

(No Model.)

J. M. CHATFIELD.

COUPLING DEVICE FOR TRAYS FOR ANNEALING FURNACES.

No. 492,190.

Patented Feb. 21, 1893.

Fig. 1

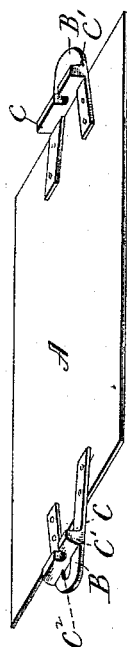


Fig. 2

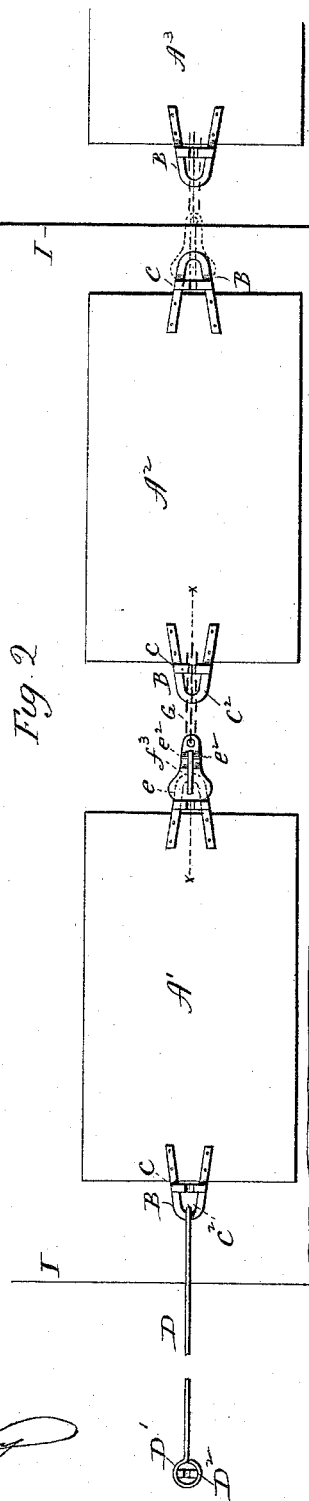


Fig. 3

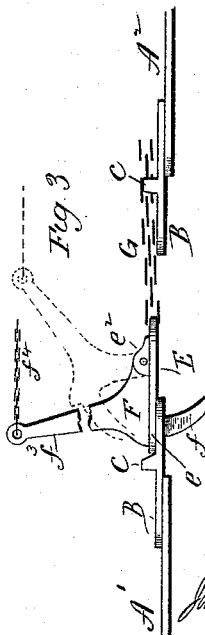


Fig. 4



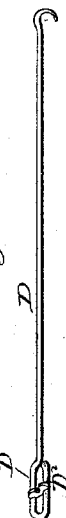
Fig. 5



Fig. 6



Fig. 7



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UNITED STATES PATENT OFFICE.

JAMES M. CHATFIELD, OF THOMASTON, CONNECTICUT.

COUPLING DEVICE FOR TRAYS FOR ANNEALING-FURNACES.

SPECIFICATION forming part of Letters Patent No. 492,190, dated February 21, 1893.

Application filed August 1, 1892. Serial No. 441,838. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. CHATFIELD; of Thomaston, in the county of Litchfield and State of Connecticut, have invented a new Improvement in Coupling Devices for the Trays of Annealing-Furnaces; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of a tray provided at each end with an eye or bridle constructed in accordance with my invention. Fig. 2, a plan view showing three trays, two of which are represented as in a double-ended furnace, the front and rear walls of which are indicated, the other tray being represented as if upon the rear platform of the furnace in position to be coupled with the rear tray therein, before the same is drawn inward after the forward tray has been detached from it, and drawn forward out of the furnace. Fig. 3, a view in side elevation, showing how the two trays are connected by the trip-coupler, the lever-hook of which is shown in its tripped position by broken lines. Fig. 4, a detached perspective view of the plate of the coupler. Fig. 5, a similar view of the lever-hook thereof. Fig. 6, a view in side elevation, of a modified form of my trip-coupler. Fig. 7, a detached perspective view of a poker having its handle-end constructed with an eye furnished with a grooved cross-piece.

My invention relates to an improvement in instrumentalities or coupling devices for handling the trays of annealing furnaces, the object being to provide simple and convenient means for handling such trays, in charging and discharging such furnaces, and elsewhere.

With these ends in view, my invention consists in a tray or other portable annealing-furnace instrumentality, having at one end an eye, constructed with a vertically grooved cross-piece.

My invention further consists in the trip-coupler having a trip-member, and a chain, and in certain other details of construction

as will be hereinafter described and pointed out in the claims.

The tray A, shown by Fig. 1 of the drawings, is, in itself, of ordinary construction. It is provided at each end with a projecting eye B, formed from a heavy bar, bent into the form of a loop, and having its diverging ends securely bolted to the ends of the tray. This eye is often called a bridle. Each of these eyes is provided with a cross-piece C, formed integrally with, or attached to it, extending above its upper face, located just outside of the edge of the tray, and reinforced against outward strain, as at C'. Each eye is provided with a central vertical groove, C², located in line with the longitudinal center of the eye.

The main application of eyes having vertically grooved cross pieces, as described, will be to the trays of furnaces, but I do not limit myself to such use of that feature of my invention, as it may be applied as shown by Fig. 7 of the drawings, to the poker D, the handle end of which is bent to form an eye D', which is furnished upon its upper face, with a central, vertically grooved cross-piece, D², the groove whereof is in line with the center of the eye. The advantages resulting from a poker of this construction will be mentioned later on.

With trays and pokers such as described, I employ a trip-coupler, or in other words, a coupler adapted to be tripped and disengaged from the eye of the tray or poker, as the case may be, quickly, and from a distant point.

Preferably my improved trip-coupler will take the form shown by Figs. 3, 4 and 5 of the drawings, in which it is represented as comprising a plate E, a hook-lever F, and a chain E³. The said plate E, which is made wide at its inner or bearing end, as at *e*, to prevent it from rocking, is constructed with a longitudinal slot *e'*, extending well into its bearing end, and with two parallel ears, *e*², *e*². The hook-lever F, of the trip-member, comprises a jaw *f*, a shoulder *f'*, a bearing arm *f*², and an operating arm *f*³, the said lever being pivoted by means of its arm *f*², between the two ears *e*², *e*², of the plate E. The

jaw f , of this lever, extends downward through the slot e' of the plate, its shoulder f' , engaging with the inner wall of the said slot, to limit the inward movement of the lever-hook. The operating-arm f^3 , of the lever, is constructed so that when the lever-hook is in its normal position, the said arm will cant forward as shown by Fig. 3 of the drawings, the upper end of the arm having an operating chain, f^4 , attached to it. The heavy chain G , attached to the outer end of the plate E , is adapted in size and construction to have its links engaged with the grooved cross-pieces of the eyes of the trays, as also shown by the said Fig. 3 of the drawings. A similar form of trip-coupler is shown by Fig. 6 of the drawings, this consisting simply of a chain H , corresponding generally to the chain G , but having one of its end links, as H' , bent longitudinally, to form a trip-member, the upturned end of this link having an operating chain H^2 , as shown.

Fig. 2 represents the charging and discharging of a double-ended furnace by means of trays such as shown in Fig. 1 of the drawings, and trip-couplers such as shown in Figs. 3, 4 and 5 thereof. A' and A^2 represent two trays within a furnace, the end walls of which are indicated by the lines I and I' . As represented, the tray A' has just been moved from the rear to the forward end of the furnace, while the tray A^2 has just been drawn into the rear end thereof, by being connected to the rear end of the tray A' by means of a coupler, which is now in about the center of the furnace, but which is not allowed to remain there, being quickly uncoupled and drawn out by means of the chain f^4 , attached to the upper end of its lever-hook, for it will be clear, by reference to Fig. 3 of the drawings, that if the chain f^4 , which at this time will lead from the hook to a point outside of the rear door of the furnace, is pulled, the lever-hook will be drawn rearward, as shown by broken lines in the said figure, whereby the two trays will be disconnected, and the trip-coupler freed to be drawn out of the furnace before it has been heated to its injury. Then, after the contents of the tray A' have been fully annealed, a poker corresponding to the poker D , or any other approved instrument, is hooked into the eye at the forward end of the tray A' , and the same drawn out of the furnace. The poker is then introduced into the middle of the furnace, and hooked into the eye at the forward end of the tray A^2 , which is then drawn forward to the place in the furnace which has just been vacated by the tray A' ; but before the tray A^2 is so drawn forward, another tray, A^3 , is coupled onto its rear end by means of the same trip-coupler, let us say, that was before used to couple the tray A^2 to the tray A' . Then when the tray A^2 is drawn forward, the tray A^3 will be drawn into the rear end of the furnace to take its place, and after that has been done, the trip-coupler, which has thus been carried into the middle

of the furnace, will be tripped and drawn out of the same, through the rear door thereof, and so on.

Instead of employing the trip-coupler shown by Figs. 3, 4 and 5 of the drawings, I may employ the similar trip-coupler shown by Fig. 6, which is used by engaging links at its opposite ends, with the vertically grooved cross-pieces of the eyes, at the adjacent ends of the two trays to be coupled, the bent link of the chain being connected with the tray in the furnace, so that by pulling upon the operating train H^2 , it may be lifted up and disconnected from its cross-piece, after which the entire chain may be drawn back out of the furnace. This form of trip-coupler will be found convenient when the objects to be annealed are small, and might possibly be disturbed and displaced by dragging the other form of trip-coupler backward over them.

It will be obvious that after the trays have been coupled together, and while they are being moved or otherwise, if any accident should occur, or it should be desired, for any reason, to quickly disconnect them, the trip-coupler may be called into requisition. It is for this reason that I do not limit the application of my improved eye with the vertically grooved cross-piece, to the trays, for it may be applied advantageously to pokers designed to be operated by power. With such pokers, I provide the chains (which are not shown) through which power is applied to them, for pulling them, with trip-couplers corresponding to those shown herein, or constructed to act on the same principle. Then if, for any reason, I desire to suddenly disconnect the power from the pokers, I can readily do so by pulling the chains of the trip-couplers. I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A tray or other portable annealing-furnace instrumentality, having at one end an eye, constructed with a vertically grooved cross-piece, in combination with a trip member to engage with the grooved cross-piece of the said eye substantially as set forth.

2. A tray or other portable annealing-furnace instrumentality, having at one end an eye, constructed with a vertically grooved cross-piece; in combination with a trip-coupler having a movable trip-member, and means attached thereto for operating the same, substantially as set forth.

3. A trip-coupler comprising a slotted plate, a chain, attached to one end thereof, a lever-hook pivoted to the said plate and having an upwardly extending operating-arm, a downwardly extending curved jaw, and a bear-

ing-arm, and a chain or other tripping connection, connected with the said operating-arm, in combination with a portable annealing-furnace instrumentality having an eye
5 adapted to be engaged by the said lever-hook, and constructed with a vertically grooved cross piece substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES M. CHATFIELD.

Witnesses:

SAMUEL S. LAMB,
A. E. BLAKESLEE.