

No. 649,425.

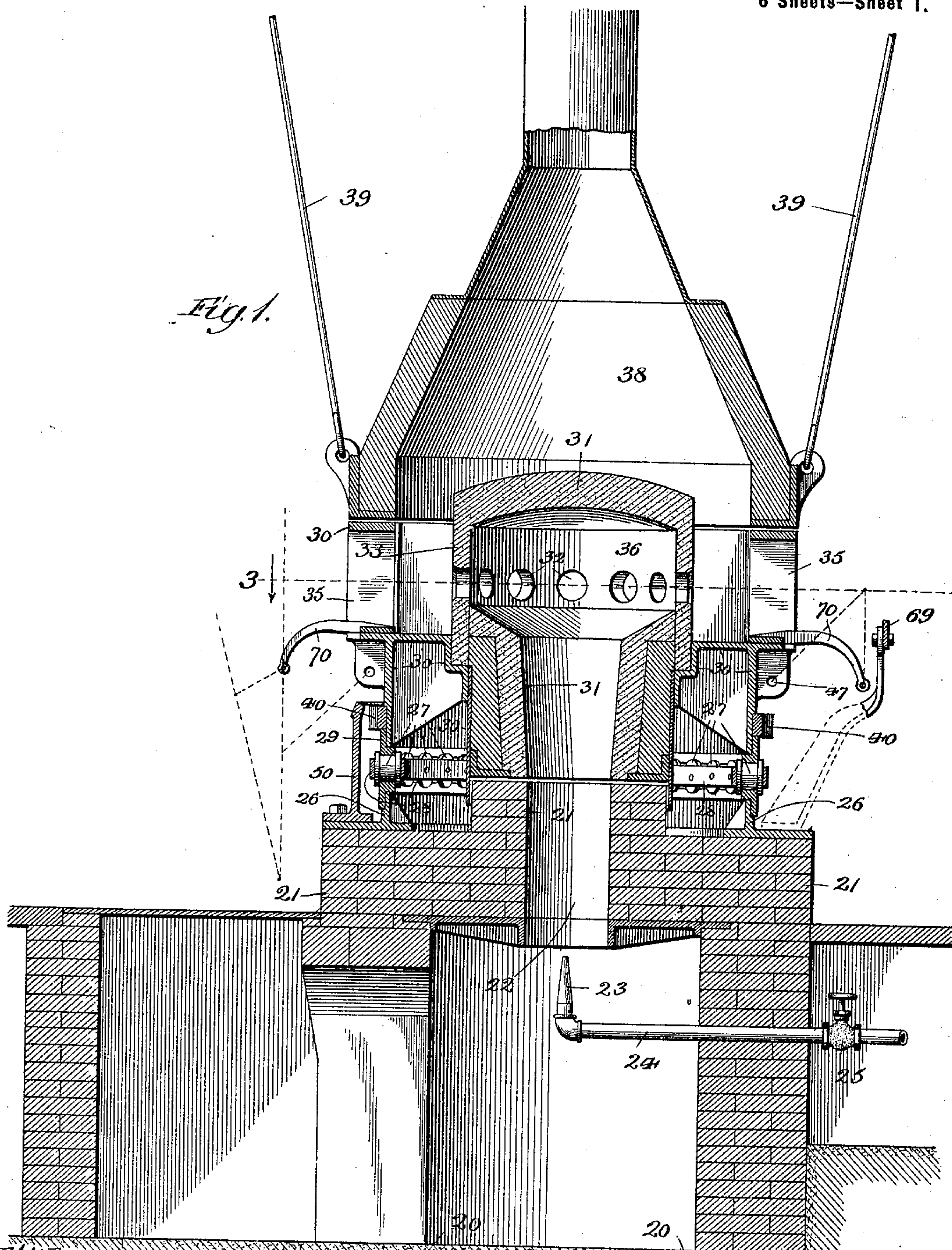
Patented May 15, 1900.

B. M. ASLAKSON & J. E. LIPPINCOTT.
GLORY HOLE FURNACE FOR FINISHING GLASSWARE.

(Application filed Nov. 13, 1899.)

(No Model.)

6 Sheets—Sheet 1.



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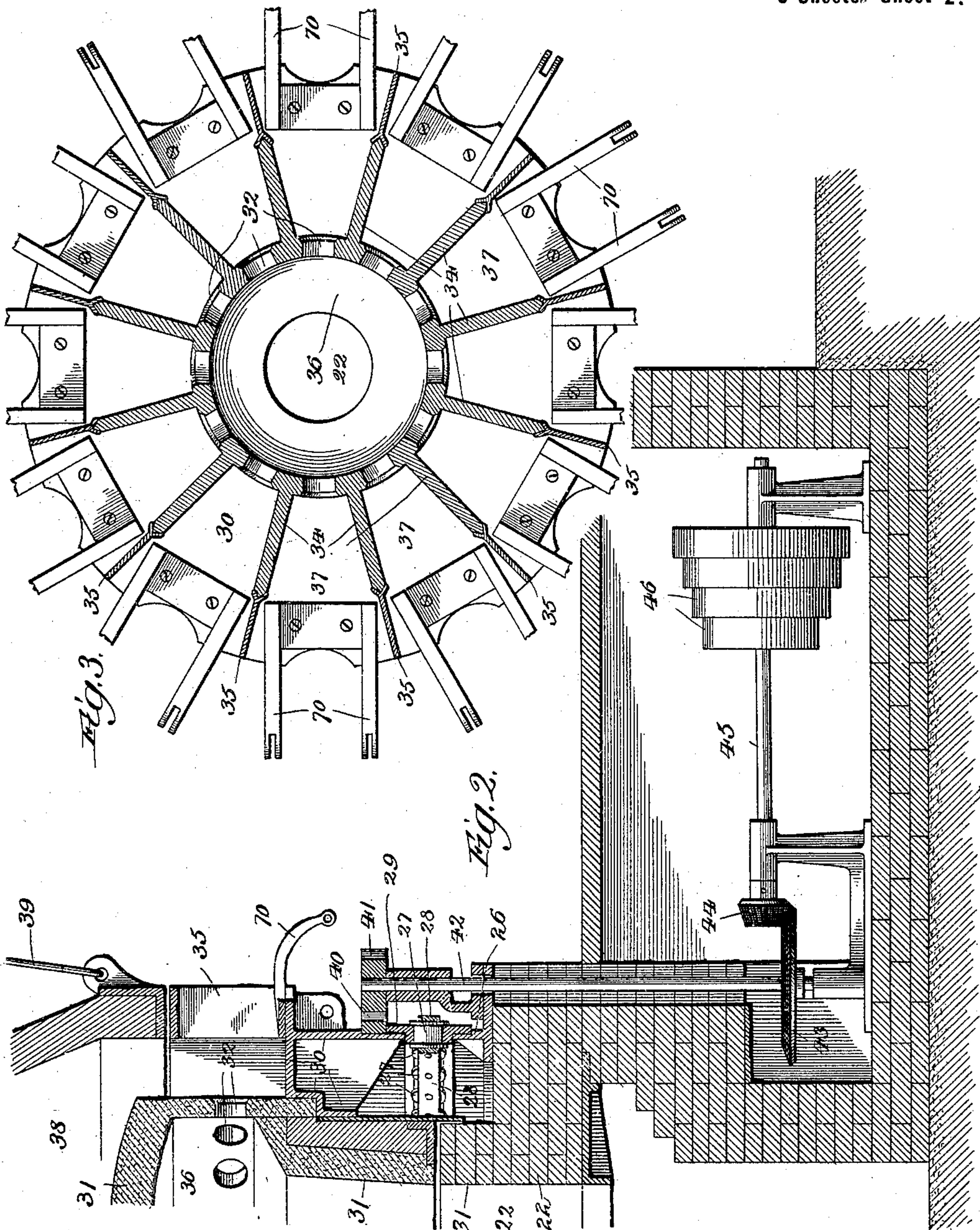
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6 Sheets—Sheet 2.



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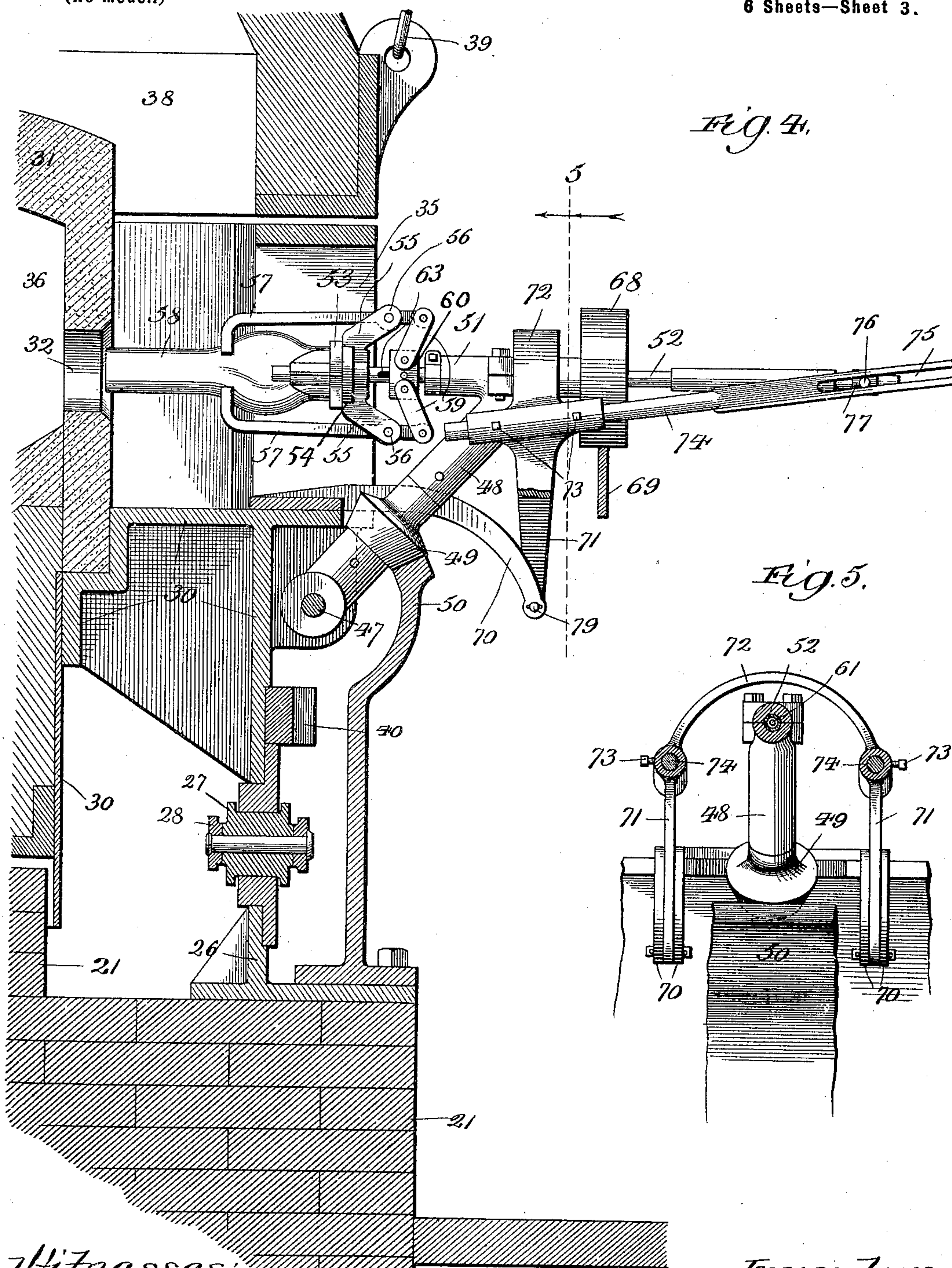
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6 Sheets—Sheet 3.



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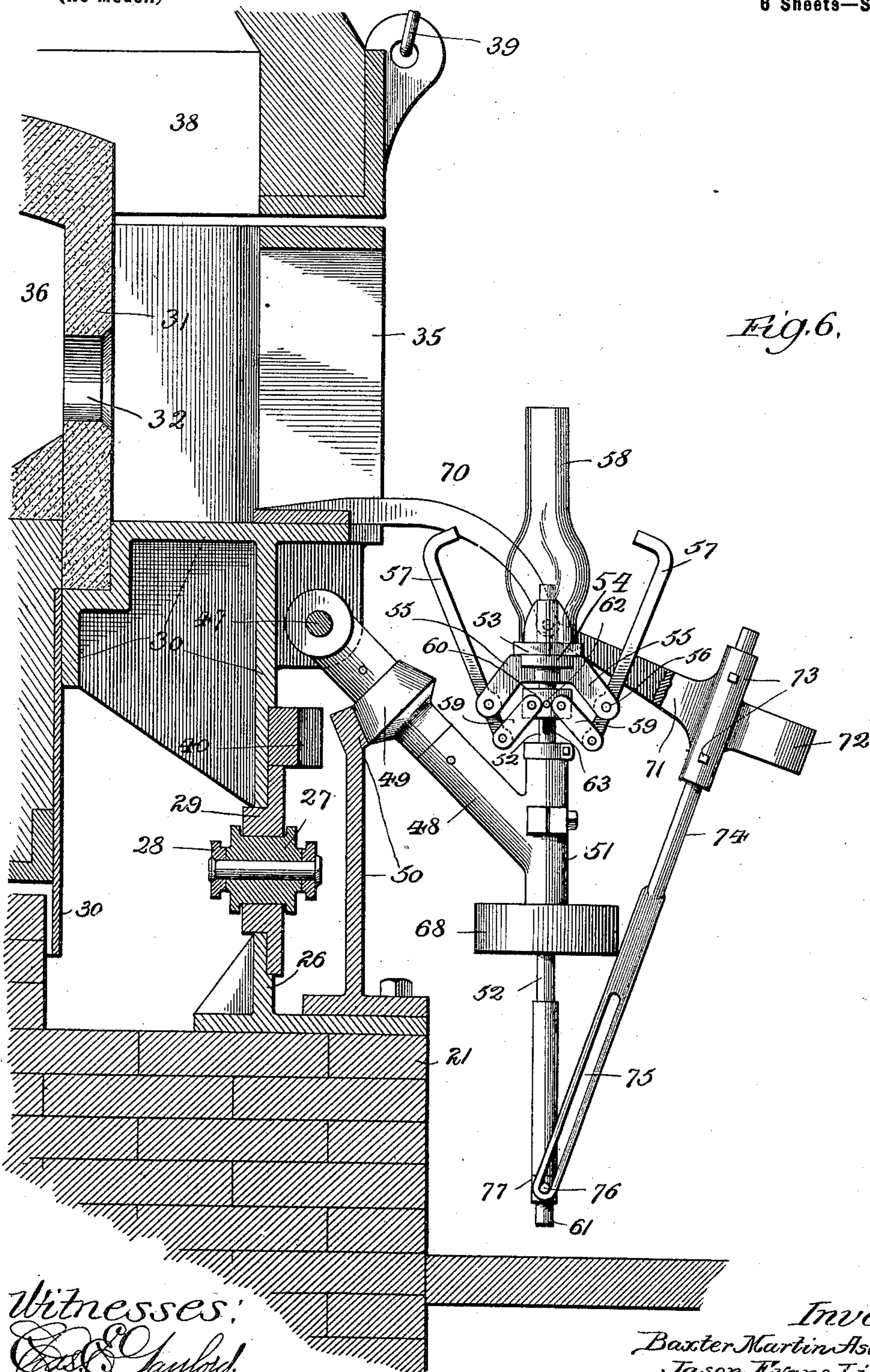
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6 Sheets—Sheet 4.



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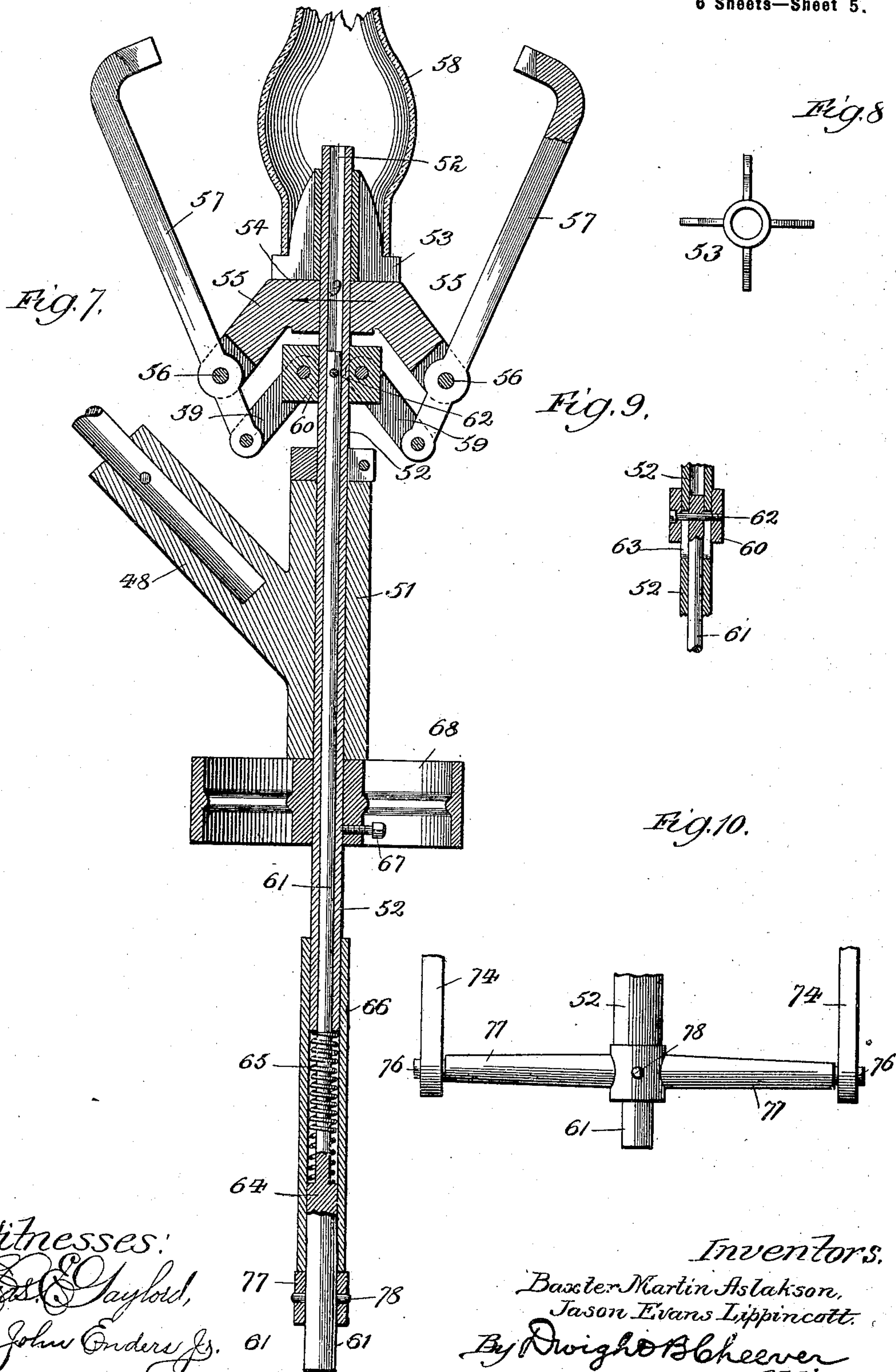
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6 Sheets—Sheet 5.



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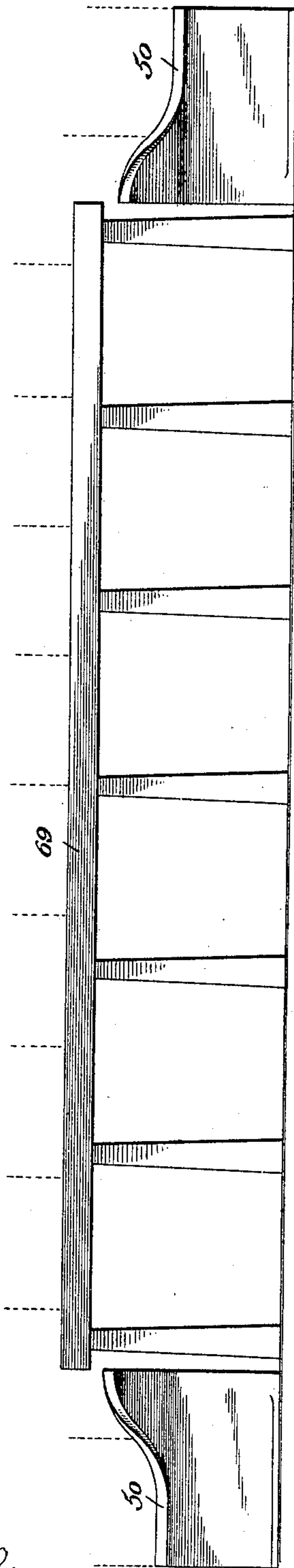
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6 Sheets—Sheet 6.

Fig. 11.



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UNITED STATES PATENT OFFICE.

BAXTER MARTIN ASLAKSON AND JASON EVANS LIPPINCOTT, OF ALEXANDRIA, INDIANA, ASSIGNORS TO THE LIPPINCOTT GLASS COMPANY, OF SAME PLACE AND CINCINNATI, OHIO.

GLORY-HOLE FURNACE FOR FINISHING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 649,425, dated May 15, 1900.

Application filed November 13, 1899. Serial No. 736,763. (No model.)

To all whom it may concern:

Be it known that we, BAXTER MARTIN ASLAKSON and JASON EVANS LIPPINCOTT, citizens of the United States, residing at Alexandria, in the county of Madison and State of Indiana, have invented a new and useful Glory-Hole Furnace for Finishing Glassware and other Articles, of which the following is a specification in its best form now known to us, reference being had to the accompanying drawings.

Our invention relates to glory-hole furnaces, and particularly to furnaces for glazing lamp-chimneys, glassware, and other articles which require the reheating of their ends in order to repolish them.

It consists of a rotating furnace having openings for the entrance of the article to be glazed, in means for holding the article, for introducing it into the opening in the furnace, for rotating the article on its axis while in the furnace, and in means for withdrawing the article from the opening and unlocking the clamp which holds it, so that it may be removed.

It also consists in other features and in details of construction hereinafter more fully described and claimed.

In the drawings, Figure 1 is a sectional view taken through the center of the furnace, the clamping mechanism being omitted. Fig. 2 is a partial view of Fig. 1, showing the method of applying power for the rotation of the furnace. Fig. 3 is a sectional plan view on line 3, Fig. 1. Fig. 4 is a detail view of the mechanism for holding the chimney when holding it in the furnace. Fig. 5 is a sectional view on line 5 of Fig. 4. Fig. 6 is the same as Fig. 4 with the mechanism moved to such a position that the clamps are opened so that the chimney may be removed. Fig. 7 is a sectional view of the clamps. Fig. 8 is a plan view of the support for the chimney. Fig. 9 is a sectional side view taken through the center of Fig. 7 looking at it in the direction indicated by the arrow 9 on that figure and shows in detail the block 60, the pin 62, and the slot 63, hereinafter more fully described. Fig. 10 is a detail view of the end of rod 61, showing the cross-head 77 and attached parts.

Fig. 11 is a developed view of a compound cam.

Similar figures indicate the same parts throughout the several views.

On a suitable foundation 20 is built the brick base 21 of the furnace, having through its center the vertical flue 22 and the oil or gas burner 23 at the bottom of said flue, the burner being fed by the pipe 24 from any suitable source of fuel supply and regulated by the valve 25. Rigidly secured to the base of the furnace is a circular metal track 26. On this track are a large number of flanged steel rollers 27, journaled in the rings 28, so as to keep them from crowding on each other. Upon these rollers 27 rests the annular ring 29, which supports or carries the metal framework 30, in which is rigidly mounted the fire-clay glory-hole furnace proper, 31, having in its sides the twelve (or more) openings 32, into which the articles to be glazed are inserted. This frame 30 fits closely over the brickwork of base 21, so that there is practically no opportunity for heat to escape at the point of juncture. At the juncture of each of the segments of the vertical walls 33 of furnace 31 radiates a fire-clay flue-wall 34, each of which has V-shaped outer edges fitting into cast-iron vertical partitions 35 of frame 30, so as to form conducting-flues 37 for the gases of combustion which pass from combustion-chamber 36 out through holes 32. The gases pass through these flues up into and out of the hood or smoke-stack 38, which is suspended by rods 39 or other suitable means from the ceiling of the furnace-room.

Rigidly secured to the outer wall of the rotatable furnace is the circular rack 40, in which meshes the pinion 41, Fig. 2, of vertical shaft 42, mounted at one side of the furnace and having at its bottom the bevel-gear 43. Meshing in bevel-gear 43 is another bevel-gear 44, mounted on shaft 45, to which is secured the cone-pulley 46, which may be belted to any convenient source of power. By putting the belt on the various steps of the cone the speed of rotation of shaft 45, and consequently that of the entire furnace, may be varied as desired.

Pivoted on journals 47, mounted on frame 100

30, directly below each glory-hole opening 32, is an arm 48. On each arm 48 is a roller 49, adapted to roll upon circular cam 50, which partially encircles the furnace, as will be hereinafter more fully described. On the outer end of the arm 48 is a bearing 51, in which rod 52 is adapted to slide backward and forward. The angle of rod 52 to arm 48 is such that the rod is normally held directly opposite the center of the opening 32, to which the rod belongs. Detachably mounted on the inner end of rod 52 is the little support or platform 53, adapted to receive and hold the base of the lamp-chimney or other article. This rests on base 54 of the arms 55, rigidly secured to rod 52. Pivoted at 56 to arms 55 are the arms or jaws 57, adapted to grasp and hold the chimney 58. The lower ends of jaws 57 are connected by toggle-joints 59 to the block 60, slidable on rod 52. Inside of rod 52 and slidable therein is another rod 61, rigidly secured to block 60 by means of pin 62, passing through slots 63 in rod 52. Interposed between the end of rod 52 and a shoulder 64 on rod 61 is a spring 65, adapted to normally force rod 61 outward from rod 52, and therefore clamp jaws 57 on chimney 58. This spring is inclosed in a slidable casing 66, Fig. 7.

Rigidly secured to rod 52 by set-screw 67 is a roller 68, adapted to run on track 69, which partially envelops the furnace in the manner hereinafter more fully described. From the foregoing description it will be seen that when this wheel 68 rotates the rod 52, with its attached mechanism, and consequently the chimney, is rotated on its axis.

Rigidly secured to and extending from the top of the furnace 30 are the arms 70, having pivoted thereto the arms 71 of a yoke having its upper part curved in the arch 72 to clear the rod 52 and attached parts. Rigidly secured to this yoke, but adjustable by means of the set-screws 73, are the rods 74, having in their outer ends the slots 75. Slidable in these slots are the ends 76 of cross-head 77, rigidly secured by pin 78 to the end of rod 61.

The pivot 79, in which yoke 71 and attached parts swing, is so located with reference to pivot 47, on which arm 48, rod 52, and attached parts swing, and the parts are so proportioned that the ends 76 of cross-head 77 will normally slide freely in slots 75, and therefore spring 65 will hold jaws 57 tight against chimney 58 in the manner hereinbefore described, but that when rod 52 swings down to approximately a vertical position the ends 76 of the cross-head will catch in the lower ends of the slots, as shown in Fig. 6, and the spring 65 will be compressed, so as to open jaws 57 and release the chimney, as shown in Fig. 7. The opening and closing are effected gradually as the rod swings slowly down and up again.

The furnace is so designed that in one complete revolution of the furnace there will be just time for the chimney to be inserted in

the jaws while they are in a vertical position, raised to a horizontal position, inserted in a hole of the furnace, rotated in the heat just a sufficient amount, and then returned to the workman at the starting-point with the jaws open, so that the chimney can be removed. In order to do this, a compound cam encircling the furnace is provided. This is made up of two parts. The track 69, in which roller 68 travels, covers about two hundred and seventy degrees, so that during this period the article is in the heat of the furnace and is being rotated. The remainder of the circumference is occupied by the cam 50, on which roller 49 travels, which is so shaped that during the course of travel of the roller over this cam the arm 48 swings down to the position shown in Fig. 6 and back again. This track and cam are shown developed in Fig. 11. Fig. 4 shows roller 49 just ready to leave cam 50 and roller 68 engaging with track 69. This making the cam in two parts has the direct advantage of supporting the rods 52 at a point as far as possible from point 47, where slight variations in the track will cause the least variation in rotation of the rod and in providing for the rotation of the rod only while it is in the horizontal position.

In the operation of the furnace heat is turned on and power is applied and the furnace rotated in the manner described. The workman stands opposite the lowest point in cam 50, and as each set of jaws (the furnace shown being equipped with twelve sets) passes him he puts in a chimney, which is clasped by the jaws, carried to, inserted, and rotated in a hole 32 of the furnace while wheel 68 is passing over track 69, so that the end is heated and glazed. The jaws then open, and as the jaws complete their revolution with the furnace the workman removes the chimney and inserts another. In this way one workman is enabled to glaze the ends of twelve chimneys while he would do one by hand.

By putting in a different-sized V-shaped support 53 and by varying the swing of the jaws 57 different sized and shaped articles may be worked with the machine. The swing of the jaws 57 may be varied by adjusting the position of rod 74 with reference to arm 71, (by means of set-screw 73,) so as to move slot 75 and regulate the opening 65.

The size, shape, and the materials of our furnace and its various details may be varied within wide limits without departing from our invention. While it is designed to use gas for heating the furnace, other fuels may be used.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In apparatus of the class described, the combination of a furnace capable of being rotated, openings in said furnace, means for holding an article in an opening in said furnace and means for rotating said article on its axis as said furnace rotates.

2. In apparatus of the class described, the combination of a furnace capable of being rotated, means for rotating said furnace, openings in said furnace, means for holding an article in an opening in said furnace and means for rotating said article on its axis as said furnace rotates.

3. In apparatus of the class described, the combination of a furnace capable of being rotated, openings in said furnace, means for automatically inserting the end of an article in one of said openings, allowing it to remain there during a portion of the revolution of said furnace and then removing said article from said opening.

4. In apparatus of the class described the combination of a furnace capable of being rotated, openings in said furnace, automatic means for inserting the end of an article in one of said openings, for holding and simultaneously rotating said article in said opening during a portion of the revolution of said furnace, and for then removing said article from said opening.

5. In apparatus of the class described the combination of a furnace capable of being rotated, a series of openings in said furnace, clamps or tongs adapted to grasp and hold an article, mounted so as to work in front of each of said openings, automatic means whereby as said furnace revolves each of said pairs of tongs will grasp an article, move so as to insert the end of said article in the opening of said furnace, hold said article there during a portion of the revolution of said furnace, then remove said article from said opening and release the hold of said tongs upon said article.

6. In apparatus of the class described the combination of a furnace capable of being rotated, means for rotating it, a series of openings in said furnace, clamps or tongs adapted to grasp and hold an article, mounted so as to work in front of each of said openings, automatic means whereby as said furnace revolves each of said pairs of tongs will grasp an article, move so as to insert the end of said article in the opening of said furnace, hold said article there during a portion of the revolution of said furnace, then remove said article from said opening and release the hold of said tongs upon said article.

7. In apparatus of the class described the combination of a furnace capable of being rotated, a series of openings in said furnace, clamps or tongs adapted to grasp and hold an article, mounted so as to work in front of each of said openings, automatic means

whereby as said furnace revolves each of said tongs will grasp an article, move so as to insert the end of said article in the opening of said furnace, hold said article there and simultaneously rotate it on its axis during a portion of the revolution of said furnace, then remove said article from said opening and release the hold of said tongs upon said article.

8. In apparatus of the class described the combination of a furnace capable of being rotated, means for rotating it, a series of openings in said furnace, clamps or tongs, adapted to grasp and hold an article, mounted so as to work in front of each of said openings, automatic means whereby as said furnace revolves each of said tongs will grasp an article, move so as to insert the end of said article in the opening of said furnace, hold said article there and simultaneously rotate it on its axis during a portion of the revolution of said furnace, then remove said article from said opening and release the hold of said tongs upon said article.

9. In apparatus of the class described the combination of a furnace capable of being rotated, a series of openings in said furnace, clamps or tongs adapted to clasp and hold an article, pivotally mounted so as to work in front of each of said openings, automatic means whereby as said furnace revolves each of said tongs will grasp an article, swing on its pivot so as to insert the end of said article in said furnace, hold said article there during a portion of the revolution of said furnace, then swing back so as to remove said article from said furnace and then release their hold upon said article.

10. In apparatus of the class described the combination of a furnace capable of being rotated, a series of openings in said furnace, clamps or tongs adapted to grasp and hold an article, pivotally mounted so as to work in front of each of said openings, automatic means whereby as said furnace revolves each of said tongs will grasp an article, swing so as to insert the end of said article in the opening of said furnace, hold said article there and simultaneously rotate it on its axis during a portion of the revolution of said furnace, remove said article from said opening and release the hold of said tongs on said article.

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