June 6, 1939. W. SCHONWALD 2,161,750

TRAY LEVELING DEVICE

Filed April 1, 1938

Fig. 1

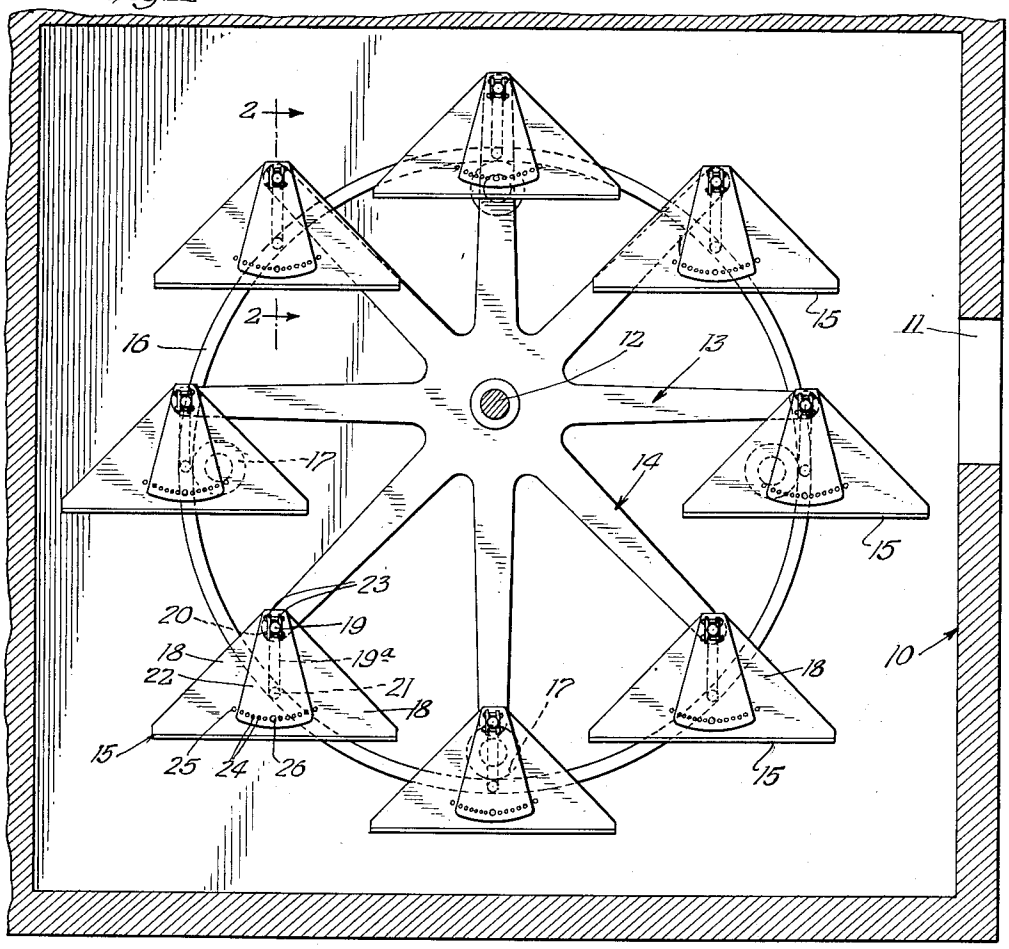


Fig. 2

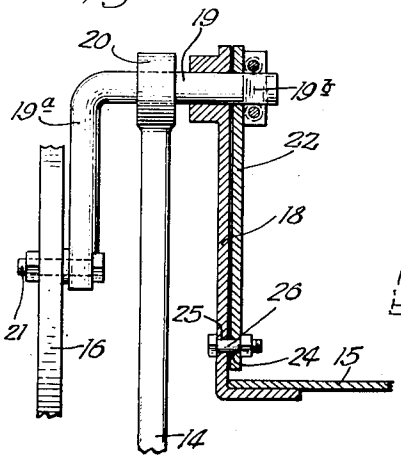


Fig. 3

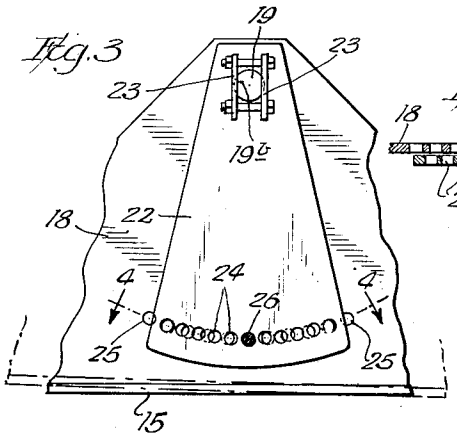
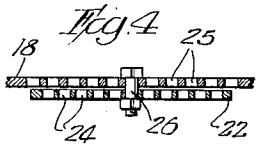


Fig. 4



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TRAY LEVELING DEVICE

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4 Claims. (Cl. 198—211)

This invention relates to improvements in tray leveling devices.

In tray ovens, stabilizing mechanisms generally are employed for retaining the trays in horizontal position during the rotation of the respective reel structures during baking operations. The trays generally are provided with adjusting screws, or the like, for initial leveling of the same or restoring them to such position should wear of the parts or other causes displace the trays from the desired level position. Readjusting the trays to a level position has been a troublesome task heretofore since ready access to the trays can be had for this purpose usually only through the loading openings of the ovens.

It is an object of the present invention to provide improved tray leveling devices which enable the trays to be adjusted conveniently to a level position and which when so adjusted will be locked positively in such position.

A more specific object of the invention is to provide leveling means comprising two relatively adjustable parts, each having a row of apertures, one aperture of each row being adapted to register with an aperture of the other row for receiving a fastening element upon relative adjustment of said members a distance less than the center-to-center spacing of the apertures of the respective rows whereby adjustment of the members and consequently of the trays by small increments can be effected.

Other objects of the invention relate to various features of construction and arrangement of parts which will be apparent from a consideration of the following specification and accompanying drawing, wherein:

Fig. 1 is a vertical section through a tray oven which is shown conventionally and embodying the present improvements;

Fig. 2 is an enlarged broken sectional view taken on line 2—2 of Fig. 1 and illustrating the improved tray leveling mechanism;

Fig. 3 is an elevation of the leveling mechanism shown in Fig. 2; and

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3.

In the drawing, 10 indicates an oven, one wall of which is provided with a loading opening 11, which parts are shown more or less diagrammatically and within which is located a reel. The reel is mounted on a transverse shaft 12 journaled in opposite end walls of the oven and driven by any suitable means for effecting the rotation of the reel which comprises spiders 13, the arms 14 of which support the trays 15 upon which the pans are placed.

Modern tray ovens are provided with stabilizing mechanism for maintaining the trays 15 in horizontal position during rotation to avoid tilting of the trays with consequent flow of the dough or batter to one side or the other of the pans and the formation of imperfect bakery products. Any suitable stabilizing apparatus may be employed with the present improvements. The stabilizing mechanism illustrated in the drawing comprises a stabilizing ring 16 which is supported by suitable rollers 17 in a position eccentric with reference to the shaft 12. Each of the trays 15 is supported by a pair of hangers 18 which, at their upper ends, are pivotally mounted on a horizontal portion of a stabilizer arm 19. In the drawing, only one end of the tray structure is illustrated.

In the construction illustrated, each of the arms 19 is journaled in an end 20 of a spoke 14 of the spider 13. Each of the arms 19 has an inwardly directed crank-like extension 19a which is pivotally secured as at 21 to the stabilizer ring 16. Were the hangers 18 fixed to the arms 19, the stabilizing mechanism would, as is well understood, tend to retain the trays in the same relative position shown in Fig. 1 during the rotation of the reel. However, it becomes necessary to make adjustments of the trays from time to time to re-level them and in accordance with the present improvements, the hangers 18 are not fixed to the arms 19 but are pivotally supported by the same as above stated.

To retain the trays in position against swinging movement and deflection from the horizontal position upon placing pans of dough thereon in such manner as tends to unbalance the same, a bracket 22 may be attached to the arms 19 by any suitable means such as by means of ears 23 formed integrally with the brackets or welded thereto and held firmly against flattened portions 19b of the end of the arms 19.

Adjacent the lower end of the bracket 22, an arcuate row of apertures 24 is provided. A second arcuate row of apertures 25 is provided in the hanger 18, the two rows being equidistant from the pivotal axis of the hanger 18. The center-to-center spacing of the two rows of openings 24 and 25 is not the same. For example, if the apertures in the bracket 22 are nine sixteenths of an inch ($\frac{9}{16}$") from center-to-center and the center-to-center spacing of the apertures 25 is five-eighths of an inch ($\frac{5}{8}$"), it will be seen that one aperture of each row will register with the aperture of the other row upon swinging the

hanger 18 through a very small arc, that is, each one-sixteenth ($\frac{1}{16}$") inch arcuate movement of the row 25 will cause one of the apertures thereof to register with one of the apertures of the row 24. A bolt 26 or other fastening means may then be passed through the registering apertures to secure the bracket and the corresponding hanger positively in relatively fixed position.

Where set screws and lock nuts, or the like, are employed for re-leveling trays, not infrequently they are difficult to loosen after a period of use in a hot oven and also difficult to adjust uniformly to level a tray throughout its length. With the present improvements, the bolts of the leveling apparatus can be removed readily and the tray swung through the desired arc in one direction or the other and the bolts reinserted in the openings of the two rows at each end of the tray which move into registration with each relatively small movement of the hanger with reference to the corresponding bracket.

It will be obvious that center-to-center spacings of the apertures may be different from that given above which is suitable for ordinary tray ovens. Where such spacing of the openings is employed, the diameters of the openings may conveniently be three-eights inch ($\frac{3}{8}$") and therefore a three-eighths inch ($\frac{3}{8}$"). bolt used for clamping the hangers and brackets in adjusted position. With the present improvements, the trays may be re-leveled conveniently through the loading opening of the ovens and since the bolts positively lock the corresponding hangers and brackets together, readjustment of the trays need be made less frequently than with the devices heretofore generally employed.

While I have shown and described an embodiment of the improvements for the purpose of illustration, it will be apparent that various changes in the construction and arrangement of parts may be resorted to without departing from the spirit of the invention.

What I claim as new and desire to cover by Letters Patent is:

1. In a tray oven provided with a reel having pairs of stabilizing arms, trays having end hangers pivotally supported by a pair of said arms, a bracket for each tray fixed to one of said arms coaxially with the corresponding hanger, said hanger and bracket having rows of concentric apertures of different center to center spacing, and means adapted to pass through any pair of registering apertures of said hanger and bracket for securing the same together for locking said tray against movement relative to said arm.

2. In a tray oven provided with tray stabilizing arms, trays having end hangers pivotally supported by said arms, a bracket fixed to each arm coaxially with respect to a corresponding hanger and disposed in parallel relation and in close juxtaposition with respect to said hanger, said hanger and bracket each being provided with an arcuate row of apertures of different center-to-center spacing whereby adjustment of a hanger arcuately a distance less than said center-to-center spacing of either of said rows will effect registration of an aperture in one row with an aperture in another, and means adapted to be passed through said registering openings for securing said hanger to said bracket against movement relative thereto.

3. In a tray oven comprising a reel having tray stabilizing arms, a tray hanger pivotally supported at one end by each of said arms, a bracket fixed to each of said arms coaxially with one of said hangers and disposed parallel therewith, said hanger and bracket each being provided with an arcuate row of apertures equidistant from the axis of said hanger and of different center-to-center spacings whereby an aperture of one row will be moved into registration with an aperture of the other row upon relative arcuate movement of said hanger with respect to the bracket a distance less than the spacing of the apertures of either row, and means adapted to be passed through any two such registering apertures for securing said hanged and bracket in relatively fixed position.

4. In a tray oven provided with a reel having pairs of stabilizing arms, trays having end hangers pivotally supported by a pair of said arms, a bracket for each tray fixed to one of said arms coaxially with respect to the corresponding hanger and arranged in parallel relation and in proximity to said hanger, and means for clamping said hanger and bracket together in a position of arcuate adjustment of one with respect to the other.

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