June 5, 1923. 1,457,417

L. A. BABCOCK

APPARATUS FOR PROCESSING PUMPKIN AND LIKE MATERIAL

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Fig. 1.

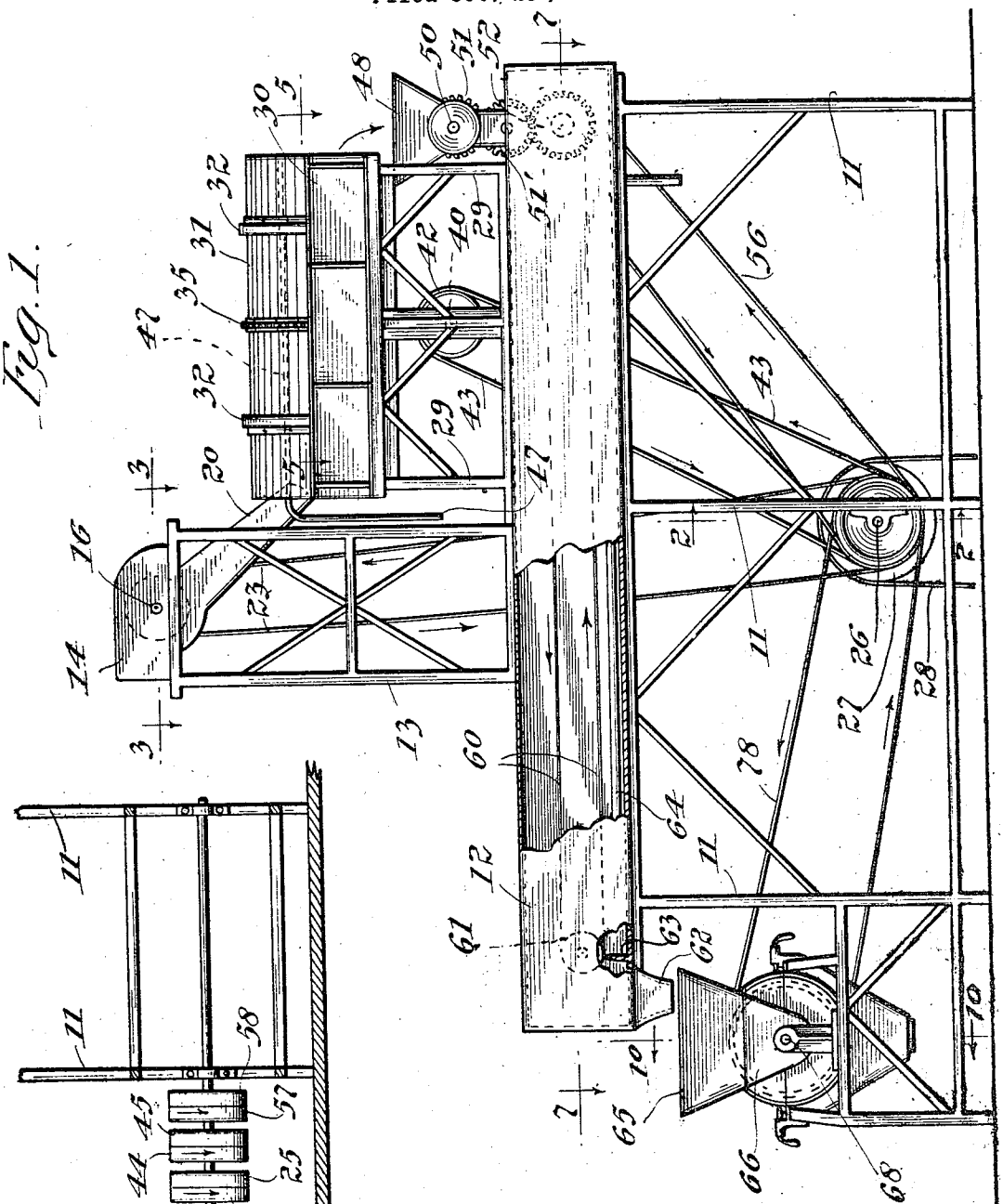


Fig. 2.

Inventor
Leland A. Babcock
By Jones, Addington, Ames & Seibold
Attys

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L. A. BABCOCK

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Fig. 3.

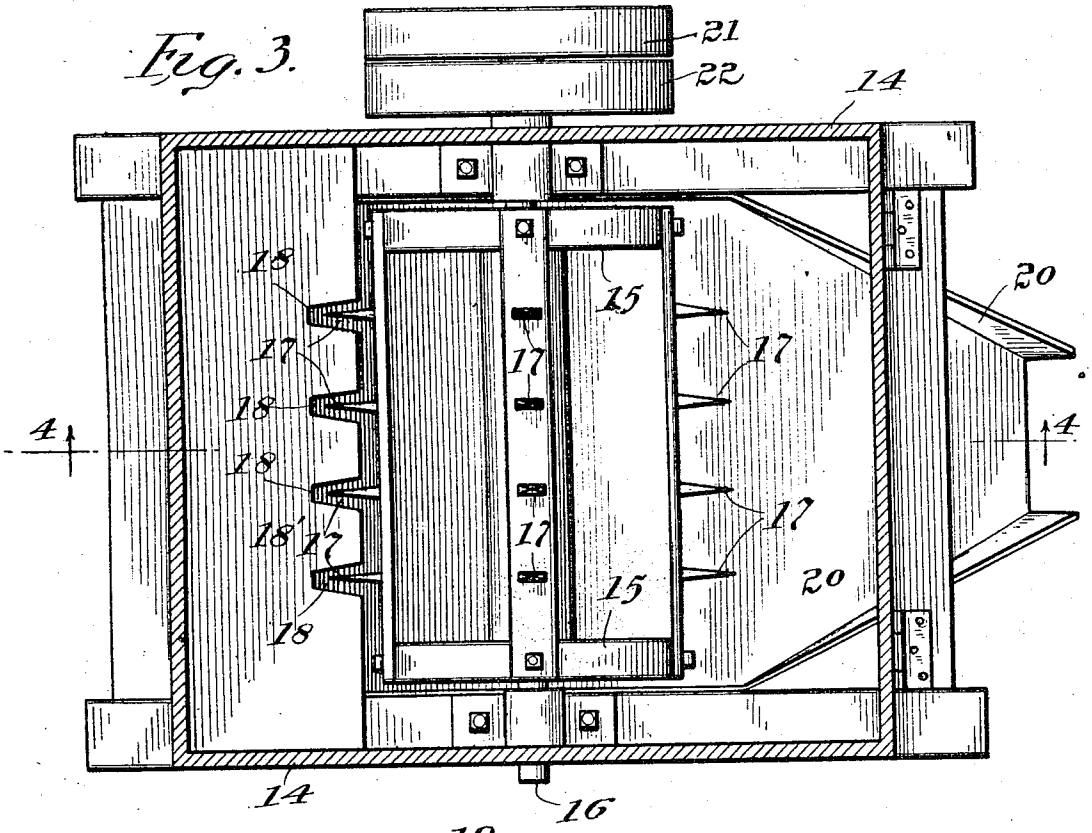
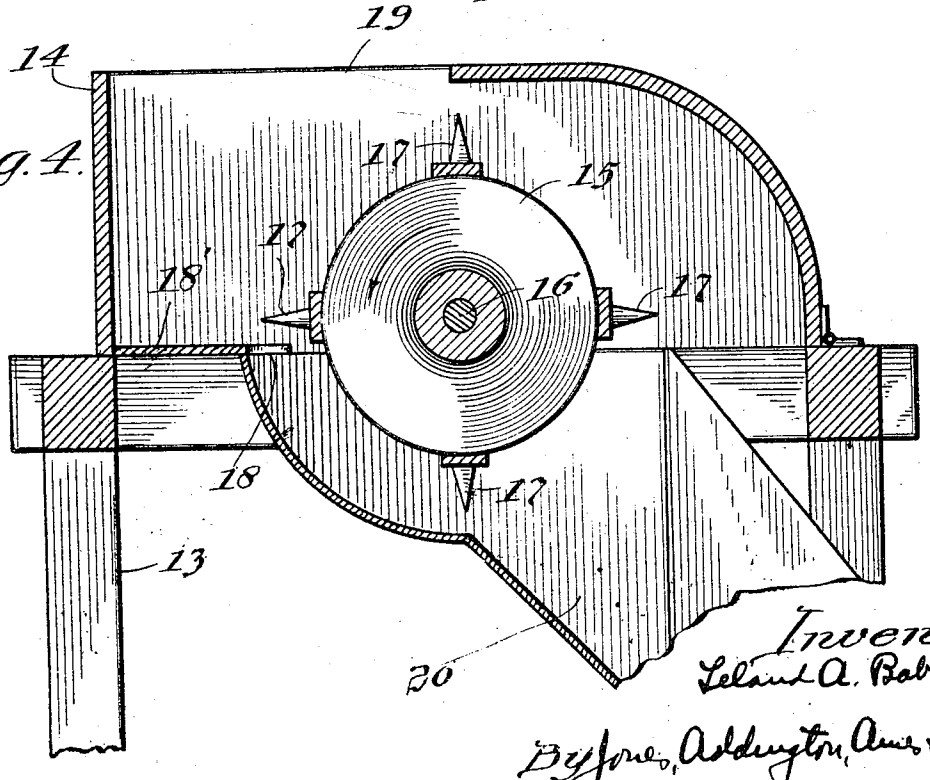


Fig. 4.



Inventor
Leland A. Babcock

By Jones, Addington, Ames & Seibold
Attys.

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L. A. BABCOCK

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Fig. 5.

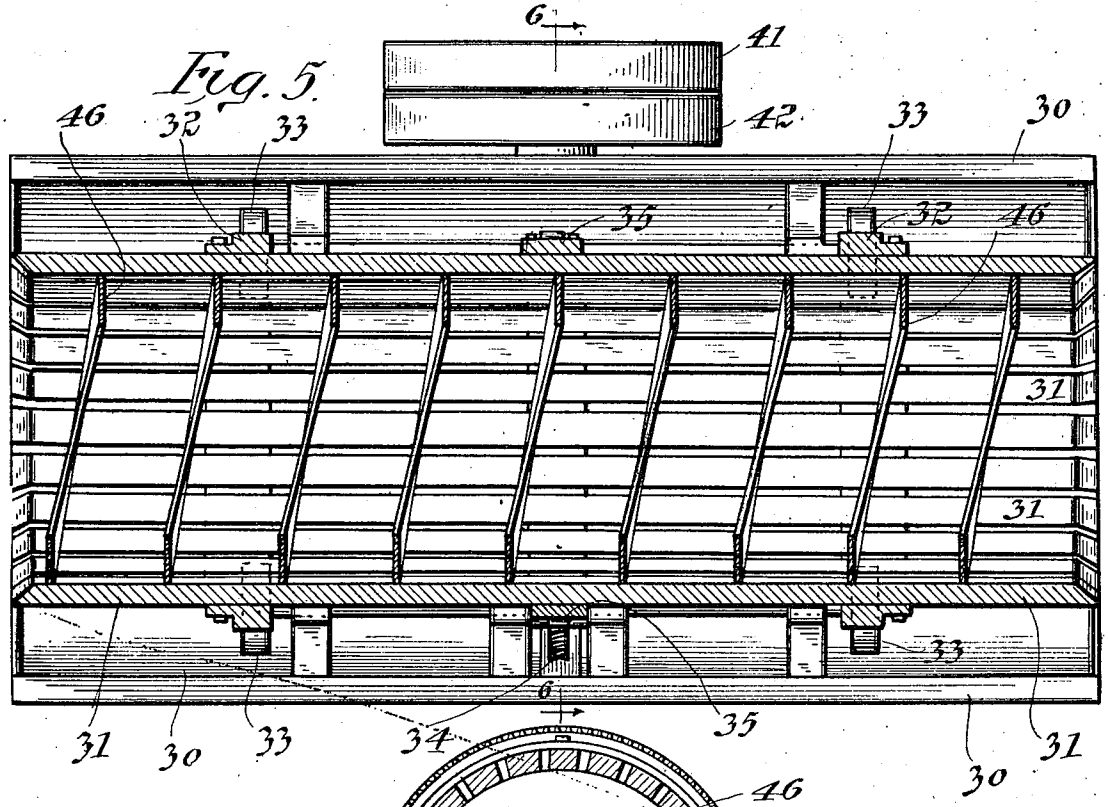
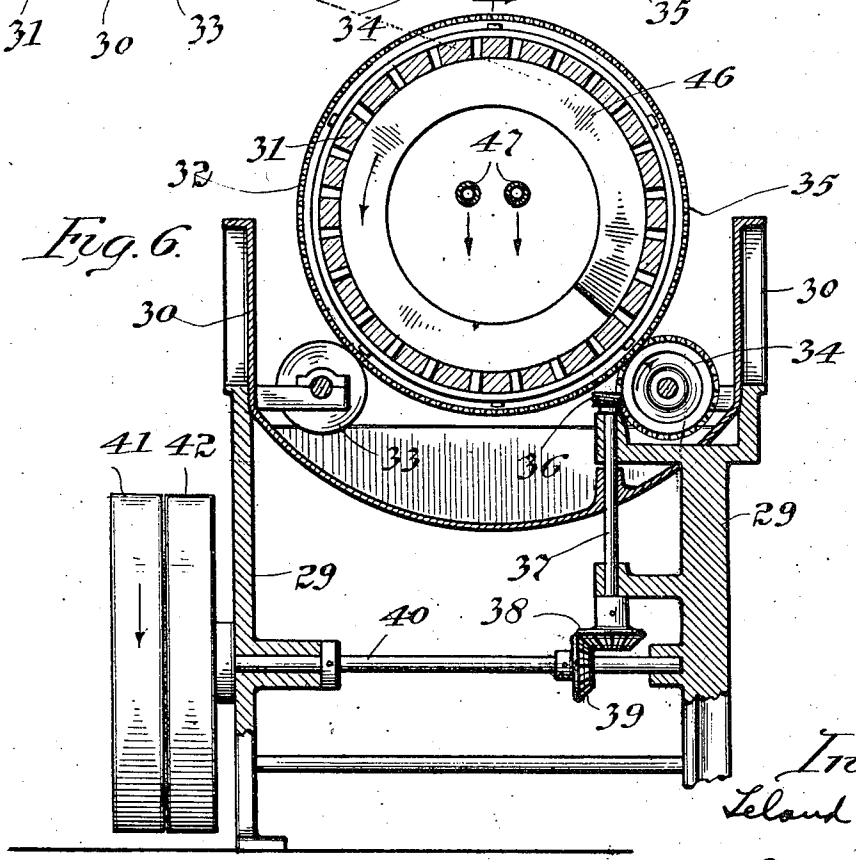


Fig. 6.



Inventor
Leland A. Babcock

By Jones, Addington, Ames & Seibold
Attys.

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L. A. BABCOCK

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Fig. 7.

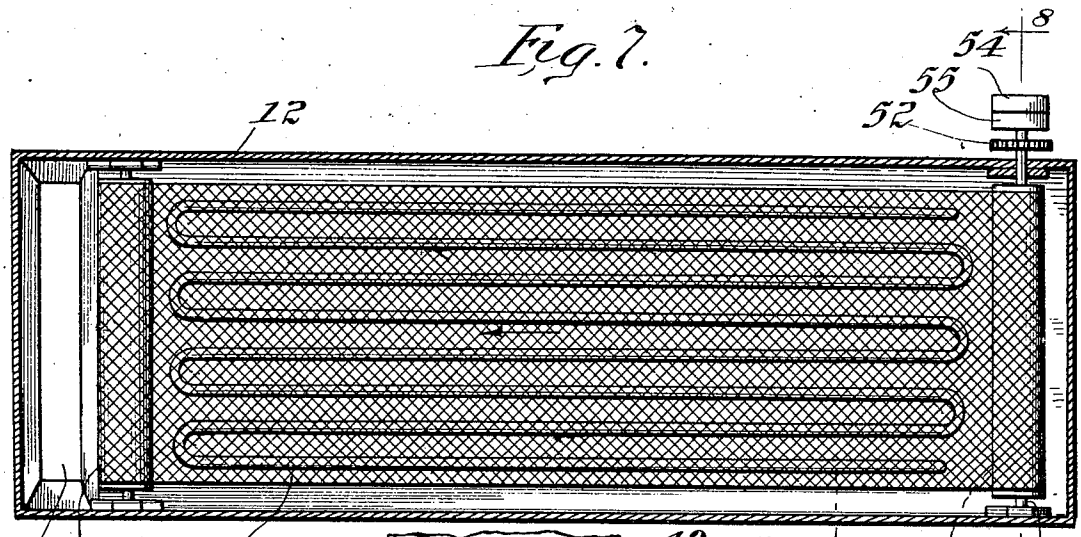


Fig. 8.

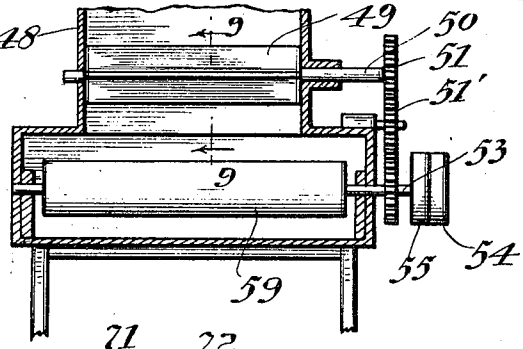
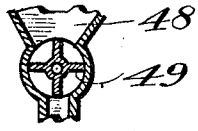


Fig. 9.



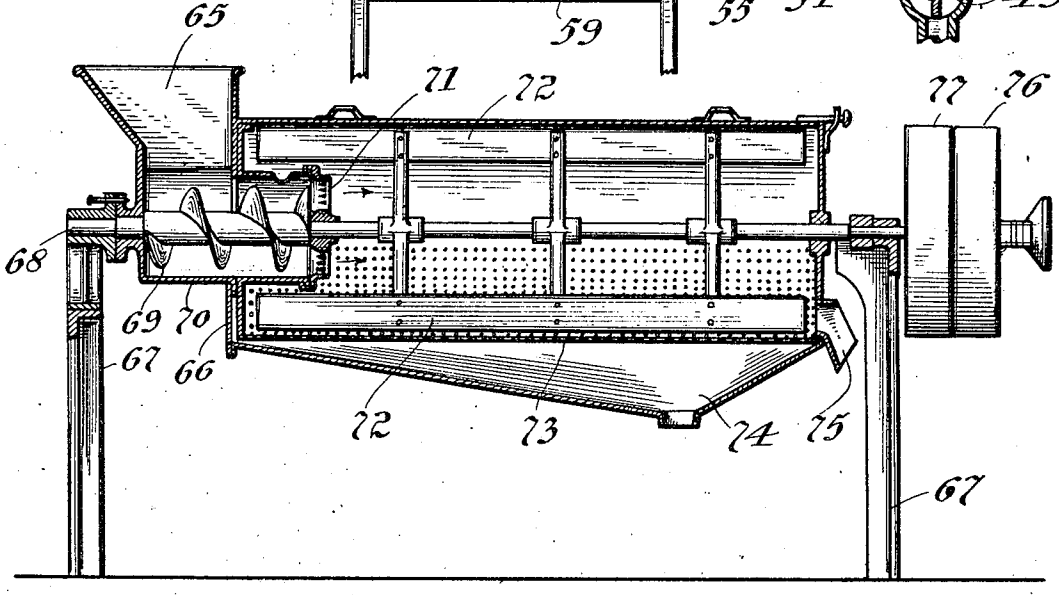


Fig. 10.

Inventor
Leland A. Babcock
By Jones, Addington, Ames & Seibold
Attys.

Patented June 5, 1923. 1,457,417

UNITED STATES PATENT OFFICE.

LELAND A. BABCOCK, OF CHICAGO, ILLINOIS, ASSIGNOR TO SPRAGUE CANNING MACHINERY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

APPARATUS FOR PROCESSING PUMPKIN AND LIKE MATERIAL.

Application filed October 29, 1919. Serial No. 334,292.

To all whom it may concern:

Be it known that I, LELAND A. BABCOCK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Apparatus for Processing Pumpkin and like Material, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to a new and improved process for treating pumpkin and the like, and to apparatus for accomplishing the processing.

The object of my invention is the production of a process and apparatus of the character mentioned whereby pumpkin and like material may be treated preparatory to canning of the same with great expedition and in such a manner as to produce a finished product which will be of the desired consistency and which will contain a maximum amount of the natural juices of the material treated.

A further object is the production of processing apparatus as mentioned which will be of durable and economical construction and highly efficient in use.

Other objects will appear hereinafter.

With these objects in view, the invention consists in the process and in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which—

Fig. 1 is a side elevation of a processing apparatus embodying the invention, portions thereof being broken away to disclose underlying parts;

Fig. 2 is a detail section taken on line 2—2 of Fig. 1;

Fig. 3 is an enlarged horizontal section taken on line 3—3 of Fig. 1;

Fig. 4 is a vertical section taken on line 4—4 of Fig. 3;

Fig. 5 is an enlarged horizontal section taken on line 5—5 of Fig. 1;

Fig. 6 is a vertical section taken on line 6—6 of Fig. 5;

Fig. 7 is a horizontal section taken on line 7—7 of Fig. 1;

Fig. 8 is a vertical section taken on line 8—8 of Fig. 7;

Fig. 9 is a detail section taken on line 9—9 of Fig. 8; and

Fig. 10 is an enlarged section taken on line 10—10 of Fig. 1.

The preferred form of apparatus for practicing my process comprises, as illustrated in the drawings, a supporting framework 11 upon which is mounted a horizontally disposed cooker 12. Upon said cooker 12 is erected a supplemental framework 13 for the support of a cutter 14. Said cutter, as clearly illustrated in Figs. 3 and 4, comprises a suitable housing in which is mounted a rotary cutter 15 carried by a shaft 16 having suitable bearings in said housing. Said cutter 15 is provided with a plurality of double edged pointed blades 17 which are adapted to pass through spaces or slots 18 formed in a stationary plate 18′ arranged in said cutter housing.

The pumpkin or other material to be processed is admitted to said cutter through an inlet opening 19 where the same is engaged by the cutter blades 17, said blades cooperating with the plate 18′ serving to cut up or initially disentegrate the pumpkin. The pieces of pumpkin after passing the rotary cutter pass downwardly into a discharge chute 20.

To effect driving of said cutting element 15, the shaft 16 is provided with tight and loose pulleys 21 and 22 respectively, which are connected through the medium of an endless belt 23 with corresponding tight and loose pulleys 24 and 25 respectively provided upon a drive shaft 26 having suitable bearings in the framework 11. Said drive shaft, as clearly seen in Fig. 2, is provided with a pulley 27 adapted to be driven from any suitable source of power through the medium of a belt 28.

The material discharged into the chute 20 is deposited thereby into an adjacently positioned washer. This washer, as clearly seen in Figs. 1, 5 and 6, comprises a base 29 which supports a trough or a channel like body 30. In the trough 30 is rotatably mounted a drum 31 formed of a plurality of

spaced longitudinal extending slats, said drum being open at both ends. Surrounding said drum are annular rails 32 which engage with supporting rollers 33 suitably mounted in the trough 30.

The drum is rotated by means of a thin spur gear 34 which meshes with an annular rack 35 surrounding said drum, as clearly seen in Fig. 6. The gear 34 also meshes with a worm 36 provided upon a shaft 37 suitably mounted in bearings provided in frame 29. The shaft 37 is provided at its lower end with a bevel gear 38 which meshes with a bevel gear 39 on a transversely extending shaft 40 also mounted in bearings provided in framework 29.

Upon shaft 40 are provided conventional tight and loose pulleys 41 and 42 respectively, adapted for operative connection, through the medium of an endless belt 43, with tight and loose pulleys 44 and 45 respectively provided on shaft 26 as seen in Fig. 2.

Within the drum 31 is provided a helical conveyor 46, the arrangement being such that, during rotation of said drum, the material introduced thereinto from the chute 20 will be caused by said helical conveyor to be conveyed along the drum the entire length thereof and finally discharged from the opposite end of the drum.

Arranged centrally in the drum is a pair of coextensive water supply pipes 47 adapted to direct sprays of water downwardly toward the material contained in the drum, the result being that, in the operation of the washer, the material in passing therethrough will be thoroughly washed by the sprays of water directed against the same by pipes 47, foreign matter being thus removed from the material and forced through the openings between the slats of the drum, such foreign matter being eventually deposited into the bottom of trough 30. Thus the material which is passed through the washer is subjected to a thorough cleansing, all foreign and waste matter being removed therefrom, so that only the clean pieces of pumpkin, or other material acted upon, will be discharged from the discharge end of the drum.

The material thus discharged from the discharge end of the drum 31 drops into the inlet hopper 48 of the cooker 12. Discharge from said hopper into the cooker body is controlled by a flanged rotary valve 49 as seen in Fig. 9, said valve being adapted to prevent the escape of any of the steam or heated gases of the cooker through the inlet of the same.

The valve 49 is carried by a shaft 50 on which is provided a gear 51, said gear meshing with an idler gear 51′ which, in turn meshes with a third gear 52, as clearly seen in Figs. 1 and 8. The gear 52 is mounted upon a shaft 53 on which are provided conventional tight and loose pulleys 54 and 55 respectively which are connected, through the medium of an endless belt 56, with corresponding tight and loose pulleys 57 and 58 respectively provided upon the drive shaft 26 as seen in Fig. 2.

The material deposited into hopper 48 after passing the valve 49 passes into one end of the body or housing of the cooker 12. The cooker body or housing is of flat substantially rectangular form and below the inlet end thereof is arranged a roller 59 carried by the shaft 53 as clearly seen in Figs. 7 and 8. Around said roller 59 travels an endless foraminated conveyor or support 60, in the form preferably of a woven wire belt. Said conveyor also travels around a roller 61 suitably mounted in the opposite end of said cooker housing, as clearly seen in Figs. 1 and 7. The arrangement is such that the material supplied to the cooker as above described will be deposited upon the upper side of the conveyor 60 and conveyed thereby through the cooker housing in the direction indicated by the upper arrow in Fig. 1, and finally deposited into the outlet opening 62 provided at the opposite end of said housing.

A transversely extending vertical flange or wall 63 is provided adjacent the outlet opening 62, as clearly seen in Fig. 1, which results in the formation of a shallow pan or compartment in the bottom of the cooker housing in which is arranged a heating coil 64. Said coil 64 communicates with any suitable source of steam or other heated fluid supply. In the operation of the device, said coil is immersed in water which is of a depth to just cover the coil, the arrangement being such that steam or heated vapor will thus be formed which will fill the cooker housing and thus serve to cook the pieces of pumpkin or other material which may be carried on conveyor 60. The cooker is of such length and the conveyor is driven at such a speed that sufficient time will elapse in the conveyance of the material through the cooker as to afford the desired cooking of the material before the same is discharged from the conveyor into the discharge passage 62.

The discharge passage 62 directs the material into the inlet hopper 65 of a pulper 66 where the cooked materials are further disintegrated or pulped, to reduce the same to the desired consistency for canning or preserving.

This pulper, as seen in Fig. 10, comprises a suitable base 67 in which is mounted a shaft 68 carrying at one end a screw conveyor 69 arranged in a housing 70. The hopper 65 communicates with one end of the housing 70, the material introduced into said hopper passing downwardly into one end of said housing 70 and being conveyed therethrough by the screw 69 which forces the same through a cutter head 71 provided at the opposite end of said housing.

In passing through the cutter head 71, the material is cut up into very small particles, these being subsequently caught up by rotary blades 72 carried by the shaft 68 which whirl the same against a screen or strainer 73, the desired product passing through said screen into a collector 74 whence the same is removed for canning purposes. the undesirable hard and waste substances being discharged through a waste passage 75 at the opposite end of the pulper.

The pulper shaft 68 is driven through the medium of tight and loose pulleys 76 and 77 respectively provided thereon which are connected by means of a belt 78 with corresponding tight and loose pulleys 79 and 80 respectively provided upon drive shaft 26 as seen in Fig. 2.

With the construction set forth, it will be seen that an apparatus is provided whereby pumpkin or other similar material may be automatically cut or broken up, and then successively subjected to a washing, cooking and pulping process; the material, in other words, being taken in a raw state and automatically prepared for canning or preservation. With this apparatus and process, the otherwise necessary handling of the material in subjecting the same to the various steps of treatment is eliminated with the result that a corresponding saving in production is also secured.

In passing the pumpkin through the cooker, it will be seen that the pieces of pumpkin are deposited on to the conveyor 60 and conveyed thereby through the steam bath in the cooker housing. By this method of conveyance, the pieces of pumpkin are undisturbed during the cooking operation, each piece lying practically immovable upon the belt as the latter moves through the cooker housing. This being the case, all of the natural highly desirable juices contained in the pieces of pumpkin will be retained and not crushed therefrom as results where the pumpkin is agitated or packed in a retort, processing kettle or similar device during the cooking operation.

This retention of the natural juices in the pieces of pumpkin is further insured by the fact that in the passage of the same through the cooker, a film of water will be formed thereon by reason of the steam bath through which the pumpkin pieces pass, this film of water serving as a sort of seal or coat enclosing the contents of each piece of pumpkin.

Moreover, this process of cooking results in the uniform treatment of cooking of all matter passed therethrough so that each piece of pumpin will be cooked or processed to the same degree as every other piece.

Further advantage of the cooking process employed is to be found in the fact that the cooking is carried on simultaneously with the conveyance of the material from the washer to the pulper so that the cooker serves the double function of a means of subjecting the material to a cooking process and a means of conveying the material from one element of the apparatus to another.

While I have illustrated and described the preferred process and apparatus for carrying my invention into effect, these are capable of variation and modification without departing from the spirit of the invention. I therefore do not wish to be limited to the precise details of construction set forth and the detail steps in the process disclosed, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A mechanism for softening and cooking cut pumpkin, comprising a combined tank and steam chamber, means for heating the water in said tank to cause the generation of steam, a conveyor for carrying the cut pieces of pumpkin through said steam chamber above the water therein to expose the cut pieces to the direct action of steam, and means for feeding the cut pieces of pumpkin into said chamber and onto said conveyor.

2. A mechanism for softening and cooking cut pumpkin, comprising a combined tank and steam chamber, means for heating the water in said tank to cause the generation of steam, a conveyor for carrying the cut pieces of pumpkin through said steam chamber above the water therein to expose the cut pieces to the direct action of steam, and means for feeding the cut pieces of pumpkin into said chamber and onto said conveyor, said conveyor being of the endless belt type having a horizontal run onto which the cut pieces of pumpkin fall.

3. A mechanism for softening and cooking cut pumpkin, comprising a combined tank and steam chamber, means for heating the water in said tank to cause the generation of steam, a conveyor for carrying the cut pieces of pumpkin through said steam chamber above the water therein to expose the cut pieces to the direct action of steam, and means for feeding the cut pieces of pumpkin into said chamber and onto said conveyor, said feeding means comprising means for preventing the escape of steam from said chamber.

In witness whereof, I have hereunto subscribed my name.

LELAND A. BABCOCK.