

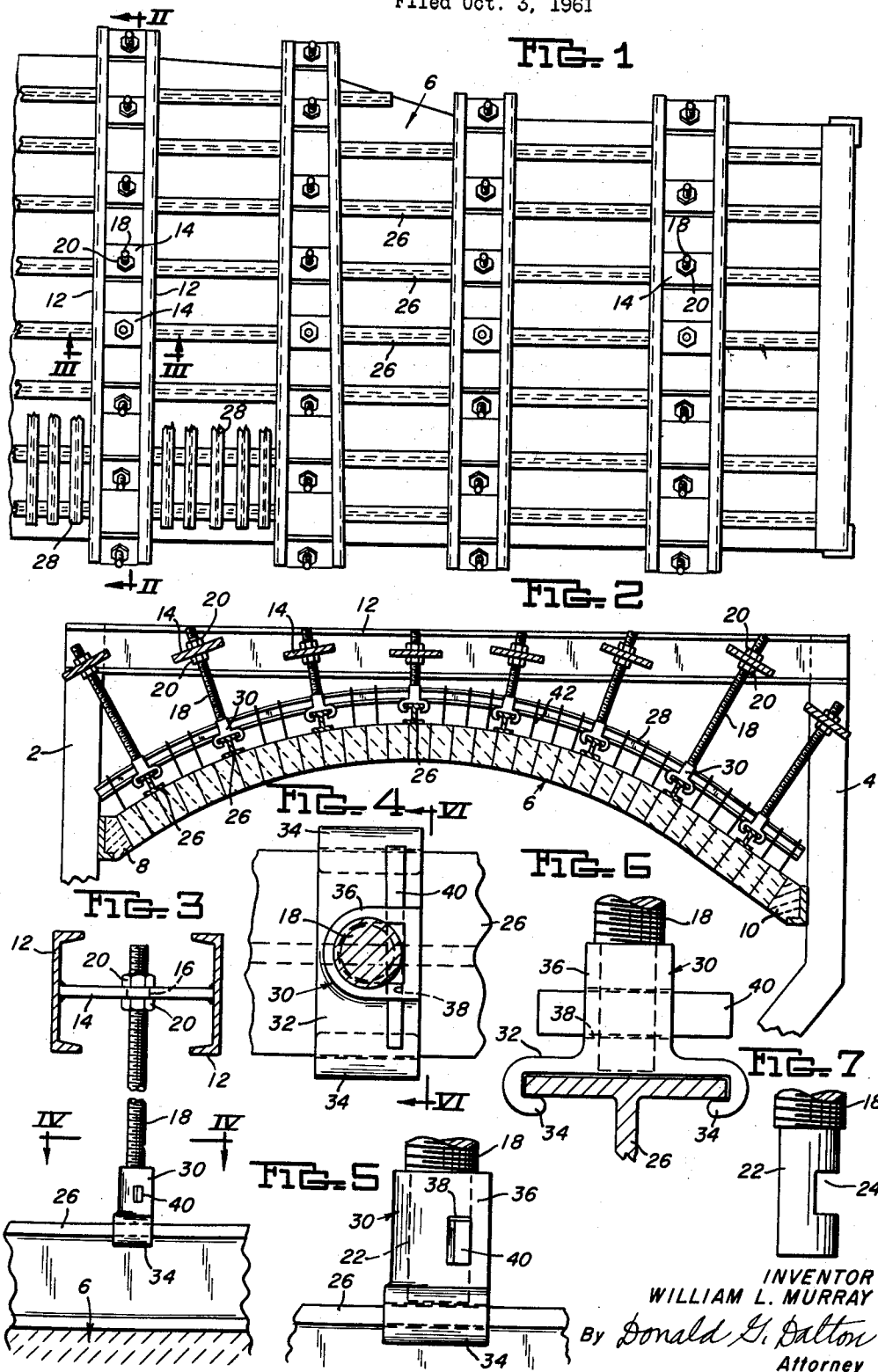
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SUPPORTING STRUCTURE

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1

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SUPPORTING STRUCTURE

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This invention relates to a supporting structure and more particularly to a structure for supporting a refractory roof beam. Various types of supports have been used for supporting roof beams, but those of which I have knowledge have various disadvantages. The basic roofs of open hearth furnaces are normally in the form of an arch and require a great number of beams which are used to both hold down the roof and also support the roof. These beams run transversely to the span of the arch and hence cannot be arranged with their flanges horizontal, but instead the lower flange of each beam is arranged at an angle substantially that of the top of the roof. Difficulty is encountered in aligning the beam support and the beam. The time required to place the supports in position is also excessive.

It is therefore an object of my invention to provide a supporting structure for a beam which is simple in construction and easy to install.

Another object is to provide a supporting structure for a sprung refractory brick arch which is easy to assemble and which provides a solid support.

These and other objects will be more apparent after referring to the following specification and attached drawings, in which:

FIGURE 1 is a partial plan view of an open hearth roof showing the supporting structure;

FIGURE 2 is a view taken on the line II—II of FIGURE 1;

FIGURE 3 is a view taken on the line III—III of FIGURE 1;

FIGURE 4 is a view taken on the line IV—IV of FIGURE 3;

FIGURE 5 is an enlarged view of a portion of FIGURE 3;

FIGURE 6 is a view taken on the line VI—VI of FIGURE 4; and

FIGURE 7 is an enlarged view of a detail.

Referring more particularly to the drawings, reference numeral 2 indicates front buckstays and reference numeral 4 the back buckstays of an open hearth furnace. A refractory brick sprung arch 6 extends between the front and back buckstays and is supported by skewbacks 8 and 10 in the usual manner. A plurality of horizontal beams 12 arranged in pairs with their flanges facing each other extend between and are supported by the buckstays 2 and 4. A plurality of generally horizontal webs 14 extend between and are supported by the webs of beams 12. Each of the webs 14 has a hole 16 therein for receiving a hold down rod 18 which is threaded at its upper end for receiving nuts 20, one on each side of the web 14. The lower end 22 of the rod 18 is unthreaded and has a generally horizontal notch 24 therein. A plurality of spaced apart I-beams 26 are arranged transversely to the beams 12 with their lower flanges bearing against the upper surface of the arc 6 and their upper flanges supporting bent beams 28 which extend in the direction of the span of the arch. Associated with each of the rods 18 is a clamp body 30 having a base 32 with hook end portions 34 for receiving the top flange of the associated beam 26. A hollow neck 36 extends upwardly from the base 32 for receiving the lower end of the associated rod 18. A transverse opening 38 provided in the neck 36 is adapted to be aligned with the notch 24 so as to receive a wedge 40. The bricks in the arch may be supported

2

from the beams 28 by means of hook rods 42 in the usual manner.

In assembly, the rods 18 are passed through the associated hole 16 from the lower side thereof with a nut 20 being threaded thereon. The hook end portions 34 of the clamp body 30 are passed over the upper flanges of the beams 26 and can be easily moved to the desired position. The lower end 22 of the associated rod 18 is passed into the hollow neck 36 of the associated clamp body 30 and the notch 24 aligned with the opening 38. The wedge 40 is then positioned so as to hold the assembly together. An upper nut 20 is threaded on the rod 18 and the rod 18 is locked in place in the desired position. Thus, the beams 26 can be positioned to prevent any upward movement of the arch or to control the limit of upward movement if desired. If, for any reason, it is desired to change the vertical position of the beams 26 during operation of the furnace it can readily be done by changing the position of the nuts 20.

While one embodiment of my invention has been shown and described it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

I claim:

1. Apparatus for supporting a beam having a web with a flange extending in both directions from the upper end of the web comprising a clamp body having a base with hook end portions for receiving the said flange and an upwardly extending hollow neck, said neck having a transverse opening therethrough, a rod receivable in said hollow neck having a notch therein adapted to be aligned with said transverse opening, a wedge receivable in said transverse opening and notch, and means for supporting the upper end of said rod.

2. Apparatus for supporting a beam having a web with a flange extending in both directions from the upper end of the web comprising an upper support, a clamp body having a base with hook end portions for receiving the said flange and an upwardly extending hollow neck, said neck having a transverse opening therethrough, a rod having an upper threaded portion and a lower portion receivable in said hollow neck, said lower portion having a notch therein adapted to be aligned with said transverse opening, a wedge receivable in said transverse opening and notch, and means for supporting the upper end of said rod on said upper support.

3. A supporting structure for a sprung refractory brick arch comprising generally vertical buckstays for supporting the ends of the arch, horizontal beams extending in the direction of the span of the arch and supported by said buckstays at opposite ends of the arch, a plurality of flanged beams extending transversely of said horizontal beams and located therebeneath, the lower flange of each of said flanged beams bearing on top of said arch, a plurality of clamp bodies for each of said plurality of beams, each clamp body having a base with hook end portions for receiving the upper flange of the associated flanged beam and an upwardly extending hollow neck, said neck having a transverse opening therethrough, a rod receivable in said hollow neck having a notch therein adapted to be aligned with said transverse opening, a wedge receivable in said transverse opening and notch, and means for supporting the upper end of each rod on the associated horizontal beam.

4. A supporting structure for a sprung refractory brick arch comprising generally vertical buckstays for supporting the ends of the arch, horizontal beams extending in the direction of the span of the arch and supported by said buckstays at opposite ends of the arch, a plurality of flanged beams extending transversely of said horizontal beams and located therebeneath, the lower flange of each

of said flanged beams bearing on top of said arch, a plurality of clamp bodies for each of said plurality of beams, each clamp body having a base with hook end portions for receiving the upper flange of the associated flanged beam, and an upwardly extending hollow neck, said neck having a transverse opening therethrough, a rod having an upper threaded portion and a lower portion receivable in said hollow neck, said lower portion having a notch therein adapted to be aligned with said transverse opening, a wedge receivable in said transverse opening and notch, transverse supports on said horizontal beams for receiving the upper ends of said rods, means for adjustably supporting each of said rods on the associated transverse support, a plurality of spaced apart bent beams extending in the direction of the span of the arch and resting on said flanged beams, and means extending between said bent beams and the arch bricks for supporting said bricks.

5. A supporting structure for a sprung refractory brick arch comprising generally vertical buckstays for supporting the ends of the arch, a plurality of pairs of horizontal beams extending in the direction of the span of the arch and supported by said buckstays at opposite ends of the arch, said horizontal beams having vertical webs, a plurality of flanged beams extending transversely of said horizontal beams and located therebeneath, the lower flange of each of said flanged beams bearing on top of said arch, a plurality of clamp bodies for each of said plurality of beams, each clamp body having a base with

hook end portions for receiving the upper flange of the associated flanged beam and an upwardly extending hollow neck, said neck having a transverse opening therethrough, a rod receivable in said hollow neck having a notch therein adapted to be aligned with said transverse opening, a wedge receivable in said transverse opening and notch, an upper threaded portion on said rod, a plurality of plates fastened to and extending between and secured to the webs of said pairs of horizontal beams, each of said plates having a hole therethrough for receiving the upper threaded portion of one of said rods, and nuts on said threaded portion of the associated rod one on each side of said plate.

6. A supporting structure for a sprung refractory brick arch according to claim 5 including a plurality of spaced apart bent beams extending in the direction of the span of the arch and resting on said flanged beams, and means extending between said bent beams and the arch bricks for supporting said bricks.

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