C. A. GORNDT.

CONTINUOUS OVEN.

APPLICATION FILED JAN. 23, 1908.

926,404. Patented June 29, 1909.

2 SHEETS—SHEET 1.

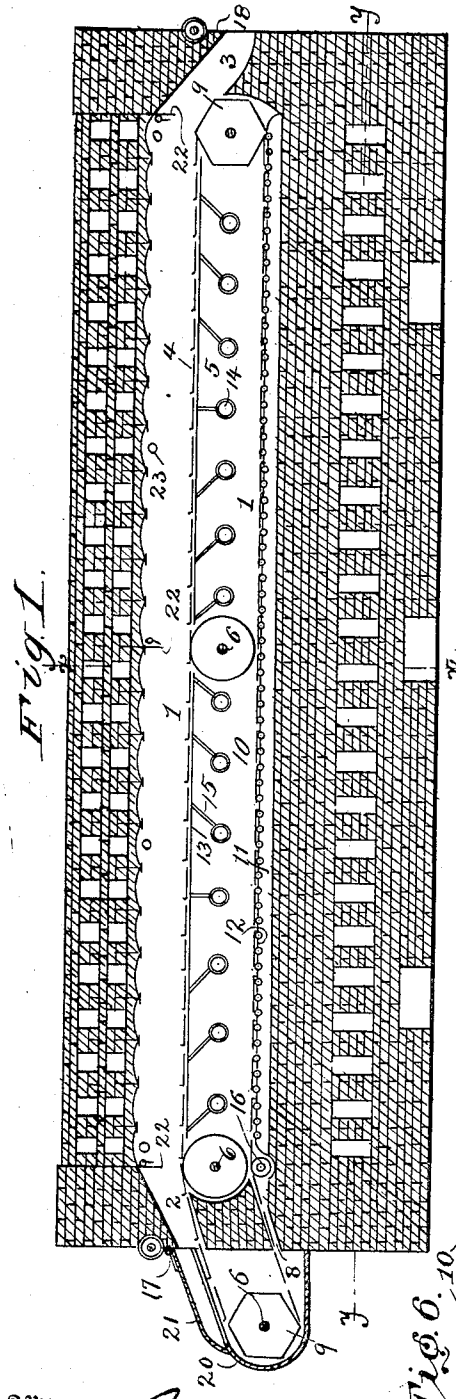

Fig. 1.

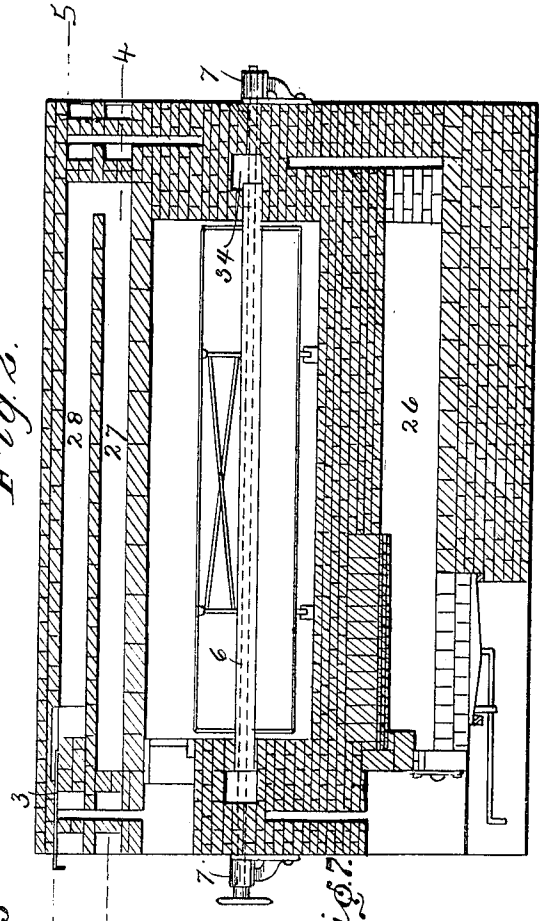

Fig. 2.

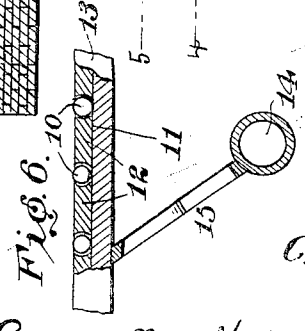

Fig. 6.

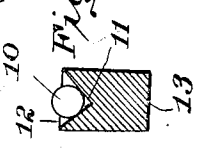

Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 3.

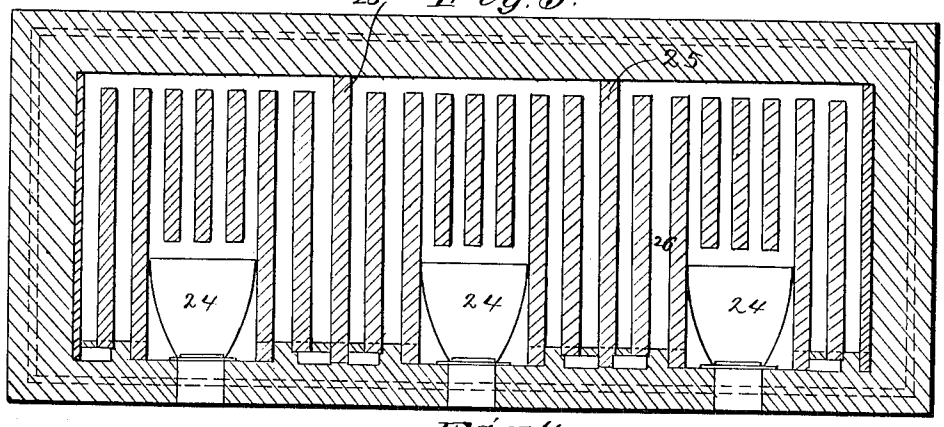


Fig. 4.

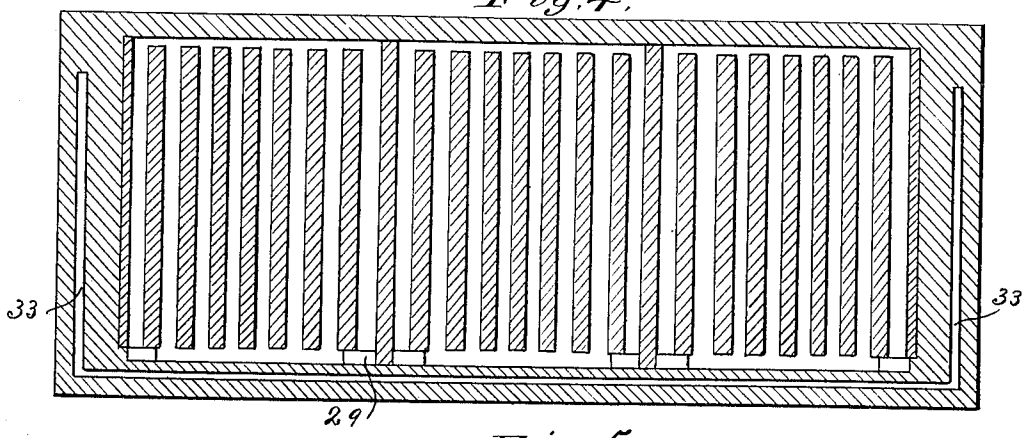
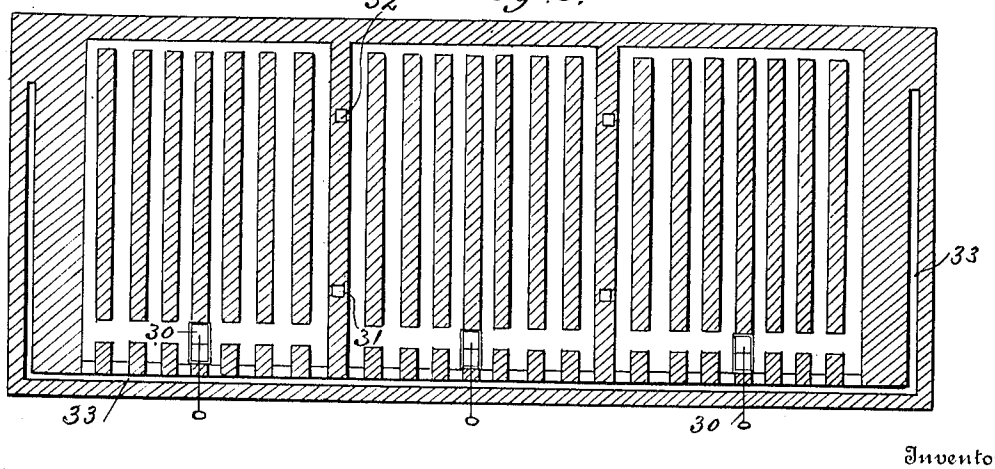


Fig. 5.



Inventor

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UNITED STATES PATENT OFFICE.

CHARLES A. GORNDT, OF CHICAGO, ILLINOIS.

CONTINUOUS OVEN.

No. 926,404. Specification of Letters Patent. Patented June 29, 1909.

Application filed January 23, 1908. Serial No. 412,290.

To all whom it may concern:

Be it known that I, CHARLES A. GORNDT, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Continuous Ovens, of which the following is a specification.

The present invention provides an improved construction of oven of the continuous type, that is, in which the article to be baked is fed in one end and after passing through the oven, is discharged at the opposite end, thereby admitting of the operation being continuous, which is of advantage over ovens of the intermittent type, which are supplied at intervals and discharged at stated periods.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which:

Figure 1 is a vertical central longitudinal section of a continuous oven embodying the invention. Fig. 2 is a transverse section thereof on the line *x*—*x* of Fig. 1. Fig. 3 is a horizontal section on the line *y*—*y* of Fig. 1. Fig. 4 is a horizontal section of a portion of the oven on the line 4—4 of Fig. 2. Fig. 5 is a horizontal section of a portion of the oven on the line 5—5 of Fig. 2. Fig. 6 is a detail view of a portion of a supporting track for the endless conveyer, showing more clearly the race-way and the balls and spacer bars arranged therein. Fig. 7 is a cross section on the line *x*—*x* of Fig. 6.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

As shown, the oven is preferably constructed of brick work. The oven space 1 is comparatively long and is provided at opposite ends with openings 2 and 3 constituting, respectively, the inlet and the outlet, said openings inclining outwardly and downwardly to prevent escape of the heat. An endless conveyer is arranged to operate in the space of the oven to move the article therethrough during the process of baking. The endless conveyer is formed of a series of plates 4, and a number of chains 5, the latter having the plates secured thereto in any substantial manner. The plates 4 may be of any length, width and thickness and their ends and rear edges are bent to provide retaining flanges to hold the pans in place containing the articles to be baked. A series of shafts 6 extend through opposite longitudinal walls of the body of the oven and are mounted in bearings 7 secured to said walls. By mounting the shafts in this manner, the bearings are prevented from heating and may be lubricated so as to enable the shaft to turn easily. The endless conveyer may be operated by applying movement to any one of the shafts, the driving power being controllable to admit of varying the speed at which the endless conveyer is to be driven so that the article to be baked may remain in the oven a greater or less time. The receiving end of the endless conveyer projects beyond the body of the oven, as indicated most clearly in Fig. 1, the upper run passing through the entrance opening 2 and the lower run passing through a lower opening 8. The receiving or projecting end of the conveyer is supported by means similar to the intermediate and inner or rear end of the conveyer. Sprocket wheels 9 mounted upon the shafts 6, receive the upper and lower runs of the endless conveyer. The lower run of the endless conveyer is supported upon a series of balls 10 which are placed in races 11 of V-form secured to the bottom of the oven. The balls 10 are spaced apart in the races 11 by bars 12. The upper run of the endless conveyer is supported in a manner similar to the lower run. The upper races 13 are mounted upon transverse tubes or pipes 14, which are supported at their ends in opposite side walls of the oven. A framework 15 is interposed between each tube 14 and the races 13 so as to support the latter in a substantial manner. The races 13 receive supporting balls 10 and spacing bars 12. A shaft 6 is located at each end of the oven space and is provided with sprocket wheels 9 to support the endless conveyer at the extremities of the oven. It is to be understood that the endless conveyer is supported intermediate of its extremities in a similar manner in addition to the races 11 and 13. A rotary support 16 is provided for the lower

run of the endless conveyer directly below the support at the entrance end of the oven space, said rotary support consisting of a shaft and sprocket wheels mounted thereon. The openings 2 and 3 are adapted to be closed at their outer ends by doors 17 and 18. The lower side of the discharge opening 3 is curved to provide a chute to effect proper delivery of the pans containing the bread, crackers or other article baked. A hood 20 protects the projecting end of the endless conveyer at the receiving end of the oven and also forms a shield for the operator. The upper portion 21 of the hood or protecting casing is hinged or movable to admit of access to the endless conveyer for placing the pans in position upon the plates 4 as the conveyer moves, so that the baking operation may be continuous, that is, the baked article may be delivered through the discharge opening 3, while the article to be baked may be placed in position to enter the inlet opening 2. A series of deflectors 22 are pendent from the top of the oven space and serve to confine the heat and prevent a circulation through the oven which would tend to carry off the heat or to admit air which would have a cooling effect. Steam pipes 23 are provided at intervals in the length of the oven space to render the air humid to prevent burning of the bread, crackers or the like and to insure the baking of the same in a moist atmosphere, thereby preventing drying and hardening of the same.

The oven may be heated in any manner, and, as shown, a battery or gang of furnaces are provided, individual furnaces 24 being properly spaced at intervals in the length of the furnace. Each furnace is designed to heat a given space, the latter being separated by transverse partitions 25. A series of transverse flues 26 are formed in the lower portion of the body of the oven for distributing the heat, said flues being in communication to insure a circulation of the hot air and flame therethrough. Other flues 27 and 28 are formed transversely in the upper portion of the body of the oven above the oven space 1 and are in communication at one end. Vertical flues 29 connect the lower flues 26 with the upper flues 27, and the hot air, after circulating transversely across the oven space, passes upward into the upper flues 28 and again returns to the side of the oven provided with the furnaces. Dampers 30 control the direct outlet and provide an escape for the smoke. Vertical flues 31 are formed in the partitions separating the sections allotted to the heating of each furnace and are provided with dampers 32. A space 33 is formed in the end and side walls of the body of the oven to prevent escape of the heat and to allow, in a measure, for contraction and expansion. The tubes or pipes 14 are in communication at opposite ends with longitudinal flues or passages 34 through which the hot air circulates, said hot air passing through the tubes or pipes 14 and thereby assisting materially in heating the oven space. It will thus be understood that the parts 14 perform a double office of supporting the suspending means for the upper run or portion of the endless conveyer and for causing the hot air to pass through the oven space and materially heating the same.

In the operation of the invention, the oven space is heated by fires in the several furnaces 24, and the endless conveyer is set in motion so that its upper run or portion travels from front to rear. The pans containing the bread, crackers, or the like to be baked, are placed upon the plates 4 in successive order and are moved through the oven space and discharged automatically through the opening 3 and are received upon a bench or other support provided for their reception.

Having thus described the invention, what is claimed as new is:

1. In combination an oven having an inlet opening at one end and a discharge opening at the opposite end, doors for controlling said openings, deflectors located at intervals in the length of the oven and dependent from the roof thereof, and a conveyer arranged to operate in the lower portion of the oven space to gradually and automatically move the articles therethrough.

2. In combination, a body provided with an oven space, of some considerable longitudinal extent and provided at opposite ends with downwardly and outwardly inclined openings forming, respectively, an inlet and an outlet, the lower wall of each opening being inclined outwardly and downwardly, an endless conveyer arranged in the oven space and adapted to travel so that its upper run moves from the inlet to the outlet, said conveyer having a portion extended beyond the receiving end of the oven, supporting means for said endless conveyer, and a hood inclosing and protecting the projecting end of the conveyer and comprising an upper movable portion to admit of charging the conveyer at the receiving end.

3. In combination, a body having a horizontally extended oven space and provided at one end with a downwardly and outwardly inclined outlet and having a downwardly and outwardly inclined inlet at its opposite end and having a correspondingly inclined opening below said inlet, an endless conveyer arranged within the oven space and having one end extended beyond the front of the oven with its upper run passing through the inlet and its lower run passing through the said opening and below the inlet, supporting means for the endless conveyer, the same including rotary supports for the upper and lower runs of the endless conveyer at the inner end of the said inlet and opening, and protecting

means for the projecting end portion of said conveyer and comprising a movable part to admit of charging the said conveyer.

4. In combination, a body having a horizontally extended oven space provided at opposite ends with, respectively, an inlet and an outlet, each inclining outwardly and downwardly from the upper portion of the oven space, an endless conveyer arranged in the lower portion of the oven space and having an end portion extended beyond the receiving end of the oven, deflectors pendent from the roof of the oven at intervals in the length thereof, and protecting means inclosing the projecting end portion of the endless conveyer and comprising a movable portion to admit of charging the said endless conveyer.

5. In combination, an oven, an endless conveyer arranged to operate in the space thereof and having an end portion extended beyond the body of the oven and adapted to receive the article to be baked, and a hood inclosing the extended end of the endless conveyer and comprising a lower fixed portion and an upper movable portion.

6. A body having an oven space, and passages in its walls outside of said oven space, tubes extended across the oven space and having their ends in communication with said passages, an endless conveyer arranged to operate in the oven space, and supporting means for the upper run of the endless conveyer mounted upon said tubes.

7. In combination, a body having an oven space and provided with passages in opposite walls exterior to said oven space, tubes extended across the oven space and mounted in opposite walls of the body and having their ends in communication with the said passages, an endless conveyer arranged to operate in the oven space, frames mounted upon said tubes, race-ways connecting the upper ends of said frames, and rotary supports arranged in said race-ways and adapted to sustain the upper run of said endless conveyer.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. GORNDT. [L. S.]

Witnesses:
WM. B. GRIFFEN,
JOHN L. MCBRIDE.