

No. 877,310.

PATENTED JAN. 21, 1908.

W. ERNST.
BAKE OVEN.

APPLICATION FILED DEC. 26, 1905.

3 SHEETS—SHEET 1.

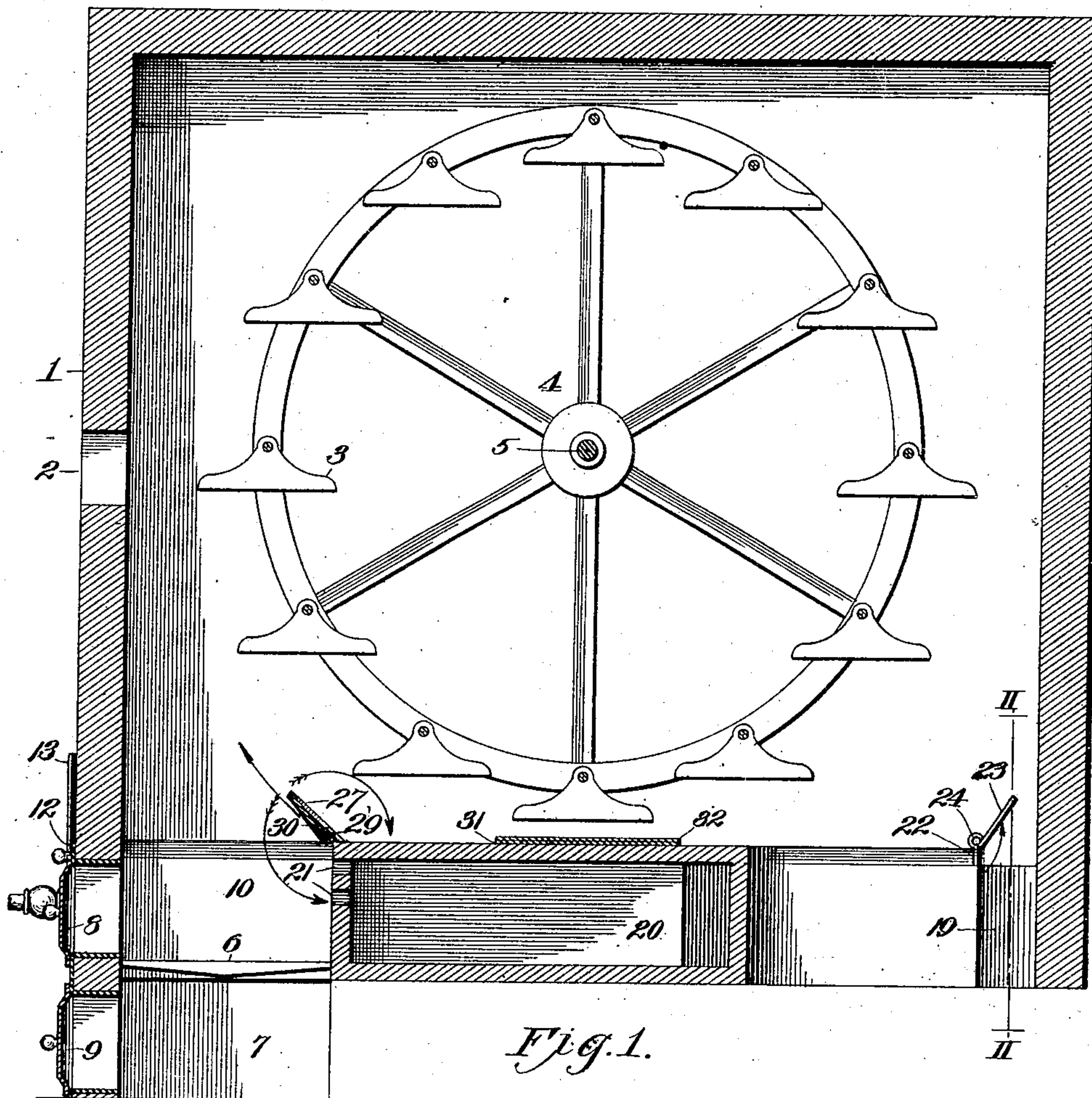
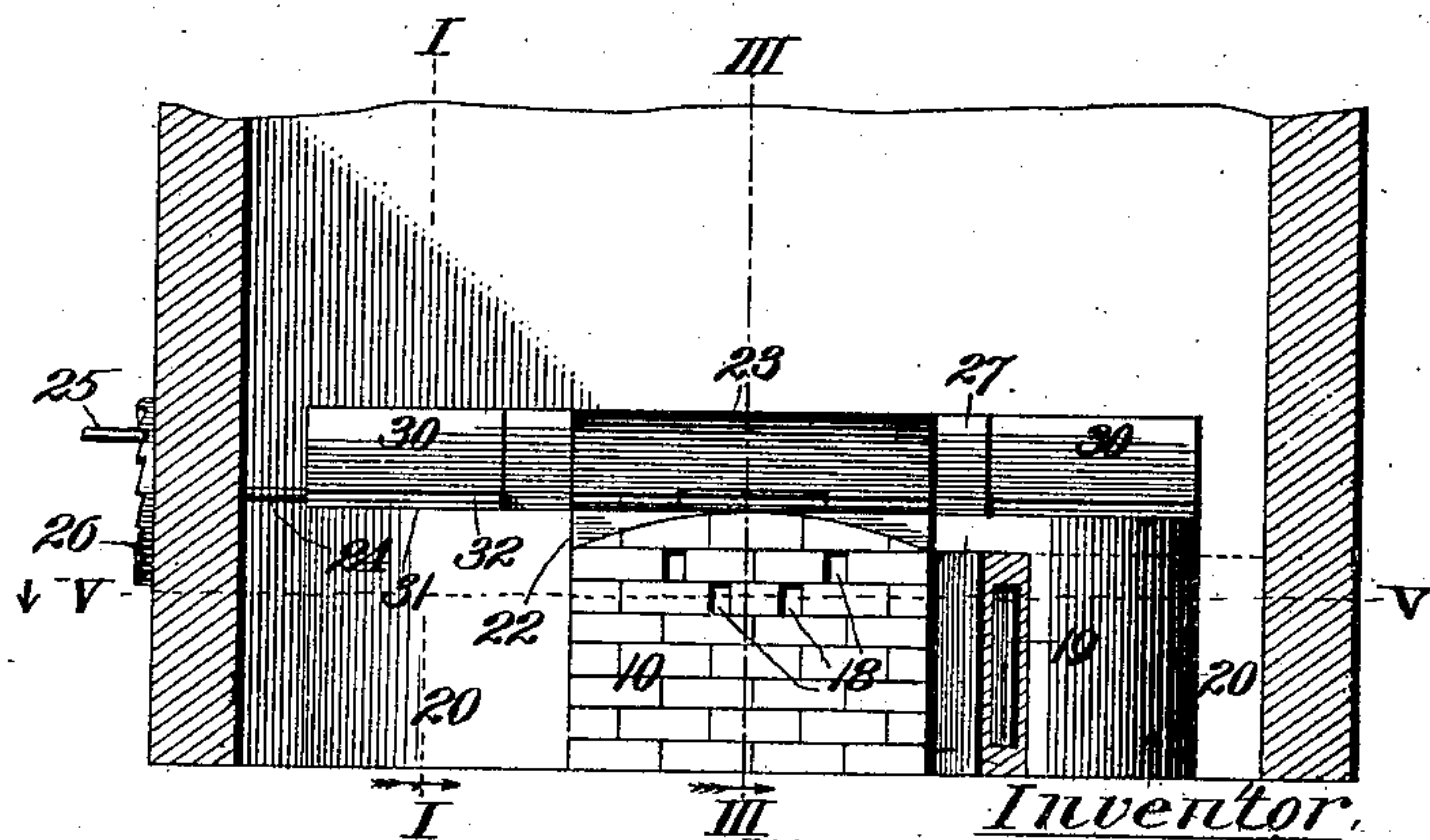


Fig. 1.

Fig. 2.



Witnesses:

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3 SHEETS—SHEET 2.

Fig. 3.

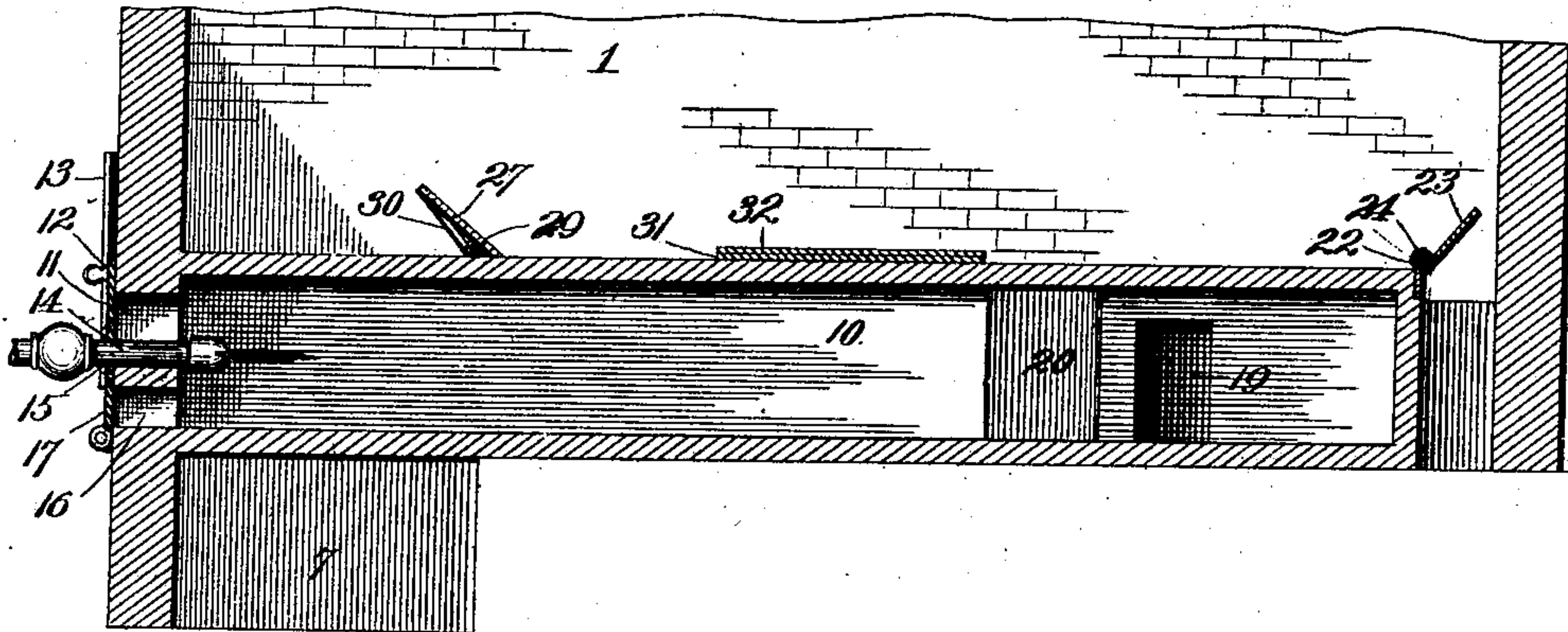
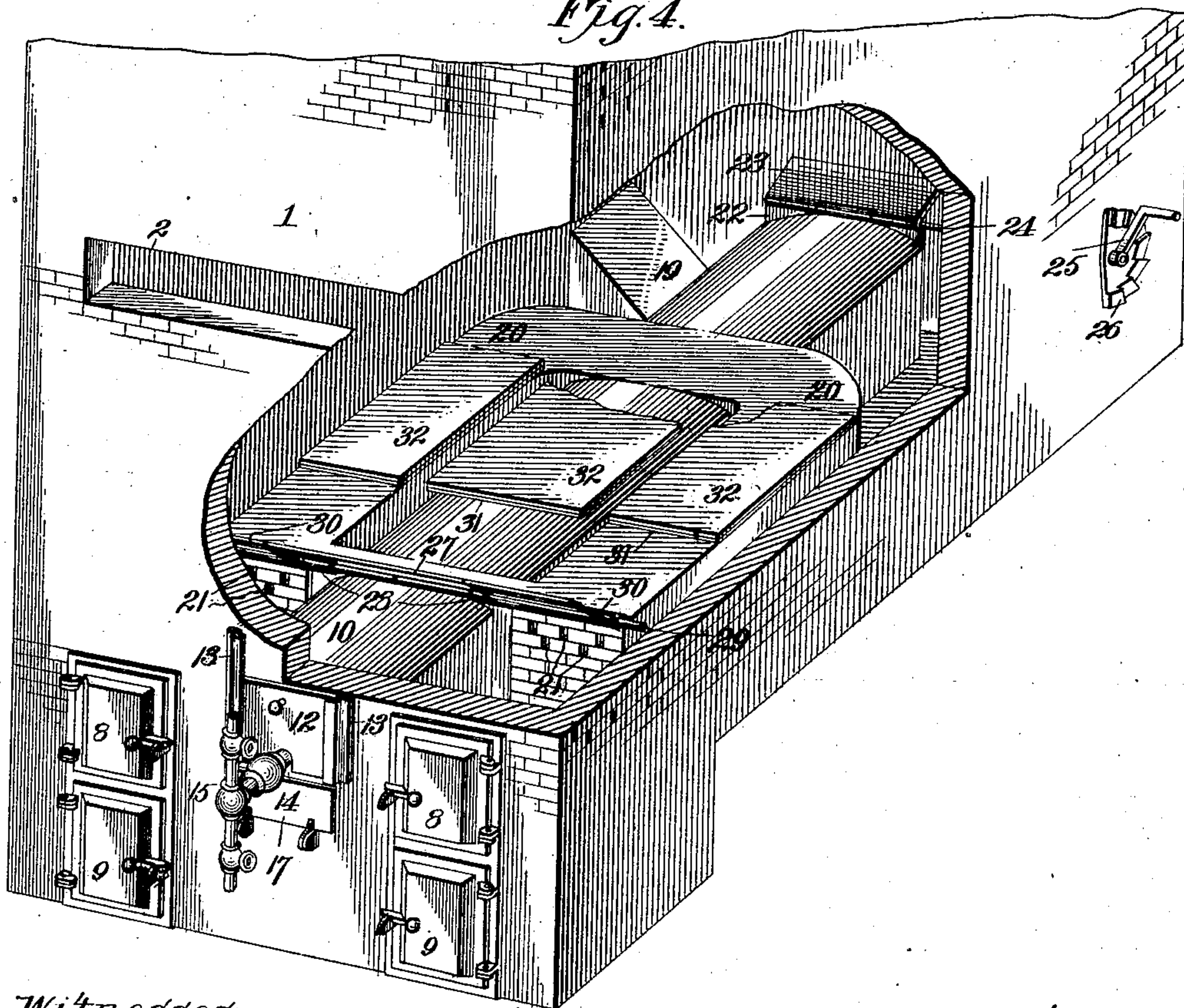


Fig. 4.



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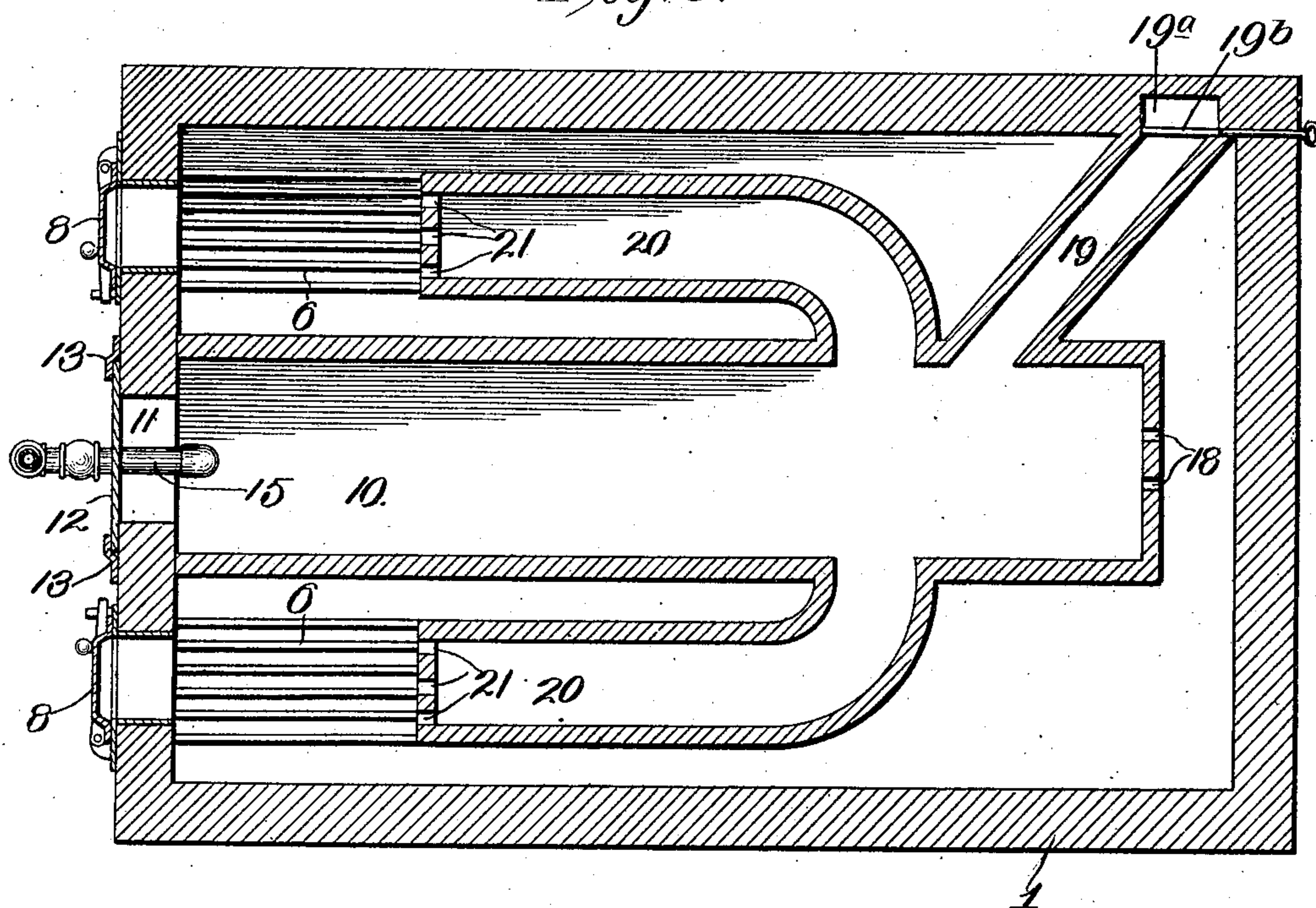
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3 SHEETS—SHEET 3.

Fig. 5.



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Frank R. Gore.
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UNITED STATES PATENT OFFICE.

WILLIAM ERNST, OF SAN FRANCISCO, CALIFORNIA.

BAKE-OVEN.

No. 877,310.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed December 26, 1905. Serial No. 293,163.

To all whom it may concern:

Be it known that I, WILLIAM ERNST, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Bake-Ovens, of which the following is a specification.

My invention relates to ovens and more particularly to that class embodying an intermittently rotating reel equipped with pivotally pendent trays on which the articles to be baked are placed and from which they are removed after the reel completes a revolution, and in which oil is used as the fuel, my object being to produce means for efficiently regulating and controlling the heat and thereby avoid burning the articles upon the trays in proximity to the furnace flues, the overheating of such trays and the consequent burning of the articles thereon being one of the objectionable features of all of the oil-fuel ovens of different types with which I am familiar.

A further object is to produce means by which the heat can not only be regulated and controlled but which can be utilized to distribute the heat according to the temperature of the oven and the nature of the articles being baked.

With these and other objects in view as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1, is a vertical section on the line I—I of Fig. 2. Fig. 2, is a vertical section taken substantially on the line II—II of Fig. 1 but with the flue leading to the chimney in section at an angle to the plane of the body of the section. Fig. 3, is a fragmentary view taken on the line III—III of Fig. 2. Fig. 4, is a perspective view of the oven with the front wall and one side wall partly broken away to expose more clearly the arrangement of the flues, the reel being omitted from said figure. Fig. 5, is a horizontal section on the line V—V of Fig. 2.

In the said drawings 1 indicates the oven of brickwork by preference and provided with an opening 2, through which the arti-

cles to be baked are placed upon or removed from the pivotally pendent trays 3 of the reel 4 mounted upon the shaft 5 operated intermittently in the usual or any preferred manner. The drawings represent a "converted" oven, that is, an oven in which the fuel originally employed was coke or its equivalent, and for this reason said oven is shown as provided with the grates 6 and ashpits 7, only one of which appear, and is also provided with doors 8 and 9 respectively controlling access to the fire box and the ash-pit. In new oil-fuel ovens the parts 6 to 9 need not be employed.

10 indicates the main flue which extends from front to rear and communicates at its front end with opening 11, controlled by slide door 12, mounted in guides 13 secured to the face of the oven, said door having a notch 14 in its lower end to fit over the burner tube 15, projecting through opening 11 into the front end of said flue. The character of burner employed is unimportant as regards this invention and is therefore not described in detail other than that the gas generated burns in a horizontal flame by preference as shown in Fig. 3, so as to avoid undue heating of the top of the arch of said flue.

Below opening 11 and also communicating with the front end of the flue is a draft opening 16 controlled by a door 17 of the hinge type shown or of any other suitable type. The rear end of flue 10 terminates short of the rear wall of the furnace and is closed except for one or more openings 18 in the upper portion of the rear wall, and extending laterally from and connecting the flue 10 to the main flue or chimney 19^a, is a flue 19 having a suitable damper 19^b.

20 indicates a pair of auxiliary flues communicating with flue 10 at opposite sides and forward of flue 19 and having their front ends sealed up except for one or more openings 21 near the top of said flues.

22 indicates a plate projecting upward from the rear end of flue 10 and 23 a hinged plate which acts as a damper or deflector when properly manipulated by the attendant, said hinged damper or deflector having a rod 24 projecting through one wall of the furnace and equipped with a handle adapted for engagement with one of the

teeth of the ratchet plate 26 secured to the outer face of said wall. By properly manipulating this handle it is obvious that the hinged plate 23 may revolve through three-fourths of a circle, at one extremity of said movement resting on the top of flue 10 and at the other against the rear end of said flue so as to close openings 18. It may furthermore through the instrumentality of the handle and ratchet plate be secured at points intermediate of said extremities so as to deflect the heat in the desired direction.

Bridging flue 10 at or near the front ends of the auxiliary flues 20 and projecting forward and upward by preference, is a rigid deflector 27, and said deflector is provided with loops 28 forming journals for the rods or shafts 29 of the same character and for the same purpose as rod 24, that is to say for the purpose of adjusting plates 30 secured rigidly on the rods so that they shall act as deflectors or entirely cut off the passage of heat and other products of combustion from flues 20 through openings 21 and into the oven chamber. Each rod 29 furthermore is adapted to be equipped with means for securing it at the desired point of adjustment.

For the purpose of protecting the tray or trays in closest proximity to the flues, the latter are partially covered with asbestos 31, covered by metal plates or other non-combustible material, the sheet metal by preference serving to evenly distribute the heat. These insulators protect the contents of the trays as the latter successively assume positions vertically below the axis of the reel, from the intense heat which radiates from the top of the flues, and cooperate with the hinged plates in effecting a comparatively wide and even distribution of the heat throughout the oven chamber.

When first starting the furnace the hinge plates 23 and 30 are manipulated to close openings 18 and 21, and door 17 is opened to provide the necessary draft to carry off the products of combustion from the burner through flue 10 and chamber 19 to the chimney, the damper 19^b being opened. In the initial part of the operation some smoke is produced but as soon as the production of smoke ceases the damper 19^b is closed and the hinged plates are operated to uncover the openings 18 and 21 of flues 10 and 20 respectively, the draft door 17 being also preferably left open to supply the oxygen necessary for perfect combustion. A large proportion of the heat generated instead of passing through the chimney flue will escape from the flue 10 through opening or openings 18, a portion of the heat also passing into the return flues 20 and thence through openings 21 into the front corners of the oven chamber. The heated air after circulating through the oven or baking chamber eventu-

ally escapes through opening 2 or its equivalent.

By this arrangement it will be seen that the heat generated is distributed uniformly in the oven chamber. If the hinged plates are folded back upon their respective flues, the heat escaping through the openings will pass directly upward and therefore tend to subject the nearest trays to the most intense heat this being desirable under certain conditions. The attendant can control this, however, by proper adjustment of the deflectors so as to cause the heat to move more or less directly toward the front or back wall and thus rise to the top of the oven near said walls and thereby subject all of the trays to an approximately uniform heat. It will be understood that the stationary deflector 27 near the front end of flue 10 cooperates with deflectors 30 in preventing the heat from concentrating on the contiguous trays and thereby possibly burning their contents, as without said stationary deflector more or less of the hot air discharged through opening 21 could readily pass upward at the inner ends of hinged plates 30 and thus impinge directly on the bottom of each tray as the reel revolves.

From the above description it will be apparent that I have produced a bake oven which embodies the features of advantage enumerated as desirable and which can be built without the grates and ashpits or which can be easily and cheaply produced by equipping a coke-fuel oven with the flues and other features described which are necessarily a part of my improved oil-fuel oven.

Having thus described the invention what I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In a bake oven, a furnace having a central flue terminating short of the rear wall of the oven and having a rear end closed by a wall provided with one or more openings near its upper edge, and auxiliary flues leading from the side of the central flue near the rear end of the same toward the front wall of the oven and having their front ends closed by walls provided by one or more openings near their upper edges, the said walls in the ends of the flues permitting a retarded flow of the heat currents to the baking chamber, and deflectors at the ends of the flues above the openings in the end walls thereof arranged to have their lower faces interposed in the paths of the heat currents whereby the said currents may be cut off or thrown toward the front and rear walls of the bake oven.

2. In a bake oven, a furnace comprising a flue and a pair of auxiliary flues at opposite sides of and communicating at their rear ends with the first-named flue and having in their front ends one or more openings, swinging plates secured to the front ends of the

auxiliary flues above said openings and projecting upwardly and forwardly toward the front wall of the oven, and a rigid plate upon the main flue in alinement with the plates of
5 the auxiliary flues and extending upwardly and forwardly toward the front wall of the oven.

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

WILLIAM ERNST.

Witnesses:

H. C. RODGERS,
G. Y. THORPE.