June 4, 1940. F. C. BAUER 2,203,518

PATTY FORMING MACHINE

Filed Sept. 19, 1938 2 Sheets-Sheet 1

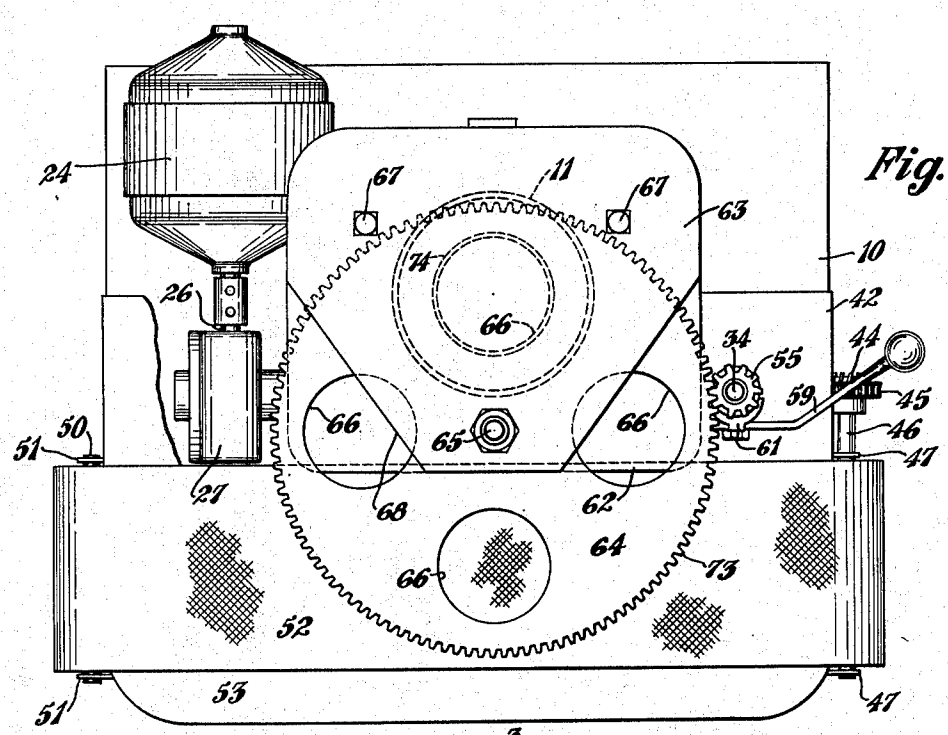


Fig. 1

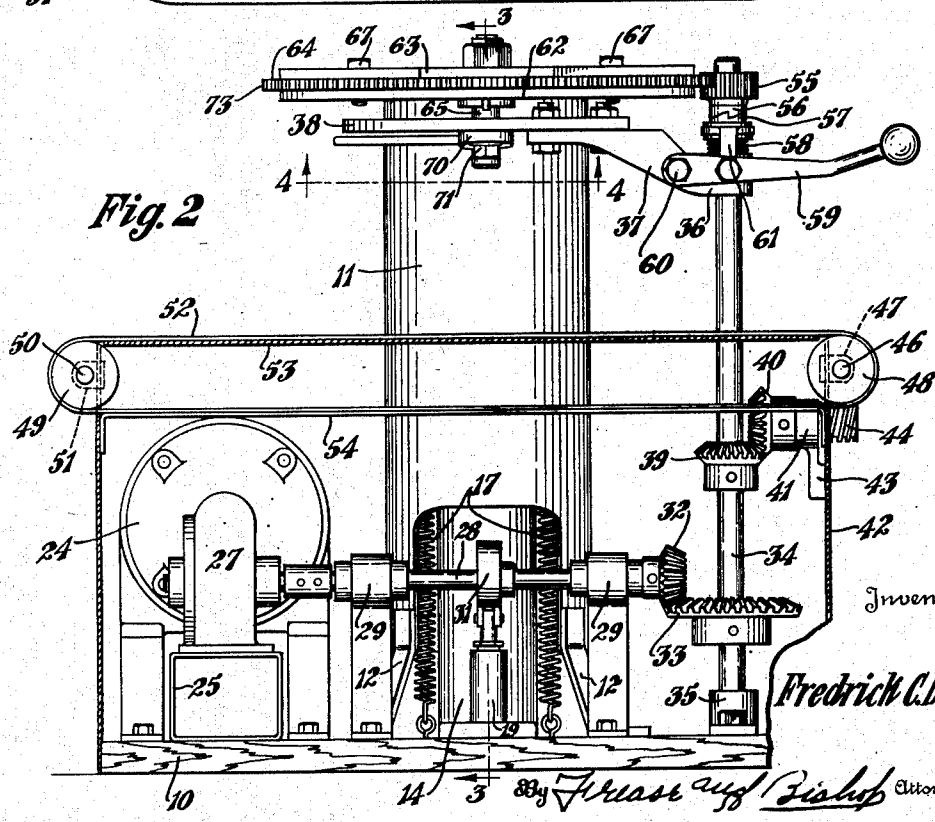


Fig. 2

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PATTY FORMING MACHINE

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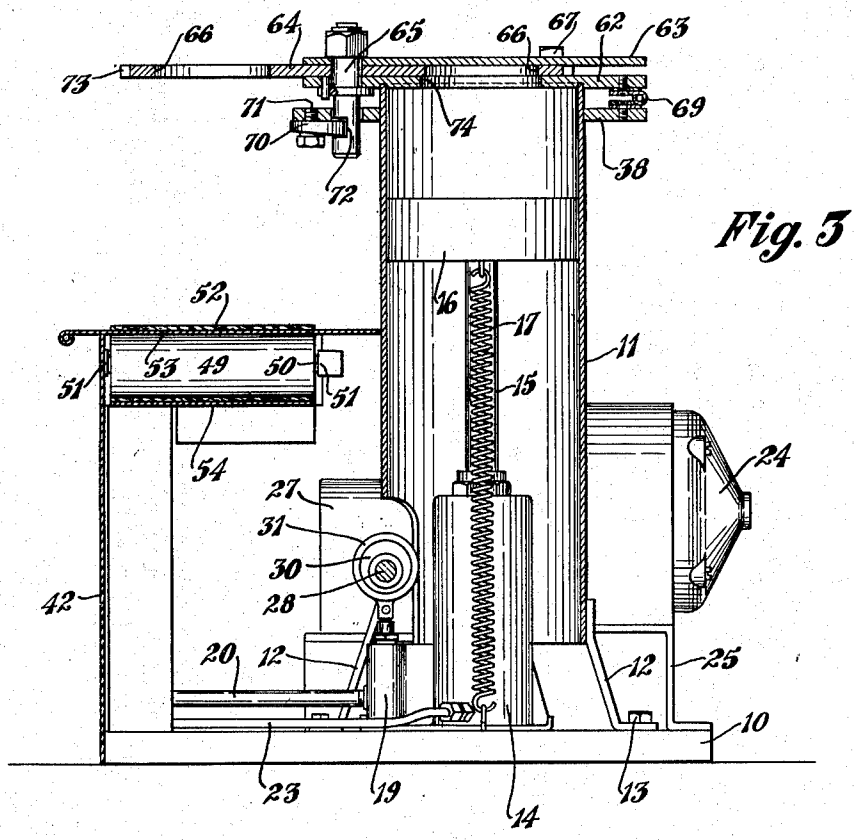


Fig. 3

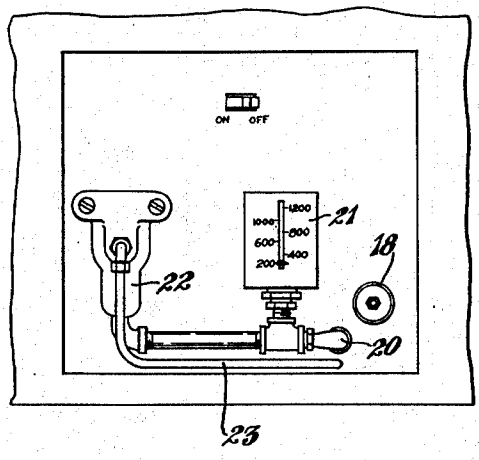


Fig. 5

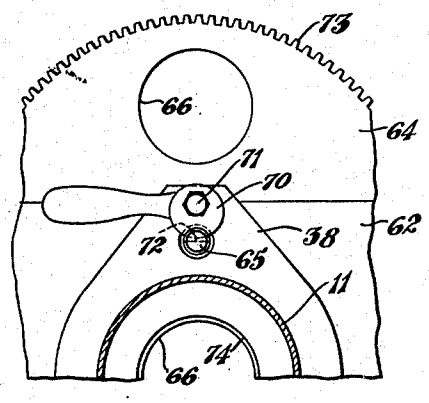


Fig. 4

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UNITED STATES PATENT OFFICE

2,203,518

PATTY FORMING MACHINE

Fredrick C. Bauer, Seville, Ohio

Application September 19, 1938, Serial No. 230,643

5 Claims. (Cl. 107—8)

The invention relates to a machine for forming patties of hamburger steak and the like and more particularly to a power driven machine which will quickly form the patties of uniform size, shape and weight and convey the formed patties away from the machine as they are discharged therefrom.

The object of the invention is to provide a machine for rapidly and economically forming patties of hamburger steak or the like of uniform size, shape and weight.

Another object is to provide a machine of this character in which the ground meat may be continuously discharged from a cylinder by means of a piston or plunger through a reduced outlet opening into mold cavities in a continuously rotating forming plate which rotates through a portion of each revolution between top and bottom plates, the formed patties being discharged from the mold cavities by gravity as the forming plate passes from between the top and bottom plates.

Another object is to provide a machine of this character in which the piston or plunger is operated by means of a hydraulic jack having a safety pressure regulator associated therewith to prevent injury to the machine in the event the rotation of the forming plate is stopped during the time the hydraulic jack is operating.

Another object is to provide means for detachably connecting the top and bottom plates and the rotatable forming plate to the upper open end of the cylinder whereby ground meat or the like may be charged into the cylinder.

A further object is to provide a machine of the character referred to in which the plunger is operated by a single acting hydraulic jack provided with a releasing valve and spring means to return the plunger to the initial position.

The above objects together with others which will be apparent from the drawings and following description or which may be later referred to may be attained by constructing the improved patty forming machine in the manner illustrated in the accompanying drawings in which

Figure 1 is a top plan view of a patty forming machine embodying the invention with parts broken away for the purpose of illustration;

Fig. 2, a side elevation of the machine with a portion of the housing broken away to illustrate the mechanism therein;

Fig. 3, a vertical sectional view through the improved machine taken substantially on the line 3—3, Fig. 2;

Fig. 4, a fragmentary transverse sectional view taken substantially on the line 4—4, Fig. 2; and

Fig. 5, a fragmentary elevation showing the safety pressure regulator for the hydraulic jack.

Similar numerals refer to similar parts throughout the drawings.

The machine may be mounted upon a base or platform 10 which may be placed upon a table, counter or other suitable support.

The cylinder 11 is open at its upper and lower ends and may be mounted in vertical position and spaced above the platform or base as by the legs 12, which may be bolted or otherwise connected to the platform as indicated at 13.

A single acting hydraulic jack is concentrically located within the lower open end of the cylinder 11 and comprises the jack cylinder 14 attached to the base and provided with the piston rod 15, which may be connected to the ejection piston or plunger 16 of the cylinder 11.

A pair of pull springs 17 may be connected at their upper ends to the ejection piston or plunger 16 and at their lower ends to the base or platform 10 for returning the piston to the initial position when the release valve 18 is operted to release the oil pressure in the jack.

The hydraulic jack may be provided with the usual pump 19 communicating with the jack cylinder 14 in usual and well-known manner and communicating as by pipe 20 with a pressure gauge 21 and a safety pressure regulator 22 from which the oil is returned through a pipe 23 to the usual oil reservoir in the jack 14.

For the purpose of operating the mechanism an electric motor 24 may be mounted upon a support or bracket 25 fixed upon the base 10, the shaft 26 of the motor being connected to any conventional reduction gearing mounted within the housing 27.

A shaft 28 leads from the reduction gearing and is journaled in suitable bearings 29 mounted upon the base and is provided with an eccentric 30 cooperating with an eccentric band 31 operatively associated with the pump 19.

A bevel pinion 32 is fixed upon the shaft 28 and meshes with a bevel gear 33 fixed upon the vertical shaft 34 journaled in the bearing 35 mounted upon the base 10 and in the bearing 36 mounted upon a bracket 37 connected to the flange plate 38 fixed to the cylinder 11 near the upper end thereof.

A bevel pinion 39 is fixed upon the shaft 34 and meshes with the bevel pinion 40 mounted upon a short shaft journaled in the bearing 41 which is attached to the side wall of the housing 42 as by the bracket 43, a worm screw 44 being formed upon said shaft and meshing with the worm wheel 45 upon a shaft 46 which is journaled in bearings 47 carried by one side wall of the housing 42, a roller 48 being fixed upon said shaft 46.

A similar idler roller 49 is mounted upon a shaft 50 journaled in bearings 51, which may be connected to the other side of the housing

42, and an endless conveyor belt 52 is located around said rollers, the upper strand of the belt being adapted to run over the top wall 53 of the housing and the lower strand thereof being adapted to run over the shelf 54 connected at opposite ends to the side walls of the housing.

A pinion 55 is rotatably mounted upon the upper portion of the shaft 34 and has formed on its under side a clutch member 56 adapted to cooperate with the clutch member 57 which is slidably keyed upon the shaft 34 and arranged to be normally held in engagement with the clutch member 56 as by a spring 58 interposed between the clutch member 57 and the bearing 36.

An operating lever 59 is fulcrumed as at 60 upon the bracket 37 and is connected as by a link 61 to the clutch member 57 whereby the same may be moved out of engagement with the clutch member 56.

At the top of the cylinder 11 is located an assembly comprising the bottom plate 62 and top plate 63 between which is journaled the rotatable forming plate 64 pivoted to the top and bottom plates as by the post 65 and provided with a plurality of mold cavities or openings 66 of a size and shape to produce the desired form of patty.

The top and bottom plates are connected together as by the bolts 67 and the forward end of the top plate may be tapered as at 68.

The bottom plate 62 may be hingedly connected to the flange plate 38 as by the hinge 69, and in order to hold the assembly in position upon the top of the cylinder an eccentric latch 70 may be pivoted as at 71 upon the flange plate 38 and adapted to be received in a notch 72 in the post 65 in order to lock the assembly in closed position upon the cylinder.

The periphery of the rotatable forming plate 64 may be provided with gear teeth 73 meshing with the pinion 55.

In operating the machine, the ejection plunger 16 is retracted and the top assembly comprising the bottom and top plates 62 and 63 and the interposed rotatable forming plate 64 is unlocked and swung open upon its hinge so that the cylinder may be filled with ground meat or other material to be formed into patties.

The top assembly is then closed and locked in the position shown in Fig. 3, the motor 24 is started and the clutch 56—57 is thrown in causing the machine to operate to automatically form patties of desired size and shape and discharge the patties from the machine and convey them away.

The pump 19 operates the hydraulic jack in usual and ordinary manner to raise the ejection piston 16 in the cylinder 11 forcing the ground meat through the opening 74 in the bottom plate 62 and as the forming plate 64 is revolved the meat is forced through the opening 74 into the mold cavities 66 of the forming plate, the thickness and diameter of each patty being uniform.

As each filled mold cavity passes forward beyond the front edge of the lower plate 62, the patty formed therein drops by gravity onto the conveyor belt 52 and is carried away. In the event the clutch is thrown out and the motor continues to operate the safety pressure regulator 22 will prevent the pressure in the cylinder 11 from building up beyond the danger point.

I claim:

1. A patty forming machine including an upright cylinder, an ejection piston movable therein, a spaced pair of plates at the upper or discharge end of the cylinder, a rotatable forming plate having a sliding fit between said plates, and provided with patty forming openings extending entirely therethrough, the lower plate of said spaced pair having an opening adapted to successively register with each of said patty forming openings, one side of the forming plate extending beyond said spaced plates whereby patties formed in said openings will drop therefrom by gravity, said spaced plates and forming plate being hinged as a unit upon the cylinder, and means for moving said piston upwardly and simultaneously rotating said forming plate.

2. A patty forming machine including an upright cylinder, an ejection piston movable therein, a spaced pair of plates at the upper or discharge end of the cylinder, a rotatable forming plate having a sliding fit between said plates, and provided with patty forming openings extending entirely therethrough, the lower plate of said spaced pair having an opening adapted to successively register with each of said patty forming openings, one side of the forming plate extending beyond said spaced plates whereby patties formed in said openings will drop therefrom by gravity, said spaced plates and forming plate being hinged at one side as a unit to the cylinder, means for detachably connecting the other side of the spaced plates and forming plate to the cylinder, and means for moving said piston upwardly and simultaneously rotating said forming plate.

3. A patty forming machine including an upright cylinder, an ejection piston movable therein, a spaced pair of plates at the upper or discharge end of the cylinder, a rotatable forming plate having a sliding fit between said plates, and provided with patty forming openings extending entirely therethrough, the lower plate of said spaced pair having an opening adapted to successively register with each of said patty forming openings, one side of the forming plate extending beyond said spaced plates whereby patties formed in said openings will drop therefrom by gravity, means for moving said piston upwardly and simultaneously rotating said forming plate, and means for stopping the rotation of said forming plate while the piston is operating.

4. A patty forming machine including an upright cylinder, an ejection piston movable therein, a spaced pair of plates at the upper or discharge end of the cylinder, a rotatable forming plate having a sliding fit between said plates, and provided with patty forming openings extending entirely therethrough, the lower plate of said spaced pair having an opening adapted to successively register with each of said patty forming openings, one side of the forming plate extending beyond said spaced plates whereby patties formed in said openings will drop therefrom by gravity, means for moving said piston and rotating said forming plate, means for stopping the rotation of said forming plate while the piston is operating, and means for releasing the pressure upon the piston.

5. A patty forming machine as described in claim 3 in which the patty forming openings in the rotatable forming plate are smaller than the opening in said lower plate.

FREDRICK C. BAUER.