

(No Model.)

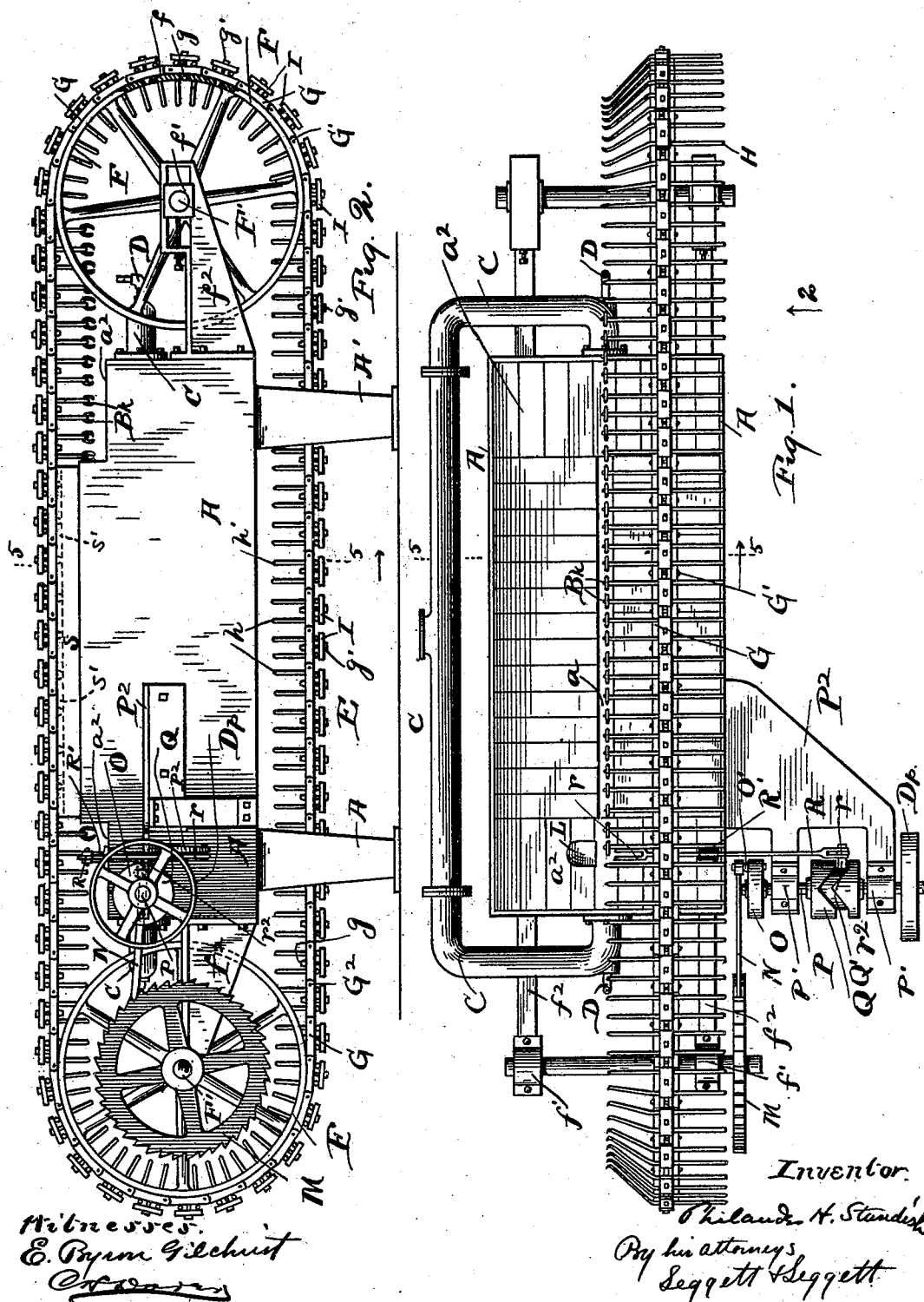
2 Sheets—Sheet 1.

P. H. STANDISH.

FURNACE FOR HEATING CHAIN LINK BLANKS, &c., FOR WELDING.

No. 502,593.

Patented Aug. 1, 1893.



(No Model.)

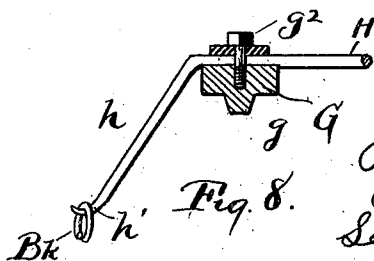
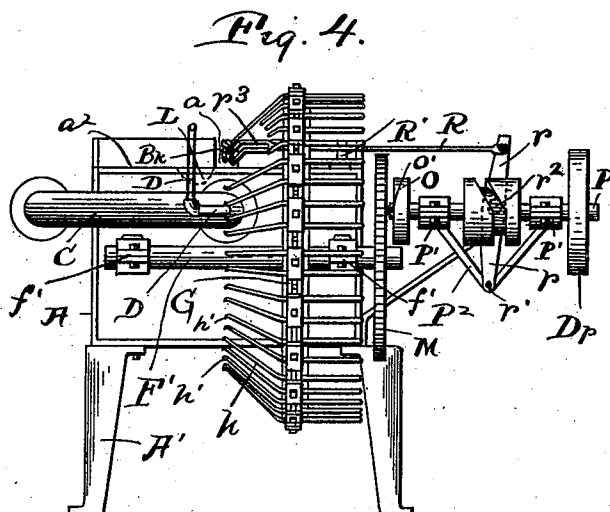
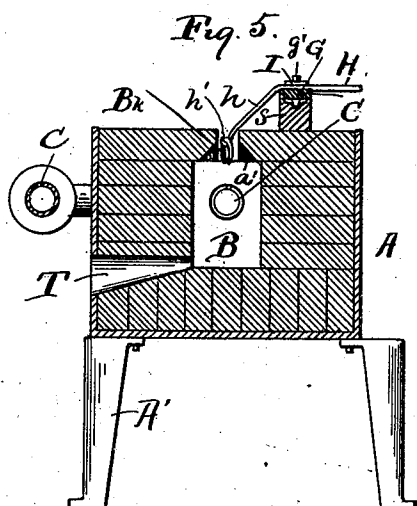
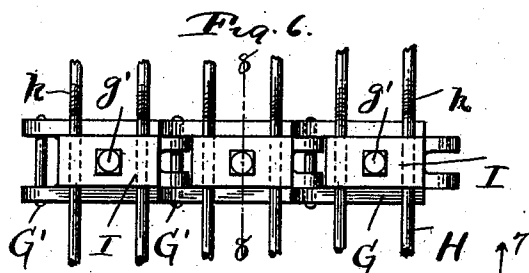
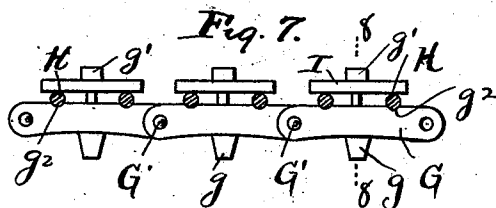
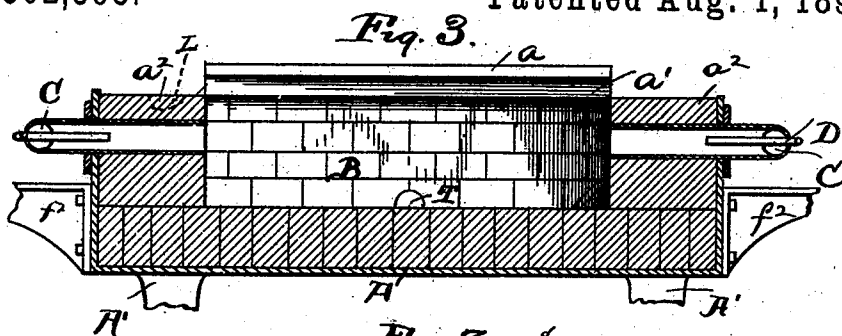
2 Sheets—Sheet 2.

P. H. STANDISH.

FURNACE FOR HEATING CHAIN LINK BLANKS, &c., FOR WELDING.

No. 502,593.

Patented Aug. 1, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

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

FURNACE FOR HEATING CHAIN-LINK BLANKS, &c., FOR WELDING.

SPECIFICATION forming part of Letters Patent No. 502,593, dated August 1, 1893.

Application filed May 2, 1892. Serial No. 431,610. (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-Link Blanks and other Similar Articles for Welding and Forging, of which the following is a specification.

My invention relates to improvements in furnaces and attachments for heating blanks for chain-links, rings, and other articles preparatory to welding or forging them, the object being to more rapidly and uniformly heat such blanks or articles to the degree required than was heretofore possible.

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 a furnace and attachments embodying my invention, showing, among other things, the endless traveling-belt or conveyer and the holders secured to said belt or conveyer for carrying the blanks or articles to be heated,—chain-link-blanks, or whatever they may be,—through the furnace, and showing also the mechanism employed for driving said endless-conveyer and for automatically removing the heated articles from their holders. Fig. 2 is a side elevation of the same, looking in the direction of the arrow 2, Fig. 1. Fig. 3 is a side elevation in central vertical longitudinal section of the furnace itself. Fig. 4 is a left-hand end elevation relative to Fig. 1. Fig. 5 is a vertical cross section about midway of the length of the furnace, for instance, on line 5—5, Figs. 1 and 2, looking in the direction of the arrow. Fig. 6 is an enlarged plan view of a portion of the endless traveling-belt or carrier, the holders for carrying the blanks or articles to be heated through the furnace and the means for securing said holders to the endless conveyer. Fig. 7 is a side elevation relative to Fig. 6, looking in the direction of the arrow 7, Fig. 6. Fig. 8 is a transverse section on line 8—8, Fig. 7, partly in elevation.

A represents the casing of the furnace, that is mounted preferably upon legs A', and B

represents the combustion and heating chamber that is located preferably centrally of and extends lengthwise of the furnace.

C C represents two air-pipes or flues that discharge into the combustion-chamber at opposite ends of the latter, respectively, and D represents gas, oil or fuel-pipes that discharge centrally into air-flues C at a suitable distance from the discharging end of the latter, so that the air and fuel will commingle before reaching the combustion-chamber.

The top wall of the furnace is slotted, as at *a*, through which the blanks or articles to be heated are suspended as will hereinafter more fully appear. Slot *a* extends preferably the entire length of the heating-chamber of the furnace, and is of such width as to just accommodate the suspension of the blanks or articles to be heated. The side-walls of slot *a*, at their lower portion and toward the bottom of the same where the blanks or articles to be heated are suspended, preferably slope away from each other, as shown at *a'* in Fig. 5, in order to there concentrate the heat and to prevent the heat from blowing or shooting upwardly through slot *a*, said enlargement of the slot constituting the upper portion of the heating-chamber of the furnace.

The top wall of the furnace, and at each end of the same, is offset downward, as at *a*², for the passage of the blanks or articles B^k into and out of the heating chamber, and at one side of slot *a*, preferably about midway between said slot and the one side of the furnace is located an endless traveling belt or conveyer, E, that passes over and under the furnace, over wheels F at the ends of the furnace. The construction of said endless traveling-belt or conveyer is preferably as shown in Figs. 6, 7 and 8, wherein the same comprises an endless metallic chain G with the links hinged together, as at G', each link having an inwardly-projecting sprocket or projection, *g*, that is adapted to engage corresponding holes, *f*, in the peripheries of wheels F. Wheels F are operatively mounted on shafts F' that are journaled in suitable boxes *f'* supported by brackets *f*² secured to the adjacent end of the furnace-casing.

H represents the holders or carriers from which the articles to be heated are suspended.

Said holders are carried along with the endless-traveling-belt or conveyer and are preferably detachably secured to said conveyer, as shown more clearly in Figs. 6, 7 and 8, by means of a clamp, I, and clamp-securing bolt, g' , the shank whereof is screw-threaded and passes through a corresponding hole in the center of the clamp and into a correspondingly threaded hole or bore in the link. By loosening or tightening bolts g' the holders or carriers held between the link and clamp may be removed or firmly secured in place as desired.

Securing-clamps I are recessed, as at g^2 , for receiving holders or carriers, H, by which construction there is no liability of said holders becoming displaced laterally. The arrangement of parts is preferably such that holders H are located equidistant apart, and so that two holders are supported between each link and securing-clamp of the conveyer-belt. Holders or carriers, H, at the inner side of the endless conveyer, are bent downwardly, as at h , and said depending member of the holders, at its free or lower end, terminates in a hook, h' , upon which the blanks or articles, Bk to be heated are hung, the parts being so arranged that, in operation, the blanks or articles to be heated will be carried through the heating chamber of the furnace. By the construction of furnace hereinbefore described, wherein the fuel is discharged into the furnace at opposite ends of the same, an even or approximately even temperature is obtained throughout the heating-chamber of the furnace and hence the blanks or articles are uniformly heated. The blanks or articles to be heated are placed upon the holders at the downwardly offset portion a^2 at one end of the top of the furnace and are removed, after having passed through the heating-chamber of the furnace, at the downward offset in the top of the furnace at the opposite end of the latter. At one end of slot a , and in suitable proximity to the path of holders or carriers H, the top of the furnace is provided with a recess, receptacle or pocket, L, into which the blank or article, after it has properly been heated, is discharged. The endless traveling-belt or conveyer is speeded intermittently in such a manner that with each propulsion of the belt, a holder with a heated blank or article arrives at a point adjacent to the receptacle or pocket L, and when a heated blank or article is thus brought opposite said receptacle or pocket, suitable means, hereinafter described, are actuated to engage the blank or article and remove it from the supporting-holder, into said pocket or receptacle. The heated blanks or articles are, of course, removed from the pocket in any suitable manner, as rapidly as they are deposited therein.

The mechanism for intermittently propelling the endless traveling-belt or conveyer is as follows:—Upon the supporting-shaft of wheel F at one end of the furnace, and at one side of the latter, is operatively mounted a

ratchet-wheel, M, the teeth whereof are adapted to be engaged by a pawl, N, that is pivotally secured to a wrist O' of a crank-wheel or crank O, operatively mounted on the driving-shaft, P, Dp representing the driving-pulley. The driving-shaft has bearing in suitable boxes P' rigid with bracket, P² secured to the adjacent side of the furnace-casing. The arrangement of parts is such that once in a rotation of the crank-wheel or crank, pawl N will actuate ratchet-wheel M to propel the endless traveling-belt or conveyer the distance required to bring a heated blank or article in proper position at the side of pocket or receptacle L.

The mechanism for automatically removing the heated blanks or articles from their holders and discharging them into receptacle or pocket L is preferably as follows:—Upon the driving-shaft is also operatively mounted a cam-wheel, Q, located preferably as shown between the bearings of the shaft. Cam-wheel Q is provided with a peripheral groove, Q', that is engaged by a lateral member, as at r^2 , (pin, bolt, block or roller) of a rock-arm, r , pivoted, as at r' , to an arm of bracket P², and having operatively connected therewith a reciprocating-rod, R, that has bearing in a sleeve or box, R', rigidly secured to the top of the furnace-casing, and terminates, at its free end, in a fork or suitable member, r^3 , that is adapted to engage the heated blank or article and remove the same from the supporting-holder or carrier into pocket or receptacle L. The trend of groove Q' in cam-wheel Q, and the arrangement of parts, are such that as a heated blank or article shall have been brought in proper position adjacent pocket or receptacle L, and before the next succeeding actuation of the endless traveling-belt or conveyer, the aforesaid reciprocating rod R will be actuated to cause its fork or member r^3 to perform its function. In other words, the endless-traveling-belt and reciprocating forked rod are actuated alternately, a heated blank or article being brought in position between said rod and pocket or receptacle L, for the purpose specified, with each actuation of the traveling-belt.

S (see Figs. 2 and 5) represents a guide-rail and support for the endless traveling-belt or conveyer, said guide-rail being secured to the top and extending lengthwise of the furnace and parallel with slot a . Guide-rail S is grooved longitudinally, as at S', for receiving sprockets or projections g of the traveling-belt or conveyer, thereby not only supporting the sag of the conveyer-belt, but, also, maintaining the alignment or parallelism of the belt with slot a in the furnace.

T (Figs. 3 and 5) represents a tap-hole for removing the cinders from the furnace.

What I claim is—

1. The combination of the heating-chamber of a furnace of the variety indicated, having a slot, in the top wall of the furnace and in open relation with and extending the entire

length or approximately the entire length of the heating-chamber, the lower portion of said slot being gradually enlarged toward its inner end, a conveyer, and holders from which the articles to be heated are suspended substantially as shown and described.

2. The combination with a furnace having a suitable heating-chamber open at the top, and a slot in the top wall and extending lengthwise of said chamber, of a traveling-belt or conveyer at one side of and parallel with said slot, and holders or carriers, for receiving the blanks or articles to be heated, secured at regular intervals to said belt or conveyer, 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 heating-chamber of the furnace, substantially as set forth.

3. The combination with a heating-furnace, of a traveling-belt or conveyer, holders or carriers from which the blanks or articles to be heated are suspended, and clamps for securing said holders or carriers to the aforesaid traveling-belt or conveyer, said clamps being recessed or grooved transversely to receive said holders or carriers and prevent lateral displacement of said holders, substantially as and for the purpose set forth.

4. The combination with a furnace having a heating-chamber open at the top, of two wheels supported at opposite ends of the furnace, respectively, and having holes or recesses at suitable intervals in their peripheries, an endless traveling belt or conveyer leading over said wheels and provided with sprockets or projections for engaging the holes or recesses in the peripheries of the aforesaid wheels, holders or carriers, upon which the blanks or articles to be heated are suspended, secured at suitable intervals to said endless belt or conveyer, the arrangement of parts being such that, in operation the blanks or articles to be heated will be conveyed through the heating-chamber of the furnace, and a guide, as at S, for said endless belt or conveyer, said guide being grooved longitudinally, as at S', and so arranged relative to the traveling-belt or conveyer, that the sprockets or projections in the traveling-belt or conveyer will enter or engage the longitudinal groove in the guide-rail and thereby maintain the alignment or parallelism of said traveling-belt or conveyer with the top of the heating-chamber of the furnace, substantially as set forth.

5. The combination with a heating furnace, of an endless traveling-belt or conveyer and holders or carriers, upon which the blanks or articles to be heated are suspended, secured at suitable intervals to said belt or conveyer, and suitable mechanism for intermittently propelling said belt or conveyer, the arrangement of parts being such that said holders or carriers will convey the blanks or articles to be heated through the aforesaid furnace, substantially as set forth.

6. The combination with a furnace having a heating-chamber open at the top the entire length or approximately the entire length of the same, of an endless traveling-belt or conveyer arranged parallel with said longitudinal opening in the top of the furnace, holders or carriers secured at suitable intervals to said belt or conveyer and means, substantially as shown, for imparting an intermittent motion to said traveling belt, the arrangement of parts being such that the aforesaid holders or carriers will convey the blanks or articles to be heated to the heating-chamber of the furnace, substantially as set forth.

7. The combination with a furnace having a heating-chamber open at the top and extending the entire length or approximately the entire length of the furnace, of a traveling-belt or conveyer arranged parallel with said longitudinal opening in the top of the furnace, holders or carriers secured at regular intervals to said belt or conveyer, the top of the furnace casing at opposite ends of the heating-chamber being offset downwardly, as at a^2 , a pocket, as at L, in the one downwardly offset portion of the top of the furnace casing, suitable means for intermittently actuating said traveling-belt or conveyer to bring the heated blanks or articles adjacent said pocket and suitable means or mechanism for automatically removing the heated blank or article from its holder into said pocket, the arrangement of parts being such that the traveling-belt or conveyer-actuating mechanism and the heated-blank-removing mechanism will be actuated alternately, substantially as and for the purpose set forth.

8. The combination with the heating-chamber of a furnace, and a pocket or receptacle in suitable proximity to the delivering-end of the heating-chamber, of an endless traveling-belt or conveyer and holders or carriers from which the blanks or holders to be heated are suspended, secured at regular intervals to said belt or conveyer, a ratchet-wheel operatively connected with said traveling-belt or conveyer, a driving-shaft, a crank-wheel or crank and a cam-wheel operatively mounted on said driving-shaft, a pawl operatively connected with said crank, substantially as described and adapted to actuate the ratchet-wheel, and a reciprocating-fork adapted to be actuated by the aforesaid cam-wheel and adapted to engage the heated blanks or articles upon the passage of the latter from the heating chamber of the furnace, and remove the same from their supporting-holders or carriers into the aforesaid pocket or receptacle, the parts being so arranged and timed that the endless traveling-belt or conveyer and the reciprocating-fork will be alternately actuated, substantially as and for the purpose set forth.

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Witnesses:

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