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(54) IMPROVEMENTS IN OR RELATING TO AN ANODE CONNECTING
CLIP FOR CATHODE RAY TUBES

(71) We, PRESSAC LIMITED, a British Company of Acton Grove, Long Eaton, Nottingham, NG10 1FW., do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to an anode connecting clip for cathode ray tubes.

Anode connecting clips of a different kind to the ones in accordance with the invention are disclosed in the specification of our prior Patent Specification 1,195,690.

The primary object of the present invention is to provide a generally improved anode connecting clip relative to the previously proposed anode connecting clips, and to ensure as far as practicable that there is little or no danger upon insertion of the legs of the clip into an anode cavity cap of damaging the base of the anode cavity cap whose fragile glass is otherwise susceptible to shattering.

According to the present invention there is provided an anode connecting clip for cathode ray tubes said clip being of springy electrically conductive material and comprising a hollow body portion provided with legs terminating in claws formed with shoulders, each leg having an outwardly extending cap-abutment member intermediate of the body portion and the claws to limit entry of the claws of the clip into an aperture in a complementary anode cavity cap, into which cap the claws of the clip can be introduced to a region determined by the location of the abutment members which are adapted to project beyond and engage with the marginal edge of the aperture of the cap.

The hollow body portion of the clip may be of square cross-section and be provided with four legs associated one with each of the four walls thereof, each leg being formed with a cap-abutment prong and terminating in a claw adapted to engage with

the edge or an aperture in the cap. Alternatively the hollow body portion may be of triangular cross-section and be provided with three legs extending respectively one from each of the three walls thereof and each being formed with a cap abutment prong and a claw. When the body portion of the clip is four-sided and square outwardly extending springy anchorage prongs may be provided on opposite four walls of the body portion that are at right angles to a wall having a projecting arm to which a cable can be crimped.

There is still further provided in accordance with the invention an assembly comprising, in combination a connecting clip of this invention and a housing therefor into which the body of the connecting clip can be inserted and anchored and an anode cavity cap for a cathode ray tube or the like with which the claws of the clip can be engaged.

By way of example preferred forms of anode connecting clips embodying this invention will now be described by way of example with reference to the diagrammatic drawings accompanying the Provisional Specification and, wherein:—

Figure 1 is an end view of an anode connecting clip illustrative of the invention;

Figure 2 is a sectional view of the clip of Figure 1;

Figure 3 is a front view of the clip of Figure 1;

Figure 4 is a side view of an anode connecting clip illustrative of the invention and having a lead fixed to the connector clip arm;

Figure 5 is a plan view of Figure 4;

Figure 6 illustrates in section a fragment of a moulded housing or cover in which the body part of the clip, shown in elevation, is anchored.

Figure 7 illustrates a detail of Figure 6 drawn to an enlarged scale, and

Figure 8 shows in section an anode cavity cap with which an anode connecting

clip illustrative of the invention has been engaged by insertion of the claws into the cap by a distance limited by the cap-abutment prongs.

5 Referring firstly to Figures 1 to 3, there is shown a hollow anode connecting clip of springy electrically conductive metal 1 of square cross-section and having four legs 2 extending respectively one from each of the four walls of a body portion 3. A pair of opposed walls (as shown in Figure 3) is provided with springy anchorage prongs 4 formed by cutting out a rectangular U-shaped strip of metal and bending and inclining the cut strip outwardly. One of the remaining walls of the body portion 3 is provided with an arm 5 formed by part of the said body portion wall said part 5 being directed outwardly at right angles to the wall from which it is formed. The purpose of the arm 5 will be described later.

Each leg 2 terminates at its end opposite the body portion 3 in a triangular claw 6 and each leg 2 is provided with a cap-abutment member consisting of a prong 7 formed in similar fashion to the anchorage prongs 4.

As will be seen from Figures 4 and 5 the arm 5 shown in Figures 1 to 3 is deformed and crimped on to the core of a cable 8, thereby avoiding the need to have a soldered connection which in the past was the usual practice. In Figures 4 and 5 the arm 5 in its crimped deformed state is denoted by 5'.

As can be seen from Figures 6 and 7 the anchorage prongs 4 serve to enable the clip body portion 3 to be fixed in a cavity in a moulding or housing 9. Figure 7 illustrates the way in which the housing cavity walls are resilient and initially yield upon introduction of the prongs 4 into the moulding 9 but region 12 of the moulding 9 beyond the reach of the prongs 4 springs back to surround closely the periphery of the body portion 3. Alternatively, if the moulding 9 were to be made of a harder and less resilient material the prongs 4 would serve to secure the clip to the moulding 9 by allowing the prongs 4 to penetrate the surface of the moulding wall. If a force were to be applied to the clip 1 to attempt to remove it from the moulding 9 the prongs 4 would be deformed and bent outwards radially thus embedding themselves further into the moulding wall and the effect would be more pronounced with increasing hardness of the moulding material. The moulding 9 may take the form of the plastics cover as shown in the drawings accompanying our prior Patent Specification 1,195,690.

The cavity in the moulding 9 that receives body portion 3 of the clip may be pre-shaped to provide a pocket or pockets

into which the anchorage prongs 4 can snap, the prongs 4 yielding and moving into the plane of the walls from which they extend as the body portion 3 is engaged in the housing and then springing outwardly due to their inherent resiliency and snapping into said pocket or pockets to prevent withdrawal of said body portions.

It will also be seen that the shoulders or elbows of the claws 6 spring under the edge of the opening in the cap 10 so as to yieldingly resist unintentional withdrawal and disengagement of the clip from the cap.

Although the particular forms of the invention as illustrated and particularly described show an anode connecting clip with four legs and four claws it is not intended to limit the clips to such forms and arrangements, for instance, instead of four legs and four claws the clip may have three legs and three claws as is shown, for example in the drawings accompanying the drawings of our prior Patent Specification 1,195,690.

WHAT WE CLAIM IS:—

1. An anode connecting clip adapted to project into a hollow anode cavity cap of a cathode ray tube, said clip being of springy electrically conductive material and comprising a hollow body portion provided with legs terminating in claws formed with shoulders, each leg having an outwardly extending cap-abutment member intermediate of the body portion and the claws to limit entry of the claws of the clip into an aperture in a complementary anode cavity cap, into which cap the claws of the clip can be introduced to a region determined by the location of the abutment members which are adapted to project beyond and engage with the marginal edge of the aperture of the cap.

2. A clip as claimed in Claim 1, wherein said hollow body portion is of square cross section and outwardly extending springy anchorage prongs are provided on opposite walls of the body portion that are at right angles to a wall having a projecting arm to which a cable can be crimped.

3. A clip as claimed in Claim 1 or 2, wherein the body portion of the clip has anchorages consisting of springy prongs adapted to engage with a wall of a bore in a housing in which the body portion of the clip is inserted and supported when in use, said body portion also having an arm projecting outwardly therefrom, the arm being so arranged and constructed as to enable a conductor wire or cable to be crimped on the clip.

4. An anode connecting clip for cathode ray tubes constructed substantially as hereinbefore described with reference to and

clip illustrative of the invention has been engaged by insertion of the claws into the cap by a distance limited by the cap-abutment prongs.

5 Referring firstly to Figures 1 to 3, there is shown a hollow anode connecting clip of springy electrically conductive metal 1 of square cross-section and having four legs 2 extending respectively one from each of 10 the four walls of a body portion 3. A pair of opposed walls (as shown in Figure 3) is provided with springy anchorage prongs 4 formed by cutting out a rectangular U-shaped strip of metal and bending and inclining the cut strip outwardly. One of 15 the remaining walls of the body portion 3 is provided with an arm 5 formed by part of the said body portion wall said part 5 being directed outwardly at right angles to the wall from which it is formed. The purpose of the arm 5 will be described later. 20

Each leg 2 terminates at its end opposite the body portion 3 in a triangular claw 6 and each leg 2 is provided with a cap-abutment member consisting of a prong 7 25 formed in similar fashion to the anchorage prongs 4.

As will be seen from Figures 4 and 5 the arm 5 shown in Figures 1 to 3 is deformed and crimped on to the core of a cable 8, 30 thereby avoiding the need to have a soldered connection which in the past was the usual practice. In Figures 4 and 5 the arm 5 in its crimped deformed state is denoted by 35 5'.

As can be seen from Figures 6 and 7 the anchorage prongs 4 serve to enable the clip body portion 3 to be fixed in a cavity in a moulding or housing 9. Figure 7 illustrates 40 the way in which the housing cavity walls are resilient and initially yield upon introduction of the prongs 4 into the moulding 9 but region 12 of the moulding 9 beyond the reach of the prongs 4 springs back to 45 surround closely the periphery of the body portion 3. Alternatively, if the moulding 9 were to be made of a harder and less resilient material the prongs 4 would serve to secure the clip to the moulding 9 by 50 allowing the prongs 4 to penetrate the surface of the moulding wall. If a force were to be applied to the clip 1 to attempt to remove it from the moulding 9 the prongs 4 would be deformed and bent outwards 55 radially thus embedding themselves further into the moulding wall and the effect would be more pronounced with increasing hardness of the moulding material. The moulding 9 may take the form of the plastics cover as shown in the drawings accompanying our prior Patent Specification 1,195,690. 60

The cavity in the moulding 9 that receives body portion 3 of the clip may be 65 preshaped to provide a pocket or pockets

into which the anchorage prongs 4 can snap, the prongs 4 yielding and moving into the plane of the walls from which they extend as the body portion 3 is engaged in the housing and then springing outwardly 70 due to their inherent resiliency and snapping into said pocket or pockets to prevent withdrawal of said body portions.

It will also be seen that the shoulders or elbows of the claws 6 spring under the edge 75 of the opening in the cap 10 so as to yieldingly resist unintentional withdrawal and disengagement of the clip from the cap.

Although the particular forms of the invention as illustrated and particularly described show an anode connecting clip with 80 four legs and four claws it is not intended to limit the clips to such forms and arrangements, for instance, instead of four legs and four claws the clip may have three legs and three claws as is shown, for 85 example in the drawings accompanying the drawings of our prior Patent Specification 1,195,690.

WHAT WE CLAIM IS:—

1. An anode connecting clip adapted to project into a hollow anode cavity cap of a cathode ray tube, said clip being of 95 springy electrically conductive material and comprising a hollow body portion provided with legs terminating in claws formed with shoulders, each leg having an outwardly extending cap-abutment member intermediate 100 of the body portion and the claws to limit entry of the claws of the clip into an aperture in a complementary anode cavity cap, into which cap the claws of the clip can be introduced to a region determined 105 by the location of the abutment members which are adapted to project beyond and engage with the marginal edge of the aperture of the cap.

2. A clip as claimed in Claim 1, wherein 110 said hollow body portion is of square cross section and outwardly extending springy anchorage prongs are provided on opposite walls of the body portion that are at right angles to a wall having a projecting arm to which a cable can be crimped. 115

3. A clip as claimed in Claim 1 or 2, wherein the body portion of the clip has 120 anchorages consisting of springy prongs adapted to engage with a wall of a bore in a housing in which the body portion of the clip is inserted and supported when in use, said body portion also having an arm projecting outwardly therefrom, the arm 125 being so arranged and constructed as to enable a conductor wire or cable to be crimped on the clip.

4. An anode connecting clip for cathode ray tubes constructed substantially as hereinbefore described with reference to and 130



as illustrated by the drawings accompanying the Provisional Specification.

- 5 A cathode ray tube fitted with an anode connecting clip as claimed in any of the preceding Claims 1 to 4, said clip being supported by a moulded housing and engaging with a cavity cap.

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