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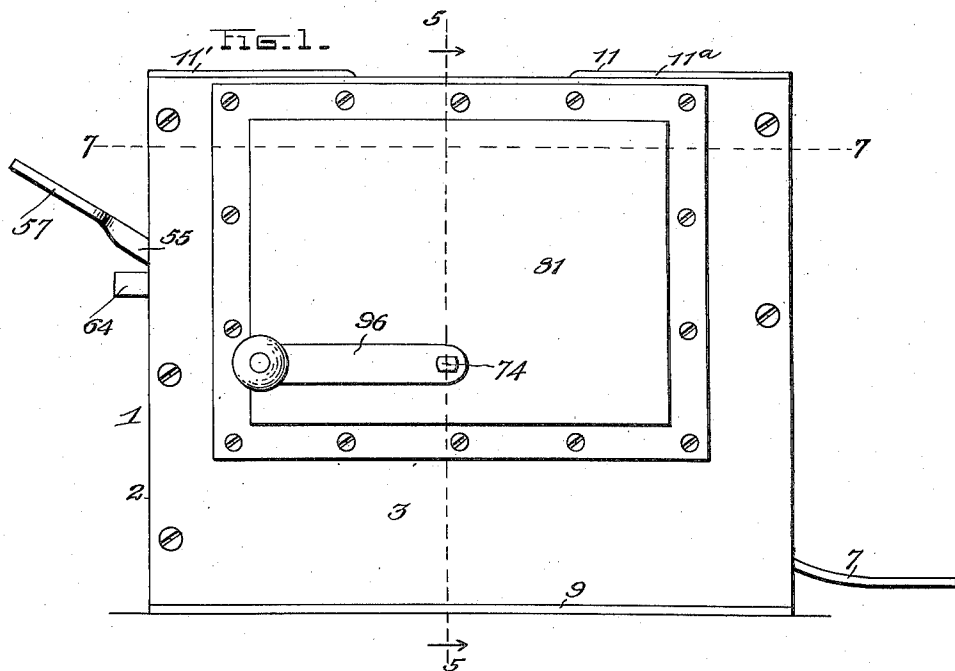
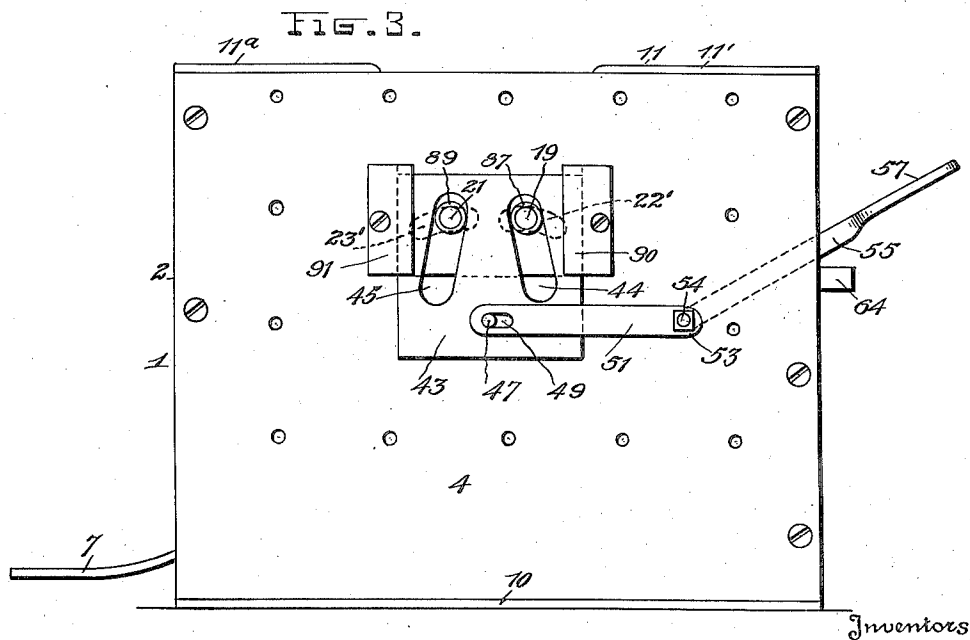
E. K. HOY ET AL

2,126,554

MACHINE FOR BREAKING MEAT FIBER

Filed Oct. 24, 1935

6 Sheets-Sheet 1



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Aug. 9, 1938.

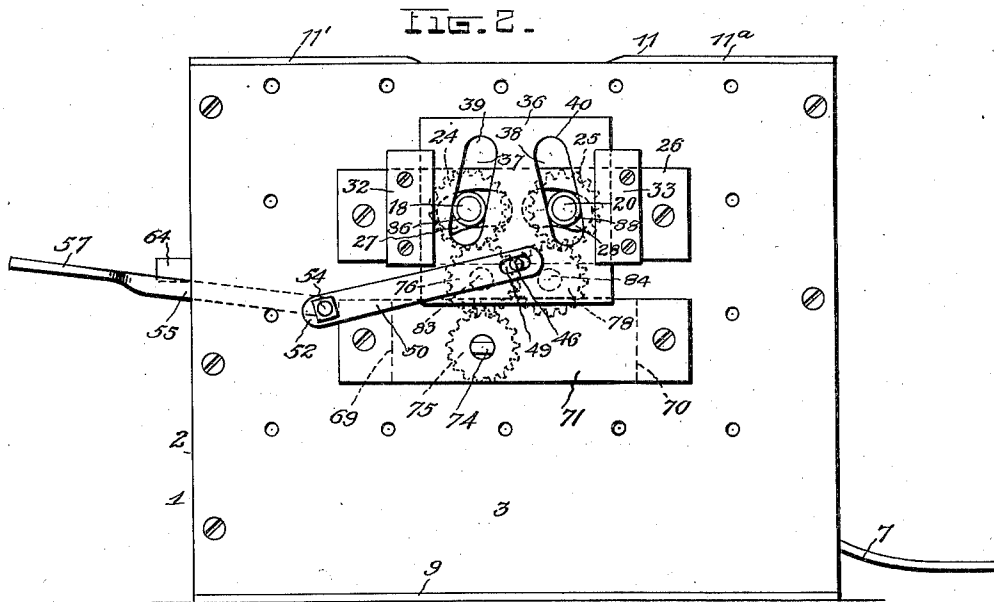
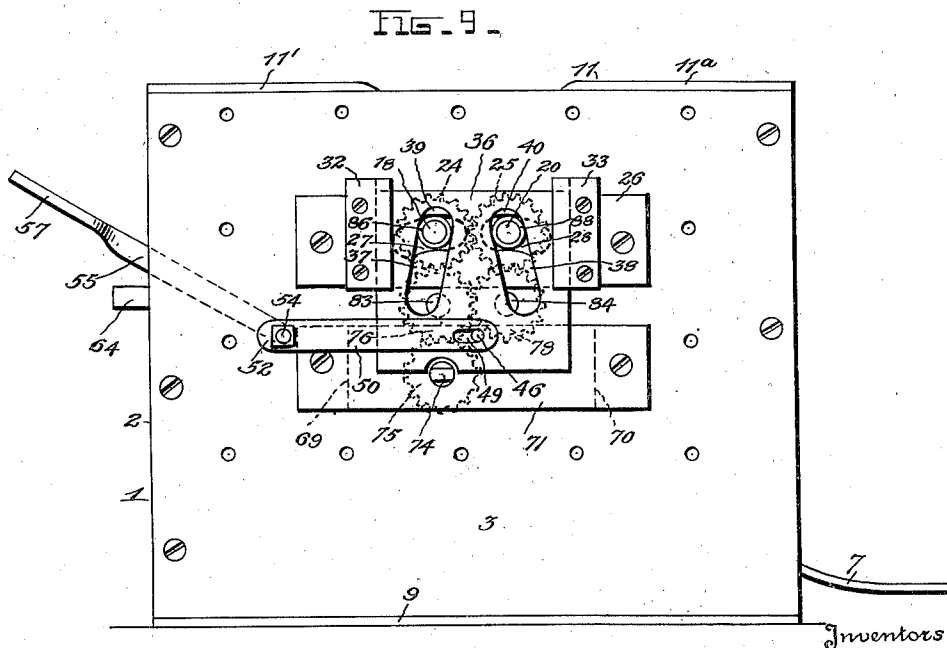
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MACHINE FOR BREAKING MEAT FIBER

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6 Sheets-Sheet 2



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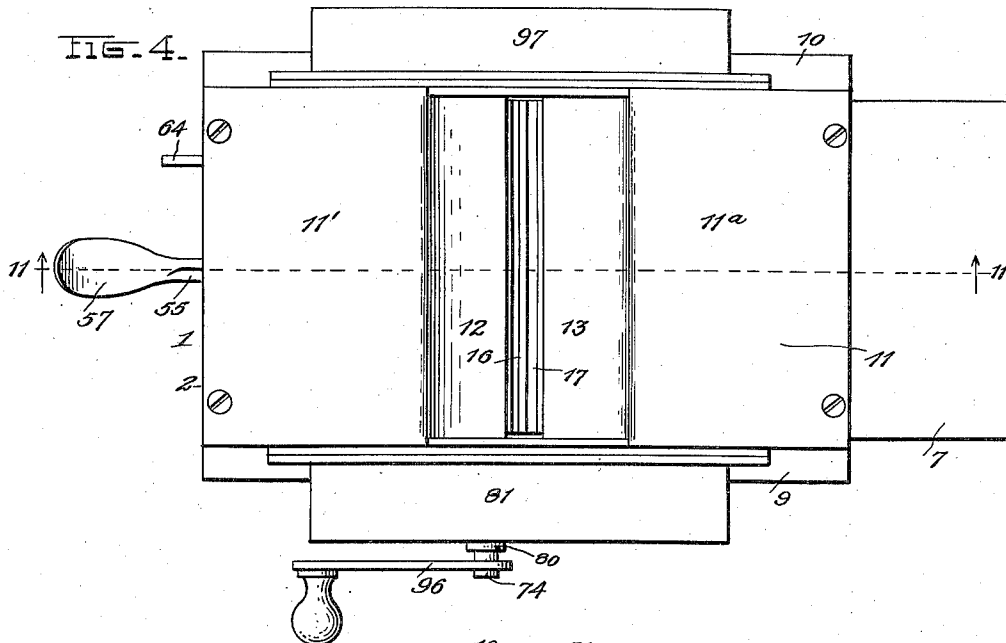
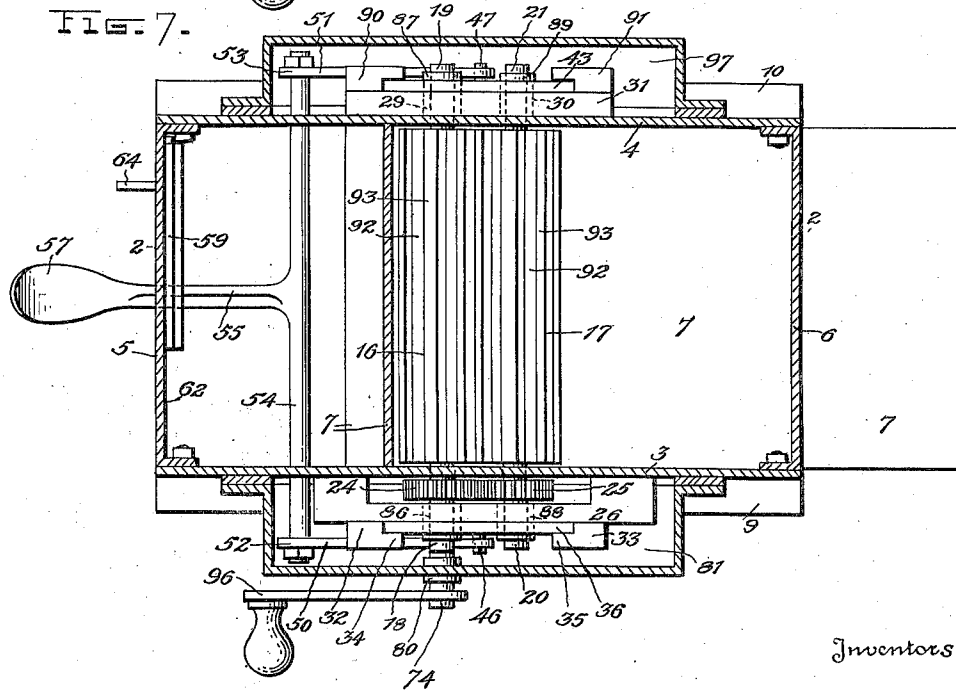
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MACHINE FOR BREAKING MEAT FIBER

Filed Oct. 24, 1935

6 Sheets-Sheet 3



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MACHINE FOR BREAKING MEAT FIBER

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6 Sheets-Sheet 4

FIG. 5.

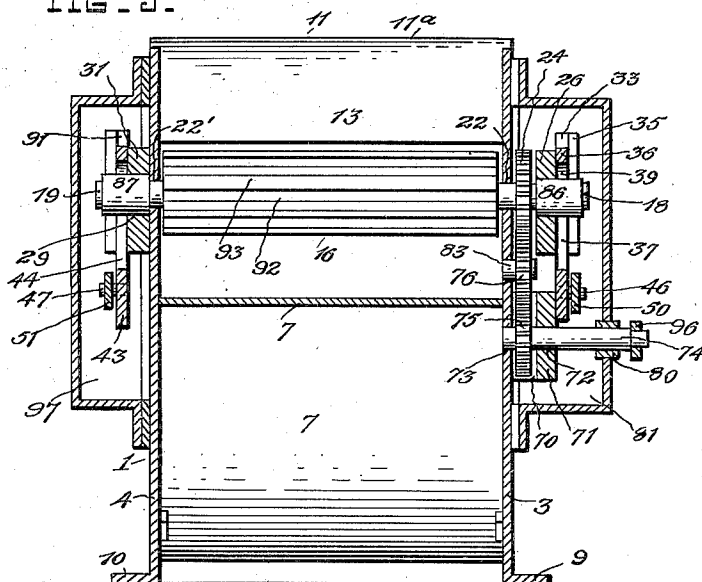
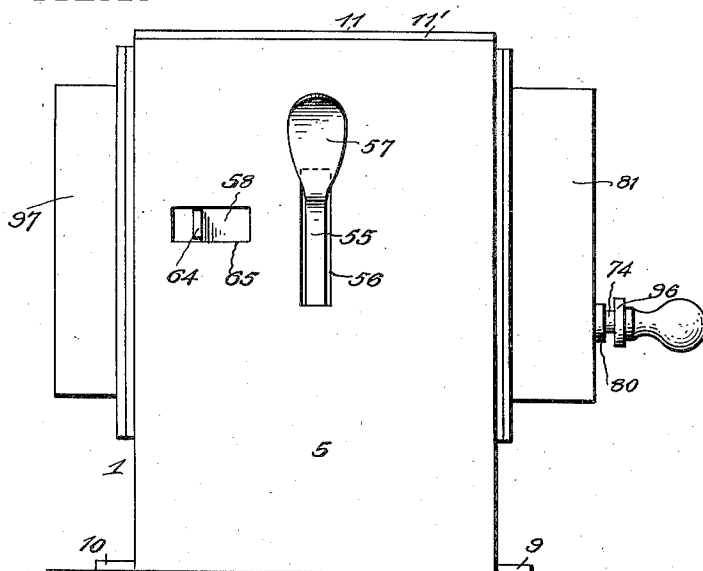


FIG. 6.



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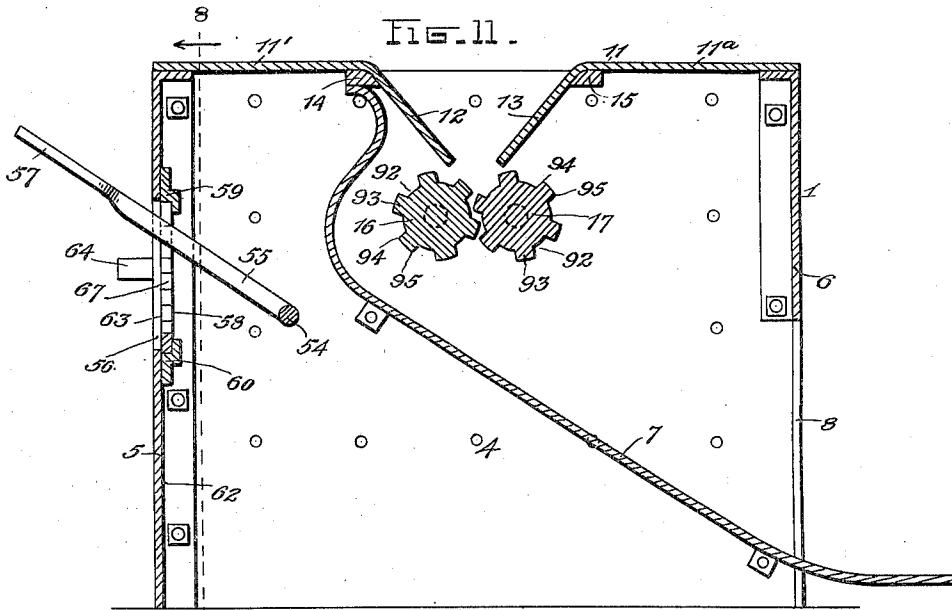


Fig. 8.

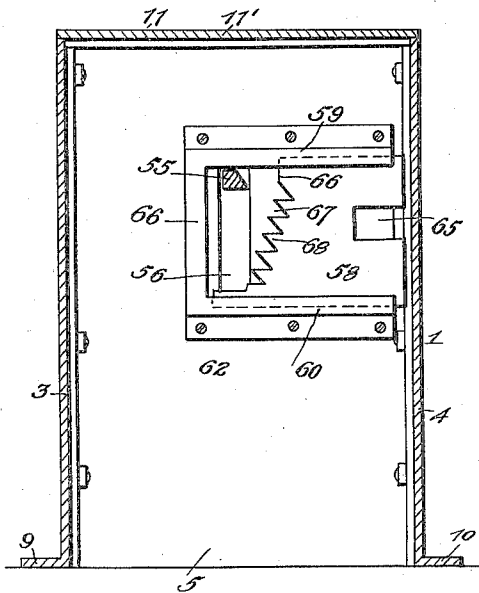
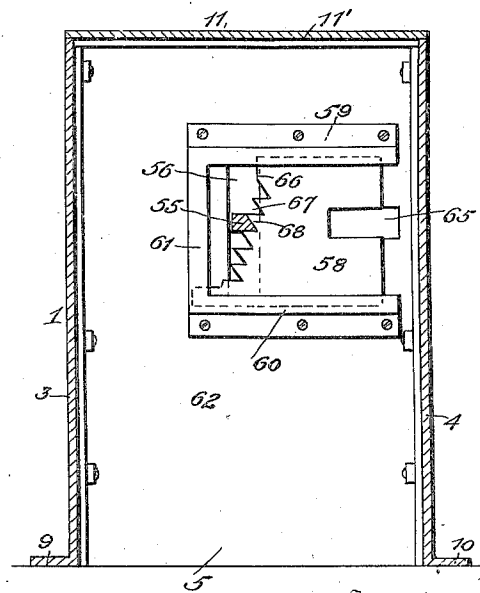


Fig. 13.



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FIG. 14.

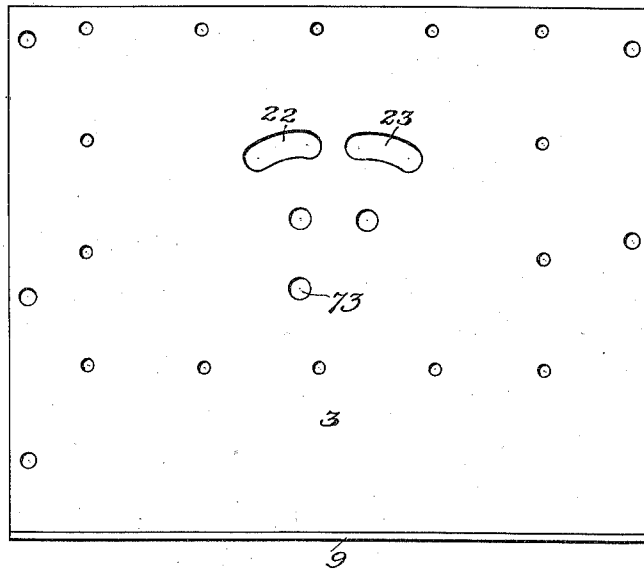


FIG. 12.

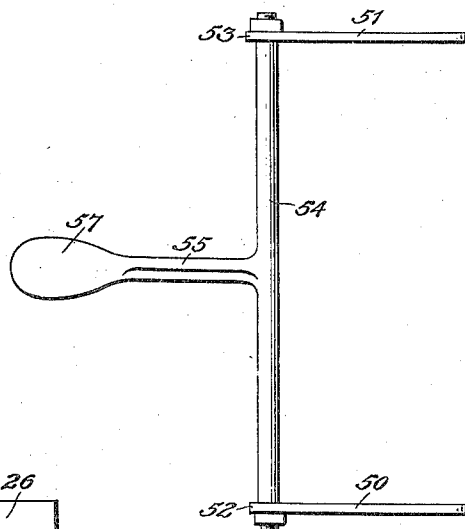


FIG. 10.

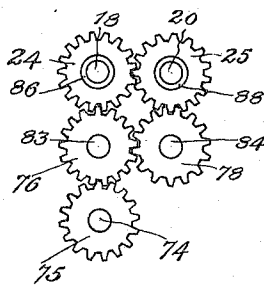
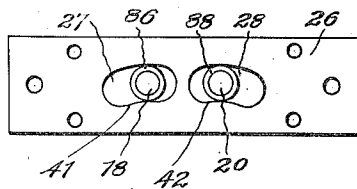


FIG. 15.



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## UNITED STATES PATENT OFFICE

2,126,554

## MACHINE FOR BREAKING MEAT FIBER

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Alturas, Calif.

Application October 24, 1935, Serial No. 46,617

6 Claims. (Cl. 17-26)

This invention relates to improvements in meat tendering devices and has for its object to provide means whereby steaks and the like may be very rapidly made tender.

Another object of the invention is to provide a meat tendering mill or machine, through which steaks and the like may be run very rapidly to thoroughly break up the fiber therein.

Another object of the invention is to provide a meat fiber breaker so arranged that the fibers in steaks and the like may be very rapidly broken into very small sections in order to quickly change an ordinarily tough steak into a tender steak.

A still further object of the invention is to provide in a steak tendering machine, a pair of fiber breaking rollers between which the steak is run.

Another object of the invention is to provide in a machine of the nature above outlined, a pair of gear driven rollers and means whereby the rollers may be moved together or apart to accommodate steaks of various thicknesses and without interfering with the gear action thereof.

A further object of the invention, as above outlined, is to provide a rapid means for adjusting said rollers.

And another object of the invention is to provide in such a machine, means for locking the rollers in adjusted position.

With the above and such other objects in view, as may hereinafter more fully appear, we have invented the device shown in the accompanying drawings, in which:

Figure 1 is a side elevational view of our machine;

Figure 2 is a similar view, the guard plate being removed;

Figure 3 is an elevational view of the opposite side, a guard plate being removed;

Figure 4 is a top plan view;

Figure 5 is a section on line 5-5 of Figure 1;

Figure 6 is a rear elevational view;

Figure 7 is a section on line 7-7 of Figure 1;

Figure 8 is a vertical cross section taken on line 8-8 of Figure 11, showing looking toward the inner side of the rear wall and showing lock in inoperative position;

Figure 9 is a view, similar to Figure 2, showing certain parts in adjusted position;

Figure 10 is a diagrammatic view of a gear train;

Figure 11 is a section on line 11-11 of Figure 4;

Figure 12 is a detail plan view of a lever operated adjustment crank;

Figure 13 is a view, similar to Figure 8, showing lock in operative position;

Figure 14 is a detail view of a side wall; and Figure 15 is a detail view of a track plate showing roller shafts seated therein.

Like reference characters indicate like parts, throughout the following specification, and in the several views in the drawings in which 1 indicates our meat fiber breaker, or meat tenderer, which comprises a box-like structure 2, having side walls 3 and 4, a rear wall 5, a relatively short upper front wall 6, a chute bottom 7 projecting beyond the front opening 8, below the said wall 6. The walls 3 and 4 are provided with lower right angular flanges 9 and 10, forming a base upon which the device rests. The top 11 is formed in two sections 11' and 11a the inner portions 12 and 13 of which are inclined down over bars 14 and 15 to form a hopper or guide to a pair of fiber breaking rollers 16 and 17, centrally disposed and transversely of the box or casing 2, and between which steaks, chops or other sliced meat is fed through said hopper, between said rollers, and delivered to said chute 7. The said rollers 16 and 17 are provided with stub shafts 18 and 19, and 20 and 21, the shafts 18 and 20 operating in arcuately disposed slots 22 and 23 in the side wall 3, while the shafts 19 and 21 operate in similar oppositely disposed slots 22' and 23' in the side wall 4. Fixed on the shafts 18 and 20, are gears 24 and 25, which are located between the wall 3, and track plate 26, which plate is provided with slots 27 and 28, which align with and conform in shape to said slots 22 and 23. The shafts 19 and 21 also project through slots 29 and 30 in a bearing plate 31, mounted on the wall 4. These latter slots conform in shape to the slots 22, 23, 22' and 23'. Track forming blocks 32 and 33, with overhanging flanges 34 and 35, form a track within which a guide plate 36 is vertically movable. This plate is provided with longitudinal upright slots 37 and 38, which incline in opposite directions from their near upper ends 39 and 40. The shafts 18 and 20 also project through the respective slots 37 and 38 whereby, through the up and down movement of the plate 36, said shafts are caused to move on the arcuate edges 41 and 42 of slots 27 and 28, either toward or away from one another, as the case may be, in order to adjust the spacing between rollers 16 and 17, to accommodate slices of meats of various thicknesses. On the opposite side of the machine is provided another guide plate 43, which is provided with slots 44 and 45, conforming in shape and ar-

5 rangement to slots 39 and 40, and in horizontal alignment therewith. Each of the plates 36 and 43, have pins 46 and 47, respectively, which project into slots 48 and 49, in the inner ends of crank levers 50 and 51, the ends 52 and 53 of which are fixed to a crank shaft 54, oscillatingly mounted in the walls 3 and 4, adjacent the rear wall 5.

10 Fixed to the center of shaft 54 is a lever arm 55, which projects through an elongated vertically disposed opening 56, in rear wall 5, and terminates in a finger hold 57 whereby the shaft 54 may be manually operated. A down pressure on member 57, turns shaft 54 to simultaneously 15 raise arms 50 and 51, and with them the plates 36 and 43, which action carries the rollers 16 and 17 to move away from one another. A reverse action of lever 54 causes a reverse action of plates 36 and 43, and consequently brings 20 said rollers toward one another. Now, in order to hold rollers 16 and 17 in adjusted position, we provide a lock plate 58, mounted to slide horizontally in the trackway formed by flanged clips 59 and 60, connected by a cross bar 61, and 25 mounted on the inner surface 62 of wall 5. Struck from the outer side 63 of plate 58, is a tongue 64, which is bent at right angles to the plate and projected through the elongated horizontally disposed slot 65 in rear wall 5, whereby 30 said plate may be manually moved to a desired position. The inner edge 66 of plate 58, is provided with a series of stepped notches 67 formed by steps or teeth 68, any one of which may be projected under the lever shank 55 to hold the 35 same locked against down movement to prevent accidental spreading apart of said rollers 16 and 17.

40 Mounted on the wall 3, and spaced therefrom by its end lugs 69 and 70, is a bearing plate 71, having a bore 72 aligning with a bore 73 in wall 3, for the drive shaft 74, upon which is fixed, between the members 71 and 3, a drive gear 75, which is in mesh with the transmission gear 76, said latter gear being also in mesh with a 45 gear 77, fixed on shaft 18. The gear 76 is meshed with an other transmission gear 78, which, in turn, meshes with the gear 79, fixed on shaft 20. The drive shaft 74 extends through a grease tight bearing 80 in the grease box 81, which en- 50 cases all of the operating mechanism outwardly mounted on or adjacent wall 3, on the outer end 82.

55 The gears 77 and 78 are mounted on pinions 83 and 84, fixed on the wall 3. Each of the shafts are mounted in suitable bearings 85. The stub shafts 18, 19, 20 and 21 being also mounted in roller bearings 86, 87, 88 and 89, on the outer ends for operation in the track and guide plate slots. The guide plate 43 operates vertically in 60 a track formed by clamps 90 and 91.

65 The rollers 16 and 17 are provided with a series of longitudinal slots 92 extending throughout their length forming ribs 93, between said stubs, and the rollers are so adjusted that ribs 93' of one roller will aline with a slot 92 of the other roller, whereby slices of meat passing between the rollers will be forced by the ribs of each roller into the slots of the other roller, the corners 94 and 95 of the ribs pressing sufficiently hard upon 70 the meat to snap or break into small pieces the

fibers of the meat, thus making the same very tender, and easy to masticate.

On the outer end of shaft 74, is fixed a crank handle 96, by means of which the device is manually operated.

Another gear box 97 is provided to enclose the mechanism projecting beyond the wall 4 of the device. However, it is, of course, obvious, that a pulley may be substituted for the handle, and the device may be power driven.

Having now described our invention, that which we claim to be new, and desire to procure by Letters Patent is:

1. In a device, as described, a pair of rollers, means for driving the same, means for adjustably spacing the same and means for holding the rollers in adjusted position, said second means including vertically movable plates with inclined slots through which the ends of said rollers project.

2. In a device, as described, a pair of rollers, means for driving the same, means for adjustably spacing the same and means for holding the rollers in adjusted position, said second means including vertically movable plates with inclined slots through which the ends of said rollers project, and lever arms for raising and lowering said plates.

3. In a device as described, a pair of rollers, means for driving the same, means for adjustably spacing the same, and means for holding the rollers in adjusted position, said second means including vertically movable plates with inclined slots through which the ends of said rollers project, lever arms for raising and lowering said plates, a crank shaft upon which said arms are fixed, and means whereby said shaft may be oscillatably moved, said holding means comprising a lock plate slidable under said oscillating means.

4. In a device as described, a pair of rollers, a frame having slots forming bearings for the rollers and vertically operating means for simultaneously moving the rollers in said slots toward each other and away from each other, said slots being arcuate, said means being plates having diverging slots.

5. In a device as described, a pair of fiber crushing rollers, vertically movable plates whereby said rollers are slidable relative to each other, means whereby said sliding movement is simultaneous and lever controlled, said means including arcuate slot bearings for said rollers, and a vertically movable member having inclined slots crossing said first slot bearings to receive the stub end of said rollers.

6. A meat tendering machine comprising a frame, a pair of serrated rollers in said frame, trunnions carried by each roller, a gear secured to each trunnion, a pair of driving gears at each end of said rollers, the gears of each pair meshing with each other and with said gears on said trunnions, means rotatably mounting said rollers for adjustment relative to each other about the axes of said second gears, and means at each end of said rollers movable in a plane at right angles to the longitudinal axes of said rollers, for moving said rollers toward or away from each other.

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