

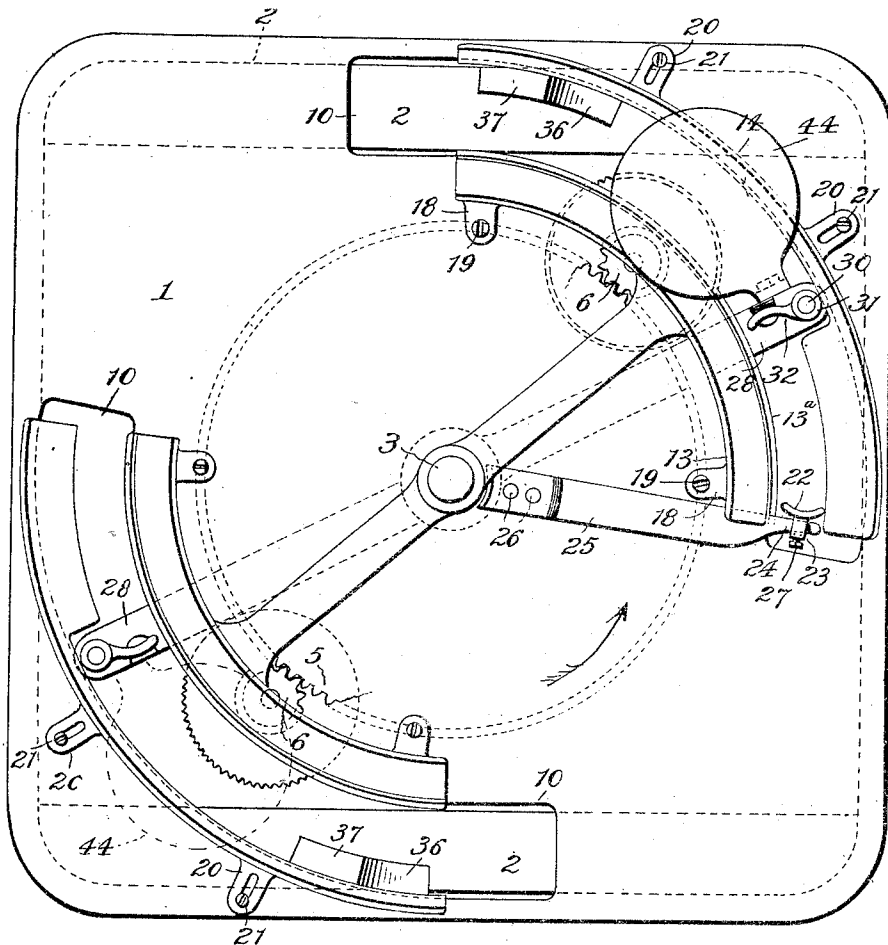
1,366,568.

F. H. KNAPP.
EAR BUTTING MACHINE.
APPLICATION FILED MAY 23, 1918.

Patented Jan. 25, 1921.

4 SHEETS—SHEET 1.

Fig. 1.



Inventor:

Witness:

James Hutchinson

Frederick H. Knapp

By

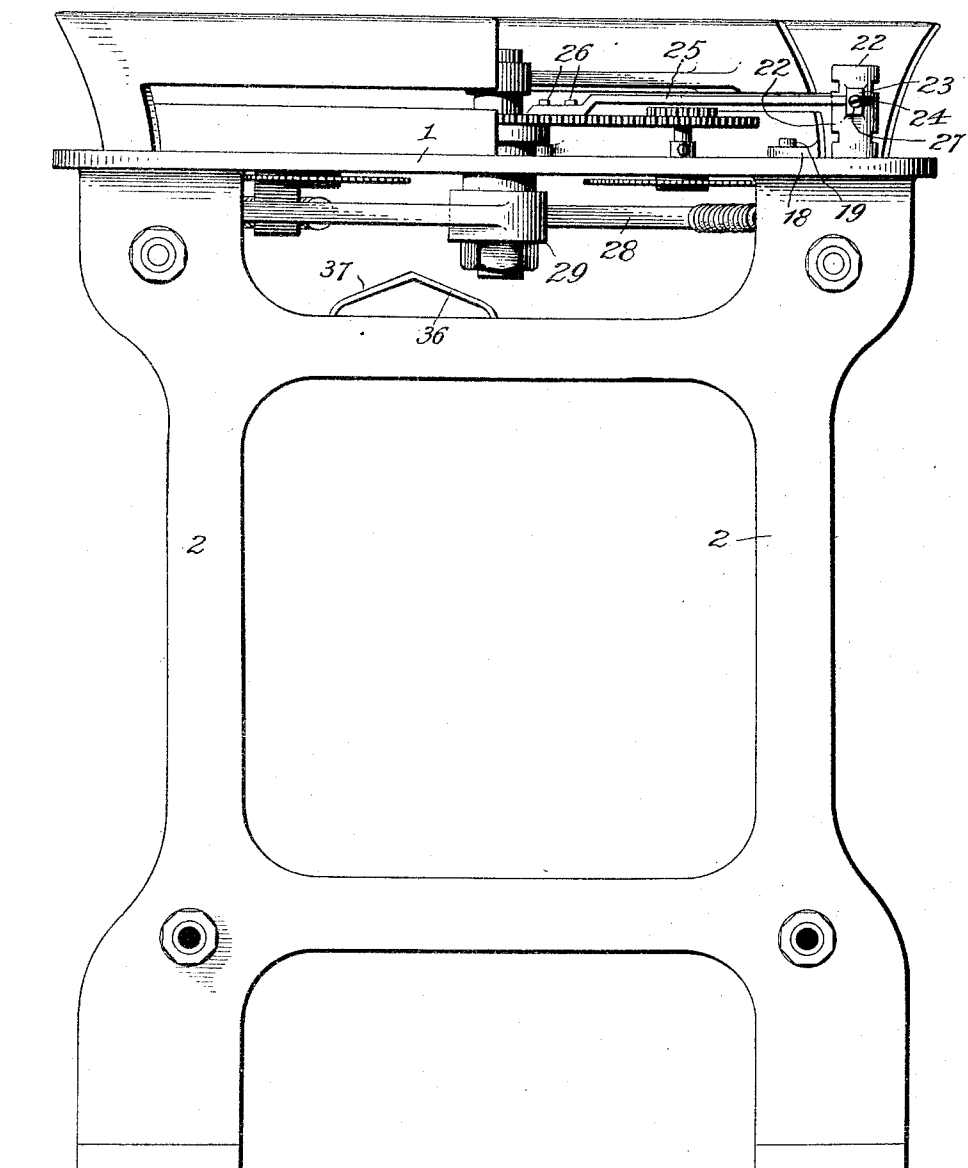
Bacon & Milans Attorneys

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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

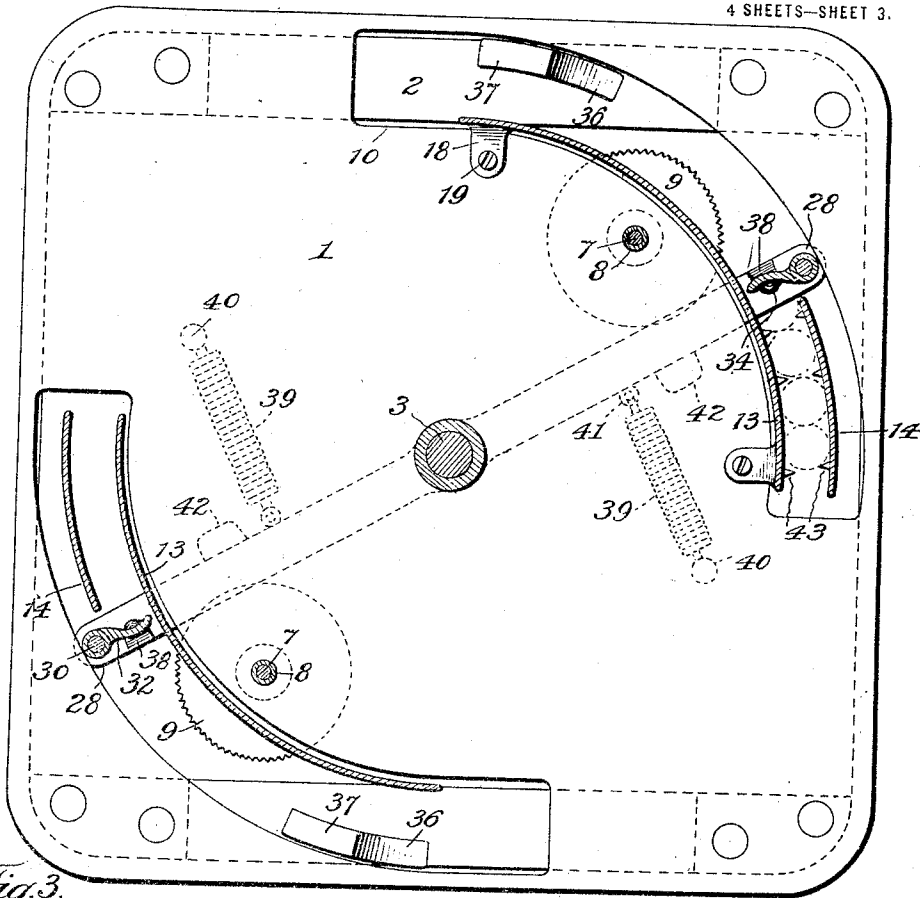


Fig. 3.

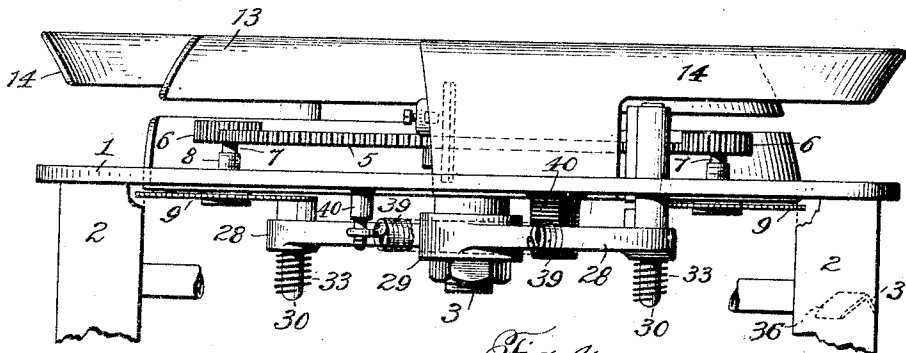


Fig. 4.

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4 SHEETS—SHEET 4.

Fig. 5.

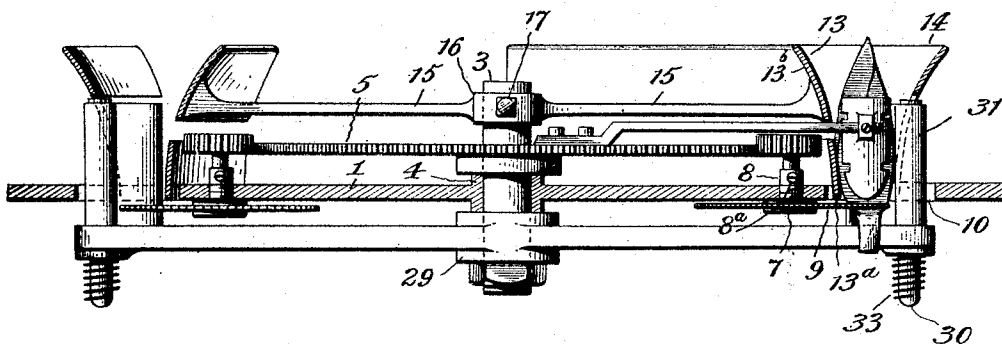
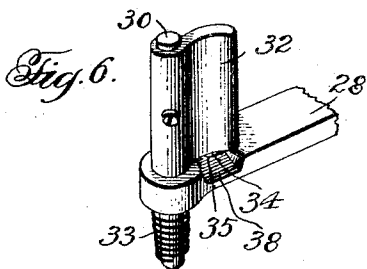
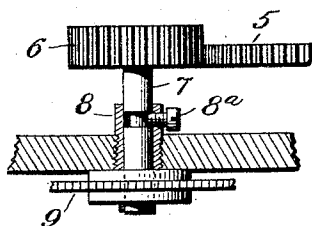


Fig. 7.



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UNITED STATES PATENT OFFICE.

FREDERICK HENRY KNAPP, OF BALTIMORE, MARYLAND.

EAR-BUTTING MACHINE.

1,366,568.

Specification of Letters Patent.

Patented Jan. 25, 1921.

Application filed May 23, 1918. Serial No. 236,230.

To all whom it may concern:

Be it known that I, FREDERICK H. KNAPP, a 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 Ear-Butting Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to machines for butting ears of corn and the like, and has for one of its primary objects the provision of a machine of this character of simplified and comparatively inexpensive construction, while at the same time embodying many improvements over machines as heretofore constructed, and now extensively in use.

The invention has to deal more particularly with butting machines of that general type wherein the ears are moved into contact with a cutter, such as a rotatable saw. Various means have heretofore been designed and constructed for the purpose of supporting the ears relative to the cutter or saw, but such prior constructions with which I am familiar are usually exceedingly complicated, and at the same time many difficulties have been encountered in effectively supporting the ears in proper position whereby to obtain uniformly and evenly butted ears, with the loss of considerable of the corn, and it is one of the primary objects of the present invention to provide novel and improved supporting and carrying means for the corn whereby the ears will be properly and accurately fed and positioned in a uniform manner, and largely doing away with any perceptible loss of the corn in the butting operation.

One of the features of the invention resides in the provision of novel and improved means for operatively moving the butt end of the ears across the cutting edge of the butter and efficient means for supporting the body portion of the ears both prior to and during the butting operation.

It is contemplated by the invention to provide a common carrier or feed mechanism for a plurality of series of ears, and a common support operatively associated with said series of ears whereby to maintain all of said ears in the proper position both during the feeding and butting operations.

Again the invention includes means

whereby a plurality of series of ears may be simultaneously operated upon for butting purposes, a common drive means being provided whereby to move said plurality of series into operative association with a plurality of series of cutters, one for each series.

In carrying out the invention it is proposed to provide means for supporting the ears in upright position and to move the ears in a rotatable path into operative position to a horizontally disposed cutter member, novel and improved supporting means being provided for firmly supporting the ears during said feeding and cutting operation.

More particularly the invention includes a guideway for the reception of ears when in upright position, conveyer mechanism for moving the ears along the guideway and means operatively associated with the conveyer mechanism whereby to support the body of the ear against tilting or canting.

The invention further embraces means whereby various parts of the mechanism may be readily adjustable thereby to adapt the same to ears of different sizes, and whereby to regulate the extent of the butting operation on the respective ears.

Generally the invention includes an ear butting machine of novel and improved construction, of increased capacity, strong and durable as well as highly efficient in operation, and because of the simplified and automatic character thereof largely doing away with skilled or experienced help.

Many other improvements and novel details in the construction and arrangement of the various parts of the invention will be appreciated from the description to follow, which, for a clear understanding of the invention is to be considered in connection with the accompanying drawings, which form a part hereof, and wherein is disclosed for the purpose of illustration, convenient and satisfactory embodiments of the invention.

In the drawings:

Figure 1 is a top plan of the machine;

Fig. 2 is an elevation of the machine;

Fig. 3 is a horizontal section, parts being illustrated in dotted lines.

Fig. 4 is a vertical detail, parts of the machine being broken away.

Fig. 5 is a vertical section.

Figs. 6 and 7 are detail views of parts

removed and enlarged, for purposes of clearness.

With more particular references to the drawings wherein like reference numerals refer to corresponding parts throughout the several views 1 is a horizontally disposed supporting table or main frame part, the same being conveniently mounted upon suitable legs or standards 2 of any desirable construction, preferably through the medium of a vertically disposed stationary shaft 3 projecting through a central boss 4 of the table 1 and fixedly secured to the latter.

Sleeved upon the shaft 3 for rotatable movement about the same as an axis is a disk 5 the same having peripheral teeth whereby to constitute a main gear wheel. The gear wheel is adapted to register with pinions 6 conveniently arranged opposite to one another, though it is to be borne in mind in this connection that any number of pinions may be provided, all depending upon the number of saws or cutters and the number of series of ears of corn it is desirable to butt at one and the same time, and by the same machine. The pinions 6 are conveniently mounted on shafts 7 projecting through sleeves 8, adjustably mounted as by threading through an aperture in the table 1. The shafts 7 are rotatable in the sleeves 8, a pin 8^a on the sleeves engaging an annular recess in the shafts. The shafts 7 have connected thereto for rotatable movement therewith a suitable cutter which conveniently takes the form of a saw 9. The table 1 is provided with segmental cut out or slotted parts 10, and the rotatable saws 9 positioned below the table upon the tubular shaft 7 are adapted to underlie said cut out parts 10 whereby to engage the butts of ears which project below said cut out parts 10 of the table in a manner to be presently described. In order to regulate the length of the severed butts, the shaft 7 with the connected saw and pinion are adapted to be vertically adjusted through the medium of the threaded connection for the sleeves 8 just described. In this connection the pinion 6 is of a width sufficient to accommodate for all necessary vertical adjustment, and to at all times maintain the proper gear connection with the gear wheel 5. The main gear wheel 5 is adapted to be driven from any suitable source and by any convenient power not necessary to describe.

As previously noted it is desirable to simultaneously butt a plurality of series of ears, and in the construction illustrated mechanism is provided for operating upon two series, one adjacent opposite sides of the table 1 at said cut-out parts 10 thereof. These parts at opposite sides of the table being duplicates, it is but necessary to describe but one set of mechanism, together

with the operation thereof, it being understood of course that both sets are simultaneously operated from the single source.

A suitable guideway and lateral support for the ears, conveniently takes the form of an inner segmental plate 13 and an outer segmental plate 14, the plates corresponding to the general curvature of the slots or cut-out parts 10 of the table, and at the lower end being adapted to project through said cut-out parts. The plates 13 and 14 are separated laterally from one another whereby to receive ears of corn in upright position therebetween, and in order to facilitate the positioning of the corn the plates 13 and 14 gradually flare outwardly toward the upper edges thereof, whereas the same have an inward flare at the lower edges thereof whereby to engage and limit the downward movement and position of the ears. The inner plate 13 is formed in two sections, the lower section 13^a being separated from the upper section 13^b by a space to provide for the projection of a suitable feed member for the ears, about to be described. The upper section of the inner plate 13 is supported from and secured to the fixed shaft 3 as by means of arms 15 having a central hub 16 sleeved upon the shaft and maintained in place as by a bolt 17. The lower section 13^a of the inner plate conveniently has offset lugs or ears 18 adapted to be secured as by bolts 19 to the table 1.

In order to accommodate for different sized ears the outer plate 14 is conveniently adjustably mounted as by lugs or ears 20 secured to the plate 14 in any desirable manner and having slotted ways to be engaged by locking bolts 21. By loosening the bolts 21 the lugs 20 together with the plate 14 may be moved laterally whereby to accommodate the guideway provided by the plates 13 and 14 to ears of different sizes.

The gear wheel 5 is adapted to rotate in the direction of the arrow, and it will be observed that the cutter or saw 9 is positioned at a point spaced from the forward end of the slot 10 of the table in the direction of movement whereby a series of ears of corn may be positioned in the guideway provided by the plates 13—14 in advance of said cutter.

Assuming that a series of ears have been spaced in upright position in the guideway with the butt ends projecting below the guideway, it is desirable to positively move the ears while in upright position into operative relation with the cutter, and to this end a pusher member 22 conveniently segmental in cross section whereby to conform to the periphery of the ears is provided, the pusher 22 conveniently having a supporting lug 23 apertured whereby to be sleeved over the terminal 24 of an elongated arm 25 fixed in any desired manner as by bolts 26 to the

upper surface of the gear wheel 5 for continuously rotatable movement with the latter. It is obvious that as the plates 13—14 of the guideway are laterally adjusted, it may be desirable to likewise adjust the pusher member 22 whereby to accurately engage the ears at a predetermined position, and to this end the supporting lug 23 of the pusher 22 may be adjusted slightly lengthwise of the terminal 24 of the arm 25, and when properly positioned is held in place as by a retaining bolt 27.

It has been ascertained that as the butts of the ears are brought into contact with the cutter member, the ears are apt to tilt or cant, thus interfering largely with proper butting, and oftentimes resulting in considerable waste of the corn, and therefore it is desirable to provide means in operative association with the pusher mechanism whereby to engage the body portion of the ears and hold the same under constant spring pressure against the action of the pusher member whereby to retain the ears in upright position both during the feeding and the cutting operations. To this end suitable supporting arms 28 are provided, the supporting arms having a hub 29 loosely sleeved for rotatable movement upon the shaft 3 conveniently at a point below the main table or rest 1. The arms 28 project to a point underlying the slotted cut-out parts 10 of the table 1 and are apertured for the reception of a vertically disposed shaft 30 adapted to support the tubular member 31 or an abutment member or stop 32, conveniently segmental in cross section whereby to correspond to the general curvature of the body portion of the ears, the abutment 32 being conveniently of a height to overlie a considerable portion of the ears. The normal position of the abutment member 32 is in the direct path of the ears as illustrated for instance in Fig. 1. Novel supporting means is provided for the abutment member 32 whereby the same may be automatically moved into a position at substantially right angles to that illustrated in Fig. 1, whereby to free the ears for discharge after the ear butting operation. With this in view the sleeve 31 is preferably fixed to the shaft 30, and the shaft 30 is of a length to project a considerable distance below the supporting arms 28 whereby to accommodate a spiral spring 33 fixed at one end to the lower terminal of the shaft 30 and at its upper end to the arm 28, the spring being of such construction that it normally exerts downward pressure on the shaft, which downward pressure is limited by engagement of the sleeve 31 with the upper surface of the supporting arm 28, and said spring is also of a character to exert rotatable movement to the shaft whereby to move the abutment member from the position out of the path of the ears into a position to contact

with the ears as illustrated for instance in Fig. 1. The sleeve 31 is conveniently provided at its lower end with a projecting lug or stop pin 34 adapted in one position of the sleeve to engage in an aperture or hole 35 in the upper surface of the arm 28 whereby to maintain the abutment member 22 in the position illustrated in Fig. 1. After the ear butts have been severed, it is desirable to elevate the sleeve 31 whereby to move the locking pin 34 out of holding engagement, and permit the abutment member to move outwardly under the pressure of the moving ears, whereby the butted ears may be relieved from holding pressure, and readily discharged. Therefore a suitably supported camway is provided, the same comprising oppositely inclined surfaces 36 and 37 and being arranged below and directly in the path of, whereby to be engaged by the lower end of the shaft 30. As the shaft engages the inclined surfaces 36 the same is gradually elevated whereby to move the pin 34 out of locking engagement with the arm 28, when the abutment member 32 is free to move outwardly under the pressure of the ears. So soon as said pressure is relieved the abutment arm 32 under the action of the spring 33 will again be moved into the position illustrated in Fig. 1, and in order to accurately guide the pin 34 into the aperture 35, the arm 28 is conveniently provided with a cam groove 38 connecting with said aperture 35. It will therefore be appreciated that so soon as the shaft 30 leaves the upper portion of the cam 36, and acting under the spring 33, the said shaft is lowered and the abutment member can return to its normal position as just stated, the locking lug 34 engaging the aperture 35 forming a fixed abutment on the arm 28 for the ears. As distinguished from the pusher arm 22 which rotates continuously, the abutment members 32 are adapted to have a to and fro rotatable movement over a given path, and a given distance. That is to say so soon as the series of ears have been butted, it is desirable to again position the abutment member 32 through the medium of its arm, whereby to constitute an abutment for a new supply or a new series of ears to be positioned in the guideway. Therefore the supporting arms 28 for the abutment members 32 are adapted to be held in one direction as by a spring 39 secured at one end to the frame work of the machine as at 40 and at its opposite end to said arm as at 41. Yieldable buffers 42 are adapted to limit the return movement of the arms 20 and maintain the abutment members in position to engage the foremost of a series of ears to be subsequently butted. So soon as the ears of an upper series have been butted and the ears released, pressure upon the abutment members 32 being relieved, the supporting arms 28 and the abutment mem-

bers are automatically returned into contact with the yieldable abutments 42, whereas the pusher arms continue their movement whereby to successively engage another series of properly positioned ears.

In order to assist in maintaining the ears in upright position pending the engagement of the pusher members 22 with the rear ear of the series, suitable projecting pins 43 may project inwardly from the sides 13—14 of the guideway. These projecting supporting pins 43 also serve the additional highly important function of slightly severing or loosening the husks, whereby to facilitate the husking operation to be carried on after the butting operation.

In view of the fact that the present machine is largely automatic after the ears are once assembled, and for this reason the operation may be readily performed by unskilled persons, it is desirable to provide effective guard mechanism whereby to protect the hands of the operator, and prevent the possibility of the operator bringing his hand into contact with the saw. With this in view, a suitable guard plate is provided, the same being indicated at 44 and overlying the slotted opening 10 at a position within the saw 9. This guard plate 44 is preferably supported in any desired manner as by the arms 28, projecting in a general direction forwardly of the movement of said arms. In this connection it will be observed that the guard will be moved therewith, and at all times when the saw is not covered by the overlying ears, the same will be covered by the guard.

From the above description, the construction and operation is believed to be clear, an operator may be placed adjacent each of the slotted ways 10 of the table with a suitable supply of ears to be butted, and the power means is placed in operation whereby to continuously rotate the gear wheel 5. The abutment arms 32 being in the position with the foremost ear in contact with the abutment 32, the ears 34 serve to retain the ears in upright position and hold the pusher members 22 in butting contact with the rear-most ears of the series. Thereupon the continued rotation of the pusher members will impart rotatable movement to the spring pressed abutment arms 28, the abutment members 32 being fixed during this operation and serving to retain the ears in upright position against any possible canting or tilting movement. While thus secured in position the ears are brought into contact with the saws and the butts severed from the ears. Further movement of the pusher arms brings the supporting shafts of the abutment members 32 into contact with the releasing camway whereby the ears may be released of holding tension, and upon the discharge of the ears and the pressure of the

arms 28 being relieved, the arms 28 are through the medium of the spring 39 returned back into position. In the meantime the abutment members 32 proper have been returned into position across the path of the corn to be engaged by the foremost ear of a succeeding series.

In the preferred construction illustrated but one pusher member 22 is utilized to operate in succession upon the plurality of series of ears. This is made possible by the reason of the fact that the supporting arm 35 for the pusher member 22 is continuously rotatable, and when the pusher member is in engagement with one series of ears, a succeeding series of ears may be placed in position to be engaged by the same pusher member as it continues its rotatable movement.

What I claim is:

1. In an ear butting machine, the combination of a cutter, means forming a guideway for the ears, means for moving the ears along the guideway whereby the butts thereof are brought into contact with the cutter, and releasable means for the ears coöperating with said ear moving means, to prevent tilting of the ears during the cutting operation.

2. In an ear butting machine, the combination of a guideway for ears, a cutter, and means to engage one ear of a series of contacting ears for moving a plurality of ears along the guideway into operative position with respect to the cutter to butt the ears.

3. In an ear butting machine, the combination of a guideway for ears, a cutter, and means to engage one ear of a series of contacting ears for moving a plurality of ears along the guideway into operative position with respect to the cutter to butt the ears, and a common support for maintaining all of said ears against tilting movement.

4. In an ear butting machine, the combination of an elongated guideway for supporting ears when in upright position, with butts of the ears projecting below the guideway, a cutter arranged in the path of the ear butts, means for moving an ear along the guideway and past the cutter, and means opposed to said moving means to maintain the ear in upright position.

5. In an ear butting machine, the combination of a guideway comprising opposed sides with an open base whereby to permit butts of ears to project below the same, a pusher member arranged to engage one side of the ear above the butt to move the ear along the guideway, and means to engage an opposite surface of the ear to maintain the same in upright position during its movement along the guideway.

6. In an ear butting machine, the combination of a guideway comprising opposed sides with an open base whereby to permit butts of ears to project below the same, a pusher member arranged to engage one side

of an ear above the butt to move the ear along the guideway, and spring pressed means to hold the ear in upright position.

7. In an ear butting machine, the combination of a guideway comprising opposed sides with an open base whereby to permit butts of ears to project below the same, a pusher member arranged to engage one side of the ear above the butt to move the ear along the guideway, yieldable means to maintain the ear in upright position, said means being movable with the ear moving means for a predetermined distance, and thereafter being releasable.

8. In an ear butting machine, the combination of a guideway comprising opposed sides with an open base whereby to permit butts of ears to project below the same, a pusher member arranged to engage one side of the ear above the butt to move the ear along the guideway, means cooperating with the ear moving means to maintain the ear in upright position during the butting operation, said last mentioned means being automatically releasable to release the ear after the butting operation.

9. In an ear butting machine, the combination of a guideway comprising opposed sides, one of said sides having a slotted way, means movable in said slotted way to engage ears when in an upright position to move the same along the guideway, a cutter in the path of the moving ears to butt the ears.

10. In an ear butting machine, the combination of a guideway comprising opposed sides, one of said sides having a slotted way, means movable in said slotted way to engage ears when in an upright position to move the same along the guideway, a cutter in the path of the moving ears to butt the ears, and releasable means for maintaining the ears in upright position.

11. In an ear butting machine, the combination of a guideway comprising opposed sides, one of said sides having a slotted way, means movable in said slotted way to engage ears when in an upright position to move the same along the guideway, a cutter in the path of the moving ears to butt the ears, releasable means for maintaining the ears in upright position, and means whereby the sides of the guideway may be relatively adjusted to accommodate the ears of different sizes.

12. In an ear butting machine, the combination of a guideway comprising opposed flared sides separated from one another to provide at the bottom an ear butting space, a cutter in the path of said butts, one of said sides having a longitudinal extending slotted way, means movable in said slotted way having an ear engaging part to move the ears along the way and in contact with the cutter, said last mentioned means being adjustably supported.

13. In an ear butting machine, the combination of a guideway comprising opposed flared sides separated from one another to provide at the bottom an ear butting space, a cutter in the path of said butts, one of said sides having a longitudinally extending slotted way, means movable in said slotted way having an ear engaging part to move the ears along the way and in contact with the cutter, said last mentioned means being adjustably supported, and said sides being relatively laterally adjustable.

14. In an ear butting machine, the combination of a curved guideway comprising opposed sides constructed to form a space for the projection of the butt end of ears, a cutter for positioning and engaging said projecting butts, and rotatably mounted means movable along the guideway to engage an ear and move the same along the guideway into contact with the cutter.

15. In an ear butting machine, the combination of a slotted guideway arranged concentric with a central axis, said guideway being adapted to support ears with butts projecting through the guideway, a cutter arranged in the path of said projecting butts of the ears as moved along the guideway and means rotatable about said axis to engage a body part of an ear in said guideway and move the same into contact with the cutter.

16. In an ear butting machine, the combination of a guideway curved about a center, said guideway being adapted to support ears in upright position, a cutter to engage the butts of ears as moved along the guideway, and suitably supported rotatable means projecting into the guideway to engage the body portion of an ear and simultaneously move a plurality of ears along the guideway successively into contact with the cutter.

17. In an ear butting machine, the combination of a guideway curved about a center, said guideway being adapted to support ears in upright position, a cutter to engage the butts of ears as moved along the guideway, suitably supported rotatable means projecting into the guideway to engage the body portion of an ear and simultaneously move a plurality of ears along the guideway successively into contact with the cutter, and means cooperating with the last mentioned means to hold the ears in upright position.

18. In an ear butting machine, the combination of a guideway curved above a center, said guideway being adapted to support ears in upright position, a cutter to engage the butts of ears as moved along the guideway, suitably supported rotatable means projecting into the guideway to engage the body portion of an ear and simultaneously move a plurality of ears along the guideway successively into contact with the cutter, and means to engage a foremost ear in

said guideway to maintain a series of ears in upright position during the butting operation.

19. In an ear butting machine, the combination of a guideway curved about a center, said guideway being adapted to support ears in upright position, a cutter to engage the butts of ears as moved along the guideway, suitably supported rotatable means projecting into the guideway to engage the body portion of an ear and simultaneously move a plurality of ears along the guideway successively into contact with the cutter, and means to engage a foremost ear in said guideway to maintain a series of ears in upright position during the butting operation, said means being automatically releasable to discharge the ears after the butting operation.

20. In an ear butting machine, the combination of opposed sides forming a guideway with a bottom space whereby to support ears in upright position with the butts projecting through said space, a cutter below the guideway to engage said projecting butts, a movable member having an engaging part projecting in the guideway to contact with a rearmost ear and move a plurality of ears along the guideway, and a yieldable abutment to engage a foremost ear and support the series of ears in upright position during movement.

21. In an ear butting machine, the combination of opposed sides forming a guideway with a bottom space whereby to support ears in upright position with the butts projecting through said space, a cutter below the guideway to engage said projecting butts, a movable member having an engaging part projecting in the guideway to contact with a rearmost ear and move a plurality of ears along the guideway, and a yieldable abutment to engage a foremost ear and support the series of ears in upright position during movement, said abutment being automatically releasable to permit discharge of the ears upon completion of the butting operation.

22. In an ear butting machine, the combination of a guideway curved along a circular path, said guideway being adapted to support a plurality of ears in upright position, rotatable means having a part projecting into the guideway for moving the ears along the same, a cutter adapted to engage the butts of the ears in the movement of the same, and means positioned within the guideway to constitute an abutment for a series of ears, said means being movable with the ears and maintaining the same in upright position during the butting operation, and means for automatically releasing said means to permit discharge of the ears on completion of the butting operation.

23. In an ear butting machine, the com-

bination of a segmental guideway for supporting ears in upright position, a rotatable pusher movable along the guideway to engage a series of ears and move the same along the guideway, and an abutment for said series of ears for maintaining the same in upright position, said abutment being mounted for swinging movement into and out of the path of the ears.

24. In an ear butting machine, the combination of a segmental guideway for supporting ears in upright position, a rotatable pusher movable along the guideway to engage a series of ears and move the same along the guideway, an abutment for said series of ears for maintaining the same in upright position, said abutment being mounted for swinging movement into and out of the path of the ears, and means for supporting said abutment to permit the same to move a predetermined distance with said pusher.

25. In an ear butting machine, the combination of an elongated guideway, comprising sides forming an open bottom, said guideway adapted to support ears in upright position with butts projecting through the bottom, a cutter to engage said butts in the movement of the ears along the guideway, an ear abutment in the guideway, spring means for normally exerting pressure on the abutment in one direction, and means movable along the guideway to engage the ears not acting in position to the spring pressure whereby to move the ears and abutment along the guideway.

26. In an ear butting machine, the combination of an elongated guideway, comprising sides forming an open bottom, said guideway adapted to support ears in upright position with butts projecting through the bottom, a cutter to engage said butts in the movement of the ears along the guideway, an ear abutment in the guideway, spring means for normally exerting pressure on the abutment in one direction, means movable along the guideway to engage the ears not acting in position to the spring pressure whereby to move the ears and abutment along the guideway, and means for limiting the movement of the ear abutment while permitting continued movement of the ear feeding means.

27. In an ear butting machine, the combination of a horizontally disposed cutter, means for supporting ears in upright position and moving the same whereby the butts will engage the cutter, means to engage a foremost ear and hold the series in upright position during the butting operation, and means for moving the last mentioned means whereby to release the ears after the butting operation.

28. In an ear butting machine, the combination of a vertically disposed supporting-

shaft, a curved guideway concentric with the shaft for supporting ears in upright position, a cutter in the path of the ears as moved along the guideway to butt the ears, and means mounted for rotation upon said shaft as an axis and adapted to move along the guideway in engagement with a series of ears to bring the same into contact with the cutter.

29. In an ear butting machine, the combination of a vertically disposed supporting shaft, a curved guideway concentric with the shaft for supporting ears in upright position, a cutter in the path of the ears as moved along the guideway to butt the ears, and means mounted for rotation upon said shaft as an axis and adapted to move along the guideway in engagement with a series of ears to bring the same into contact with the cutter, the guideway being laterally adjustable, and said ear having means being adjustable relative to the guideway.

30. In an ear butting machine, the combination of a vertical shaft, a curved guideway for supporting ears in upright position, said guideway being concentric with the shaft, means supported on the shaft and movable along the guideway to impart movement to the ears therein, and an abutment member for supporting the ears in upright position mounted upon said shaft, and a cutter in the path of the ears.

31. In an ear butting machine, the combination of a vertical shaft, a curved guideway for supporting ears in upright position, said guideway being concentric with the shaft, means supported on the shaft and movable along the guideway to impart movement to the ears therein, an abutment member for supporting the ears in upright position mounted upon said shaft, a cutter in the path of the ears, the ear feed means being continuously rotatable in one direction and the butting member mounted for back and forth rotatable movement.

32. In an ear butting machine, the combination of a vertical shaft, a curved guideway concentric with the shaft for supporting the ears in upright position, a butting device adjacent the guideway to engage the butts of ears fed along the guideway, an elongated arm rotatable upon said shaft having pusher means at the end thereof to engage ears within the guideway.

33. In an ear butting machine, the combination of a vertical shaft, a curved guideway concentric with the shaft for supporting the ears in upright position, a butting device adjacent the guideway to engage the butts of ears fed along the guideway, an elongated arm rotatable upon said shaft having pusher means at the end thereof to engage ears within the guideway, and a releasable abutment to maintain the ears in upright position, said abutment being

mounted upon a swinging arm adapted to move a predetermined distance with the ear pusher means.

34. In an ear butting machine, the combination of a plurality of spaced cutter members, guiding means adjacent the respective cutter members whereby to support ears in upright position and a rotatable ear pusher means movable in succession to said guideways whereby to move ears along the respective guideways in succession into operative position with the adjacent cutter.

35. In an ear butting machine, the combination of a plurality of spaced cutter members, guiding means adjacent the respective cutter members whereby to support ears in upright position, and a rotatable ear pusher means movable in succession to said guideways whereby to move ears along the respective guideways in succession into operative position with the adjacent cutter, and means cooperating with said pusher means to maintain the ears in upright position during the cutting operation.

36. In an ear butting machine, the combination of guiding means comprising segmental sections arranged concentric with a common axis, a plurality of cutters adjacent said guiding means, means rotatable about said common axis to engage a plurality of series of ears in contact with one another in succession and move the same into contact with the cutters, and means common to a series of ears to prevent tilting of the ears during the cutting operation.

37. In an ear butting machine, the combination of guiding means comprising segmental sections arranged concentric with a common axis, a plurality of cutters adjacent said guiding means, means rotatable about said common axis to engage a plurality of series of ears in succession and move the same into contact with the cutters, and a releasable abutment adjacent each cutter to engage a foremost ear of each series and maintain the series of ears in upright position relative to the guiding means.

38. In an ear butting machine, the combination of a segmental guide having an open bottom, a cutter underlying said guide, means movable along the guide for feeding ears in an upright position along the guide whereby the butts of the ears will engage the cutter, an ear abutment member spaced from the ear feed, means to engage a foremost ear and cooperating with the feeding means to maintain the ears in upright position, said abutment being mounted for movement for a limited distance with the ear feed means, and means whereby the abutment will be moved out of the path of the ears automatically.

39. In an ear butting machine, the combination of a guideway having husk pene-

trating parts, means for moving the ears along the guideway, and cooperating means for maintaining the ears in upright position as moved along the guideway, and ear but-
5 ting means in the path of the ears as moved along the guideway.

40. In an ear butting machine, the combination of a guideway having an open base, said guideway being adapted to receive ears
10 in upright position with butts projecting through the opening in the guideway, a cutter underlying said opening to engage said projecting butts in the movement of ears along the guideway, a movable arm
15 having an ear pusher to engage an ear and move the same along the guideway, a movable arm having an ear abutment to engage the foremost of said series of ears to maintain the ears in an upright position, means
20 whereby said ear abutment arm may move with the pusher arm a predetermined distance, and means for maintaining the abutment proper in rigid position on said arm.

41. In an ear butting machine, the combination of a guideway having an open base, said guideway being adapted to receive ears
25 in upright position with butts projecting through the opening in the guideway, a cutter underlying said opening to engage said projecting butts in the movement of ears along the guideway, a movable arm
30 having an ear pusher to engage an ear and move the same along the guideway, a movable arm having an ear abutment to engage the foremost of said series of ears to maintain the ears in an upright position, means
35 whereby said ear abutment arm may move with the pusher arm a predetermined distance, means for maintaining the abutment proper in rigid position on said arm, said last mentioned means being releasable
40 whereby the abutment member is moved automatically out of the path of the ears.

42. In an ear butting machine, the combination of a guideway having an open base, said guideway being adapted to receive ears
45 in upright position with butts projecting through the opening in the guideway, a cutter underlying said opening to engage said projecting butts in the movement of ears along the guideway, a movable arm
50 having an ear pusher to engage an ear and move the same along the guideway, a movable arm having an ear abutment to engage the foremost of said series of ears to maintain the ears in an upright position, means
55 whereby said ear abutment arm may move with the pusher arm a predetermined distance, means for maintaining the abutment proper in rigid position on said arm, said last mentioned means being releasable
60 whereby the abutment member is moved automatically out of the path of the ears, and means for returning the abutment arm and
65 the abutment member proper into position

to engage a subsequent series of ears to be engaged by said pusher.

43. In an ear butting machine, the combination of a rotatable gear, a cutter having a pinion in mesh with said gear, a guide-
70 way concentric with the gear overlying the cutter and adapted to support ears in upright position, and means mounted on the gear for moving a series of ears along the guideway into contact with the cutter. 75

44. In an ear butting machine, the combination of a rotatable gear, a cutter having a pinion in mesh with said gear, a guide-
80 way concentric with the gear overlying the cutter and adapted to support ears in upright position, means mounted on the gear for moving a series of ears along the guideway into contact with the cutter, and an abutment member for the ears movable with
85 said pusher member a predetermined distance and thereafter automatically returns to initial position, and means whereby the ear butting member is adapted to release the ears after the butting operation and prior
90 to the return movement of the abutment member.

45. In an ear butting machine, the combination of a guideway for ears to be butted, said guideway comprising opposed sides outwardly flared toward the upper edge there-
95 of, said sides being separated from one another at the base whereby to receive the butts of ears arranged in upright position between said sides, means for adjustably supporting said sides in place whereby to adapt
100 the guideway to ears of different sizes, a cutter arranged in the path of said projecting ear butts, and means for conveying the ears along the guideway.

46. In an ear butting machine, the combination of a cutter, means for supporting
105 and conveying ears of corn whereby the butts thereof will be severed by the cutter, and a guard member for the cutter, and means whereby said guard member is automatically movable into and out of position
110 relative to the cutter, according to the movement of the ears.

47. In an ear butting machine, the combination of an elongated guideway for supporting a series of contacting ears in upright
115 position, with butts of the ears projecting below the guideway, cutting means arranged in the path of the ear butts, means for simultaneously moving the series of ears along the guideway into operative position relative to,
120 and past, the cutting means, and releasable means acting in opposition to said moving means whereby to maintain the ears in position during the cutting operation. 125

In testimony whereof I hereunto affix my signature in the presence of a witness.

FREDERICK HENRY KNAPP.

Witness:

CALVIN T. MILANS.