Aug. 22, 1939. B. WEIL 2,170,170

TOASTING MACHINE

Filed May 10, 1938 4 Sheets-Sheet 1

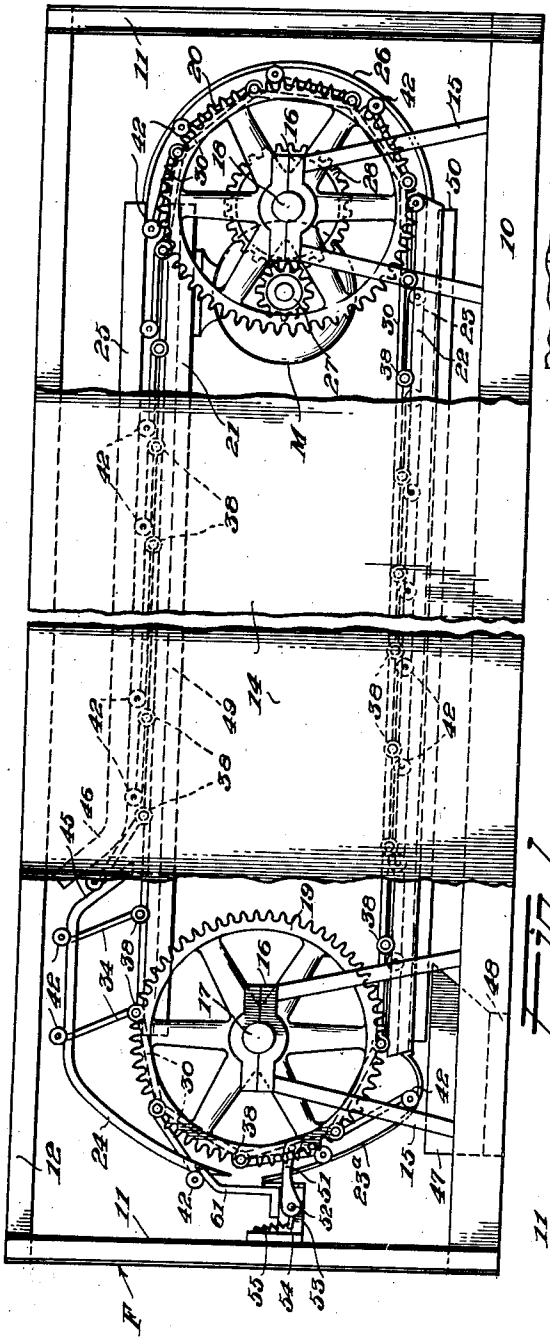


Fig. 1.

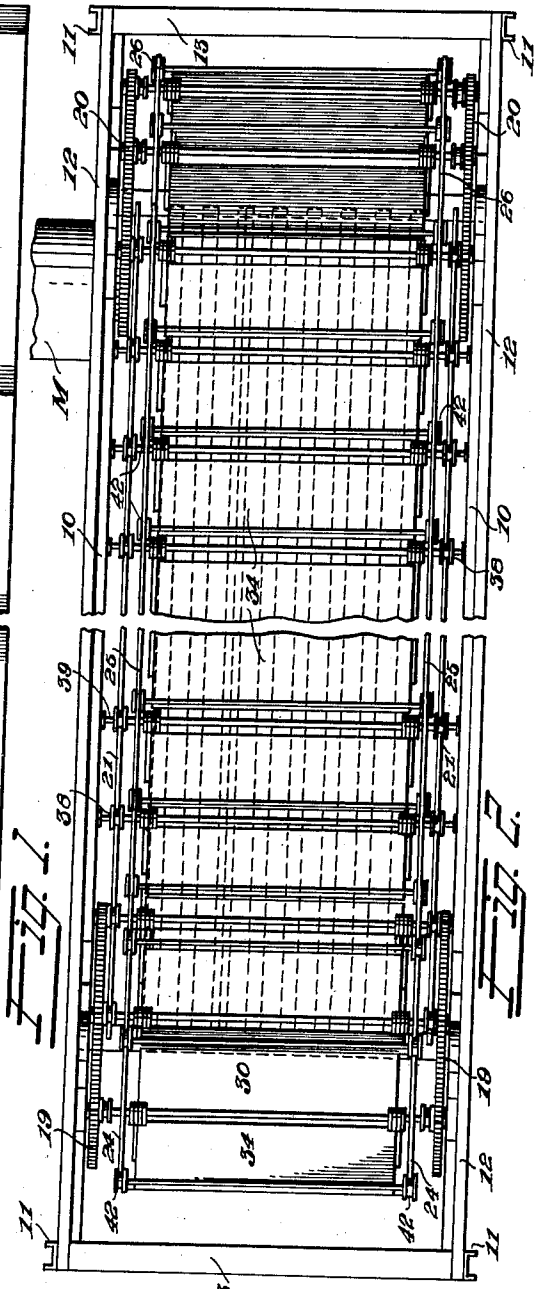


Fig. 2.

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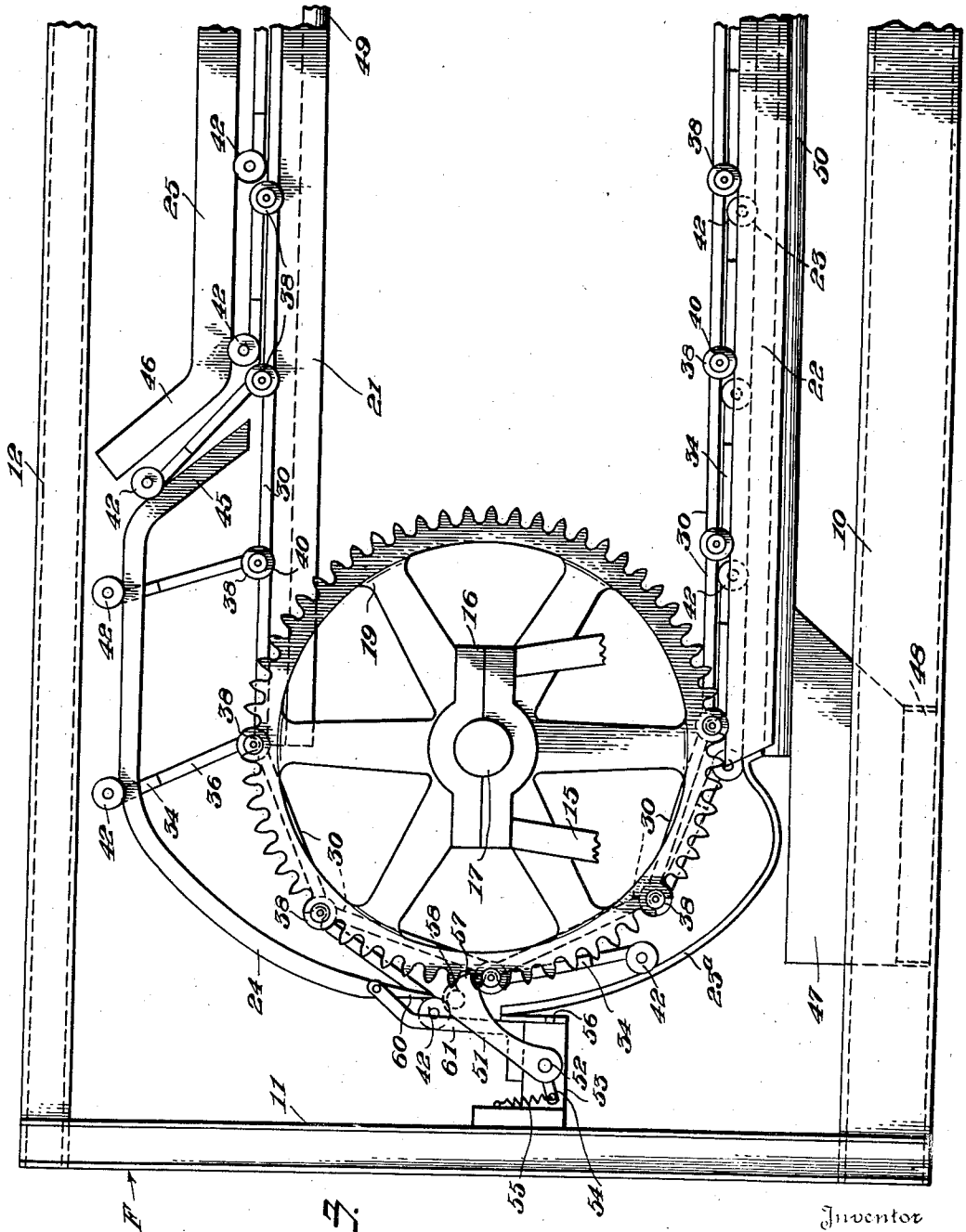


Fig. 3.

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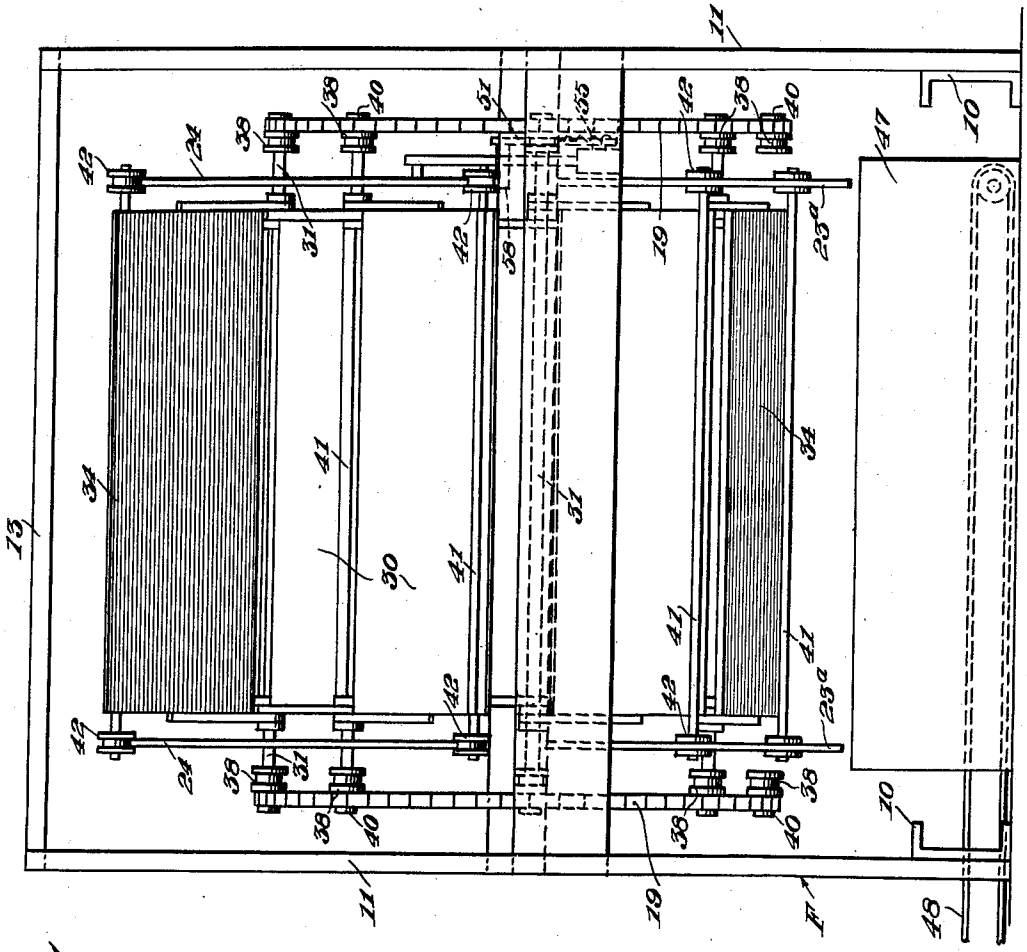


Fig. 4.

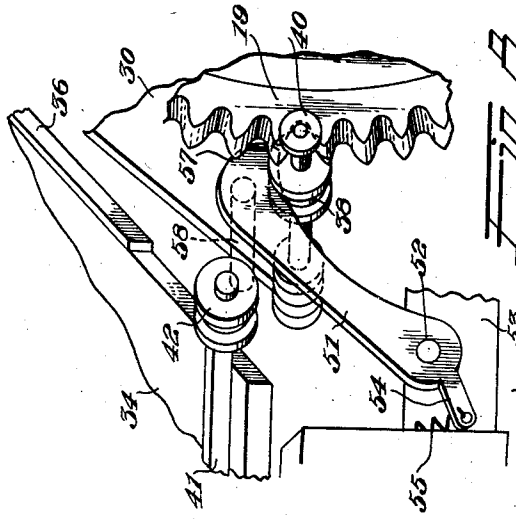


Fig. 5.

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TOASTING MACHINE

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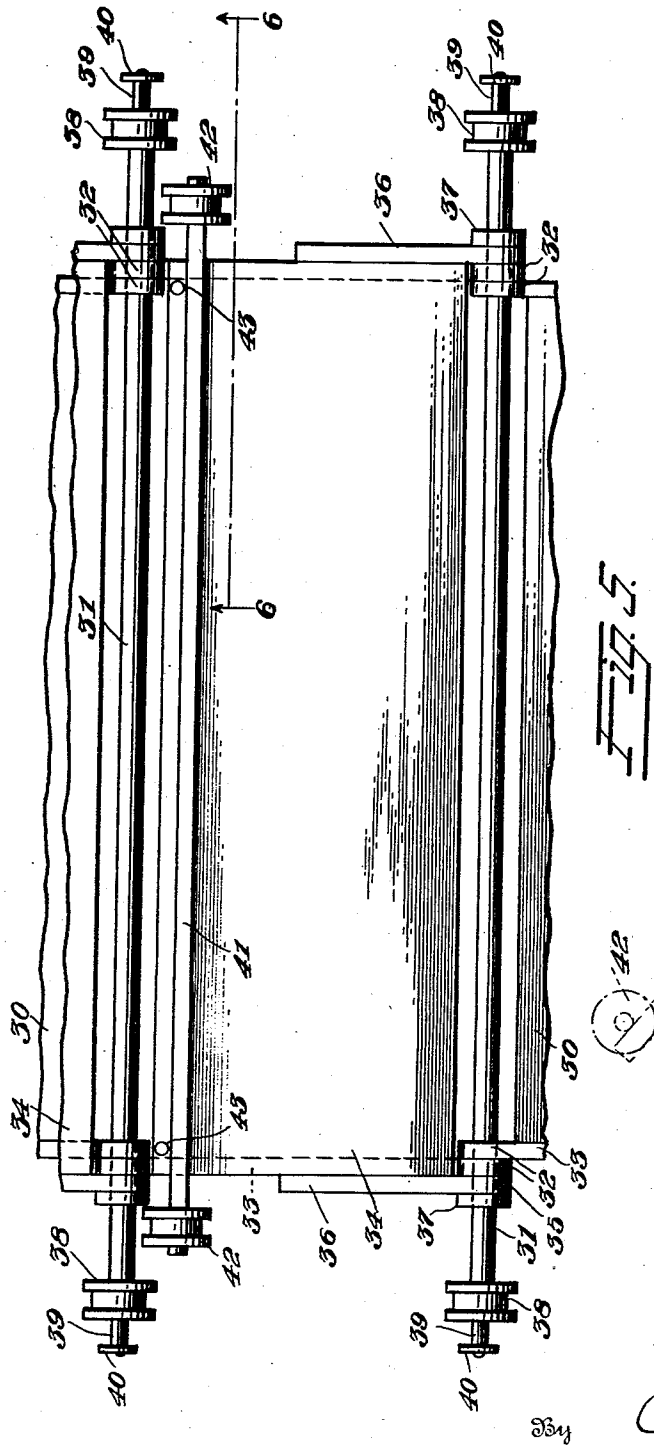


Fig. 5.

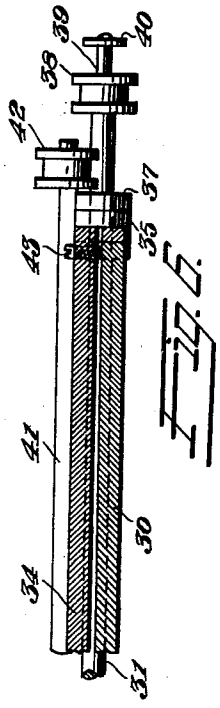


Fig. 6.

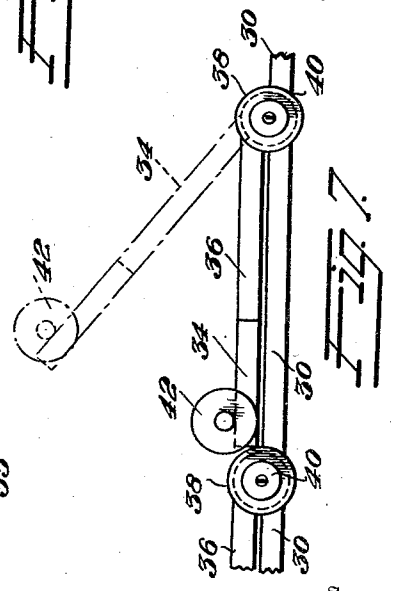


Fig. 7.

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Patented Aug. 22, 1939 2,170,170

UNITED STATES PATENT OFFICE

2,170,170

TOASTING MACHINE

Bert Weil, New York, N. Y., assignor to Melba Machinery Royalty Corporation, New York, N. Y.

Application May 10, 1938, Serial No. 207,119

7 Claims. (Cl. 53—5)

The present invention relates to the manufacture of toasted wafers and more particularly to a machine for toasting bread to form wafers of the type disclosed in U. S. Patents Nos. 1,956,130 and 1,965,082.

One of the primary objects of the invention is the construction of a machine for toasting slices of bread in a continuous manner in large quantities.

Still another aim is to improve the type of machine disclosed in U. S. Patent No. 2,051,303 by providing positive means for opening and closing the cooperating toasting plates to eliminate the objectionable features attendant upon the free swinging movement of one of the two cooperating plates periodically in its travel.

Yet another purpose of the invention is to improve the construction of the cooperating toasting plates to form a continuously moving toasting machine of rigid design and well adapted for long and efficient operation.

Still a further object is the formation of an improved drive associated with the interconnected series of the cooperating toasting plates of the machine.

Other aims and objects will be apparent from the detailed description hereinafter appearing when taken in conjunction with the appended drawings forming a part hereof and showing a preferred embodiment of the invention, to which reference is now made and in which:

Fig. 1 is a side elevational view of the machine in a preferred embodiment thereof, the machine being centrally broken away and the side enclosure being omitted adjacent the opposite ends.

Fig. 2 is a top plan view of the machine illustrated in Fig. 1.

Fig. 3 is an enlarged side elevational view of the feed and discharge end of the machine, with the enclosing side plates removed.

Fig. 4 is an elevational view of the feed and discharge end of the machine on the same scale as Fig. 3.

Fig. 5 is a detailed top plan view of a pair of cooperating toasting plates and portions of adjacent pairs of toasting plates, the view particularly disclosing the pivotal connections between the plates as well as the track and sprocket engaging means carried thereby.

Fig. 6 is a longitudinal section on a plane substantially as represented by the line 6—6 in Fig. 5.

Fig. 7 is a left end elevation of the structure illustrated in Fig. 5 with one of the toasting plates of a cooperating pair shown in raised position by dot-and-dash lines.

Fig. 8 is a perspective view of a novel tripping means for positively deflecting the track engaging means, carried by the outer or movable toasting plates, from one section of track to another.

Referring now in detail to the drawings by reference characters, and wherein like characters designate like parts in all of the views, F designates a supporting frame which may be of any desired construction insofar as the present invention is concerned. The frame F in a suitable embodiment thereof comprises a pair of laterally spaced and horizontally disposed base channels 10 to the lower ends of which are secured a plurality of vertically disposed channels 11, the latter being connected at their upper ends with horizontal channels 12, the opposite ends of the frame including transverse bracing members 13.

The frame F may be of any desired dimensions but is in practice of substantial length for reasons hereinafter to appear and the frame is enclosed by suitable sheet iron or other material 14 as indicated in Fig. 1.

Supported by the base channels 10 or in any other convenient manner are standards 15, there being a pair of such transversely aligned standards at each end of the frame F as clearly indicated in Fig. 1.

The standards 15 at their upper ends support transversely aligned shaft bearings 16 in which are journalled the opposite ends of front and rear shafts 17 and 18 respectively. Suitably secured to shaft 17 within and adjacent the bearings 16 are a pair of transversely spaced sprocket wheels 19 and secured in like manner to shaft 18 are a pair of sprocket wheels 20. The frame F further supports a pair of laterally spaced upper tracks 21 and a pair of laterally spaced lower tracks 22 for supporting the base or pivotally interconnected toasting plates hereinafter specifically referred to. Furthermore, the frame supports lower pairs of laterally spaced and upper pairs of laterally spaced tracks 24 and 25 for maintaining a proper relation between the plates of the cooperating pairs in a manner later described. The tracks 23 and 25 are rendered continuous at the rear ends thereof by means of arcuate tracks 26 as indicated in Fig. 1.

The toasting plates are in the form of an endless conveyor, having means for operatively engaging the sprocket wheels 19 and 20 and is given a continuous and uniform movement by means of a motor M having a gear drive connection with

the shaft 18 as indicated at 27 and 28 in Fig. 1. The novel toasting plate assembly comprises an endless series of main or base plates 30 (shown in detail in Figs. 5, 6 and 7), which are pivotally interconnected at adjacent spaced edges thereof by means of pintle shafts 31 which extend through eyes 32 of the adjacent lapped ends of bars 33 suitably secured to opposite side edges of the plates 30.

The toasting plate assembly further comprises secondary or swingable plates 34 which are pivotally connected with the pintle shafts 31 by means of eyes 35 on bars 36 secured to opposite sides of the plates. Collars 37 are attached to shafts 31 outwardly of bars 36 in order to maintain the articulated series of cooperating toasting plates in longitudinally aligned relation.

The pintle shafts 31 adjacent opposite ends thereof support grooved rollers 38 as indicated in Fig. 5, the rollers engaging the upper and lower tracks 21 and 22 intermediate the front and rear sprocket wheels 19 and 20 for maintaining the upper and lower runs of the toasting plate assembly in horizontal relation. Further, the shafts 31 are reduced at their opposite ends outwardly of the rollers 38 as indicated at 39 for engagement between adjacent teeth of the sprocket wheels 19 and 20, see Fig. 8, and disks 40 are secured to the extreme ends of the shafts for maintaining alignment between the reduced portions 39 and the sprocket wheel teeth.

The swingable plates 34 each have a rod 41 connected thereto adjacent the free edge thereof, which rod is preferably rectangular in cross section to more effectually prevent rotation thereof. The rod at its opposite ends rotatably supports grooved rollers 42 for operative engagement with the tracks 23, 24, 25 and 26.

The cooperating tracks 21 and 25 and 22 and 23 are spaced vertically so as to permit the cooperating main and secondary toasting plates 30 and 34 respectively to be spaced apart a distance substantially equal to the desired thickness of the toast and, in order to limit the approach of the plates to such spaced distance, the plates 34 are provided with adjustable studs 43 as will be apparent from an inspection of Figs. 5 and 6 of the drawings.

From the foregoing, and upon further reference to Figs. 1 and 3, it will be seen that the articulated endless series of toasting plates engage the sprocket wheels 19 and 20 through the reduced portions 39 on the pintle shafts 31 at which points the adjacent rollers 38 float between the sprocket wheels and that the upper and lower runs between the front and rear sprocket wheels 19 and 20 are maintained horizontal by engagement of the grooved rollers 38 with the upper and lower tracks 21 and 22 respectively.

While the main or base toasting plates 30 travel only in the sprocket wheel and track circuit above referred to, it is essential that the secondary or swingable toasting plates be given a movement relative to the base plates at regular intervals in order to load the cooperating plates with slices of bread to be toasted and to permit discharge of the toasted wafers.

For this purpose, the tracks 24 are formed, as indicated in Fig. 3, to permit raising or swinging the plates 34 to a position approaching the vertical to facilitate feeding of the bread slices at a suitable opening at the front and adjacent the top of the machine. The tracks 24, sufficiently rearwardly of the machine to permit proper loading, incline downwardly as indicated at 45. The tracks 25 are also upwardly inclined as at 46 for cooperation with the inclined portions 45 for guiding the rollers 42 into engagement with the tracks 25 for proper toasting cooperation with the main or base plates 30.

The cooperating pairs of plates 30 and 34 continue in toasting position along the upper horizontal run, around the sprocket wheels 20, and along the lower horizontal run to a point substantially vertically below the shaft 17 at which point the tracks 23^a are secured to tracks 23 and are arched downwardly as indicated in Fig. 3 to allow the plates 34 to swing downwardly away from the base plates 30 to permit the finished toast or wafers to be automatically discharged into a hopper 47 provided with a suitable movable conveyor belt 48 (Fig. 4).

It will be seen that the plates 30 and 34 are in toasting relation substantially the full length of the machine which is of a length sufficient for proper compressing, drying and toasting of the bread slices to provide toasted wafers of maximum quality and appearance, the speed of movement being regulated to accomplish this purpose. The heat is supplied by upper and lower horizontal gas pipes 49 and 50 provided with spaced nozzles adjacent the toasting plates.

It is to be particularly noted that tracks 23^a have no positive swinging influence upon the plates 34 but only permit same to fall away from the plates 30 to discharge the toast, while tracks 24 positively raise the plates 34 away from the plates 30 and it is accordingly necessary to provide a means for displacing the rollers 42 from engagement with tracks 23^a to engagement with tracks 24.

Such means in a preferred embodiment thereof comprises a tripping or deflecting mechanism which essentially includes a lever 51 pivotally connected at 52 to a suitable bracket 53 and having a tail 54 engaged by one end of a coil spring 55 for normally urging the lever into engagement with a stop 56 in which position the nose 57 of the lever lies in the arcuate path of the rollers 38. The latter upon engagement with the nose 57 thereof raises the lever 51 whereby a lateral pin 58 carried by said lever engages the adjacent roller 42 thus moving the corresponding plate 34 outwardly a distance sufficient for the opposed rollers 42 to engage the flared ends 60 of the tracks 24 which ends are anchored in position by brace bars 61. Continued movement of the cooperating toasting plates causes the rollers 38 to ride by the nose 57 of the lever 51, the latter being then returned by the action of spring 55 from the position shown in Fig. 3 of the drawings to the position shown in Fig. 1 for repeating the above described operation.

From the foregoing it will now be apparent that there has been provided a novel toasted wafer forming machine well adapted for its intended purposes. Obviously, various changes in the specific details of construction will be apparent to those skilled in the art and it is contemplated to cover all such and to be limited in this respect only as may be necessary by the scope of the claims hereto appended.

What I claim and desire to secure by Letters Patent is:

1. A bread toasting machine comprising spaced pairs of sprocket wheels, upper and lower tracks intermediate the pairs of sprocket wheels, a series of pivotally connected toasting plates in the form of an endless conveyor, rollers carried by the conveyor at the pivotal connections of the plates

for engaging the tracks, lateral extensions from the rollers for operating engagement with the sprocket wheels, means for driving the sprocket wheels, and a second series of plates cooperating with the first series and pivotally connected at corresponding ends thereto.

2. A bread toasting machine comprising spaced pairs of sprocket wheels, upper and lower tracks intermediate the sprocket wheels, a series of pivotally connected toasting plates in the form of an endless conveyor, means supported at the pivotal connections of the plates for touching engagement with the tracks, other means supported at the pivotal connections of the plates for driving engagement with the sprocket wheels, a second series of plates cooperating with the first series and pivotally connected at corresponding ends thereto, upper and lower tracks for holding the second plates in toasting relation to the first plates between the pairs of sprocket wheels, lower tracks at the front end of the machine for constant engagement with the second plates and permitting movement thereof from the first plates to discharge the toast, and upper tracks for positively moving the second plates away from the first plates to permit feeding untoasted bread between the cooperating toasting plates.

3. The structure defined in claim 2 wherein the second plates are provided with rollers for engagement with the tracks, and means for automatically moving the rollers successively from engagement with the lower tracks at the front end of the machine to operative engagement with the upper tracks.

4. A bread toasting machine comprising two spaced pairs of sprocket wheels, one pair of which is positively driven, a series of pivotally connected toasting plates in the form of an endless conveyor and provided with means for operative driving engagement with the sprocket wheels, a second series of plates for cooperating with the first plates and pivotally connected at corresponding ends thereto, rollers carried by the second plates, upper and lower tracks between the pairs of sprocket wheels engaged by the rollers for holding the second plates in toasting relation to the first plates, lower tracks adjacent one pair of sprocket wheels in continuation with the first named lower tracks for permitting swinging movement of the second plates away from the first plates to discharge the toast, upper tracks adjacent the same pair of sprocket wheels and in continuation with the first named upper tracks for positively swinging the second plates away from the first plates to permit feeding untoasted bread between the cooperating plates, and automatic means between the last named lower and upper tracks for moving the rollers successively from engagement with one to operative engagement with the other.

5. The structure defined in claim 4 wherein the automatic means comprises a pivotally mounted lever yieldably biased to inoperative position, means on the lever successively engageable and movable by the continuously moving conveyor, and means on the lever for successive engagement with the rollers carried by the second plates to move same into position to engage said upper tracks.

6. In a bread toasting machine, a series of plates, means intermediate a pair of adjacent plates pivotally connecting same into a continuous conveyor, a second series of plates cooperating with said first series, each of said second series of plates pivoted to said means pivotally connecting said first series of plates into a continuous conveyor.

7. In a bread toasting machine having driving wheels at opposed ends thereof, a series of plates, a plurality of spaced shafts, a pair of adjacent plates of said series pivoted to one of said shafts forming a continuous conveyor, a second series of plates cooperating with said first series of plates, each of said second series of plates pivoted at one side edge thereof to one of said shafts, the latter having means engaging said driving wheels for moving said conveyor.

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