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F. A. FISHER ET AL
INTERNAL LATHE BURNER

2,648,166

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3 Sheets-Sheet 1

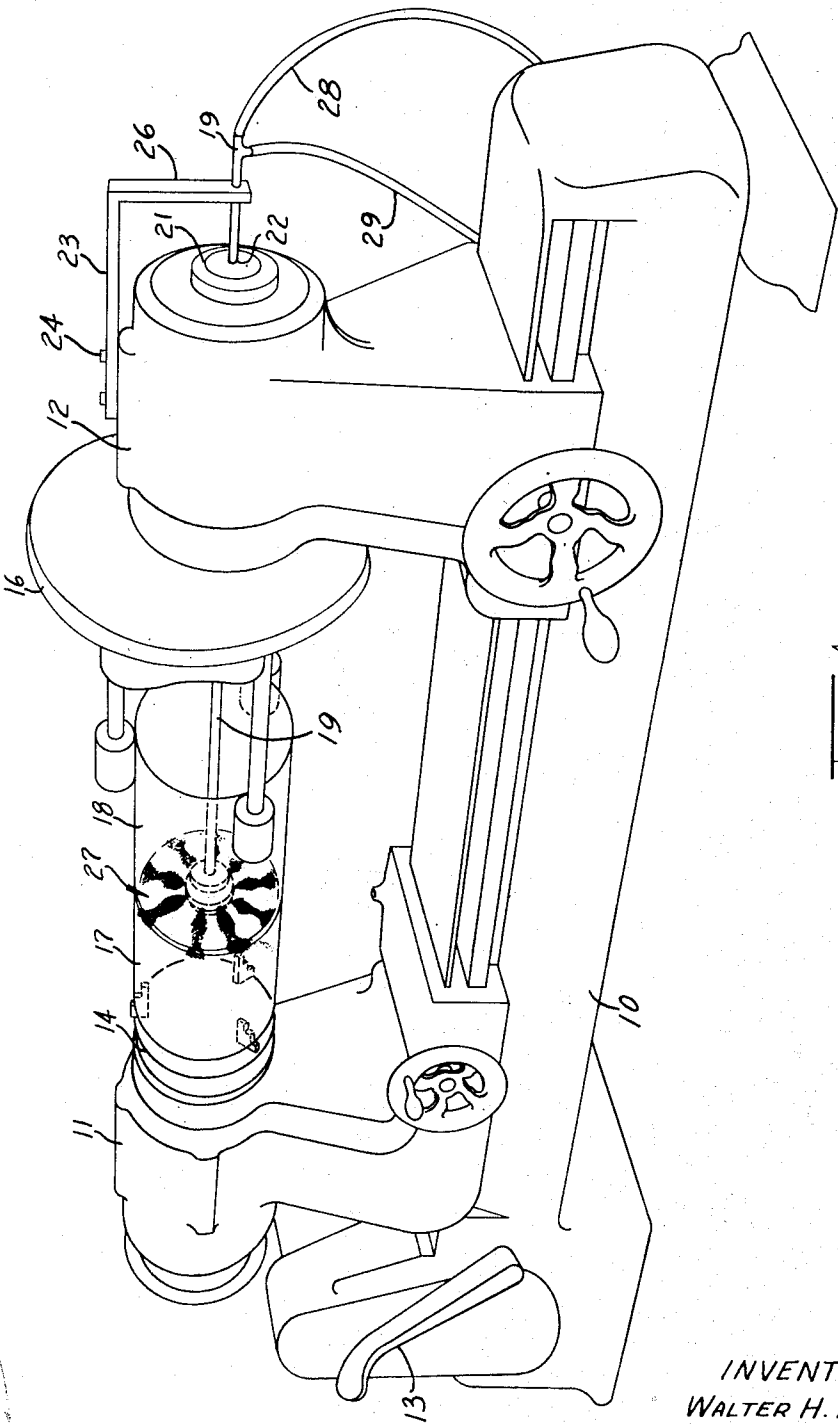


FIG. 1

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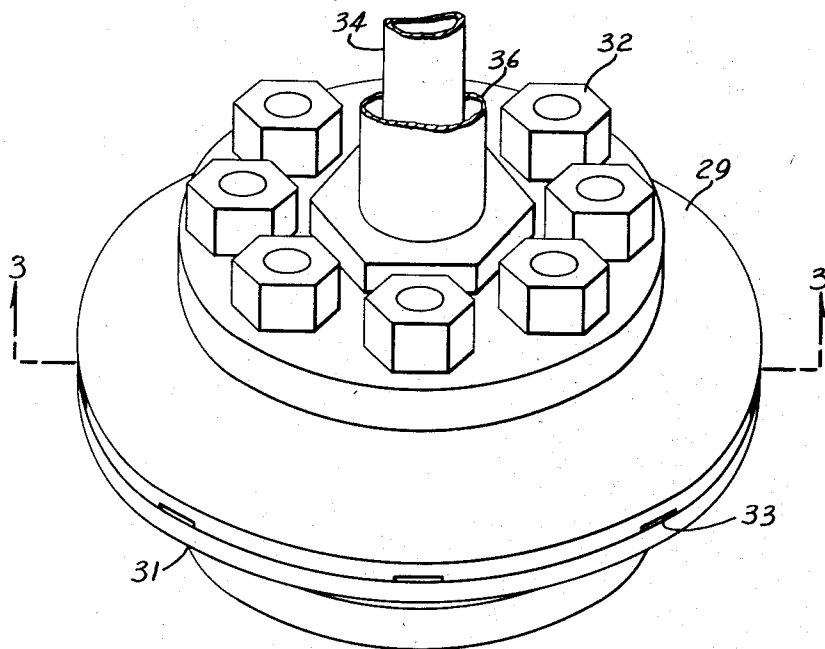


FIG 2

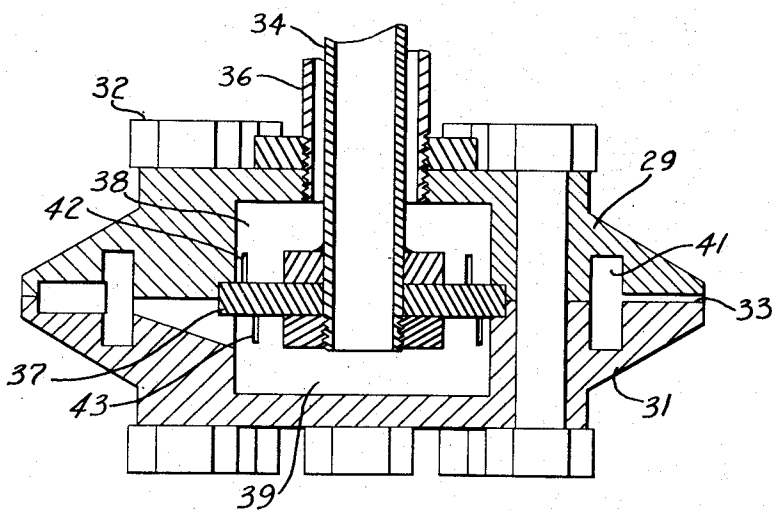


FIG 3

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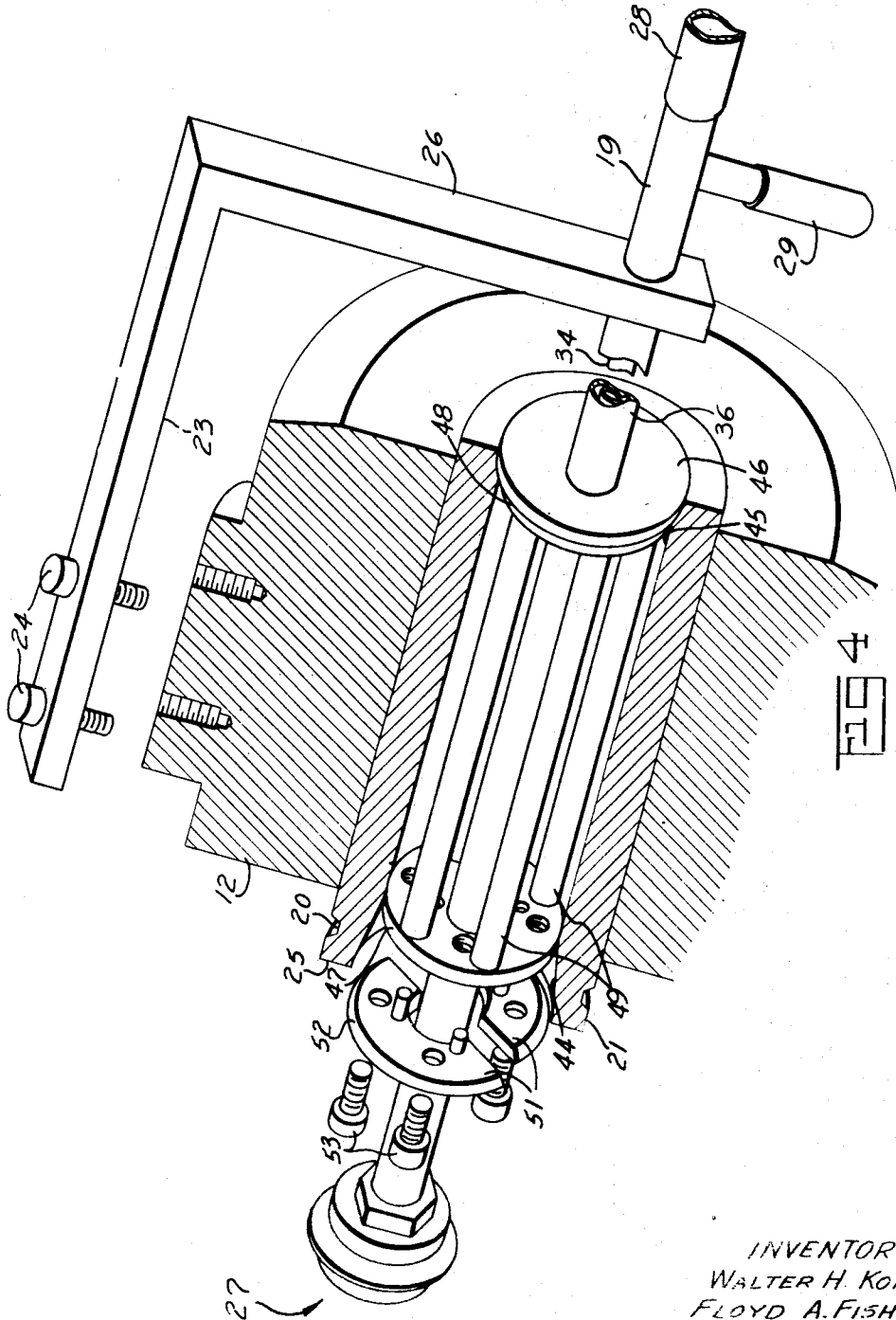
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3 Sheets-Sheet 3



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INTERNAL LATHE BURNER

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2 Claims. (Cl. 49—1)

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This invention relates in general to burners, and in particular to an internal burner for a lathe.

It oftentimes becomes necessary in the tube industry and other industries to join glass to a metal, ceramic, or other glass member. Generally, the work to be joined is held in a lathe and heat applied to the abutting edges of the glass and other member to heat the glass to a temperature such that it becomes plastic and forms a seal. The burners used for heating may burn natural gas and oxygen, and to assure uniform heating of the work either the burner or the work is rotated. This procedure works very well for glass up to a relatively thick cross-section, but as the thickness is increased the seal is not complete because sufficient heat does not reach the inside portion of the work.

It is an object of this invention, therefore, to provide an internal burner which may be maintained within the confines of the members to be joined and thus apply heat to the internal surface.

Another object of this invention is to provide an internal glass burner which may be maintained within the members to be joined while the members are rotated about the stationary burner.

A further object of this invention is to provide an improved method of making a heavy glass seal.

A feature of this invention is found in the provision for an internal burner which is formed with a plurality of openings about its periphery, to which are furnished fuel gas and oxidizing gas, respectively, and which is maintained within the confines of members to be joined while they rotate.

Further objects, features, and advantages of this invention will become apparent from the following description and claims when read in view of the drawings; in which

Figure 1 is a perspective view of a glass lathe with a pair of glass cylinders mounted between head and foot stocks, respectively, and with the internal gas burner of this invention held in its operative position;

Figure 2 is an enlarged isometric view of the burner of this invention;

Figure 3 is a sectional view taken on line 3—3 of Figure 2, and illustrates the relative spatial relationship among the various internal parts of the burner; and

Figure 4 is a sectional view of the burner-supporting stock illustrating how the burner support is assembled.

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Figure 1 shows a glass lathe which comprises a base member 10, the head stock 11 and the foot stock 12. Suitable driving means, not shown, are controlled by the lever 13 and are connected to drive the head and foot chucks of the lathe. The head stock 11 has mounted therein the chuck 14 and the foot stock 12 has mounted thereon the chuck 16. The chuck 14 has mounted thereon a glass cylinder 17 and the chuck 15 has mounted therein a second glass cylinder 18. If it is assumed that the cylinders 17 and 18 are to be sealed together, their ends are placed in abutting engagement and heat applied externally to cause the material to fuse and seal. The conventional external burner which fits about the cylinder 17 and 18 is not shown because it does not form a part of this invention, although it might be used simultaneously.

As best shown in Figure 4, a support tube 19 is supported in the foot stock 12. The stock has a hollow movable cylinder 21 extending therethrough which is driven by the lathe motor, not shown. The means of driving are well known to those skilled in the art and is not shown for this reason. It is to be noted that the movable cylinder extends from either end of the foot stock. The end 25 of the cylinder has formed therein a groove 20 for receiving therein the holding pins of the chuck 16, shown in Figure 1. Thus the chuck rotates with the cylinder 21. The inner walls 44 and 45 of the cylinder are tapered for receiving in mating engagement a pair of discs 46 and 47. The discs are rotatably mounted on the tube 19. The disc 46 is formed with an inclined surface 48 which may be wedged against the wall 45, whereas the disc 47 may be moved through the holding cylinder freely.

Longitudinal members 49 join the discs 46 and 47 together to maintain them in a predetermined spatial relationship.

A split 51 is formed with bevelled edges 52 and has a diameter larger than the cylinder's central opening. The ring 51 is provided with clamping means, as for example bolts 53, for attaching it to the disc 47. Thus if the disc 47 is inserted through the cylinder 21 and the split ring 51 attached, the discs 46 and 47 will rotate with the cylinder 21 because of wedging action on the inclined surfaces 44 and 45.

A holding bracket 23 is of a general L shape and is connected to the foot stock by the bolts 24. A downwardly extending portion 26 is rigidly connected to the tube 19 for preventing longitudinal or rotational movement thereof.

Thus when the cylinder 21 is rotated the chuck 16 turns and moves the glass cylinder 18, whereas the tube 19 remains stationary. The discs 46 and 47 give longitudinal support and stability to the tube while the bracket 23 prevents longitudinal or rotational movement thereof.

The internal end of the tube 19 extends within the confines of the cylinders 17 and 18 and terminates in a burner designated generally as 27. Connected adjacent the opposite end of tube 19 are the supply lines 28 and 29. The line 28 may carry fuel gas, for example, and the line 29, oxygen. The tube 19 contains therein two separate passages which maintain the fuel gas and oxygen separate and supply them to the burner 27 in an unmixed condition. The gases are mixed in the burner, and when ignited burn with a very hot flame. The burner 27 is provided with radial openings from which the gas emerges. As the cylinders 17 and 18 are rotated, the flame from the burner 27 heats the internal surfaces to a plastic temperature. The rotation of the cylinders assures uniform heating and also prevents the glass from falling into the cylinder. Thus, centrifugal force aids in forming the seal.

Figure 2 illustrates the burner 27 in detail. It comprises a pair of plates 29 and 31 which are held together by the holding means 32. Between the plates 29 and 31 are formed a plurality of openings 33 from which the mixed gases emerge. Figure 3 is a sectional view taken on the line 3-3 of Figure 2 and illustrates the tube 19 with its inner conductor 34 and its outer conductor 36 in their relative spatial relationship for supplying fuel gas and oxygen to the burner. The internal portion of the discs 29 and 31 are hollowed out and a partition 37 is received between them to divide the space formed into two chambers 38 and 39. The internal conductor 34 extends through the chamber 38, the partition 37, and emerges in the chamber 39. The outer conductor 36 opens into the chamber 38. Thus if oxygen is supplied to the outer conductor 36, the chamber 38 will contain oxygen, and if fuel gas is furnished to the inner conductor 34 it will be supplied to the chamber 39. An annular opening 41 is formed between the discs 29 and 31 adjacent the outer edges when the discs are assembled. Openings 42 connect the chamber 38 with the annular opening 41 to allow oxygen to arrive therein, and openings 43 extend from the chamber 39 to the annular opening 41 to furnish fuel gas thereto. At various points about the periphery of the burner are formed outlets 33 through which the mixed gas emerges. It is ig-

nited as it leaves the burner and continues to burn as long as the fuel supply is left on.

In operation, the fuel gas is turned on and ignited and the burner is adjusted to the correct longitudinal position relative to the pieces to be joined. The work is rotated about the burner and heat is applied uniformly. An external burner may be used simultaneously to seal the outer edges of the pieces. When the glass is heated sufficiently it becomes plastic and makes the seal. The burner is then burned off and the work is allowed to cool before being removed from the lathe.

It is seen, therefore, that this invention provides means for maintaining a gas burner within the confines of pieces which are to be sealed and thus allows a superior and uniform seal.

Although this invention has been described with respect to particular embodiments thereof, it is not to be so limited as changes and modifications may be made therein which are within the full intended scope as defined by the appended claims.

We claim:

1. Apparatus for supporting an internal burner connected to a longitudinal member which extends through one of the stocks of a lathe, comprising a pair of disc-shaped collars rotatably connected to said longitudinal member, said disc-shaped collars rotatably supported by said stock, and a holding bracket connecting said stock to said longitudinal member.

2. An internal burner for a lathe, having a longitudinal double conduit passing through a rotating portion of a stock of said lathe, a support means, comprising a first disc rotatably mounted on said conduit having a bevelled facing, a second disc mounted on said conduit with a bevelled facing, means connecting said first and second discs and adapted to adjust them longitudinally along the conduit so that they may be locked to the rotating portion of the stock.

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