W. D. ROOT.

CORN POPPING AND VENDING MACHINE.

APPLICATION FILED MAR. 14, 1918.

1,436,726.

Patented Nov. 28, 1922.

6 SHEETS—SHEET 1.

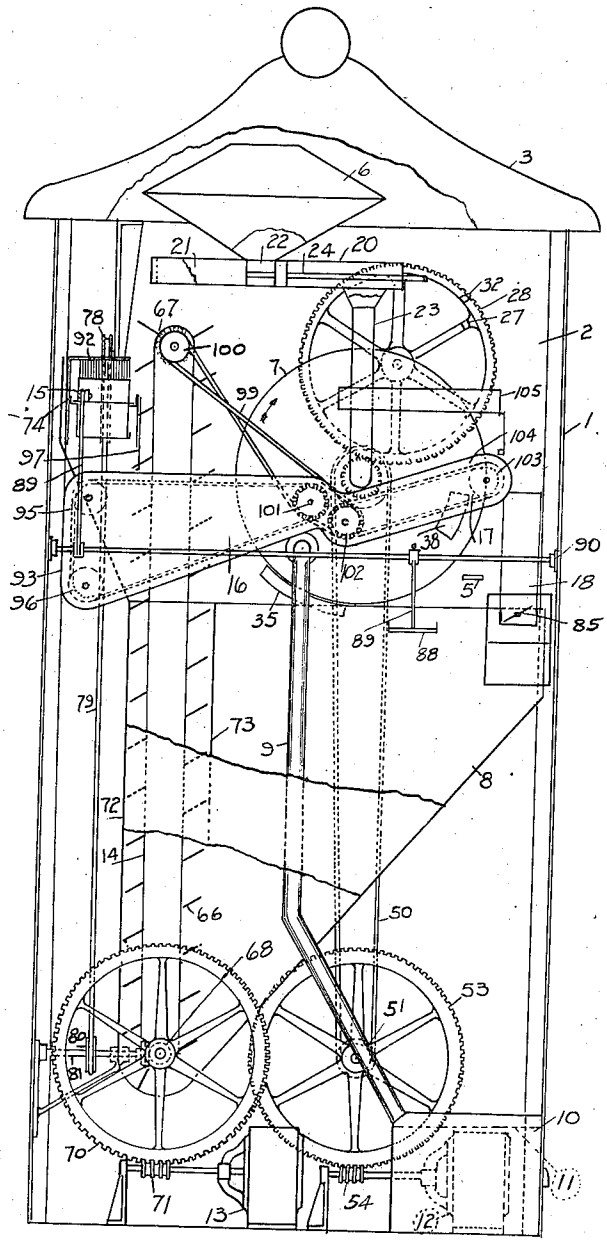


Fig. 1

Inventor.
William D. Root.
By Brockett and Boyle
his attorneys

W. D. ROOT.

CORN POPPING AND VENDING MACHINE.

APPLICATION FILED MAR. 14, 1918.

1,436,726.

Patented Nov. 28, 1922.

6 SHEETS—SHEET 2.

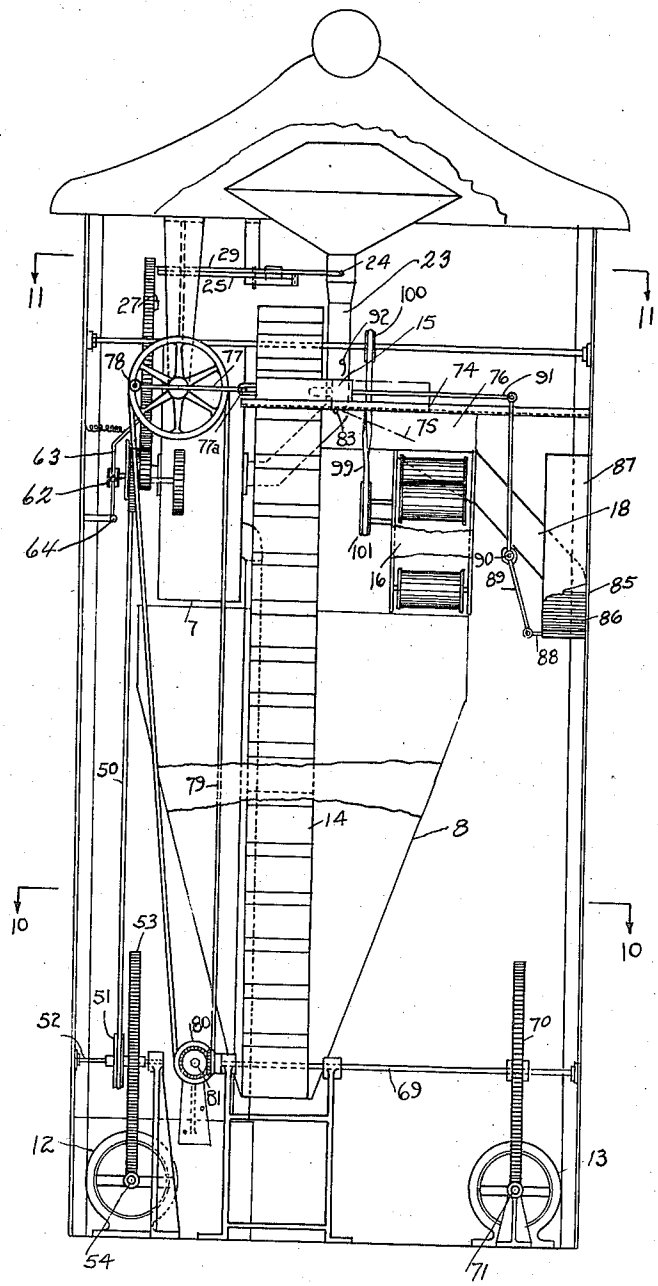


Fig. 2

Inventor.
William D Root
By Brockett and Hyde
his attorneys

W. D. ROOT.

CORN POPPING AND VENDING MACHINE.

APPLICATION FILED MAR. 14, 1918.

1,436,726.

Patented Nov. 28, 1922.

6 SHEETS—SHEET 3.

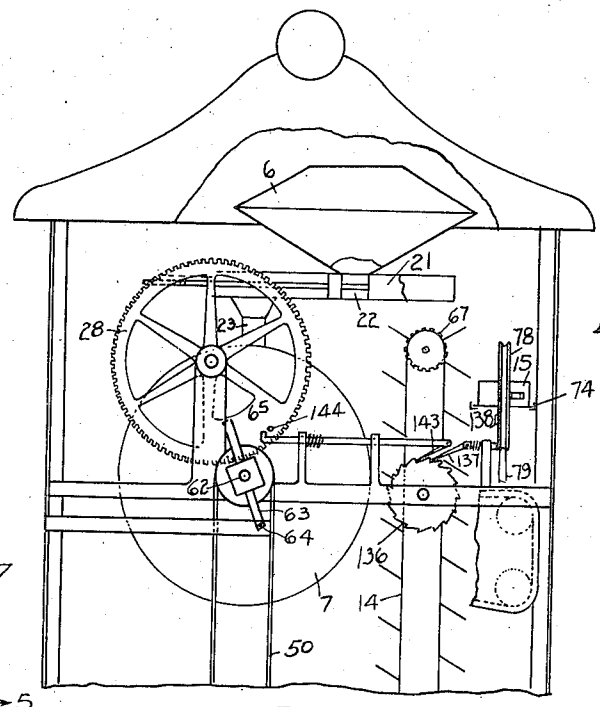


Fig. 3

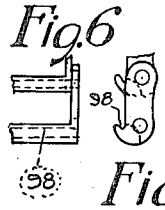


Fig. 6

Fig. 7

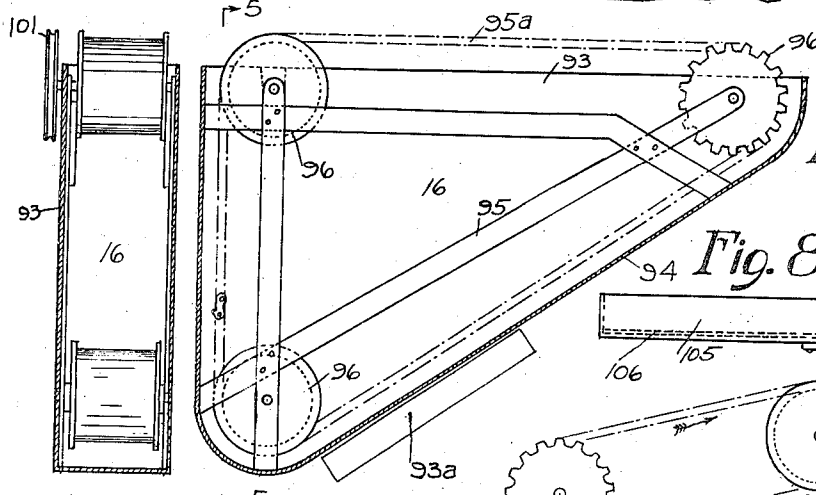


Fig. 4

Fig. 5

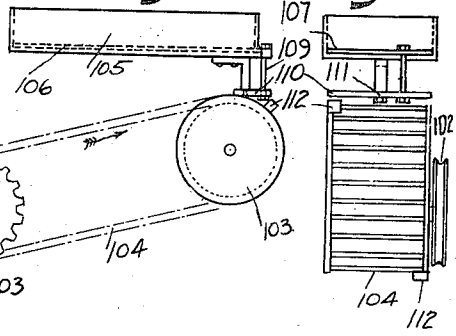


Fig. 8

Fig. 9

Inventor.
William D. Root
By Brockett and Hyde
his attorneys

W. D. ROOT.

CORN POPPING AND VENDING MACHINE.

APPLICATION FILED MAR. 14, 1918.

1,436,726.

Patented Nov. 28, 1922.

6 SHEETS—SHEET 4.

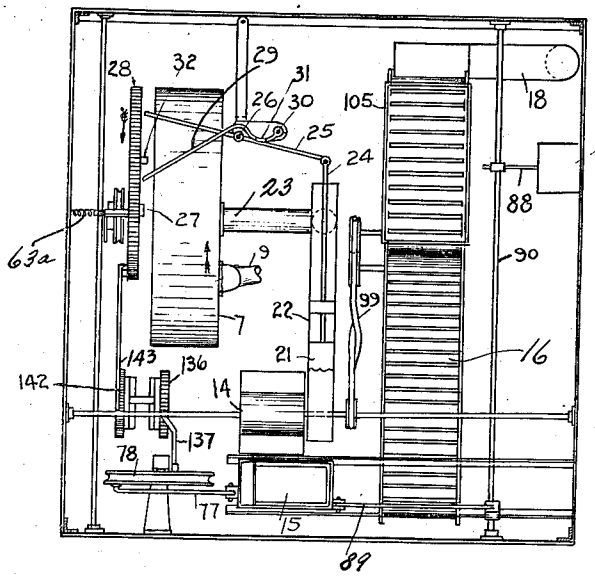


Fig. 11.

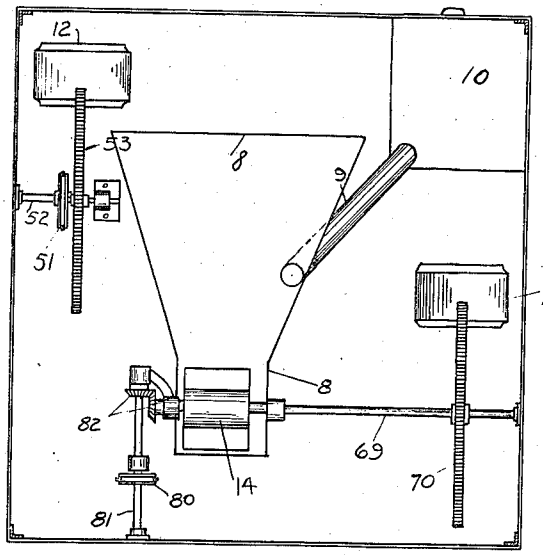


Fig. 10.

Inventor.
William D. Root.
By Brockett and Hyde
his attorney

W. D. ROOT.

CORN POPPING AND VENDING MACHINE.

APPLICATION FILED MAR. 14, 1918.

1,436,726.

Patented Nov. 28, 1922.

6 SHEETS—SHEET 5.

Fig. 14

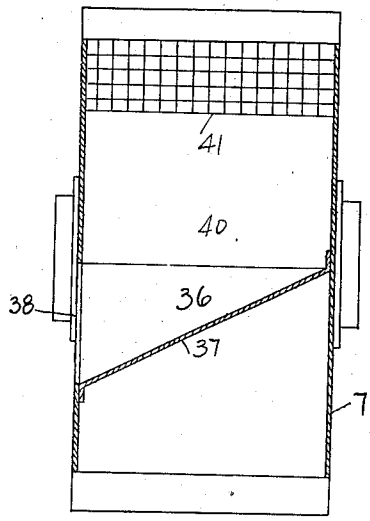
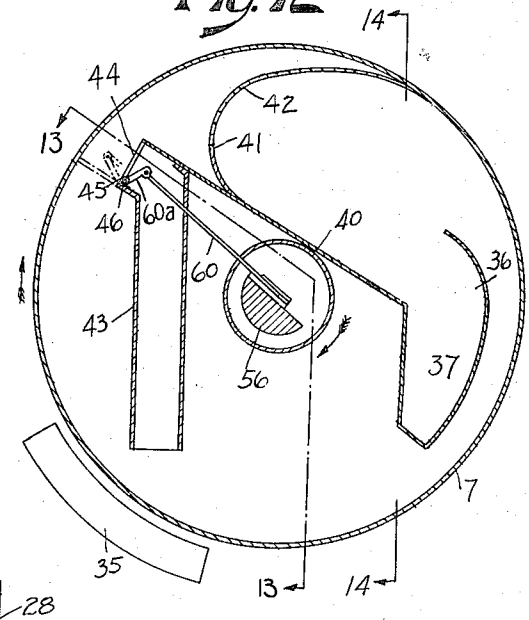


Fig. 12



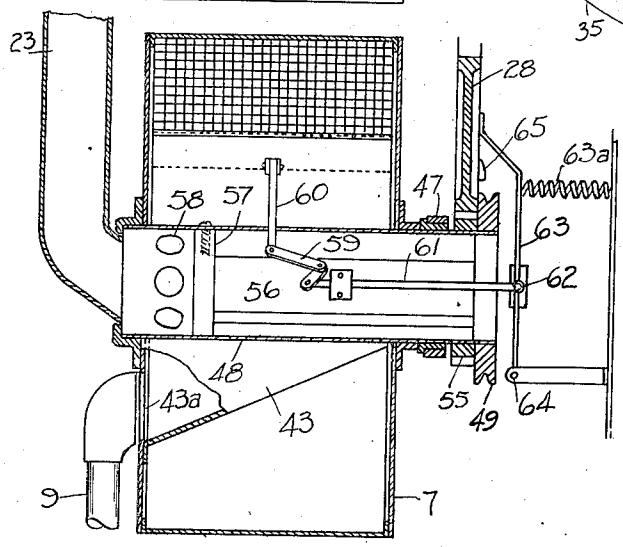


Fig. 13

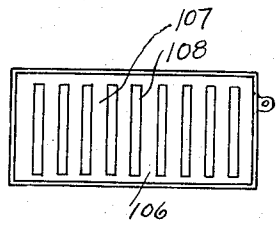


Fig. 17

Inventor.
William D. Root
By Brockett and Hyde
his attorneys

W. D. ROOT.

CORN POPPING AND VENDING MACHINE.

APPLICATION FILED MAR. 14, 1918.

1,436,726.

Patented Nov. 28, 1922.

6 SHEETS—SHEET 6.

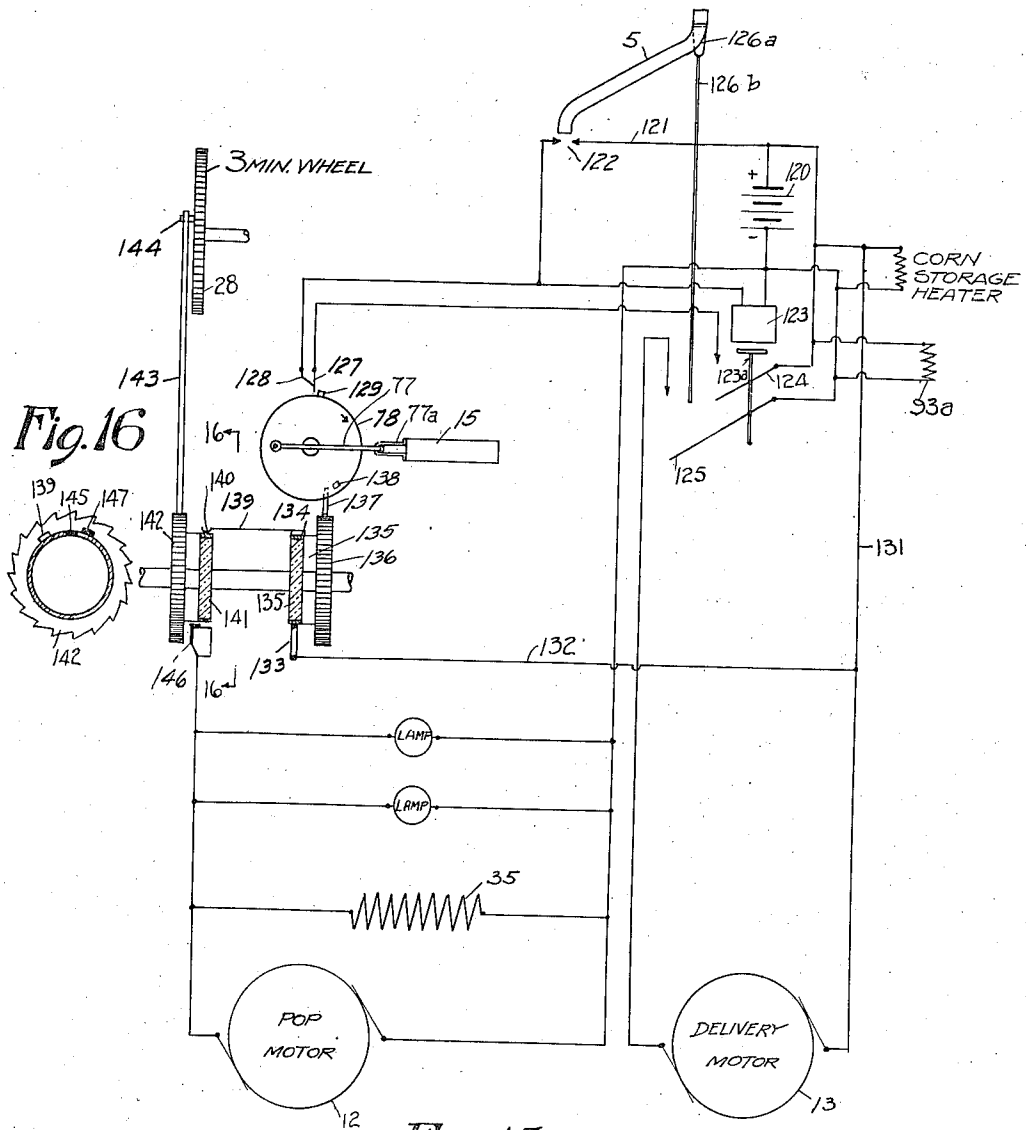


Fig. 16

Fig. 15.

Inventor.
William D. Root
By Brockett and Ryan
his attorneys

Patented Nov. 28, 1922. 1,436,726

UNITED STATES PATENT OFFICE.

WILLIAM D. ROOT, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE GUARDIAN SAVINGS AND TRUST COMPANY, TRUSTEE, OF CLEVELAND, OHIO.

CORN POPPING AND VENDING MACHINE.

Application filed March 14, 1918. Serial No. 222,270.

To all whom it may concern:

Be it known that I, WILLIAM D. ROOT, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Corn Popping and Vending Machines, of which the following is a specification.

This invention relates to corn popping and vending machines.

The objects of the invention are—to provide an improved machine of this kind which is wholly automatic and requires no personal attention beyond the maintaining of supplies of raw corn and bags or containers; to stimulate the interest of the observer attract his attention, and encourage a purchase by exposing practically all of the mechanism to his view and extending to him the opportunity of causing actuation of the mechanism by the insertion of a coin in the coin controlling mechanism; to produce the prompt delivery, after the insertion of a coin or coins, of the proper number of packages of buttered and salted pop corn, the same operation producing actuation of the popping mechanism to replenish the pop corn withdrawn and delivered from the storage reservoir; and to generally simplify and improve all of the various units of the machine so that they will work in harmony with proper co-operation for the production of the required results, and which units are less likely to get out of order than prior devices or mechanisms for the same purpose.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawings, which represent one embodiment of the invention, Fig. 1 is a front elevation; Fig. 2 is a side elevation, the view being taken from the left in Fig. 1; Fig. 3 is a rear elevation of the upper portion of the case and the mechanism therein; Fig. 4 is a detail side elevation, on a larger scale, the front casing wall being omitted, illustrating the buttering device; Fig. 5 is a sectional elevation on the line 5—5, Fig. 4, the chain being omitted for clearness of illustration; Fig. 6 is a detail view of one end portion of a chain bar and one of the links connected thereto; Fig. 7 is an end view thereof; Fig. 8 is a side view of the salting device; Fig. 9 is an end view thereof from the right in Fig. 8; Fig. 10 is a sectional plan view on the line 10—10, Fig. 2; Fig. 11 is a sectional plan view on the line 11—11, Fig. 2, the lower portion of the mechanism shown in Fig. 10 being omitted for clearness of illustration; Fig. 12 is a side elevation of the popping drum, one end wall being omitted; Fig. 13 is a sectional view on the line 13—13, Fig. 12; Fig. 14 is a similar section on the line 14—14, Fig. 12; Fig. 15 is a diagrammatic view, illustrating the electric circuits and some of the mechanism associated therewith; Fig. 16 is a detail sectional view on the line 16—16, Fig. 15; and Fig. 17 is a detail plan view of a portion of the salting device.

Referring to the drawings, the machine illustrated comprises an enclosing casing, which may be of any suitable form and is illustrated as embodying vertical corner angle irons 1 which form a support for the mechanism as will appear, and to which also are attached the side walls 2 of the casing. The lower third or half of the casing may have its side walls made of wood, metal or opaque material, but the upper portion of the casing preferably has its side walls made of glass or other transparent material. Most of the mechanism is in the upper portion of the casing and the glass walls enable said mechanism to be seen from the outside. As the purchaser starts the mechanism by inserting the coin into the slot, his ability to see the mechanism work is an incentive to purchase. The top of the machine is covered by a suitable hood or roof 3. In the machine shown in the drawings the entire side walls are of glass merely for simplicity of illustration.

5, Fig. 15, indicates generally the coin controlling mechanism or chute, into which the purchaser inserts a nickel or other coin to start the mechanism working. This mechanism will be suitably located in the case and will be of any suitable type. As such devices can be procured in the open market, it need not be described in detail.

6 indicates the raw corn reservoir, which is of suitable size to require replenishment once every day or so, or at more or less frequent intervals as may be desired. When the coin is inserted into the machine a charge of raw corn is measured out and conveyed from the reservoir 6 to the popping drum 7, in which it is popped by a suitable heating

unit. The popped grains are discharged automatically from a door or opening in the drum and fall into a storage reservoir 8 in the lower portion of the case. The unpopped grains are automatically selected and delivered through what is known as the "bachelor" tube 9 to a second and smaller reservoir 10 in the bottom of the case, in which may be a drawer 11 capable of being pulled out to dump the unpopped grains when the machine is periodically served and recharged.

All of the mechanism so far described, to-wit, the raw corn feeding mechanism, the popping drum and the devices for automatically separating popped and unpopped kernels are operated by a motor 12, which may, therefore, be termed the popping motor. A second motor 13, which may be termed the delivery motor, actuates the remaining portion of mechanism, said mechanism being arranged when operated to deliver to the operator or purchaser a definitely measured charge of popped corn. This mechanism comprises an elevator 14 which carries the popped corn upwardly from the storage reservoir 8 and discharges it upon or into a suitable transfer device, shown as a reciprocating car 15, which delivers the measured charge upon the traveling conveyer of a buttering device 16 from which the corn is discharged to a salting device 17, which in turn delivers the corn to a chute 18, from which it may be withdrawn by the operator. The several units or departments of the machine will now be described in detail.

Raw corn feed.

The raw corn reservoir 6 is of hopper form, its bottom outlet opening into a horizontal tubular casing or member 20 in which is a reciprocating feeding device having a portion 21 adapted to close the hopper outlet as the feeding device advances, and having a recess or pocket 22 adapted to carry a charge of corn sufficient for one popping operation and deliver the same into the upper end of a conduit 23 which discharges into one end of the popping drum 7 and preferably at the axis thereof. This feeding device is actuated each time the popping motor 12 is set into operation, for which purpose it is provided with an outwardly extending rod 24, Fig. 11, pivotally connected to a lever 25 pivoted at 26 to a suitable support, the opposite end of said lever 25 extending into the path of a cam 27 on what is known as the "three minute wheel" 28. Adjacent to lever 25 is a second lever 29 pivoted at 30 and having a projection 31 engaging the lever 25 between its pivot 26 and the rod 24, the opposite end of said lever 29 extending into the path of movement of a second cam 32 on the "three minute wheel."

When the popping motor 12 begins to operate, the first motion of the "three minute wheel" 28 operated thereby causes the cam 27 to engage lever 25 and actuate the same to advance the feeding device and deliver a charge of raw corn to the drum. Cam 32 then engages lever 29 and restores both levers to their normal positions ready for another operation.

Corn popping device.

The popping drum 7 may be of any suitable form or construction. It preferably comprises a light metal frame with walls formed of wire mesh or perforated sheet metal, to more readily transmit to the corn in said drum the heat from the heating unit 35. This heating unit is immovably fixed on a suitable support and is located fairly close to the cylindrical outer or side surface of the drum opposite the position to which the corn rises with the inner surface of the drum as the latter rotates. The heating unit may be an electric resistance element in a circuit to any suitable source of current, said circuit being maintained closed so that the heating unit is always heated, or it may be in a circuit closed automatically with establishment of the circuit to the motor 12, as it will come to full temperature practically simultaneously with closing of its circuit, the precise arrangement being unimportant. The latter arrangement is shown for convenience in Fig. 15.

The drum rotates slowly, turning over and over the grains of raw corn until popped. Experience shows that it requires practically three minutes to fully pop all the good grains in a charge, as a consequence of which the controlling wheel 28, by properly proportioning the driving mechanism, is made to turn through one revolution in about two and one-half to five minutes, completing one cycle of the popping operation.

The drum revolves through approximately twenty complete revolutions for each revolution of the "three minute wheel." It is provided with suitable means for selecting and ejecting first the popped grains and subsequently the unpopped grains. For this purpose the drum is provided on its interior with a metal receptacle, shown as a trough 36 extending parallel to and at one side of the axis of the drum from end to end thereof, the floor or bottom 37 of the trough being inclined downwardly when in discharging position as shown in Fig. 12. When in this position the popped grains slide downwardly along the sloping floor and through an opening or door 38 in the end of the drum and drop into the storage reservoir 8, which extends downwardly from the drum nearly to the bottom of the case. This storage reservoir is made as large as possible by suitably locating the mechanism and,

generally speaking, is of hopper form with its floor or bottom converging to the lower end of the elevator 14.

One side wall of the trough 36 is connected at its upper edge to a selecting member 40, which extends from end to end of the drum, and is of curved form as shown in Fig. 12. The inner portion of this selecting member, out to approximately a line indicated at 41, is formed of fine wire mesh or imperforate metal, so the popped grains will readily slide thereon, while the remaining outer portion 42 of said members is of larger open mesh screen, the openings being large enough to allow unpopped grains to readily pass through. While the drum revolves in a clock-wise direction, Fig. 12, the screen 42 selects the popped grains as the screen moves over the top of its circle of movement and delivers them to the trough 36 and then to the storage reservoir. The unpopped grains, however, are held back and turned over and over at practically the bottom of the drum over the heating element until they are popped, selected and discharged at the next revolution of the drum.

Suitable means is also provided for collecting and ejecting from the drum those grains which remain unpopped at nearly the end of the cycle. For this purpose the drum is provided, behind the selecting member 40 in the direction of its movement, with a collecting trough or receiver 43, extending from end to end of the drum and whose floor extends to an outlet opening 43ª in the end drum wall. The other end of the selecting member has a wide opening normally closed by a door 44, hinged at 45 and normally held closed by a light spring 46. This door prevents escape of popped grains. After all of the popped grains have been selected and ejected the door is opened by mechanism to be described and is turned to the position shown in dotted lines, Fig. 12. During the following revolution of the drum the door serves as a collecting member in the same manner as the screen 42 and being of solid material picks up and discharges into the receiver 43 all of the unpopped grains. When the parts reach the position in Fig. 12, these grains are discharged through the opening 43ª into the upper end of the "bachelor" tube 9, already referred to, which is a fairly small conduit leading downwardly to the small chamber 10 and drawer 11.

The drum is preferably supported only at one end, to enable the raw corn to be delivered to its opposite end, although two end supports may be used if desired. As illustrated it is supported in a bearing 47, which receives the tubular member 48 at the axis of the drum and to which it is connected, said tube being provided on its outer end with a driving pulley 49 from which the belt 50 extends to pulley 51 on a short shaft 52 carrying a worm gear 53 driven by a worm 54 on the shaft of motor 12. The drum tube 48 is also provided with a small gear 55 which operates the "three minute wheel" 28.

Within the tube 48 is a filler member 56, half-round in cross section and having a solid circular head 57 which limits the flow of raw kernels through the tube and causes their discharge into the drum through the openings 58. The filler member 56 serves to support a light bell crank lever 59, one of whose arms is connected by a link 60 to an arm 60ª on the door and whose other arm is connected to a link 61 slidably mounted on the filler member. The outer end of slide 61 is connected by a universal joint at 62 to a lever 63 pivoted at 64 to a fixed support. The opposite end of said lever 63 lies in the path of movement of a cam 65 on one face of the "three minute wheel" 28. Therefore, when the "three minute wheel" approaches the end of its cycle of movement, cam 65 opens the door 44 to produce ejection of the unpopped grains as described, the arm 63 finally leaving cam 65, whereupon spring 46 and a lever spring 63ª close the door 44 ready for another cycle of operations.

Pop corn elevator.

The pop corn elevator 14 is in the form of an endless belt band or cross barred chain provided at intervals with a series of buckets or shelves 66. Said chain travels over upper and lower sets of sprockets 67, 68, the latter of which is on a shaft 69 extending out through the wall of the reservoir 8 and carrying a worm gear 70 driven by a worm 71 on the shaft of motor 13. The downwardly moving flight of the elevator travels along one wall 72 of the reservoir 8, while the lower portion of the upwardly moving flight is exposed to the corn in the reservoir so that each of its buckets collects a charge thereof. To decrease the drag of the pop corn in the reservoir upon the upwardly moving chain its upper portion is preferably inclosed by a guard 73, although this is not essential.

Measuring and transfer work.

The pop corn elevator delivers the corn to suitable mechanism for measuring out a proper charge of corn to be delivered to the purchaser, and which device also conveys said measured charge to the buttering device. This measuring device is the box-like car or container 15 before referred to, which has reciprocating motion horizontally upon suitable guides 74. The bottom 75 of said car is loosely hinged thereto along its rear edge, so that when said car is advanced to its discharge position said bottom drops

to the position shown in dotted lines, Fig. 2, whereupon the corn in said car flows out along its bottom and between the depending guide aprons 76 to the buttering device 16, as will more fully appear.

The car 15 is connected by a link or links 77 operating in a lost motion strap 77ª to a crank pin on driving wheel 78, connected by a belt 79 to a small pulley 80 on a shaft 81 connected by beveled gears 82 to the shaft 69.

The normal position of car 15 is illustrated in Fig. 2. As soon as the motor 13 begins to operate the wheel 78 turns over, thereby advancing the car 15 to discharge position. The retracting movement of said car closes its bottom by dragging the same over a cross bar 83 connected to the guide ways 74. As the car moves back, and also while advancing along the side of the elevator it is filled thereby with a charge of corn. The elevator operates fast enough to deliver to the car more than the latter will hold, so as to measure a full load, and the excess corn drops back into the storage reservoir. Just above the car is a stationary comb or fork 92, which levels off the charge of corn in the car as the latter moves past it to the discharge position and as the car advances its hinged bottom opens and the load is delivered to the buttering device.

Bag delivery.

As will appear later, the charge of corn is finally delivered to the conduit 18, whose lower chute end may be of glass or transparent material and which lies within the case but is protected in a recess open to access by the operator, the lower end of said chute being closed by a manually operable door or gate 85. The operator draws the mouth of a paper bag or carton over this conduit and by opening the door 85 delivers the corn thereto. Suitable means is provided for supplying to the operator a paper bag or other carton to receive the corn. As illustrated, these bags or cartons indicated at 86, are piled in a compartment 87 provided with any suitable mechanism for ejecting a single one at each operation of the transfer car 15. The drawings show for this purpose an ejecting slide or member 88 working across the bottom of the compartment 87 and connected to one arm of a lever 89 pivoted at 90 to a fixed support and having its other arm connected by a link 91 to the car 15, although other arrangements may be utilized.

Buttering device.

The buttering device 16 comprises an inclosing metal casing 93 having side walls, a bottom, and an open top, forming a reservoir for melted butter. This butter can be maintained in melted form either by a small detachable electrical resistance element 93ª or in any other manner as desired. The floor 94 of the reservoir slopes downwardly toward one end, so that the butter can be used up practically to the last ounce. Within the reservoir is a separate detachable frame 95 carrying a series of sprocket wheels or drums 96, the lowermost one of which is at the bottom of the reservoir. Over said sprockets travels an endless belt or chain 95ª. The upper horizontal portion of the belt 95ª is exposed and at one end, its left-hand end in Fig. 1, is in position to receive the corn discharged from the car 15. 97 indicates a stationary comb which engages the pile of corn delivered to the belt 95ª and levels it off so that practically every kernel thereof comes in contact with the cross bars of the chain. This chain will preferably have its links or bars of special form, as indicated in Figs. 6 and 7, each link bar being provided with a small cavity or pocket 98 which picks up a small amount of melted butter and carries it to the top of the device, where the bars turn over into horizontal position and allow the butter to flow out upon the flat surface of the bars and links of the chain to be absorbed by the popped grains of corn in contact therewith.

The buttering device is actuated by a crossed belt 99 passing over a pulley 100 on the shaft of the sprocket 67, and also passing over a pulley 101 on the shaft of one of the upper sprockets 96 and a similar pulley 102 on the shaft of one of the sprockets 103 of the conveyer of the salting device now to be described. The buttering and salting devices are therefore driven by the same belt and operate in timed relation. The shaft of pulley 101 fits in an open slot in the casing 93. Therefore by detaching belt 99 the false frame 95 and buttering chain can be removed bodily from the casing for cleaning out the latter. The casing or bowl 93 has no holes or lugs and is therefore easily cleaned and may also be made easily detachable for sanitary purposes.

Salting device.

The corn carried by the upper horizontal flight of the buttering conveyor is discharged upon the upper flight of a conveying belt 104 passing over the sprockets 103, said conveyer traveling upwardly at a slight angle and discharging the corn into a hopper converging toward and leading to the conduit 18. Above said conveyer 104 is a horizontally extending reservoir 105 containing salt in fine granular form, the bottom of said reservoir consisting of two superposed grids 106, each formed of slats 107 separated by spaces 108. One of said grids, specifically the upper one in Fig. 8, is slidable relative to the other, the direction of sliding movement being transverse to the bars 107. Said

sliding member is provided with a depending rigid arm 109 connected to one arm of a lever 110 pivoted at 111 to a fixed support. On the conveyer chain 104 are two lugs or projections 112 spaced equi-distantly from each other along the length of the conveyer, one of said lugs being at one side of the conveyer and the other being at the other side. As the conveyer operates these lugs in turn engage the opposite ends of lever 110, swinging said lever first in one direction and then in the other and thereby traversing the upper grid over the lower. This motion momentarily opens up the gaps between the grid bars and allows a small amount of salt to drop on all the corn exposed on the top of the conveyer thereby salting the same. The excess salt drops through the conveyer into a pan or receiver below the same, and is retained for later use.

Coin controlling mechanism.

Fig. 15 illustrates diagrammatically the electric circuits, their connections to the motors and other parts of the mechanism, and the manner of control of said circuits by the inserted coin and the mechanism. 120 indicates the source of current, which may be a battery or a suitable power circuit, and which for convenience is here referred to as a battery. This source of current is in a circuit 121 including a gap 122 and an electro-magnet 123 whose armature 123[a] is connected to two switches 124 and 125 movable together or as a unit. Gap 122 is located at the coin receiving chute 5, so that said gap is momentarily closed by passage of the coin through the chute, such as by allowing the coin to roll over the gap and momentarily bridge the same. Closing of the circuit 121 energizes magnet 123 and closes switches 124 and 125. Switch 125, as will appear, establishes the delivery circuit, which is maintained closed until the operator has received the charge of corn to which he is entitled. Suitable mechanism must also be provided for maintaining this circuit closed. This mechanism may be of any suitable construction, such as a mechanical lock for locking the switch closed, said lock being released, for example, by a cam or projection 129 upon the car operating wheel 78, said cam coming into operation when the delivery of the charge of corn is completed. The drawings show, however, an electric circuit for accomplishing the same purpose, said circuit being known as the "stick circuit" and being established by closing of the switch 125.

Stick circuit.

The stick circuit runs from the positive side of the battery through the switch 124 and through the two spring contacts 127 and 128 of a normally closed switch and thence through the electro-magnet 123 to the battery. Contact 127 lies adjacent the wheel 78 which actuates the corn delivery car, and when said wheel has made its single complete revolution, the cam or projection 129 thereon strikes contact 127 and moves it away from contact 128 thereby breaking the circuit through the electro-magnet so that the latter is de-energized, which allows the switches 124 and 125 to open by gravity. This circuit and the contact 129 therefore maintain closed the delivery circuit, to be described, until the said mechanism has operated through one cycle and delivered one charge of corn to the purchaser.

126[a] indicates a slide working across the coin chute close to its mouth and transverse to the direction of movement of the coin. This slide is connected to a rod or bar 126[b] whose opposite end lies adjacent the path of movement of the switch 125, or a member connected thereto. Consequently there is lost motion of the switch 125 before the slide 126[a] is raised. When the switch 125 is closed the slide moves across the chute and blocks the insertion of a new coin into the chute until the delivery of a charge of corn has been completed, whereupon the switch 125 opens and the slide 126[a] drops back to its original position by gravity. Because of the lack of direct connection between the bar 126[b] and switch 125 the operator is unable by a tool or otherwise to jam the slide 126[a] in the chute and thereby hold the switch 125 closed to keep the delivery mechanism operating but the switch 125 will open at the conclusion of the delivery operation so that a new coin must be inserted to again bridge the gap 122.

Delivery circuit.

The delivery circuit 131 runs from the positive side of the battery through the delivery motor 13 and thence through switch 125 to the negative side of the battery. This circuit is maintained closed by the attraction of magnet 123 until the projection 129 releases said switch by opening the circuit through the magnet 123.

Popping circuit.

A third circuit established by bridging the gap 122 is the popping circuit. The delivery mechanism operates fairly rapidly. In other words, about twenty seconds, more or less, elapse, between the insertion of a coin and the discharge of the corn popped, buttered and salted to the operator. As before stated, it requires about three minutes to pop a charge of corn, and the parts are so proportioned that each operation of the popping mechanism delivers into the storage reservoir approximately the amount of corn discharged to the operator. Consequently

there must be a complete popping operation for each charge delivered. If the coins are inserted at intervals of twenty seconds, six charges of corn will be delivered in two minutes but the popping mechanism must continue to operate for eighteen minutes. The mechanism should therefore be so arranged that the insertion of a number of coins in fairly quick succession will set the mechanism so that the popping devices will continue to operate, after the purchasers have left the machine, to replenish the corn withdrawn therefrom. This mechanism in the form illustrated involves co-relation or interconnection of the popping mechanism and delivery mechanism, although any suitable mechanism for the purpose may be used.

The popping circuit runs from the positive side of the battery through a wire 132 to a stationary spring contact 133 engaging a continuous conducting ring 134 carried by an insulating block 135 to which is attached a ratchet wheel 136. Said ratchet wheel is actuated by a reciprocating pawl 137 operated by a cam 138 on the car operating wheel 78. At each operation of said car the ratchet wheel 136 and ring 134 are stepped around one space.

Ring 134 carries a spring contact 139 whose opposite end rests upon a conducting ring 140 carried by an insulating block 141 connected to a ratchet wheel 142, said ratchet wheel being actuated by a pawl 143 operated by a cam or projection 144 upon the "three minute wheel" 28. Ring 140 has an insulating gap 145 therein and is wide enough so that the contact 139 can travel clear around said ring without interfering with a stationary spring contact 146 through which the current is conducted to the popping motor 12 and thence to the negative side of the battery.

In the idle position of the parts, to-wit, when both the delivery and popping motors are at rest, the spring contact 139 lies on the insulating gap 145, so that the circuit through the popping motor is broken. When a coin is inserted into the machine the circuit through the delivery motor is closed and actuation of the delivery mechanism almost immediately moves the pawl 137 and rotates the ring 134 and contact 139 one space, thereby moving said contact into a position in which the circuit is completed through the ring 140 and through the popping motor. The popping mechanism therefore begins to operate. If a number of coins are successively inserted into the machine, the contact 139 is advanced along the conducting ring 140 one space for each coin so inserted. At the conclusion of each popping cycle the ring 140 is advanced one space, so that finally, no matter how many coins are inserted into the machine, the insulated gap 145 will overtake the contact 139 and come to a position beneath the same. In this position all circuits are broken and the mechanism is wholly at rest.

Usually the ratchets 136 and 142 will have about forty-five teeth, to provide for that many sales in quick succession, and to avoid the contact 139 advancing onto or ahead of the gap 145 by a complete revolution and therefore overtaking the same, the ring 140 is preferably provided with an obstruction, such as a small projection 147 adjacent to said gap. Therefore, if more than forty-five coins are inserted contact 139 will carry the ring 140 along with it and cause the popping mechanism to operate at least through forty-five complete cycles before insulated gap 145 overtakes spring contact 139.

What I claim is:

1. Apparatus of the class described, comprising a corn popping means, a reservoir for popped corn, means for delivering measured charges of popped corn from said reservoir, said reservoir having a capacity sufficient to hold a plurality of such charges, means for operating said popping means to supply a quantity of popped corn to said reservoir sufficient for a plurality of delivery charges, and for restarting said popping means upon partial emptying of said reservoir.

2. In a corn popping and vending machine, the combination with a corn popping means, of a popped corn vending means comprising a storage receptacle and means for delivering measured charges of popped corn therefrom, and means for operating said popping means controlled by said vending means upon partial emptying of said reservoir.

3. In a corn popping and vending machine, the combination with a corn popping means, of a popped corn vending means comprising a storage receptacle and means for delivering measured charges of popped corn therefrom, said reservoir having a capacity sufficient to hold a series of such delivery charges, and means operable upon actuation of said delivery means for starting said popping means and for stopping said popping means when a quantity of popped corn corresponding to that delivered from the reservoir has been supplied thereto.

4. In a corn popping and vending machine the combination with a popping means, of a device for delivering measured charges of popped corn, means controlled by the delivery means for operating said popping means, and means interposed between said popping means and delivery means for maintaining a plurality of reserve charges of popped corn.

5. Apparatus of the class described, com-

prising a corn popping means having a definite cycle of operations for popping and delivering a charge of popped corn, a reservoir adapted to receive a plurality of charges from said popping means, means having a cycle of operations differing from that of the popping means for delivering measured charges from said reservoir, and means controlled by said delivering means on its first actuation for starting said popping means, said means being adapted upon subsequent operations of the delivering means to cause the cycle of operations of the popping means to be repeated.

6. Apparatus of the class described, comprising a corn popping means having a definite cycle of operations for popping and delivering a charge of popped corn, a reservoir adapted to receive a plurality of charges from said popping means, means having a cycle of operations differing from that of the popping means for delivering measured charges from said reservoir, and means controlled by said delivering means for starting said popping means and causing said popping means to operate through a number of cycles of operations sufficient to supply a quantity of popped corn to said reservoir substantially corresponding to the quantity delivered.

7. Apparatus of the class described, comprising a reservoir for popped corn, means adapted when actuated to deliver a charge of popped corn therefrom, popping means for supplying popped corn to said reservoir, and controlling means for said popping means actuated by said delivery means, said controlling means being arranged to permit the popping means to operate for a sufficient period to replace the popped corn delivered by a plurality of delivery operations.

8. Apparatus of the class described, comprising corn popping means, a reservoir supplied thereby and having a capacity for holding a plurality of charges of corn popped in said popping means, means for measuring and delivering a measured charge of popped corn from said reservoir, and controlling means adapted when actuated to cause actuation of said measuring and delivering means and popping means.

9. Apparatus of the class described, comprising corn popping means, a reservoir supplied thereby, and having capacity for holding a plurality of charges of corn popped in said popping means, means for measuring and delivering a measured charge of popped corn from said reservoir, controlling means adapted when actuated to cause actuation of said measuring and delivering means and popping means, and independent means for stopping the operation of said measuring and delivery and popping means.

10. Apparatus of the class described, comprising a reservoir, popping means, an electric motor for operating the same, means for delivering a charge of popped corn from said reservoir, an electric motor for operating the same, independent electric circuits for said motors, means for closing the circuit to said delivering motor, and means actuated by the delivery means for closing the circuit to the popping motor.

11. Apparatus of the class described, comprising a reservoir, popping means, an electric motor for operating the same, means for delivering a charge of popped corn from said reservoir, an electric motor for operating the same, independent circuits for said motors, and switch mechanism included in said popping motor circuit, and controlled by the delivery motor circuit.

12. Apparatus of the class described, comprising a reservoir, popping means, an electric motor for operating the same, means for delivering a charge of popped corn from said reservoir, an electric motor for operating the same, independent circuits for said motors, switch mechanism in said popping circuit, said switch mechanism being controlled by the delivery motor circuit and being constructed and arranged to cause operation of the popping motor for a sufficient period to replace popped corn withdrawn from the reservoir by a number of operations of the delivery motor.

In testimony whereof I affix my signature.

WILLIAM D. ROOT.