

July 23, 1946.

C. SHOMMER

2,404,663

ADJUSTABLE MOUNTING FOR LIQUID FUEL BURNERS

Filed April 5, 1945

2 Sheets-Sheet 1

Fig. 1.

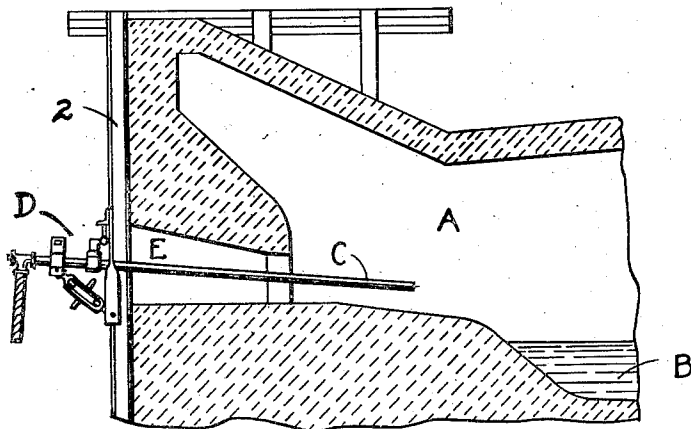
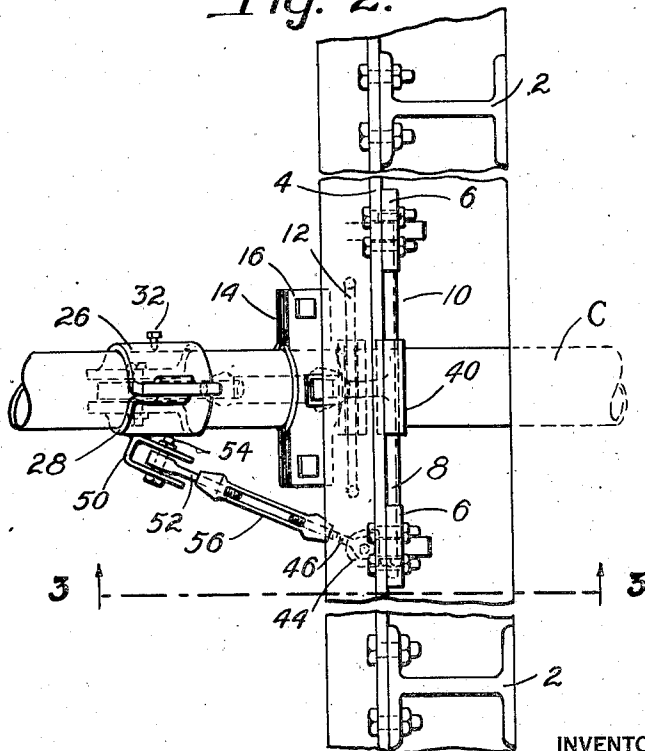


Fig. 2.



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Fig. 3.

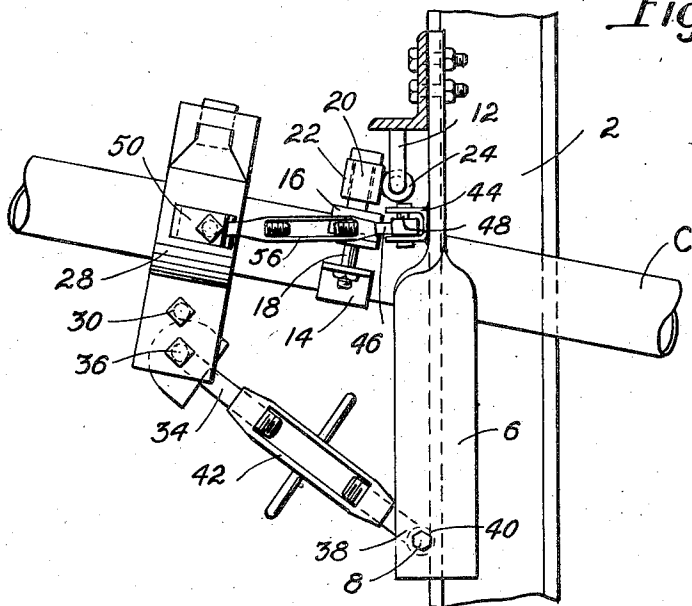
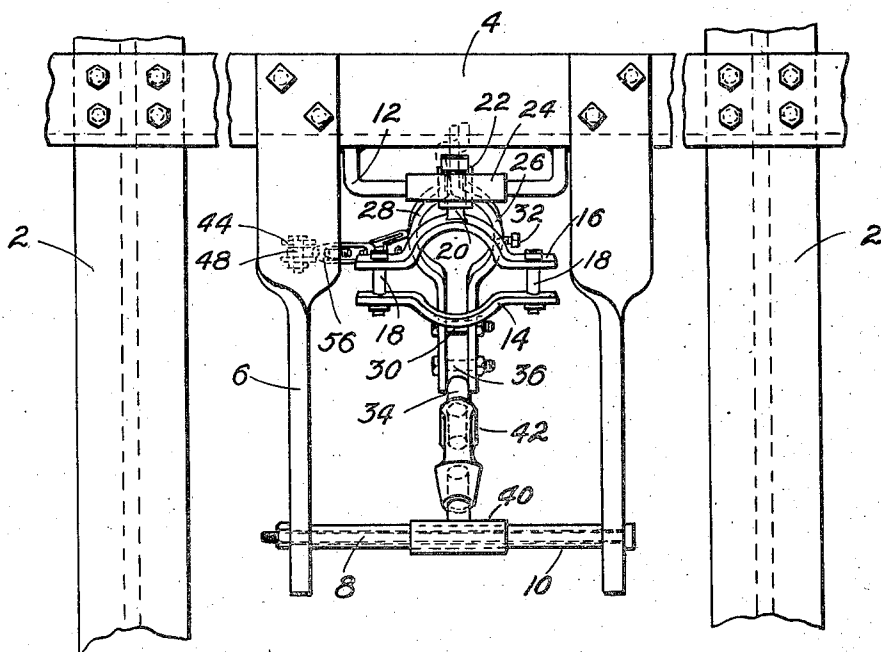


Fig. 4.



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ADJUSTABLE MOUNTING FOR LIQUID FUEL
BURNERS

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Application April 5, 1945, Serial No. 586,746

3 Claims. (Cl. 158—2)

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This invention relates to improvements in adjustable mountings for liquid fuel burners of the character employed in open hearth furnaces and the like.

The invention has among its objects the provision of an improved and simplified adjustable burner mounting structure, simple to construct, maintain, and operate.

Additional objects and advantages will become apparent from the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a vertical section through a portion of an open hearth furnace showing a burner adjustably mounted therein by an embodiment of the invention;

Figure 2 is an enlarged plan view of the adjustable burner mounting of Figure 1;

Figure 3 is a view in vertical section of the adjustable burner mounting, said section being taken along the line III—III of Figure 2; and

Figure 4 is a view in elevation of the burner mounting of the present invention with the burner removed, the view being taken in the direction toward the outside of the furnace.

Adjustable burner mountings such as disclosed in the patent to Lewis, No. 2,358,982, dated September 26, 1944, have proved to be disadvantageous in certain respects due to the fact that certain of the adjustable elements, such as the elongated screw for adjusting the burner laterally, being positioned close to the furnace wall, are subjected to dirt and the intense heat from the furnace and become difficult to manipulate. It has further been found that such mounting requires considerable maintenance, and that even with such maintenance the horizontal adjustment of the burner is difficult, often requiring the efforts of several men. It is accordingly an object of the invention to provide a simple easily maintained mounting for burners of the type indicated, which provides for the easy adjustment of the burner, both angularly in a vertical plane and transversely of the furnace.

Referring to the drawings, A designates an open hearth furnace containing a bath of molten metal B. The burner C for the combustion of liquid fuel, such as tar, is directed inwardly toward bath B from outside the furnace through an opening E in the end thereof, said burner including an elongated tube or pipe, the greater length of which is disposed inside the furnace away from external support.

The improved mounting of the present invention for such burner is generally indicated at D,

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secured to the buckstays 2 of the furnace which are a part of the framework thereof, and which may be in the form of vertical I-beams. Secured to buckstays 2, on opposite sides of the opening E, is a horizontally disposed angle beam 4 which forms a support for the burner mounting. Secured to angle beam 4 at the locations equally spaced from the vertical center of opening E are two vertical twisted bars 6 disposed as shown with their upper flat portions bolted in contact with the rear of the beam 4 and with their lower parallel portions extending vertically beneath. The lower ends of such parallel portions of twisted bar 6 are held together by means of elongated bolt 8 passing through them, bolt 8 being surrounded by a pipe 10 which acts as a spacer sleeve. Welded to the horizontal portion of beam 4, as shown in Figure 4, in a location centrally between bars 6, is a U-shaped bar 12 having a long horizontal bottom portion parallel to sleeve 10.

Burner C is carried by a clamp which consists of a lower portion 14 and an upper portion 16 which at least partially embrace the burner and which are held thereagainst in clamped relation by means of bolts 18 extending through the confronting ears of the upper and lower portions of the clamp. The upper portion 16 of the clamp is provided with a headed stud 20, projecting upwardly at right angles therefrom, stud 20 extending through sleeve 22 as shown. Sleeve 22 in turn is welded to horizontal sleeve 24, the latter sleeve being disposed about the lower horizontal portion of U-shaped bar 12 so as to be slidable thereon. The means thus far described provides a support for the burner whereby the latter may be moved laterally and may be moved angularly in a vertical plane.

Additional means are provided to secure the burner in the desired lateral or angular position and to permit the ready change of either of such adjustments. Such additional means consists of a second clamp embracing the burner C at a position to the rear of the first named clamp. Such second clamp consists of two members 26 and 28, shaped at their intermediate portions so as substantially to conform to the burner tube, the upper portions of parts 26 and 28 being loosely hinged together as by a tongue on part 28 which projects through a hole in the upper end of part 26. Bolt 30 through the lower projecting ears on hinged parts 26 and 28 holds such parts together. A set screw 32 screwed into part 26 may be tightened against the burner tube to hold the latter in the clamp.

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Angular adjustment of the burner in a vertical plane is accomplished by means of a turnbuckle connected between the rear burner engaging clamp consisting of parts 26 and 28 and the spacer tube 10. Such turnbuckle consists of a threaded end 34 pivotally attached between the lower ends of portions 26 and 28 by means of pivot bolt 36, a second oppositely threaded end 38 welded to sleeve 40, which slides upon tube 10, and a turnbuckle sleeve 42 engaging portions 34 and 38. It is obvious that by turning sleeve 42 of the turnbuckle, the vertical angular disposition of the burner tube about the axis consisting of the horizontal portion of U-shaped bar 12 may be changed.

Adjustment of the burner laterally is accomplished by means of a second turnbuckle attached between the rear burner tube engaging clamp and a fixed portion of the burner mounting means. Specifically, such means consists of a U-shaped bracket 44 welded to the left hand twisted bar 6 in Figure 4. One threaded end 46 of the second turnbuckle is secured to bracket 44 by means of the vertical pivot pin 48, the eye portion of member 46 through which pin 48 passes being sufficiently thinner than the opening between the arms of the U-shaped bracket as to allow substantial freedom of movement of part 46 in a vertical direction. A second U-shaped bracket 50 is welded, as shown in Figures 2 and 3, to portion 28 of the second clamp at a position substantially in line with the axis of the burner C. The opposed arms of U-shaped bracket 50 extend vertically, as shown in Figure 2, and project substantially in a direction toward pivot pin 48 when the burner tube is directed at substantially right angles to the end wall of the furnace. The threaded end 52 of the second turnbuckle is connected to bracket 50 by means of horizontal pivot pin 54. Parts 46 and 52 of the second turnbuckle are connected by threaded sleeve 56, the turning of which pulls said parts together or pushes them apart, depending upon the direction of rotation of the sleeve. Sleeves 40 and 24 travel upon means 10 and 12, respectively, and thus allow the burner mounting and the burner carried thereby to travel laterally upon adjustment of the second turnbuckle. In the modification shown the second turnbuckle lies in a plane which is substantially at right angles to the plane containing guides 12 and 10.

It will be apparent from the above disclosure that the adjustable burner mounting means permits the ready and convenient adjustment of the burner to the vertical angular and lateral position desired by means spaced from the furnace wall, and which are thus easily accessible and can be kept free of dirt. As disclosed, the first turnbuckle permits attainment of the desired angular disposition of the burner in a vertical plane by rotation of sleeve 42 in the appropriate direction. Following such adjustment, the burner may be adjusted laterally by the rotation of sleeve 56 on the second turnbuckle, which slides the mounting as a whole laterally upon the spacer tube 10 and the horizontal portion of the U-shaped bar 12.

Although a preferred embodiment of the invention has been shown and described, it is to be understood that the invention is capable of numerous variations obvious to those skilled in the art. The invention is therefore to be defined in the following claims.

I claim:

1. In the combination of a furnace having a

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burner receiving opening therein and an elongated burner extending through such opening from the outside of the furnace, the improved burner mounting which comprises a supporting frame located outside the furnace opening, said frame including upper and lower parallel guide members transverse to the furnace opening, a first means attached to the burner and to the upper guide to support the burner for sliding movement transverse to the furnace opening and for pivotal movement in a vertical plane, a second means attached to the burner at the rear of the first attaching means and slidably mounted on the lower guide, said second means being adjustable in its length from its lower guide engaging portion to the point of its attachment to burner whereby the burner may be adjusted in a vertical plane, and means to slide the two burner attaching means longitudinally of the upper and lower guides to adjust the burner transversely of the furnace opening.

2. In the combination of a furnace having a burner receiving opening therein and an elongated burner extending through such opening from the outside of the furnace, the improved burner mounting which comprises a supporting frame on the outside of the furnace comprising a support transverse to the furnace opening and to the burner, an upper guide means on the support at the furnace opening and parallel to the support, a first means attached to the burner and to the upper guide to support the burner for sliding movement transverse to the furnace opening and for pivotal movement about the guide in a vertical plane, a second lower guide on the supporting frame for the upper guide and parallel thereto, a second attaching means attached to the burner at the rear of the first attaching means and slidably and pivotally mounted on the lower guide, said second means being adjustable in its length between its guide engaging portion and the point of its attachment to the burner whereby the burner may be adjusted in a vertical plane, and means for adjusting the burner transversely of the furnace opening, said means consisting of a member spaced from the furnace and adjustable in length, said member being connected between the burner and the supporting frame so as to cause the burner attaching means to slide laterally on their supporting guides.

3. In the combination of a furnace having a burner receiving opening therein and an elongated burner extending therethrough from the outside of the furnace, the improved burner mounting which comprises a supporting frame on the outside of the furnace comprising a support transverse to the furnace opening and to the burner, depending vertical members attached to the transverse support at either side of the furnace opening, said vertical members being connected at the bottom thereof by a horizontal transverse guide member of circular cylindrical cross section, an upper guide member parallel to the bottom transverse guide attached to the transverse support at the furnace opening, said upper guide likewise being of circular cylindrical cross section, a first burner attaching means attached to the burner and to the upper guide, said means comprising a sleeve slidable and rotatable upon the upper guide, a second burner attaching means attached to the burner at a position rearwardly of the first burner attaching means and to the lower guide member, said means comprising a sleeve mounted on the lower guide for sliding and pivotal movement thereon, and means compris-

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ing a turnbuckle between the sleeve on the lower guide and the rear burner engaging means whereby the burner may be adjusted in a vertical plane, and means comprising a second turnbuckle connected between rear burner attaching means and the supporting frame in a plane substantially at right angles to the plane containing the upper

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and lower guides, whereby adjustment of the second turnbuckle adjusts the burner laterally in the furnace opening by causing the burner attaching means and their supporting sleeves to slide longitudinally of their respective guides.

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