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BIMETAL STRIP CLEANER

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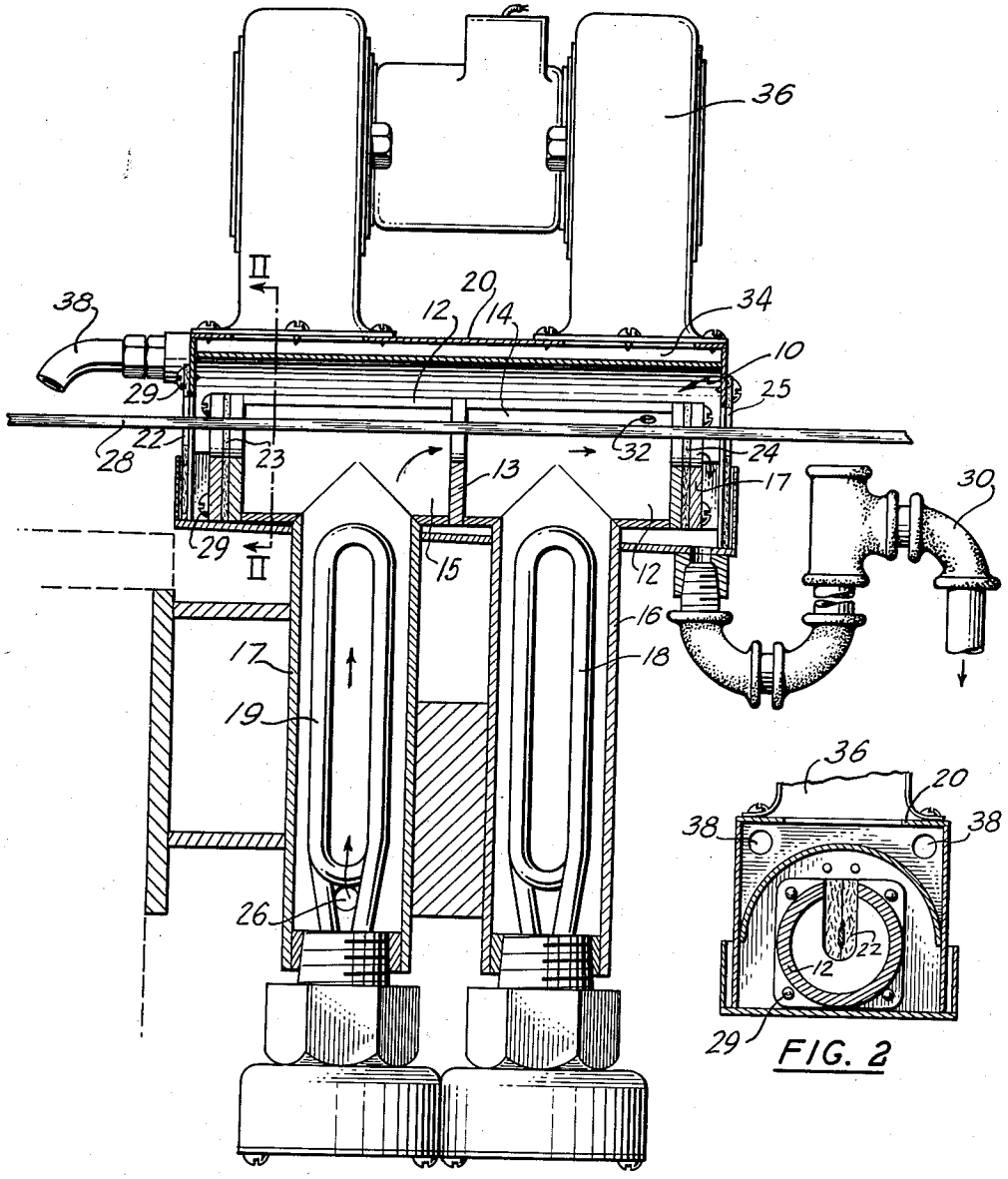


FIG. 1

FIG. 2

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BIMETAL STRIP CLEANER

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The present invention relates to the manufacture of glow switches and, more particularly, to the treatment of the bi-metal strip prior to cutting to length and mounting said strip in a glow switch assembly.

The glow type starting switch for a fluorescent lamp consists of two electrodes, one of which is a bi-metal strip, enclosed in a small glass bulb filled with an inert gas, such as neon or argon. When the voltage is applied, a small current flows through the circuit, as a result of a glow discharge between the two electrodes. The heating effect of the current expands the bi-metallic strip element and causes the electrodes to touch, thereby stopping the glow discharge, but permitting a substantial flow of current to preheat the fluorescent lamp electrodes.

In the past, the bi-metal strip was originally unreeled and fed directly into a bi-metal strip welding machine, which cut off, formed and welded the bi-metallic strip in place in glow switch assemblies. Often the bi-metal strip, as received, was dirty, thereby causing defective welds in the glow switch assembly and introducing deleterious material into the glow switch itself.

Hence, it has been found advantageous according to our invention, to provide apparatus for washing and drying the bi-metal completely, prior to its entry into the welding machine. This apparatus washes the strip thoroughly in boiling water. This is accomplished without running the bi-metal strip through bends that would deform or give it a permanent set. Washing the bi-metal strip in the washer of our invention also prevents the creation of a deleterious steam laden atmosphere around the bi-metal welding machine.

The strip washer of our invention consists of a tank contained within a dome-shaped condensing hood, both having slitted felt pads at each end portion, a blower mounted on top to condense the steam inside the hood and dry the emerging washed bi-metal strip, and means for heating the circulating water in the tank.

In its general aspect, the present invention has as its objective the elimination of the defects and disadvantages of prior art processing of bi-metal strip.

A specific object of the invention is the elimination of dirty bi-metal strips, defective welds in the glow switch assembly, and the introduction of deleterious material into the glow switch.

A further object is an improved method of treatment of the bi-metal strip comprising complete washing and drying prior to the cutting off, forming, and welding, of the bi-metal in glow switch assemblies.

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An additional object is a bi-metal strip washer comprising a tank having a constant flow of water therethrough and housed in a dome-shaped condensing hood, both tank and hood having slitted felt pads at each end thereof, a blower on top of the hood for condensing the steam within and drying the emerging washed bi-metal strip, and means for heating the water in said tank.

Other objects will appear to those skilled in the art to which it appertains as the description proceeds.

Referring to the drawing, in which like symbols of reference refer to similar parts throughout:

Fig. 1 is a side elevation partially in section of a bi-metal strip washer embodying our invention.

Fig. 2 is a transverse sectional view of the tank and hood, on the line II—II of Fig. 1, in the direction of the arrows, showing one of the pads in the end portion of the tank.

In the drawing, the bi-metal strip washer of our invention is designated generally by the reference numeral 10. It has a tank 12, suitably box-like in shape, which is separated by a partition 13 into a "dirty" wash section 14 and a "clean" wash section 15. These sections respectively have downward depending lower portions 16 and 17 in which are mounted the water-heating means 18 and 19.

The tank is mounted within a dome-shaped condensing hood 20. As shown in the drawing, slitted felt pads 22, 23, 24 and 25 are provided in the end walls of the tank and hood to hold the hot water around a bi-metal strip 28 passing through the tank 12 and retain the steam inside the steam condensing hood. Suitable openings or slits are provided in the partition 13 and the pads 22, 23, 24 and 25 to permit passage of the bi-metal strip 28 therethrough. These pads are held in place by suitable means such as screws 29. Water is continuously circulated desirably with a uniform rate of flow from an inlet 26 in the lower portion 17, through the sections 15 and 14 of the tank 12 in the order named, and discharged from an outlet connection 30 depending from section 14. An overflow hole 32 is provided in the first or dirty wash section 14.

The water heating means 18 and 19 are suitable electric immersion-type heaters, an example being Type 1213444, as manufactured by the

Westinghouse Electric Corporation. The condensing hood 20 has a double walled roof defining an air-heating chamber 34. Mounted on the top of the hood 20 is a suitable blower 36 for directing air at room temperature into the chamber 34 of the hood 20, thereby condensing steam on the inner surface of the dome from whence it runs down the curved sides of the hood 20 and into the tank overflow in the bottom portion of the hood. The blower air passing through the chamber 34 is heated by the condensing steam and directed by means of outlet pipes 38 onto both sides of the emerging washed strip 23 to dry it as the strip leaves the felt pad 22.

According to our invention, the bi-metal strip 26 is unwound from a reel (not shown) and fed into the slit through the felt pads 25, 24 at one end of the washer 10, into the "dirty" wash section 14, through the slit in the partition 13, into the "clean" wash section 15, and thence successively through the pads 23 and 22, from whence it emerges clean and is dried by the hot air from the outlets 38. The washed bi-metal then proceeds to a welding machine (not shown) where it is cut off to size, formed into the desired configuration and welded into position in glow switch assemblies.

It will be seen from the foregoing description that our invention has provided a bi-metal strip washer 10 and an improved method of preparing bi-metal strip for assembly in glow switches. The washer 10 consists of a tank 12 having a constant flow of heated water therethrough, and mounted within a dome-shaped condensing hood 16, slitted felt pads 22, 23, 24 and 25, at the ends of the tank 12 and hood 20, a blower 36 mounted on the hood for condensing the steam therein and drying the washed bi-metal, and a pair of immersion heaters 18 and 19 for heating the circulating water to a desired temperature. The rate of water flow is high enough so that the bi-metal strip is properly cleaned, while low enough so that the water is boiled during the operation.

Although a preferred embodiment of our invention has been described, it will be understood that modifications can be made.

We claim:

1. In apparatus for washing and drying bi-metal strips prior to cutting, forming, and welding for glow switch assemblies in combination, a tank for holding wash water, means for heating the water, a double walled condensing hood above said tank, a slitted feld pad in each end portion of the tank for maintaining the heated water level above the strip and means on the top for blowing air into the double walled hood to heat said air and to condense steam on the inner surface thereof and warmed air outlet means from said hood for drying the emerging washed bi-metal strip.

2. In apparatus for washing and drying bi-metal strips prior to cutting, forming, and welding for glow switch assemblies, in combination, a tank for holding wash water, means for heating said water, a dome-shaped condensing hood with a double walled roof over said tank, and means for blowing air at room temperature between the double walls of said hood to heat said air and to condense steam on the inner surface thereof and warmed air outlet means from said hood for drying the emerging washed bi-metal strip.

3. In apparatus for washing and drying bi-metal strips prior to cutting, forming, and welding for glow switch assemblies, in combination, a tank for holding wash water, means for heating said water, a dome-shaped condensing hood with a double walled roof over said tank, a slitted felt pad in each end portion of the tank and hood for maintaining the heated water level above the strip and containing the steam inside the condensing hood and means for blowing air at room temperature between the double walls of said hood to heat said air and to condense steam on the inner surface thereof and warmed air outlet means from said hood for drying the emerging washed bi-metal strip.

4. In apparatus for washing and drying bi-metal strips prior to cutting, forming and welding for glow switch assemblies, in combination a tank for holding water, a double-walled condensing hood above said tank, said hood providing a chamber for heating air and condensing steam, a slitted felt pad in each end portion of the tank and the hood for maintaining the heater water level above the strip and for containing the steam inside the condensing hood, and a blower on the roof of said hood for directing air at room temperature into said chamber to heat said air and to condense the steam on the inner surface of said hood and warm air outlet means from said hood for drying an emerging washed bi-metal strip.

5. In apparatus for washing and drying bi-metal strips prior to cutting, forming, and welding for glow switch assemblies, in combination, a tank for holding water and divided into a "clean" wash and "dirty" wash compartment by a partition, a depending extension on each compartment, an immersion-type electric heater in each extension, inlet means in the "clean" wash compartment extension for introducing water under constant flow into the "clean" wash compartment and outlet means in said "dirty" wash compartment for withdrawing said water from said "dirty" wash compartment, a double-walled condensing hood above said tank, said hood providing a chamber for heating air and condensing steam, a slitted felt pad in each end portion of the tank and the hood for maintaining the heated water level above the strip and for containing the steam inside the condensing hood, and a blower on the roof of said hood for directing air at room temperature into said chamber to heat said air and to condense the steam on the inner surface of said hood and warm air outlet means from said hood for drying an emerging washed bi-metal strip.

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