, assuming that the delivery end thereof inclines downwardly, I provide a suitable detent or end thrust bearing, taking the form of a roller 9^a, supported from a suitable bracket 9^b, projecting laterally from the upright or standard 2. Preferably the roller 9^a and bracket 9^b is duplicated at opposite sides of the machine and by engaging the side of the ring 9 or a part fixed thereto, an efficient end thrust bearing for the latter is afforded.

Projecting inwardly from the rings 8 and 9 are a series of relatively short brackets 11 and extended brackets 12, a short and long bracket being provided for each pair of rolls. Supported from the short brackets 11 are shafts 13, whereas supported from the longer brackets 12 are shafts 14. Suported on the shafts 13 and 14 are tubular husking surfaces conveniently taking the form of metal cylinders or tubes, though in this connection rubber or other means may be substituted. Metal or other material of wear resisting properties are desirable, however, and because of the novel means of support therefor provided by me rollers of this type constitute satisfactory and efficient husking members. 15 designates the husking rolls on the shafts 13, and 16 the husking rolls on the shafts 14. These rolls are of greater diameter than their supporting shafts, and in order to permit the rolls themselves to have proper yieldability laterally in all directions, it is proposed to insert between the shaft and rolls a yieldable support. The yieldable support may take various designs and formations, such as springs or the like, but in the preferred embodiment of the invention, the yieldable supporting means is internal so as to be protected and not interfere with the husking operation, and a preferred means of support illustrated herein comprises cushions 17, conveniently of rubber or rubber composition forced into place so as to frictionally engage

the shafts and metal tubes. These cushions terminate short of the ends of the rollers, and interposed between the rollers and shafts are suitable filler blocks taking the form of non-yielding (as metal) collars 18, which may be secured in place as by pins projecting from the rollers and loosely passing through the collars so as to permit of the necessary movement between these parts. These collars are of less diameter than the husking tubes whereby to provide an intervening space 19 between the tubes and the collar at this point. These spaces allow for the necessary movement of the husking rolls under compression, and the filler blocks limit such movement or play and at the same time constitute retaining means for the cushioning members. While, as previously stated, each of the cooperating rolls of each pair may be similarly supported, I have found that very satisfactory results may be accomplished by supporting one only of the rolls of each pair in the manner just described, whereas the cooperating roll may be rigidly supported or take the form of a solid roll with a rubber or metal periphery, and a convenient type of cooperating roll is illustrated in Figure 8, taking the form of a metallic tube 15^a supported from a rotatable shaft 13^a, and interposed between the metallic tube and shaft are suitable metallic washers or filler members 18^a engaging and connecting respectively with the shaft and surrounding tube whereby to firmly support the latter against relative lateral play. In this latter type of construction, the non-yieldable husking roll presents a more or less firm engaging surface and the cooperating yieldable roll will in most instances supply the necessary yieldability between the rolls during the husking operations, but if, as desired, still further yieldability may be found advisable all of the rolls throughout the series may have independent yieldable characteristics.

Preferred mechanism for imparting rotatable movement to the cylindrical drum or reel, and independent rotation to the husking rolls proper will now be described. A main driving shaft 20 is provided, the same being mounted in suitable bearings in the casting 2 for rotatable movement, and conveniently of a length to project to the opposite end casting 1 and having a suitable bearing in the latter. The shaft 20 is adapted to be driven from any suitable source, and in any suitable manner, a simple type of drive being illustrated and taking the form of a pulley or sprocket 21 adapted to have rotatable movement imparted thereto as by means of a belt or chain not shown. Positioned on the shaft 20 for rotatable movement therewith is a suitable pinion 22 adapted to mesh with external gear teeth 23 on the disc-shaped gear wheel or rather ring 24. Secured to one side of the ring 24 as by means of retaining pins or the like 25 is an auxiliary ring shaped member 26 of a diameter preferably slightly less than the diameter of the gear ring 24, and conveniently having in the periphery thereof a central guideway or groove 27, the periphery of said ring 26 constituting a circular track or runway surface for the parts comprising the rings 24 and 26. Secured to the track ring 26 and preferably constituting an integral extension thereof is an annular flange 27^a having internal gear teeth 28. Mounted upon the shafts 13 for the husking rolls 15 are suitable pinions 29 arranged to mesh with the internal annular gear 27—28. Also mounted upon the shafts 14 of the husking rolls 16 are pinions 30 adapted to mesh with the pinions 29, and because of the fact that the relatively long supporting brackets 12 position the shafts 14 at a point inwardly with respect to the shafts 13, the pinions 30 will likewise be positioned inwardly or at a point out of contact with the internal gear teeth 28. The intermeshing pinions 29 and 30 are adapted to impart rotatable movements to the rolls of each pair in opposite directions through the medium of the rotatable annular gear member 27—28.

It is desirable to simultaneously rotate the drum or cylinder which carries the husking rolls with the rotation of the rolls proper, and suitable mechanism for accomplishing this purpose includes a gear wheel 31 taking a ring-shaped formation and connecting in any suitable manner with a hub 32 connected to, in any suitable manner, as by arms 33, with what may be termed the driving head, comprising the members $24—26—27^a$. Adapted to mesh with the gear wheel 31 is a gear wheel 33 mounted upon a suitable shaft 34 supported from the uprights or standards 1 and 2 for rotatable movement. The gear wheel 33 through the gear wheel 31 is adapted to rotate the shaft 34, and mounted upon said shaft 34 is a suitable drive pinion 35 adapted to mesh with an annular gear wheel 36^a fixed in any desired manner to one of the end rings of the drum, preferably the inner end ring 9. The gear wheel 36 is preferably of a diameter slightly greater than that of the end ring 9, and the periphery of this ring 9 constitutes a trackway. This is also true of the periphery of the end ring member 8.

At the top of the machine and projecting between the uprights 1 and 2 and supported therefrom for rotatable movement is a shaft 36, and mounted upon said shaft is a suitable roller 37 having a central peripheral flange 38 adapted to engage in the groove 27 of the annular treadway 26 for said roller 37. Also positioned on said shaft for rotatable movement with the latter are anti-friction rolls 39 and 40 adapted to engage re-

spectively the periphery or annular tread surfaces formed by the rings 9 and 8 respectively of the drum. Supported for free rotatable movement are suitable rollers 41 and 42 adapted to engage the periphery of the end rings 8 and 9 adjacent the base and to one side, and adapted to engage said members 8 and 9 adjacent the base to the opposite side are rotatable rolls 43 and 44, the latter being supported preferably from the shaft 34 but independently rotatable. The shaft 34 may also have mounted upon a projecting end thereof for relative free rotation a roll 45 to engage the trackway 26 of the driving head adjacent the base and to one side, whereas an auxiliary roll 46 conveniently on the shaft 20 for free rotatable movement is adapted to engage said trackway 26 adjacent the base at the opposite side of the machine.

The corn to be husked is adapted to be delivered into the chamber formed by the rotatable drum in any suitable manner as by positive movable feeding mechanism, or as illustrated in the drawing through the medium of a suitable trough or receptacle 47 open at the top 48 thereof and having an inclined base or chute part 49 and a projecting delivery end 50 adapted to extend through the opening formed by the annular gear 31 and hub 32 to a point adjacent the feed end of the husking rolls.

It may be desirable at times to relatively adjust the husking rolls, and to this end one of the bracket supports, say 11, may be mounted for adjustable movement as through the medium of a curved slotted way 11^a through which the retaining bolt 11^b passes, and in this connection the retaining bolt 11^c will constitute a pivot when the bolts are loosened, and when the brackets are properly adjusted to take up play, etc., both of said bolts are threaded into seated or retaining position.

While in some instances it may be desirable to have a substantially continuous series of pairs of husking rolls on the drum, it has been ascertained that for some purposes this is unnecessary, particularly in view of the rapid rotation of the drum, and for this reason I prefer to have the pairs of rolls spaced from one another and to provide in the intervening spaces suitable filler members constituting in connection with said rolls a substantially continuous engaging or supporting surface for the corn. These filler members may take various forms, but in the illustrative embodiment of the invention, I find it convenient to employ segmental plates 51 arranged adjacent the active periphery of the rolls and extending longitudinally of the latter and secured in position in any desired manner, as by flanges or brackets 52 to the end rings 8 and 9 respectively.

The construction and operation may be briefly reviewed as follows:

Assuming that power has been applied to the driving pulley 21, the driving head, comprising the parts 24—26 and 27 are rotated through the medium of the interposed pinion 22 and gear teeth 27. The rotation of the head through the medium of the internal annular gear 28 and the intermeshing gears 29 and 30 impart the necessary rotation to the husking rolls, it being noted in this connection of course that the rolls of each pair rotate in an opposite direction. At the same time, rotatable movement is imparted to the drum through the medium of the gear connections 31, 33, 35 and 36, but at a different speed from that of the driving head proper.

The ears of corn may be continuously fed into the machine through the chute at the feed end thereof, and discharged at the opposite end of the machine after the husking operation, and any suitable delivery chute or the like may be employed in this connection or the husked ears may be directly deposited onto the floor or suitable receptacle or conveyor.

In view of the rotatable movement of the drum it will be observed that the husking rolls are continuously changing their positions with the result that regardless of how the corn may be supplied to the drum the husks will sooner or later be engaged between the rolls of one or another of the several pairs of husking rolls, and in this connection it has been ascertained that when the rolls of each pair are offset with respect to one another as illustrated, the husking operation is materially facilitated.

In view of the yieldable characteristics of the husking rolls proper, this eliminates to a large extent noise, but what is perhaps most important, the sudden shock on the ears when first brought into contact with the husking rolls is largely overcome with the result that the ears or rather the corn, will not be damaged incident to the husking operation.

The construction of the present machine, because of the elimination of many gears, chains and the like, previously employed, is not only rendered less expensive in operation and upkeep, but also eliminates to a considerable extent noise in operation.

By reason of the frictionally engaging rollers for the driving head as well as the drum, which rollers engage annular trackways on these parts, considerable strain on the operating gears is eliminated, and the parts are firmly supported against unnecessary vibration and undue strains. This characteristic also is of importance in deadening sounds. The frictionally engaging rolls which contact with the tracks of the husking drum are also of importance in

their tendency to prevent overriding of the drum under the action of the gears in operation.

Having thus described the invention, what I claim is:

1. In a husking machine, the combination of a carrier comprising an annular series of pairs of husking rolls having cooperating gears, a rotatable head having an internal annular gear adapted to simultaneously engage one of said gears of each pair of gears, said head being adjacent but spaced from one end of the carrier, and means for rotating the carrier and said head.

2. In a husking machine, the combination of a rotatable carrier comprising an annular series of husking rolls arranged in pairs, end-supporting rings for the rolls, one of said rings having connected therewith an annular gear, a gear to engage said annular gear and rotate said rings and connected rolls, the said rolls having adjacent one end intermeshing gears whereby the rolls of each pair rotate oppositely, a hollow rotatable driving head independent of the husking roll carrier, said driving head having upon its inner surface an annular gear which overlies and meshes with the gear of one roll of each of the pair of rolls, and said driving head having an external annular gear, and a gear in engagement with the latter.

3. In a husking machine, the combination of a carrier, a plurality of pairs of husking rolls arranged in annular series connected with the carrier, means for rotating the carrier, intermeshing gears carried by the rolls, means forming a housing for said gears, comprising a rotatable head having an internal annular gear adapted to engage one gear only of each pair of gears, said head being hollow, and means for introducing the corn to be husked into the interior of the carrier through said head.

4. In a husking machine, the combination of a rotatable head having internal and external peripheral gears, and a rotatable carrier comprising connected end rings, one of which rings has an external peripheral gear, and both of which rings of the carrier have depending bracket bearings, an annular series of husking rolls arranged in pairs and supported in said bearings, said rolls projecting at one end through said bracket bearings, and the rolls of each pair having intermeshing gears, and one roll of each pair having an auxiliary gear in mesh with the internal peripheral gear of the driving head, and gears to engage the external peripheral gear of the driving head and said end ring of the carrier, substantially as and for the purpose described.

5. In a husking machine, a carrier rotatable about a horizontal axis, and a plurality of horizontally disposed pairs of cooperating rotatable husking rollers on the carrier, all of said rollers being of substantially the same size, one roll of each pair being offset inwardly with respect to its cooperating roll, and a rotatable member adapted to simultaneously and directly engage that roll of each pair of rolls which is outwardly offset with regard to its cooperating roll.

6. In a husking machine, the combination of a rotatable drum, a circular series of pairs of rollers mounted on the drum, all of said rollers being of substantially the same size, one roller of each pair of rollers being disposed nearer the periphery of the drum than its cooperating roller, and a rotatable head independent of the drum and having a direct gear-driving connection with that roller of each pair of rollers disposed near the periphery of the drum.

7. In a machine of the character described, the combination of a rotatable drum having end rings and connecting rolls, the rolls being arranged in a series of pairs, one of said rings having a peripheral gear, a gear wheel engaging therewith for rotating the drum, and means for rotating the rolls, said last-mentioned ring having a peripheral portion of reduced diameter with respect to the peripheral gear, a roller to engage the ring at said reduced portion adjacent the teeth of the peripheral gear, and a cooperating end-thrust roller to engage said ear at the opposite sides thereof.

8. In a husking machine, the combination of a pair of husking rollers arranged in cooperative relation and for reverse movement to husk, a shaft for one of the rollers, and an interior yieldable support interposed between the shaft and roller whereby the latter is yieldable in different directions.

9. A husking roll for husking machines comprising a supporting shaft, a tubular husking roller, and a yieldable connection between the shaft and said roller, whereby to permit the roller to give in different directions substantially throughout.

10. A husking roll for husking machines comprising a tubular metal husking roller, a supporting shaft and yieldable connection between the tubular roller and shaft.

11. A husking roll for husking machines comprising a substantially non-yielding husking tube, a shaft, extending lengthwise through the tube and readily yieldable cushioning means interposed between the shaft and tube.

12. A husking roll for husking machines comprising a tubular husking surface, a shaft, and rubber cushioning means interposed between the shaft and tubular surface and extending substantially entirely around the shaft and in engagement with the interior surface of said tubular member for permitting the surface to bodily yield.

13. A husking roll for husking machines comprising a tubular husking surface, a shaft, cushioning means interposed between the shaft and tubular surface permitting the surface to bodily yield, and means for limiting the yieldability of the tubular surface.

14. A husking roll for husking machines comprising an outer tubular member, an internal shaft support yieldable means interposed between the shaft and tubular member, and substantially rigid means interposed between the shaft and tubular member to limit the yieldability of the tubular member.

15. A husking roll for husking machines comprising an outer substantially non-yielding tube, an internal shaft, and an annular cushion such as rubber interposed between the shaft and tube and in contact with both.

16. A husking roll for husking machines comprising a metallic tube, a shaft extending therethrough, a cushion interposed between the shaft and tube, and a stop member on the shaft to engage the inner surface of the tube when moved to a predetermined degree.

17. In a husking machine, the combination of a rotatable drum having husking devices, a driving head having external and internal gears, means engaging the external gears to rotate the head, and connection between said husking devices and the internal gear, and cooperating means associated with the drum for rotating the latter at a different speed with respect to the driving head.

18. In a husking machine, the combination of a rotatable drive head, a rotatable drum having husking devices, a gear connection between the drive head and husking rolls of the drum, a gear connection between the drive head and drum, the head having a circular trackway, and the drum having a circular trackway, and rollers to engage said trackways, means for supporting the drum at an inclination and roller bearings to engage the side walls of the drum.

19. In a husking machine, the combination of an inclined rotatable drum having a series of pairs of rotatable husking rolls, means for supporting the drum at an inclination, and a suitable supported end thrust roller bearing for the drum.

20. In a husking machine, the combination of an inclined rotatable drum, means for rotating the same, an annular series of pairs of rotatable husking rolls, means for rotating the latter, the drum having an inlet at one end and a discharge outlet at the opposite end, means for inclining the drum towards the discharge end, and an anti-friction end thrust bearing engaging the side of one end wall of the drum for preventing longitudinal movement of the drum in a direction towards the discharge end.

21. In a husking machine, the combination of an inclined rotatable carrier comprising an annular series of husking rollers, ring-shaped end plates constituting supports for the rollers at the forward and rear ends thereof, supporting bars projecting between said plates, means for rotating said carrier with said rollers, auxiliary means for rotating the rollers with respect to the carrier, means for supporting the carrier at a longitudinal inclination, and an anti-friction roller bearing mounted on a fixed support and adapted at its periphery to engage the inner side of the annular plate at the forward end of the machine.

22. In a husking machine, the combination of a horizontally disposed rotatable carrier comprising annular end plates and a circumferential series of husking rolls projecting between said plates, means for rotating said rolls, one of said plates having fixed thereto an annular gear wheel, and rollers fixedly mounted, the periphery of one roller being adapted to engage the inner side of one of said end plates, and the periphery of another roller being adapted to engage the inner side of the opposite end plate, substantially and for the purpose described.

23. In a husking machine, the combination of a rotatable husking drum comprising open end walls, bracket bearings depending from said wallls, said bearings being arranged in pairs and one bearing of each pair being disposed inwardly at a point beyond its cooperating bearing, husking rolls mounted upon shafts projecting between the end walls of the drum and having bearing in said bracket bearings, one of said shafts for each pair of rolls being extended and having a pinion thereon, intermeshing gears on the rolls of the respective pairs, an annular rotatable head having an unobstructed center, and also having an internal gear to mesh with the trunnions of the husking roller shafts, means for rotating the driving head and associated means for rotating the drum, whereby in the rotatable movement of the drum the relative positions of the husking rolls will constantly change without interrupting the independent rotatable movement of the rollers about their own axes.

24. In a husking machine, the combination of a rotatable husking drum comprising open end walls, bracket bearings depending from said walls, said bearings being arranged in pairs and one bearing of each pair being disposed inwardly at a point beyond its cooperating bearing, husking rolls mounted upon shafts projecting between the end walls of the drum and having bearing in said bracket bearings, one of said shafts for each pair of rolls being extended and having a pinion thereon, intermeshing gears on the rolls of the respective pairs, an annular rotatable head having an unobstructed

center, and also having an internal gear to mesh with the trunnions of the husking roller shafts, means for rotating the driving head and associated means for rotating the drum, whereby in the rotatable movement of the drum the relative positions of the husking rolls will constantly change without interrupting the independent rotatable movement of the rollers about their own axes, and said associated driving means being constructed and arranged whereby the driving head and the drum rotate at relatively different speeds.

25. In a husking machine, the combination of a rotatable drum having thereon husking rolls arranged in pairs with a space between each adjacent pair, and one roll of each pair being off-set outwardly with respect to its cooperating roll, and plates, one arranged in each space between the respective pairs of rolls extending longitudinally of the rolls in substantial alignment radially with the innermost portion of the outwardly off-set rolls.

26. In a husking machine, the combination of a rotatable drum having a plurality of pairs of husking rolls, with the pairs of husking rolls separated circumferentially from one another, and plates arranged between and substantially filling the space between adjacent pairs of rolls, said plates being in radial alignment with the inner portion of one roll of each pair, whereby to guide the corn over the inner surface of said roll to a husking position between the cooperating roll.

27. In a husking machine, the combination of a rotary drum having a plurality of pairs of husking rolls arranged about the periphery thereof, one roll of each pair being relatively non-yieldable and the cooperating roll of each pair comprising an outward tubular member, an interior shaft, and supports of yieldable material interposed between the shaft and the tubular member and projecting substantially entirely around the shaft and in contact with the tubular member, and means for limiting the compression of the tubular member on said yieldable supporting means.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

FREDERICK H. KNAPP.

Witnesses:

ANNA CASE,

A. M. VAN DOREN.