

June 2, 1931.

C. C. McDONALD ET AL

1,808,676

ASPARAGUS TRIMMING AND CANNING MACHINE

Filed April 28, 1928

6 Sheets-Sheet 1

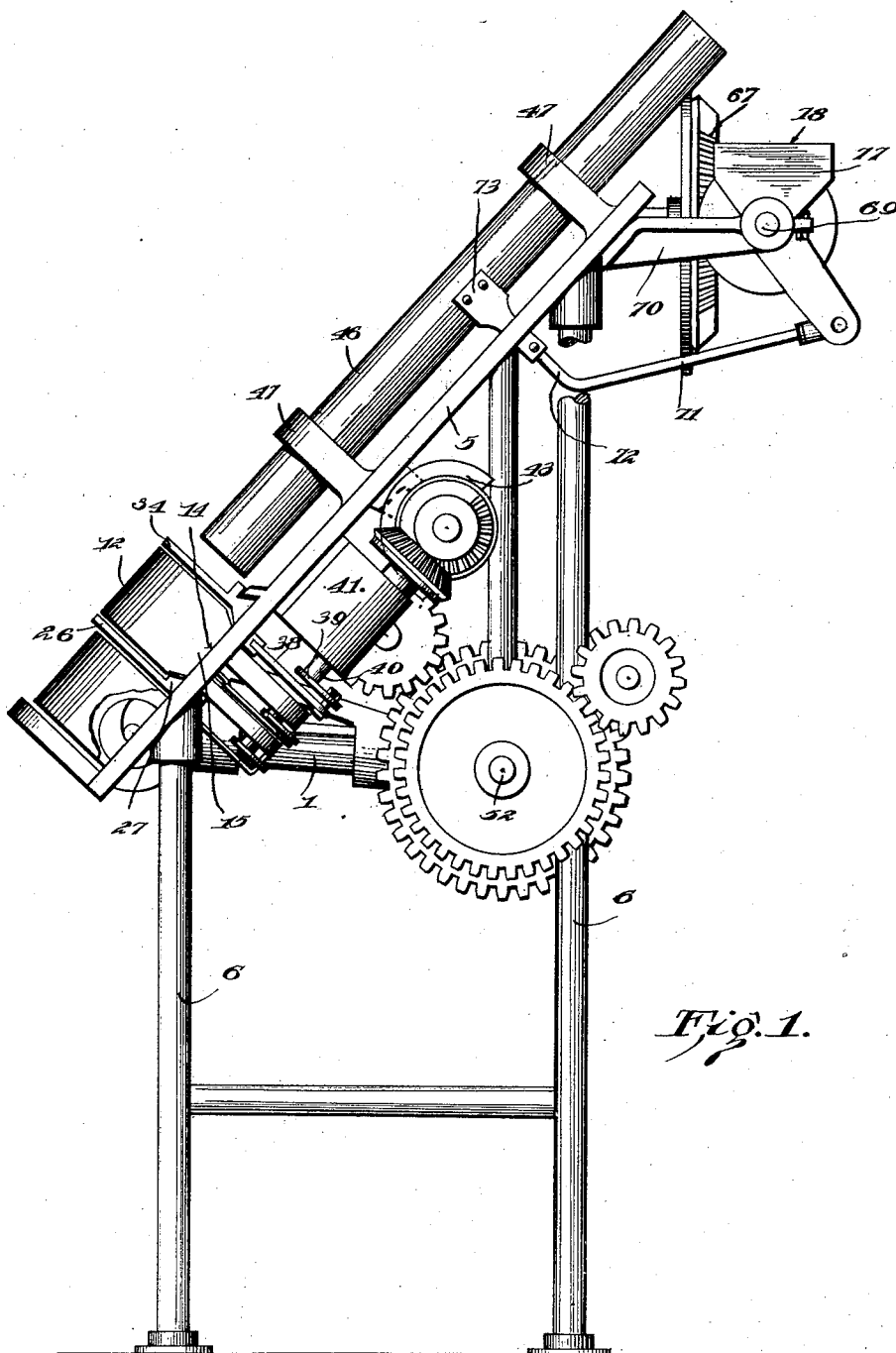


Fig. 1.

INVENTOR
C.C. McDonald and
C.L. Troutman
BY *Muan & Co.*

ATTORNEY

June 2, 1931.

C. C. McDONALD ET AL

1,808,676

ASPARAGUS TRIMMING AND CANNING MACHINE

Filed April 28, 1928

6 Sheets-Sheet 2

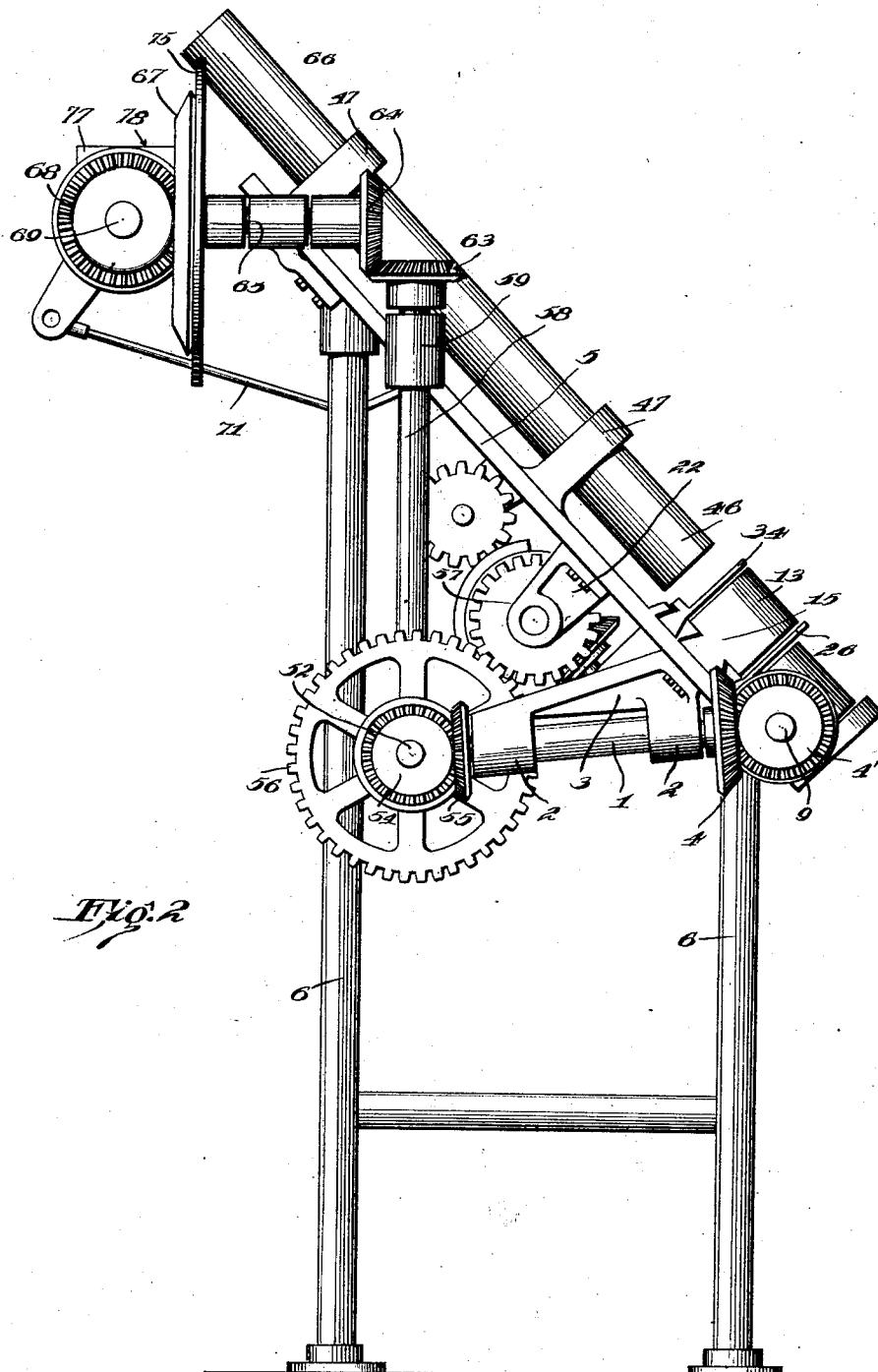


Fig. 2

INVENTOR
C.C. McDonald and
C.L. Troutman
BY *Munn & Co.*

ATTORNEY

June 2, 1931.

C. C. McDONALD ET AL

1,808,676

ASPARAGUS TRIMMING AND CANNING MACHINE

Filed April 28, 1928

6 Sheets-Sheet 3

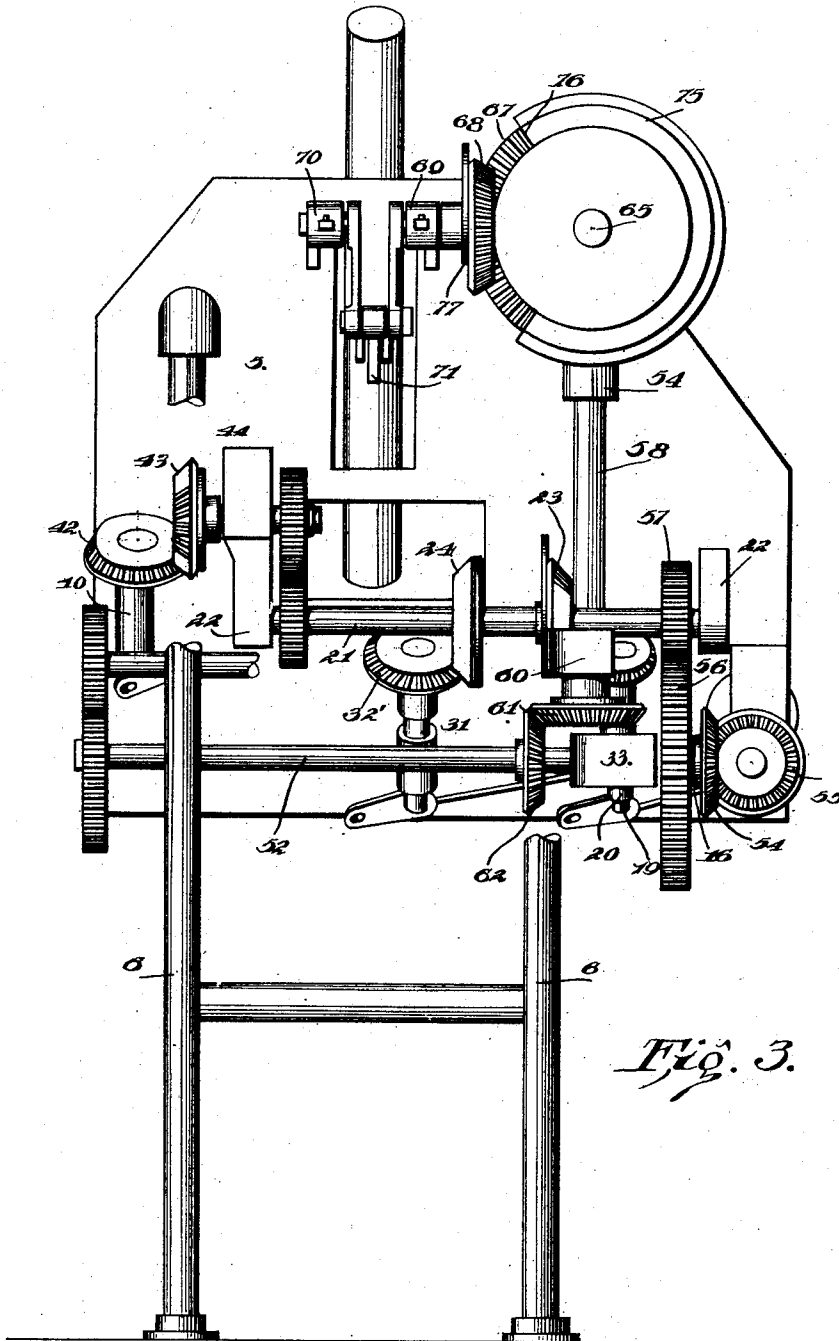


Fig. 3.

INVENTOR
C.C. McDonald and
C.L. Troutman

BY
Munn & Co.
ATTORNEY

June 2, 1931.

C. C. McDONALD ET AL

1,808,676

ASPARAGUS TRIMMING AND CANNING MACHINE

Filed April 28, 1928

6 Sheets-Sheet 4

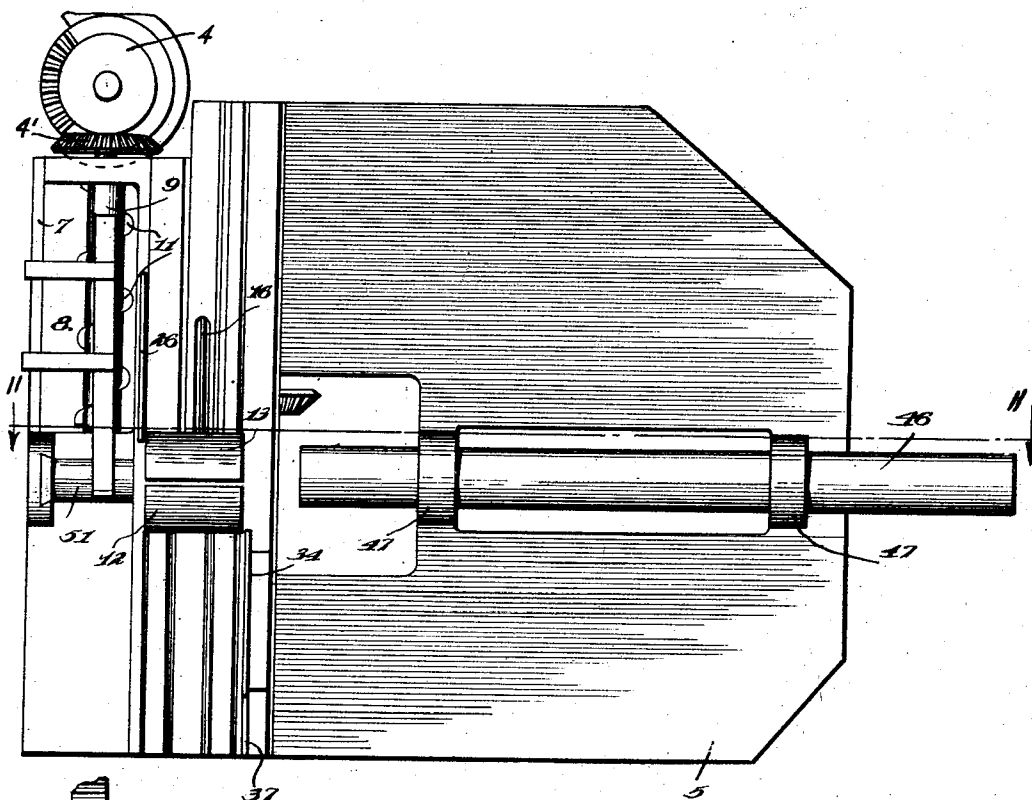


FIG. 4

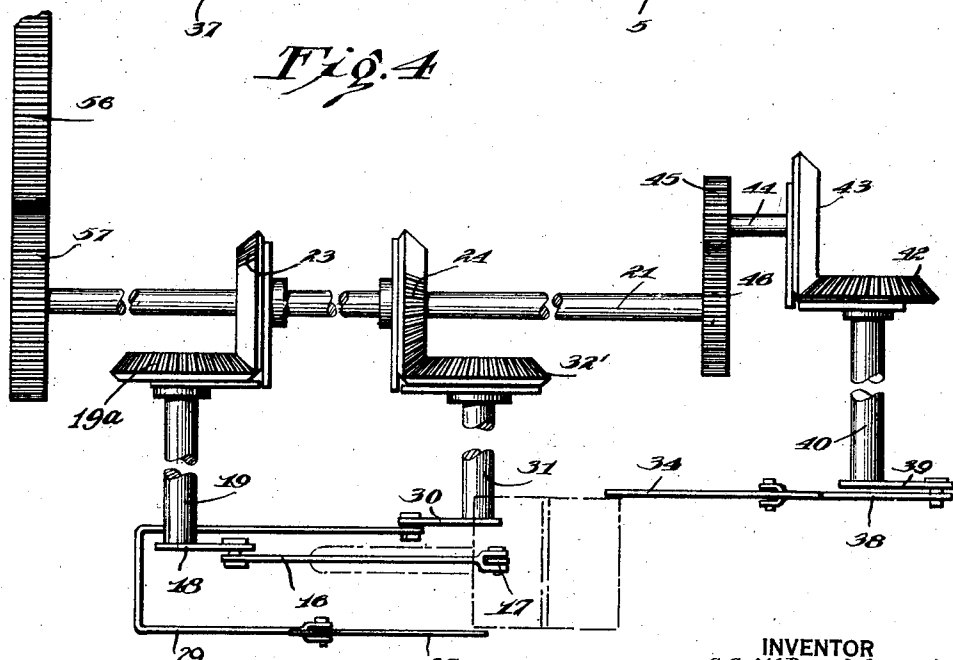


FIG. 5.

INVENTOR
C.C. McDonald and
C.L. Troutman
BY *Munn & Co.*

ATTORNEY

June 2, 1931.

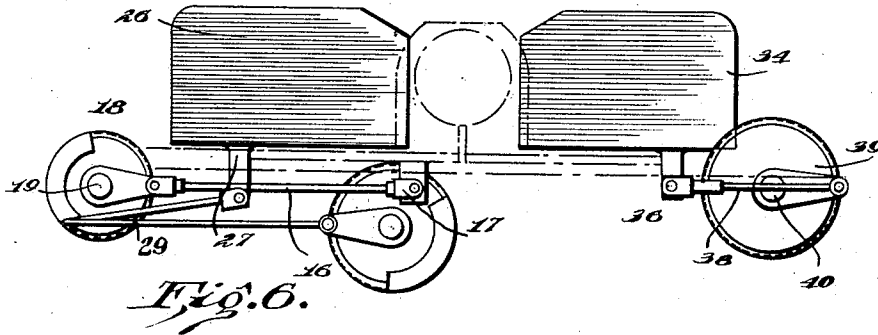
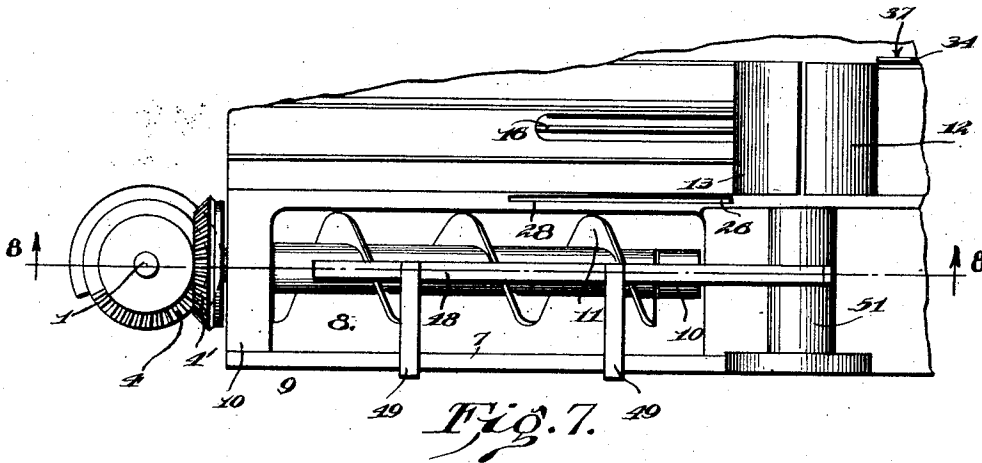
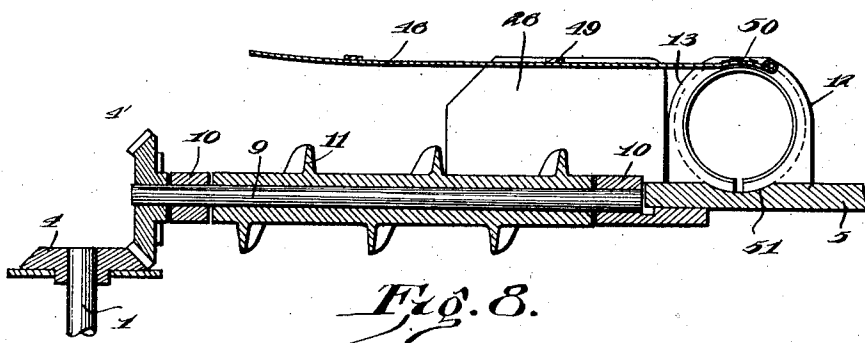
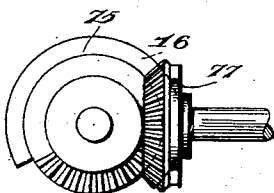
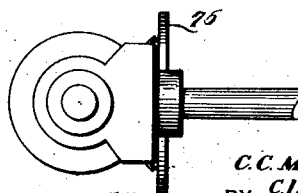
C. C. McDONALD ET AL

1,808,676

ASPARAGUS TRIMMING AND CANNING MACHINE

Filed April 28, 1928

6 Sheets-Sheet 5



INVENTOR
C. C. McDonald and
BY C. L. Troutman
ATTORNEY

June 2, 1931.

C. C. McDONALD ET AL

1,808,676

ASPARAGUS TRIMMING AND CANNING MACHINE

Filed April 28, 1928

6 Sheets-Sheet 6

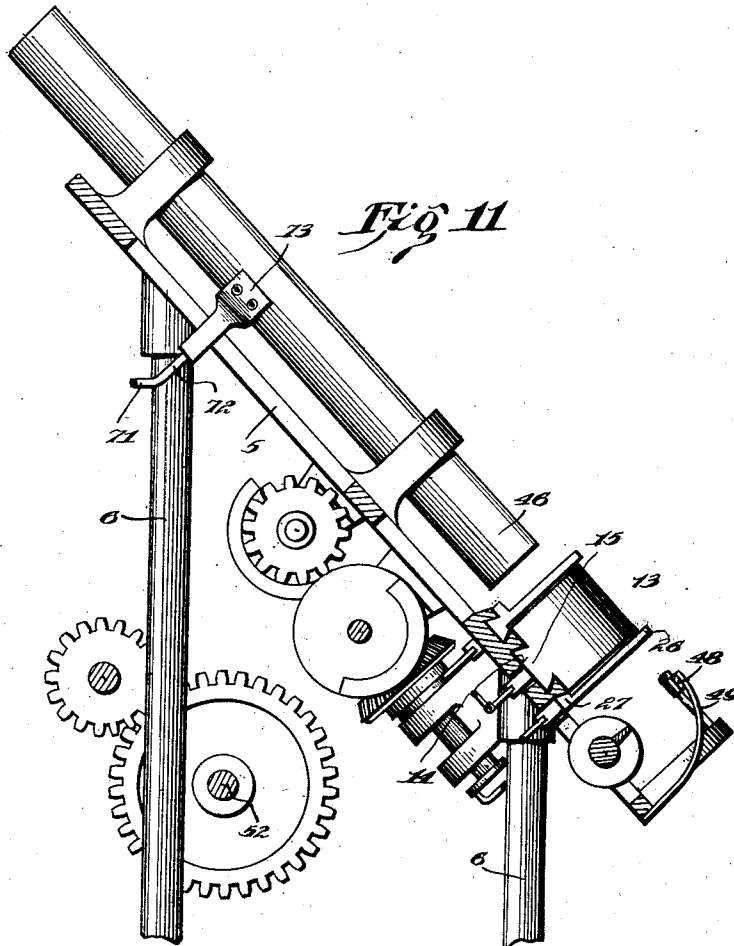


Fig. 11

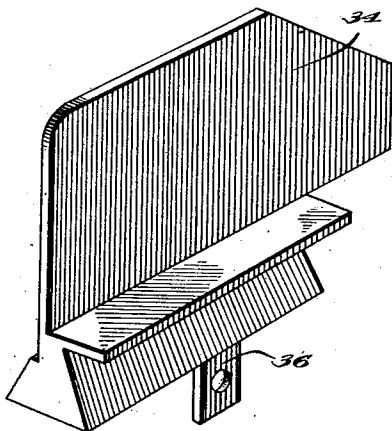


Fig. 12.

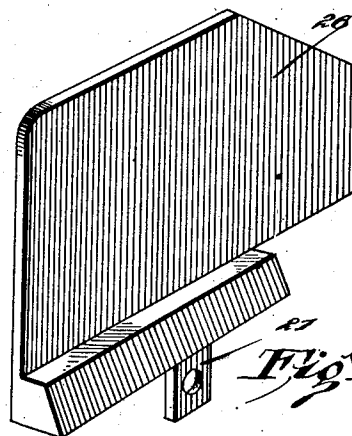


Fig. 13

INVENTOR
C. C. McDonald and
C. L. Troutman
BY *Munn & Co.*
ATTORNEY

UNITED STATES PATENT OFFICE

CHARLES C. McDONALD AND CHARLES L. TROUTMAN, OF ELYRIA, OHIO

ASPARAGUS TRIMMING AND CANNING MACHINE

Application filed April 28, 1928. Serial No. 273,676.

Our invention relates to asparagus trimming and canning machine and an object thereof is to provide an automatically operable machine wherein cans or other receptacles are advanced to filling position, the asparagus butts severed and a bunch of asparagus packed in each can.

A further object of the invention is to provide an apparatus of this character which is continuously operated to perform the asparagus butt severing operation and to pack the asparagus into cans thereby facilitating the packing or canning of asparagus.

The invention also contemplates a machine for trimming and canning edibles having means for holding the edibles in advance of a can and a reciprocable plunger or ejector which is operable to eject edibles into the can.

With the preceding and other objects and advantages in mind, the invention consists in the novel combination of elements, constructions and arrangement of parts to be hereinafter specifically referred to, claimed and illustrated in the accompanying drawings, wherein:

Figure 1 is an end elevation of the machine;

Figure 2 is a similar view taken at the opposite end of the machine;

Figure 3 is a rear face view;

Figure 4 is a front elevation of the machine;

Figure 5 is a fragmentary top plan view of mechanism embodied in the invention;

Figure 6 is a front elevation of the mechanism illustrated in Figure 5;

Figure 7 is a fragmentary top plan view and illustrating the can conveyor;

Figure 8 is a longitudinal sectional view on line 8—8 of Figure 7;

Figure 9 is a detail elevation of coacting beveled gear stop plates embodied in the invention;

Figure 10 is a similar view taken at right angles of Figure 9;

Figure 11 is a horizontal sectional view on line 11—11 of Figure 4;

Figure 12 is a perspective of the cutter embodied in the invention; and

Figure 13 is a perspective of the sliding door or abutment.

Referring to the invention in detail an angularly disposed base plate 5 supported on vertical legs 6 is provided and cast with the upper face of the plate 5, and extending transversely thereof is the can retaining hopper or trough 7 whose inner end is open and extends to a point intermediate the longitudinal edges of the base plate.

Within the confines of the hopper or trough 7 the plate 5 is provided with a longitudinal opening 8 which is disposed centrally of the side walls of the hopper or trough, and positioned in this opening is a shaft 9 journalled in bearings 10 formed with the plate, and rotatable therewith is a screw conveyor 11 for advancing cans longitudinally of the hopper or trough.

For the purpose of holding asparagus in a circular bunch, coacting fixed and movable circular jaws 12 and 13 are provided on the base plate slightly above the hopper or trough, at the open end of the latter. The fixed jaw 12 is formed with a forwardly projecting extension 12' having a dove-tail groove 14 in its upper face, while the movable jaw is formed with a dove-tail tongue 15 slidably received in the groove 14. For the purpose of actuating the movable jaw towards and away from the fixed jaw a pitman rod 16 extending parallel to the trough or hopper has one end operatively connected with the movable jaw, as at 17, while its opposite end is eccentrically connected with a rotatable disk 18 fixed to one end of a shaft 19 journalled in a bearing 20 upon the under face of the base plate, at its lower edge.

A power take-off shaft 21 extends transversely of the base plate 5 and is journalled in bearings 22 upon the outer face thereof and carries oppositely disposed interrupted beveled gears 23 and 24. The shaft 19 carries a gear 19a which meshes with the gear 23.

Movable transversely of the base plate 5 and adapted to extend across and close the lower ends of the coacting jaws when in gripping engagement with a bunch of asparagus, is an abutment or sliding door 26. This abutment is formed with a depending arm or

shank 27 which is movable longitudinally within a transverse slot 28 in the base plate. A U-shaped pitman 29 has one end pivotally connected with the arm 27 and its opposite end eccentrically connected with a disk 30 fixed to one end of a shaft 31 extending parallel to the shaft 19 and journaled in a bearing 32 upon the outer face of the base plate. This shaft 31 is provided with a beveled gear 32' which meshes with the interrupted gear 24.

A cutting blade or knife 34 is provided for severing the butts of the asparagus stalks as they are held between the coacting jaws. This blade is slidable transversely of the base plate across the upper ends of these jaws and carries a depending arm 36 movable in a transverse slot 37 in the base plate. A pitman rod 38 has one end eccentrically connected with a disk 39 fixed to a shaft 40 journaled in a bearing 41 upon the outer face of the base plate, and its opposite end pivotally connected with the arm 36. A beveled gear 42 is fixed to one end of the shaft 40 and meshes with an interrupted beveled gear 43 rotatable with a shaft 44 extending at right angles to the shaft 40. A pinion 45 rotatable with the shaft 44 engages a larger pinion 46 fixed to the adjacent end of the shaft 22. It follows that the power is taken from the shaft 22 by way of the operative connections referred to, to intermittently reciprocate the knife or cutter 34.

The invention provides means for moving asparagus stalks, held between the jaws into a can after the butts have been severed, in the form of a reciprocatory cylindrical ejector or plunger 46 slidably mounted in upstanding guides 47 on the upper face of the base plate in longitudinal alinement with the coacting jaws, and movable therethrough when the latter are in the operative position illustrated in Figure 7. This ejector or plunger is of a diameter slightly smaller than the cans to be packed and the coacting jaws when in operative position.

To retain the cans against the screw conveyor and to hold each can in position as it is advanced to filling position below the coacting jaws, a resilient arm 48 extends longitudinally within the trough or hopper at the upper end thereof and is secured to resilient brackets 49 attached to the lower side wall of the trough or hopper and projecting at right angles thereto. This resilient arm normally contacts with all of the cans within the hopper to retain them against the blade of the screw conveyor. At its forward end a longitudinally curved can embracing seat 50 is provided in the resilient arm, which normally engages the forwardmost can and retains it in a concavity or can seat 51 in the upper face of the extension 12' of the jaw 12. It will be observed that the forward end of the resilient arm will engage each can as

it is advanced to filling position and firmly hold it in place while being filled or packed.

A main power shaft 52 extending transversely of the base plate at its rear lower edge, is journaled in bearings 53 thereof and carries at one end a beveled gear 54 which meshes with a beveled gear 55 fixed to one end of a shaft 1 extending at right angles to the power shaft and journaled in bearings 2 formed on a casting 3 secured to the rear face of the plate 5 at its lower edge. At its opposite end this shaft 1 carries an interrupted beveled gear 4 meshing with a smaller gear 4' fixed to one end of the conveyor shaft 9. A drive pinion 56 carried by the shaft 52 meshes with a pinion 57 fixed to the shaft 21 whereby power is transmitted to the latter.

A vertical shaft 58, journaled in vertically alined bearings 59 and 60 on the outer face of the base plate, carrying a beveled gear 61 at its lower end, meshing with a drive gear 62 on the drive shaft 52, is provided. At its upper end the shaft 58 carries a beveled gear 63 meshing with a smaller gear 64 fixed to one end of a horizontal shaft 65 journaled in a bearing 66 projecting laterally from the upper end of the base plate and which carries at its rear end an interrupted beveled gear 67. This gear 67 meshes with a beveled gear 68 fixed to one end of a crank shaft 69, the latter being journaled in the outer end of a laterally projecting arm 70 extending from the rear face of the base plate at its upper end. A connecting rod 71 has one end pivotally connected with the crank shaft and its opposite end extended at right angles, as at 72, and pivotally connected with a bracket 73 fixed to the under face of the ejector or plunger.

In order to hold the conveyor shaft, movable jaw, abutment or door 26 and cutter 34 against accidental movement when their coinciding beveled gears are stationary, incident to the companion interrupted gear for the latter coming to a position where its blank surface rides over the teeth of these gears, locking means is provided for each pair of companion or right angularly disposed gears. For the sake of simplicity this locking means will be described in conjunction with gears 67 and 68, respectively. However, it is to be understood that this locking means is employed throughout the entire machine where two companion or right angularly disposed gears, the driving one of which is an interrupted gear, are employed for taking power from one rotatable element and transmitting it to the abutment or sliding door, movable jaw, cutter and reciprocating plunger or ejector. This locking means comprises a disk 75 fixed to the rear face of the driving interrupted bevelled gear 67 and cut away at one side, opposite the teeth thereof as at 76. Disposed at right angles to the plane of rotation of the disk 75 and fixed to the rear face of the driven

bevelled gear 68 is a plate 77 having right angular edges 78, any one of which is adapted to contact with the disk 75 and thereby hold the gear 68 against turning when the blank space on the gear 67 is passing over the teeth of the gear 68. However, during the interval that the cut-out edge or recess 76 is disposed in opposed relation to the gear 68, the latter is free to rotate by reason of the plate 77 clearing the disk.

It will be noted that all interrupted gears are continuously rotating drive gears, therefore, when the blank space thereon passes over the teeth of a companion driven gear, the driven gear will be permitted to stop momentarily. When the teeth on the interrupted drive gears again come into contact with the teeth on the driven gears, the part driven by such gears will be caused to pass through another complete cycle of operation.

Operation

The power shaft being in motion, the coacting jaws being in the position illustrated in Figure 4 to grasp a bunch of asparagus stalks therebetween, and the sliding door or abutment extending across the lower ends of the coacting jaws, the knife 34 is advanced to the left to sever the asparagus stalk butts and then returned to normal position where it remains momentarily stationary. As the knife is returning to normal position the door or abutment is retracted to uncover the lower ends of the coacting jaws and remains in a position to one side of the latter momentarily. The plunger or ejector is now moved downwardly between the coacting jaws engaging the bunched asparagus stalks, ejecting the latter into a can which has been previously advanced to line up with these jaws. The ejector or plunger now returns to normal position where it is held stationary momentarily, and at the same time the movable jaw moves away from the fixed jaw and is held in this position for a sufficient period of time to permit a bunch of asparagus to be placed between the latter and the fixed jaw. The movable jaw and door or abutment now move to the right and the entire operation is repeated. The interrupted sections of the drive gears, 4, 23, 24, 43 and 67 are of such length and are so spaced relative to each other that the above operations are caused to occur in their proper sequence and in proper timed relation. The stop mechanism which prevents accidental rotation of the driven gears 4', 19^a, 32', 42 and 68, due to momentum or other causes, further insures the proper operation of the parts in correct timed relation.

What is claimed is:

1. In an automatic stalk canning and trimming machine, a base, fixed and movable coacting jaws mounted thereon for retaining stalks in bunched relation, a sliding door

normally closing one end of the jaws to retain the stalks therein, a cutter operable across the other end of said jaws to sever projecting ends of the stalks, a reciprocating ejector for ejecting the stalks into a can placed in registration with the jaws when in operative position, and a common mechanism for actuating the cutter, door, ejector and movable jaw to operative and inoperative positions in timed relation.

2. In a stalk trimming and packing machine, a base, coacting fixed and movable jaws for holding bunched stalks, a door slidable on the base and normally closing one end of the jaws, a cutter movable across the opposite end of the jaws for trimming the stalks, a reciprocable ejector movable at right angles to the movable jaw, means for singly advancing cans to a position coinciding with the jaws when in operative position, and means for imparting movement to the door, movable jaw, cutter, ejector and can advancing means whereby said parts are actuated in sequence.

3. In a stalk trimming and canning machine, an angularly disposed base plate, coacting fixed and movable jaws arranged thereon and adapted to hold stalks in a cylindrical bunch, means for holding the can beneath the coacting jaws when in operative position, a knife movable across the upper ends of the jaws to trim the stalks, and a reciprocable plunger mounted on the base plate in longitudinal alinement with the jaws and arranged to pass into the latter to eject the stalks therefrom and deposit them within the can.

4. An apparatus of the character described comprising a vertically inclined base plate, fixed and movable jaws mounted thereon for holding bunched stalks, a plurality of rotatable elements supported from the base plate, a sliding door normally closing the lower ends of the jaws, a cutter movable across the opposite ends of the jaws, operative connections between the rotatable elements, cutter, movable jaw and door whereby to move the cutter, movable jaw and door over the base plate in timed relation, and a reciprocable plunger movable between the jaws to eject objects therefrom into a can supported in longitudinal alinement with the plunger and the jaws when the cutter and door are disposed in inoperative positions.

5. An apparatus of the character described comprising a vertically inclined base plate, fixed and movable jaws mounted thereon for holding bunched stalks, a plurality of rotatable elements supported from the base plate, a sliding door normally closing the lower ends of the jaws, a cutter movable across the opposite ends of the jaws, operative connections between the rotatable elements, cutter, movable jaw and door whereby to move cutter, movable jaw and door over the base plate

- in timed relation, a reciprocable plunger movable between the jaws to eject objects therefrom into a can supported in longitudinal alinement with the jaws and plunger when the cutter and door are disposed in inoperative positions, and means for stopping the movement of the cutter, movable jaw, door and plunger at predetermined intervals.
6. An apparatus of the character described comprising a vertically inclined base plate, fixed and movable jaws mounted thereon for holding bunched stalks, a plurality of rotatable elements supported from the base plate, a sliding door normally closing the lower ends of the jaws, a cutter movable across the opposite ends of the jaws, operative connection between the rotatable elements, cutter, movable jaw and door whereby to move the cutter, movable jaw and door over the base plate in timed relation, a reciprocable plunger movable between the jaws to eject objects therefrom into a can supported in longitudinal alinement with the jaws and plunger when the cutter and door are disposed in inoperative positions, and means for intermittently actuating the cutter, movable jaw, door and plunger at predetermined intervals, including pairs of rotatable elements disposed at right angles to each other, one of each pair of which being cut away to permit the other to pass at predetermined times and against which the other engages normally to hold one member of each pair stationary.
7. In an apparatus of the character described, a supporting frame, a rearwardly inclined plate supported thereon, means at one end of the plate for advancing cans in a transverse direction, means for holding the cans in a position for filling after they are advanced, coacting fixed and movable semi-circular jaws on the plate for holding asparagus stalks therebetween with their butts projecting, a door slidably mounted on the plate to normally close the lower ends of the jaws, a cutter movable transversely of the upper ends of the jaws and in parallelism to the latter to sever the asparagus butts, and a plunger slidably mounted on the plate for movement between the jaws to eject the asparagus bunch therefrom and deposit the same within a can.
8. In an apparatus of the character described, a supporting frame, a rearwardly inclined plate supported thereon, means at one end of the plate for advancing cans in a transverse direction, means for holding the cans in a position for filling after they are advanced, coacting fixed and movable semi-circular jaws on the plate for holding asparagus stalks therebetween with their butts projecting, a door slidably mounted on the plate to normally close the lower ends of the jaws, a cutter movable transversely of the upper ends of the jaws and in parallelism to the door, a plunger slidably mounted on the plate in alinement with the jaws and adapted to pass between the latter to eject the asparagus bunch therefrom and deposit the same within the can, and driving means for actuating the movable jaw, cutter, door and plunger in timed relation.
- CHARLES C. McDONALD.
CHARLES L. TROUTMAN.

75

80

85

90

95

100

105

110

115

120

125

130