April 7, 1942. T. W. MUNFORD 2,278,891

ANNEALING FURNACE

Filed Aug. 21, 1941 2 Sheets-Sheet 1

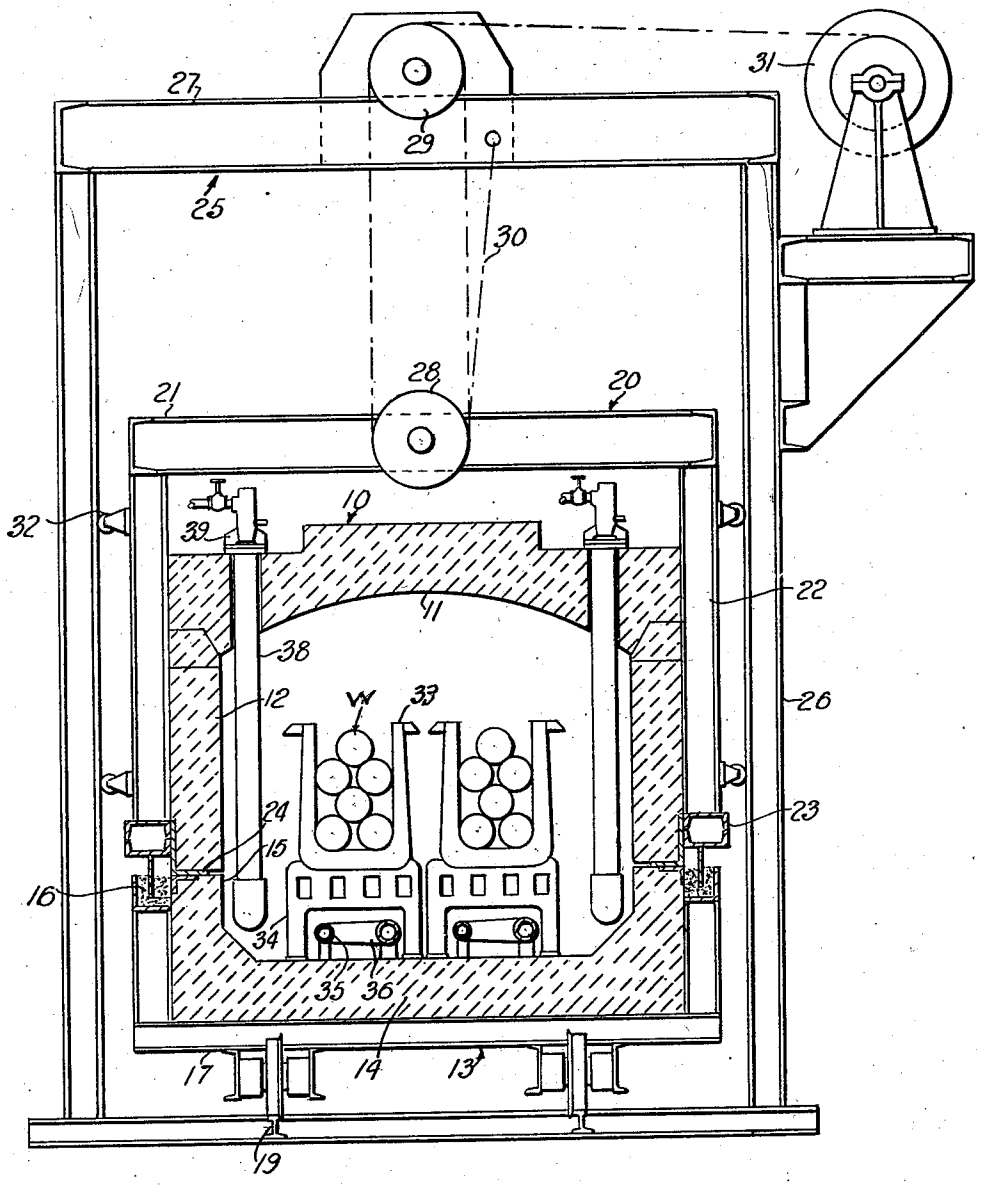


Fig. 1.

Inventor
T. W. Munford

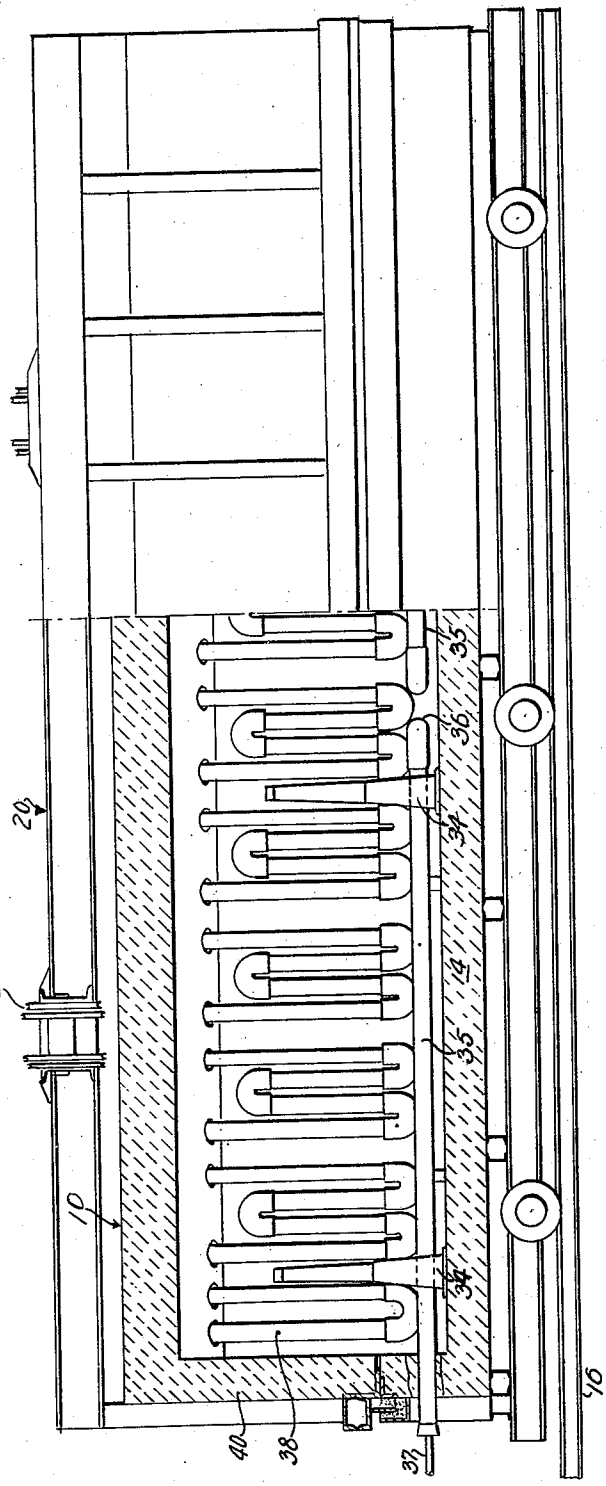
By
Charles A. Lind
Attorney

April 7, 1942. T. W. MUNFORD 2,278,891

ANNEALING FURNACE

Filed Aug. 21, 1941 2 Sheets-Sheet 2

Fig. 2.



Inventor
T. W. Munford
By Charles A. Lind
Attorney

Patented Apr. 7, 1942 2,278,891

UNITED STATES PATENT OFFICE

2,278,891

ANNEALING FURNACE

Theodore W. Munford, Ottawa Hills, Ohio, assignor to General Properties Company, Inc., a corporation of Delaware

Application August 21, 1941, Serial No. 407,785

1 Claim. (Cl. 263—43)

The present invention relates to an annealing furnace of the type comprising a load supporting platform and an open bottom hood adapted to cooperate with the platform to form a heating chamber for a load of work supported on the platform. The object of the invention is to embody in a furnace of this type a relatively simple and practical arrangement of internally fired tubes for heating the work. Other related objects will more fully appear from the detail description taken in connection with the accompanying drawings wherein the preferred form of the invention is shown.

In the drawings—

Fig. 1 is a transverse vertical section of a furnace embodying the present invention, and Fig. 2 is in part a longitudinal vertical section and in part a side elevation of the furnace shown in Fig. 1 except for the omission of the hoisting stand for the hood.

In the drawings, 10 indicates generally an open bottom hood comprising a roof 11 and depending side walls 12. The bottom closure for the hood is generally indicated at 13, the same comprising a work-supporting platform 14 having an upstanding peripheral wall 15 on top of which the hood is adapted to seat. 16 indicates severable sealing means between the hood and its bottom closure.

The platform 14 is mounted on a car 17 adapted to run on tracks 19. Secured to the hood 10 is a frame for lifting the same, the frame comprising top beams 21 from which upright beams 22 depend alongside of the hood, the lower ends of the beams 22 being connected by tie beams 23 from which shoes 24 extend under the side walls 12 of the hood. 25 indicates a lifting stand, the same comprising upright supports 26 and top connecting beams 27. Suitable hoisting means connect the hood frame 20 to the lifting stand, said means being shown as comprising pulleys 28 and 29 and a cable 30 leading to power operated means generally indicated at 31. Guide means between the lifting stand and the hood frame are indicated at 32. From the foregoing it will be understood that the hood 10 is elevated to permit its bottom closure 13 to be moved to one side for loading and unloading.

The work to be annealed is generally indicated at W, the same being shown as bar stock piled in U-shape holders 33 adapted to seat on pedestals 34 extending upwardly from the platform 14. Two loads of work are shown side by side in spaced relation.

35 indicates horizontally disposed return-bend heating tubes below the top of the pedestals 34 for heating the underside of the load supported on the pedestals. The bend of the tube is indicated at 36 about midway the length of the platform 14. The inlet and outlet ends of the tubes extend through the upstanding peripheral wall 15 of the platform. Each tube has its own burner 37 which fires into the inlet end of the tube. As exhauster not shown may be connected to the outlet end of each tube. It will be understood that similar heating tubes extend from the other end of the platform 14.

Disposed in a row alongside of the side walls 12 of the hood 10 are upright heating tubes 38 shown as of the return bend type with their inlet and outlet ends extending through the roof of the hood. Each tube has its own burner 39 which fires into the inlet end of the tube. An exhauster not shown may be connected to the outlet end of each tube.

It is one of the important features of the present invention that the tubes 38 depend from the hood 10 to a level relatively close to the platform 14, it being noted that this level is substantially below the top of the peripheral wall 15 of the platform. The lower ends of these tubes therefore cooperate with the horizontally disposed tubes 35 to heat the bottom of the work load. Moreover, by extending the tubes 38 to below the top of the wall 15 the latter does not constitute a relatively cold spot of the furnace chamber. The tubes 38 next to the end walls 40 of the hood are preferably of the conventional return bend type; whereas, the next succeeding tubes are preferably of the plural return bend type as clearly shown in Fig. 2.

Although I have shown the upright tubes 38 as passing through the roof of the hood it is evident that they may pass through the side walls 12 at a point adjacent the roof. Other details may of course also be varied within the scope of the appended claim.

What I claim is:

A furnace comprising in combination a relatively long wide work-supporting base, a plurality of combustion tubes extending along the top side of the base, means on the base for supporting the work next above said tubes so that the underside of the work may be heated by radiation from said tubes, said base having a peripheral wall which extends a substantial distance above the top level of said tubes and through which said tubes extend, and an open bottom structure seated on said wall to form a heating chamber for said work.

THEODORE W. MUNFORD.