Sept. 25, 1945. R. PETZOLD 2,385,538

POTATO EXTRUDER

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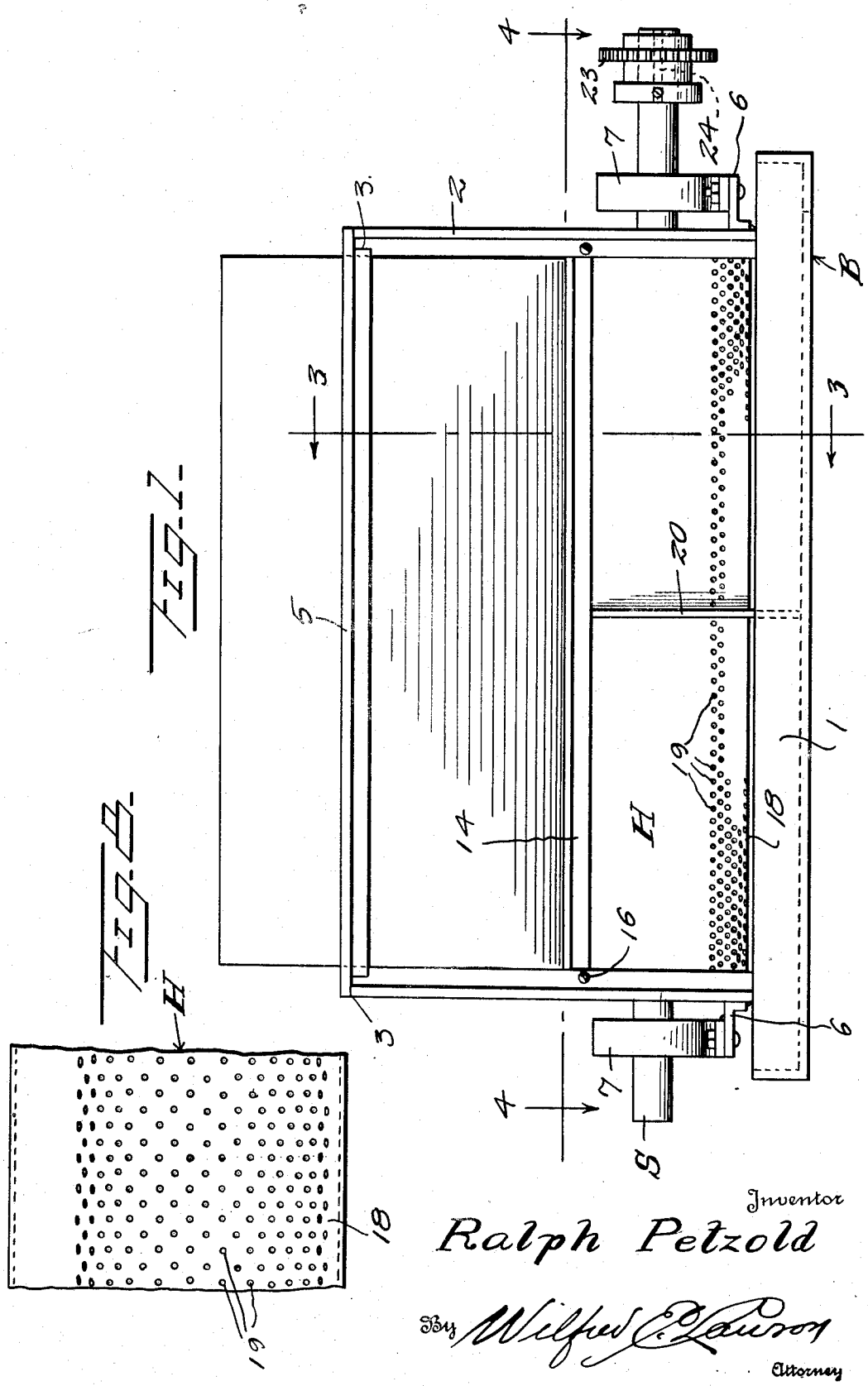


FIG. 1.

FIG. 2.

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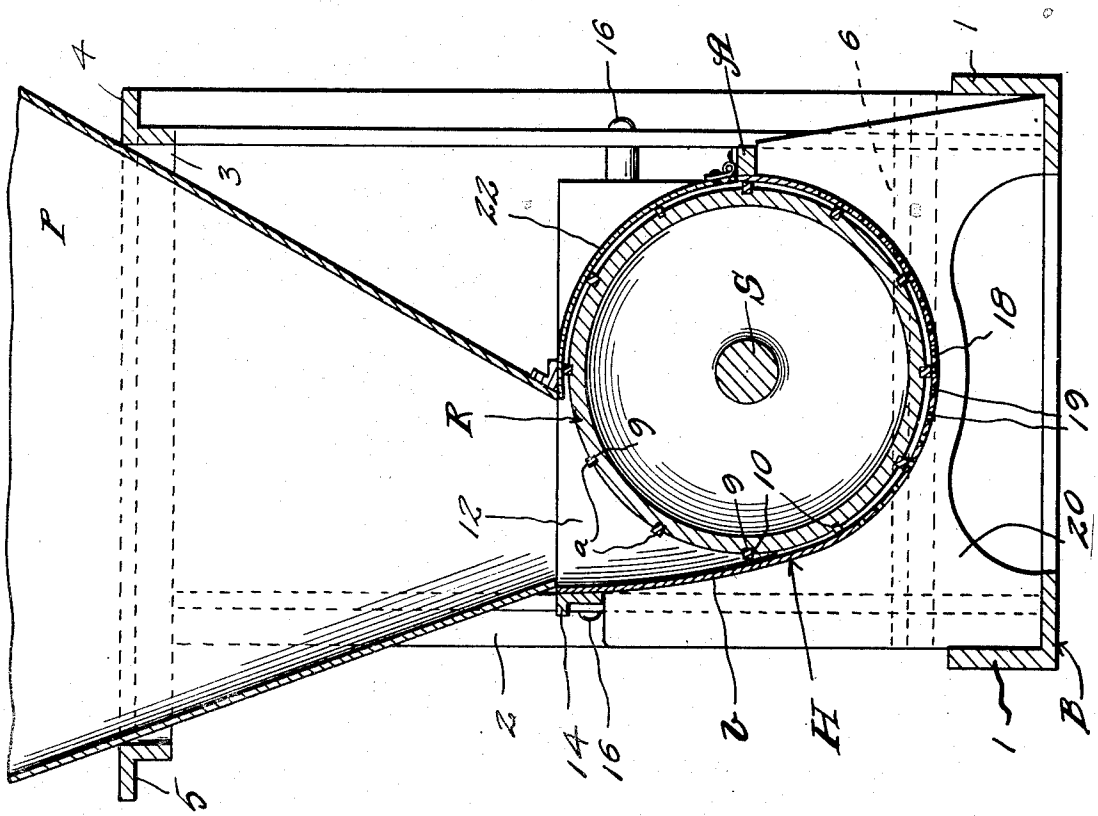


Fig. 3.

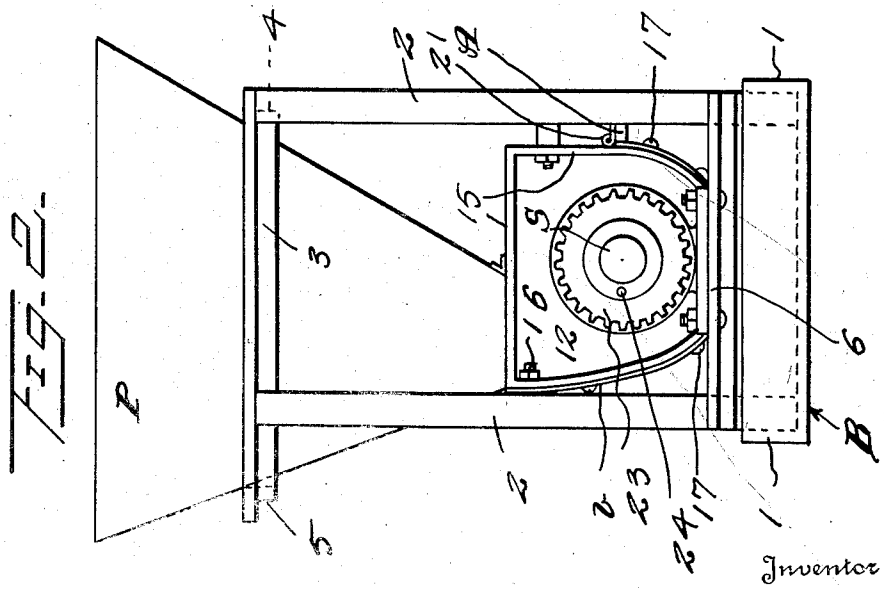


Fig. 2.

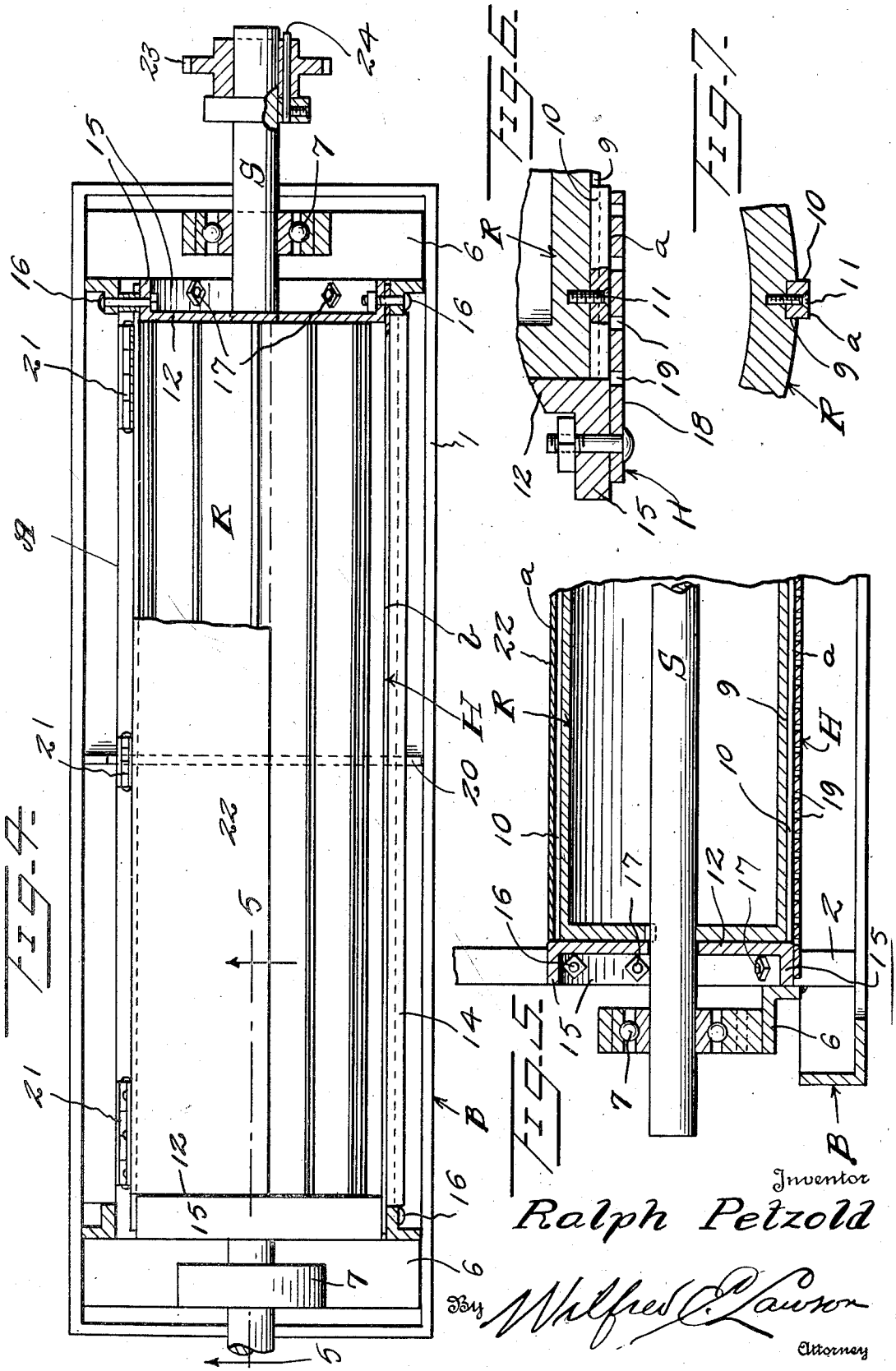
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POTATO EXTRUDER

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POTATO EXTRUDER

Ralph Petzold, Mitchell, Nebr.

Application April 3, 1944, Serial No. 529,286

2 Claims. (Cl. 146—174)

This invention relates to a potato extruder, and it is a particular object of the invention to provide an apparatus of this kind wherein liability of waste is substantially eliminated.

It is also an object of the invention to provide an apparatus of this kind comprising a roller housing or ricer and an associated roller and wherein the roller is provided therealong at desired points spaced circumferentially therearound with outstanding rubber ribs for coaction with the roller housing or ricer.

A still further object of the invention is to provide an apparatus of this kind wherein the roller housing or ricer constitutes a screening element and wherein such element extends around approximately three-fifths of the associated roller and wherein a part of the element is movable toward or from the roller to allow such part to be positioned as close as possible to the roller and also to facilitate cleaning of the apparatus.

An additional object of the invention is to provide an apparatus of this kind comprising a roller and an associated housing or ricer constituting a screening element and wherein such element includes a part movable toward or from the roller and wherein the apparatus also includes a feed hopper which provides means for maintaining the movable part of the screening element in working position.

The invention also contemplates as an object to provide an apparatus of this kind including an extruding roller provided with removable outstanding ribs disposed lengthwise thereof and wherein such ribs extend beyond the periphery of the roller a distance substantially equal to the thickness of the sliced potatoes to be worked and wherein such ribs are of a material width to increase resistance and to retard squeezing of the potatoes thereby.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved potato extruder whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein.

Figure 1 is an elevational view of a potato extruder constructed in accordance with an embodiment of the invention;

Figure 2 is a view in end elevation;

Figure 3 is an enlarged sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 1;

Figure 5 is a fragmentary detail sectional view taken substantially on the line 5—5 of Figure 4;

Figure 6 is an enlarged fragmentary detail sectional view illustrating certain features of the assembly of the housing and the extruder roller;

Figure 7 is a fragmentary transverse sectional view taken through the extruder roller; and

Figure 8 is an enlarged fragmentary sectional view of the housing.

As illustrated in the accompanying drawings, B denotes a rectangular base structure of desired dimensions and the elongated side members 1 thereof in close proximity to their extremities are provided with the upstanding posts 2. The posts 2 at each end are connected by the rigid members 3 which extend a distance beyond one side of the base member B. The posts 2 at one side of the base member B are connected by the rigid member 4 while the extremities of the extended portions of the members 3 are connected by the rigid member 5.

The posts 2 at each end of the base member B are connected by the platforms 6 extending outwardly therefrom and upon each of which platforms at the central portion thereof is mounted a bearing 7 for one end portion of the shaft S.

Mounted on the shaft S for rotation therewith is an extruder roller R of desired radius and which, in the present embodiment of the invention, is of a length substantially coextensive with the distance between the posts 2 at the end portions of the base member B. This roller R is provided at equidistantly spaced points circumferentially therearound with the grooves or channels 9 extending from one end of the roller R to the other and in each of these grooves or channels 9 is removably received the lower portion of a rib 10.

This rib 10 is of substantially the same length as the roller R and in practice it has been found best to have this rib about one-fourth of an inch thick with the groove or channel 9 one-eighth of an inch thick so that when the rib is applied position, it will project about one-eighth of an inch beyond the periphery of the roller R. The outer face of the rib 10 is flat and in practice it has been found that such flat face *a* should be of a width not less than one-fourth of an inch. Each of these ribs 10 is removably held in applied position by the screws 11 or otherwise as may be preferred.

The roller R is positioned within a housing or ricer H and extends from one head 12 to the other of the housing. The housing H has its lower portion in cross section substantially semicircular and on a radius to closely conform to the periphery of the roller R. The upper portion *b* of the housing at one side thereof is outwardly and upwardly extended while the portion of the housing H at the opposite side thereof is cut away above from substantially the horizontal center of the shaft S.

Secured to the housing H along the upper margin of this cut-away portion is a rigid reinforcing strip A which is anchored at its extremities to the post 2 at the adjacent side of the housing, said strip being relatively heavy. The opposite or higher margin of the housing H also has secured therealong a rigid reinforcing strip 14 secured to the posts 2 at the adjacent side of the housing H.

The heads 12, as herein disclosed, have their margins defined by the outstanding flanges 15 which are bolted, as at 16, or otherwise detachably secured to the posts 2 to properly position the housing or ricer H, and suitably held to these flanges 15 by the bolts 17 or the like are the extremities of the bottom wall 18 of the housing H. This bottom wall 18 constitutes a screen element and for such reason said wall is provided in its lower portion and from one end to the other with the minute screening openings 19 through which potatoes or the like being treated are extruded after being crushed by the coaction of the roller R with said bottom wall or screen element 18.

The central portion of the housing is received within a saddle member 20 mounted upon the side members 1 of the base member B and provides means for effectively bracing or stiffening the bottom wall or screen element 18. This is important as it is of advantage to assure that during a working operation the pressure upon the potatoes being treated will not force the bottom wall of screen element 18 outwardly or away from the roller R as it is essential for the effective operation of the apparatus to maintain the roller R and the bottom wall or screen element 18 in a fixed set relation.

Hingedly connected to the upper face of the strip A adjacent the ends thereof and at the central part thereof by the hinge members 21 is the lower marginal portion of a top plate 22 arcuate in cross section and of a radius substantially equal to the radius of the roller R with, of course, its concave side opposed to the roller. This plate 22 is of a length substantially equal to the distance between the heads 12 of the housing H but readily swings therebetween so that the plate 22 may be readily brought into desired position with respect to the upper portion of the roller R.

The plate 22 is held in this applied or working position by the potato hopper P which is freely inserted from above between the members 3, 4 and 5 with the lower edge of the front wall of the hopper contacting from above the free longitudinal marginal portion of the closed plate 22 so that the potatoes placed within the hopper may readily enter the housing H to one side of the vertical center of the housing through the receiving slot to the housing afforded by the space between the upper free edge of the closed plate 22 and the adjacent top edge of the housing H.

When the hopper P is removed, the plate 22 may be readily swung outwardly into an ineffective position to allow desired access within the hopper and to the roller to facilitate cleaning.

It is to be noted that the heads 12 are so positioned with respect to the bottom wall or screen element 18 as to close at least one-half of the openings 19 at the extremities of the wall or element 18. This reduces the pressure at such point so that there will be no carry-over.

The potatoes to be extruded are cut, before cooking, into slices substantially one-eighth of an inch thick and it is for this reason, as hereinbefore explained, that the ribs 10 are extended approximately one-eighth of an inch beyond the periphery of the roller R. This results in such retardation to the rotation of the roller R as to assure a maximum of extruding of the potatoes. This extruding is further facilitated in view of the fact that the housing H including the plate 22 extends approximately three-fifths around the roller and it is to be stated that the applied hopper only has light contact with the plate 22.

It has also been found in practice that the ribs 10 are to be of such number as to have a minimum of seven of such ribs in contact with the wall or screen element 18 to assure the most effective back pressure or resistance being brought into play.

It is believed to be obvious that any of the product which may be carried over with the roller will be recrushed with the new potatoes.

In the present embodiment of my invention, the shaft S has fixed thereon a sprocket wheel 23 for coupling with the required source of power in a well known manner and it is to be pointed out that this coupling of the sprocket wheel 23 with the shaft S is by a shear pin 24 which will break if anything should be dropped within the housing which would abnormally retard the rotation of the roller, thus substantially eliminating breakage of the wall or screen element 18.

From the foregoing description it is thought to be obvious that a potato extruder constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

What is claimed is:

1. A potato extruder comprising a suitably supported housing, the lower portion of which is substantially semicircular in cross section and the upper portion of a side of said housing being cut away, the lower half of the wall of the housing being foraminous to form a screen element, a roller mounted within the housing, closely approaching and concentric with the lower half portion of the housing, ribs carried by and extending longitudinally of the outer side of the roller and spaced circumferentially therearound, the outer faces of the ribs being flat, a hinged plate coacting with the side portion of the roller immediately adjacent to the cut away portion of the housing, said plate being arcuate in cross section and concentric with the lower half of the housing, said plate moving toward or from the roller with its concave face opposed to the roller, the outer margin of the plate, when said plate overlies the roller, being spaced from the opposite side of the housing to provide an entrance to the housing for the potatoes to be worked, and a hopper supported to discharge through the entrance opening, said hopper providing means for holding the plate in closed position over the roller.

2. An extruder of the character stated, comprising a support, a pair of spaced head plates

fixed in upright position thereto, a rotatably supported shaft passing through said plates, a housing extending between and secured to said plates, the housing having a semi-circular lower half terminating at one side at approximately the horizontal plane of the axis of the shaft and at its opposite side extending upwardly and outwardly away from and above said axis, the lower portion of the housing being foraminous to form a screen, a roller supported within the housing upon the shaft and having its periphery in close proximity to the lower half of the housing, ribs extending longitudinally of the exterior of the roller to co-act with the screen, an arcuate shiftable cover plate hingedly attached to the said one side of the housing to overlie a portion of the upper half of the roller, the space between the upper edge of said cover plate and the top edge of the said opposite side of the housing providing an inlet for the housing, an open horizontal frame supported above said base, and a hopper extending through and suspended in the frame and having a lower portion extending into said inlet space, the said upper edge of the plate resting against one side of the hopper and said plate being maintained in position over the roller by its engagement with the side of the hopper.

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