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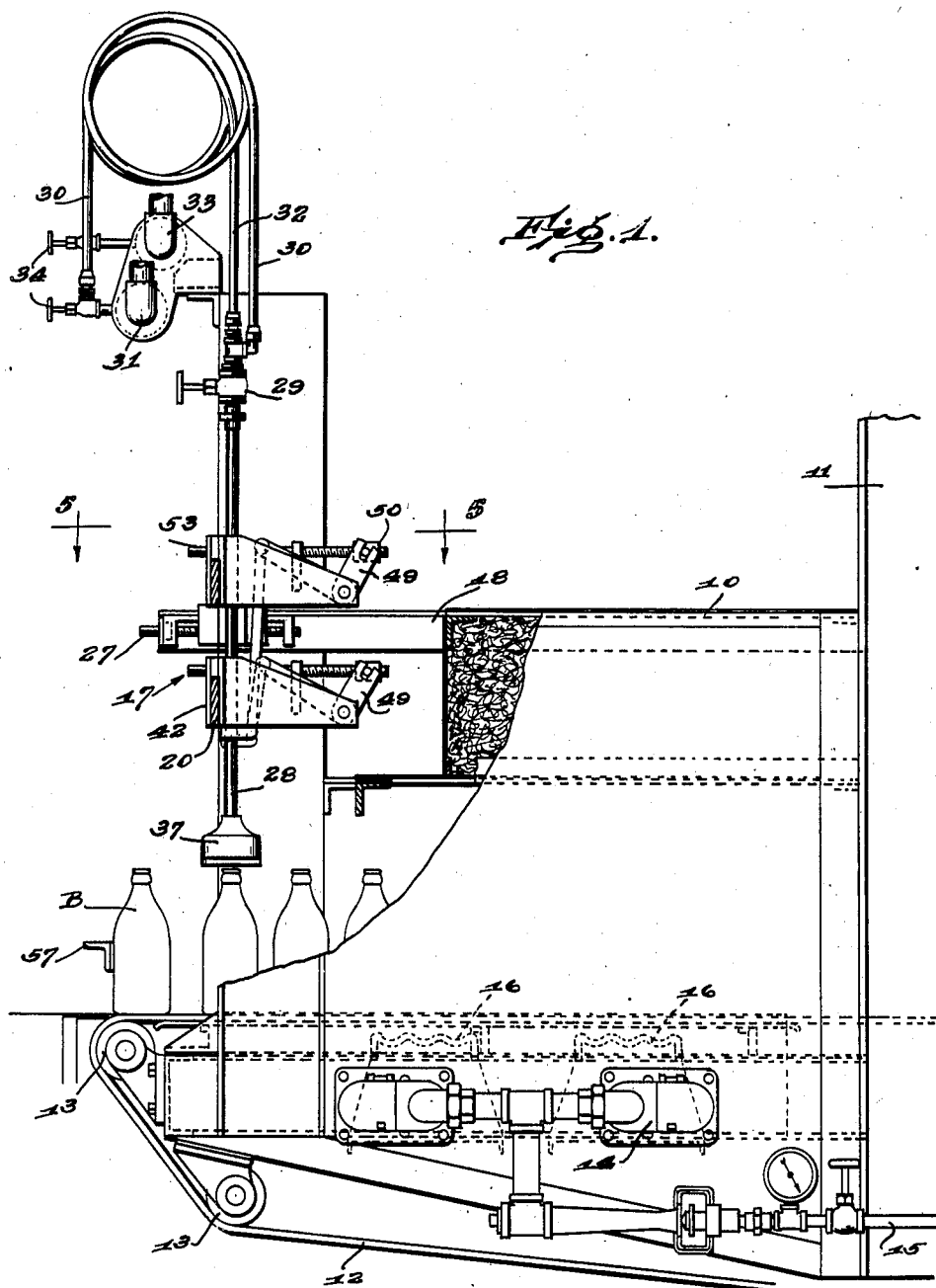
J. P. BROWN

2,331,014

FIRE POLISHING APPARATUS

Filed June 20, 1940

3 Sheets-Sheet 1



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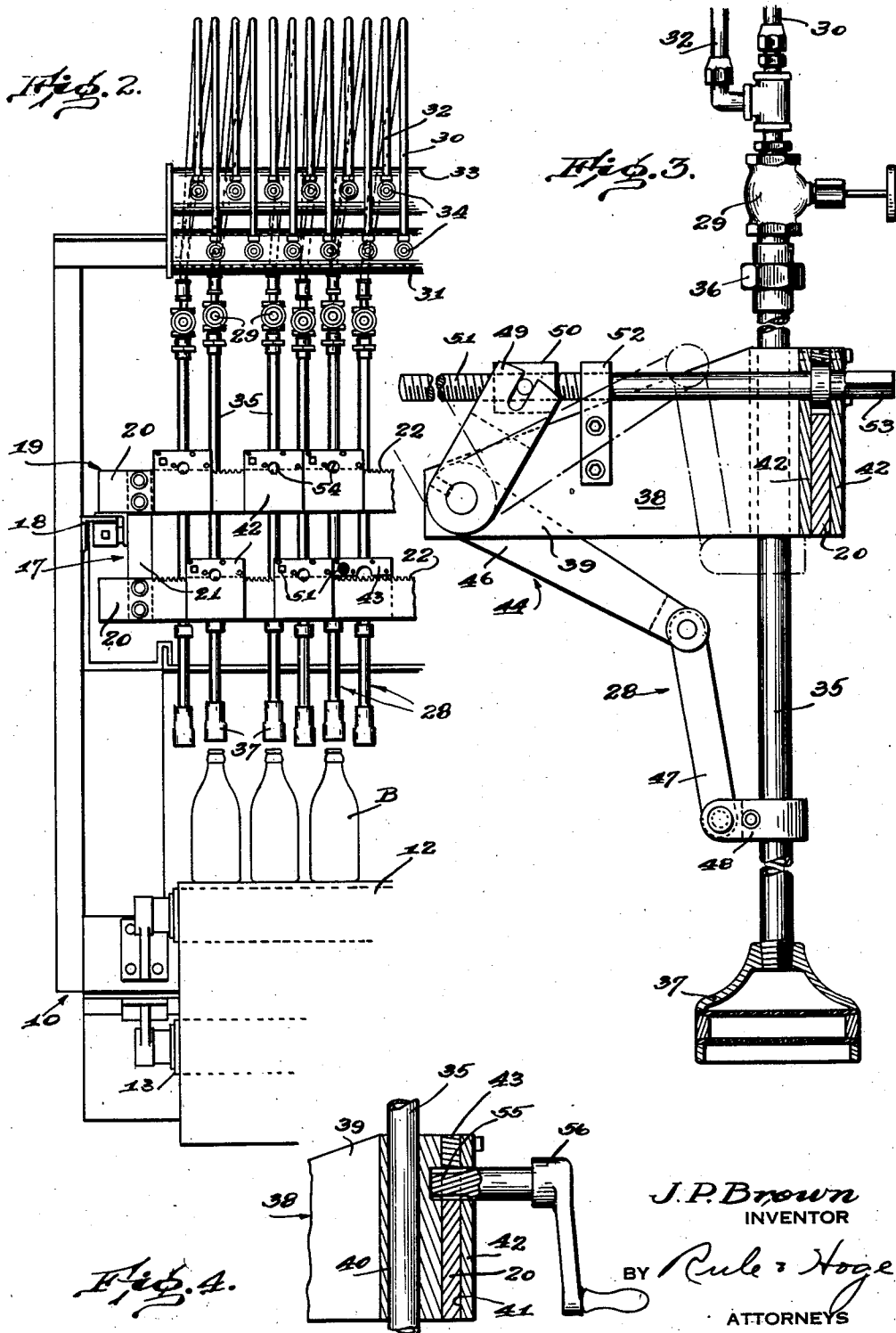
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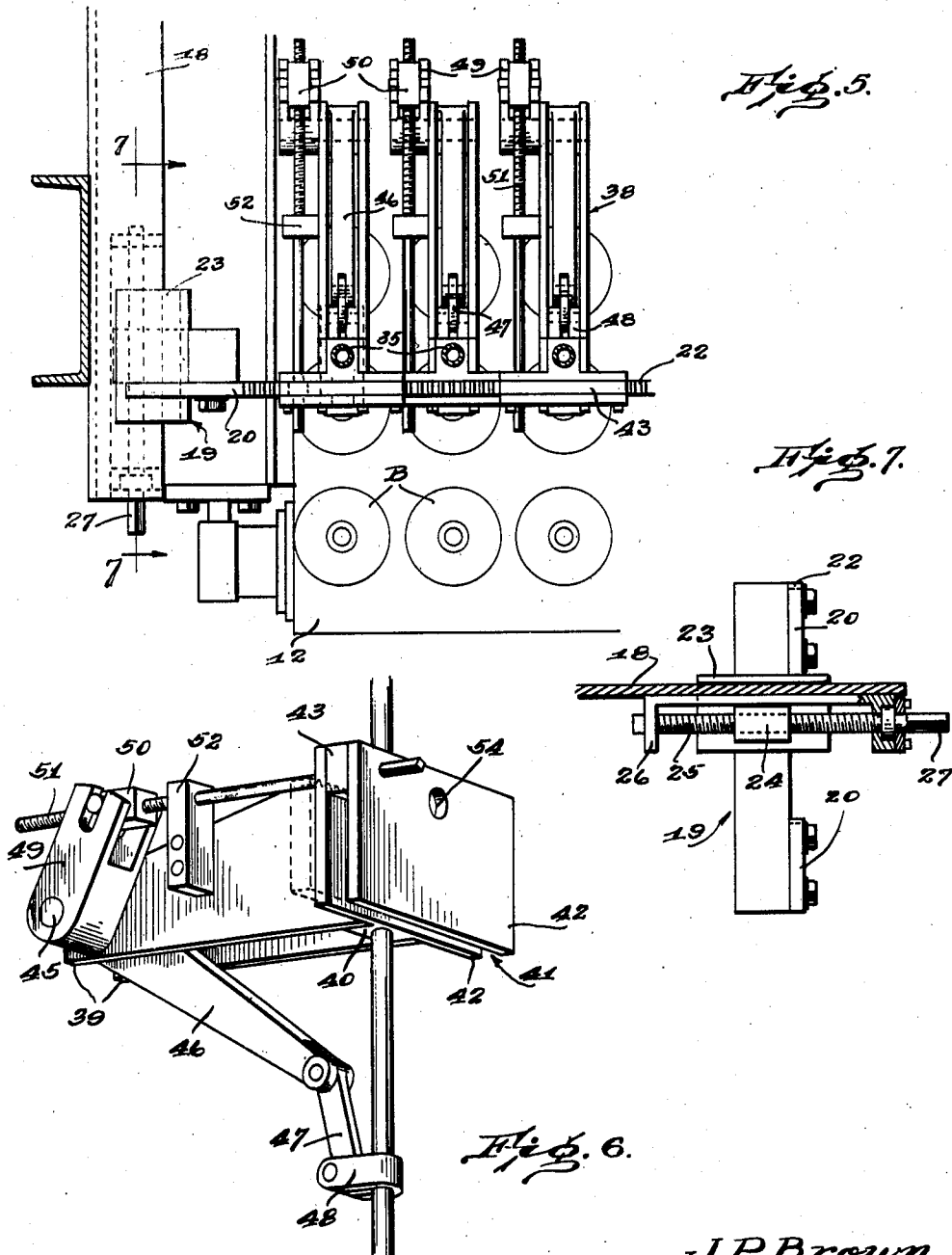
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UNITED STATES PATENT OFFICE

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FIRE POLISHING APPARATUS

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2 Claims. (Cl. 158—99)

The present invention relates to improvements in fire polishing apparatus of the type commonly employed in the treatment of glass containers. In the production of glass containers, the molding parts frequently produce fins and like sharp edges or rough projections in proximity to the sealing surface with the result that persons handling the articles are likely to become injured thereby. Moreover, such fins or projections interfere with and often prevent satisfactory capping or sealing of the containers. Various types of apparatus have been provided and employed commercially in melting down these projections, fins, etc., and thereby rendering them free from the above noted objections.

An object of my invention is the provision of an extremely simple form of apparatus for fire polishing bottles and like glass containers, which is readily and removably attachable to the receiving end of the conventional annealing leer.

Another object of my invention is the provision of a fire polishing apparatus including a series of depending burners arranged over the receiving end of a leer conveyor, such burners being adjustable to compensate for differences in the height and diameter of containers being treated and additionally adjustable and removable individually as may be required by variations in the number of rows of articles being transported through the annealing leer.

A further object of my invention is the provision of novel means for adjustably and removably supporting the individual burner units. To this end each unit is adjustable manually in a direction transverse to the length of the leer and upon simply disconnecting it from a source of supply of fuel, may be removed in its entirety from the main supporting frame.

Other objects will be in part apparent and in part pointed out hereinafter.

In the drawings:

Fig. 1 is a fragmentary side elevational view with parts in section illustrating the application of my invention to a conventional form of annealing leer.

Fig. 2 is a fragmentary end elevational view of a leer showing my invention in operative position thereon.

Fig. 3 is a detail vertical sectional elevational view of one of the complete burner units.

Fig. 4 is a detail sectional view illustrating the structure by means of which the burner units may be adjusted transversely of the leer.

Fig. 5 is a sectional plan view taken substantially along the line 5—5 of Fig. 1.

Fig. 6 is a fragmentary detail perspective view of the adjustable support or bracket for one of the burner units.

Fig. 7 is a sectional view taken substantially along the line 7—7 of Fig. 5.

My invention is illustrated in conjunction with an extension 10 at the receiving end of a conventional type of annealing leer 11. A leer conveyor 12 is trained over rollers 13 at the outer end of the extension, the upper reach of said conveyor moving in a path above heating means 14 to which fuel is supplied from a pipe 15. Baffles 16 are interposed between the heating means 14 and conveyor 12 for the purpose of uniformly distributing the heat over the conveyor. The fire polishing apparatus 17 is mounted upon a pair of horizontal angle iron bars 18 which project forwardly from the extension 10. One side only of the leer is shown and therefore only one of these bars is illustrated. Briefly, it consists of a transverse series of individual burner units arranged in a single row directly above the path of travel of bottles or other glass containers into the leer extension 10, said units being adjustable vertically and longitudinally and transversely with respect to the leer conveyor, whereby to compensate for differences in the height and diameter of the articles being treated.

The specific construction of the illustrated embodiment of the fire polishing apparatus includes a horizontal frame 19 which comprises a pair of superposed horizontal rack bars 20 which are secured together in spaced relationship by means of vertical strips 21 or connectors. The toothed edge 22 of each rack bar faces upwardly as shown in Fig. 2 for a purpose which will become apparent presently. This frame 19 is adjustable as a unit in the direction of the length of the conveyor 12 in order to compensate for differences in the diameter of the articles being handled. To this end the upper rack bar 20 carries at each end a bracket 23 which takes over and is slidably supported upon one of the angle iron bars 18 on the leer extension 10. Each bracket (Figs. 1, 5 and 7) has threaded connection through a boss 24 to a horizontal adjusting screw 25, the latter being rotatively mounted in an inverted U-shape frame 26 which is attached to the lower side of one of the angle bars 18. The outer end 27 of the adjusting screw is square or of other irregular form to facilitate engagement therewith of a wrench, or other screw rotating means (not shown).

The burner units 28 are mounted upon the aforementioned rack bars 22 and at their upper

ends are connected through valves 29 to flexible pipes 30 which lead to an air manifold 31 and a separate group of pipes 32 which lead to a gas or fuel manifold 33. Pairs of valves 34 individual to the burner units 28 control and regulate the flow of air and gas to said burner units, while the valve 29 is employed in controlling the flow of the combustible mixture of fuel and air to the burner units. Inasmuch as the several burner units are identical in construction and operation, the following detail description will be directed to one unit only.

Each of these units (Figs. 1, 3 and 6) includes a vertical burner pipe 35 connected at its upper end through a union 36 to the aforementioned valve 29. A generally elongated burner head 37 is attached to the lower end of the burner pipe 35, the latter being slidably mounted in a bracket 38 which, as is shown in Fig. 6, includes a pair of parallel horizontal arms 39 which are spaced apart by a bearing block 40. This bearing block (Figs. 4 and 6) is formed on the inner face of a yoke 41 which is intended to straddle one of the rack bars 20. This yoke consists of a pair of side walls 42 or plates and a spacer bar 43 at and between the upper end thereof, all of which are positioned at right angles to the arms 39. Means for adjusting the burner pipe and burners vertically in the bracket 38 whereby to adjustably control the elevation of the burner 37, includes a bell crank lever 44 mounted upon a horizontal hinge pin 45 at the outer end of the bracket 38, one arm 46 of said lever being connected through a link 47 and a clamp 48 to burner pipe 35. The other arm 49 of this lever is suitably connected to an adjustable block 50 which is threaded upon the inner end of an adjusting screw 51. This adjusting screw is journaled in a bearing block 52 and an opening in the spacer 43 of said yoke 41 and has its outer end 53 squared, or otherwise irregularly formed, for separable connection with a wrench or other rotating means. By attaching a wrench or the like to said outer end of the adjusting screw and rotating it in one direction or the other, the operating position of the burner 37 may be adjusted vertically to compensate for differences in the height of the bottles B or other articles which are being transferred to the leer 11.

It is also desirable to be able to adjust the burner units in a direction transverse to the length of the leer in order that the burners may be axially aligned with the bottles, or other articles, which are to be fire polished. To this end I have formed in each of the yokes 41 a horizontal opening 54 which is so positioned with respect to the upper toothed edge of the corresponding rack bar that a pinion 55 carried by a hand crank 56 (Fig. 4) may be inserted in the opening and placed in mesh with the rack bar 60

and thereupon operated to shift the entire corresponding bracket 38 and parts carried thereby, longitudinally of the supporting rack bar 20. Thus the burners may be accurately aligned with the rows of articles to be treated.

In operation, bottles are placed in front of the extension 10 in a row extending transversely of the leer and in proximity to the receiving end of the leer conveyor 12. At regular intervals a pusher bar 57 is operated to transfer a row of bottles to the leer conveyor. The conveyor then moves the bottles lengthwise of the leer and in so doing, carries them beneath the group of burner units, the heads 37 of which are elongated in the direction of travel of the bottles to thereby lengthen the period of fire polishing. As stated heretofore, the burner units are adjustable as to elevation and transverse spaced relationship in order to compensate for variations in the height and diameter of bottles or other articles being treated. Moreover, as is quite obvious, the burner units may be removed entirely for replacement simply by closing the main control valve 29, unscrewing the union 25 coupling 36 and then lifting the yoke 41 and bracket 38 off of the supporting rack bar 20.

Modifications may be resorted to within the spirit and scope of the appended claims.

I claim:

30 1. Apparatus of the character described including a frame, a burner unit including a vertical burner pipe slidable through said frame, a burner head at the lower end of the pipe, a horizontal bracket attached to one side of the 35 frame, a bell crank lever pivoted to said bracket, a link connecting one arm of said lever and the burner pipe at a point below said frame, an adjustable screw carried by the bracket, and operative connection between the screw and the 40 other arm of said lever whereby rotation of the screw moves the lever about its pivot and effects vertical adjustment of the burner pipe.

45 2. Apparatus of the character described including a frame, a burner unit including a vertical burner pipe slidable through said frame, a burner head at the lower end of the pipe, a horizontal bracket attached to one side of the 50 frame, a bell crank lever pivoted to said bracket, a link connecting one arm of said lever and the burner pipe at a point below said frame, an adjustable screw carried by the bracket, and operative connection between the screw and the other 55 arm of said lever whereby rotation of the screw moves the lever about its pivot and effects vertical adjustment of the burner pipe, said operative connection including a block threaded upon said screw and pin and slot connection between said block and arm.

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