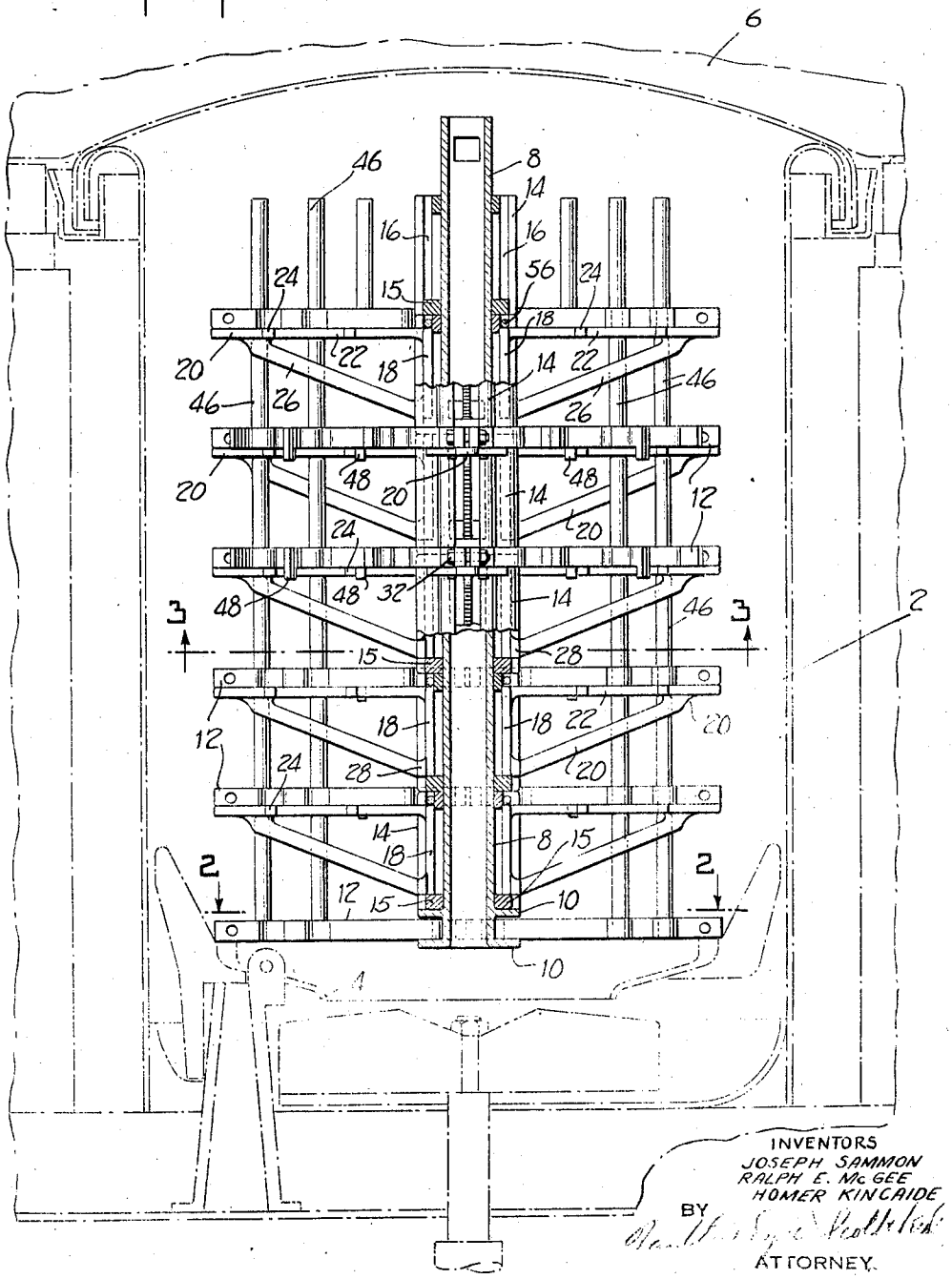
Feb. 4, 1941. J. SAMMON ET AL 2,230,310

WORK-SUPPORTING FIXTURE

Filed Sept. 27, 1939 3 Sheets-Sheet 1

Fig. 1.



INVENTORS
JOSEPH SAMMON
RALPH E. McGEE
HOMER KINCAIDE

BY

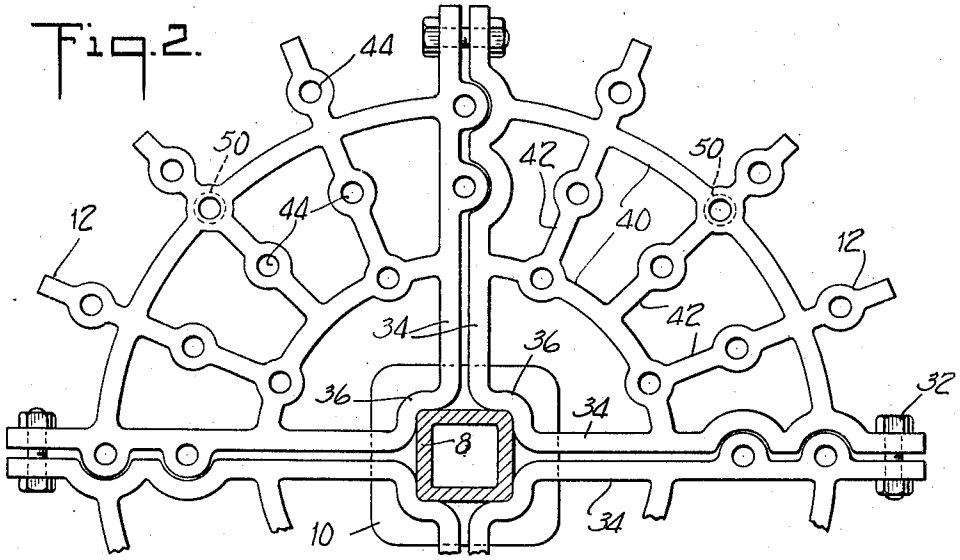
ATTORNEY.

Feb. 4, 1941. J. SAMMON ET AL 2,230,310

WORK-SUPPORTING FIXTURE

Filed Sept. 27, 1939 3 Sheets-Sheet 2

Fig. 2.



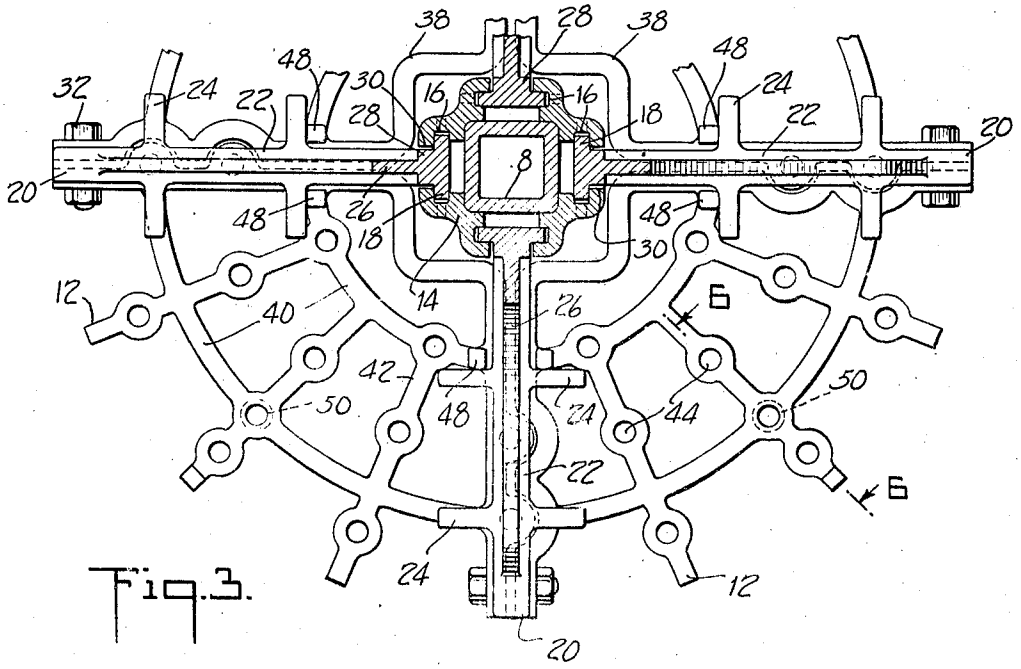


Fig. 3.

INVENTORS
JOSEPH SAMMON
RALPH E. McGEE
HOMER KINCAIDE
BY Bartlett Eyre & Southwell
ATTORNEYS

Feb. 4, 1941. J. SAMMON ET AL 2,230,310

WORK-SUPPORTING FIXTURE

Filed Sept. 27, 1939 3 Sheets-Sheet 3

Fig. 4.

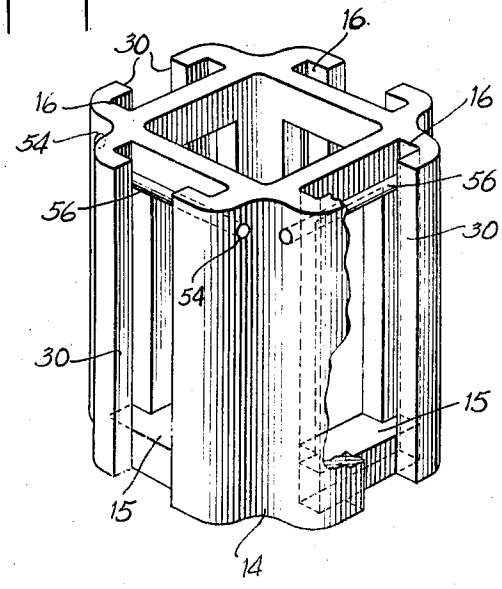
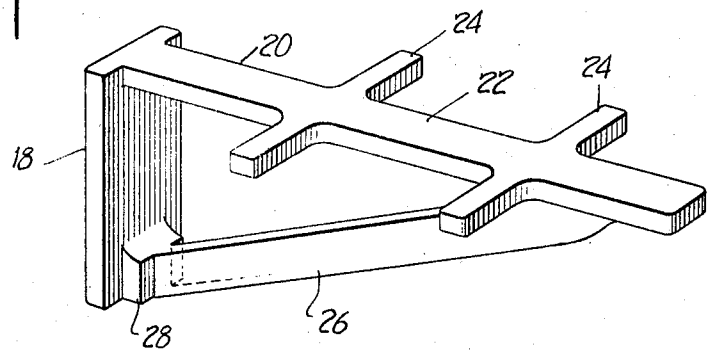


Fig. 5.



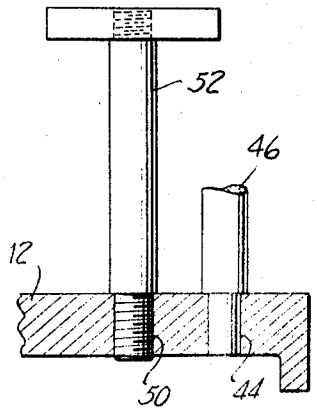


Fig. 6.

INVENTORS
JOSEPH SAMMON
RALPH E. McGEE
HOMER KINCAIDE

BY Baldwin Egan & Waters

ATTORNEYS

Patented Feb. 4, 1941 2,230,310

UNITED STATES PATENT OFFICE

2,230,310

WORK-SUPPORTING FIXTURE

Joseph Sammon, Kearny, N. J., and Ralph E. McGee, Moline, and Homer Kincaide, Carbon Cliff, Ill., assignors to Driver-Harris Company, Harrison, N. J., a corporation of New Jersey

Application September 27, 1939, Serial No. 296,778

2 Claims. (Cl. 211—148)

The present invention relates to work-supporting fixtures that are particularly adapted for use in vertical or pit type of heat-treating furnaces.

The principal object of the invention is to provide a fixture of this character which permits the work to be stacked in many different combinations, and which permits the work to be conveniently removed from the furnace either in sections or in one load as desired.

Another object of the invention is to provide a fixture of the character indicated which is simple in construction and convenient in use.

The invention is illustrated, by way of example, in the accompanying drawings, in which:

Figure 1 is a sectional elevation of the fixture in its preferred form, shown positioned in a vertical or pit type of heat-treating furnace, the furnace being diagrammatically illustrated by broken lines.

Figs. 2 and 3 are detail sectional views, respectively taken on the lines 2—2 and 3—3 of Fig. 1;

Fig. 4 is a detail view in perspective, partly broken away, of a spacer constituting a component part of the fixture;

Fig. 5 is a detail view in perspective of a bracket; and

Fig. 6 is a detail sectional view, on an enlarged scale, taken on the line 6—6 of Fig. 3 and showing in elevation a lifting device which may be used in lifting the tray from the fixture and a stack rod which may be used in connection with the tray.

My improved fixture is shown positioned in a common form of vertical or pit type heat-treating furnace having the usual cylindrical shell forming a pit 2, a bottom or base portion 4, and a cover 6, the furnace being heated in any suitable manner.

The fixture is provided with a central hollow stem 8 that is square in cross-section. The lower end of the stem is provided with spaced flanges 10 between which is held the bottom one of a series of work-supporting shelves or trays 12, the tray being made in sections as hereinafter described to permit it to be positioned between the flanges.

Upon the stem 8 may be positioned a plurality of spacers 14 which are arranged end to end one upon the other with the lower end of the lowermost spacer resting upon the upper one of the flanges 10, the spacers being in sliding engagement with the stem. Each of the spacers is provided with a slot 16 extending longitudinally of each face thereof with the lower end wall 15 of the slot spaced a distance from the lower end of the spacer. Each slot 16 is adapted to receive an upright 18 of a bracket 20, the upright being inserted into the upper end of the wall of the slot 16. Each bracket is provided with a horizontal outwardly extending arm 22 which is flush with the upper end of the upright 18. The arm 22 has a plurality of laterally projecting supporting members 24 projecting from the sides thereof. An arm or brace 26 extends from the lower end of the upright 18 to the underside of the outer end portion of the arm 22, and the inner end of the brace 26 has an enlarged portion 28 that is of substantially the same width as the arm 22. When the bracket is inserted in a slot 16, it is held from lateral movement by engagement of the sides of the arm 22 and enlarged portion 28 of the brace 26 with the inner edges of spaced guiding flanges 30 that form portions of the walls of the associated slot.

Each of the trays 12 is made in four sector-shaped sections which may be detachably secured together by bolts 32. As shown, each section may be made of skeleton form having members 34 arranged in a plane at right angles to the sides of the square stem 8, the corresponding members 34 of adjacent sections being arranged in close proximity.

The inner ends of the members 34 of each section of the bottom tray 12 are connected by corner portions 36 which when the sections are assembled between the flanges 10 engage the corners of the stem 8. These corners may be securely clamped to the stem by means of the bolts 32 so as to securely hold the sections in position.

The trays 12 above the bottom tray have the inner ends of the members 34 connected by angular portions 38. These portions 38 and the several sections of each tray, form a square opening through the center of the tray which permits each tray to be slid down over a spacer 14 to position the tray upon brackets of the underlying spacer.

Each section of each of the trays 12 is provided with spaced arcuate members 40 that are connected by radial members 42, the members 42 extending a distance outwardly beyond the outer arcuate member 40. The arcuate members 40 and the radial members 42, and also some of the members 34 may be provided with apertures 44 for receiving the lower reduced ends of stack rods 46. The trays are of such form as to permit the work to be conveniently stacked

thereon and held in position by applying the stack rods in proper position.

The trays 12 that are supported on the brackets 20 are held from lateral movement thereon by downwardly projecting lugs 48 on each section, the lugs being arranged at opposite sides of the horizontal arm 22 of the underlying bracket, and adjacent the sides of lateral members 24. Each of the tray sections is provided with a screw-threaded aperture 50 in which the lower end of a lift rod 52 may be screw-threaded.

The walls of the dove-tail slots 16 are provided with holes 54 through which pins 56 may be inserted above the upper ends of the bracket uprights 18 so as to trap the brackets in the slots.

The work may be conveniently stacked or otherwise positioned on the various trays of the fixture, and then the fixture placed in position in the furnace as shown in Fig. 1, or the several spacers and trays with the work thereon may be separately placed on the stem 8 while in the furnace. Owing to the skeleton construction of the trays and the spacing thereof the work is uniformly subjected to the treating atmosphere of the furnace so that uniform results may be secured.

At the completion of the treating operation the entire fixture with the work may be easily removed from the furnace. If it is desired to remove the trays in quarter sections, the sections are left unbolted and the lifting of each individual section may be accomplished by means of the lift rod 52. This is particularly desirable where different work requires heat-treating for different lengths of time. Also, if it is desired to lift a tray spacer and bracket together, the lock pins 56 may be inserted in the holes so as to trap the brackets 20 as above described, whereupon each entire tray, spacer and brackets may be removed together. Also, if desired the sections of each tray may be secured together by the bolts 32 which also permits the several sections to be removed as a unit, or two or three sections may be secured together.

In case it is desired to space the trays further distances apart, this may be accomplished by using square spacers between the spacers 14.

It will be apparent that my improved fixture permits of great flexibility in that it is possible to stack the work in many different combinations, and it is also possible to remove the work from the furnace in sections or in one load, whichever is preferred or necessary. The fixture is of simple and strong construction and convenient in use.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What we claim is:

1. In a work-supporting fixture for use in a heat-treating furnace of the class described, a central stem vertically arranged, spacers surrounding and removably mounted on the stem one above the other, a plurality of radially extending work-supporting brackets spaced about each of said spacers, and vertically arranged tongue and groove connections between the inner ends of said brackets and the associated spacers for detachably securing the brackets to the spacers whereby the brackets may be individually disconnected from their spacers upon sliding each bracket upwarly on its spacer, and the bracket with the work thereon removed from the furnace.

2. A structure according to claim 1 in which a work-supporting tray of skeleton form is mounted upon the brackets associated with each spacer, and each tray is made in sections that are individually supported upon adjacent brackets.

JOSEPH SAMMON.
RALPH E. McGEE.
HOMER KINCAIDE.