Dec. 23, 1958

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PEANUT SHELLING MACHINE

Filed April 23, 1957

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The present invention relates to machines for the shelling of peanuts, and, more particularly, has reference to means whereby the machine can be readily and easily adjusted to compensate for the size of the nuts to be shelled.

This invention constitutes an improvement over the peanut shelling machine disclosed in the prior U. S. Patent No. 2,672,901, issued March 23, 1954.

Heretofore, it has been a serious problem in the art to adapt the machine to the size of peanut to be shelled, and the customary procedure is to adjust the position of the rotor or the rotatable member carrying the knives relative to the grate or basket. This is a laborious and time consuming operation which materially reduces the output of the plant and, in addition, the operation is an expensive one.

Accordingly, the salient object of the present invention is to overcome the drawbacks currently present in the art, and these ends are accomplished by the provision of means whereby the rotor is mounted in the machine frame in a stationary or non-adjustable position, and the gap or space between the rotor and the grate or basket is adjustable to the desired degree by varying the position of the grate or the basket relative to the rotor thereby reducing to a minimum the time required for the change-over as well as the costs of effecting such change-over.

A study of the following description and accompanying drawings will disclose further objects and advantages of the invention which will be fully understood by a person skilled in the art.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application wherein like reference numerals denote the same or similar parts in the several views and in which:

Fig. 1 is an end elevational view of the shelling machine;

Fig. 2 is a perspective view, partly broken away, of the machine;

Fig. 3 is a perspective view of the machine with the grate or basket removed;

Fig. 4 is a perspective view of the machine showing further details;

Fig. 5 is an elevational side view of the expanders and supporting mechanism;

Fig. 6 is a longitudinal sectional view of an expander taken on the line 6—6 of Fig. 5 in the direction of the arrows;

Fig. 7 is a longitudinal sectional view of the expander mechanism taken on the line 7—7 of Fig. 5 in the direction of the arrows;

Fig. 8 is a longitudinal sectional view of an expander taken on the line 8—8 of Fig. 5 in the direction of the arrows;

Fig. 9 is a cross-sectional view of the basket showing one set of end expanders; and

Fig. 10 is a perspective view of a portion of the basket structure.

Referring to the drawings, the numeral 1 denotes the framework of the machine and includes legs, side members and end members together with suitable bracing means, with such framework preferably being in the form of angle irons of U-shape and right angle members. A sheet metal casing 2, Figs. 1 and 2, is mounted and secured on the framework 1, and a basket 3 extends longitudinally of the framework. Angularly disposed guide chutes 4 and 5, Fig. 2, serve to guide the peanuts from the conveyor (not shown) into the basket 3.

At each end of the framework there is located a drum expander in the form of a drum assembly casting with each drum having an aperture 7 centrally located therein for the reception of the axle of the rotor or cutter bar reed (not shown). Mounted within each drum unit is a multiple scroll cam 8, Figs. 3 and 5, which functions to actuate expanders 9 and 10, with expanders 9 operating from the inside portion of the cam 8 and expanders 16 from the outside portion of the cam 8, as will be more fully described.

Each drum 6 is secured to one of the end braces of the machine framework by bolts 61 passing through apertures 62 in the drum, Figs. 3 and 9. Each of the expanders 9 and 19 is mounted for radial movement and includes a head portion 9′, 10′ and a shank portion 9″ and 10″. As best seen in Fig. 5, the expanders are arranged about the drum, and are preferably eight expanders. An annular coil spring 11, Figs. 3 and 5, cooperates with the shanks of the expanders 9 and 10 to normally maintain the expanders against the scroll cam 8. The expanders 9 and 10 bear against the inside surface of the basket 3 at each end thereof throughout the entire circumferential extent of the basket 3, and each expander is made of metal of such gauge that it can be distorted, the outward radial movement of the expanders 9 and 10 will move the basket outwardly an equal extent throughout its peripheral extent thereby changing the distance between the aperture for the cutter bar reed (not shown) and, as a consequence, changing the distance between the periphery of the reel and the inside of the basket.

Referring to Fig. 3, the numeral 12 indicates a lever serving to effect a change in the diameter of the basket, and the lower rear end of the lever is attached to a shaft 11 which extends longitudinally of the machine and is suitably journaled in the framework at 16 and 17. A toothed sector 14 is secured to the shaft 11, and a latch 15 cooperates with the teeth of the sector 14 to lock the lever 12 as well as a lever 13 in the desired position. The latch 15 can be withdrawn from between adjacent teeth by moving a pivoted grip device 16 toward the lever 12 which moves a connecting rod 17 upwardly against the action of a spring 18 which latter functions to return the latch 15 to the locking position when the grip 16 is released.

The lever 13 connected to the shaft 11 is pivotally connected at 19 to one end of a rod 21 which latter at its other end is pivotally connected to an arm 22, by pivot 23, secured to the ratchet type cam 8, Fig. 3. Hence, it will be appreciated that movement of the handle bar or lever 12 will rotate the shaft 11 and, as a consequence, move or adjust the cams 8. To prevent the cam 8 from changing their positions, there is provided a friction locking element 24 secured at 24′ and carried by a bar 25 pivoted to the framework on a spacer 26 as at 27. A spring 28 coacts with the locking element 24 to return the same to the locking position.

Referring to Fig. 3, it will be seen that an arm or lever 29 is bolted to the other end of the shaft 11 at 30.
A rod 31 is pivoted to the upper end of the lever 29 at 32 with the free end of the rod pivoted at 33 to a lever 34. The basket 3 is carried in a manner similar to the lever 22, so that the cans associated with the drum at the other end of the machine will move simultaneously when the lever 12 is actuated.

To lock and release the friction locking element 24, a lever 23 is provided, guided in a bracket 35 carried by the framework and a spring 37 operatively connected with the lever and the friction locking element 24 serves to maintain tension on the locking element when the lever 23 is disposed in the release position.

There is further provided means to fasten or secure the basket 3 to the respective end drums 6 and, in this connection, attention is directed to Fig. 4. It will be noted that a lever 33 is provided with a toolshoef section 39 at its lower end, and the assembly is carried by a crankshaft 40 rotatably mounted in the legs of the framework along one side of the machine. A lever 41 is pivoted at 42 to a connecting rod 43 which extends transversely of the machine and which, in turn, is pivoted at 44 to an arm 45 secured to a second crankshaft 46 extending longitudinally along the opposite side of the machine.

A plurality of spaced arms 47, 48 and 49 are interposed between the crankshaft 40 and the upper edge of the basket 3, and a bar 50 suitably secured to the respective arms maintains the same in proper spaced relationship. It will further be seen that arms 51 and 52 are positioned on the upper edge of the basket and the crankshaft 46 with a bar 53 attached to the arms 51 and 52 to maintain such arms in the proper relationship. Hence, it will be seen that rotation of the respective crankshafts 40 and 46 will move the arms 47, 48, 49, 51 and 52 and thus fasten and secure the basket 3 about the drums 6 at the ends of the machine.

A release grip member 54 is pivoted to the lever 38 and actuates a rod 55 which carries a latch (not shown) at its lower end for cooperation with the teeth of the sector 39 to lock the lever 38 in the desired position and a spring 56 returns the latch to the locking position when the grip member 54 is released.

A bar 57 is pivoted at 59 on a spacer element 58 carried by one of the legs of the frame, and a friction lock 60 on the bar 57 cooperates with the rod 43 to prevent displacement of the rod and thereby prevent the basket 3 from being dislodged from its adjusted position. A lever 61 is mounted in a bracket 62 on one of the legs and functions to lock and release the friction lock 60. A spring 63 associated with the lever 61 and the lock 60 will maintain tension on the lock 60 when the lock is in the released position. Also, a spring 64 operatively connected with the friction lock 63 will return the lock to the locking position.

In Fig. 1 it will be seen that a lever 65 carries a plate segment 66 at the lower end; such elements are carried by a shaft 67, as seen in Fig. 2, and arms 68 are fixed to the shaft 67. A sliding door, plate closure or shutter 69 cooperates with the open upper end of the basket and bolts or other securing means 69 hold the door in position to slide on the top of the arms 47, 48 and 49. The plate closure 63 is formed with apertures 70 through which project extensions of the levers 68.

A bolt 71 secures the lever 65 in position on the plate 66 and aperture 72 in the plate permits the bolt 71 to be engaged in the proper aperture to position the lever 65.

In Fig. 1 the legends U—V, W—X and Y—Z, together with the arrows, indicate the direction of movement of the levers 38, 12 and 65, respectively, while the legend S—T with arrows in Fig. 2 denotes the direction of movement of the levers 63 and 65.

It is believed clear from the foregoing that there is provided a plurality of means easily accessible to the operator whereby the diameter of the end drums supporting the basket 3 can be enlarged or reduced within certain limits to adjust the position of the basket relative to the rotor or cutter bar reel to compensate for the particular size of peanuts being shelled, and the basket securing means to prevent the displacement of such means after the desired adjustments have been made. Furthermore, there is provided a minimum of control members for effecting the required adjustments, and all of the control members are in the nature of levers mounted at one end of the machine so that a single operator can effect the desired adjustments without the necessity of moving all around the machine.

In connection with the rotor or cutter bar reel, this assembly can comprise a structure of the type set forth in Patent No. 2,672,931, issued March 23, 1954, to Lawrence Pearman et al., although, of course, it is obvious that any type of reel can be employed. In other words, the basket and its operating means can be incorporated with existing types of shells with a minimum of modification of such shells. The entire assembly is quite rugged and relatively simpe as to structural details and operation.

The machine fully eliminates the prior practice of removing the cutter bar reel, adjusting individually each bar of the reel and remounting the reel in the framework of the basket, with the present invention, the spacing desired between the basket and the reel is determined, and the operator then merely manipulates the proper levers to position the basket to the correct spacing, secure the basket to the drums, lock the basket in position, and the machine is ready for operation. After the peanuts have been introduced into the basket, the closure plate is moved to close the entrance opening, and rotation of the rotor is effected. As a matter of fact, in addition to the closure plate being used to close the entrance opening, it is more often used to regulate the flow of the products into the basket and rotary shears.

Referring to Figs. 5 to 8, the cam 8 has double ratchet cans as the outer cans 90 for the expanders 10 and the inner cans 91 for the expanders 9 with a groove 92 therebetween. The expanders are slidable radially in slots 93 arranged radially in each drum 6 with eight such slots or grooves 93 for the eight expanders. The spring 11, as clearly shown in Fig. 5, tends to pull the expanders radially inwardly to maintain the expanders on their respective cans at all times. The outer faces 94 of the expanders contact the internal surface of the shell metal basket 3 at the ends thereof and this basket 3 has elongated holes 95 therein through which the shelled peanuts and broken shells pass after having been cracked open by the revolving breaker reel, not shown. As shown in Fig. 8, the tapped hole 94, of which there are two receive the bolts 23, Fig. 3, to secure the arm 22 to the cam 8.

The actuation of the handle lever 12, Fig. 3, will result in the adjustment of the expanders to thus adjust the specific diameter of the basket or perforated curved plate 3.

The handle lever 65, Fig. 2, operates the closure plate 68 and the handle lever 35, Fig. 4, operates to tighten and hold the basket 3 on its drums. Fig. 1 shows all three handle levers in such a position so that an operator may make the desired adjustments from one position of the machine.

Figs. 7 and 9 show spaced bevel portions 58 spaced around each drum 6 between each adjacent pair of expanders.

The expanders are beveled so as to allow the expanders to cleanse themselves automatically of the products and thereby prevent the clogging of the expanders.

The present invention is not to be confined to any strict conformity with the showings in the drawings, and changes or modifications may be made therein in so far as such changes or modifications mark no material de
patent from the salient features of the invention as set forth and defined in the appended claims. It is, of course, understood that in referring to peanuts throughout the specification and claims that the machine is applicable to be used for shelling all kinds and types of nuts and beans. The machine is thus constructed to shell all nuts of similar character to peanuts as well as walnuts, beans in general, and peas. In fact, the machine is applicable for shelling nuts and vegetables including hard and soft shells.

I claim:

1. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, and operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel.

2. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, and actuating means connected to the operating means to move the same, and a friction lock cooperating with the basket securing means to maintain the securing means in its adjusted position.

3. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, and spring means coacting with the radially movable members to maintain said members on the cam means.

4. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, and spring means coacting with the radially movable members to maintain said members on the cam means.

5. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, and a friction lock cooperating with said operating means to hold said operating means in its adjusted position.

6. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, and means to secure the basket to the drums after the position of the basket relative to the cutter bar reel has been adjusted.

7. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, and means to secure the basket to the drums after the position of the basket relative to the cutter bar reel has been adjusted.

8. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, and means to secure the basket to the drums after the position of the basket relative to the cutter bar reel has been adjusted.

9. A peanut shelling machine comprising a framework, a drum fixed at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket having openings therein extending longitudinally of the framework and mounted on the drums, means forming an opening in the top of the basket for the introduction of peanuts into the basket, a plurality of radially movable expanders carried by each drum and bearing against the basket, cam means movably mounted on each drum, spring means operatively connected to the radially movable members to maintain the members against the cam means, an operating rod connected to each of said cam means, a shaft interconnecting the rods, handle means connected to the shaft whereby manipulation of the handle means turns the shaft and simultaneously moves the cam means to move the radially movable members thereby changing the position of the basket relative to the support for the cutter bar reel shaft, and friction lock means cooperating with the operating rod to hold said rod in its adjusted position.

10. A peanut shelling machine comprising a framework, a drum fixed at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket having openings therein extending longitudinally of the framework and mounted on the drums, means forming an opening in the top of the basket for the introduction of peanuts into the basket, a plurality of radially movable members to maintain the members against the cam means, an operating rod connected to each of said cam means, a shaft interconnecting the rods, handle means connected to the shaft whereby manipulation of the handle means turns the shaft and simultaneously moves the cam means to move the radially movable members thereby changing the position of the basket relative to the support for the cutter bar reel shaft, and friction lock means cooperating with the operating rod to hold said rod in its adjusted position.
movable expanders carried by each drum and bearing against the basket, cam means movably mounted on each
10 drum, spring means operatively connected to the radially movable members to maintain the members against the
15 cam means, an operating rod connected to each of said
cam means, a shaft interconnecting the rods, handle means
20 connected to the shaft whereby manipulation of the handle
means turns the shaft and simultaneously moves the cam
means. The cam means move the radially movable members thereby changing the position of the basket relative to the support for the cutter bar reel shaft, friction lock means engaging the operating rod to hold said rod in its adjusted position, and means connected to the framework to release said friction lock means.

10. A peanut shelling machine comprising a framework, a drum fixed at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket having openings therein extending longitudinally of the framework and mounted on the drums, means forming an opening in the top of the basket for the introduction of peanuts into the basket, a plurality of radially movable expanders carried by each drum and bearing against the basket, cam means movably mounted on each drum, spring means operatively connected to the radially movable members to maintain the members against the cam means, an operating rod connected to each of said cam means, a shaft interconnecting the rods, handle means connected to the shaft whereby manipulation of the handle means turns the shaft and simultaneously moves the cam means to move the radially movable members thereby changing the position of the basket relative to the support for the cutter bar reel shaft, friction lock means engaging the operating rod to hold said rod in its adjusted position, a crankshaft mounted along each side of the machine framework, spaced arms carried by each crankshaft with the arms engageable with the top edges of the basket, handle means connected to one of the crankshafts to turn the same, connecting rod means connected to the handle means and the other crankshaft whereby movement of the handle means simultaneously moves the arms into engagement with the basket to secure the basket to the drums, and friction lock means cooperating with the connecting rod means to hold said connecting rod means in its adjusted position, the cam means being in the form of a double scroll cam.

12. A peanut shelling machine according to claim 10, wherein a plate is mounted for sliding movement relative to the opening in the top of the basket, handle means is pivoted to the framework and linkage interconnects the handle means and the plate whereby manipulation of the handle means slides the plate relative to the opening.

13. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, said basket having an upper open position with a bent edge along each side of the opening, and means engageable with said bent edges to force the sheet metal basket tightly on the cam means and the bent edges of said connecting rod means.

14. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, said basket having an upper open position with a bent edge along each side of the opening, and means engageable with said bent edges to force the sheet metal basket tightly on the cam means and the bent edges of said connecting rod means.

15. A peanut shelling machine comprising a framework, a drum mounted at each end of the framework and serving as a support for a cutter bar reel shaft, a sheet metal basket extending longitudinally of the framework and mounted on the drums, radially movable members carried by the said drums and bearing against the internal surface of the basket, cam means operatively associated with the radially movable members, operating means mounted on the framework and connected to the cam means to move such cam means thereby imparting movement to the radially movable members to vary the position of the basket relative to the support for the cutter bar shaft to adjust the sheet metal basket relative to the cutter bar reel, said basket having an upper open position with a bent edge along each side of the opening, means engageable with said bent edges to force the sheet metal basket tightly on the cam means and the bent edges of said connecting rod means.
ing extending longitudinally at the top thereof, means for feeding nuts through the opening in the sheet metal member, cam means mounted adjacent each drum and connected by radially movable members to contact the internal surface of the sheet metal member, and means in the framework operable by a handle member to adjust the cam means to vary the diameter of the sheet metal member by the radial movement of said radially movable members.

17. A nut shelling machine comprising a framework, a drum member mounted at each end of the framework in fixed relation, a cylindrical sheet metal member provided around the drums and having an interrupted opening extending longitudinally at the top thereof, means for feeding nuts through the opening in the sheet metal member, cam means mounted adjacent each drum and connected to contact the internal surface of the sheet metal member, means in the framework operable by a handle member to adjust the cam means to vary the diameter of the sheet metal member, said sheet metal member having a rim along each side of the opening, and means mounted on the framework having an operating handle and connected to the rims of the sheet metal member to tightly clamp the latter around the cam means.

18. A nut shelling machine comprising a framework, a drum member mounted at each end of the framework in fixed relation, a cylindrical sheet metal member provided around the drums and having an interrupted opening extending longitudinally at the top thereof, means for feeding nuts through the opening in the sheet metal member, cam means mounted adjacent each drum and connected to contact the internal surface of the sheet metal member, means in the framework operable by a handle member to adjust the cam means to vary the diameter of the sheet metal member, said sheet metal member having a rim along each side of the opening, means mounted on the framework having an operating handle and connected to the rims of the sheet metal member to tightly clamp the latter around the cam means, a closure member for the opening in the sheet metal member, means in the framework operable by a handle member to adjust the cam means to vary the diameter of the sheet metal member, said sheet metal member having a rim along each side of the opening, means mounted on the framework having an operating handle and connected to the rims of the sheet metal member to tightly clamp the latter around the cam means, a closure member for the opening in the sheet metal member.

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