C. G. TUCKER.

REEL OVEN.

APPLICATION FILED JAN. 10, 1908.

915,810.

Patented Mar. 23, 1909.

3 SHEETS—SHEET 1.

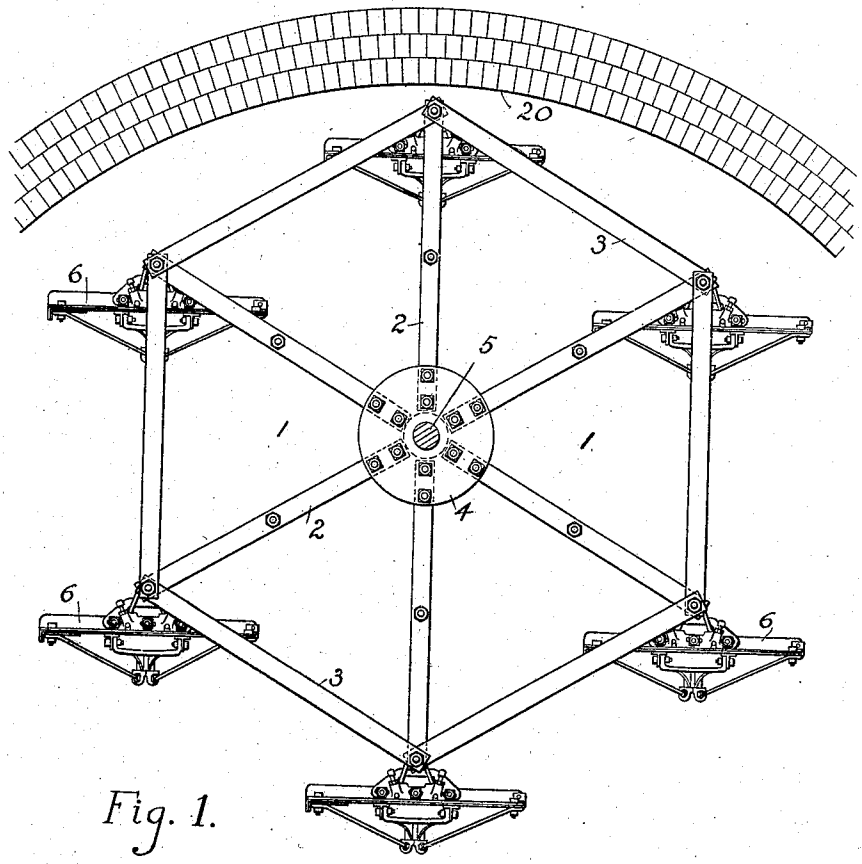


Fig. 1.

Witnesses
Fritz Haempfle.
M. R. Sentman

Clare G. Tucker, Inventor
By D. K. Allison
his atty.

THE NORRIS PETERS CO., WASHINGTON, D. C.

C. G. TUCKER.

REEL OVEN.

APPLICATION FILED JAN. 10, 1908.

915,810. Patented Mar. 23, 1909.

3 SHEETS—SHEET 2.

Fig. 2.

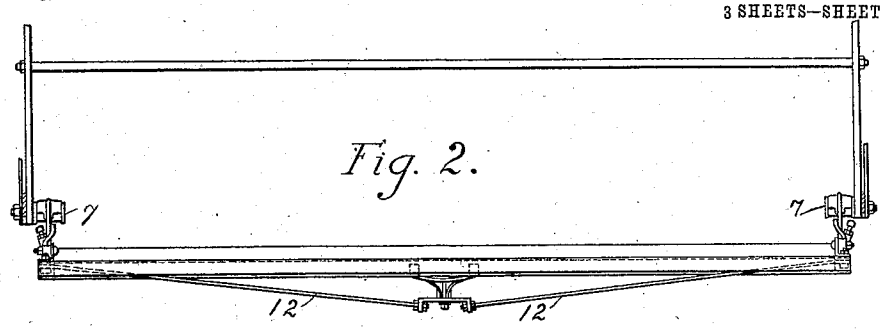


Fig. 3.

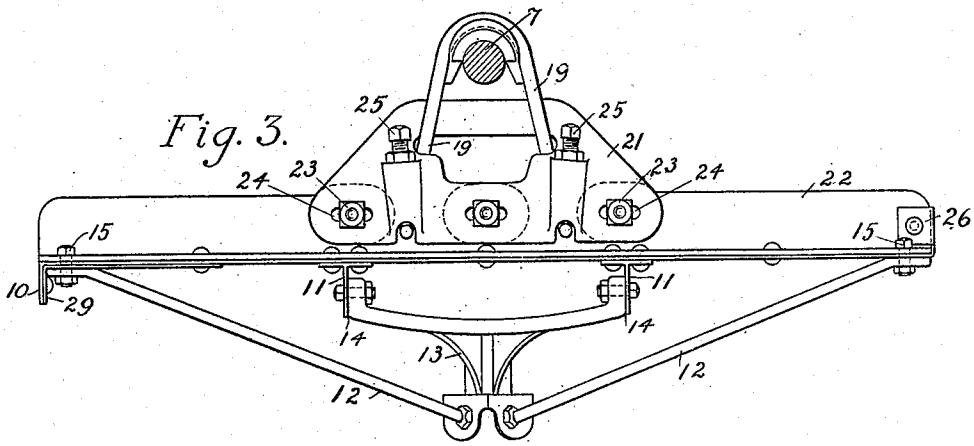


Fig. 4.

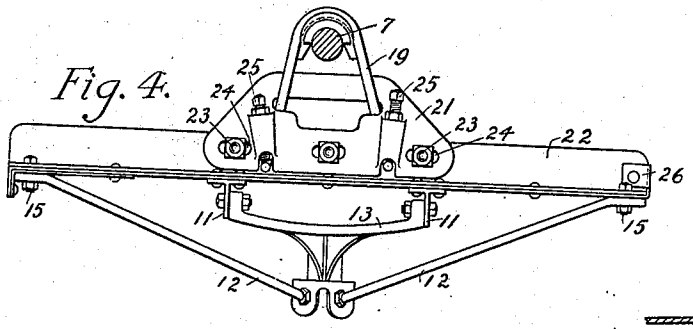
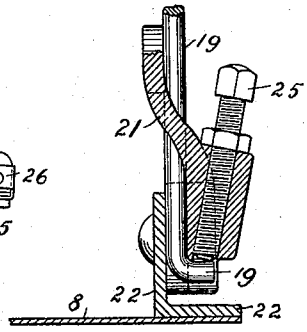


Fig. 5.



Witnesses
Fritz Haempfli.
M. R. Sentman

Clare G. Tucker, Inventor.
By D. K. Allison
his atty.

THE NORRIS PETERS CO., WASHINGTON, D. C.

C. G. TUCKER.

REEL OVEN.

APPLICATION FILED JAN. 10, 1908.

915,810. Patented Mar. 23, 1909.

3 SHEETS—SHEET 3.

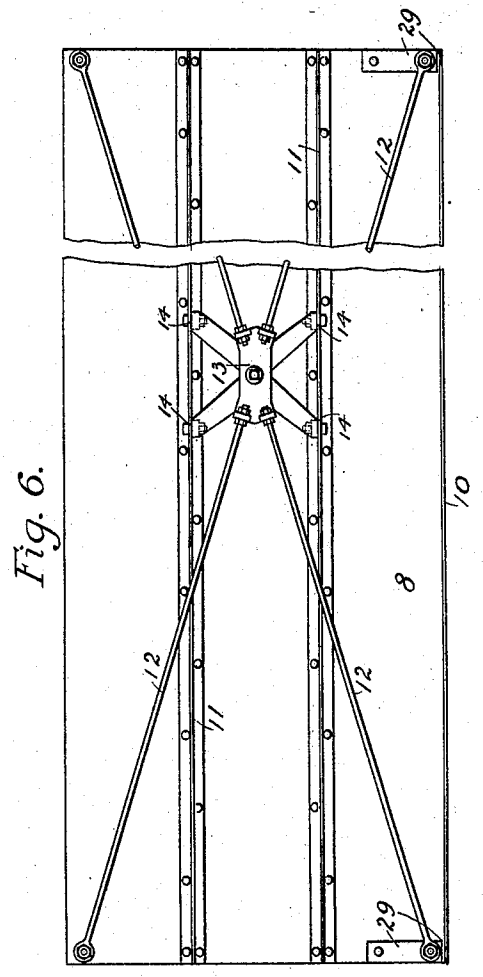


Fig. 6.

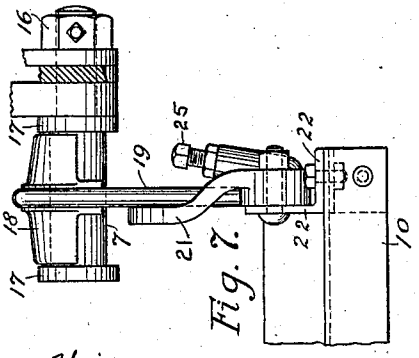


Fig. 7.

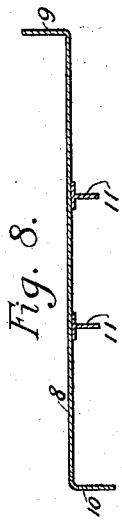


Fig. 8.

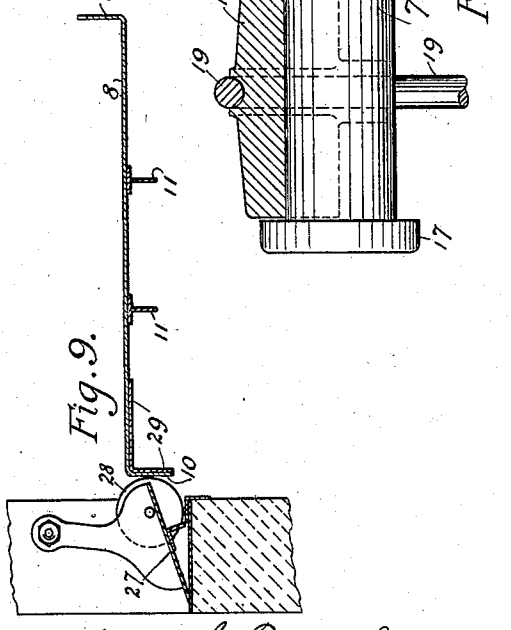


Fig. 9.

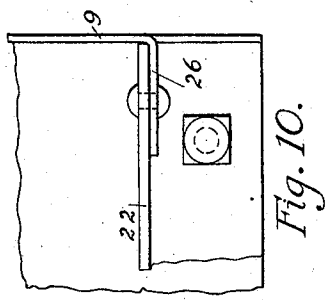


Fig. 10.

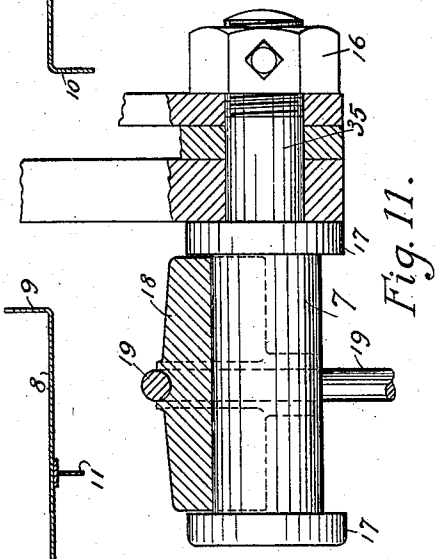


Fig. 11.

Witnesses
Fritz Haempfli.
M. R. Sentman.

Clare G. Tucker, Inventor
By D. K. Allison
his atty.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CLARE G. TUCKER, OF CINCINNATI, OHIO, ASSIGNOR TO THE J. H. DAY COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

REEL-OVEN.

No. 915,810. Specification of Letters Patent. Patented March 23, 1909.

Application filed January 10, 1908. Serial No. 410,262.

To all whom it may concern:

Be it known that I, CLARE G. TUCKER, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and the State of Ohio, have invented certain new and useful Improvements in Reel-Ovens, of which the following is a specification.

My invention relates to improvements in reel ovens; and the principal objects of the invention are to provide a simple means of balancing the shelves of the reel after they are assembled therein and separate means for tipping the shelves when such tipping is desirable.

A further object is to provide means whereby the shelves may be shifted sidewise without changing their points of support, so as to bring their front edges very close to the oven mouth, and also to provide separate means for bringing said shelves to a level position after the lateral shifting thereof.

A further object is to devise means whereby the oven shelves may be made as light as possible in weight, and may also be made as rigid as possible by T irons, by bending of the plate, diagonal rods and connections, to prevent deformation by the weight of the material placed thereon, and warping by the heat.

A further object is to provide an oven shelf which shall swing freely under all conditions, and in which there is no possibility of upsetting in its circuit of travel.

I attain the above named objects by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is a partial sectional elevation of an oven showing the crown thereof and the reel with the shelves therein. Fig. 2 is a front elevation of a shelf. Fig. 3 is an end view of a shelf enlarged. Fig. 4 is an enlarged end view of the same, showing the shelf tipped. Fig. 5 is a partial section through the end of a shelf showing the means for tipping. Fig. 6 is a bottom view of a shelf. Fig. 7 is a partial view of the end of a shelf showing the means of support. Fig. 8 is a transverse section through the shelf plate and the T irons thereon. Fig. 9 is a transverse section through a shelf plate and a partial transverse section of the oven wall taken through the mouth thereof. Fig. 10 is a top view of the rear corner of a shelf showing how the shelf plate is bent around the end angle iron. Fig. 11 is an enlarged vertical section through the bearing which supports the shelf.

The reel 1 is constructed of the radial bars 2—2, the tie bars 3—3 and the center piece 4, all mounted on the shaft 5. A series of shelves 6—6 are swung within the frame of the reel and being freely supported upon the studs 7—7 at a point above their centers of gravity, the shelves thereby maintain a substantially horizontal position throughout their circuit with the reel. The shelves have a main portion which is preferably constructed of a steel sheet 8 bent upwardly in the rear at 9 and downwardly in the front at 10. The sheet 8, being very light in weight (preferably about $\frac{1}{10}$ of an inch in thickness) and being quite long, is not rigid enough in itself to support any weight without deflection. To make the plate rigid the portion 9 is bent upwardly and the portion 10 downwardly. The portion 10 is placed nearest the mouth of the oven so that the baked material may easily be placed on the shelf and with equal facility be scraped off. The up-turned portion 9 serves to prevent the material from falling or sliding off the shelf in the rear. The upturned portion 9 is old but I have chosen to use same in combination with a portion 10 bent downwardly in front for the purpose of stiffening the shelf plate in the back and front. The bending of the plate downwardly in front is a new construction, an angle iron having been used for that purpose heretofore. The advantage of the bent down construction over the angle construction is that a smoother and neater job can be made by bending the plate downward. The angle iron requires the use of rivets whose heads above will interfere with scraping off the baked material and if the heads are flattened or countersunk the rivets will project a certain amount and leave a rough surface to the plate. Then again, the riveting of the thin plate to the angle iron will expand the plate a certain amount and result in buckling the plate, leaving a wavy surface along the front of the pan, hence the advantage of turning down the plate instead of riveting an angle iron on same is evident, and when finished makes a neater and more satisfactory piece of work.

The main plate of the shelf requires other means of stiffening throughout its middle portion and the T irons 11—11 are secured to the bottom of said plate. A common practice now in use is to stiffen the shelf by a single angle or two angles placed back to back through the central portion of the plate. I have discovered that where the shelves are quite wide better results are obtained by securing two T irons to the shelf, one on each side of the center line thereof. By these means I have stiffened the said shelf plate on both edges and on two lines parallel therewith and between same. I have also provided a truss construction for distributing the stresses from the central portion of the shelf to the four corners, comprising the central spider 13 and the four diagonal rods 12—12. These diagonal rods serve to tie the four corners to the center and while acting as a truss to prevent deflection caused by the weight of the pan and the material to be placed thereon, also serve to prevent the pan from warping when heated. The central spider is secured to the two T bars at 14—14 and between same and is provided with lugs to which the said diagonal rods are attached. The said diagonal rods are secured to the corners of the shelf plate by the bolts 15—15. I have provided the studs 7—7 having the shanks 35—35, the nuts 16—16 and the shoulders 17—17, as a support for the shelves. The studs 7 are mounted on the frame of the reel, one for each end of the shelf, and upon same the box 18 is loosely mounted and upon said box the stirrup 19 hangs, supporting the shelf. By the stirrup 19 hanging loosely over the box 18, riding in a groove therein, the shelf will always hang in substantially a horizontal position and in case the supporting studs 7—7 should not be in exact alinement the shelf would nevertheless swing freely. The shelf plate 8 is also stiffened transversely at each end by the angle iron 22 which forms the end of the shelf and prevents the material from sliding off endwise.

A plate 21 is mounted on the angle iron 22 at each end of the shelf by the bolts 23 mounted in the slot 24 in the plate 21. Mounted in the plate 21 are the adjusting screws 25—25 which serve to hold the stirrup 19 which is bent under the points of said screws.

In constructing an oven of this kind, it is impossible to build the shelves so nearly uniform that they will all hang exactly alike upon their supports, owing to irregularities in the thickness and weight of the materials of which the shelves are composed. Some of the shelves after being brought to a level will approach the oven mouth very closely, while others built after the same pattern and measuring the same in every dimension, will leave a wide gap between the shelf and the oven mouth. This variation will often amount to as much as one and one-half inches. It is a desirable feature in ovens of this kind to have all the shelves approach the oven mouth very closely in their circuit with the reel, so that in unloading the shelves, the crackers may be scraped off the shelves onto the plate 27 without danger of losing any of them by dropping between the shelf and the plate 27 into the oven below. In order to accomplish this, I have provided the slotted holes 24 and bolts 23 by means of which the shelf may be adjusted, so that the front thereof may contact with the roller 28. This shifting of the shelf may cause the same to hang out of level, in which case the shelf may be brought to a level position again by adjusting the screws 25—25. Thus, by the coöperation of the two adjusting means, towit: the slots 24 and bolts 23 for horizontal adjustment, and the screws 25—25 for vertical adjustment (or tipping) I am able to cause all the shelves to approach the oven mouth alike in their circuit with the reel. As the shelves revolve about in their circuit they frequently take up a swinging movement in which there is a possibility of the material thereon sliding off. In such cases the shelves may be tipped slightly by adjusting the screws 25—25 to prevent such sliding. I have cut the plate 8 at the rear corners and bent same around the end angles 22 and riveted same as shown at 26. This serves to make a very strong corner in the rear and firmly ties the turned up portion 9 to the end angles 22.

The Fig. 9 shows the proper position of a shelf with respect to the oven mouth in order to remove the material therefrom, and shows the inclined plate 27 onto which the material is delivered. In order to line up the shelves with the plate 27, the wheel 28 is provided, against which the shelves strike in approaching the oven mouth. This impact of the shelf with the wheel is often enough to distort the turned down portion 10 of the plate 8, and to strengthen same at this point, I have provided the reinforcing plate 29.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A shelf for a reel oven comprising a metal sheet supported by stirrup hangers and capable of lateral adjustment in combination with means for leveling said metal sheet, which is independent of said lateral adjustment.

2. A shelf for a reel oven comprising a metal sheet supported by stirrup hangers and provided with lateral adjusting devices in combination with vertical adjusting means by which the front edge of said metal sheet may be raised or lowered.

3. A shelf for a reel oven comprising a metal sheet supported by stirrup hangers and having means for lateral adjustment in

combination with means whereby one edge of said metal sheet may be raised and the other lowered, or vice versa.

4. An oven shelf comprising a sheet of metal supported by stirrup hangers journaled upon studs at both ends, said stirrup hangers having an adjustable connection with said metal sheet in both horizontal and vertical directions.

5. In a reel oven having a suitable mouth, the combination with a sheet metal shelf having devices by which said shelf may be shifted toward or away from said oven mouth of means whereby said shelf may be leveled after said shifting is accomplished for the purpose specified.

6. In a reel oven, the combination with a series of shelves mounted in a reel of a wheel arranged to gage the approach of the shelves to a uniform distance from the oven mouth.

7. In a reel oven having a suitable mouth, the combination with a series of shelves mounted in a reel of a wheel mounted in the wall of said oven mouth, and arranged to contact the said shelves and limit their approach toward the said oven mouth.

8. An oven shelf comprising a metal sheet supported by angle iron ends secured thereto, said sheet being bent upwardly in the rear and said upturned portion having extensions which are bent around the rear corners and secured to the sides of said angle iron ends for the purpose specified.

9. The combination in an oven shelf comprising a metal sheet, end plates for said metal sheet provided with slotted connections therewith, stirrup hangers secured to said end plates and provided with vertical adjustment therewith, loose boxes journaled upon studs and furnishing supports for said stirrup hangers.

CLARE G. TUCKER.

Witnesses:
JAMES E. LARSH,
OTTO L. KOCH.