Nov. 7, 1950 R. MEYROWITZ 2,528,536

CRUCIBLE HOLDER

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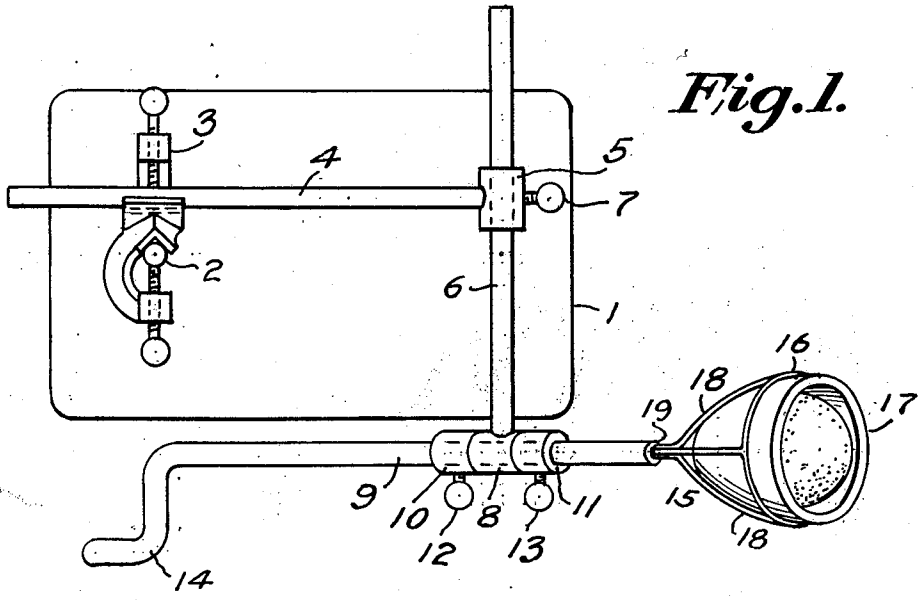


Fig. 1.

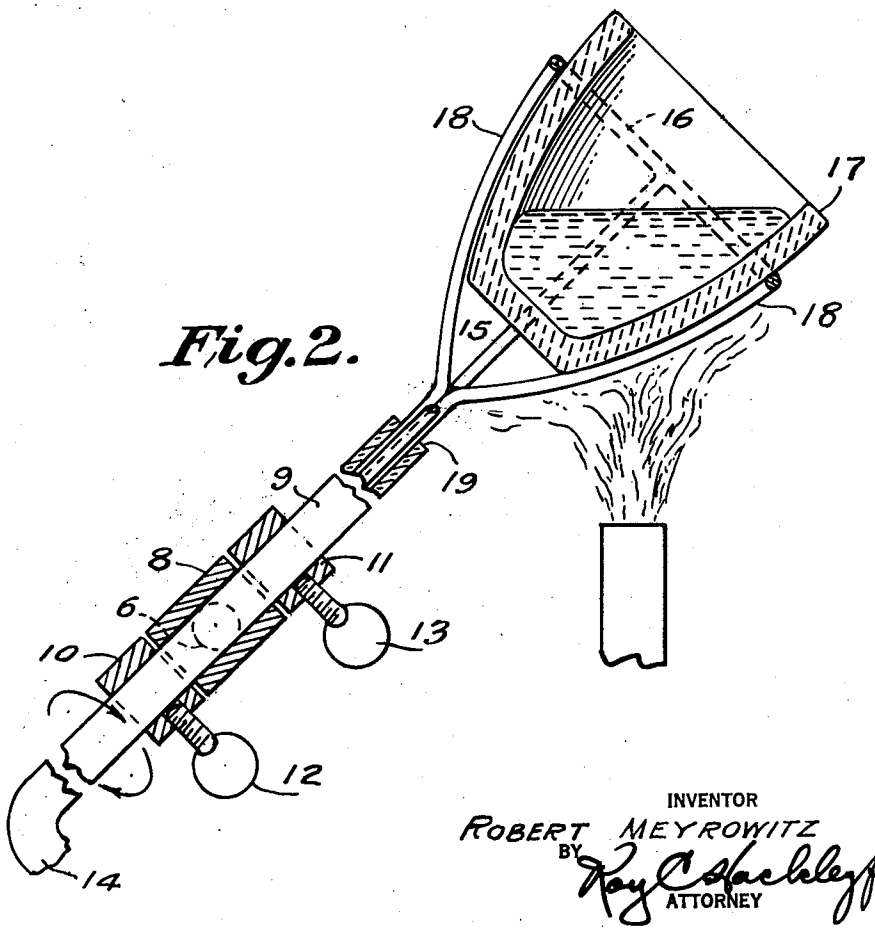


Fig. 2.

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CRUCIBLE HOLDER

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1 Claim. (Cl. 248—124)

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The invention described herein may be manufactured and used by or for the Government of the United States for governmental purposes without the payment to me of any royalty thereon in accordance with the provisions of the act of April 30, 1928 (Ch. 460, 45 Stat. L. 467).

This invention relates to rotary crucible supports and more particularly to supports for crucibles or the like adapted to rotate on a tilted axis. More broadly, the apparatus of this invention is adapted to carry articles to be heated in a flame or the like wherein the carrier and the articles to be heated may be rotated.

Heretofore, in the heating of crucibles to high temperatures, wherein it is desired to bring the contents, which may be a mixture of high melting oxides and flux, to the molten state, it has been customary to hold the crucible manually with a pair of tongs and from time to time to remove the crucible from the flame, take a fresh grip thereon, and return the same to the flame. In order that the molten contents be thoroughly intermixed, it was necessary that the crucible be tilted so as to wash its inner surface with flux, at the same time continuously rotating the crucible. It will be seen that this represents a tedious and complicated procedure. Due to the necessary frequent changes in tong position many crucibles were dropped and broken.

This invention accordingly has for an object the provision of a suitable means for supporting a crucible over a flame while permitting continuous rotation of the crucible about an inclined or tilted axis. Another object is the provision in a crucible support of adjustable means for varying the angle of tilt or inclination at which the crucible is supported. Other related objects will appear hereinafter as the ensuing description proceeds.

These objects are accomplished in accordance with this invention which provides a crucible support adapted to rotate on a tilted axis, such a support comprising a base, a rotary shaft carrying at one end a crucible engaging member, and adjustable means connecting said shaft and said base for causing the shaft to assume a predetermined tilt angle.

Reference is made to the accompanying drawings forming a part hereof in order that the ensuing description may be clearly understood.

In the drawings:

Figure 1 is a plan view of the crucible support, and

Figure 2 is an enlarged elevation, partly in section, of the inclined shaft and crucible basket.

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For a practical embodiment of the invention and referring to Figure 1, there is shown a base stand having a base plate 1 and a vertical member 2 affixed thereon. A clamp 3 is attached at any convenient height to the vertical member 2 and in turn supports a horizontal member 4 at any convenient height. To the base structure thus described, affixed to the horizontal member 4 is a sleeve 5 mounted so that its axis is generally horizontal. A shaft 6 is carried in and supported by the sleeve 5 and is adapted for both axial and rotary movement therein. A set screw 7 is mounted radially in the sleeve 5 so that the shaft 6 may be clamped in any predetermined position. At one end of the shaft 6 is attached a second sleeve 8 with its axis normal to the axis of the shaft 6. In the second sleeve 8 is journalled a rotary shaft 9. A pair of retaining collars 10 and 11 engage the shaft 9 on each side of the sleeve 8 for restraining the axial movement of the shaft 9. A pair of set screws 12 and 13 are radially threaded into retaining collars 10 and 11 in order that the shaft 9 may be supported at any predetermined point along its axis and thereafter restrained against axial movement by the clamping action of the collars 10 and 11 and cooperating set screws 12 and 13, while at the same time the shaft 9 is free to rotate about its axis.

Suitable means are provided for causing the shaft 9 to rotate about its axis and, as shown in Figure 1, such means may take the form of a bell crank 14.

At the upper end of the shaft 9, there is fastened a flame-proof crucible basket 15 which may be made of a chrome-nickel alloy impervious to high temperatures. As shown in an enlarged scale in Figure 2, the crucible basket 15 comprises a toroidal ring member 16 mounted coaxially with the shaft 9 and the crucible 17 engaging the latter about its periphery near the lip thereof. The toroidal member 16 is held by a series of arcuate members 18 spaced equi-distant about the periphery of the member 16 and joined together by welding or the like at the lower portion thereof near the upper end 19 of the shaft 9. The radius of the arc upon which the members 18 are formed is selected to correspond to the outline of the crucible 17 such that continuous longitudinal support is provided by the members 18 for the crucible 17.

It will be seen that the foregoing combination provides a flexible and simple means for supporting a crucible or other article over an open flame while rotating it about its longitudinal axis. In operation, the set screw 7 in the sleeve 5

is loosened and the shaft 6 rotated until the crucible is at a desired tilt angle. Normally this is selected so that the contents of the crucible approach the lip thereof and the entire area of the crucible is thus bathed with molten flux or the like during its rotation. The set screw 7 is then tightened and the set screws 12 and 13 loosened to permit axial adjustment of the shaft 9. Normally the shaft 9 is moved upwardly along its axis until the crucible support 15 places the crucible 17 at the correct height for maximum efficiency over the flame. Thereupon, the set screws 12 and 13 are tightened to fasten the collars 10 and 11 to the shaft 9 while permitting free rotary movement of the shaft 9. Upon heating of the crucible 17 the bell crank 14 is turned for example by hand to provide continuous rotation of the crucible 17 about its axis. Thus all portions of the crucible are evenly heated and as soon as the contents thereof are molten, the molten material continuously is intermixed and washes substantially the full interior surface of the crucible 17.

It will be appreciated that many apparently differing embodiments will occur to one skilled in the art without departing from the spirit and scope of this invention.

What is claimed is:

A support for a crucible adapted to rotate on a tilted axis which comprises a base stand having a horizontally disposed sleeve, a horizontal shaft mounted in said sleeve for rotary and axial movement therein, a set screw radially mounted in said sleeve for restraining said horizontal shaft in a predetermined position, a second sleeve mounted at one end of said horizontal shaft, the axis of said second sleeve being normal to the axis of said horizontal shaft, a rotary shaft journalled in said second sleeve, and a crucible-carrying basket axially mounted on the upper end of said second shaft.

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REFERENCES CITED

The following references are of record in the file of this patent:

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