Jan. 3, 1933. E. G. STAHLE 1,892,814

CAPPING GLASS CYLINDER

Filed Dec. 2, 1929

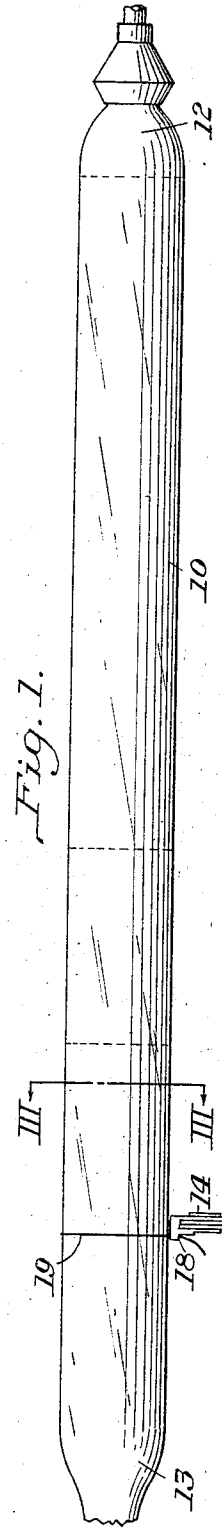


Fig. 1.

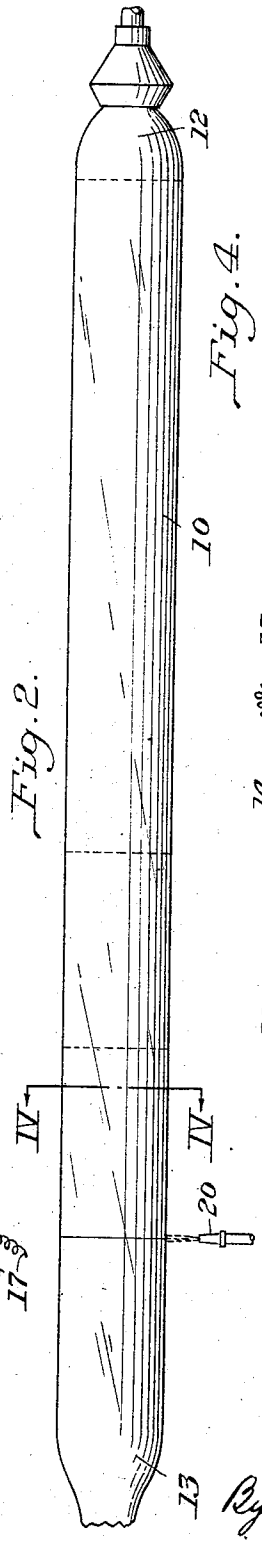


Fig. 2.

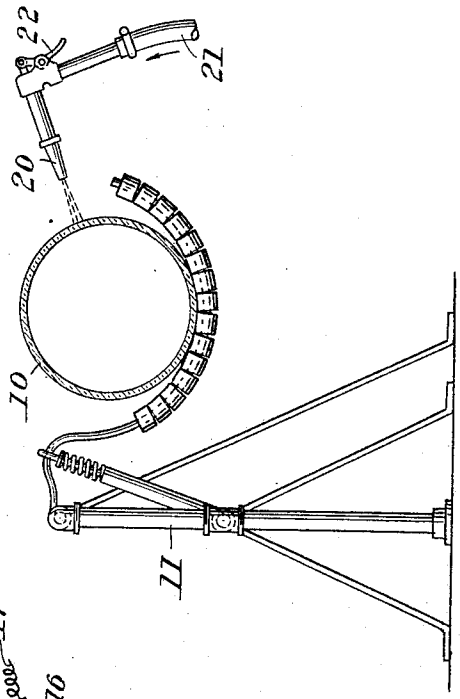


Fig. 4.

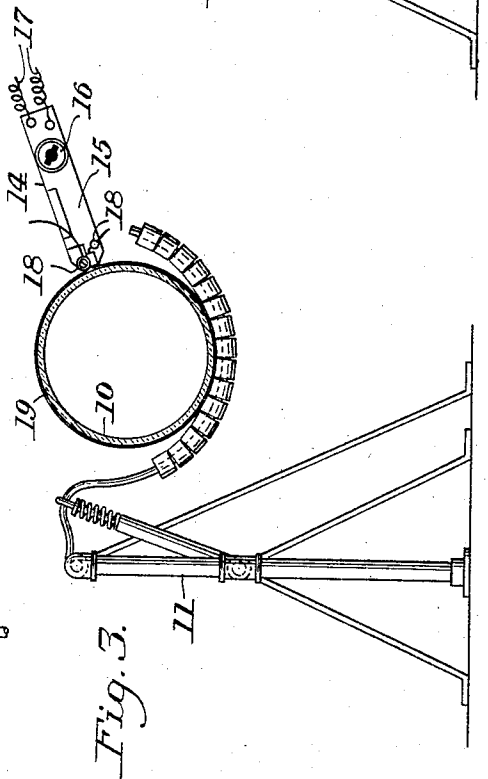


Fig. 3.

INVENTOR

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Patented Jan. 3, 1933 1,892,814

UNITED STATES PATENT OFFICE

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CAPPING GLASS CYLINDER

Application filed December 2, 1929. Serial No. 411,192.

My invention relates to the severing into sections of glass cylinders of considerable length, and is especially applicable to and advantageous in the manufacture of glass cylinders by the process and apparatus disclosed in the co-pending application of I. O. Pedersen, Serial No. 366,787, filed May 29, 1929, although it may be used in severing any glass cylinder into sections.

In the said Pedersen application, there is disclosed a method of and means for drawing hollow glass cylinders from a bath of molten glass through a sizing and setting die.

In "severing" or "capping off" the ends of such drawn cylinders and severing (capping) them into cylinders of the desired lengths, the electric capping device disclosed in United States Patent No. 821,361 to Hitner was employed. Hitner's device is provided with a small resistance or heating wire preferably of nichrome which is placed around the cylinder at the transverse plane of severance, and a narrow circumferential zone of the cylinder is heated by passing electric current through the wire. When this zone became sufficiently heated, one point thereof was suddenly cooled by the application thereto of a relatively cold metal tool causing peripheral cracking around the heated zone.

In the manufacture of the Pedersen cylinders, this process presented disadvantages, mainly in irregular cracking around the cylinder, formation of fire checks in the ends of the sections and breakage of the cylinders, either when capped or later treated. The fracture tended to be rough and ragged, and as the section should have smooth and preferably ground ends, considerable glass was lost and much grinding was necessary in order to give the desired straight smooth ends.

I have discovered that by sudden chilling of an extended portion of the heated zone, these disadvantages can be overcome and a much smoother severing action obtained with substantial freedom from fire checks.

In carrying out my invention, I preferably employ one or more blasts of cooling gas, such as air, to suddenly chill a considerable portion of the heated zone after such zone has been heated.

In the drawing:

Figure 1 is a plan view showing the Pedersen drawn cylinder having a heated wire applied thereto, the supporting horse being omitted;

Figure 2 is a view similar to Figure 1, showing the applying of an air blast; and

Figures 3 and 4 are sectional views on the lines III—III and IV—IV, respectively, of Figures 1 and 2.

In the drawing, 10 is the drawn and sized glass cylinder which, after drawing, is taken down and placed on supporting racks or horses 11, shown in cross section in Figures 3 and 4. There are, of course, a number of spring-supported arms on which the drawn length rests. The cylinder as it comes from the drawing machine has a bait end 12 and a hole end 13, which are severed from the drawn and sized body. After these are cut off by the successive use of the heating wire of the capping stick and the air blast 20, the cylinder is then cut into the desired lengths using the same apparatus. The capping stick 14, preferably employed, has a handle 15 carrying an electric switch 16, and conductor 17, leading to binding posts 18 to which the nichrome 19 is connected.

In severing the cylinder into lengths, the wire 19 is preferably wrapped around the cylinder at the plane of severance, its other end connected to one of the binding posts 18 and the current then turned on by switch 16. The wire then heats up a narrow circumferential zone of the cylinder. When the temperature of this zone has been raised to the desired extent, a cooling blast or jet of gas or air is blown on to the heating zone from a nozzle 20. 21 is the flexible compressed air supply pipe, and 22 a hand valve to control the jet.

The effect of the blast is to suddenly cool a considerable or substantial portion of the circumferential heated zone. While I prefer to apply the blast while the electric current is on, the sections may be severed by first heating and then removing the wire and applying the jet of cooling gas or fluid. In applying

the blast, it is preferably moved for some distance along the narrow heated zone of the cylinder.

The advantages of my invention result from reducing breakage, making a smoother and straighter cut than formerly, and reducing or eliminating the tendency to form fine fire checks at the ends of the cut sections. The absence of fire checks enables capping to be carried out closer to the desired finished length, thus reducing the amount of grinding or dressing down the ends, which was heretofore desirable in order to remove the fire checks from the edges.

More than one jet may be employed in order to increase the length of the cooled zone, an irregular shaped cooling band may be applied instead of the air jet, the heating means may be changed, and other variations made without departing from my invention.

I claim:

1. In the cutting of glass cylinders into sections, the steps consisting of heating a narrow circumferential zone of the cylinder, and then moving a cooling stream along a substantial portion of the heated circumferential zone.

2. In a treatment of long glass cylinders, the steps consisting of heating a narrow circumferential zone of the cylinder, applying a jet of cooling fluid to the heated zone and moving the jet along the heated zone.

In testimony whereof I have hereunto set my hand.

ERIK G. STAHLE.