Jan. 9, 1962 E. BRACH 3,016,442

HEAT TREATING ARCH FOR TREATING FINISHES ON VEHICLES AND THE LIKE

Filed May 18, 1960 2 Sheets-Sheet 1

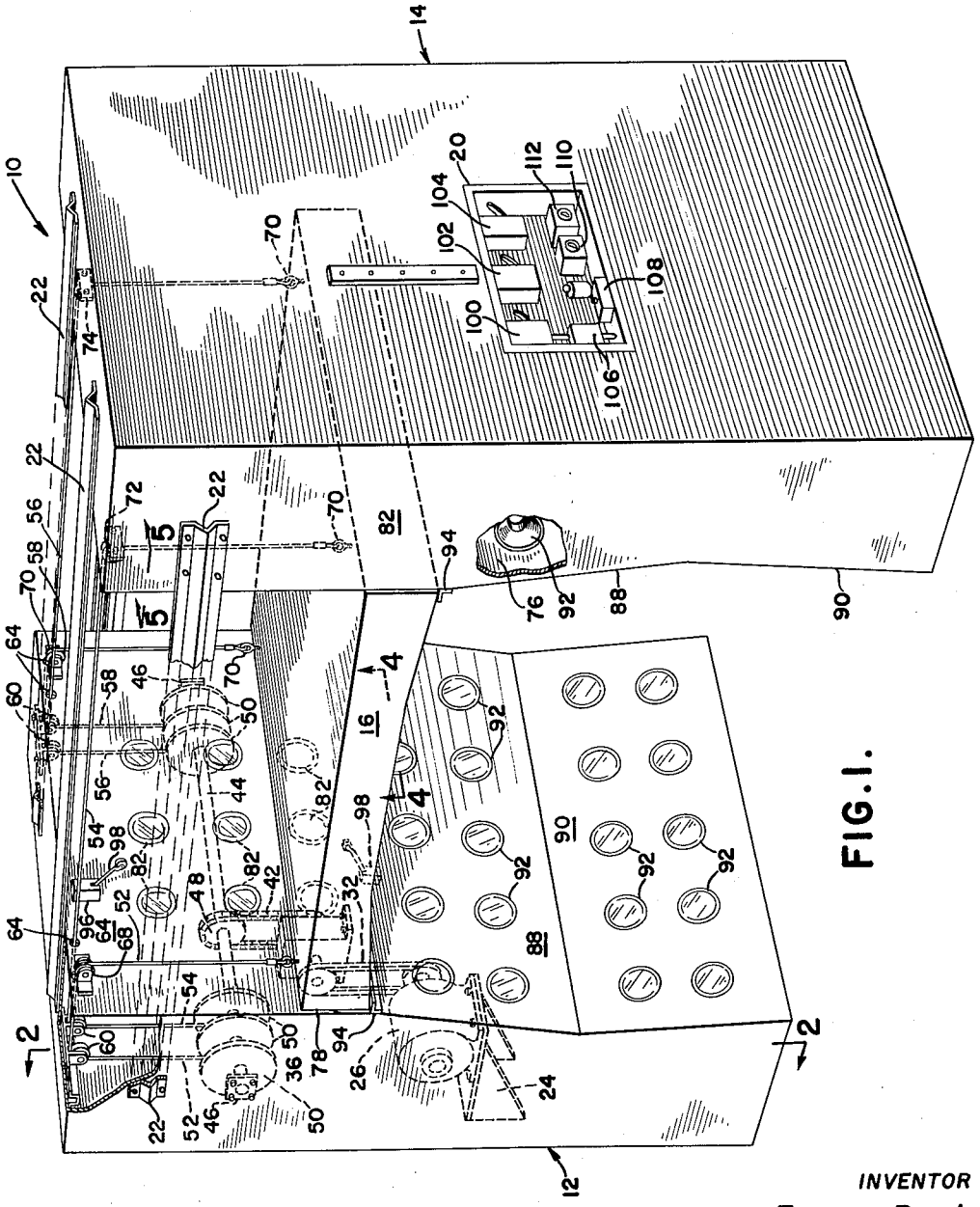


FIG. 1.

INVENTOR
Eugene Brach

BY Frederick C. Bromley
ATTORNEY

Jan. 9, 1962 E. BRACH 3,016,442

HEAT TREATING ARCH FOR TREATING FINISHES ON VEHICLES AND THE LIKE

Filed May 18, 1960 2 Sheets-Sheet 2

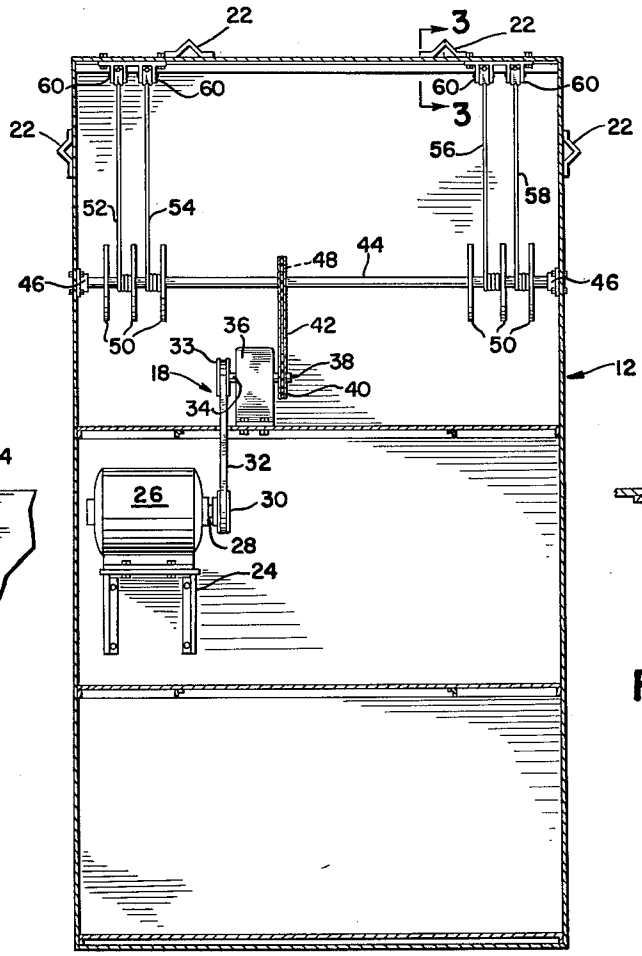


FIG. 2.

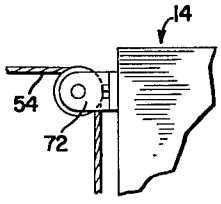


FIG. 5.

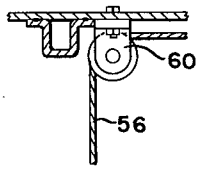


FIG. 3.

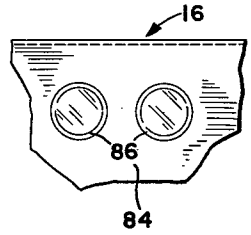


FIG. 4.

INVENTOR
Eugene Brach

BY Frederick C. Bromley
ATTORNEY

United States Patent Office 3,016,442 Patented Jan. 9, 1962

3,016,442

HEAT TREATING ARCH FOR TREATING FINISHES ON VEHICLES AND THE LIKE

Eugene Brach, 225 Viewmont Ave., Toronto, Ontario, Canada, assignor of one-half to Alexander Wagman, Toronto, Ontario, Canada

Filed May 18, 1960, Ser. No. 29,830
2 Claims. (Cl. 219—35)

This invention relates generally to baking ovens and more particularly to a novel adjustable heat treating arch for automotive shops, for example, but having other practical applications as will be apparent to those skilled in the art.

Drying facilities in most body shops or in other installations have been constructed with fixed dimensions, and thus the treating of finishes on different sized vehicles, in view of the wide range of dimensions, is an existing problem. Since heat rises, when a standard sized bake oven is used to dry the finish of a relatively small vehicle, a large amount of the most efficient heat is lost in the unnecessary space above the vehicle. As a general rule, most body shops or the like cannot afford the luxury of a plurality of different sized bake ovens and thus a primary object of this invention is to provide a versatile and practical heat-treating arch.

A further object of the invention is to provide a relatively inexpensive and practical heat-treating arch which includes an adjustable portion for aiding in concentrating heat in the most efficient manner for treating different sized articles, especially vehicles.

Another object of the invention is to provide means whereby the top of a heat-treating arch may be vertically adjusted relative to heat emitting means in side members.

Still another object of the invention is to provide a heat-treating arch including means whereby power means for an adjustable top member is de-energized in order to prevent damage to the force transmitting means incorporated therein.

Other objects and the nature and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein:

In the drawings:

FIGURE 1 is a perspective view of the novel heat treating arch, showing the vertically adjustable top member in its lowermost adjusted position, with portions broken away for purposes of clarity;

FIGURE 2 is a vertical section taken substantially on line 2—2 of FIGURE 1, illustrating an exemplary form of power means for the vertically adjustable top member;

FIGURE 3 is an enlarged fragmentary section on line 3—3 of FIGURE 2 showing a detail of how a suspension cable is entrained over a support pulley on one of the side members of the novel arch;

FIGURE 4 is a fragmentary underside plan view of a portion of the underside of the top member taken from the plane of line 4—4 of FIGURE 1; and

FIGURE 5 is an enlarged fragmentary section taken on line 5—5 of FIGURE 1, showing a cable entrained over a pulley mounted on one of the side members of the heat-treating arch.

Referring to the drawings in detail, the novel heat-treating arch is indicated generally at **10** and includes spaced parallel side members indicated generally at **12** and **14** and a top member **16** which is suspended therefrom in a manner to be described in detail. The top member **16** will be vertically adjusted relative to the side members through the medium of power means indicated generally at **18**. The heating means, which may

comprise banks of infra-red lamps on the confronting inner surfaces of the side and top members together with the power means will be conveniently controlled by a control panel indicated generally at **20**, which will subsequently be described in detail.

The side members **12** and **14** are substantially the same and are of a hollow box-like construction and are constructed from any suitable material and are of any satisfactory construction, being shown in the exemplary embodiment as comprising plates and reinforcing angle members. In order to stabilize the side members suitably secured reinforcing bars **22** are provided at the top and sides of the side members.

Included within the side member **12** is a support platform **24** upon which is mounted a power source **26** comprising a suitably rated, reversible electric motor. The motor **26** includes a drive shaft **28** including a driving sheave **30** over which is entrained a flexible drive belt **32** extending over driven sheave **33** on the input shaft **34** of a suitable transmission **36**. The transmission **36** includes a power output shaft **38** having a toothed wheel **40** thereon over which is entrained an endless drive chain **42**.

A shaft **44** is journalled at opposite ends in suitable bearings **46** mounted on opposed end walls of the side member **12**. The shaft **44** has a tooth wheel **48** secured intermediately thereof which is engaged by the drive chain **42**. Thus the shaft **44** may be rotated for the purpose of coiling or uncoiling suspension cables and will in effect comprise a reel for these cables.

The shaft **44** has fixed thereon spaced disc elements **50** between which is secured the end of a suspension cable as indicated at **52**, **54**, **56** and **58**. Depending from the upper surface of the side member **12** are support pulley assemblies **60**, one of each receiving one of the suspension cables therethrough. The inner wall **62** of the support member **12** includes a plurality of apertures **64** each accommodating one of the suspension cables therethrough.

Secured on the outer surface of wall **62** are pulley assemblies **66** and **68** which respectively receive the cables **52** and **58**. The cables **52**, **58** are terminally secured to suitable vertically disposed eye elements **70** secured at underlying corners on the upper surface of the top member **16**. The cables **54**, **56** extend to the side member **14** and are respectfully received in pulley assemblies **72**, **74** secured on the inner wall **76** of the side member **14**. The cables **54**, **56** are terminally secured to underlying eye elements **70** at the other corners of the top member.

It will now be understood that as the motor **26** is operated, the shaft **44** will be rotated in one direction or the other to accordingly "reel in" or "unreel" the suspension cables **52–58** to according raise or lower the top member **16**.

As the top member is raised or lowered, the opposite side edges **78**, **80** will traverse the three horizontal rows of infra-red lamps **82** mounted on an upper panel portion of the side members and which are suitably mounted in the side walls **62** and **76**. Any desired number of rows of lamps may be used. The inner wall **84** of the top member **16**, see FIGURE 4, also includes infra-red lamps **86**. The inner walls **62**, **76** of the side members include an intermediate inwardly directed panel portion **88** and lower angularly related panel portion **90**. The panel portions **88**, **90** include rows of infra-red lamps **92** thereon and by virtue of the angular disposition of these panels the heat eminating from the lamps **92** is substantially concentrated on the article being treated.

Mounted on the inner walls **62**, **76** of the side members **12**, **14** are horizontally disposed abutment bars **94** which will limit the downward movement of the top member **16**.

Mounted on the inner wall **62**, if preferred, in the path of travel of the top member **16**, are micro-switch assemblies **96** which are connected in series in the reversible field circuits of the motor **26**. The switch assemblies **96** will function to open the field circuits due to engagement of their operating levers **98**, when engaged by the top member **16** at its uppermost or lowermost position to prevent over-travel thereof and damage to the operating parts.

The side edges **78**, **80** of the top member **16**, when moving below a row of the infra-red lamps **82** will in a sense "blank" them out, and these "blanked" out rows of lamps will not be energized to thus afford economies of current consumption while at the same time concentrating the heat from the lamps closer to the article being treated.

The control panel **20** will include circuit breakers **100**, **102**, **104**, circuit breakers **100**, **102** being respectively connected in a circuit to the infra-red lamps **92** on the side members **12** and **14** and circuit breaker **104** being connected to a circuit to the lamps **86** on the top member **16**. A control switch assembly **106** is connected in a circuit to the reversible motor **26** (which includes therein a standard fuse box assembly **108**) permitting selective raising or lowering of the top member. Included in the circuits to the lamps **92** of the side members are circuit control switches **110**, **112**, connected to the individual bank of infra-red lamps **92** and **82** whereby an operator may progressively energize the vertically disposed rows of lamps to accordingly utilize only those required with the part of the heat treating arch required for a particular job. The specific wiring of the electrical circuits will be conventional and accordingly further details in this regard are not believed to be necessary.

It is believed that the manner in which the novel heat-treating arch is used is apparent from the foregoing. Briefly, the top member **16** is adjusted to the desired height of the vehicle being treated. The safety switch assemblies **96** will prevent excessive adjustment and subsequent damage to the mechanism. The proper infra-red lamps are energized. The hollow members **12**, **14** and **16** will aid to insulate the heating and loss of heat and since the heating arch is adjusted to the size of the article being treated, efficient heat treatment will be afforded with the use of only necessary current.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is limited not to only what is shown in the drawings and described in the specification but only as indicated in the appended claims.

I claim:

1. A heat-treating arch for drying finishes on vehicles or the like comprising a pair of spaced vertical side members, a top member extending transversely of said side members, heat emitting means on the confronting inner surfaces of said members for defining a heat treating area, said top member being vertically adjustably mounted relative to said side members for controlling the height of the heat-treating area in relation to an article being treated in order to attain maximum efficiency from the emitted heat, said members being of a hollow construction to aid in maintaining the heat in said area, and power means connected between said top and at least one of said side members for mechanically adjusting the vertical height of said top member, said heat emitting means on said side members including a plurality of vertically spaced rows of heat emitting elements, said rows of heat emitting elements being vertically traversable by opposite side edges of said top member, the vertically adjusted position of said top member determining which heat elements disposed therebelow will emit heat to said heat treating area, said power means comprising a reversible motor mounted in one of said hollow side members, a reel shaft journaled on said one side member, means operatively connecting said shaft to said motor for rotation thereby, suspension cables secured at one end to said shaft for reeling and unreeling in response to shaft rotation, pulley means on confronting inner surfaces of said side members over which said suspension cables are entrained, said top member being secured to said suspension cables and being suspended thereby.

2. The structure of claim 1; one of said side members including limit switches defining limits of the path of travel of said top member, said motor being electrically energized, a control circuit for said motor, said limit switches being connected in the control circuit of said motor to automatically de-energize said motor at the upper and lower limits of travel of said top member.

References Cited in the file of this patent

UNITED STATES PATENTS

2,688,068	Marr	Aug. 31, 1954
2,756,319	Hatch	July 24, 1956
2,761,948	Todd	Sept. 4, 1956
2,841,684	Miskella	July 1, 1958