

J. DION & J. D. BELANGER.

OIL CAKE TRIMMER.

APPLICATION FILED APR. 5, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

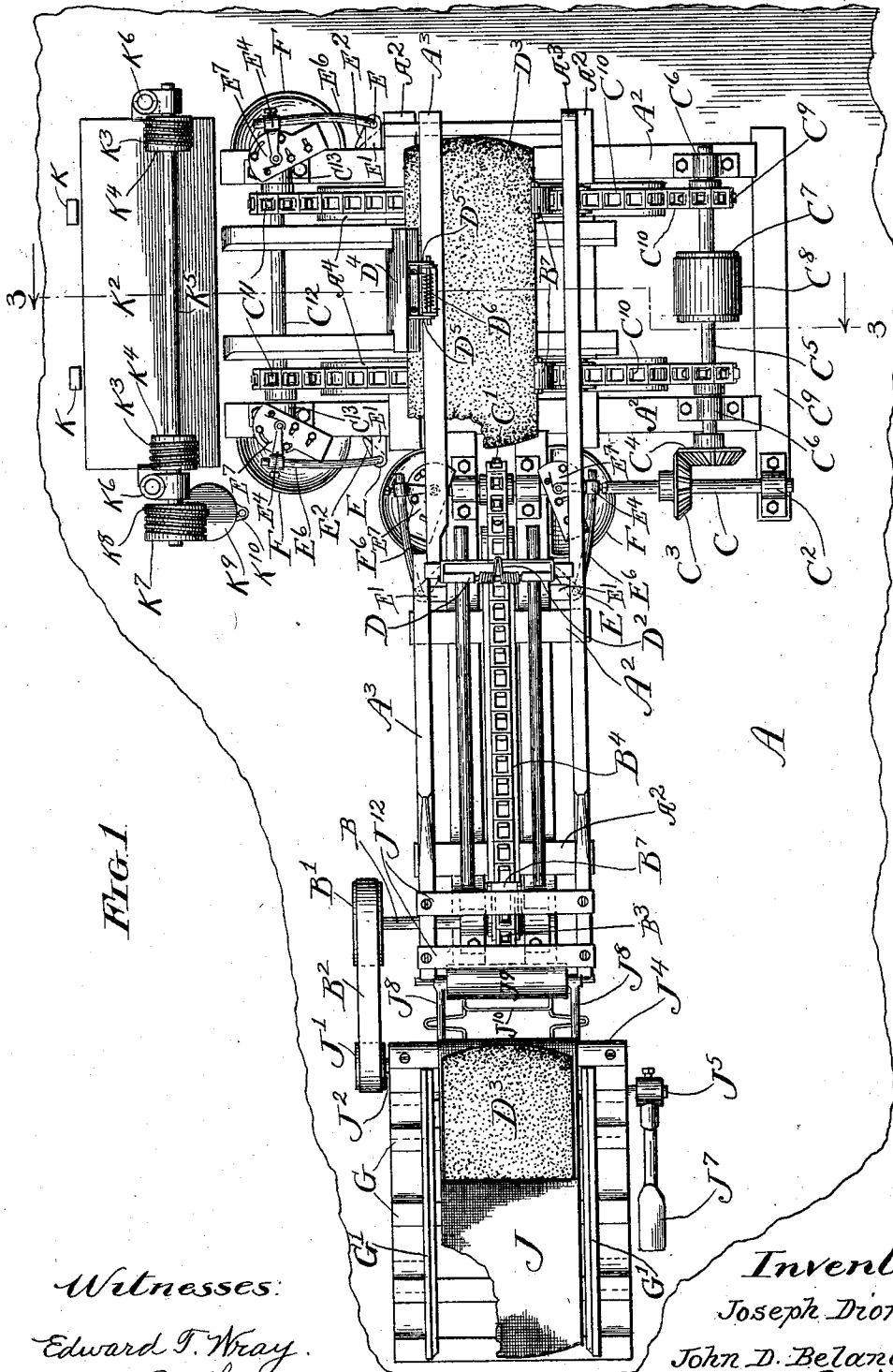


FIG. 1.

Witnesses:
 Edward F. Wray.
 A. J. Bell

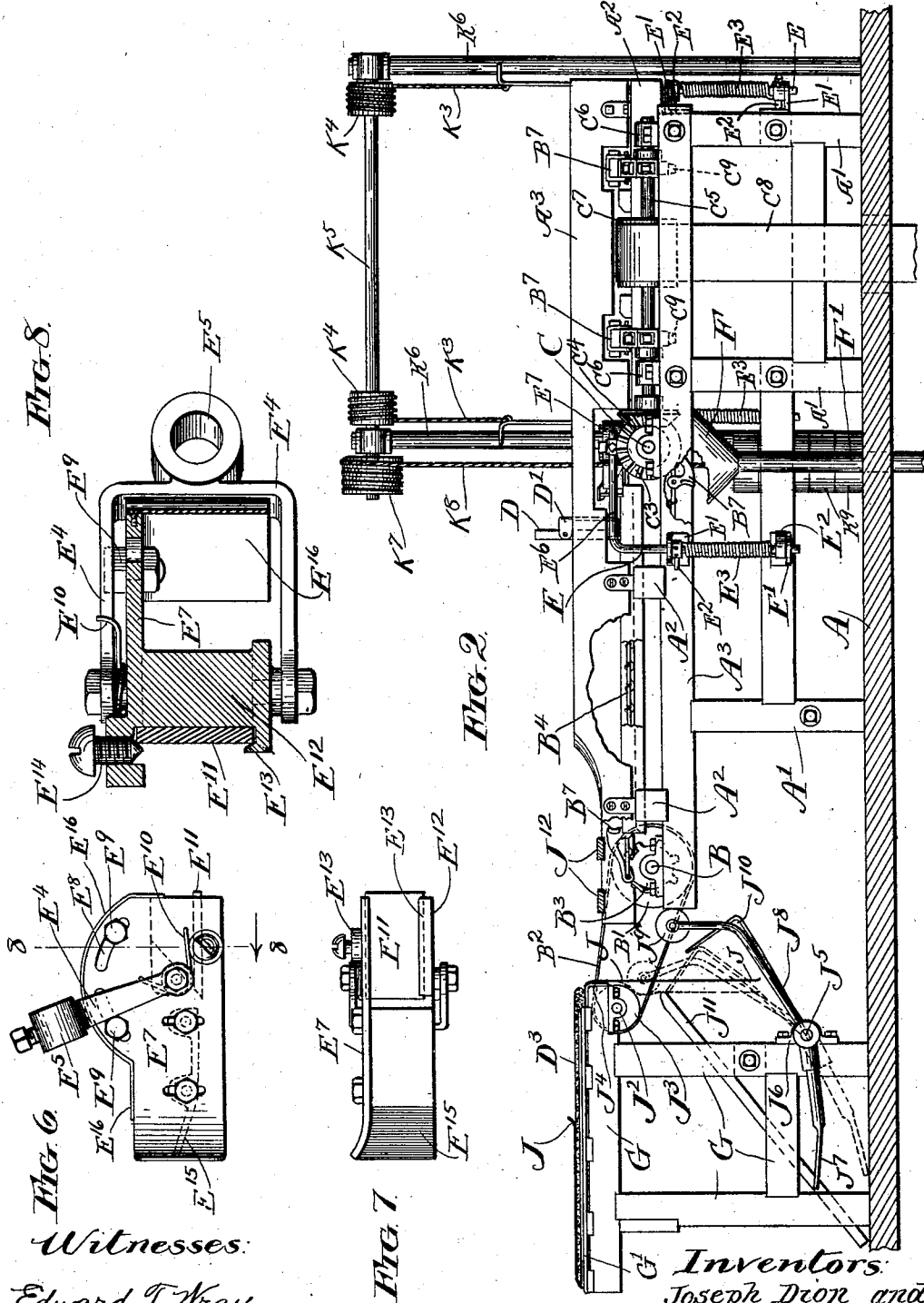
Inventors:
 Joseph Dion, &
 John D. Belanger.
 by Parker Carter, Atty's.

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3 SHEETS—SHEET 3.

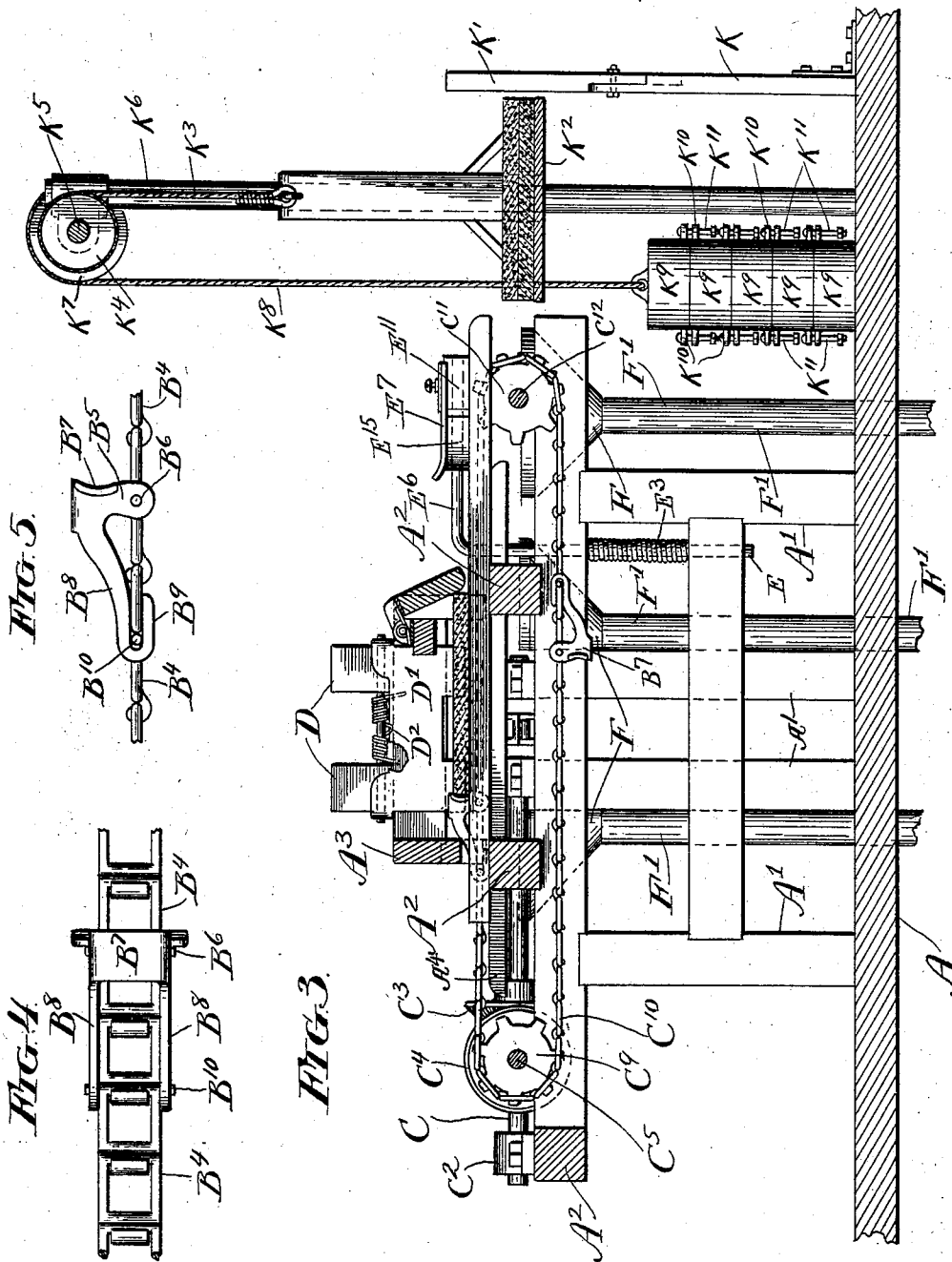


FIG. 5.

FIG. 4.

FIG. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH DION AND JOHN D. BELANGER, OF CHICAGO, ILLINOIS.

OIL-CAKE TRIMMER.

SPECIFICATION forming part of Letters Patent No. 721,867, dated March 3, 1903.

Application filed April 5, 1902. Serial No. 101,528. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH DION and JOHN D. BELANGER, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Oil-Cake Trimmers, of which the following is a specification.

Our invention relates to oil-cake trimmers or machines for trimming oil-cake.

It is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan of the machine. Fig. 2 is a longitudinal section. Fig. 3 is a cross-section. Fig. 4 is a detail of the conveyer-chain. Fig. 5 is a detail of the conveyer-chain hook. Fig. 6 is a plan view of the cutter. Fig. 7 is a front view of same. Fig. 8 is a detail section.

Like parts are indicated by the same letters in all the figures.

A is a base-plate, on which the several parts may be mounted. A' A' are standards thereon.

A² A² are cross-beams for the proper support of the different parts of the mechanism.

A³ A³ are longitudinal beams on the main portion of the cake-cutting frame, and A⁴ A⁴ are longitudinal beams transverse to the beams A³ A³ on the secondary portion of the cake-cutting frame. Mounted in the rear end of this frame is the shaft B, having at one end the pulley B', on which travels the belt B². This shaft carries at about its middle portion a sprocket-wheel B³, engaging the chain B⁴. This is what we call the "conveyer-chain" of the main portion of the machine, and it is provided with two conveyer-hooks, each of which has a downwardly-depending part B⁵, pivoted at B⁶ to the chain, and an upwardly-projecting portion B⁷ to receive the edge of the cake, and rearwardly-extending portions B⁸, provided each with a hook B⁹, which is adapted to form a loose or sliding connection with the chain by engaging the pin B¹⁰. By this construction the hook has a motion which will permit it to pass around the sprocket-wheels freely. At the other end of this frame is journaled the shaft C, which also carries a sprocket-wheel C', on which this chain travels. The shaft C is extended and its outer end is journaled at C² on the sec-

ondary portion of the frame. It carries the bevel-gear C³, engaging the bevel-gear C⁴ on the shaft C⁵, which is journaled at C⁶ C⁶ on the secondary frame at right angles to the shaft C. The shaft C⁵ has a pulley C⁷, driven by the belt C⁸, and from this point power may be communicated to the entire apparatus. The shaft C⁵ carries two sprocket-wheels C⁹ C⁹ for the conveyer-chains C¹⁰ C¹⁰, which are in like manner adapted to travel over the sprocket-wheels C¹¹ C¹¹ on the shaft C¹², which is journaled at C¹³ C¹³ in the other end of the laterally-extended secondary frame. Each of these chains carries two or more hooks like those on the chain B⁴.

We have now described the conveyer mechanism. By this conveyer mechanism the cakes are taken up and fed endwise past the two cutters in the forward end of the main portion of the frame, and they are then fed sidewise on the two chains in the secondary portion of the frame past the two cutters shown. These hooks are shaped so as to engage the edge of the cakes and push them along.

D D are standards on the frame, and to them is pivoted the downwardly-depending sheet-metal piece D', which is kept in its vertical position by the action of the spiral spring D². This flexible stop in the path of the cake causes it to come to the proper alinement and to pass through between the standards under the action of the chain on a straight path. D³ indicates such a cake after it has thus passed onto the two chains. On one longitudinal bar A³ is mounted a somewhat similar flexible stop D⁴, and it is provided with upper projections D⁵ D⁵ and is engaged by the spiral spring D⁶ to keep it in its vertical position. It acts in a manner somewhat similar to the action of the other flexible stop to bring the cake into proper alinement. The vertical rods E E are positioned so as to receive the cake and bring it into position to pass between the two end cutters for the ends of the cake. All of these cutters are substantially the same, and we will describe but one of them.

E is a vertical rod mounted in suitable bearings E' E' and provided with a projecting stop E² to limit its inward motion and

also provided with the spiral spring E⁸ to tend to hold the cutter at the limit of its inward motion.

E⁴ is a yoke having an outer aperture E⁵, through which passes the laterally-bent portion E⁶ on the rod E. The yoke has at its outer extremity and pivotally mounted thereon the plate E⁷. In this plate are two slots E⁸ E⁸, into which are fixed the adjustable stop-bolts E⁹ E⁹.

E¹⁰ is a spring which tends to keep the plate at the limit of its motion in one direction against one of the stops E⁹.

E¹¹ is a cutter arranged parallel to the outer face of the plate and held in position by a downwardly-projecting frame-piece E¹², having a lip E¹³ and a set-screw E¹⁴ above.

E¹⁵ is a curved guard-plate fixed in position in front of and near the knife and curved backward at its end to form a guide for the cake. As the cake comes forward it engages first the curved end of this guide-plate, forces the plate out, and then acting by reason of the engagement of the edge of the cake with the flat portion of the plate E¹⁵ brings the cutting apparatus so that the cutter is in parallelism with the moving cake. The cake next engages the cutter, and its outer edge is thus trimmed off. The entire cutter is held flexibly to its work up against the edge of the cake by means of the stronger spiral spring operating on the rod E to throw its upper bent end E⁶ inwardly. Thus the cakes are trimmed on their edges and ends as they pass along. Under each of these cutters is arranged a hopper F, with the pipe F' leading therefrom, whereby the refuse cut away is disposed of.

In connection with our apparatus for cutting or trimming the oil-cakes we have also devised means for stripping and feeding the oil-cakes. In Fig. 2 this device is illustrated. It is mounted on the same platform A, provided with the upward standards or frame-pieces G G. The top is preferably formed of slats and guide-rolls G' G'. Each cake is commonly wrapped in a covering J. The cake is laid on this slatted frame, and a layer of the covering is stripped off by hand and allowed to drop down at the end of the frame, as indicated in Fig. 2. The belt B² runs over a pulley J' on the shaft J² on this stripping-frame, and this shaft carries a roller J³, preferably guarded at the top by the sheath J⁴. On the lower portion of the stripping-frame is the rocking shaft J⁵, supported in suitable bearings J⁶ and having an operating-treadle J⁷ and also forwardly and upwardly projecting arms J⁸ J⁸, carrying a roller J⁹, which is normally out of engagement with the roller J³. J¹⁰ is a spring-frame. This spring-frame is placed in opposition to the upward end of the inclined plate or chute J¹¹, but is not normally in engagement therewith. When the cloth or covering is stripped off, as indicated, and has dropped down into the position shown in full lines in Fig. 2, by operating the treadle

the parts will be brought into the position indicated in dotted lines—that is, the spring-frame will force the cloth or covering up against the end of the inclined chute J¹¹ and the roller J⁹ will be brought into contact with the roller J³, the cloth being between them. Now since the roller J³ is rotating the result will be that the cloth will again be drawn between the two rolls; but this will draw the cake forward, and in the end this cake will be discharged upon and thrown across the two slats J¹² J¹² or the rear end of the cake-cutter frame, and the cloth will be stripped entirely off of the cake and will fold up on the inclined chute J¹¹. In this manner the cakes are stripped of their coverings and fed to the apparatus.

It is necessary also to have means for receiving the cakes. It is not desirable to drop them, as they are more less fragile and liable to break. Hence we have invented means for holding the cakes, so that the receiving-surfaces will be approximately at the same height until the receiver is entirely full.

K K are standards fixed on the frame beyond the point where the cakes would be discharged, each provided with a folding top K'.

K² is a movable platform, suspended at both ends by means of the cords K³ K³, which wind on the drums K⁴ K⁴ on the shaft K⁵, which is mounted in suitable bearings at the top of the standards K⁶ K⁶ and which carries at one of its outer extremities a drum K⁷, on which winds the cord K⁸. The cord K⁸ carries at its lower end a series of buckets K⁹ K⁹, each provided with weights, such as shot. (Not shown.) These buckets are each provided with two laterally-projecting lugs K¹⁰ K¹⁰, which rest short bolts K¹¹, so that the buckets can be lifted one after the other and yet kept together in permanent relation. The weights in the buckets are so arranged that when a single cake is thrown upon the table K² it will lower approximately a distance equal to the thickness of such cakes. As cakes are further loaded on the table it will continue to descend, accordingly raising the buckets in its descent, until the table has been forced to the bottom. The hinged ends K' on the standards K can then be thrown down, and the topmost cake will be substantially in the position on the table as indicated in Fig. 3. As the cakes are taken off to be slid or loaded onto a cart or carriage or platform, the table accordingly rises under the action of the weights until all of the cakes are gone, thus assuming the position shown in Fig. 3.

These several parts can be greatly modified or changed and altered in many particulars without departing from the spirit of our invention, and we do not wish, therefore, to be limited to the particular forms, proportions, sizes, shapes, and arrangements of all of the features shown.

The part E¹⁶ serves as a shield to keep the cuttings removed by the knife from flying out

into the operative parts of the machine or onto the floor and to guide them into the hopper beneath.

The use and operation of our invention have probably been sufficiently set forth; but we will add a further description of such operation.

A cake having its wrapping-cloth is thrown upon the stripping-table and the forward end of the cloth pulled off, so that it will hang down. The treadle is then operated and the parts brought into position. The cloth is rolled and stripped and the cake thrown forward across the bars J¹² onto the traveling link chain in the main part of the cutting-frame. As this chain continues to travel a hook comes about and engages the rear end of the cake and forces it forward under the spring-stop until its side edges pass between the two cutters and are trimmed, and the cake then passes onto the two chains which are traveling in the opposite direction. The hooks are so spaced and timed that shortly after such movement the two hooks engage one of the side edges of the cake and it is drawn forward across the transverse secondary portion of the cutting-frame under the yielding or flexible stop. The cake is brought into proper position by engagement with the vertical rods and is then passed through between the two cutters, where its end edges are trimmed. It then drops onto the table and the table moves down approximately the distance of one cake. This operation is continued and the cakes may be removed from the receiving-table during such operation, or they can all be removed after a complete load has been permitted to discharge. The cutters are brought into proper alinement by the action of the spring associated with the cutter-plate and there held firmly against the edges of the cake by the spiral springs on the rod whose end supports the cutter.

We claim—

1. In an oil-cake machine the combination of a table to receive the cloth-covered cakes, with a stripping device to engage and grip the cloth, and means for driving such device so as to strip the cloth, and thereby force the cake onto the trimming-table, and a trimming-machine with cake-conveyers and trimming-knives to receive, convey and trim the cake.

2. In an oil-cake machine a stripping-machine comprising a table, a roll associated therewith, a movable friction-roll to engage the stripping-roll, means for driving the rolls so that they will grip the cake-cover and strip it from the cake thereby throwing the cake upon the trimming-machine, and a trimming-machine with cake-conveyers and trimming-knives to receive, convey and trim the cake.

3. In an oil-cake machine a stripping-machine comprising a table, a roll associated therewith, a movable friction-roll to engage the stripping-roll, means for driving the rolls so that they will grip the cake-cover and strip it from the cake thereby throwing the cake

upon the trimming-machine, and a gripping device to engage the end of the cloth so as to cause it to fold upon itself and a trimming-machine with cake-conveyers and trimming-knives to receive, convey and trim the cake.

4. In an oil-cake machine a stripping-machine comprising a table, a roll associated therewith, a movable friction-roll to engage the stripping-roll, means for driving the rolls so that they will grip the cake-cover and strip it from the cake thereby throwing the cake upon the trimming-machine, and a gripping device to engage the end of the cloth so as to cause it to fold upon itself, and an inclined way down which the cloth travels as it is stripped, and a trimming-machine with cake-conveyers and trimming-knives to receive, convey and trim the cake.

5. In an oil-cake machine, the combination of a cake-stripping device to engage one end of the cloth at the front end of the cake, means for drawing on said cloth so as to strip the same and force the cake forward along the table on which it rests, a trimming-table in close proximity to such stripping mechanism to receive the cake when it is forced forward by this action, a cake-conveyer to carry the cake forward and trimming-knives to engage the sides thereof and trim the same.

6. In an oil-cake machine the combination of conveyer-chains with hooks thereon to engage the rear ends of the cakes, said hooks consisting of a forward portion pivoted to the chain with a rear portion secured to the chain by a loose joint permitting longitudinal play.

7. In an oil-cake machine a trimming-frame comprising two parts at right angles to each other, and conveying-chains and cutters consisting each of a non-rotating knife-edge standing in a vertical plane and provided with a spring device to hold it yieldingly against the edge of the cake associated in groups, one group with one portion of the cutter-frame and the other group with the other portion so that the cake is carried first in one direction and then at right angles thereto.

8. In an oil-cake machine the combination of a conveyer and cutters consisting each of a non-rotating knife-edge standing in a vertical plane and provided with a spring device to hold it yieldingly against the edge of the cake to trim two of the edges of the cake, with a conveyer traveling at right angles thereto to receive the cake partially trimmed, and cutters consisting each of a non-rotating knife-edge standing in a vertical plane and provided with a spring device to hold it yieldingly against the edge of the cake associated with the last-mentioned conveyer to cut or trim the uncut edges of the cake as the latter is moved forward by such conveyers.

9. In an oil-cake machine a cutter comprising a spring-actuated vertical rod having a lateral projection, with a cutter pivoted to such projection and projecting therefrom into the path of the cake.

10. In an oil-cake machine a cutter compris-

ing a spring-actuated vertical rod having a lateral projection, with a cutter pivoted to such projection and projecting therefrom into the path of the cake, said cutter provided with
 5 adjustable stops between which it is free to move and a spring to keep it at the limit of motion in one direction.

11. In an oil-cake machine a cutter comprising a spring-actuated vertical rod having a
 10 lateral projection, with a cutter pivoted to such projection and projecting therefrom into the path of the cake, said cutter provided with a guard outwardly flanged in advance of the cutter proper to engage and guide the cake.

12. In an oil-cake machine a cutter comprising a spring-actuated vertical rod having a
 15 lateral projection, with a cutter pivoted to such projection and projecting therefrom into the path of the cake, said cutter and parts
 20 disposed so that the cutter is substantially parallel to the edge of the cake as the latter passes therealong.

13. In an oil-cake machine a movable receiving-table in combination with balancing-
 25 weights said table adapted to receive the cake at substantially the same level whatever number of cakes there may be on the table, said weights loosely linked together so as to admit of vertical separation without disturbing
 30 their permanent relation.

14. In an oil-cake machine the combination of a movable table with supporting-ropes and a shaft on which they are wound, and a rope also wound on said shaft and a series of weights attached to said rope, said weights
 35 loosely linked together so as to admit of vertical separation without disturbing their permanent relation.

15. In an oil-cake machine, mechanism for moving the cake forward, in combination
 40 with a cutter at the side of the cake, a hopper beneath the cutter, and a plate-like shield on the cutter-support adapted to prevent the cuttings from flying out and direct them into the hopper.

16. In an oil-cake machine, the combination of a table to receive the cloth-covered cakes, a stripper to grip the cloth at one end of the cake, means for driving the stripper and causing it to pull the cloth and simultaneously to
 45 move the cake forward upon the trimming-machine, a trimming-machine, means associated therewith for conveying and trimming the cakes, and a receiver to receive the cloths stripped from the cakes.

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