

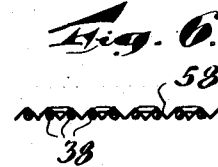
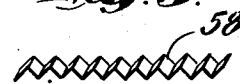
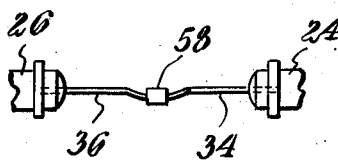
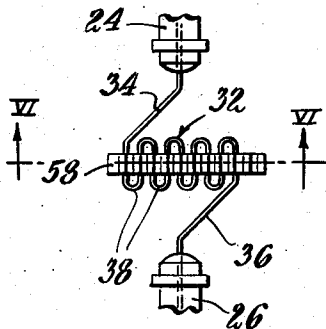
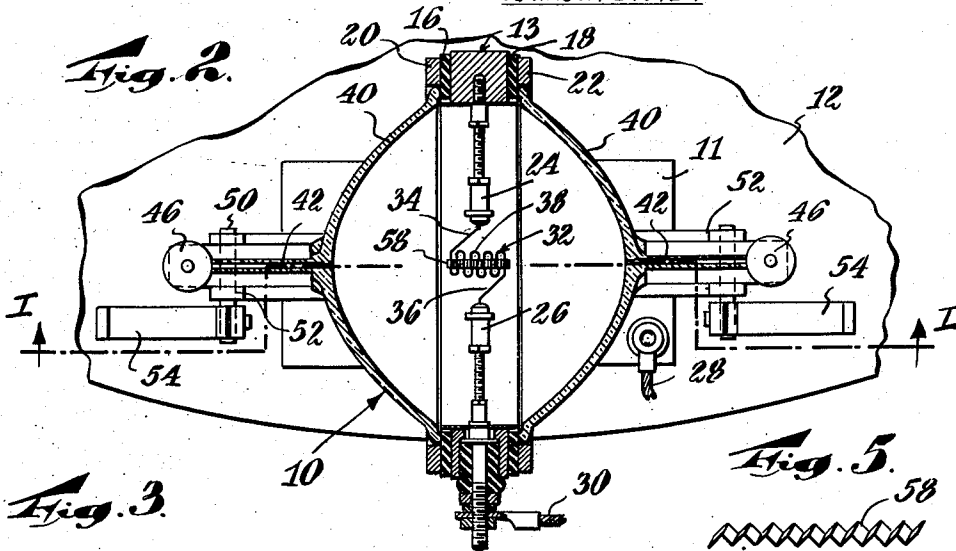
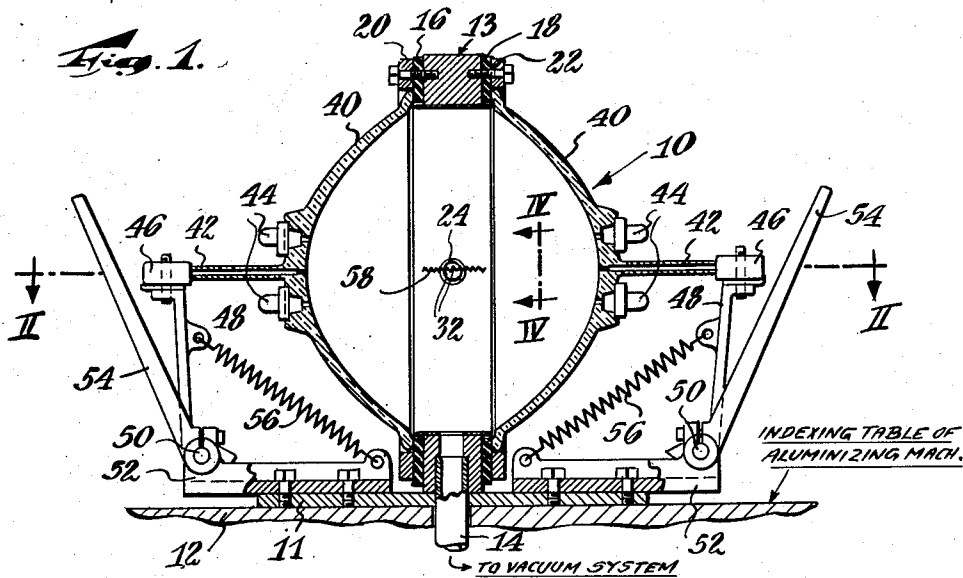
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FOIL AND LAMP BODY HOLDER FOR METALLIZING MACHINES

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FOIL AND LAMP BODY HOLDER FOR METALLIZING MACHINES

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This invention relates to automatic metallizing machines and, more particularly, to a foil holder for such a machine.

In the manufacture of incandescent lamps such as, for example, sealed-beam head lamps, wherein a metallized reflector surface on the interior surface of the lamp envelope is required, metallic ferrules or leading-in conductors are first inserted and sealed along with an exhaust tubulation to the reflector or envelope. After annealing in a suitable oven and cooling to room temperature, the reflector member is then provided on an automatic machine with a metallized reflector surface, of material such as aluminum or silver, on its interior surface.

In the past, V-shaped strips of aluminum foil or other suitable metallizing material have been placed by hand in a conventional tungsten coil foil holder. After a few flashes, the foil holder becomes rather brittle and then any contact made with it by the operator's hand during the foil loading operation usually results in breakage. This breakage of the flashing coils results in considerable shut-down time and corresponding increase in production costs.

Hence, it has been found desirable according to our invention, to employ a foil holder in the form of a grid or grating. Further, by employing the metallizing foil in the shape of a corrugated strip, the foil may be loaded easily onto the foil holder grid of our invention without the operator's hand contacting the holder, thereby reducing breakage to a minimum and eliminating the undesirable prior defects usually caused thereby.

In its general aspects, the present invention is concerned with eliminating the undesirable features and characteristics of the prior art foil holders for an automatic metallizing machine.

A specific object of the present invention is a grid-like foil holder which can be loaded with a corrugated strip of foil without operator contact.

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

In the accompanying drawing, in which like numerals of reference indicate similar parts throughout the several views:

Fig. 1 is a side elevational view, partially in section, of a metallizing head wherein the foil holder grid of our invention is employed.

Fig. 2 is a sectional view of the metallizing head on the line II-II of Fig. 1, in the direction of the arrows.

Fig. 3 is a plan view of the foil holder grid and corrugated strip foil of our invention.

Fig. 4 is an end view of the holder of Fig. 3.

Fig. 5 is a perspective view of the corrugated foil strip of our invention.

Fig. 6 is a sectional view of the foil holder and foil on the line VI-VI of Fig. 3, in the direction of the arrows.

Referring to the drawing, and more particularly to Figs. 1 and 2, a metallizing or aluminizing head for an automatic metallizing machine is designated by the reference numeral 10 and is suitably mounted on a head base 11 which rests on an indexing table 12.

This head 10 comprises an annular reflector mounting body 13 and is provided with an exhaust tube 14 in the bottom. Reflector gaskets 16 and 18 are retained against the body 13 by gasket clamps 20 and 22. A pair of oppositely disposed foil holder electrodes 24 and 26 (Fig. 2) are mounted in the body 13 and provided

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with suitable electrical connections 30 (only one of which is illustrated), extending to a suitable voltage supply (not shown). Between the electrodes 24 and 26 a non-inducting grid 32 of our invention is mounted axially with respect to the body 13. This grid 32 (Fig. 3) is a conveniently a tungsten strip having mounting portions 34 and 36 and a center or grating portion 38 composed of a series of continuous and parallel sections or connected hairpin turns lying in one plane.

A pair of open necked reflectors or envelopes 40, each having an exhaust tubulation 42 and a plurality of ferrules 44, are positioned with the lips on their open ends, against the head gaskets 16 and 18 respectively. Each reflector 40 is kept in position thereat by means of a compression rubber 46 carried on and held against the end of the exhaust tube 42 by a spring arm 48, and thereby provided with a vacuum-tight seal after a suitable evacuation through the exhaust tube 14 in the body 13. The lower end of each arm 48 is fixed to a shaft 50, rotatable in a bracket 52 on the head base 11. On the other end of each shaft 50 is a head clamp handle 54 for manually loading and unloading the head 10. A return spring 56, extending from the upper portion of each spring arm 48 to the inner end of its bracket 52, biases the arms 48 and maintains the compression rubbers 46 against the tubulations 42.

We have also found that the above mentioned defects of the prior art foil holder coils can be further minimized by employing a metallizing foil 58 having the shape of a corrugated strip, as shown in Fig. 5.

A suitable automatic aluminizing machine (not shown) may comprise for example, 16 such heads, 10, arranged and spaced about the indexable table 12, and indexing through a series of stations thereon.

At station "1" any finished or aluminized reflectors 40 may be unloaded from the head 10. At station "2" the metallizing foil 58 is placed onto the foil holder grid 32 of our invention, without operator contact with said holder, and a pair of oppositely disposed reflectors 40 to be metallized are positioned against the gaskets 16 and 18 on the body 13 and held thereat by the compression rubbers 46. At stations "3" through "10" the interior of the oppositely disposed reflectors 40 is evacuated through the exhaust tube 14.

At stations "11," "12" and "13" a suitable voltage is applied across the connectors 30 and the foil holder electrodes 24 and 26, and hence the grid 32, to electrically heat said grid and the foil 58 thereon to a temperature which will completely vaporize the foil 58 onto the interior of the reflectors 40 without burning the coating already applied or vaporizing the tungsten grid 32. At station "11" the foil 58 is melted sufficiently to flow around the grid 32. At station "12" practically all the foil 58 should be vaporized. At station "13" any spots of excess metallizing material are vaporized, thus leaving the grid practically free.

At stations "14," "15" and "16" the grid 32 and the now coated reflectors 40 are allowed to cool prior to unloading. At station "1" the now cooled aluminized reflectors 40 are unloaded from the head 10 by manual operation of the handles 54.

Thus it will be seen from the foregoing description that the present invention has overcome the disadvantages of the prior art foil holders for a head of an automatic metallizing machine. We have provided a foil holder grid and a corrugated strip metallizing foil which eliminate operator contact during the loading of said holder and reduce foil holder breakage and resultant machine down-time to a minimum.

Although a preferred embodiment has been disclosed, it will be understood that modifications may be made without departing from the spirit and scope of the invention.

We claim:

1. A head for an automatic machine for coating the interior surface of a pair of reflectors each having an exhaust tubulation, comprising reflector mounting means provided with an interior chamber and exhausting means, gasket means on said mounting means, for engaging the edges of said reflectors, means for both holding said reflectors against said gasket means and closing said

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tubulations, supporting and heating means extending from said mounting means into said chamber, a foil holder grid on said supporting and heating means and having mounting portions and a center grid portion composed of a series of continuous sections lying in one plane, and means for energizing said grid through said supporting and heating means.

2. A head for an automatic machine for coating the interior surface of a pair of reflectors each having an exhaust tubulation, comprising a reflector mounting body provided with an interior chamber and an exhaust tube, gasket means on said body for engaging the open ends of said reflectors, means for both holding said reflectors against said gasket means and closing said tubulations, supporting and heating means extending from said mounting body into said chamber, a foil holder grid on said supporting and heating means and having mounting portions and a center grid portion composed of a series of continuous sections lying in one plane, and means for energizing said grid through said supporting and heating means.

3. A head for an automatic machine for coating the interior surface of a pair of reflectors each having an exhaust tubulation, comprising a reflector mounting body provided with an interior chamber and an exhaust tube, a pair of gaskets for sealing the edges of said reflectors to said body, means both for holding said reflectors against said gaskets and sealing said tubulations, supporting and heating means extending from said mounting body into said chamber, a foil holder grid on said supporting and heating means and having electrode connecting end portions and a grating portion composed of a series of continuous sections lying in one plane, and means for energizing said grid through said supporting and heating means.

4. A head for a turret of an automatic machine for coating the interior surface of a pair of reflectors each having an exhaust tubulation, comprising a reflector mounting body provided with an interior chamber and an exhaust tube, a pair of gaskets for sealing the edges of said reflectors to said body, a pair of mounting brackets on said turret, a horizontal shaft on each of said

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brackets, a spring arm on one end of each of said shafts, a head clamp handle on the other end of each of said shafts for operating said spring arms, a compression rubber on the upper end of each of said spring arms for positioning said reflectors against said gaskets and sealing said tubulations, biasing means for each of said arms supporting and heating means extending from said mounting body into said chamber, a foil holder grid on said supporting and heating means, and means for energizing said grid through said supporting and heating means.

5. A head for an automatic machine for coating a pair of reflectors each having an exhaust tubulation, comprising a head base, a reflector mounting body on said base provided with an interior chamber and an exhaust tube, a pair of reflector gaskets on said body, a pair of gasket clamps for retaining said gaskets against said body, a pair of mounting brackets on said base, a horizontal shaft on each of said brackets, a spring arm on one end of each of said shafts, a head clamp handle on the other end of each of said shafts for operating said spring arms, a compression rubber on the upper end of each of said spring arms for positioning said reflectors against said gaskets and sealing said tubulations, biasing means for each of said arms, electrodes extending from said body and into said chamber, a foil holder grid between said electrodes, and means for energizing said electrodes to flash said material onto said reflectors.

6. A refractory metal strip foil holder grid for a metalizing head comprising a pair of electrode-connecting end portions and a center grating portion having a series of connected and hairpin turns lying in one plane.

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