



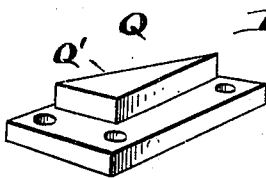
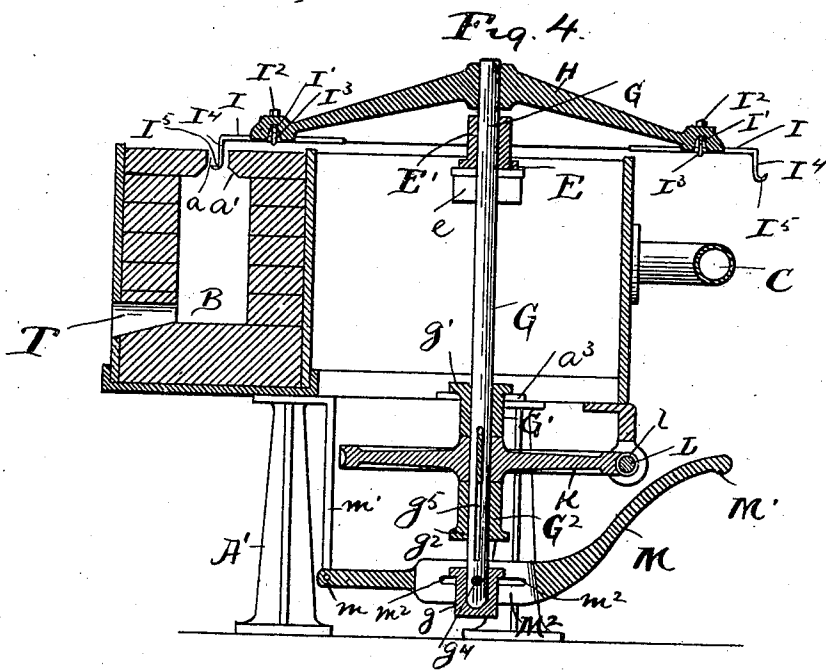
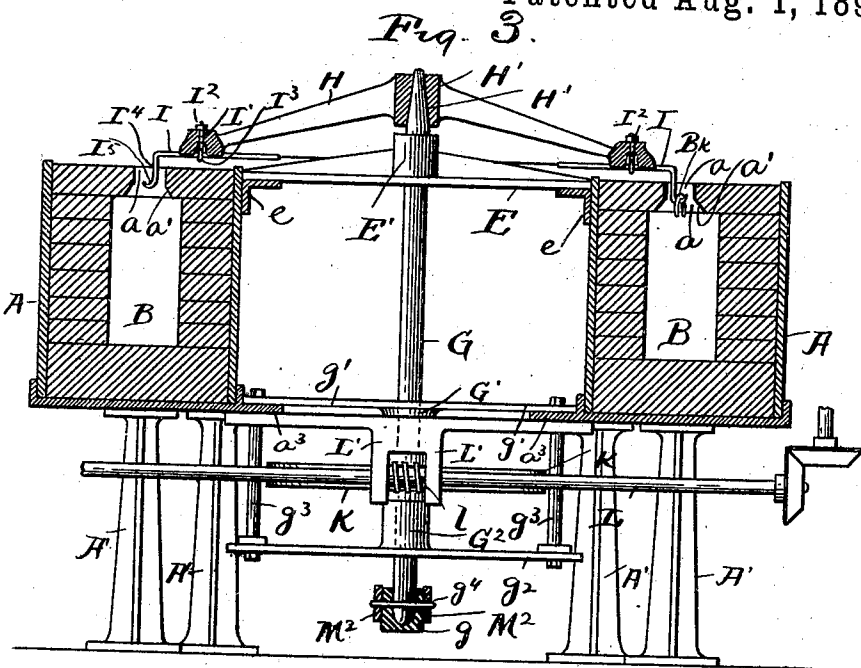
(No Model.)

2 Sheets—Sheet 2.

P. H. STANDISH.  
FURNACE FOR HEATING CHAIN LINKS.

No. 502,594.

Patented Aug. 1, 1893.



WITNESSES,  
E. Byron Gilchrist.  
Chas. W. W. W.

Inventor.  
Phileas H. Standish  
By his Attorneys,  
Seymour Seymour.

# UNITED STATES PATENT OFFICE.

PHILANDER H. STANDISH, OF ST. MARY'S, OHIO.

## FURNACE FOR HEATING CHAIN-LINKS.

SPECIFICATION forming part of Letters Patent No. 502,594, dated August 1, 1893.

Application filed May 20, 1892. Serial No. 433,785. (No model.)

### *To all whom it may concern:*

Be it known that I, PHILANDER H. STANDISH, a citizen of the United States, residing at St. Mary's, in the county of Auglaize and State of Ohio, have invented certain new and useful Improvements in Furnaces for Heating Chain-Links, Rings, and Like Articles for Welding or Forging, of which the following is a specification.

My invention relates to improvements in heating-furnaces and attachments, for heating blanks for chain-rings, rings and such like articles preparatory to welding or forging the same, the object being to rapidly and uniformly heat such blanks or articles to the degree required, and to render the construction of the furnace and attachments simple, durable and convenient.

With this object in view, my invention consists in certain features of construction and in combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan, of my improved furnace and attachments, a portion being broken away to more clearly show the construction. Fig. 2 is a front side elevation of the same, with the forward portion of lever M broken away. Fig. 3 is a front elevation, partly in vertical section, on line 3—3 Fig. 1. Fig. 4 is a vertical section on line 4—4, Figs. 1 and 2, looking in the direction of the arrow. Fig. 5 is a perspective in detail hereinafter described. Fig. 6 is a bottom plan of a portion of wheel H.

A represents the casing of the furnace that is preferably semi-circular or U-shaped as shown and mounted upon legs A'.

B represents the combustion and heating chamber of the furnace that is semi-circular or U-shaped in plan as shown in Fig. 1, and located centrally between the inner and outer sides of the U-shaped furnace casing as shown in Fig. 3.

C represents air-pipes or flues that discharge into the combustion-chamber at opposite ends of the latter, respectively.

D represents gas, oil or fuel-pipes that discharge centrally into air-flues C such a distance from the discharging-end of the air-flues that the oil and air will commingle before being discharged into the combustion-chamber of the furnace. The top wall of the furnace-casing, centrally of the heating-chamber is

slotted, as at *a*, the slot extending from end to end of the heating-chamber. Through said slot are suspended the blanks or articles, B/k, to be heated as will hereinafter more fully appear. Slot *a* is of such width as to just accommodate the suspension of the blanks or articles to be heated, but the lower portion of said slot is gradually and downwardly enlarged in width, as at *a'*, which enlargement of the slot constitutes the top of the heating-chamber of the furnace the object being to concentrate the heat at the point where the blanks or articles to be heated are suspended and to prevent the heat from blowing or shooting upwardly out of the furnace.

E represents a cross-bar that bridges the space between the opposing inner side-walls of the furnace-casing and is arranged preferably parallel with the front side of the furnace, said cross-bar being supported preferably by means of angle-plates *e* secured to the respective ends of the cross-bar and to the adjacent side of the furnace-casing.

G represents a vertical shaft that, at its lower end, has bearing in a step-box, *g*, and extends upwardly through a boss or supporting-bearing E', located centrally of and integral with cross-bar E. Operatively mounted on said shaft, above the cross-piece E, is a wheel, H.

I represents the holders or carriers from which the blanks or articles to be heated are suspended. Holders I are arranged radially with the axis of wheel H and at suitable preferably regular, intervals about the lower side of the rim of said wheel. Holders or carriers I are supported preferably by means of eye-bolts I', the shanks whereof extend upward through corresponding holes in the rim of said wheel and are secured in place, respectively, by means of a nut, I<sup>2</sup>, mounted on the shank of the bolt above the rim of the wheel, holders or carriers I extending through eyes I<sup>3</sup> of the bolts. By tightening nuts I<sup>2</sup>, the holders are brought tightly against the under side of the rim of wheel H and thereby prevented from tilting in a vertical plane. The rim of wheel H is recessed or grooved transversely and radially with the axis of the wheel, as at *h*, (see Fig. 6) for receiving the holders or carriers, thereby preventing lateral displacement of said holders or carriers, and said wheel-rim, on its under side is preferably

grooved circumferentially, as at  $h'$  (see Fig. 6 and dotted lines Fig. 1) for the reception of the eyes of bolts I, to bring said eyes in proper position relative to recesses or grooves  $h$ .

5 Holders I comprise preferably a rod or bar bent downwardly outside of the rim of wheel H, as at  $I^4$ , said downwardly-extending member of the holders, at its lower end, within slot  $a$  in the furnace-casing, terminating in a  
10 hook,  $I^5$ , on which the blanks or articles to be heated are hung.

Wheel H is of such diameter relative to the semi-circular slot  $a$  in the top of the furnace-casing that the rim of said wheel will  
15 not extend over said slot so as not to come in too close contact with the heat escaping from the furnace at said slot.

The top of the furnace-casing, at both ends of the heating chamber, at the front of the furnace, is offset downward, as at  $a^2$ , for the passage of the blanks or articles into and out of the heating-chamber. Wheel H is adapted to be slowly and continuously revolved by means hereinafter described; the blanks or  
25 articles to be heated are hung upon holders or carriers I at or before reaching the offset at the side of the furnace in the direction of which the holders or carriers travel, and are removed at the downwardly offset portion at the opposite side of the furnace.

Carrying-wheel H is preferably secured to the top of upright shaft G by means of a tapering fit, as at  $H'$ , (see Fig. 3) whereby said wheel may be readily removed and replaced,  
35 and always replaced in its true position relative to the shaft. Said shaft is driven by means of a worm-wheel K that meshes with a worm  $l$  on driving-shaft L that extends along forward of the furnace and is supported by brackets  $L'$  secured to the furnace-casing.

Worm-wheel K is mounted upon shaft G preferably by the well known means of groove and feather, but the groove,  $g^5$ , is of such  
45 length as to accommodate the endwise movement of said shaft effected by means of a lever, M, that supports the step-box of said shaft and is fulcrumed, at its rear end, as at  $m$ , to the lower end of a bracket,  $m'$ , depending from and secured to the furnace-casing. Lever M, forward of the furnace, and within convenient reach of the operator, terminates in a handle,  $M'$ , by manipulating which up  
50 or down, vertical shaft G, and carrying-wheel H and attached holders or carriers I, will be elevated or lowered as required in adjusting the blanks or articles to be heated at the proper elevation or depth in the heating-chamber of the furnace.

60 Worm-wheel K, to prevent the same from moving with shaft G in the endwise movement of the latter, is confined between the supporting-bearings,  $G'$ ,  $G^2$ , of shaft G, said bearings being rigid or integral with cross-bars  $g'$  and  $g^2$ , that are rigidly connected with each other, preferably by means of bolts  $g^3$ ,  
65 and also rigidly connected with the furnace-

casing, the latter preferably having inwardly-projecting flanges  $a^3$ , for supporting the upper cross-bar  $g'$  and perforated for the passage of the aforesaid securing-bolts  $g^3$ . 70

Upright shaft G is preferably operatively connected with lever M as follows:—Said lever is provided with a yoke between the side-members  $M^2$  whereof the step-box of said  
75 shaft is supported preferably as shown by means of lateral pin  $g^4$ , extending through the step-box and engaging slots  $m^2$  in the aforesaid members of the yoke, and adapted to move endwise of said slots in the operation  
80 of the lever.

Suitable means are provided for automatically disengaging or removing the heated blanks or articles as rapidly as they pass from the heating-chamber of the furnace and causing  
85 the blanks or articles to be deposited in a recess, pocket or receptacle, P, at the delivering-end of the heating-chamber of the furnace at the respective downwardly-offset portion of the top of the furnace-casing. The  
90 means referred to for effecting the disengagement or removal of the heated blank or article from its holder or carrier consists preferably of an angular block or plate, Q, secured to the top of the furnace-casing at the  
95 mouth of pocket or receptacle P and in a plane just below the path of the holder or carrier, the working side  $Q'$  of block or member Q being tangential or oblique to the path of the holder or carrier, and said block, plate  
100 or member being located in such position relative to the path of the holder or carrier that the working-side  $Q'$  of said block, plate or member will engage and effect the removal of the heated blank or article, from  
105 the holder or carrier, into the aforesaid pocket or receptacle whence the blank or article is immediately removed in any suitable manner for the welding or forging operation.

T (Fig. 4) represents a tap-hole for drawing off cinders from the furnace. 110

What I claim is—

1. The combination with a furnace having a semi-circular or U-shaped heating chamber, the top wall whereof has a slot or opening for  
115 the passage through the furnace of the blanks or articles to be heated, of a wheel adapted to rotate in a horizontal plane above the furnace, suitable means for operating said wheel, holders or carriers, from which the blanks or  
120 articles to be heated are suspended, secured at suitable intervals to the rim of said wheel, the arrangement of parts being such that said holders or carriers shall be adapted to convey the blanks or articles to be heated through  
125 the heating-chamber of the furnace, substantially as set forth.

2. The combination with a semi-circular or U-shaped heating furnace, of a wheel adapted to rotate in a horizontal plane, suitable  
130 means for operating said wheel, holders or carriers from which the blanks or articles to be heated are suspended, secured at suitable intervals to, and arranged radially with the

axis of, said wheel, the arrangement of parts being such that said holders or carriers shall be adapted to convey the blanks or articles to be heated through the heat of the furnace, substantially as set forth.

3. The combination with a heating-furnace, provided with a semi-circular heating chamber having an opening in its top wall of a wheel adapted to rotate in a horizontal plane, suitable means for operating said wheel, holders or carriers, from which the blanks or articles to be heated are suspended, arranged at suitable intervals about the rim of said wheel, and eye-bolts for securing said holders or carriers to the wheel-rim, the arrangement of parts being such that, in operation, the blanks or articles to be heated will be carried through the heat of the furnace, substantially as set forth.

4. The combination with a heating-furnace, provided with a semi-circular heating chamber having an opening in its top wall of a wheel adapted to rotate in a horizontal plane, suitable means for operating said wheel, holders or carriers, from which the blanks or articles to be heated are suspended arranged at suitable intervals about the rim of said wheel, said wheel-rim being recessed or grooved transversely and radially with the wheel-axis for receiving said holders or carriers, and suitable means for tightly holding said holders or carriers within said grooves or recesses, the arrangement of parts being such that, in operation, the blanks or articles to be heated will be carried through the heat of the furnace, substantially as set forth.

5. The combination with a furnace having a semi-circular or U-shaped heating-chamber and a slot, as at *a*, in the top wall and extending lengthwise of said heating-chamber, of a wheel adapted to rotate in a horizontal plane above the furnace, suitable means for operating said wheel, and holders or carriers, from which the blanks or articles to be heated are suspended, secured at suitable intervals to and arranged radially with the axis of said wheel, the arrangement of parts being substantially as indicated and the wheel having such a diameter relative to the aforesaid slot that said wheel does not extend over said slot, substantially as and for the purpose set forth.

6. The combination with a furnace having a semi-circular or U-shaped heating-chamber, the top wall whereof is slotted or open for the passage, through the furnace, of the blanks or articles to be heated, of a horizontally-rotating blank-holder carrying-wheel, a shaft for supporting said wheel, a worm-wheel operatively mounted on said shaft, a driving-shaft, and a worm on said driving-shaft and in mesh with the aforesaid worm-wheel, the location of the blank-holder carrying-wheel, relative to the opening in the top of the heating-chamber of the furnace, being such that the blanks or articles to be heated, will be carried through the furnace, substantially as set forth.

7. The combination with a furnace having a semi-circular or U-shaped heating-chamber, the top wall whereof is slotted or open for the passage, through the furnace, of the blanks or articles to be heated, of holders for the blanks a horizontally-rotating blank-holder carrying-wheel, a shaft for operatively supporting said wheel, the arrangement of parts being substantially as described, suitable means for rotating said shaft, and suitable means for elevating and lowering the blank-holder carrying-wheel, substantially as and for the purpose set forth.

8. The combination with a furnace having a semi-circular or U-shaped heating-chamber, the top wall whereof is slotted or open for the passage, through the furnace, of the blanks or articles to be heated, of a vertical-shaft having a groove, *g*<sup>5</sup>, a blank-holder carrying-wheel operatively supported on the upper end of said shaft, a worm-wheel on said shaft and having a feather or key engaging said groove, the latter being of sufficient length to accommodate the movement of the shaft in a vertical plane, a horizontal driving-shaft, a worm on said driving-shaft in mesh with the aforesaid worm-wheel, a lever operatively connected with the lower end of the aforesaid upright shaft for elevating and lowering the same, and means substantially as indicated for preventing said worm-wheel from moving up and down with said upright shaft, the arrangement of parts being substantially as shown and described.

9. The combination with a heating-furnace and traveling holders or carriers for conveying the blanks or articles to be heated through said furnace, of a block, plate or member at the delivering-end of the furnace, said block, plate or member being arranged with one of its sides at an angle or obliquity to the path of, and in such position relative to, the heated blanks or articles, that the side specified of said block, plate or member will engage and cause the removal, from the holders or carriers, of the heated blanks or articles, substantially as set forth.

10. The combination with a heating furnace and a holder or carrier for conveying the blank or article to be heated through said furnace, of a pocket or receptacle at the delivering-end of the furnace, and an angular block, plate or member located at the mouth of said pocket or receptacle, the arrangement and location of said block, plate or member and the aforesaid pocket or receptacle being such relative to the path of the holder or carrier that the heated blank or article shall be engaged by said angular block, plate or member and removed, from the holder or carrier, into the aforesaid pocket or receptacle, substantially as set forth.

PHILANDER H. STANDISH.

Witnesses:

CHAS. F. BULLOCK,  
FRANK KONLEY.