

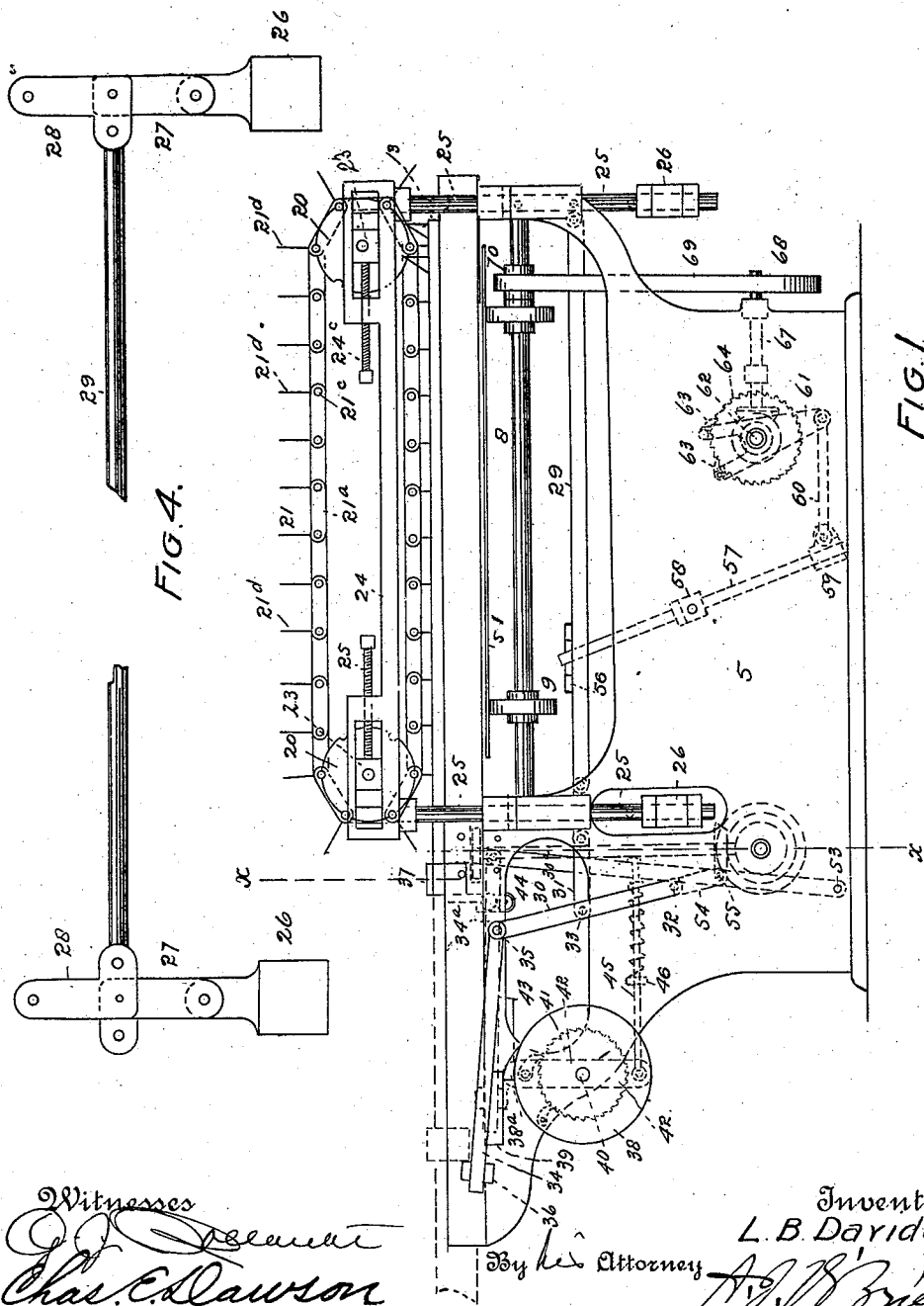
(No Model.)

3 Sheets—Sheet 1.

LE GRAND B. DAVIDSON.
CUTTING AND PANNING MACHINE.

No. 570,870.

Patented Nov. 3, 1896.



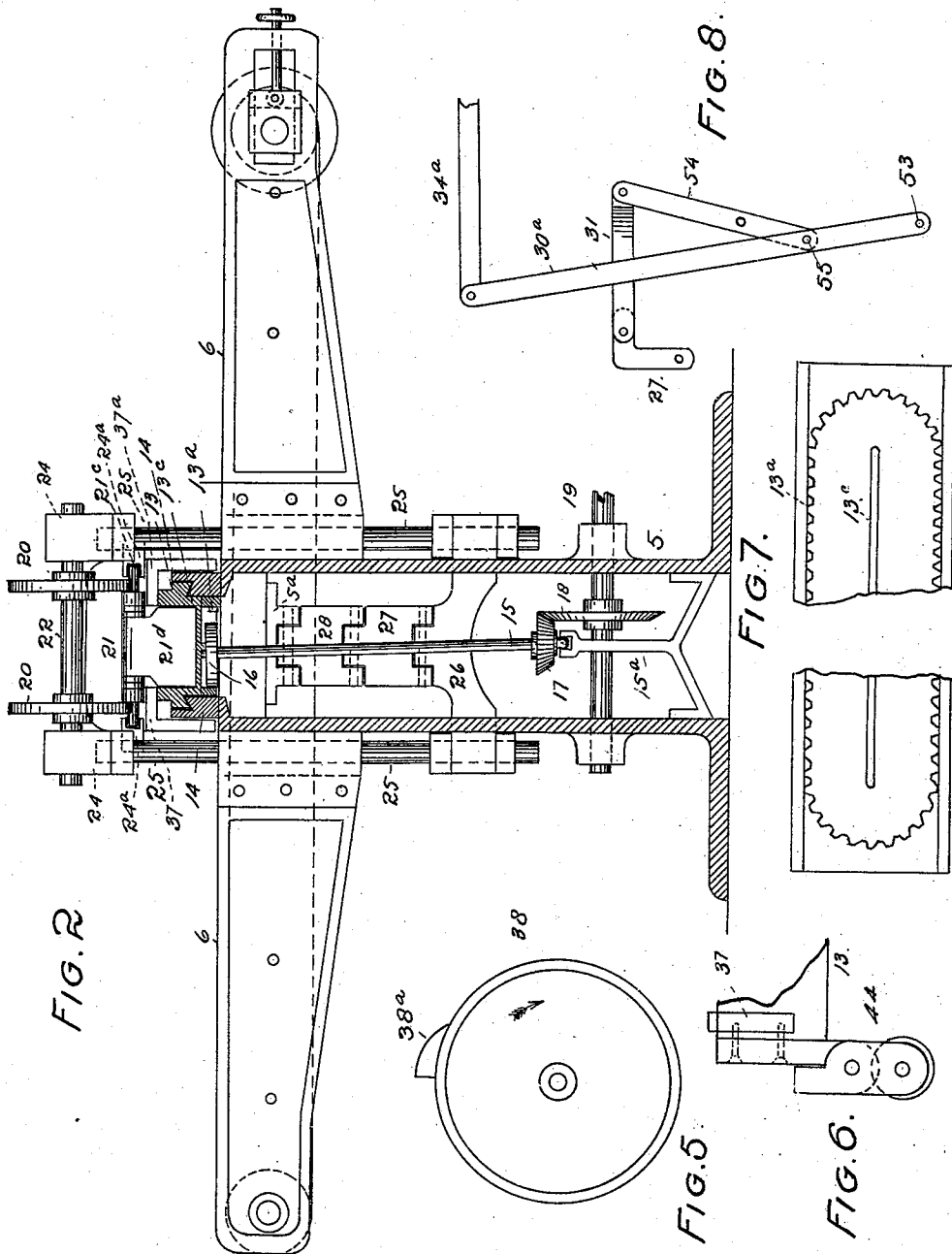
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3 Sheets—Sheet 2.

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Patented Nov. 3, 1896.



Witnesses
Chas. C. Dawson

Inventor
L. B. Davidson
By his Attorney

(No Model.)

3 Sheets—Sheet 3.

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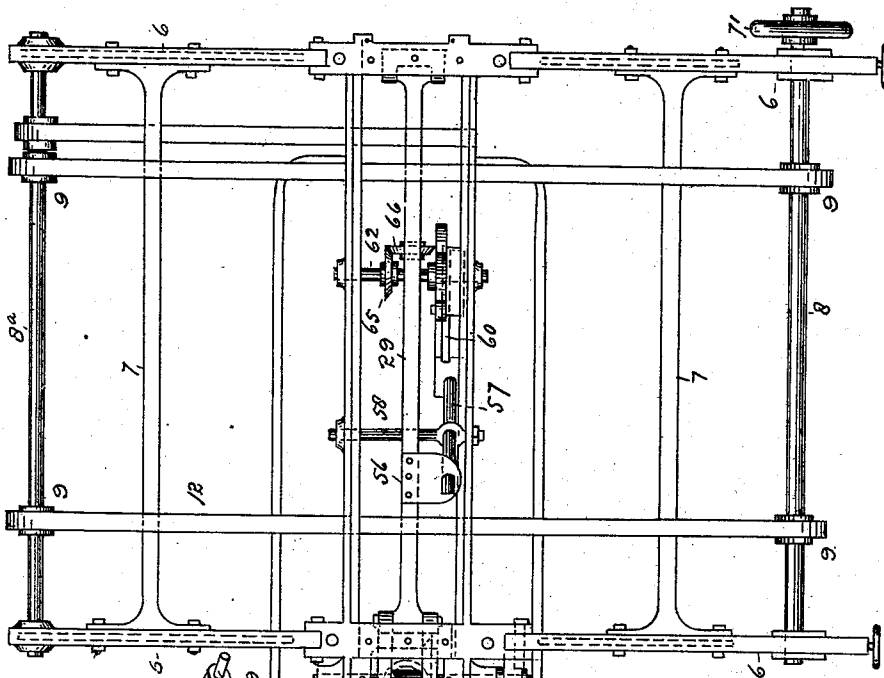


FIG. 12.

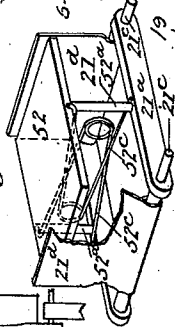


FIG. 10.

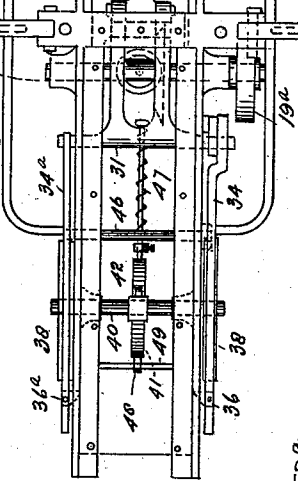


FIG. 11.

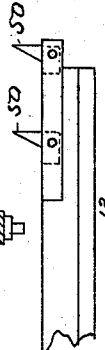
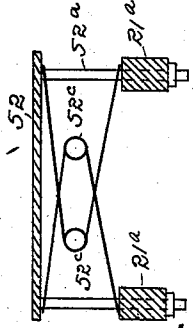


FIG. 10.



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UNITED STATES PATENT OFFICE.

LE GRAND B. DAVIDSON, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF
TO WILLIAM C. ALLEN, OF PHILADELPHIA, PENNSYLVANIA.

CUTTING AND PANNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 570,870, dated November 3, 1896.

Application filed June 26, 1895. Serial No. 554,171. (No model.)

To all whom it may concern:

Be it known that I, LE GRAND B. DAVIDSON, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Cutting and Panning Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to a machine specially designed for use in the preparation of cereal food, but which may be employed in other relations of a kindred character. The machine will, however, be described in this specification with special reference to its use in the manipulation of food material subsequently to shredding or analogous treatment and preparatory to baking. Hence this intermediate function consists in the cutting of the shredded or otherwise prepared material into cakes and dropping the cakes upon a pan ready for baking.

The mechanism consists, generally speaking, of a reciprocating box into which the material is discharged in layers of uniform thickness from a suitable shredding-machine, (not shown;) a chain of knives for cutting the layers deposited in the box into cakes of uniform size, and a carrier or conveyer for the pan, which is moved beneath the box at right angles to the reciprocation of the latter, together with suitable connections whereby the movement of the reciprocating box adjusts and operates the knives and propels the pan-supporting carrier or conveyer, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a section taken through the frame on the line *x x*, Fig. 1, looking toward the right. In this view the upper part of the knife-belt is removed. Fig. 3 is a top or plan view of the machine, the reciprocating box, the knife-belt, and its supporting and actuating mechanism being re-

moved. Fig. 4 is a side elevation in detail, illustrating the toggles, their connecting-bar, and the lifting-yoke. Fig. 5 is a detail view of one of the cam-wheels. Fig. 6 is a detail view of the swinging cam attached to the reciprocating box. Fig. 7 is an underneath view of the continuous rack attached to the bottom of the reciprocating box. Fig. 8 is a detail view of one set of levers for operating the toggles, together with the connecting-yoke. The levers and the forwardly-extending arm shown in this view are shown in dotted lines in Fig. 1 and are located on the side of the machine opposite that presented in Fig. 1. Fig. 9 is a fragmentary underneath view of the knife-belt, illustrating one of the clearing-plates. In this view the springs are omitted, as the device may be operated by gravity. Fig. 10 is a section taken on the line *y y*, Fig. 9, the springs being illustrated and the parts shown on a larger scale. Fig. 11 is a fragmentary view of the reciprocating box, illustrating the pivoted driving-lugs. Fig. 12 is a fragmentary perspective view of the knife-belt, illustrating one of the clearing-plates attached thereto. All the detail views are shown on a larger scale than in the general views, where the parts are assembled.

Similar reference-characters indicate corresponding parts in the views.

Let the numeral 5 designate the upright cast-iron frame of the machine, to which are attached the cast-iron arms 6. There are two pairs of these arms, one pair being attached to each side of the main frame and on opposite sides thereof. Each pair of arms is connected by a brace 7. The arms 6 support two shafts 8, to which are made fast pulleys 9, connected by belts 12.

As shown in the drawings, there are two pulleys on each shaft, and these pulleys are connected by belts 12. It is evident that in place of the pulleys and belts sprocket wheels and chains or other equivalent constructions may be employed without departing from the spirit of the invention. This mechanism as a whole will be termed the "carrier" or "conveyer." Located above the carrier mechanism and occupying a position at right angles thereto is the reciprocating box 13, supported by stationary guides 14. The box and its

guides are provided with counterpart tongues and grooves, whereby the box is permitted to move freely back and forth. Attached to the bottom of the box is a continuous cogged rack

5 13^a. Midway between the sides of this rack is a tongue 13^c, which forms the guide for the upper extremity of a shaft 15, carrying a pinion 16 of less diameter than the space between the two sides of the rack and so located as to en-
10 gage the latter. The attachment of the rack to the bottom of the box forms a shallow, elongated recess of sufficient depth to receive the gear 16. The tongue 13^c terminates at a
15 sufficient distance from the rack extremities to allow the gear to pass around the tongue at these points as it passes from one side of the rack to the other. By means of the pinion 16 and the rack 13^a the box 13 is reciprocated.

The lower extremity of the shaft 15 engages
20 a socket formed in a support 15^a and has sufficient movement in this socket to allow the shaft a slight oscillation as it moves or passes from one side of the rack to the other. Just above the socket extremity of the shaft is lo-
25 cated a fast bevel-gear 17, meshing with another similar gear 18, made fast on a shaft 19. Motion is communicated to this shaft in any suitable manner for the purpose of operating the machine.

30 Located above the box and mounted on wheels 20 is the knife-belt 21, comprising links 21^a, pins 21^b, and blades 21^c. The assembled links comprise two parallel chains engaging the extremities of the pins 21^b. Between these
35 chains, and fast on the pins, are located the knife-blades. The pins of the knife-belt project outward from the links and engage notches formed in the peripheries of the wheels 20, fast on shafts 22, whose extremities
40 are journaled in movable boxes 23, carried by a frame 24 and controlled by screws 24^c. This frame comprises two parallel bars suitably separated. To the bottoms of the bars are at-
45 tached guides 24^a, having grooves, which the extremities of the pins 21^b engage. The frame is supported by four vertical posts 25, whose upper extremities engage the side arms of the frame, while their lower extremities are made
50 fast to two yokes 26. Each of these yokes is hinged to the lower member 27 of a toggle-joint, whose upper member 28 is hinged to a hanger 5^a on the main frame. The posts 25 are vertically movable on the frame. Hence the knife-belt frame 24 may be raised and
55 lowered by actuating the toggles.

The two toggle-joints are connected by a bar 29, whose extremities are hinged to corresponding members of the toggles. One member of the toggle located farther to the left
60 (referring to Fig. 1) is connected with two levers 30 54 by means of a yoke 31. These two levers are located on opposite sides of the machine. The lever 30 is instrumental in imparting one motion to the toggles, and the
65 lever 30^a the reverse movement. The connection whereby this operation of the toggles is effected will now be described. The lever

30 is fulcrumed at 32, connected with the yoke 31 at 33, and pivoted to an arm 34 at 35. The arm 34 is provided with a lug 36, which is en-
70 gaged by a lug 37 on the box 13, when the arm is suitably adjusted. The normal position of the lug 36, however, is below the path of the lug 37 on the box, for the reason that it is as-
75 sumed it will be necessary for the box to make several reciprocations beneath the shredding-machine (not shown) before the layer of shred-
80 ded material will be of the desired thickness. When this does occur, however, the blades of the knife-belt must be lowered to the cutting
85 position through the instrumentality of the toggles and their connections. The raising of the arm 34 to bring its lug 36 into the path of the lug on the box is effected by a wheel 38, carrying a cam 38^a, which engages a block 39,
90 attached to the arm 34, every time the cam-wheel rotates. This last-named wheel is made fast on a shaft 40, carrying a centrally-located ratchet-wheel 41, actuated by an arm 42, carry-
95 ing a dog 43. This arm 42 is pivoted on the shaft 40, and its upper extremity projects into the path of a cam 44, pivoted to one end of the box 13. This cam is pivoted and so con-
100 nected with the box that when the latter is traveling in one direction (toward the left, referring to Fig. 1, for instance) the cam swings on its pivot and passes over the arm 42. When, however, the box is making the reverse
105 movement, the cam maintains its depending position, strikes the arm 42, and gives the ratchet-wheel 41 a partial rotation through the medium of the dog 43. The pivoted arm 42 is returned to its upright or normal position by a spring-held rod 45, pivoted to the lower ex-
110 tremity of the arm and connected with the frame. This rod 45 passes through a stationary cross-head 46, against which the spring 47 bears. As the pawl-arm 42 actuates the ratchet-wheel this spring is compressed or
115 placed under tension. Hence as soon as the pawl-arm is released or disengaged from contact with the cam 44 the recoil of the spring 47 returns the pawl-arm to its normal position. The ratchet-wheel is locked against
120 reverse movement by a dog 48, supported on a stationary cross-piece 49. Hence for each reciprocation of the box 13 the ratchet-wheel 41, together with the cam-wheel 38, is given a partial turn. In this manner the cam-wheel
125 is rotated, and every time it makes a complete revolution its cam engages the block 39 on the arm 34 and raises the latter sufficiently to bring the lug 36 of the arm in the path of the lug 37 on the box just before the box completes its movement toward the left, (referring to Fig. 1.) The movement of the arm 34 should be sufficient to straighten the toggles by virtue of the connections heretofore de-
130 scribed. This movement of the toggles depresses the yokes 26 and lowers the knife-belt sufficiently to bring the pins 21^b into the path of driving-lugs 50, pivoted on the box near its extremity farther to the right, (referring to Fig. 1.) As the box 13 continues

its movement toward the right after the depressing of the knife-belt the latter is moved on its supporting-wheels 20. During this movement of the knife-belt the blades 21^a thereof are successively carried downward into the box and made to cut the layer of food material therein into cakes having a width equal to the distance between the knife-blades. When the box 13 has reached its limit of movement toward the right, (see Fig. 1,) the entire layer of food material has been cut into cakes, and the knife-belt ceases to move. The box then begins its movement in the opposite direction, but the driving-lugs 50 turn on their pivots and pass under the belt without moving the latter. Hence as the box 13 moves toward the left it passes away or from under the knife-belt, and the cakes which are held by the blades of the belt until the box moves away drop to a pan 51, resting on the carriers below, and heretofore described. In order to insure the instantaneous dropping of the cakes from their position between the knife-blades spring-actuated plates 52 (see Fig. 10) are employed. The springs which actuate these plates are compressed as long as the box is in position directly beneath. When, however, the box moves away, the recoil of the springs moves the plates downward sufficiently to cause the cakes to drop and clear the belt. These plates 52 may perform their function by gravity alone.

Just before the box 13 reaches its limit of movement toward the left (see Fig. 1) it engages an arm 34^a, actuates the lever 54, reverses the position of the toggles, and raises the knife-belt through the instrumentality of mechanism which will now be described in detail. The arm 34^a is of the same construction as the arm 34, but located on the opposite side of the reciprocating box. Hence it is provided with a lug 36^a, lying in the path of a lug 37^a, attached to the box, when the arm 34^a is raised by another cam-wheel 38, fast on the shaft 40. The two cam-wheels are exactly alike, but so arranged that the cam of one is a step in advance of the cam of the other, so to speak. Hence the cam-wheel located directly beneath the arm 34^a raises this arm during the first movement of the box toward the right after the lowering of the knife-belt to the cutting position. Hence when the box makes its next movement toward the left the lug 36^a on the arm 34^a will be in the path of the lug 37^a on the box. The lugs 36 36^a on the arms 34 34^a should be made adjustable by any suitable contrivance, whereby they may be so set as to engage the lugs 37 37^a on the box at the proper time. The arm 34^a is pivoted to the lever 30^a, fulcrumed at 53 on the frame. The lever 54 is pivoted to the lever 30^a at 55, its opposite extremity being connected with the yoke 31. This lever 54 is fulcrumed on the frame between its yoke extremity and the point 55. Hence as the arm 34^a is moved toward the left (see Fig. 1) the lever 30^a will be actuated and the lever 54

moved in such a manner as to thrust the yoke 31 toward the right and change the toggles to the angular position, thus raising the knife-belt by virtue of the construction heretofore set forth.

As shown in the drawings, the elements of the mechanism are so constructed and arranged that the knife-belt is raised and lowered once during a single revolution of the cam-wheels. This arrangement, of course, is based on the assumption that the time necessary to complete a single revolution of the cam-wheels will also be the time required to collect a layer of food material in the reciprocating box of sufficient thickness for the cakes into which it is desired to form said material. If, however, it is desired, the wheels 38 may be provided with two or more cams, which would effect the raising and lowering of the knife-belt two or more times during every revolution of the cam-wheels. Hence it is obvious that the time consumed in collecting a layer of food material in the reciprocating box preparatory to cutting the same into cakes may be regulated at will.

After each cutting of the layer of food material in the box the cakes are dropped into the pan 51, resting on a carrier underneath, as heretofore described. This pan is made of such a size that it will contain a number of batches of cakes. Hence a single batch of cakes, or the quantity cut each time the knife-belt is lowered, or during a single operation, lie in a row across the pan. In order that the pan may be ready to receive the next batch or row of cakes, it must be shifted a suitable distance in a direction transverse to the movement of the reciprocating box. The mechanism for operating the carrier or conveyor upon which the pan rests, and whereby the latter is shifted, will now be described.

To the bar 29, connecting the two toggles, is attached a plate 56, provided with an elongated aperture, through which protrudes one extremity of a lever 57, fulcrumed on a bar 58. To the opposite extremity of this lever is attached a block 59, to which is pivoted one extremity of a rod 60, the other extremity of the rod being connected to a ratchet-arm 61, pivoted on a shaft 62. One extremity of this ratchet-arm is forked and carries two pawls or dogs 63, which engage a ratchet-wheel 64, fast on the shaft 62, which carries a bevel-gear 65, meshing with a similar gear 66, fast on the shaft 67, occupying a position at right angles to the shaft 62. These shafts 62 and 67 are suitably journaled on a main framework. To the outer extremity of the shaft 67, or the extremity remote from the bevel-gear 56, is attached a pulley 68, connected by means of a belt 69 with another pulley 70 on one of the carrier-shafts 8. Hence every time the toggle-bar 29 moves toward the right, (see Fig. 1,) which movement occurs just after a batch of cakes has been discharged into the pan, the lever 57 is actuated in such a manner as to give the ratchet-

wheel 64 a partial rotation through the instrumentality of the connecting-rod, the ratchet-arm, and the dogs. This movement of the ratchet-wheel imparts a corresponding movement to the shafts 62 and 67, and thence to the shaft 8, the carrier or conveyer and the pan thereon, by virtue of the connection set forth.

One of the carrier-shafts 8 is provided with a hand-wheel 71, whereby the carrier may be adjusted independently of the automatic mechanism described, whenever it may be necessary to adjust the pan or bring it into the proper position for receiving the first batch of cakes. When properly adjusted to receive the first batch of cakes, the pan is subsequently adjusted automatically until full.

To operate the machine, power is applied to the shaft 19 by connecting the pulley 19^a, which is fast on said shaft, with any suitable motor. From the shaft 19 motion is communicated to the upright shaft 15, through the medium of the gears 17 and 18, and thence to the box 13 through the instrumentality of the pinion 16 and the endless rack 13^a, formed on the bottom of the box. As the box is reciprocated by the rack and pinion the shredded material is discharged thereinto from a suitable machine and distributed in thin layers, one on top of the other, until the mass in the box is made into a suitable thickness for cakes by the accumulated strata or layers. While the reciprocating box is gathering this shredded material, the lugs 36 and 36^a on the arms 34 and 34^a occupy a position below the path of the lugs 37 and 37^a on the box, and the cam-wheels 38 are turned through the instrumentality of the swinging cam 44 attached to the box, the ratchet-wheel 41, and the pivoted pawl-arm 42, which the swinging cam engages. As the cam-wheels are turned one of the cams 43 is a step in advance of the other, and when the more advanced cam reaches its highest position it engages the block 39 on the arm 34 and raises the latter sufficiently to bring the lug 36 into the path of the lug 37. Hence the next time the box moves toward the left (see Fig. 1) the lug 37 will engage the lug 36 and actuate the arm 34 sufficiently to straighten the toggles through the medium of the lever 30, the yoke 31, and the bar 29, connecting the toggles. This straightening of the toggles lowers the knife-belt by virtue of the construction hereinbefore described. The lowering of the knife-belt brings the latter into the path of the pivoted driving-lugs 50 on the box, and the movement of the latter actuates the knife-belt and causes the blades thereof to enter the box 13 and cut the mass of material therein into cakes. The cutting is accomplished by the blades as they successively assume the vertical position in the box, the arrangement being such that the box has reached its limit of movement toward the left (see Fig. 1) when the knife-belt is lowered. When the box has reached its limit of movement toward the right, and the cutting of the

mass into cakes is completed, the knife-belt ceases to move, and as the box makes the return movement, or moves again toward the left, it passes from under the knife-belt without moving the latter, since the pivoted driving-lugs 50 turn on their pivots as they engage the pins of the belt, and offer no resistance. As the box 13 moves away from the knife-belt the cakes, which are prevented by the knife-belt from moving with the box, are dropped downward into the pan 51, and just before the box 13 reaches its limit of movement toward the left its lug 37^a engages the lug 36^a on the arm 34^a (which has been raised by its corresponding cam-wheel 38) and moves the lever 30^a sufficiently to actuate the toggles or throw their members from the straight to the angular position through the medium of the lever 54, the yoke 31, and the bar 29. This movement of the toggles raises the knife-belt out of the path of the box 13, and the knife-belt remains idle until the box collects sufficient material for the next batch of cakes, and when this occurs the cam-wheel 38 will have made another rotation, after which the operation of cutting the mass into cakes and dropping the latter into the pan will be repeated.

After the first batch of cakes is dropped into the pan the carrier or conveyer upon which the pan rests is actuated sufficiently to bring the batch of cakes therein out from under the box, so that the next batch of cakes will drop into the pan alongside of the first batch, and so on, the movement of the pan-conveyer being intermittent and at right angles to the movement of the reciprocating box. The mechanism for imparting the intermittent movement to the pan-conveyer is connected with the bar 29, and consists of the lever 57, the ratchet-arm 61, the connecting-rod 60, the ratchet-wheel 64, the shafts 62 67 and their meshing gears, and a belt 69 connecting a pulley on the shaft 67 with another pulley on one of the conveyer-shafts 8.

In order to insure the disengagement of the cakes from the knife-belt as the box 14 moves away, the mechanism shown in Figs. 9, 10, and 12 may be employed. This mechanism consists of a clearing-plate 52, located between the knives 21^a and made fast to pins 52^a, which pass through apertures formed in the links 21^a, and are held in place by nuts applied to the pin extremities remote from the clearing-plate. The pins 52^a slide freely in the links. These clearing-plates may be constructed to operate by gravity or by springs, as may be desired. In Figs. 10 and 12 suitable springs 52^c are shown. These springs, as shown, are two in number, and each provided with a central coil, their extremities bearing against the links and the clearing-plate, respectively. The springs normally hold the plates at their outward limit of movement. As the knife-belt enters the box, however, containing the food material the knives pass through said material, and the plates 52 are moved up-

wardly, placing the springs under tension. Hence as the box 14 moves away from the knife-belt the recoil of the springs will force the plates downwardly and insure the disengagement of the cakes from the knife-belt.

Having thus described my invention, what I claim is—

1. In a machine of the character described, the combination with a suitable supporting-frame, of a reciprocating receptacle, a vertically-adjustable knife-belt located above the receptacle, and a pan conveyer or carrier located below the receptacle, and having a movement at right angles to the movement of the receptacle, substantially as described.

2. In a machine of the character described, the combination with the frame, of the reciprocating receptacle, a vertically-adjustable knife-belt located above the receptacle, and a pan-conveyer located below the receptacle and having an intermittent movement at right angles to the movement of the box, substantially as described.

3. In a machine of the character described, the combination with a suitable frame, of a reciprocating receptacle, the knife-belt located above the receptacle, the vertically-movable knife-belt frame, the toggles, one member of each being attached to the stationary frame, and the other member to the knife-belt frame, a suitable bar connecting the toggles, and suitable means actuated by the reciprocating receptacle for actuating the toggles whereby the knife-belt is raised and lowered, substantially as described.

4. In a machine of the character described, the combination with a suitable stationary frame, of the reciprocating receptacle, the knife-belt located within the receptacle, a vertically-movable frame supporting the knife-belt, operating-toggles connected with the knife-belt frame, actuating-levers connected with the toggles, and intermittently operated by the reciprocating receptacle, substantially as described.

5. In a machine of the character described, the combination with the stationary frame, of the reciprocating receptacle mounted thereon, the knife-belt located above the receptacle, a vertically-movable frame supporting the knife-belt, operating-toggles connected with the movable knife-belt frame, levers for actuating the toggles, arms connected with the levers and normally occupying a position below the path of the reciprocating receptacle, and mechanism operated from the receptacle for periodically raising the arms into the path of the receptacle, whereby the toggles are operated through the medium of the levers, and the knife-belt raised and lowered at suitable intervals, substantially as described.

6. In a machine of the character described, the combination with a suitable stationary frame, of the reciprocating receptacle mounted on said frame, the knife-belt located above the receptacle, the vertically-movable frame supporting the knife-belt, the operating-tog-

gles connected with said frame, a suitable bar connecting the two toggles, a yoke 31 directly connected with one of the toggles, two levers 70 connected with said yoke, and suitable means connected with the levers whereby the movement of the receptacle while traveling in the same direction imparts reverse movements to the toggles and raises and lowers the knife-belt, substantially as described.

7. In a machine of the character described, the combination with a suitable stationary frame, of a reciprocating receptacle suitably mounted thereon, a knife-belt located above the receptacle, a vertically-movable frame supporting the knife-belt, toggles connected with said frame, a suitable bar connecting the toggles, a yoke 31 directly connected with one toggle, two levers, 30 and 54, connected with the yoke 31, an arm connected with the lever 30, another lever connected with lever 54, another arm connected with the last-named lever, the two arms normally occupying a position out of the path of the reciprocating box, and suitable means actuated by the reciprocating receptacle for periodically, and at different times, bringing the said arms into the path of the box whereby the toggles are actuated in both directions, and the knife-belt raised and lowered, substantially as described.

8. In a machine of the character described, the combination with a suitable stationary frame, of the reciprocating receptacle, the knife-belt located above the receptacle, a vertically-movable frame supporting the knife-belt, toggles connected with said frame and with each other, a yoke 31 connected with one of the toggles, two levers, 30 and 54, connected with the yoke, an arm 34 connected with the lever 30, a lever 30^a connected with the lever 54, an arm 34^a connected with the lever 30^a, and means for raising the arms 34 and 34^a periodically, but at different times, into the path of the reciprocating receptacle, said means comprising a pair of cam-wheels actuated by the receptacle and having their cams arranged at relatively different points, substantially as described.

9. In a machine of the character described, the combination with a stationary frame, of a reciprocating receptacle, the knife-belt located above the receptacle, a vertically-movable frame supporting the knife-belt, toggles connected with said frame and with each other, a yoke 31 connected with one of the toggles, two levers, 30 and 54, connected with the yoke, an arm 34 connected with the lever 30, a lever 30^a connected with the lever 54, an arm 34^a connected with the lever 30^a, cam-wheels having their cams arranged at relatively different points whereby the arms 34 and 34^a are brought into the path of the reciprocating receptacle periodically, and at different times, and means for actuating the cam-wheels, comprising a ratchet-wheel fast on the shaft of the cam-wheels, and an arm pivoted on the shaft and carrying a pawl

engaging the ratchet-wheel, said arm projecting into the path of the reciprocating receptacle, substantially as described.

10. In a machine of the character described, the combination with a stationary frame, of a reciprocating receptacle, the knife-belt located above the receptacle, a vertically-movable frame supporting the knife-belt, toggles connected with said frame and with each other, a yoke 31 connected with one of the toggles, two levers, 30 and 54, connected with the yoke, an arm 34 connected with the lever 30, a lever 30^a connected with the lever 54, an arm 34^a connected with the lever 30^a, cam-wheels having their cams arranged at relatively different points whereby the arms 34 and 34^a are brought into the path of the reciprocating receptacle periodically, and at different times, and means for actuating the cam-wheels, comprising a ratchet-wheel fast on the shafts of the cam-wheels, an arm pivoted on the shaft and carrying a pawl engaging the ratchet-wheel, said arm projecting into the path of the reciprocating receptacle, and means for returning the pawl-arm to its normal position after each engagement with the receptacle, consisting of a spring-held rod connected with the pawl-arm, substantially as described.

11. In a machine of the character described, the combination with a suitable stationary frame, of a reciprocating receptacle suitably mounted thereon, a knife-belt located above the receptacle, the vertically-movable frame supporting the knife-belt, toggles connected with said frame and with each other, a yoke 31 connected with one toggle, levers 30 and 54 connected with said yoke, an arm 34 connected with the lever 30, a lever 30^a connected with the lever 54, an arm 34^a connected with the lever 30^a, cam-wheels having their cams arranged at relatively different points, a ratchet-wheel fast on the shaft of the cam-wheels, an arm pivoted on said shaft and carrying a pawl engaging the ratchet-wheel, a swinging cam attached to the reciprocating receptacle and adapted to actuate the pawl-arm when the receptacle is moving in one direction, and a spring-held rod for returning the pawl-arm to its normal position after each engagement with the swinging cam, substantially as described.

12. In a machine of the character described, the combination with a suitable stationary frame, of a reciprocating receptacle suitably mounted thereon, a vertically-movable knife-belt located above the receptacle, pivoted driving-lugs attached to the receptacle, and means for periodically lowering the knife-belt to the path of said lugs, substantially as described.

13. In a food-preparing machine, the combination with a suitable stationary frame, of a reciprocating receptacle for receiving the food material, said box being suitably mounted on the frame, means operated from the re-

ceptacle for periodically cutting the material therein into cakes, and holding the cakes until the receptacle moves away, and a conveyer located below the reciprocating receptacle and adapted to support the pan for the reception of the cakes, said conveyer having a movement at right angles to that of the receptacle, substantially as described.

14. In a food-preparing machine, the combination with a suitable supporting-frame, of a reciprocating receptacle suitably mounted thereon and adapted to receive the food material, means actuated from the receptacle for periodically cutting the material therein into cakes and holding them until the receptacle moves away, a conveyer located below the box and adapted to hold a pan for receiving the cakes as the box leaves them, and means operated from the reciprocating receptacle for imparting an intermittent movement to the conveyer at right angles to the movement of the receptacle, substantially as described.

15. In a machine of the character described, the combination with a suitable frame, of a reciprocating receptacle mounted thereon, a knife-belt located above the receptacle and supported on a movable frame, and suitable means for raising and lowering the knife-belt, as and for the purpose set forth.

16. In a machine of the character described, the combination with a suitable frame, of a reciprocating receptacle mounted thereon, a vertically-movable knife-belt located above said receptacle, and means actuated by the movement of the receptacle for raising and lowering the knife-belt, substantially as described.

17. The combination with a suitable stationary frame, of a vertically-movable frame mounted thereon, wheels journaled on said frame, the knife-belt mounted upon the wheels, said belt being composed of parallel chains, pins connecting the chains and engaging the wheels, and blades attached to the pins, and a reciprocating receptacle occupying a plane below the knife-belt, substantially as described.

18. In a machine of the character described, the combination with a suitable stationary frame, of a reciprocating receptacle mounted on the frame, a knife-belt located above said receptacle and comprising two parallel chains suitably separated, pins connecting said chains and radial blades attached to the pins; a vertically-movable frame, and wheels journaled on said frame and engaged by the knife-belt, substantially as described.

19. The knife-belt comprising two parallel chains suitably separated, pins connecting the chains, and blades attached to the pins, substantially as described.

20. In a machine of the character described, the combination with a suitable stationary frame, of a reciprocating receptacle suitably mounted on said frame, a knife-belt located above said receptacle and comprising two

parallel chains, pins connecting the chains and radial blades attached to the pins; a vertically-movable frame mounted on the stationary frame, wheels journaled on said frame and adapted to carry the knife-belt, and grooved guides attached to the frame and engaging the protruding extremities of the knife-belt pins, substantially as described.

21. In a machine of the character described, the combination with a suitable stationary frame, of a reciprocating receptacle mounted thereon, a knife-belt located above the reciprocating receptacle, the knife-belt frame comprising vertical posts movable on the stationary frame, bars attached to the posts and wheels journaled on the bars; yokes to which the posts are attached, toggles attached to the yokes at one extremity and to the stationary frame at the opposite extremity, and suitable means for actuating the toggles whereby the

knife-belt is raised and lowered, substantially as described.

22. In a machine of the character described, the combination of a stationary frame, a reciprocating receptacle mounted thereon, a knife-belt located above said receptacle, a frame supporting the knife-belt and having posts vertically movable on the stationary frame, yokes attached to the posts, a toggle connected with the yokes and actuated by the movement of the reciprocating receptacle for operating the toggle and raising and lowering the knife-belt, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

LE GRAND B. DAVIDSON.

Witnesses:

CHAS. E. DAWSON,
ALFRED J. O'BRIEN.