

N. W. L. BROWN.
CAKE FORMER.

APPLICATION FILED FEB. 29, 1912.

1,049,336.

Patented Jan. 7, 1913.

3 SHEETS—SHEET 1.

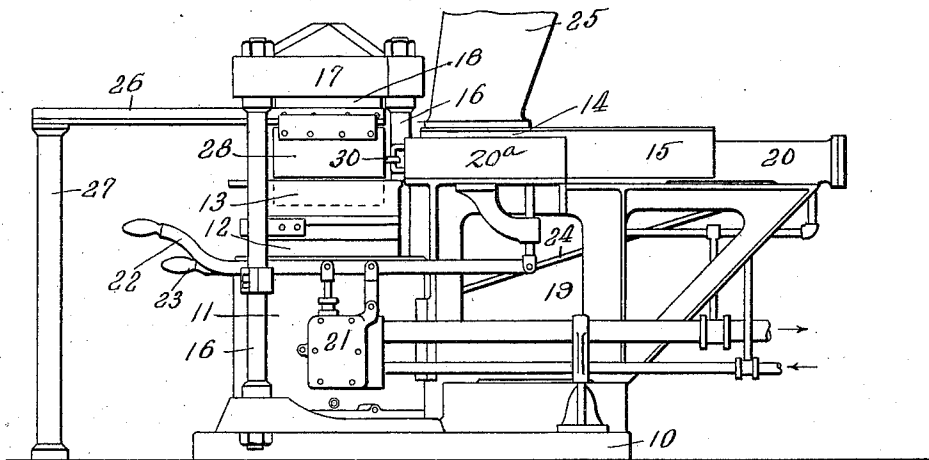
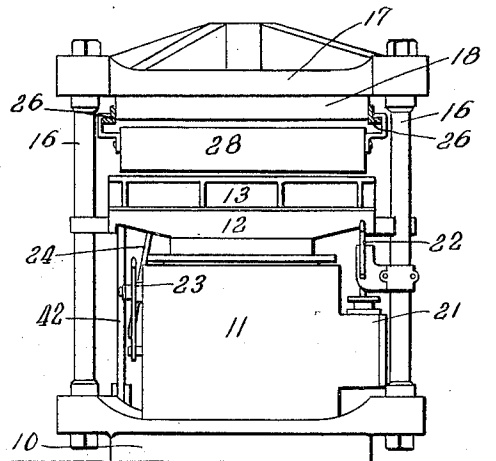


Fig 1

Fig 2



Witnesses
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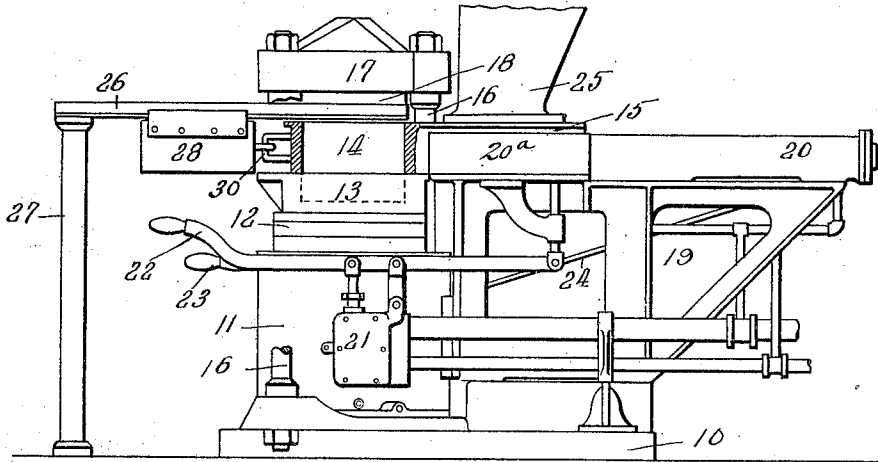
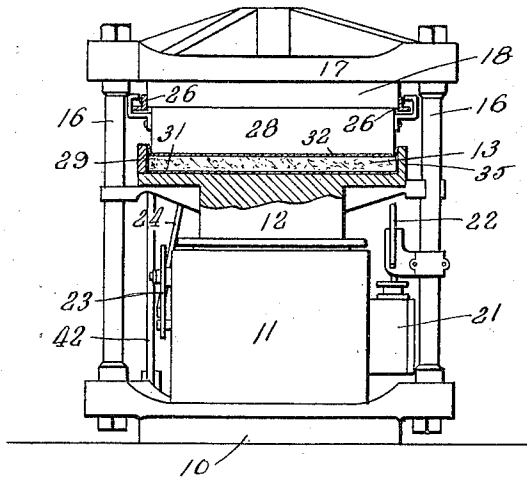


Fig 3

Fig 4



Witnesses
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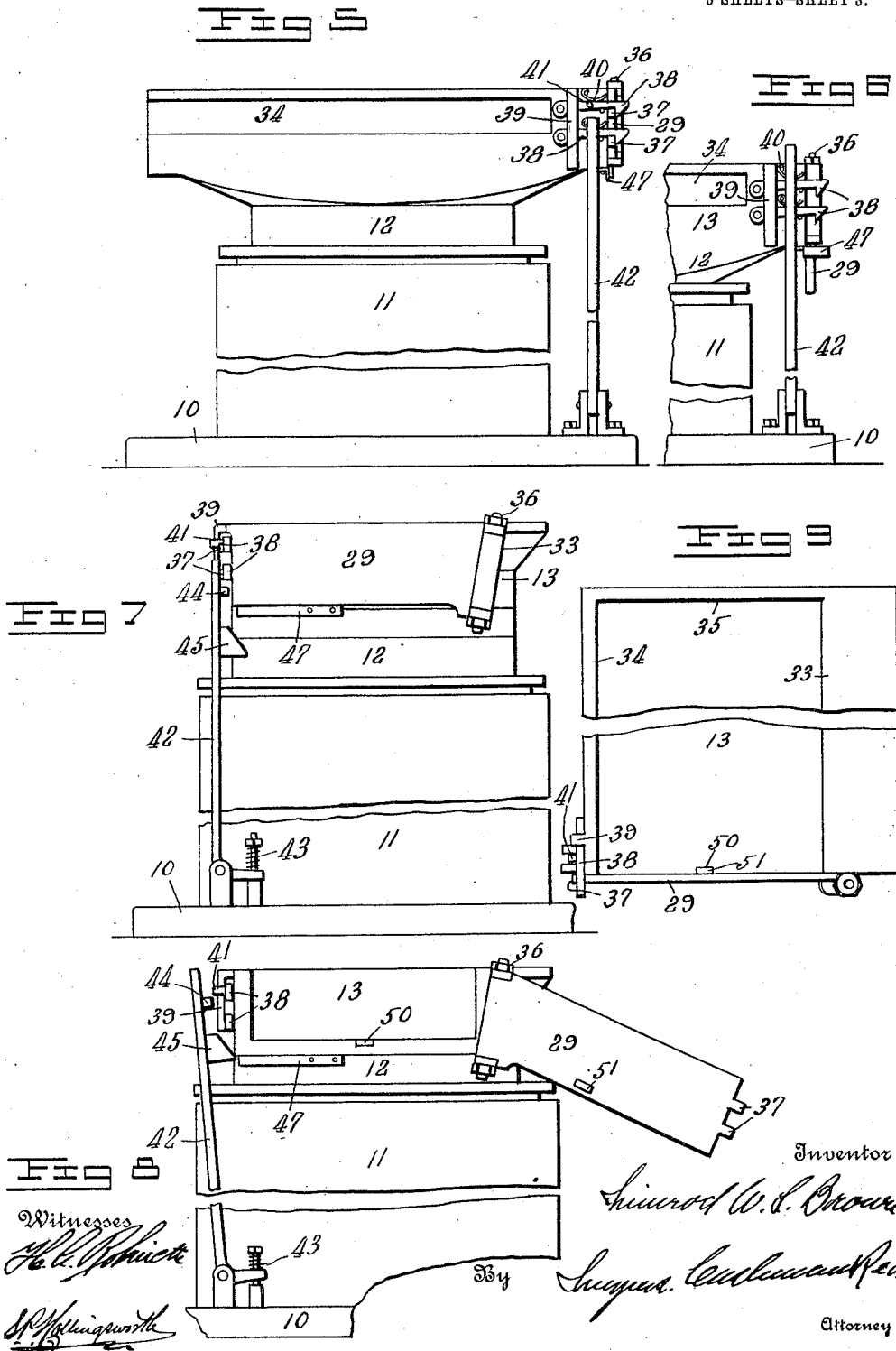
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

NIMROD W. L. BROWN, OF MARIETTA, GEORGIA.

CAKE-FORMER.

1,049,336.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed February 29, 1912. Serial No. 680,660.

To all whom it may concern:

Be it known that I, NIMROD W. L. BROWN, a citizen of the United States, residing at Marietta, in the county of Cobb and State of Georgia, have invented new and useful Improvements in Cake-Formers, of which the following is a specification.

This invention relates to a cake forming machine for shaping or forming and partly compressing oleaginous seeds into a cake of proper proportions to be placed in a hydraulic press of any known type, to extract the oil from the seeds.

In the best known cake forming machines of the present day, a vertical steam cylinder mounted on a base and containing a piston, has secured on the upper end of the piston a pressing box having but two sides over which, when lowered, there passes a slide having a through opening in one end designed to contain a charge of seeds or "meats" to be discharged at the end of its forward movement into the pressing box and then returns to be again filled. As soon as the slide has been fully withdrawn from above the pressing box, the latter is raised, by admitting steam into the cylinder below the piston, to cooperate with a fixed head which enters the pressing box near the end of its upward movement and compresses the meats to the desired extent. A long press cloth is placed in the pressing box before receiving the charge of meats to be pressed, the ends of which are folded over the material to inclose the same.

A serious defect in the above described and other like forms of cake forming machines is the excessive distance traveled by the pressing box from its charging position to the compressing head or abutment, due to the necessity of providing space for the movement of the charging slide over the pressing box. This space is, in the present types of machines, all lost motion and limits the output of said machines. To overcome this defect is one of the objects of the present invention which is accomplished by flexibly securing a filling block to the forward end of the charging slide, said block moving with the slide and being brought over the pressing box to nearly fill the space between the same and the abutment or compressing head.

Another object of the invention is to im-

prove the pressing box by providing the same with a hinged side arranged to be opened automatically when the pressing box descends, a latch means for holding said side closed and means actuated by the descending pressing box to disengage the latch means from the swinging side, said disengaging means being controlled by the movement of the pressing box.

With these and other objects in view, the invention consists of the novel combination and arrangement of parts hereinafter described in detail and pointed out in the appended claims, reference being had to the accompanying drawings in which—

Figure 1 is a side view of the improved cake forming machine, the parts being in position to start compression. Fig. 2 is an end view of the same viewed from the left of Fig. 1. Fig. 3 is a view similar to Fig. 1 with the parts in position to deposit a charge of material into the pressing box. Fig. 4 is a view similar to Fig. 2 showing the pressing box elevated and compressing a cake. Figs. 5 and 6 are enlarged detail views of the latch mechanism as seen from the front of the machine in different positions. Figs. 7 and 8 are like views of the latch mechanism as seen from the side of the machine, showing the manner of actuating said mechanism. Fig. 9 is a plan view of the pressing box.

In the drawings, 10 indicates a bed plate, on one end of which is mounted a vertically disposed cylinder 11 containing a piston 12 extending through the upper head of the cylinder and supporting a pressing box 13 into which is deposited from a charging box 14, forming one end of a slide 15, the material to be formed and lightly pressed into a cake. Above the pressing box 13 and supported on columns 16 or otherwise is a head 17, on the underside of which depends an abutment or pressure block 18 which cooperates with the pressing box 13 to compress the material in said box. Fastened on the bed plate 10 next the cylinder 11 is an open frame 19 over which the slide 15 travels to and from the pressing box 13 when actuated by a piston in a cylinder 20^a carried on the frame. Guides 20 bolted to the frame 19 on each side of the slide, direct the slide in its movement in a straight line. Steam for operating the piston 12, is ad-

mitted into the cylinder 11 through a valve 21 operated by a hand lever 22, and into the cylinder 20 through a suitable valve, not shown, under the control of a hand lever 23 through a connecting rod 24.

Above the slide 15 and behind the head 17 is a hopper 25 into which the "meats" or prepared oleaginous seeds or other material is deposited to run into the charging box 14 at the forward end of the slide when the latter is drawn rearwardly as in Fig. 1, the lower end of the hopper terminating close to the top surface of the slide. After the charging box 14 fills, the slide advances until it lies over the pressing box into which the material falls onto a press cloth placed on the bottom. The slide then returns to again place the charging box beneath the hopper.

As thus far described, the construction and operation of the machine is similar to cake forming machines now in general use, but instead of using a pressing box having a front side and a rear side only, and a long press cloth hanging down from the ends of the box, a press box closed on four sides is employed with two short press cloths. Furthermore in the old machines the ends of the press cloths are lap-folded over the material in the pressing box and the latter elevated to the abutment or pressure block 18 which enters the box and compresses the material; after which the box returns to its former position. The travel of the pressing box through the space provided for the charging box consumes an appreciable amount of time which in the aggregate, limits the speed of the machine. To overcome this loss of time, or lost motion of the pressing box, means are provided for filling the space left vacant by the retreat of the slide 15 and thus greatly reduce the travel of the pressing box and increase the output of the machine.

For the purpose described, two horizontal rails 26, which may be of angle iron, are bolted one on each side of the abutment 18 and project in a forward direction parallel to each other for a suitable distance, their outer ends being supported in any manner as by posts 27. Mounted to slide on the rails 26 is a filling block 28 of a size to enter the pressing box 13 which in this instance has four sides, one of them 29 being preferably hinged and held closed by a latch, as hereinafter described. The front side of the charging box 14 and the rear side of the filling block are connected by any approved link device 30 whereby the block may have a limited vertical play independent of the charging box. When, therefore, the slide is moved forward to bring the charging box over the pressing box, the filling block will, through its connection therewith, be pushed along the rails 26 toward the posts 27. The

return movement of the slide and charging box draws the filling block 28 over the pressing box 13, thus practically closing the space occupied by the charging box. The bottom of the block is separated from the pressing box by a narrow space, about one-half inch wide, to permit the insertion of a short press cloth 31 within the box before the advance of the charging box, and on its retreat to enable a second short cloth 32 being placed over the contents of the pressing box.

Steam being admitted to the cylinder 11, the pressing box rises and the filler block entering the same is carried into contact with the abutment 18 a very short distance above said block which latter compresses the material in the pressing box into a cake. The pressing box is then returned to its lowermost position, the filling block following until arrested by the rails 26 from which it was raised a short distance. The thickness of the cake being less than that of the material before compression, there is left a space between said cake and the bottom of the filling block which enables the latter to be removed quickly from the box.

The pressing box 13, shown in detail in Figs. 5 to 9, is rectangular in shape, closed at its front side 33 and rear side 34 and preferably closed at one end 35, the opposite end being provided with a pivoted side 29 designed to be opened for removing the cake, and when closed, fastened by an automatically operated latch. The side 29 is pivotally mounted on a pin 36 inclined slightly from the vertical and away from the box so that when unlatched, the side will swing open by gravity. Projecting from the free end of the side 29 are two lugs 37 which are engaged when the side is closed by two latch hooks 38 pivoted on the rear side of the pressing box 13 and prevented from swinging laterally by a keeper 39 overlying said latches, a spring 40 holds each latch in engagement with one of said lugs 37. Projecting outwardly from the uppermost latch hook is a pin 41, the purpose of which will be described later.

Pivotally mounted on a fixed support, say the base 10, is an upright lever 42, normally held close to the latch hooks by a spring 43 as shown in Fig. 7, which lever extends upwardly a suitable distance and has a short pin or stud 44 projecting inwardly near its upper end. Below the pin 44 and just above the cylinder 11 the lever 42 is provided with a lug 45, the upper edge 46 of which is beveled or inclined as shown. The length of the lever is such that when the pressing box is in its elevated position, see Figs. 5 and 7, the top of the lever is a short distance below the pin 41 projecting from the upper latch hook 38, the lever itself under the force of the spring 43 lying

close to said hooks. After compressing the material in the pressing box 13, the latter descends, bringing the pin 41 on the upper latch hook 38 into contact with the top of the lever 42 and the lower latch hook into contact with the pin or stud 44 on the lever. Continued downward movement arrests the latch hooks which are thereby disengaged from the lugs 37 on the pivoted side 29 of the pressure box and the latter is partly thrown open by a spring 47 and completely opened by gravity due to the angular disposition of the hinge pin 36. About the time the latch hooks are disconnected from the lugs 37, the bottom of the pressing box strikes the beveled portion of the lug 45 which swings the lever 42 outwardly, thus disengaging the latch hooks which immediately fall to their normal position ready to engage the lugs on the swinging side 29 as soon as the latter is closed. The lever 42 is held in its outward position by the pressing box, as shown in Fig. 8, until the next elevation of said box when the latter releases the lug 45 and the lever is swung inwardly below the latch hooks by spring 43 in position to engage said hooks on the next descent.

After the hinged side of the pressing box has been opened and said box comes to rest in its lowermost position, the pressed cake is removed therefrom by means of a thin flat sheet of steel called a pan, which is slipped under the lower sheet of the press cloth, and the cake removed from the machine. There is more or less tendency for the press cloth to become rumpled or crumpled as the pan is pushed under the cake, but to prevent disarrangement of the cloth, the pan pusher, as he is called, grasps the cake with one hand and gradually lifts it as the pan is pushed under the cake. To enable the pan pusher to grasp the cake firmly, a notch 50 is made in the bottom of the pressing box on its open side for the thumb of the operator, while the fingers of the same hand grasp the cake and lift the same as the pan is pushed under. To prevent the material and cloth from entering the notch 50, a lug 51 projects from the swinging side in position to enter the notch 50 when the side is closed.

It will be evident that while it is preferred to connect the filler block flexibly to the charger box, this is not absolutely necessary. It will also be evident that while it is desirable to have the bottom of the filler block about one half inch above the top of the pressing box in its lowermost position for one class of service, for other classes of service it will be desirable that this clearance at times be greater or less. It will furthermore be evident that the hinged side of the box need not necessarily open by gravity.

What I claim is:

1. In a machine of the character described, the combination with a pressing box, an abutment coöperative therewith, and a movable charging box for said pressing box, of a filling block adapted to be moved between the pressing box and the abutment as the charging box is withdrawn from above the pressing box.

2. In a machine of the character described, the combination with a reciprocating pressing box, an abutment coöperative therewith, and a movable charging box for said pressing box, of a filling block adapted to be moved between the pressing box and the abutment as the charging box is withdrawn from above the pressing box.

3. In a machine of the character described, the combination with a pressing box, an abutment coöperative therewith, and a movable charging box for said pressing box, of a filling block flexibly connected to said charging box and adapted to be drawn between said pressing box and the abutment as the charging box is withdrawn therefrom.

4. In a machine of the character described, the combination with a pressing box, an abutment coöperative therewith to compress the material in said pressing box, and a slidable charging box for delivering the material to the pressing box, of a filling block connected to said charging box and adapted to be drawn in between the pressing box and the abutment as the charging box is withdrawn from above said pressing box, said filling block adapted to enter the pressing box and compress the material therein.

5. In a machine of the character described, the combination with a pressing box, an abutment coöperative therewith to compress material in said pressing box, and a slidable charging box for delivering material to the pressing box, of a filling block flexibly connected to said charging box and adapted to be drawn between said pressing box and the abutment as the charging box is withdrawn therefrom, said filling block adapted to enter the pressing box and compress the material therein.

6. In a machine of the character described, the combination with a pressing box having a side which can be opened and closed, an abutment coöperative therewith, and a movable charging box for said pressing box, of a filling block adapted to be moved between said pressing box and the abutment as the charging box is withdrawn therefrom.

7. In a machine of the character described, the combination with a vertically moving pressing box, an abutment coöperative therewith to compress the material in said pressing box, and a slidable charging box for delivering the material to the press-

ing box, of a filling block mounted upon ways and adapted to be moved between said pressing box and the abutment when the charging box has been withdrawn therefrom, and means for moving said filling block.

8. In a machine of the character described, the combination with a pressing box, an abutment coöperative therewith to compress material in said pressing box, and a slidable charging box for delivering material to the pressing box, of a filling block mounted upon ways and adapted to be moved between said pressing box and the abutment, and a flexible connection between the charging box and the filling block for moving the latter.

9. In a machine of the character described, the combination with a pressing box, an abutment coöperative therewith to compress material in said pressing box, and a slidable charging box for delivering material to the pressing box, of a filling block mounted upon ways and adapted to be moved between said pressing box and the abutment to substantially fill the space between said parts and enter the pressing box during compression to act on the material therein, and a flexible connection between the charging box and the filler block.

10. In a machine of the character described, a pressing box having a hinged side adapted to swing open by gravity, a latch device for holding said side closed, pivoted means for disengaging the latch device from the hinged side, and means on said pivoted means actuated by the movement of the pressing box for moving the pivoted means into and out of operative position.

11. In a machine of the character described, a pressing box having a side hinged on a pivot inclined from the vertical to cause said side to open by gravity, a latch device for holding said side closed, means for automatically disconnecting said latch device after compression to permit the hinged side to open, and a filling block adapted to be moved over said pressing box a short distance above and in position to enter the same.

12. In a machine of the character de-

scribed, a vertically movable pressing box having three of its sides fixed and one side hinged on a pivot inclined from the vertical to cause said side to open by gravity, a latch device for holding said side closed, a lever held normally in position to disengage said latch device and release the door as the pressing box descends, and a lug on said lever operated by the descending box to force the lever away from the latch device and permit the latter to engage the side when closed and to hold said lever away until the ascent of the pressing box carries the latch device above the lever.

13. In a machine of the character described, a vertically movable pressing box having three of its sides fixed and one side hinged on an inclined pivot to cause it to open by gravity, a spring to start the opening of said side, a latch device for holding said side closed, a lever for disengaging said latch device, and means operated by the movement of the pressing box to carry said lever out of the path of travel of the latch device and so hold it during a portion of the ascending movement of the pressing box.

14. In a machine of the character described, a vertically movable pressing box having a side which can be opened and closed, a thumb notch in the end of the bottom of the box, and a lug on said side to fit into said thumb notch when said side is closed.

15. In a machine of the character described, a pressing box having a hinged side, a latch device for holding said side closed, pivoted means for disengaging the latch device from the hinged side, and means on said pivoted means actuated by the movement of the pressing box for moving the pivoted means into and out of operative position.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

NIMROD W. L. BROWN.

Witnesses:

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