

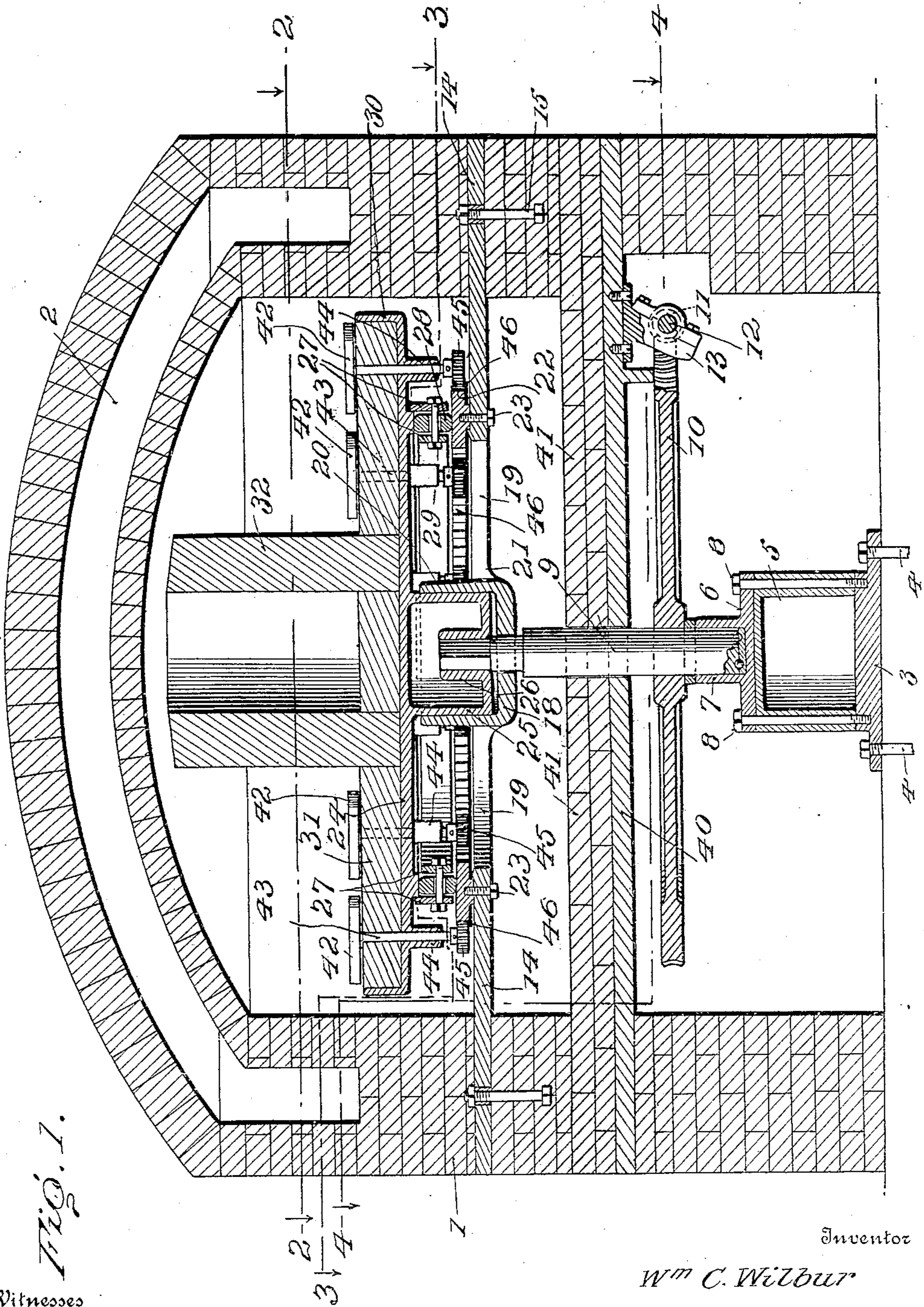
W. C. WILBUR.
FURNACE.

APPLICATION FILED NOV. 2, 1908.

931,663.

Patented Aug. 17, 1909.

4 SHEETS—SHEET 1.



Witnesses

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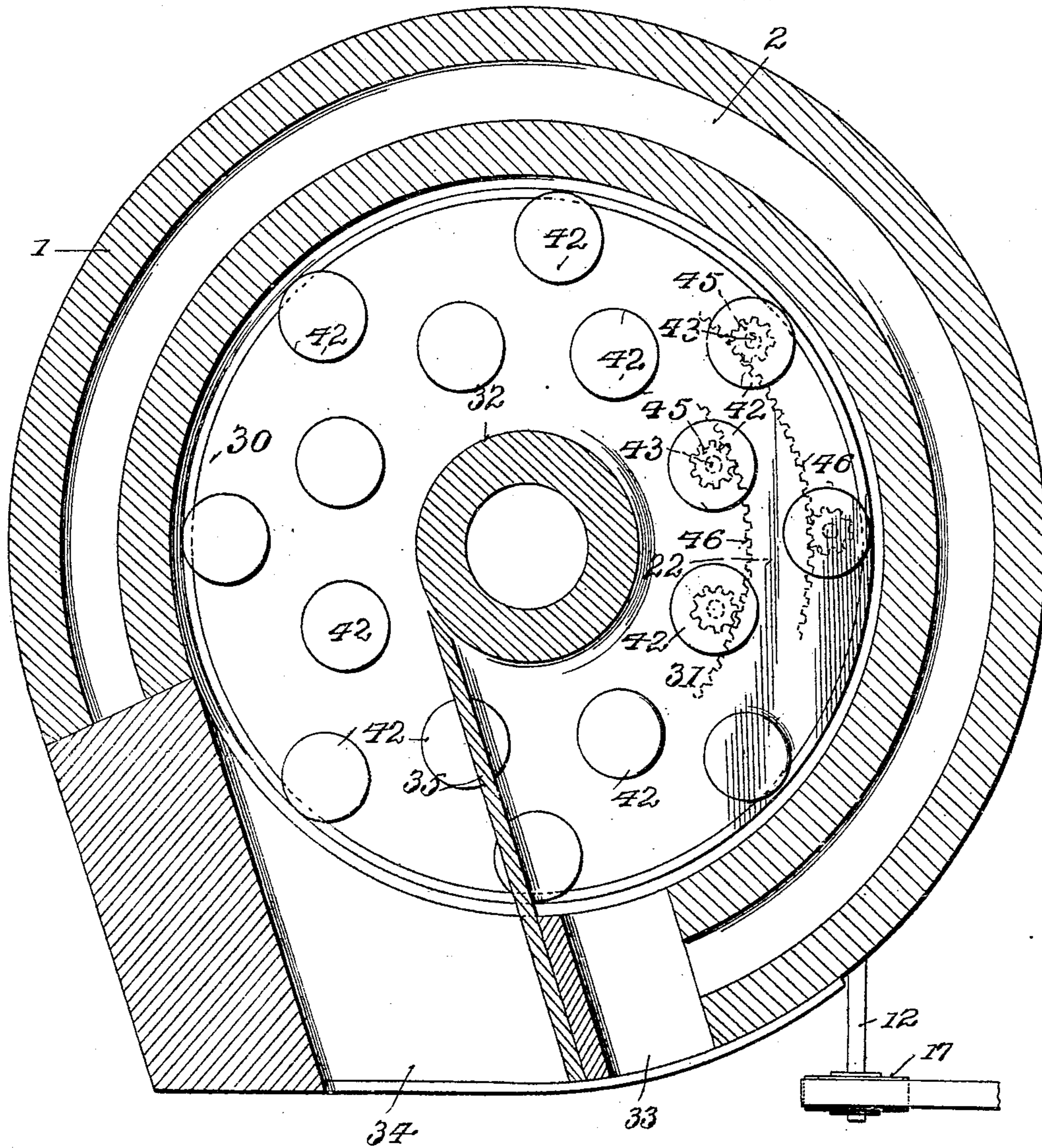
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4 SHEETS—SHEET 2.

Fig. 2.



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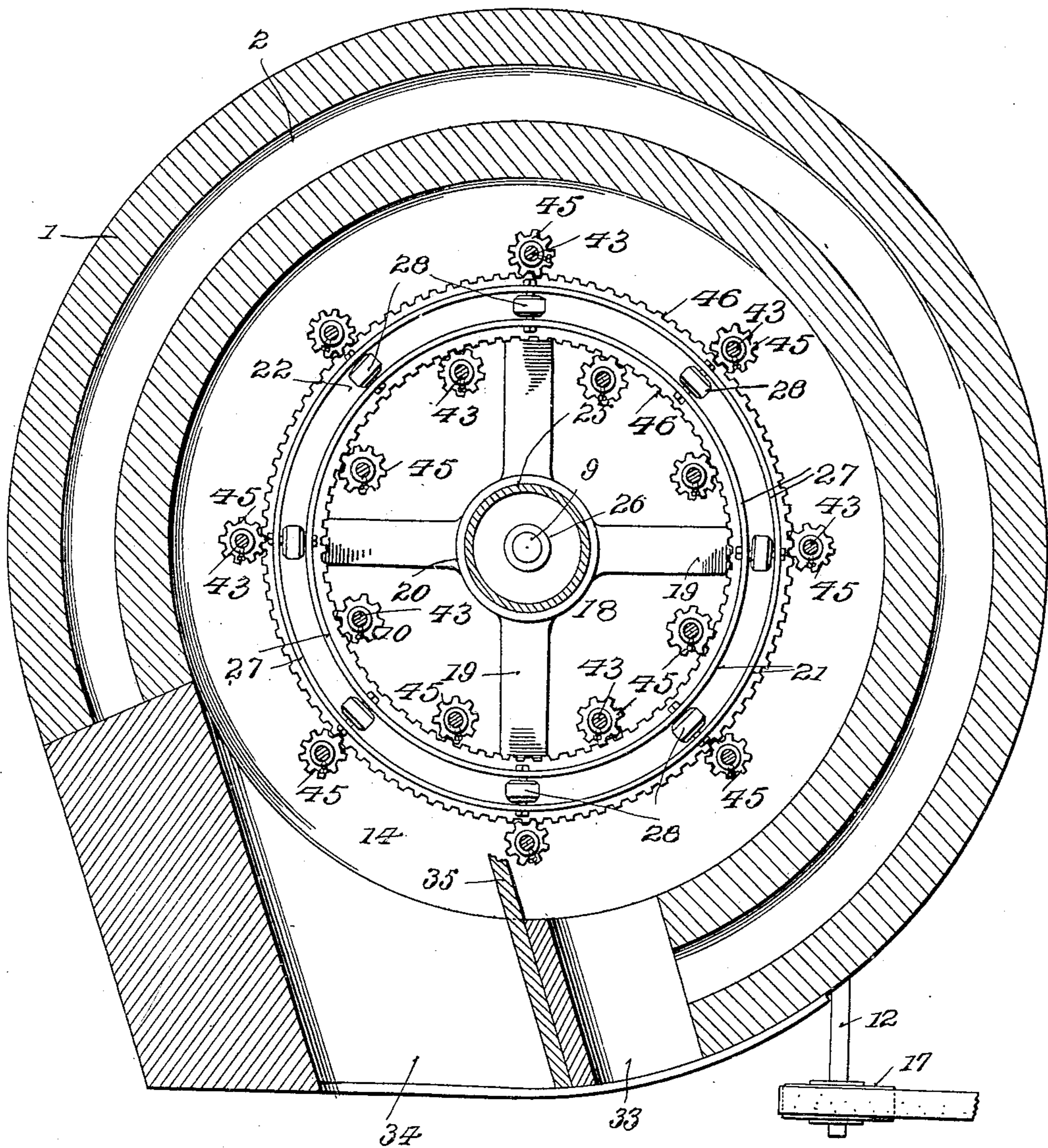
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4 SHEETS—SHEET 3.

Fig. 3.



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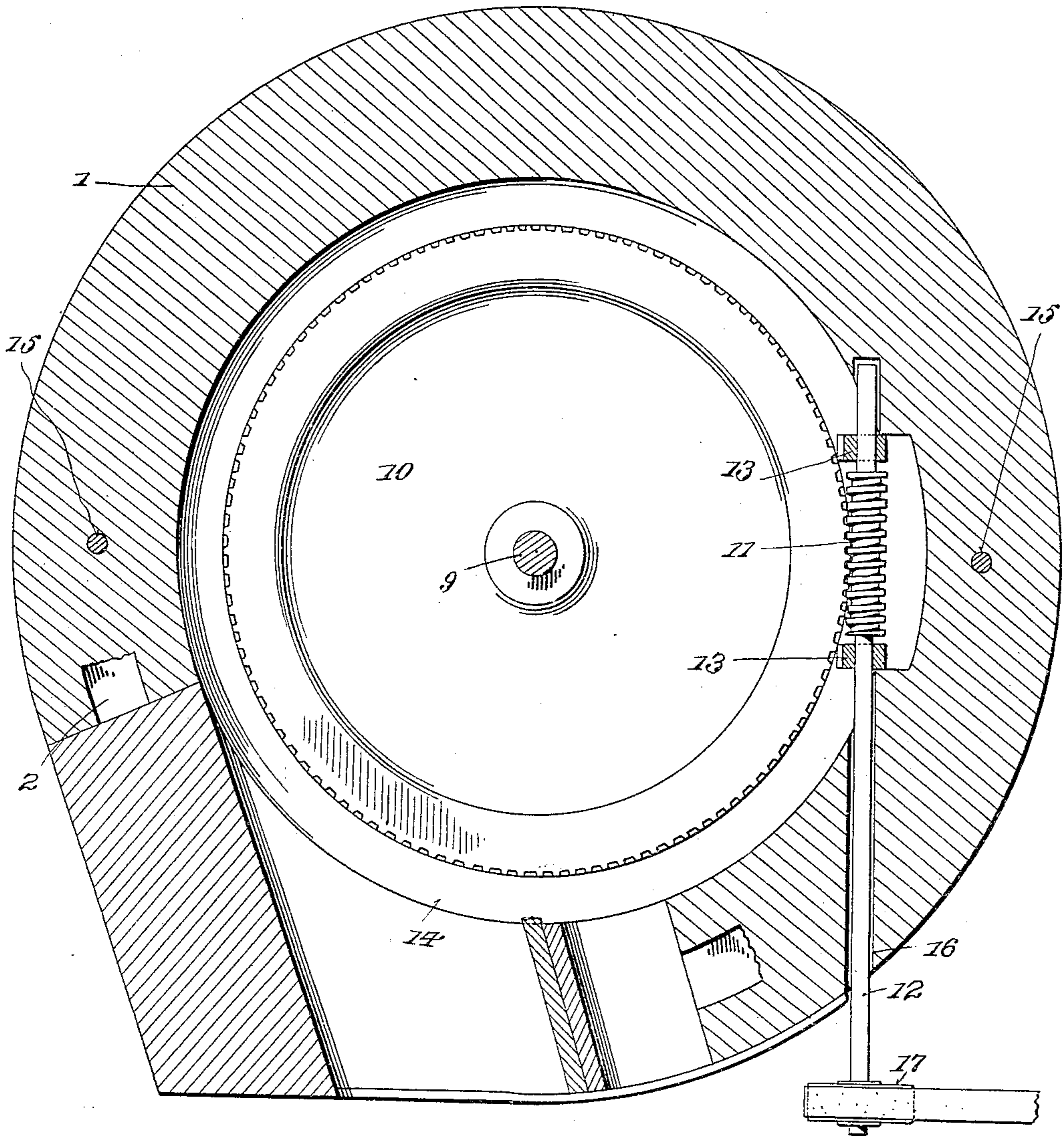
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4 SHEETS—SHEET 4.

Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM C. WILBUR, OF CHARLESTON, SOUTH CAROLINA, ASSIGNOR TO THE LIBBEY GLASS COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

FURNACE.

No. 931,663.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed November 2, 1903. Serial No. 460,669.

To all whom it may concern:

Be it known that I, WILLIAM C. WILBUR, citizen of the United States, residing at Charleston, in the county of Charleston and State of South Carolina, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

My invention relates to certain new and useful improvements in furnaces and particularly heating furnaces, and the object of my invention is to produce such a furnace which is simple in construction, economical in the cost of installation and maintenance, and one in which material such for instance as glass can be heated for any purpose with perfect control over the time in which it remains in the furnace.

With these and other objects in view my invention consists in certain constructions, combinations and arrangements of parts the preferred form of which will be first described in connection with the accompanying drawings and then the invention particularly pointed out in the appended claims.

Referring to the drawings wherein the same part is designated by the same reference numeral wherever it occurs, Figure 1 is a central vertical section taken on line 1, 1 of Fig. 2; Fig. 2 is a horizontal section taken on line 2, 2 of Fig. 1, and Fig. 3 is a similar section taken on line 3, 3 of Fig. 1; Fig. 4 is a section taken on line 4, 4 of Fig. 1.

In the form of my invention shown, 1 designates the wall of the furnace which is of any ordinary or desired form and, as shown, is provided with the combustion chamber 2 in the roof thereof. The combustion may be supplied by burning gas in the chamber 2, or the furnace may be heated in any other manner as may be found most desirable.

Centrally mounted on the floor of the furnace is a base plate 3, said plate being secured to the floor by the bolts 4, or other suitable securing means. Supported on top of the plate 3 is a block 5 which preferably, and as shown, is made hollow for the sake of lightness and cheapness in construction. Resting on top of the block 5 is a plate 6 having the vertical bearing 7 located in the center thereof. The plate 6 and the block 5 are secured to the base plate 3 by suitable securing means, as the bolts 8. These form a pedestal or support for a vertical shaft 9,

the lower end of which is rotatably mounted in the bearings 7. The shaft 9 intermediate of its ends has fast thereon the worm wheel 10 meshing with a worm 11 fast on the shaft 12, mounted in bearings 13, carried on the under side of a plate 40, which is mounted in the side walls of the furnace, and preferably anchored therein. On the upper surface of this plate 40 is a layer of refractory material 41 whereby the gear 10 and its driving means are protected from the effects of the heat. The shaft 12 at one end extends through a bearing 16 in the side wall of the furnace, and on its end outside the furnace is provided with a driving pulley 17, whereby the shaft 12 is rotated which, through the worm 11, drives the gear 10 and revolves the shaft 9.

18 is a hub suitably supported as by means of the arms 19, projecting inwardly from a ring 14 secured in the side walls of the furnace by means of the bolts 15 or other suitable securing means. This hub is formed with a cup-shaped bearing 20 in its upper side and is centrally bored at 21 to form the upper bearing for the shaft 9. The ring 14 carries on its upper surface the ring 22 which forms a track and which is suitably secured to the ring 14, as by means of the screws 23.

24 is a table provided with the downwardly projecting hub 25 which rests in the bearings 20. To the center of the hub 25 the upper end of the shaft 9 is secured in the portion 26 of the hub.

27, 27, are a pair of rings, one located within the other and projecting downwardly from the under side of the table and between which are mounted the bearing rolls 28 by means of the bolts 29. These bearing rolls run on the track 22 and support the outer portion of the table.

The table is provided with the peripheral flange 30, whereby the refractory cover 31 is supported on the table upon which is supported the material to be heated.

32 is a cylinder supported on the table and projecting upwardly from the center thereof, said cylinder operating to prevent drafts through the furnace.

In the form of my invention as shown, 33 is the opening into the furnace through which the material to be heated is placed upon the revolving table, and 34 is the opening through which the material is removed after being heated. It is evident that if the table

is rotated in the opposite direction the material is placed on the table through the opening 34 and removed through the opening 33.

35 is a refractory wall which separates the openings 33 and 34, the wall extending into the furnace and making close contact with the cylinder 32 at one side thereof, whereby the draft through the furnace is further prevented, and by means of which the material on the table may be removed by coming in contact with the wall 35 and, through the rotation of the table, swept off the table onto the floor of the openings 34.

It is sometimes desirable to have the material rotate on the table 24 while the same is in the furnace, and in order to effect this I may provide the table 24 with a series of supports 42 mounted on the upper end of spindles 43 which extend through bearings 44 in the under side of the table. The spindles at their lower ends carry gears 45 which mesh with the gear teeth 46 cut on the edges of the ring 22. As shown the rotary supports are arranged in two series on the table, one within the other, and the gears 45 of the outer series mesh with the teeth on the outer edge of the ring 22 while the gears of the inner series of supports mesh with the teeth on the inner side of the ring. It is to be of course understood that where the character of the material is such that it does not need to be revolved independently of the table, these rotary supports are omitted when the table may be made solid.

In the operation of my furnace after the same has been heated to the desired temperature, the shaft 12 is driven by power applied to the pulley 17, and through the worm 11 and gear 10 the shaft 9 is rotated, thus rotating the table 24. The material to be heated can now be introduced through the opening 33 and placed upon the revolving table. At the conclusion of a single revolution the material is delivered through the opening 34 being swept off the table by the partition 35, if it has not been previously removed by hand. The length of time the material is in the furnace is automatically controlled by the speed at which the table is rotated, and at a given speed all pieces of the material are allowed to remain in the furnace approximately the same length of time.

I realize that considerable variation is possible in the details of construction and arrangement of parts without departing from the spirit of my invention, and I therefore do not intend to limit myself to the specific form shown and described.

What I claim as new and desire to secure by Letters Patent is—

1. A furnace provided with a shaft vertically mounted therein, a table secured to the upper end of the shaft, a drive shaft extending through the wall of the furnace and connected to the vertical shaft whereby the table may be rotated at a constant speed, the wall of the furnace being provided with a receiving and a delivery opening, a partition supported on the wall of the furnace, projecting into the furnace over the table and separating said openings, and a cylinder centrally located on the table and extending up nearly to the roof of the furnace, whereby material to be heated will remain in the furnace a length of time dependent solely upon the speed of rotation of the table.

2. A furnace having a ring supported in its walls, a central hub supported from the ring, a table having a part supported in the hub, a vertical shaft supported at its lower end in a suitable bearing with its upper end passing through the hub and secured to the part of the table supported in the hub, and means extending through the wall of the furnace for driving the shaft whereby the table may be rotated.

3. A furnace having a ring supported in its walls, a central hub supported from the ring, a table having a part supported in the hub, a vertical shaft supported at its lower end in a suitable bearing with its upper end passing through the hub and secured to the part of the table supported in the hub, means extending through the wall of the furnace for driving the shaft whereby the table may be rotated, a track supported on the ring and anti-friction devices mounted between the table and track.

4. A furnace having a ring supported in its walls, a circular track mounted upon said ring, one of the edges of said track being provided with gear teeth, a shaft vertically mounted within the track, a table secured to the shaft, means for driving the shaft, a series of shafts extending vertically through the table and carrying supports at their upper ends, the lower ends of the last mentioned shaft being each provided with a gear meshing with the teeth on the track, said table being supported by said track.

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

WILLIAM C. WILBUR.

Witnesses:

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E. L. WHITE.