

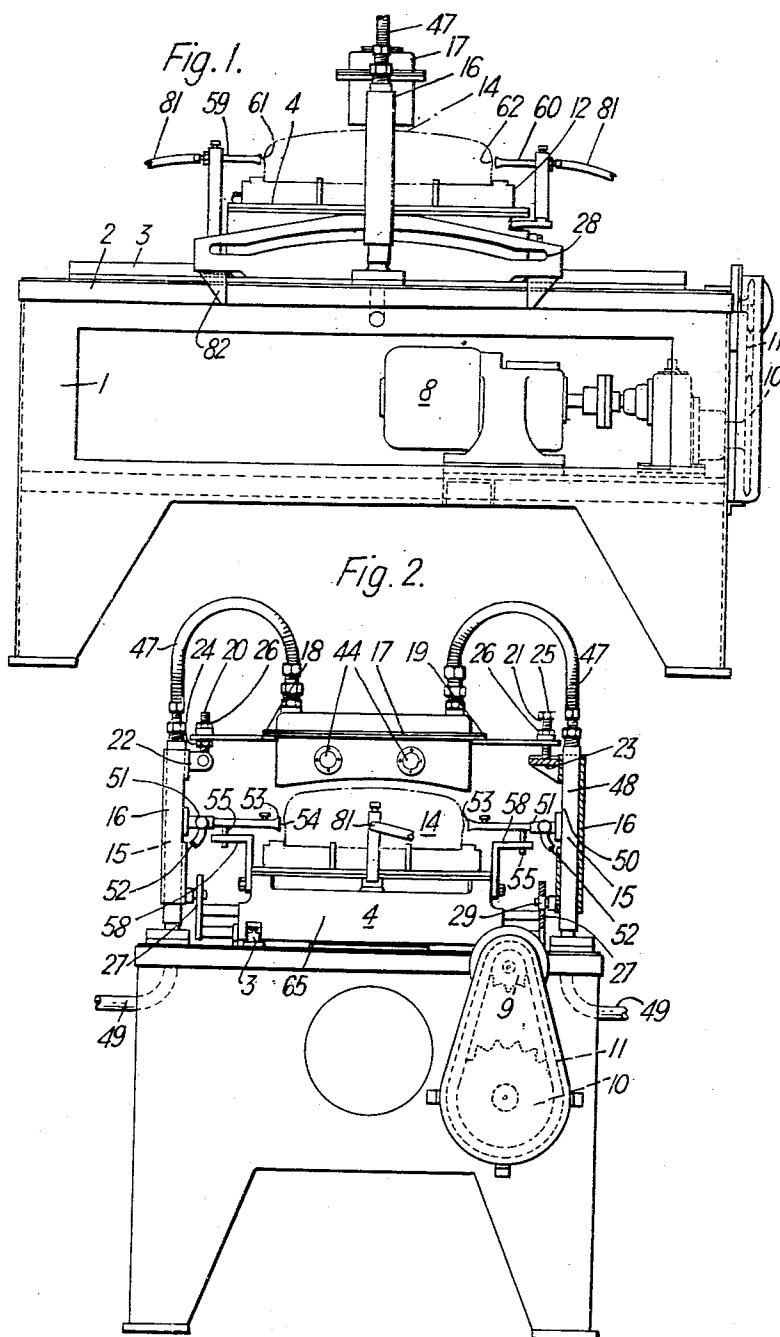
May 23, 1961

H. C. WYNNE ET AL
METHOD OF AND APPARATUS FOR MANUFACTURING
FACE PLATES OF CATHODE RAY TUBES

2,984,942

Filed May 8, 1957

3 Sheets-Sheet 1



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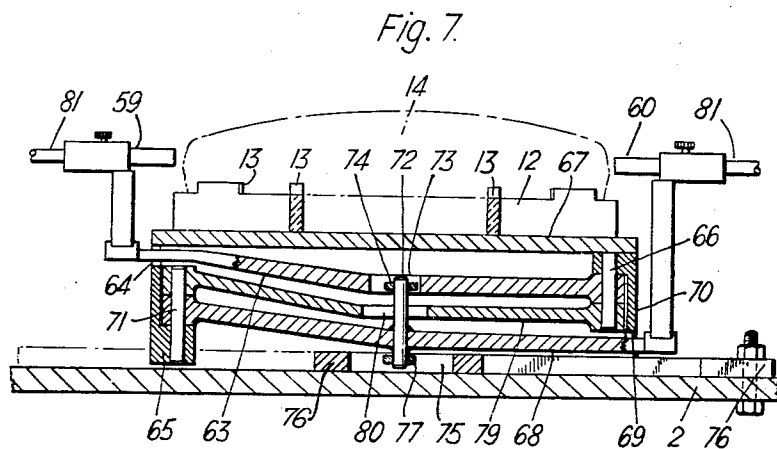
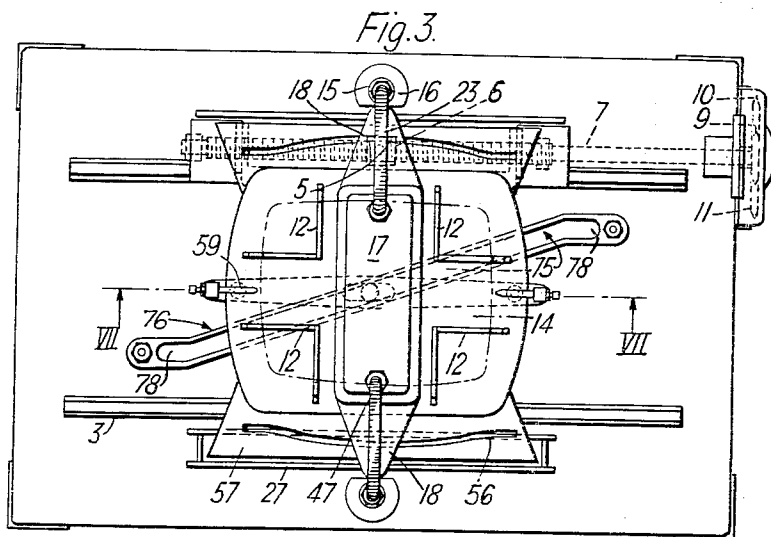
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3 Sheets-Sheet 2



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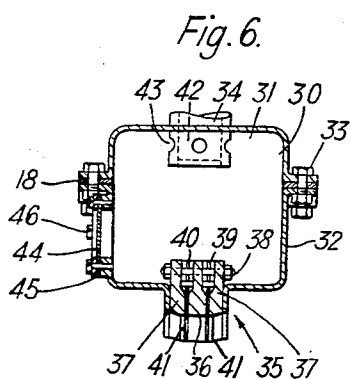
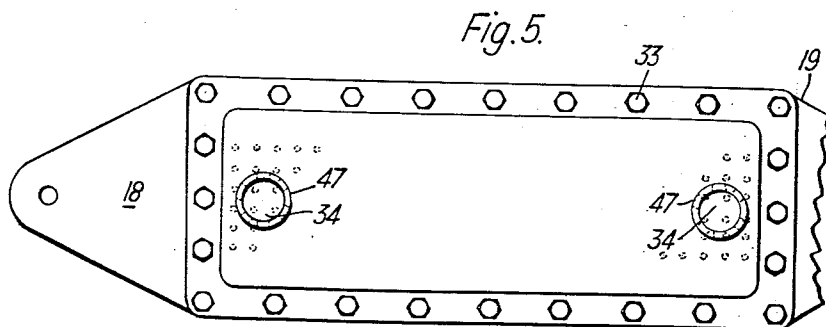
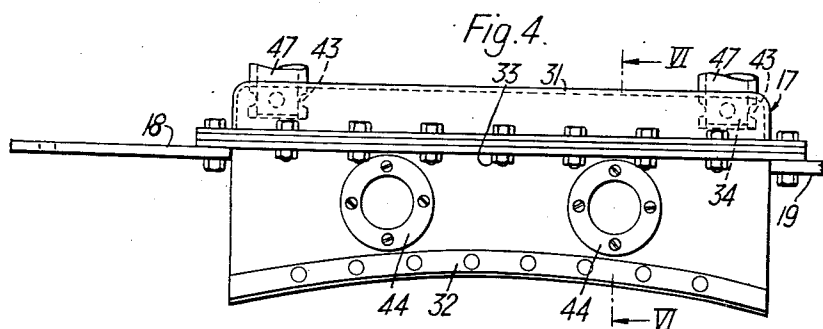
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3 Sheets-Sheet 3



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2,984,942

METHOD OF AND APPARATUS FOR MANUFACTURING FACE PLATES OF CATHODE RAY TUBES

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Claims priority, application Great Britain May 9, 1956

13 Claims. (Cl. 49—58)

This invention relates to improvements in the methods of and apparatus for the manufacture of faceplates of cathode-ray tubes.

In the manufacture of cathode-ray tubes for television receivers the faceplate is made separately from the envelope and is pressed out from a measured quantity of glass charged to a mould, its final shape having a face which is usually convex and flanges curved sharply away from the face. Such moulded faceplates have faults, flow lines and mould marks on their outer, i.e. convex faces, which adversely affect the optical qualities of the faceplate and have hitherto been removed by grinding and polishing which, in view of the shape of the faceplates, is a difficult operation taking time to carry out: and the outer surfaces of the flanges possess a projecting beading corresponding to the joint in the mould, and it is desirable to remove or round off this beading.

The main object of the present invention is to provide a method of and apparatus for manufacturing such faceplates so that they possess a fire finished surface free of faults, flow lines and mould marks or other imperfections of the surface.

This invention involves the novel principle of applying a gaseous heating medium to the outer faces of the faceplates to soften them sufficiently to melt out the irregularities of the surface and disperse the faults without melting the main body of the glass which would then sag and become useless as a faceplate. Thus the faceplates when cooled after such surface melting treatment will have a fire finish free of faults, flow lines and mould marks or scratches.

For successful operation of this principle it is essential to heat the outer surface of the face of the faceplate for a short time only and to heat the whole surface substantially uniformly as otherwise the finished faceplate would still suffer distortion or still retain surface imperfections.

According to the present invention a method of fire finishing the outer face of a faceplate for a cathode-ray tube is characterised by effecting a relative movement between the faceplate and a curtain of a gaseous heating medium projected towards the outer face of the faceplate in a direction substantially at right angles to the face of the faceplate so as to maintain substantially constant the area of impact of the heating medium on the face of the faceplate during the heat treatment of the face by the heating medium, the breadth of the curtain and the speed at which the relative movement is effected being such that during the relative movement the whole of the useful area of the face of the faceplate is uniformly heat treated.

The invention also comprehends a method of manufacturing such faceplates which consists in pressing the faceplate in a mould, removing the moulded faceplate from the mould, and, while the temperature of the faceplate is still high enough to avoid fracture during the subsequent flame treatment, effecting lateral movement of the faceplate past a curtain of flame disposed transversely of the path of travel of the faceplate, maintaining substantially constant the distance between the origin of

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the flame and the ribbon-like area of the outer face of the faceplate on which the flame impinges, the breadth of the flame being such that during the travel of the faceplate the whole of the useful area of the face of the faceplate is uniformly heat treated, and regulating the cooling of the faceplate.

Preferably the faceplate pressing when removed from the mould is turned over so that its outer face, which is normally convex, is uppermost, and the faceplate is preferably moved in a horizontal plane while the curtain of flame is projected vertically downwards from its origin.

The invention further covers apparatus for fire finishing the outer faces of such faceplates, comprising in combination a mount for a faceplate, an elongated burner having a jet for projecting a curtain of gaseous heating medium towards the outer face of the faceplate and disposed in a direction substantially at right angles to the face of a faceplate on the mount, and means to effect relative movement between the burner and the mount in a direction substantially at right angles to the curtain of heating medium so that every part of the face of the faceplate is subjected for the same length of time to the impact of the heating medium on it during the heat treatment of the face by the heating medium, the breadth of the burner and the extent of the said relative movement being such that during the said relative movement the whole of the useful arc of the face of the faceplate is uniformly heat treated.

Such apparatus preferably comprises a mount for the faceplate, guides for the mount whereby the mount can be laterally displaced in a predetermined path, a vertically adjustable elongated burner above the level of the mount and having a slot or slots or a series of holes disposed to present a continuous curtain of a gaseous heating medium to the face of a faceplate disposed on the mount, means for moving the mount along the guides at a uniform rate to effect relative movement between the burner and the mount, whereby the latter is maintained in desired register with the burner until the burner and the faceplate have wholly passed one another, and actuating means for the burner operatively associated with a cam on the mount so that the vertical distance between the burner and the face of a faceplate on the mount is maintained substantially constant during the said relative movement.

The flanges of the faceplate may be fire finished in such apparatus. To this end the faceplate may be placed on the mount with its end flanges transversely of the mount and end burners for fire finishing the end flanges are preferably disposed to move with the mount, and means are provided to traverse these burners across the end flanges of the faceplate whereby the burners move relatively to the end flanges of the faceplate on the mount and project a jet of gaseous heating medium perpendicularly to the end flanges of the faceplate while the distance between the burners and the area of the end flanges on which the jet impinges is maintained substantially constant.

Further, side burners are preferably disposed at each side of the mount to traverse the side flanges of the faceplate at the side of the mount and to direct a jet of gaseous heating medium on the side flanges of the faceplate while maintaining substantially constant the distance between the burners and the area of the side flanges of the faceplate on which the jets impinge during relative movement between the burners and the faceplate. The side burners are preferably mounted for movement in a direction transversely to the direction of movement of the faceplate on the mount and means are provided to move the side burners in such transverse direction during movement of the mount so that when heat treating faceplates with curved side flanges the distance between the

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faceplate side flanges and the burners will be maintained substantially constant.

The means for effecting movement of the end or side burners or both end and side burners relative to the faceplate on the mount are preferably variable whereby the apparatus may be employed in the heat treatment of faceplates having end flanges and side flanges of various curvatures.

In order that the invention may be more clearly understood one preferred embodiment will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows in side elevation a machine comprising a reciprocable mount for a faceplate capable of being moved back and forth under a vertically movable burner supported transversely of the mount;

Figure 2 shows in end elevation the machine illustrated in Figure 1;

Figure 3 is a plan of the machine shown in Figures 1 and 2;

Figures 4, 5 and 6 are a side elevation, a plan and a central sectional elevation respectively of a preferred form of transverse burner shown in the machine illustrated in Figures 1, 2 and 3, Figure 6 being taken on the line VI—VI of Figure 4; and,

Figure 7 is a partial transverse section of the mount shown in Figures 1, 2 and 3, taken on the line VII—VII of Figure 3.

In the drawings the same numerals are employed to designate the same parts of the machine.

Referring to Figures 1-3 of the drawings the machine comprises a base 1 having a top 2 to which are fixed a pair of parallel rails 3 on which a mount 4 is slidably disposed, the mount having a block 5 with a threaded bore 6 engaging with a threaded shaft 7 driven by an electric motor 8 through sprocket wheels 9, 10 and a chain 11. The motor 8 is reversible and a suitable switch is provided, which forms no part of this invention, for reversing the drive of the motor when the mount 4 reaches the ends of its movement along the rails 3. Locating members consisting of plates 12 which are L-shaped in plan are secured edge-on to the top of the mount, the upper edges of the plates 12 being cut away as at 13 (see Figure 7) to form a cradle into which the faceplate 14, shown in chain dotted lines in Figures 1-3 and 7, can be placed so as to be accurately located on the mount. The plates 12 can be removed and replaced by plates of various sizes to locate faceplates of various dimensions.

A vertical pillar 15 is fixed to the base 1 at each side of the mount at the centre of its run and a sleeve 16 is slidably disposed on each pillar so that it will be urged by its own weight towards the bottom of the pillar. A burner 17 to be described is mounted on brackets 18, 19 which in turn are supported on threaded members 20, 21, one of which, 20, is pinned to a bracket 22 on one sleeve 16; the other member, 21, is supported on a bracket 23 on the other sleeve 16 so as to be free to slide thereon in the direction of the length of the burner. The member 20 passes through a hole in the bracket 18 and threaded upon it below the bracket 18 is a nut 24 which supports the bracket 18. The member 21 is threaded through a threaded hole in the bracket 19 and is provided with a head 25 whereby it can be turned. By turning nut 24 and member 21 the height of the burner above the mount may be adjusted. Lock-nuts 26, adjustable on the members 20, 21, are provided to lock the adjusted height of the burner above the mount.

Secured to each side of the mount 4 in spaced relation thereto is a vertical cam plate 27 having a longitudinal slot 28 therein, the curve of the slot corresponding to the curve of the convex surface of the faceplate to be fire finished on the mount. A follower 29 is secured to each sleeve 16 and extends horizontally through the slot 28 of the contiguous cam plate 27 so that as the

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mount is moved backwards and forwards on the base 1, the sleeves 16 will be raised and lowered by the followers 29 moving in the slots 28 whereby the jet of the burner 17, to be described, is projected downwardly in a direction substantially at right angles to the convex surface and is maintained at a constant distance from the convex surface of the faceplate on the mount as the mount is moved along the rails 3. Various interchangeable cam plates 27 may be provided to suit the various sizes and curvatures of the various faceplates to be treated.

Referring to Figures 4, 5 and 6 the burner 17 comprises a chamber 30 formed by upper and lower casing parts, 31, 32 secured together in any suitable manner as by the bolts 33. A gasket may be disposed between the flanges of the casing parts 31, 32 to ensure that the joint formed by the flanges is gas tight. Inlets 34 are provided in the top 31 of the chamber 30 through which a combustible mixture of gases is supplied; a jet 35, secured to the bottom of the casing part 32, is formed, as shown in Figure 6, of a central plate 36 and two outer plates 37 joined together by screws or bolts 38 passing through spacers 39 between the plates. The inner contiguous surfaces of the plates 36, 37 are recessed at their upper ends as at 40 to facilitate the flow of gases from the chamber 30 to the narrow jet slots 41 between the lower ends of the plates 36, 37 to provide two ribbon jets of gaseous mixture extending across the burner from which when the gaseous mixture is lit a pair of curtains of flame is projected. The outer plates and the central plate may be tapered so that the two ribbon jets converge if desired. The lower casing part 32 and hence the plates 36, 37, or at least the plates 36, 37, are curved so that the jets are disposed parallel to the face of the faceplate on the mount 4 transversely thereof.

The inlets 34 have their lower ends closed as at 42 and orifices 43 are formed in their sides through which gaseous mixture flows whereby the gaseous mixture is evenly dispersed throughout the chamber 30. Also frangible diaphragms 44 are secured by retaining rings 45 and screws 46 to the sides of the casing to cover holes in the sides of the casing part 32 so that should the pressure in the chamber 30 rise to a dangerous level, for example as a result of explosion of the gaseous mixture therein, these diaphragms will break up and allow the pressure to fall by releasing the products of the explosion. The gaseous mixture is supplied to the inlets 34 through flexible pipes 47 which, as shown in Figures 2 and 3, are connected to hollow bores 48 in the pillars 15 to which the gaseous mixture is supplied from a suitable source through pipes 49. While two burner jets 41 are shown in the drawings it will be understood that a single jet or any number of jets in the form of slots or of one, two or more linear series of holes may be employed if desired.

The sleeves 16 are provided with cut away portions 50 exposing a portion of each pillar 15 facing the mount and a burner bracket 51 is secured to the pillar through the portions 50 which are of such a size as not to interfere with the raising and lowering of the burner 17. Gaseous mixture is supplied through flexible tubing 52 to burners 53 mounted one on each bracket 51 and the burners 53 are disposed with their jets 54 at the requisite distance from the longitudinal side flanges of the faceplates, and at such a height that the flames from them impinge on the beading thereon corresponding to the joint in the mould.

Where the faceplates have curved longitudinal sides, the burners 53 as shown in Figure 2 are axially slidably mounted in the brackets 51 and a pin 55 extends from each burner into a cam slot 56 (see Figure 3) on a horizontal portion 57 of a cam plate 58 secured to the mount 4. Thus as the mount moves on the rails 3 the burner jets 54 are displaced to maintain them at a constant distance from the side flanges of the faceplate on the mount. Interchangeable cam-plates 58 may be pro-

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vided to suit the various curvatures of the side flanges of the various faceplates to be treated.

For fire finishing the end flanges of the faceplate on the mount, end burners 59, 60 are disposed on the mount to travel therewith and to be moved transversely of the mount with their jets 61, 62 respectively at a constant distance from the end flanges of the faceplate, and at such a height that the flames from them impinge on the beading corresponding to the joint in the mould.

Referring to Figures 3 and 7 the burner 59 is mounted on a lever 63 passing through a slot 64 in the upper part of the transverse wall 65 of one end of the mount, the lever 63 being pivoted at the other end of the mount on a pin 66 secured in the transverse wall 70 of the mount. The other burner 60 is secured to the free end of a lever 68 which extends through a slot 69 in the lower part of the other transverse wall 70 of the mount and extends beneath the mount and is pivoted on a pin 71 secured in the wall 65. At mid-length of the lever 68 a pin 72 is secured and extends into a slot 73 in the lever 63 the sides of which are engaged by a roller 74 on the pin 72. The lower end of the pin 72 extends downwardly into a slot 75 in a cam-plate 76 bolted to the top 2 of the base 1, the sides of which slot 75 are engaged by a roller 77 on the pin 72, the slot 75 being cut in the cam-plate 76 which extends obliquely to the rails 3. Interchangeable slotted cam-plates 76 may be provided in which the length and obliquity of the slot are varied to suit the various sizes of faceplates to be treated. The slot 75 may have end sections 78 parallel to the rails 3 so that the burners 59, 60 do not move far enough to foul the burners 53 when the mount reaches the ends of its movement (Figure 3). A bracing member 79 may be provided as shown in Figure 7 connecting the pins 66, 71, this member having a slot 80 transversely of the mount and of such dimensions as to allow free movement of the pin 72 therethrough during the full travel of the mount 4 as will be described.

The gaseous mixture is supplied to the burners 59, 60 through flexible pipes 81.

As the mount moves along the rails between the extremities of its travel, the pin 72 is moved along the slot 75 and thus moves transversely of the mount 4, moving the lever 68 whereby the burner 60 is moved across the mount in a curved path so that it is maintained at a constant distance from the end flanges of the faceplate on the mount. At the same time, the pin 72 moves the lever 63 to move the burner 59 in a similar manner at a constant distance from the other end flange of the faceplate, the slot 73 being elongated to permit relative movement of the levers 63, 68 during such traversing movements thereof.

The gaseous mixture supplied to all the burners may be a mixture of any suitable combustible gas such as coal gas with air and/or oxygen. One or both of the cam-plates 27 may be provided with a cam face 82 at each end thereof disposed to engage a lever connected to cocks in the pipes supplying the gaseous mixture to all the burners, whereby at the end of the movement of the mount the supply of such mixture is reduced to a minimum to avoid waste, the lever being returned to the full mixture supply position by a spring when the cam-plates 27, on movement of the mount, move out of contact with the levers, but the construction of these cocks forms no part of the present invention and are therefore not further described herein.

In operation a faceplate is moulded in a normal mould from a measured quantity of glass fed thereto and while still hot, e.g. at about 450° C., the faceplate is positioned on the mount at one end of its travel on the rails 3 and located between the parts 13 of the plates 12 thereon. The motor 8 is then energised and through the chain drive 9, 10, 11 and the shaft 7 causes the mount to travel with the faceplate at uniform speed beneath the ribbon jets 41 of the burner 17. As the mount moves,

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the sleeves 16, by the pins 29 in the slots 28, raise the burner and subsequently lower it to maintain the flame curtain projected therefrom, which impinges on the surface of the faceplate, at a substantially constant distance from the convex face of the faceplate 14. At the same time the flame jets of the burners 53 impinge on the side flanges of the faceplate while the burners 59, 60 traverse the end flanges of the faceplate so that their jets impinge on those flanges.

It will thus be seen that as the mount moves its full run along the rails 3 the whole face of the faceplate and the beaded portions of the flanges of the faceplate will be fired by the flame jets impinging thereon, all the flames being projected substantially at right angles to the surfaces of the faceplate, which they strike, and maintained at a substantially constant distance therefrom.

It is important that the flames will impinge on the glass for only sufficient time and with the burners maintained substantially at a predetermined distance from the glass surfaces to ensure that only the surfaces are melted to effect a fire finish without softening the main body of the glass, which would cause it to sag. Thus the speed of the motor 8 must be adjusted according to the flame temperature. It has been found that satisfactory results are achieved by moving the mount at approximately one inch every 2½ seconds where the burner jets are about ¾ an inch from the surfaces of the glass and the two curtain flames for the face of the faceplate impinge on the glass ¼-½ inch apart, the actual curtain of flame from each burner slot 41 being about 0.04 of an inch wide, this being the width of each slot 41.

After this fire finishing treatment in the above described apparatus, the faceplates are still at a high temperature, and they are then removed from the mount and placed in a lehr for the normal annealing treatment.

It will be seen that with apparatus according to the invention the surfaces of the convex face and of the flanges of the faceplate are melted without softening the main body of the glass itself and thus the surfaces of the glass flow sufficiently to remove faults and irregularities such as flow lines and mould marks and scratches thereby producing fire finished uniform surfaces without distorting the main body of the glass.

While the invention has been described with reference to the manufacture of television cathode-ray tube faceplates it will be understood that it may be employed in the manufacture of any similarly shaped glass articles and the term "television cathode-ray tube" used herein is to be interpreted as including such similar articles.

We claim:

1. A method utilizable in fire finishing the useful area of the outer face of a moulded faceplate for a cathode ray tube characterized by supporting the faceplate substantially horizontally on its rim outerface uppermost, projecting a ribbon-like curtain of uniform breadth of gaseous heating medium towards said outer face substantially at right angles thereto from a profiled curtain origin following the profile of said outer face and extending fully across said face from one side to the other, effecting relative movement between the faceplate and said origin to cause said curtain to traverse said outer face and to traverse the whole of said outer face from end to end in a direction substantially at right angles to said curtain, maintaining the speed of said movement uniform, and maintaining the area of impact of said curtain on said face constant during said movement, whereby the whole of said useful area is uniformly heated at least once without softening the main body of the faceplate sufficiently for it to sag and said outer face is fire finished.

2. A method of manufacturing moulded faceplates for cathode ray tubes comprising supporting a faceplate substantially horizontally on its rim outerface uppermost and, while the temperature of the faceplate is still high

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enough to avoid fracture during subsequent flame treatment, projecting a ribbon-like curtain of uniform breadth of gaseous heating medium towards the outer face of the faceplate substantially at right angles thereto from a profiled curtain origin extending fully across said outer face from one side to the opposite side, effecting lateral movement of said faceplate and of the whole of it from one side of said curtain to the other said thereof substantially at right angles to said curtain, maintaining the speed of said movement uniform, and maintaining the area of impact of said curtain on said face substantially constant during said movement, whereby the whole of the useful area of said outer face is uniformly heat treated at least once to fire finish it without softening the main body of the faceplate sufficiently for it to sag, and uniformly cooling the faceplate.

3. A method of manufacturing faceplates for television tubes according to claim 1, characterised by disposing the faceplate on a mount with its outer face uppermost, moving the faceplate on the mount in a horizontal plane, and projecting a curtain of flame vertically downwards from its origin to impinge on the outer face of the faceplate, and adjusting the curtain origin during said lateral movement to maintain said curtain a constant distance from said outer face.

4. Apparatus for use in fire finishing the useful area of the outer face of a faceplate of a cathode ray tube, comprising in combination a substantially horizontal mount constructed to support a faceplate by its rim outer-face uppermost, an elongated profile burner extending fully across said outer face and following the profile thereof from one side to the opposite side, said burner being disposed to project a ribbon-like curtain of uniform breadth of gaseous heating medium towards said outer face in a direction substantially at right angles thereto, means to effect relative movement between said burner and said mount over the full length of a path substantially at right angles to said curtain and extending beyond said face, means to maintain substantially constant during said movement the distance between said outer face and said burner, and means to maintain said movement constant whereby during said movement the whole of the useful area is uniformly treated by the heating medium without softening the main body of the face plate sufficiently for it to sag.

5. Apparatus for fire finishing the outer faces of faceplates for cathode-ray tubes comprising in combination a mount for a faceplate, guides along which the mount is laterally displaceable, a vertically adjustable elongated burner disposed above the level of the mount, an inlet in the burner for gaseous heating medium, at least one outlet jet in the burner disposed to present a continuous curtain of gaseous heating medium to the outer face of said faceplate located on the mount, means for moving the mount along the guides in a direction substantially at right angles to said curtain at a uniform rate to effect relative movement between said burner and said mount, actuating means for vertical movement of said burner in a direction towards or away from said guides, and a cam on the mount operatively associated with said actuating means to maintain substantially constant the vertical distance between said burner and said face of said faceplate on the mount during said lateral displacement of said mount until said mount has wholly passed said burner, the breadth of said at least one jet and the extent of said lateral movement being such that during said movement of said mount and said burner the whole of the useful area of said face of said faceplate is uniformly fire finished.

6. Apparatus according to claim 5, wherein end burners for fire finishing end flanges of a faceplate on the mount are disposed to move with the mount, and means are provided to traverse these burners across the end flanges of the faceplate whereby the burners move relatively to the end flanges of the faceplate on the mount and project a jet of gaseous heating medium perpendicularly to the

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end flanges of the faceplate while the distance between the burners and the area of the end flanges on which the jet impinges is maintained substantially constant, said burner traversing means preferably being variable whereby said apparatus may be employed in the fire finishing of faceplates with flanges of various curvatures.

7. Apparatus according to claim 5, wherein side burners are disposed at each side of the mount to traverse the side flanges of the faceplate at the side of the mount and to direct a jet of gaseous heating medium on the side flanges of the faceplate while maintaining substantially constant the distance between the burners and the area of the side flanges of the faceplate on which the jets impinge during relative movement between the burners and the faceplate.

8. Apparatus according to claim 5 wherein side burners are mounted at each side of said mount, for movement in a direction transversely to the direction of movement of the faceplate on the mount and to direct a jet of gaseous heating medium at right angles to said faceplate side flanges, and means are provided to move said side burners in such transverse direction during said movement of the mount so as to maintain constant the distance between said side burners and the areas of said side flanges of the faceplate on which the jets impinge during said movement of said mount, said means for moving said side burners preferably being variable whereby said apparatus may be employed in the fire finishing of faceplates having end flanges of various curvatures.

9. Apparatus for fire finishing the outer faces of faceplates for cathode-ray tubes comprising in combination a mount for a faceplate, guides along which the mount is laterally displaceable, vertical pillars fixed with respect to said guides at each side of said mount, members vertically slidable on said pillars, an elongated burner mounted on said vertically slidable members above the level of said mount, a cam slot disposed at each side of said mount to move with said mount, a follower connected to each vertically slidable member and extending into one of said cam slots, said cam slots being so shaped that as the mount moves relative to the elongated burner the followers will cause the sliding members and said burner to rise and fall, thereby maintaining substantially constant the vertical distance between the burner and the outer face of a faceplate on the mount, at least one jet in said burner disposed to present a continuous curtain of gaseous heating medium to the outer face of said faceplate on said mount, means for moving said mount laterally on said guides in a direction substantially at right angles to said curtain at a uniform rate to effect relative movement between said burner and said mount until said faceplate on said mount has wholly passed said elongated burner, the breadth of said at least one jet and the extent of said lateral mount movement being such that during said movements of said mount and of said burner the whole of the useful area of said face of said faceplate is uniformly fire finished.

10. Apparatus according to claim 5 wherein a burner is provided for fire finishing each end flange of the faceplate on the mount, each burner being mounted on a lever pivoted to the opposite end of the mount, the two levers being interconnected at their central portions by a pin the lower end of which rides in an oblique cam slot in a member rigid with the guides, so that as the mount moves relative to the guides, the levers are moved to traverse the said end burners across the ends of the faceplate on the mount at a constant distance from said ends, said cam slot preferably being interchangeable with alternative cam slots whereby said apparatus may be employed in the fire finishing of faceplates having various outer face curvatures.

11. Apparatus according to claim 9 wherein side burners are mounted one on each pillar and are provided with jets movable towards and away from the side flanges of a faceplate on the mount, and a pin is associated with

each burner jet, said pins each riding in a cam slot movable with the mount, the cam slots being such that, as the mount moves relative to the side burners, the burner jets will be moved to maintain the side burners at a constant distance from said faceplate side flanges.

12. Apparatus according to claim 9 wherein said cam slots are interchangeable with other cam slots respectively whereby the apparatus can be adapted for fire finishing faceplates of various sizes.

13. Apparatus according to claim 5 wherein a burner is provided for fire finishing each end flange of the faceplate on the mount, each burner being mounted on a lever pivoted to the opposite end of the mount, the two levers being interconnected at their central portions by a pin the lower end of which rides in an oblique cam slot in a member rigid with the guides, so that as the mount moves relative to the guides, the levers are moved to traverse the said end burners across the ends of the faceplate on the mount at a constant distance from said ends, said oblique slot having end portions parallel to the

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direction of movement of the mount whereby the movement of the end flange burners with respect to the mount will not cause said burners to foul a faceplate on the mount.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,984,942

May 23, 1961

Hubert C. Wynne et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 47, after "shaped" insert -- concavo-convex --; column 7, line 8, for "said", second occurrence, read -- side --; column 9, line 20, before "slot" insert -- cam --.

Signed and sealed this 10th day of October 1961.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

DAVID L. LADD

Commissioner of Patents

USCOMM-DC