(No Model.) 2 Sheets—Sheet 1.

A. A. FOSTER.

BUTTER WORKER.

No. 421,130. Patented Feb. 11, 1890.

Fig. 1.

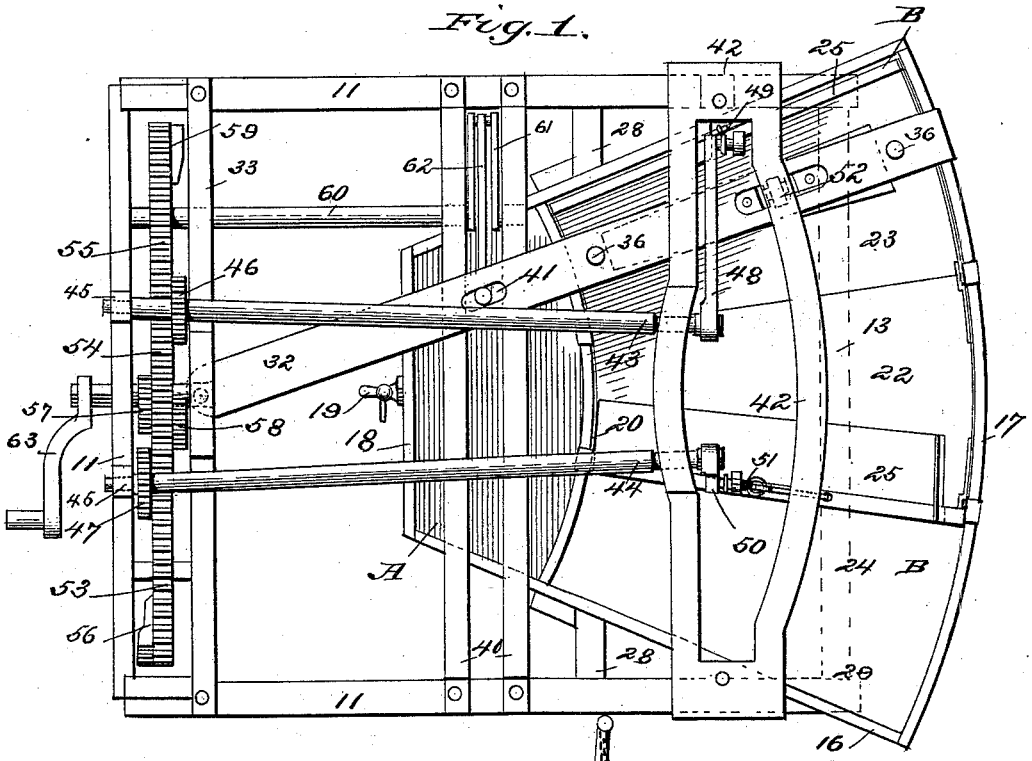
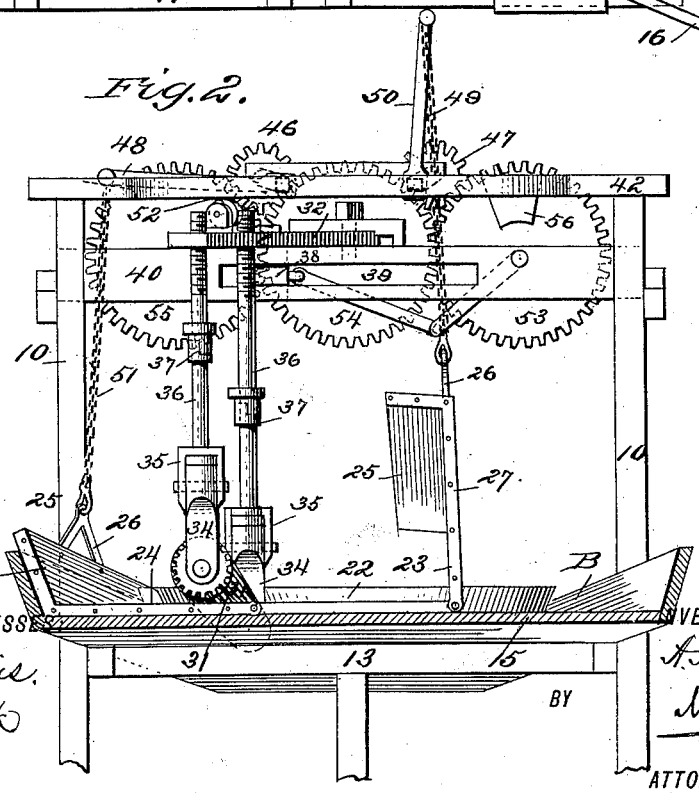


Fig. 2.



WITNESSES:

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C. Sedgwick

INVENTOR:

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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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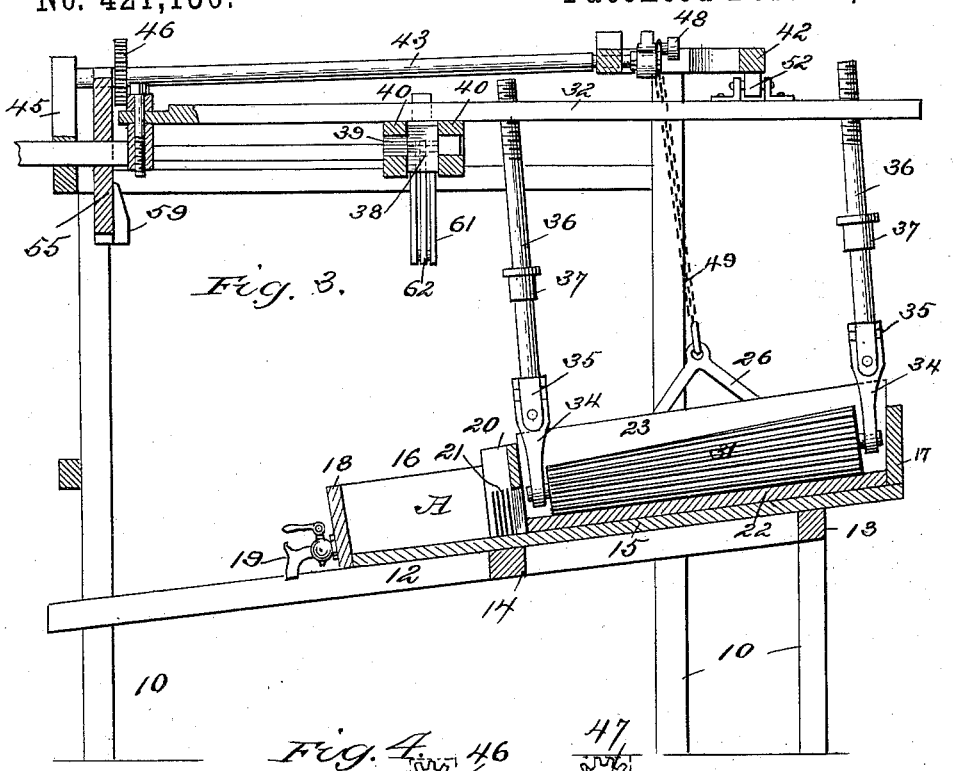

Fig. 3.

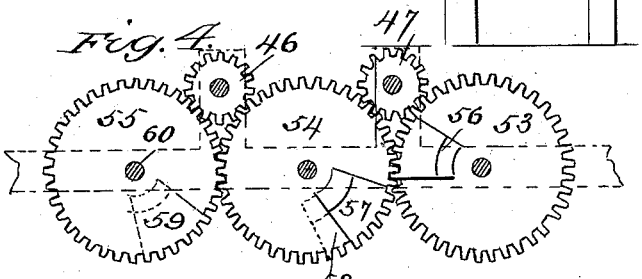

Fig. 4.

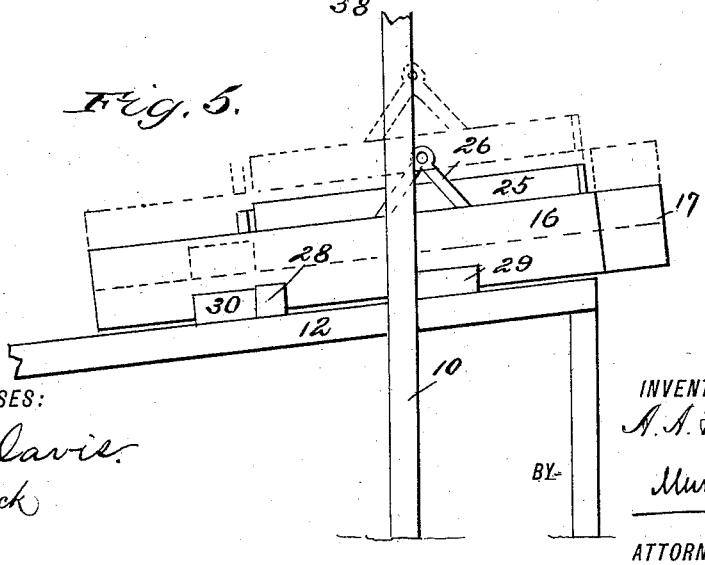

Fig. 5.

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UNITED STATES PATENT OFFICE.

ALMA A. FOSTER, OF POMEROY, OHIO.

BUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 421,130, dated February 11, 1890.

Application filed August 8, 1889. Serial No. 320,114. (No model.)

To all whom it may concern:

Be it known that I, ALMA A. FOSTER, of Pomeroy, in the county of Meigs and State of Ohio, have invented a new and useful Improvement in Butter-Workers, of which the following is a full, clear, and exact description.

My invention relates to an improved machine for working butter, and has for its object to provide a machine of simple and durable construction, in which the butter as taken from the churn may be placed and its position automatically shifted while rolling pressure is brought to bear thereon.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the machine. Fig. 2 is a front elevation of the machine, having the front flange of the trough cut away. Fig. 3 is a central vertical section through the machine. Fig. 4 is a side elevation of the gearing detached; and Fig. 5 is a partial side elevation of the frame and trough, the latter being shown in position thereon in positive lines and as lifted off in dotted lines.

The frame of the machine consists, essentially, of four or more uprights 10, connected at the top, with the exception of the front, by horizontal cross-bars 11, and near the bottom at each side by rearwardly-inclined side bars 12, which side bars project beyond the front, and are in turn connected by a cross-bar 13 at the projecting ends and a second cross-bar 14 at the rear of the forward uprights. Upon the inclined side bars of the frame a trough adapted to receive the butter is supported. This trough is essentially triangular in general contour, being curved at the outer or wider end and straight at the inner or contracted end. The trough consists of a bottom 15, having vertical side and front flanges 16 and 17, and also a rear flange 18. In the rear flange 18, at or near the center, a suitable aperture is made, in which a faucet 19 is introduced, and between the center and the rear end flange of the trough a curved transverse partition 20 is secured concentric with the front flange, in which partition a series of vertical slots or openings 21 is produced to permit any liquid placed in the trough with the butter or extracted from the latter to pass out into the compartment A at the rear of the trough, from whence it may be drawn through the faucet 19. The rear flange 18 is preferably made of greater depth than the front flange 17, and the sides 16 are preferably of such depth that when in the frame their upper edges will be on a level, in order that the trough may be filled with water when so desired. The forward compartment B of the trough is provided at the center with a longitudinal rigidly-attached strip 22, forming a portion of the auxiliary or working floor, the sides of which central strip of the auxiliary floor are inclined from the front in the direction of the rear, whereby the inner end of the strip is narrower than the outer end, and to each side of the central strip 22 corresponding strips 23 and 24 are respectively hinged, which side strips 23 and 24 virtually constitute wings, and are each adapted at times to maintain a perpendicular or essentially perpendicular position, as shown in Fig. 2.

The outer side of each of the wings 23 and 24 is provided with an upwardly-inclined flange 25, to the outer face of which flanges, at or near the center, a bracket-arm 26 is rigidly secured by bolts, staples, or otherwise, for a purpose hereinafter stated.

The bracket-arms may be fitted in suitable recesses produced in the outer face of the wing-flanges 25, or the side flanges 16 of the trough may be recessed to receive them, in which latter event the brackets are simply attached to the outer face of the wing-flanges. The hinges employed are preferably of such a nature that when the wings are elevated to the perpendicular position there will be no visible space between the contiguous edges of the wings and the center strip of the working-floor.

The working-floor, it will be understood, includes the central strips and the wings and essentially fills the entire space within the forward chamber B of the trough. The forward edges of the wings, and likewise the rear edges, are preferably metal bound, as shown at 27 in Fig. 2.

It will be observed that as the supports 12 of the trough are inclined when the trough is placed in position thereon it will be inclined also from the front to the rear. In order that the trough when placed upon the supports may not slip under the action of the roller, hereinafter described, cleats 28 are placed upon the cross-bars 14 near each end, which cleats have beveled inner ends to fit snugly against the inclined sides of the trough, and similar cleats 29 are placed upon the upper face of the inclined side bars 12, having beveled inner faces, which clamp the sides of the trough near its forward end. Thus the trough is wedged to place in the direction of the rear, and to prevent a forward movement cleats 30 are secured to each side of the trough, adapted for contact with the rear side face of the cleats 28, as shown in Fig. 5. Thus while the trough may be lifted vertically upward and disengaged from its support it is rendered incapable of moving laterally in the slightest degree.

Upon the working bed or floor of the trough a tapering roller 31 is held to roll essentially from side to side, the periphery of which roller is preferably corrugated or ribbed. This roller is detachably attached to a horizontal arm 32, pivoted at one end to a cross-bar 33, located at the top and to the rear end of the frame a slight distance from the rear cross-bar 11, as best shown in Fig. 1, and the manner of connecting the roller with the arm is as follows: At each end of the roller one end of a post 34 is pivoted, the upper ends of which posts are engaged by a clamp 35, each of which clamps is swiveled upon the lower end of a rod 36, the upper ends of the rods being threaded and made to pass upward through threaded apertures in the pivoted arm 32. By reason of the inclination of the trough when in working position the rear rod is longer than the forward one. The clamps are attached to the pivotal posts of the rollers by means of pivotal pins or bolts, and the rods 36, when detached from the roller, may be screwed upward out of the way, and to facilitate this movement a ferrule or sleeve 37 is secured to each of the rods between their ends. The arm 32 is guided in its lateral movement upon the frame by means of a block 38, having side arms, which block is held to slide in recesses 39, formed in two spaced transverse bars 40, secured to the upper side bars of the frame at or near their center, as shown in Figs. 1 and 2. The upper end of the block is provided with a circular projection, which extends through and has movement in a longitudinal slot 41, formed in the arm 32. Upon the upper extremities of the forward uprights of the frame the ends of a yoke 42 are secured, and in the said yoke the forward ends of shafts 43 and 44 are journaled—one at each side of the center, as best shown in Fig. 1. These shafts are carried rearward in opposite directions, and are journaled at their rear ends in suitable bearings 45, attached to the rear upper cross-bar of the frame, as shown in Fig. 3. These shafts have attached thereto, respectively, a pinion 46 and 47, the pinion upon the shaft 44 being located near the rear cross-bar 11, and the pinion upon the shaft 43 near the parallel and adjacent cross-bar 33, upon which the rear end of the arm 32 is pivoted. Upon the forward end of the shaft 43, within the yoke 42, a crank-arm 48 is rigidly secured, the outer extremity of which crank-arm is connected with the bracket 26 of the wing 23 of the trough by a chain 49. A similar crank-arm 50 is secured to the forward end of the shaft 44, which crank-arm at its outer end is attached by a chain 51 to the bracket of the wing 24, as best shown in Fig. 2. The roller-carrying arm 32 is preferably provided with a friction-roller 52, capable of contacting with the under side of the forward member of the yoke 42.

The mechanism by which the shafts 43 and 44 and the roller-carrying arm 32 are manipulated consists of three gears of equal size, 53, 54, and 55, journaled between the rear cross-bars 11 and 33 of the frame, which gears operate in connection with the pinions 46 and 47. All the gears 53, 54, and 55 are placed in the same plane, and the side gears are made to mesh with the center gear. The side gear 53 is provided upon the rear face with a toothed segment 56, the teeth of which segment are in horizontal alignment with the teeth of the gear. The center gear 54 is provided with two toothed segments 57 and 58, one being located upon each side, the end of one segment being essentially in alignment with the center of the opposite segment, and the side gear 55 is provided with a toothed segment 59 upon its forward face, as illustrated best in Fig. 4.

The segments 56 and 57 are adapted to alternately mesh with the pinion 47, and the segments 58 and 59 with the pinion 46, the object being to so rock the shafts 43 and 44 at stated intervals that their crank-arms 48 and 50 will be carried first to a vertical position and then to their horizontal or normal position. The gear 55 is secured upon a short longitudinal shaft 60, the inner end of which shaft extends through the rear central guide-beam 40, and to the forward end of this shaft one member of a crank-arm 61 is secured, the other member being journaled in the opposed or forward guide-beam 40, as shown in Fig. 1. This crank-arm 61 is connected by a pitman 62 with the slide-block 38, connected with the arm 32. The train of gearing is set in motion through the center gear 54, and to that end the spindle of the said gear is carried rearward through the cross-beam 11 of the frame, and a crank-arm 63 is secured to the outer end of the spindle.

In operation as the crank-arm 63 is revolved the segment 56, meshing with the pinion 47, elevates the wing 24 of the working-table of the trough, and the revolution of the gear 55

causes the roller-carrying arm 32 to travel over the butter in the direction of the opposite wing, and as the wing 24 is brought to the perpendicular position illustrated in Fig. 2, and slightly past the perpendicular, the butter upon said wing is thrown upon the center strip 22 of the working-table, to be pressed by the roller upon its return. Immediately upon the release of the pinion 47 by the segment 56 it is engaged by the segment 57 upon the central gear, which throws the crank-arm 50 back to its normal position, enabling the wing 24 to drop to its normal position upon the floor of the trough. At the same time the arm 32 is carried over upon the center strip 22 in the direction of the wing 24 just dropped, and the segment 58, contacting with the pinion 46, elevates the wing 23, and as said wing is brought to a position slightly beyond the perpendicular it deposits the butter just rolled upon the central strip, and in the revolution of the gear 55 the segment 59 thereon contacts with the pinion 46 immediately after its release by the segment 58, and the crank-arm 48 is restored to its normal or horizontal position to permit the wing 23 to drop, and this movement is continued as long as desired, or until the butter has been sufficiently worked.

It will be observed that the milk, water, or other liquid contained in the butter will pass through the slots 21 in the partition 20 of the trough into the rear chamber A.

The trough may be removed at any time by disconnecting the clamps 35 from the posts pivoted to the roller 31 and screwing the rods 36 upward in the arm 32.

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

1. The combination, with a trough having an auxiliary bottom or working-table comprising a central fixed strip and wings hinged at each side of the same, of a reciprocating arm, a roller carried by said arm adapted for contact with the working-table, shafts capable of being alternately rocked, crank-arms secured to said shafts, and a connection between the crank-arms and the wings of the working-table, substantially as shown and described.

2. The combination, with a trough provided with an auxiliary bottom or working-table consisting of a central rigid strip and wings hinged to each side of the said strip, of a laterally-reciprocating arm located above the trough, a tapering roller adapted to travel upon the working-table of the trough, a connection between the roller and the reciprocating arm, shafts capable of being rocked alternately, a crank-arm secured to one end of each shaft, chains connecting the said crank-arms and the wings of the working-table, and means, substantially as shown and described, for reciprocating the arms and rocking the shafts, as and for the purpose specified.

3. The combination, with a trough provided with a central perforated transverse partition and an auxiliary bottom or working-table occupying the space between the front of the trough and the opposed face of the partition, comprising a rigid central strip and wings hinged to the sides of said strip, of an arm capable of reciprocating above the trough, a roller carried by the forward end of the said arm contacting with the working-table of the trough, rock-shafts capable of alternate movement, a crank-arm secured to each rock-shaft, and a connection between the said crank-arms and the wings of the working-table, substantially as shown and described.

4. The combination, with the stationary working-table having vertically and alternately swinging side wings and a transversely-reciprocating roller extending in the direction of the length of the table, of a power-shaft and connections between said shaft, the roller, and the side wings, substantially as set forth.

5. The combination, with the segment-shaped trough, of the horizontally-oscillating bar extended over the trough in the direction of the length thereof, vertically-adjustable rods 36, having clamps 35 on their lower ends, the posts 34, engaged by said clamps, and the roller journaled in said posts, substantially as set forth.

6. The combination, in a butter-worker, with the frame having side bars each provided with cleats 28 29, of the inclined removable segment-shaped trough, the sides of which enter wedge-like between said cleats, whereby inward longitudinal movement is prevented, and the cleats 30 on the sides of the said trough and engaging two cleats on opposite side bars of the frame and the roller, substantially as set forth.

7. The combination, with the frame and the trough having its working-table provided with hinged wings, of the shafts 43 44, flexible connections between the inner ends of the shafts and said wings, pinions 46 47 on the opposite ends of the shafts, the three gear-wheels 53 54 55, meshing with each other, and the outer gears 53 55, each having a toothed segment adapted to engage the pinions 46 47, respectively, the central gear 54 being provided with toothed segments on both faces adapted to engage alternately with the pinions 46 47 to turn them in a direction opposite to that imparted by segments of the outer gears, and the roller operated from said gearing, substantially as set forth.

ALMA A. FOSTER.

Witnesses:
GEO. B. GROW,
CHRISTOPHER IHLE.