H. NORTHWOOD.

METHOD OF DRILLING GLASS.

APPLICATION FILED JULY 8, 1916.

1,276,683.

Patented Aug. 20, 1918.

Fig. 1

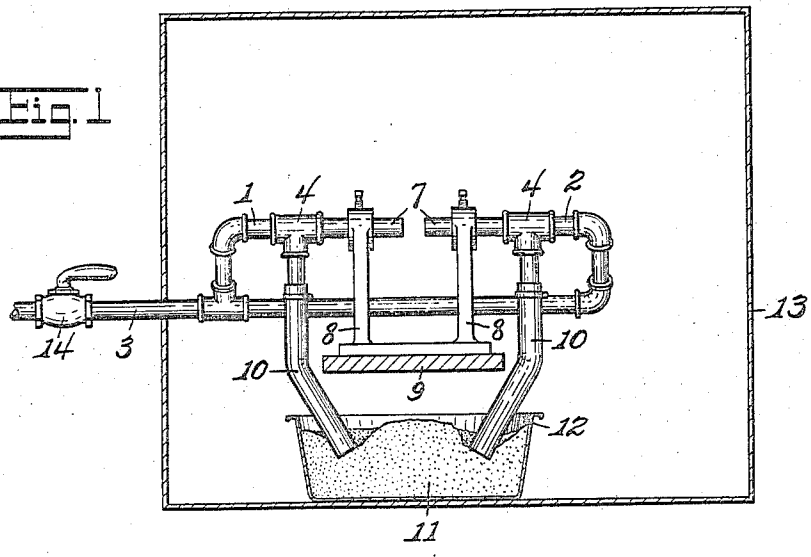



Fig. 3

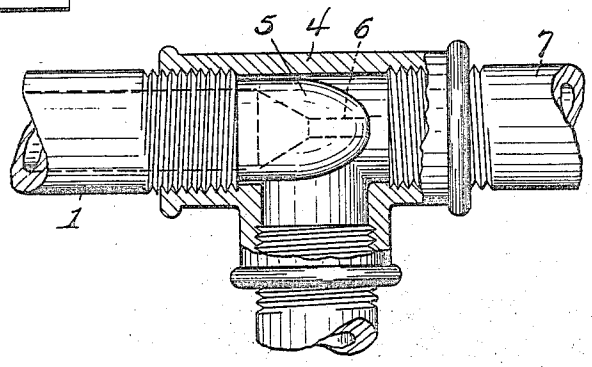
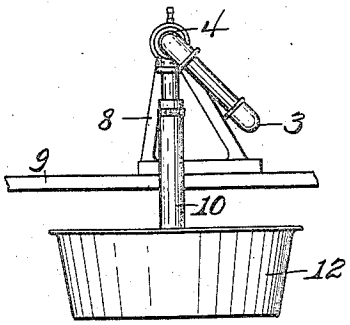



Fig. 2




INVENTOR

Harry Northwood.

By H. E. Dewey

ATTORNEY

# UNITED STATES PATENT OFFICE.

HARRY NORTHWOOD, OF WHEELING, WEST VIRGINIA.

## METHOD OF DRILLING GLASS.

1,276,683. Specification of Letters Patent. Patented Aug. 20, 1918.

Application filed July 8, 1916. Serial No. 108,122.

*To all whom it may concern:*

Be it known that I, HARRY NORTHWOOD, a citizen of the United States of America, and resident of Wheeling, county of Ohio, and State of West Virginia, have invented certain new and useful Improvements in Methods of Drilling Glass, of which the following is a specification.

This invention relates broadly to glass-drilling methods and more specifically to a method for boring or drilling holes in articles of glassware.

The primary object of the invention is to provide a simple method whereby holes may be accurately drilled in articles of glassware with great rapidity and without the breakage ordinarily attendant upon the drilling of such holes by the methods and apparatus heretofore employed.

In describing the invention in detail, reference is herein had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation of the invention;

Fig. 2 is an end view of the same; and

Fig. 3 is an enlarged detail section showing the air-nozzle.

Referring to said drawings, in which like designating characters distinguish like parts throughout the several views—

1 and 2 indicate two alined horizontally disposed air-pipes which branch from a main air-conducting pipe 3 leading from a suitable compressor or air-storage tank (not shown). Each of said pipes 1 and 2 is threaded within the outer end of the horizontal head member of a T-coupling 4 and is terminated by a tapered nozzle 5 having a discharge bore 6 of restricted size. Threaded within the inner end of each of said head members is a tubular sand-directing nozzle 7, said nozzles having their inner ends spaced apart a suitable distance and removably mounted in upright supporting members 8 which are mounted at a suitable point, as upon a base-piece 9.

Suitably connected to the vertical stem portion of each T-coupling 4 is a tube 10, preferably composed of a flexible material, as rubber, which has its lower end received in the sand 11 of a sand container 12 located at a suitable point.

The air nozzles 5 have their ends so disposed or adjusted with respect to the stem portions of the T-couplings 4 that the blasts of air directed therethrough produce a suction whereby sand is drawn from the container 12 through the tubes 10 and is directed through and discharged from the oppositely disposed nozzles 7 with great force. As is obvious, the suction in the sand tubes 10 may be regulated by adjustment of the air nozzle 5 forward or back with respect to the sand-directing nozzle 7.

The glass article to be acted upon is so disposed between said nozzles 7 that the streams of sand issuing from the latter are directed against opposite sides of the point to be drilled. The opposing sand streams act to abrade a perfectly circular bore in the interposed glass article in an extremely short interval of time, the size of the bore produced being dependent upon the caliber of the nozzle 7 employed and also upon the distance between said nozzles.

While, as is obvious, a single sand-directing nozzle would suffice to drill a hole in a properly positioned article of glassware, such hole would not only be tapered in form, but its outer end would have a ragged or irregular outline, due to the fact that, having once produced a small break through the glass, the air and sand would be permitted to pass through the small opening in such a practically unobstructed manner that little or no further abrading action would result. With two nozzles employed in opposing relation, the break occurs midway of the thickness of the glass and the streams of sand so impinge upon and oppose each other that all of the glass in line with said nozzles is cut away, producing a hole of true circular form.

The apparatus described is preferably located within a suitable inclosure or casing, as 13, which may be closed during the short interval in which a hole is being drilled, preventing the escape of sand and dust into the work-room.

A valve, as 14, is provided in the air line 3 at a suitable point outside the casing whereby the passage of air may be controlled.

In practice, the articles of ware to be drilled are disposed between the blast nozzles and supported in proper position by any suitable means.

What is claimed is—

1. The method of drilling glass which consists in simultaneously subjecting opposite sides of a thickness of glass to the action

of blasts of sand which meet and complete the cutting operation at a point intermediate the opposite faces of the thickness of glass.

2. A glass-perforating apparatus including opposed, alined, closely-juxtaposed means for simultaneously directing two blasts of sand from opposite sides against an interposed thickness of glass to cut the latter and complete the cutting operation at a point intermediate the faces of said thickness of glass.

3. The method of drilling glass which consists in simultaneously directing against opposite sides of a thickness of glass two alined equal blasts of sand which act to initially cut the glass from opposite faces thereof and to complete the cutting operation at a point intermediate said opposite faces.

In witness whereof I affix my signature in presence of two subscribing witnesses.

HARRY NORTHWOOD.

Witnesses:
H. E. DUNLAP,
W. F. KEEFER.