M. CUMMINS.

FIRE GLAZING OR FINISHING OF GLASS ARTICLES.

APPLICATION FILED JAN. 9, 1909.

916,959. Patented Mar. 30, 1909.

3 SHEETS—SHEET 1.

FIG. 1.

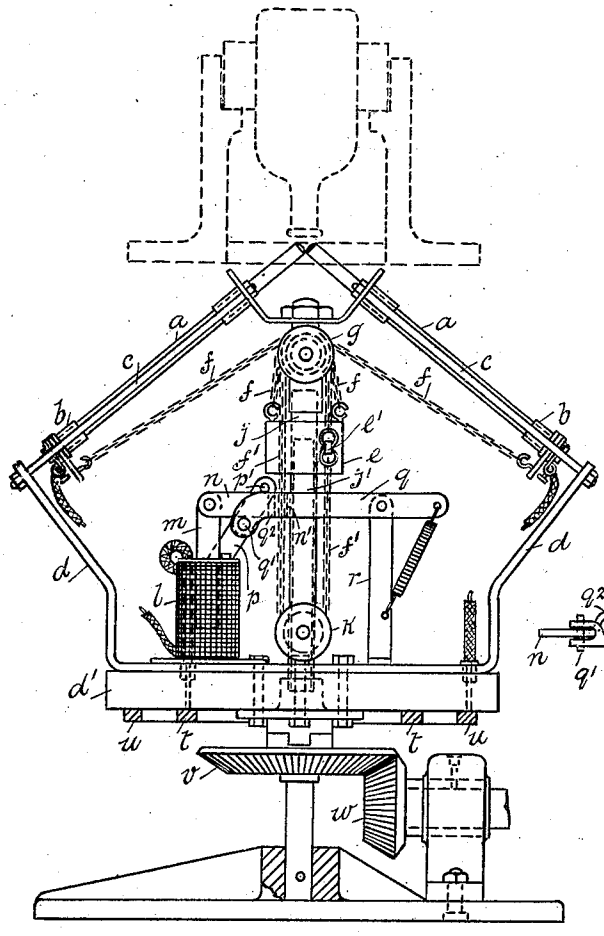
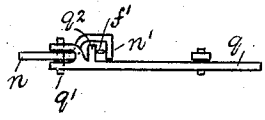


FIG. 1A.



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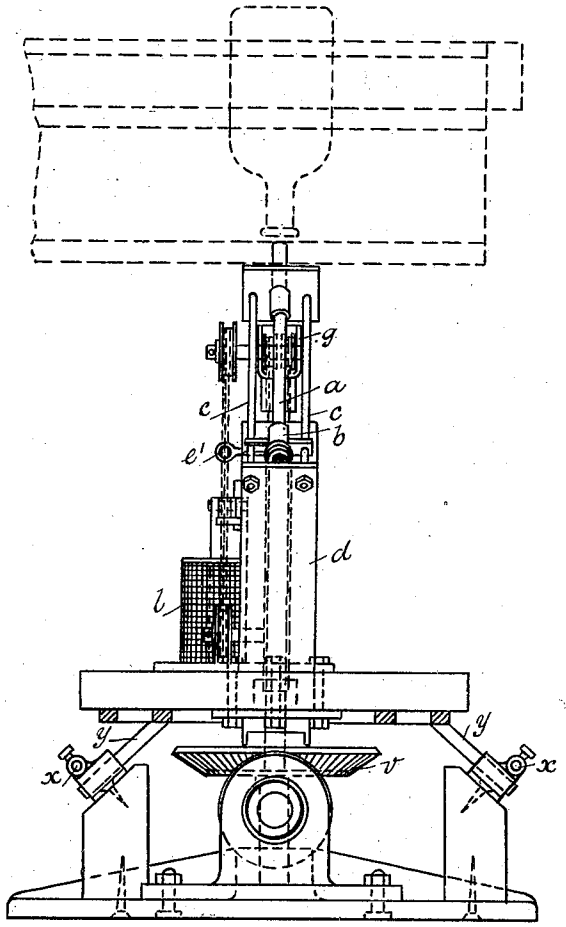
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3 SHEETS—SHEET 2.

FIG. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

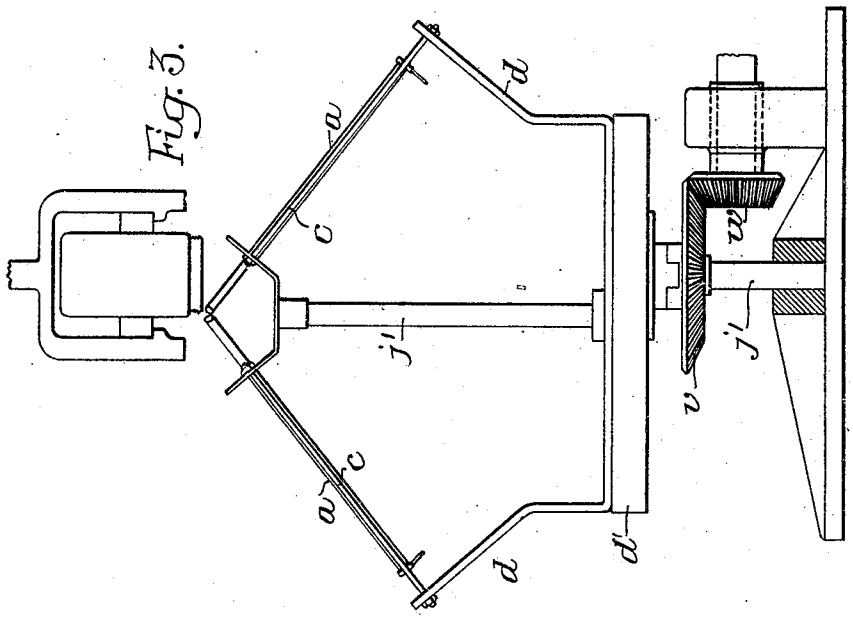
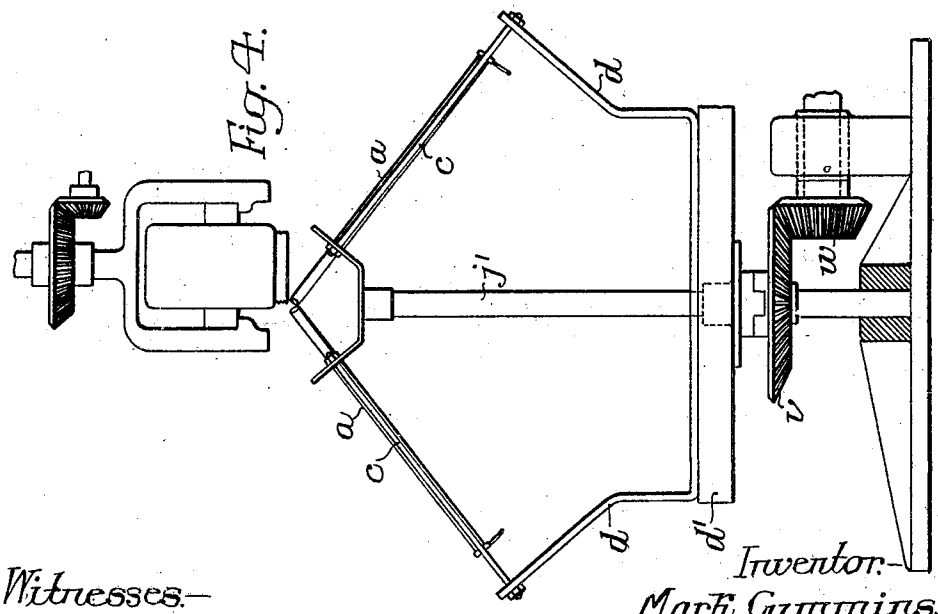


Fig. 4.



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UNITED STATES PATENT OFFICE.

MARK CUMMINS, OF MANCHESTER, ENGLAND.

FIRE GLAZING OR FINISHING OF GLASS ARTICLES.

No. 916,959. Specification of Letters Patent. Patented March 30, 1909.

Application filed January 9, 1909. Serial No. 471,500.

To all whom it may concern:

Be it known that I, MARK CUMMINS, a citizen of the United States, and a resident of Manchester, in the county of Lancaster, England, engineer, have invented certain new and useful Improvements in or Relating to Fire Glazing or Finishing of Glass Articles, of which the following is a specification.

This invention relates to fire glazing or finishing of glass articles by exposing the article to, passing through, or over an electrical arc, which I arrange in different ways best suited for this purpose.

Hitherto the fire glazing or finishing of glass articles has been done by exposing the article to, through, or over a flame of combustible gas. The use of this method has proved to be more or less undesirable and expensive, from the fact that the intensity of heat varies from causes not easily controlled. According to my invention I provide means whereby glass articles may be exposed to, passed through or over an electrical arc, and by so doing accomplish the same results in a simpler and cheaper manner.

In the accompanying drawing illustrating my said invention and to which I hereinafter refer, Figure 1 is a side view, Fig. 1ª is a plan of a part of same and Fig. 2 an end view of a device for obtaining an electric arc and the manner of its application, Figs. 3 and 4 are modifications of the same.

In these views the same letters refer to like parts.

a a are the carbons that are carried in holders *b b* and sliding through insulator between guides *c c* that are fitted in a frame *d;* variation by consumption in the length of the carbons is neutralized by a balance weight *e* that is connected to the carbon holders by chains *f* passed over pulleys *g* centrally supported on the pipe *j*, which is placed on the standard *j';* the pulley *k* is also fitted on pipe *j* over which a chain *f'* is also fitted and attached at *e'* to the weight *e*. A single magnet coil *l* is fixed on the base *d*, having a loose core *m* in the center, which is free to move in and out of the coil *l;* one end of a transverse lever *n* is connected to said core *m* and rotates on the pin *q'* in the lever *q* on the standard *r*, so that when the lever *n* is drawn down by the core *m* it causes the jaw q^2 on the end of the lever *n* to grip the chain *f'* between its jaw and a like jaw on the lever *q*, and by so doing the chain is drawn in the same direction as the core *m* and the lever *n*, thereby raising the weight *e*, which allows the carbons to slip down the guides *c* by their own weight, thus separating the ends and causing an arc; *p'* is a pin which is fixed in the support *p* for straightening the levers *n* and *q* when the current is off, and the core *m* is raised by the spring at the end of the lever *q* and in this way allowing the chain *f'* to pass between the jaw *n'* on lever *n* and a like jaw q^2 on lever *q*, thereby allowing the weight *e* to draw the carbons together to close the circuit, this operation taking place every time the current is switched off or when the arc may go out for other reasons.

The frame *d* is secured to a wood foundation *d'* to the underside of which a circular positive plate *t* and a circular negative plate *u* are fixed; the wood foundation rests on a spindle carrying a bevel wheel *v* gearing in a bevel wheel *w* on a shaft to which power is applied, and the machine thereby revolved; *x x* are the wire terminals for the mains, and *y y* the brushes for admitting current to the rings *t* and *u*.

In the application of my invention the articles such as a bottle shown in dotted lines on the drawing is placed by any preferred means over the lamp; the current is then switched on and passes to the coil *l*, which causes the core *m* to be drawn down, thereby raising the end *n'* of the lever *n* and the projection q^2 on the lever *q* and causing said end *n'* and projection q^2 to grip the chain *f'*, thereby raising the balance weight *e*, allowing the carbons to slip down the guides *c c* by the weight of the carbons and sockets into which they are fixed, and causing the ends of the carbons to separate. The carbons as shown on drawing are in an inoperative position.

In cases where the articles such as bottles, fruit jars, tumblers and the like are blown by machinery, it may be desirable to have either the arc revolve around the edge or mouth of same glazing the surface on its passage, as shown in Fig. 3 or the glassware may be revolved so that the edge or mouth would pass through the arc and become finished, as shown in Fig. 4 or the arc can be left stationary in cases of smaller mouthed articles where the arc would cover the entire surface, such as bottles; said articles may be dropped into carriers direct from the

machine, the carriers being supported a sufficient height above the arc, so that the neck or end of bottle would pass through the arc as the carriers were automatically or otherwise moved along, or revolved to any point where the bottles may be taken away as finished articles to be annealed. I do not confine myself to any particular location of lamp for carrying out this purpose, owing to there being various methods of conveying and handling the articles to be glazed, but I may attach the lamp in any desired position to, or in close proximity to the blowing machine, as may be preferred or considered necessary.

I do not confine myself to the precise construction of lamp shown on the drawings, as this may be modified; for articles of irregular shape I may cause the lamp to accommodate itself to the shape of the article by being eccentrically mounted as shown in Fig. 3.

I am aware that it has already been proposed to smooth the rough exteriors of tubes of silica by means of the electric arc, and I make no claim to such arrangements in general.

By the use of an electric arc as a means of fire finishing or glazing glass and similar articles, I am enabled to effect the desired fusion of the skin or surface of the article undergoing treatment without unduly heating the body of the same, and I thereby avoid all danger of damage or breakage. This condition is due to the extremely high heat of such arc and to the fact that owing to the speed of operation its contact with the article is but momentary; the fusion being substantially instantaneous. Moreover, my improved method of treatment is much less costly and, for the reasons above set forth, is much more satisfactory than those hitherto employed.

What I claim as new and desire to secure by Letters Patent is:—

1. The method of fire glazing or finishing glass articles which consists in exposing the article under treatment to an electric arc.

2. The method of fire glazing or finishing glass articles which consists in passing the article for treatment through an electric arc.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

MARK CUMMINS.

Witnesses:
THOMAS PRESCOTT,
HAROLD WALKER.