Jan. 5, 1971 B. J. LEIMONTAS ET AL 3,553,727

KINESCOPE SOCKET WITH SPARK GAP

Filed Dec. 16, 1969 2 Sheets-Sheet 1

FIG. 1

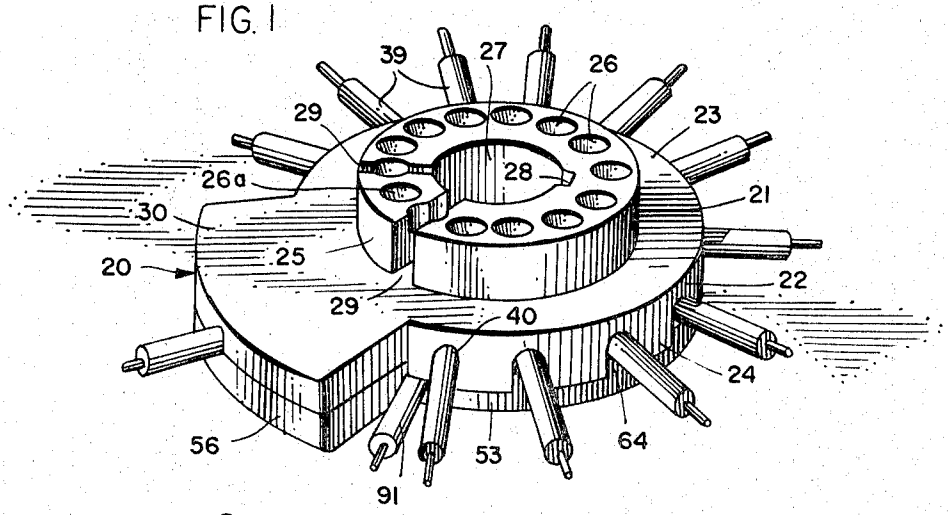

FIG. 2

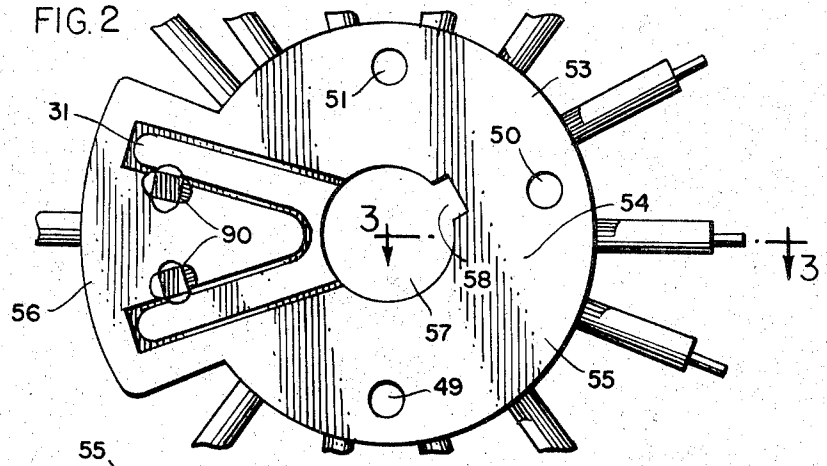

FIG. 4

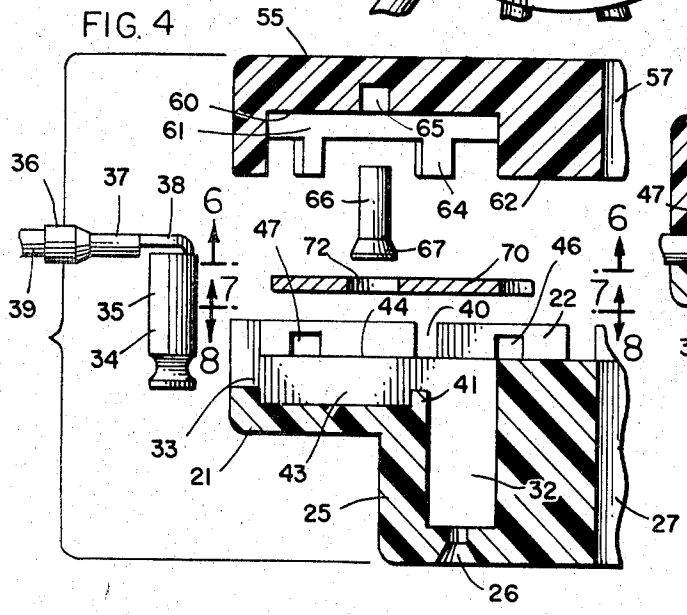

FIG. 3

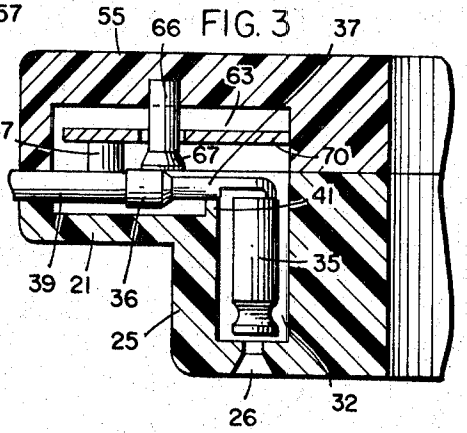

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FIG. 5

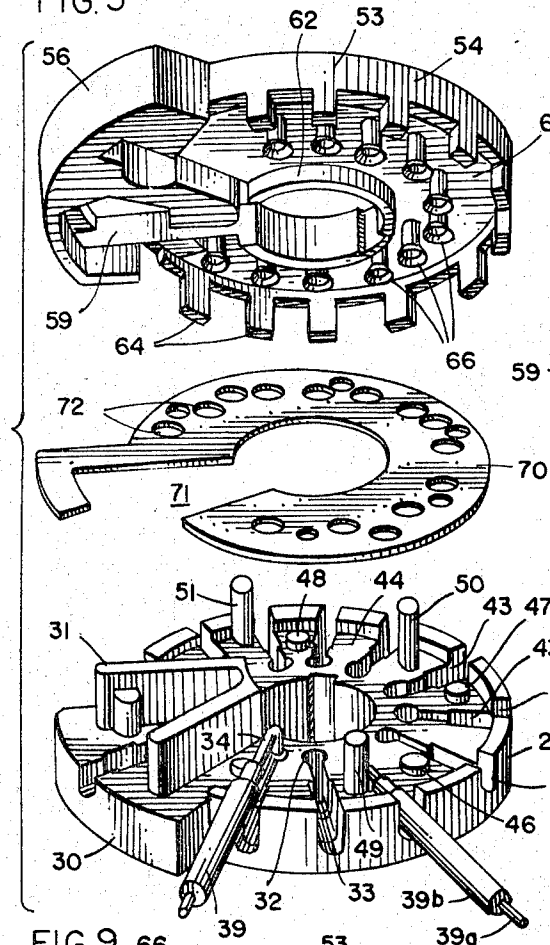


FIG. 6

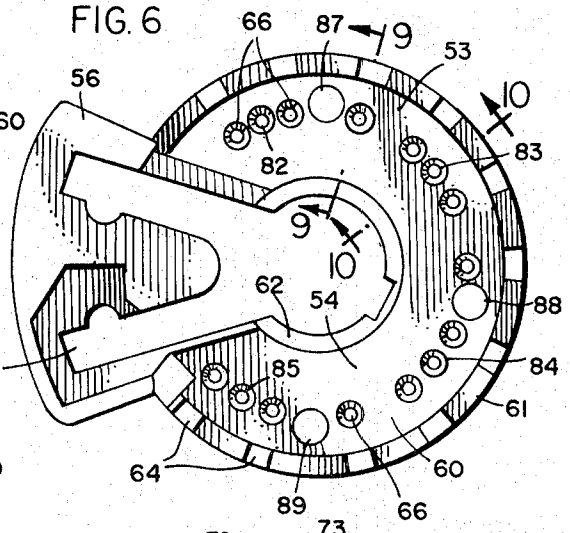


FIG. 7

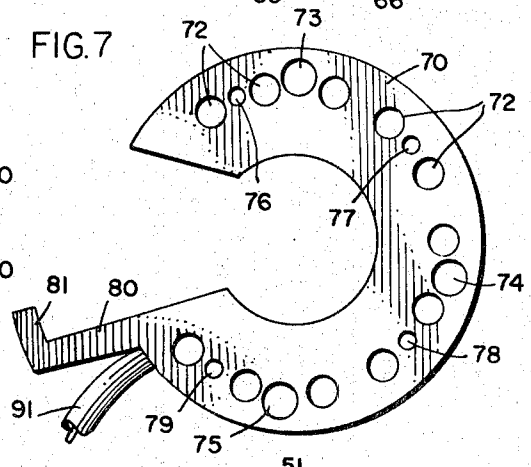


FIG. 9

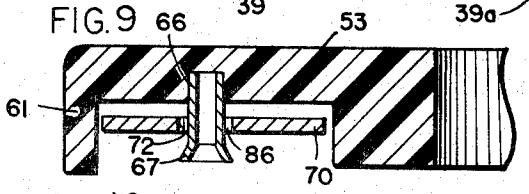


FIG. 10

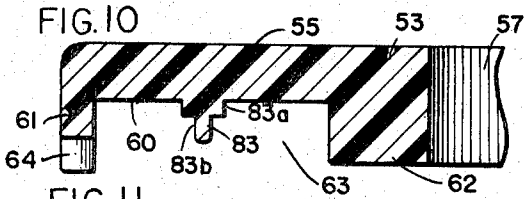


FIG. 11

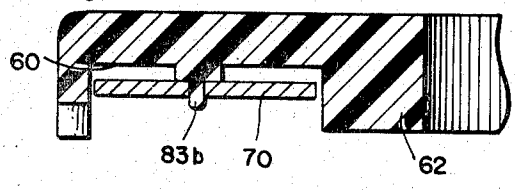
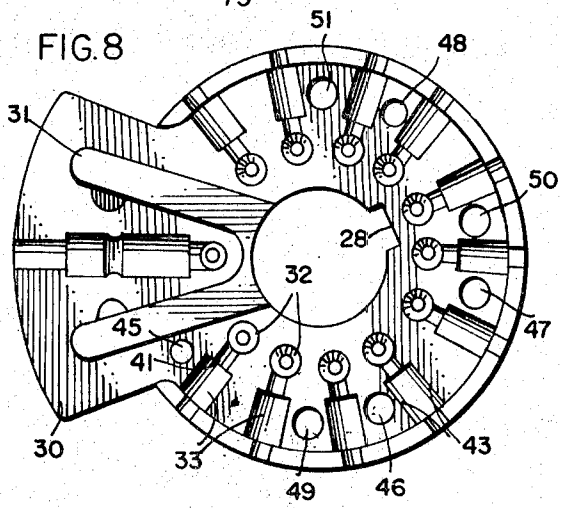


FIG. 8



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United States Patent Office

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3,553,727

KINESCOPE SOCKET WITH SPARK GAP

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Continuation-in-part of application Ser. No. 748,433, July 29, 1968. This application Dec. 16, 1969, Ser. No. 885,603

The portion of the term of the patent subsequent to Mar. 24, 1987, has been disclaimed

Int. Cl. H01j 5/60

U.S. Cl. 313—325

15 Claims

ABSTRACT OF THE DISCLOSURE

A spark gap kinescope socket wherein the spacing of the spark gap is maintained constant. The socket includes a socket body which is provided with a plurality of openings for receiving the terminal pins of a television picture tube. A generally L-shaped metal contact is positioned within the socket body in alignment with each of the pin-receiving openings, and a lead wire is connected to each metal contact and extends outwardly from the socket body. A back plate is secured to the socket body in covering relationship with the metal contacts, and a metal conducting plate is interposed between the metal contacts and the back plate. The conducting plate is provided with a plurality of openings aligned with the metal contacts, and a plurality of conducting pins extends from the back plate through the openings in the conducting plate into electrical engagement with the metal contacts. Each pin is secured against transverse movement by the back plate, and the periphery of each conducting pin is spaced from the periphery of the associated conducting plate opening to provide a spark gap.

RELATED APPLICATION

This application is a continuation-in-part of our prior copending application entitled "Spark Gap Picture Tube Socket," Ser. No. 748,433, filed July 29, 1968, now Pat. No. 3,502,933.

BACKGROUND

This invention relates to spark gap kinescope sockets particularly suitable for television picture tubes.

While spark gap sockets for picture tubes have been provided in the past, these sockets have encountered some difficulties. For example, U.S. Pat. Nos. 3,277,910, 3,240,980, 3,251,016, and 3,377,612, all relate to spark gap sockets. The sockets described in these patents provide a spark gap or electrical spacing between the terminal pin-receiving metal contacts and a conductor ring positioned within the socket body. A common problem with these sockets is that, for a number of reasons, this spacing might not always be accurately maintained. For example, the conductor ring and the various insulating wafers or plates may warp or move axially with respect to the terminal pins and the metal contacts, or the metal contacts may move with respect to the conductor ring. The spark gaps for the voltages involved are relatively small, and a shift in spacing of a few thousandths of an inch changes the voltage breakdown values considerably.

It will be appreciated that when the socket is engaged with the picture tube, the terminal pins of the tube must be forced into the pin-receiving sleeves of the metal contacts, and the position of the metal contacts within the socket body may thereby be changed. Indeed, "float" or free movement of the tube pin contacts in a direction transverse to the tube pins is desirable for self-alignment during the engagement of the picture tube with the socket, as a rigid construction makes the mating a force fit during which the contacts can be distorted causing mechanical pressure on the tube parts and thereby affecting positive electrical contact. This may cause high values of contact resistance and inconsistency of electrical contact which may introduce "noise" in the circuit. Further, after the socket is positioned on the picture tube, the lead wires attached to the metal contacts are then connected to the appropriate components within the television set, and this step may cause the metal contacts to be pulled or twisted slightly out of position. The spacing which provides the spark gap may be typically of the order of thousandths of an inch, and even a slight change in the position of the metal contact with respect to the conductor ring can cause a substantial variance in the voltage at which arcing will occur between these parts.

Further, in these prior sockets arcing may occur adjacent to the insulating wafer, and the wafer may become carbonized. Subsequent arcing may track across the carbonized area of the insulator, and the breakdown voltage will be reduced.

SUMMARY

The socket disclosed in our said application Ser. No. 748,43 provides a constant spark gap by maintaining a fixed relationship between the conducting pins and the conducting plate, each of which are secured to the insulating wafer. We have now found that a socket can be provided with a constant spark gap even when the insulating wafer is eliminated. The conducting pins and the conducting plate are maintained in constant, fixed positions with respect to each other by locating means on the back plate of the socket. Each conducting pin extends from the back plate through an opening in the conducting plate into electrical engagement with a metal contact, and the spark gap is provided between the periphery of the conducting pin and the periphery of the conducting plate. The locator means for the conducting plate also spaces the conducting plate away from the back plate, and support means on the socket body spaces the conducting plate away from the metal contacts. Arcing thereby occurs completely within an air dielectric, and this air dielectric is self-recovering so that repetitious results can be obtained by the spark gap in the socket. The size of the pin and the diameter of the openings in the conducting plate can be very accurately regulated, and the spacing which provides the arc gap can be accurately controlled. The diameter of each of the openings in the conducting plate can be varied depending upon the breakdown voltage desired, and the conducting pins maintain electrical engagement with the metal contacts at all times even when the metal contacts move as a result of normal use of the socket.

DESCRIPTION OF THE DRAWING

The invention will be explained in conjunction with an illustrative embodiment shown in the accompanying drawing, in which—

FIG. 1 is a perspective view of a kinescope socket embodying the present invention;

FIG. 2 is a bottom plan view of the socket illustrated in FIG. 1;

FIG. 3 is a fragmentary sectional view taken along the line 3—3 of FIG. 2;

FIG. 4 is an exploded view of FIG. 3;

FIG. 5 is an exploded perspective view of the socket;

FIG. 6 is a plan view of the back plate taken along the line 6—6 of FIG. 4;

FIG. 7 is a plan view of the conducting plate taken along the line 7—7 of FIG. 4;

FIG. 8 is a plan view of the socket body taken along the line 8—8 of FIG. 4;

FIG. 9 is a sectional view of the back plate and con-

ducting plate as would be seen along the line **9—9** of FIG. 6;

FIG. 10 is a sectional view taken along the line **10—10** of FIG. 6; and

FIG. 11 is a view similar to FIG. 10 showing the back plate with conducting plate.

DESCRIPTION OF SPECIFIC EMBODIMENT

Referring now to the drawing, the numeral **20** designates generally a television picture tube socket which includes a socket body **21** formed of suitable insulating material such as polypropylene, general purpose phenolic, glass alkyd, or the like. The socket body **21** includes a base portion **22** having a flat upper surface **23** and a depending perimetric side wall **24**, and a socket portion **25** which extends upwardly from the base portion **22**. The socket portion **25** is generally cylindrical and is provided with a plurality of arcuately arranged openings **26** which are adapted to receive the terminal pins of a television picture tube. A central aperture **27** having an axially extending key way **28** is provided through the socket portion and is adapted to receive the locating pin of the picture tube base.

The particular socket illustrated is intended for use with a picture tube having a high voltage focusing anode which is received in the pin-receiving opening **26***a*. The socket portion **25** is provided with radially extending slots **29** on either side of the opening **26***a* which may receive a barrier wall provided on the tube base to surround the high voltage focusing anode or which may provide an air gap insulation for the high voltage anode. Similarly, the base portion **22** is provided with a radially outwardly extending tab portion **30** which supports the downwardly extending generally U-shaped high voltage barrier wall **31** (FIGS. 2 and 5). It is to be understood, however, that the invention may also be used with sockets which are not provided with the high voltage barrier wall or the tab portion **30** and which are generally circular. Such sockets are commonly used on black and white picture tubes.

Referring now to FIGS. 3–5, the socket portion **25** is provided with a generally cylindrical bore **32** in axial alignment with each of the openings **26** and a recess **33** extending radially outwardly from each bore **32**. A plurality of generally L-shaped metal contacts **34** are received by the socket body, and each metal contact **34** includes a generally tubular portion **35**, a clamping portion **36**, a sleeve portion **37**, and a connecting portion **38**. As can be seen best in FIG. 3, the tubular portion **35** of each of the metal contacts **34** is received by a bore **32** and is adapted to receive and engage a terminal pin of the picture tube which is inserted through the opening **26**. The sleeve portion **37** and clamping portion **36** serve to connect the metal contact to a lead wire **39** provided for each of the terminal pins and which extends through a slot **40** in the side wall **24** of the socket which is aligned with the radially extending recess **33**. As is well known in the art, the sleeve portion **37** is crimped about the bare wire strands **39***a* of the lead wire, and the clamping portion **36** is crimped about the covering insulation **39***b* of the wire.

The sleeve portion **37** abuts the wall **41** which separates the bore **32** from the recess **33**, and the clamping portion **36** may be spaced slightly from the bottom of the recess. The sides of each recess **33** are defined by vertically extending walls **43**, and the distance between the side walls **43** is designed so that the contact may "float" or move somewhat within the recess in a direction transverse to the plane of the L-shaped contact to permit self-alignment of the tubular portion **35** with the terminal pin of the picture tube.

Referring now to FIGS. 4, 5 and 8, the socket body is seen to be provided with a generally planar back surface **44** which is interrupted by the bores **32** and recesses **33** and the central aperture **27**. Relatively short support studs **45**, **46**, **47** and **48** extend away from the planar back surface **44** between selected pairs of adjacent recesses **33**, and relatively elongated locating studs **49**, **50** and **51** extend from the planar back surface between other pairs of recesses **33**.

Referring now to FIGS. 3–6, the socket **20** includes a back plate **53** which is also formed of suitable insulating material and may advantageously be formed of the same material as that of the socket body **21**. The back plate **53** is seen to include a generally circular central portion **54**, a generally planar back surface **55** and a tab portion **56** having a shape similar to the shape of tab portion **30** of the socket body. The back plate is provided with a central aperture **57** having a key way **58** which are aligned, respectively, with the central aperture **27** and key way **28** of the socket body, and a generally U-shaped slot **59** for receiving the high voltage barrier wall **31** of the socket body. The back plate has a flat front surface **60** which is defined by a perimetric side wall **61** and a generally cylindrical aperture wall **62** extend away from the flat surface **60** to provide an arcuate channel **63**. The perimetric side wall **61** includes circumferentially spaced pegs **64** which are spaced and dimensioned to be received by the slots **40** provided in the socket body through which the lead wires **39** extend.

An opening **65** is provided in the flat front surface **60** of the back plate in general radial alignment with each of the pegs **64** intermediate the side wall **61** and the aperture wall **62**. Each of the openings **65** is in general axial alignment with one of the metal contacts **34** positioned in the socket body, and an elongated generally cylindrical conducting pin **66** is received by each opening **65**. The particular pins illustrated are generally cylindrical in shape, and the outside diameter of the pin end received in the opening **65** is approximately the same as the diameter of the opening so that the pin is received snugly therein and secured against transverse movement. The other end of each conducting pin is flared outwardly as at **67**, and the length of each pin is such that the flared end **67** firmly engages a metal contact **34** (FIG. 3) when the back plate is positioned in place on the socket body.

An annularly shaped conducting plate **70** is positioned within the channel **63** of the back plate between the flat front surface **60** of the back plate and the planar rear surface **44** of the socket body. The conducting plate is interrupted or opened as at **71** (FIG. 5) to permit the plate to be inserted over the barrier wall **31** of the socket body, but it is to be understood that if the socket were not provided with a barrier wall, the conducting plate **70** could be made in a circular or ring shape. The conducting plate is provided with a plurality of spark gap openings **72** which have a diameter slightly greater than the diameter of the cylindrical conducting pins **66**. First locator stud openings **73**, **74** and **75** are provided in the conducting ring between selected pairs of adjacent spark gap openings **72** and have a diameter approximately the same as the diameter of the locating studs **49–51** of the socket body. Second locator stud openings **76**, **77**, **78** and **79** of slightly smaller diameter than the locator stud openings **73–75** are provided in the conducting plate between other pairs of adjacent spark gap openings. One of the ends of the conducting plate is provided with a radially outwardly extending finger **80** extending along one side of the barrier wall **31** and terminates in an end portion **81** which extends into the slot of the U-shaped barrier wall.

Referring now to FIGS. 6, 10 and 11, the back plate **53** includes locator studs **82**, **83**, **84** and **85** which are adapted to be received by the second locator stud openings **76–79**, respectively, in the conducting plate. The locator studs **82–85** and the conducting pin **66** are seen to be located along approximately the same arc approximately in the middle of the channel **63**. As can be seen best in FIGS. 10 and 11, the locator stud **83** is seen to include a generally cylindrical base portion **83***a* and a generally cylindrical end portion **83***b* of reduced diam-

eter. The diameter of the end portion **83***b* is approximately the same as the diameter of the locator stud opening **77** in the conducting plate, and the end portion is relatively snugly received by this opening. The radially enlarged base portion **83***a* is larger than the locator stud opening and spaces the conducting plate away from the flat front surface **60** of the back plate. The locator studs **82**, **84** and **85** are similarly provided with enlarged base portions and radially reduced end portions which are relatively snugly received in their respective locator stud openings **76**, **78** and **79**, and the conducting plate is thereby positioned within the channel **63** and spaced from the front wall **60** of the back plate. The annular conducting plate is seen to have an outside diameter slightly less than the inside diameter of the side wall **61** and an inside diameter slightly greater than the outside diameter of the aperture wall **62** so that the conducting plate is spaced from the sides of the channel **63**.

The position of the locator studs **82–85** and the openings **65** for the conducting pins **66** are correlated with the positions of the locator stud openings **76–79** and the spark gap openings **72** in the conducting plate so that when the conducting plate is received by the locating studs **82–85**, the spark gap openings **72** will be concentric with the cylindrical conducting pins which are positioned within the openings **65** in the back plate (FIG. 9). The spacing **86** (FIG. 9) between the periphery or outside diameter of each conducting pin **66** and the periphery of the associated spark gap opening **72** of the conducting plate defines the spark gap for each of the picture tube terminals, and, since both the conducting pins **66** and the conducting plate **70** are held by the back plate against movement in a direction parallel to the plane of the conducting plate (transverse to the axis of the conducting pin), the dimensions of the spark gaps remain constant. The diameter of each opening **72** can be varied depending upon the breakdown voltage, i.e., the voltage at which arcing will occur, which is desired. The diameter of the particular spark gap openings **72** illustrated in FIGS. 7 and 9 is slightly greater than the diameter of the flared end portions **67** and the conducting pins, and the conducting plate can be positioned on the locator studs **82–85** after the conducting pins **66** are positioned in their locating holes **65**. If the desired breakdown voltage is such that the spark gap openings **72** are smaller than the diameter of the flared end portions **67** of the conducting pins, the conducting pins can be inserted into their respective locator openings aftter the conducting plate is positioned on the locating studs. Alternatively, the flare if the conducting pin could be reduced or eliminated.

After the conducting pins **66** and the conducting plate **70** are positioned on the back plate **53**, the back plate **53** can be secured to the socket body **21**. Referring to FIG. 6, the back plate is provided with locator stud openings **87**, **88** and **89** which are adapted to receive the elongated locator studs **49–51**, respectively, of the socket body, and the locator stud openings **73–75** of the conducting plate will be aligned with the locator stud openings **87–89** of the back plate when the conducting plate is secured thereto. As the back plate and conducting plate are moved toward the socket body, the elongated locator studs **49–51** pass relatively snugly through the locator stud openings in the conducting plate and back plate and position the conducting pins **66** relative to the contacts **34** which are held by the socket body. When the back plate and socket body are brought together, the pegs **64** which extend from the side wall of the back plate are received by the slots **40** in the socket body through which the lead wires pass, and the back plate and socket body are further locked against relative rotational movement.

As the back plate is pressed against the socket body, the flared ends **67** of the conducting pins engage the metal contacts **34** (FIG. 3). Preferably, the radial position of each conducting pin is such that the flared end of the pin engages the clamping portion **36** of the associated metal contact to provide a relatively large contacting area therebetween so that the conducting pins and metal contacts will remain in electrical engagement even if the contacts move somewhat in a direction transverse to the axis of the conducting pin. Some transverse "floating" movement of the contacts is desirable to permit the contacts to align themselves with the terminals of the kinescope tube. The tubular portion **35** of the contact may move slightly toward or away from the back plate as the socket is positioned on or removed from the kinescope tube, but this movement will not affect the electrical engagement of the metal contact with the conducting pin. Excessive axial movement of the contact away from the conducting pin is restrained by the recess wall **41**.

When the perimetric side wall **61** and the aperture wall **62** of the back plate engage, respectively, the perimetric side wall **22** and the flat surface **44** of the socket body, the ends of the locator studs **49–51** will extend beyond the back surface **54** of the back plate (FIG. 2), and the back plate and socket body can be secured by welding or heat sealing the ends of the studs to the back plate. If desired, the tab portion **56** of the back plate can also be welded to the barrier wall **31** as at **90**.

When the back plate is secured to the socket body, the support studs **45–48** on the socket body (FIGS. 3 and 4) support the conductor plate **70** and maintain the conductor plate well spaced from the contacts **34**. The axial spacing of the conducting plate from the contacts will always be greater than the spark gap spacing provided between the periphery of each conducting pin and the associated spark gap opening of the conducting plate, and arcing will not occur from the metal contacts directly to the conducting plate even though no insulator is interposed between the conducting plate and the metal contacts. Rather, arcing will occur between the conducting pins and the conducting plate. We believe that superior results are obtained by providing the spark gap between rounded surfaces such as the periphery of the spark gap openings **72** and the tubular pins **66** than by providing the spark gap between relatively sharp or pointed edges or flat-faced surfaces.

The conducting plate is seen to be supported within the channel **63** in air, and the suports for the conducting plate provided by the support studs **45–48** on the socket body and enlarged base portions of the locator studs **82–85** on the back plate are spaced away from the spark gap openings. Arcing will therefore occur directly through air from the conducting pins to the conducting plate, and breakdown or carbonization of insulating or dielectric material which may result in tracking is substantially or completely prevented. The air gap provides a dielectric for arcing which is recoverable and which will provide repetitious results, i.e., constant breakdown voltages.

The conducting plate may be connected to ground or to a lower potential than that of the metal contacts which receive the terminal pins of the television tube by wire **91** which can be soldered or otherwise connected to the conducting plate, and a spark gap for the high voltage focusing anode which is received by the terminal-receiving opening **26***a* is provided by the finger portion **80** of the conducting plate which extends along one side of the high voltage barrier wall **31**. The voltage at which arcing from the metal contact associated with the high voltage focusing anode will occur can be varied by varying the length of the finger portion **80** and the end portion **81**.

The breakdown voltage of each spark gap is determined by the spacing between each conducting pin and the periphery of the associated conducting plate opening. The desired spacing can be very accurately regulated because both the conducting plate and the conducting pins are secured to the same reference point—the back plate. The size and location of the spark gap openings and locator stud openings in the conducting plate can be very precisely controlled by perforating the openings by a punch press. The back plate and socket body can be molded, and the size and relative positions of the locating openings **65** for the

conducting pins and the locator studs **82–85** and **49–51** can also be very precisely controlled by the molding die. The die of the punch press and the die of the mold can be correlated to ensure that the assembled socket will provide the desired performance.

If the spacing between the ends of the support studs **46** and the radially enlarged portions of the locator studs **82–85** (e.g., **83***a*) is greater than the thickness of the conducting plate, the conducting plate can move in a direction generally perpendicular to the plane thereof or in the axial direction of the conducting pins. However, axial movement of the conducting plate along the conducting pins will not change the spark gap, and the locating studs **49–51** and **82–85** will always maintain the conducting plate in the desired spark gap relationship to the conducting pins.

Since the locator studs **49–51** on the socket body pass through both the conducting plate and the back plate, these studs also position the spark gap openings in the conducting plate relative to the conducting pins, and the end portions of the locator studs **82–85** could be eliminated. By using both sets of locator studs, however, the conducting plate is fixed relative to the back plate adjacent every spark gap opening, and each spark gap is thereby very accurately maintained.

While in the foregoing specification, a detailed description of a specific embodiment of our invention was set forth for the purpose of illustration, it is to be understood that many of the details hereingiven may be varied considerably by those skilled in the art without departing from the spirit and scope of our invention.

We claim:

1. A kinescope tube socket comprising

(a) a socket body formed of insulating material and provided with a plurality of terminal pin-receiving openings,

(b) a metal contact within said socket body for each of the terminal pin-receiving openings, one end of each of said metal contacts adapted to receive a terminal pin of a kinescope tube,

(c) a back plate formed of insulating material secured to said socket body,

(d) a metal conducting plate interposed between said socket body and said back plate and spaced from said metal contacts, said conducting plate being provided with a plurality of openings,

(e) a plurality of elongated metal conducting pins, each pin extending longitudinally from the back plate through an opening in the conducting plate to a metal contact, each pin being in electrical engagement with the metal contact and being substantially anchored against transverse movement by the back plate, the periphery of each pin being spaced from the periphery of the associated conducting plate opening to provide a spark gap.

2. The socket of claim **1** in which said conducting plate openings are generally circular and said conducting pins are generally cylindrical, the outside diameter of each pin being less than the diameter of the associated conducting plate opening.

3. The socket of claim **1** including an insulated lead wire for each of said metal contacts, each metal contact including a sleeve portion crimped about the lead wire in electrical engagement therewith and an enlarged clamp portion crimped about the insulation of the lead wire, each of said conducting pins engaging the enlarged clamp portion of the associated metal contact.

4. The socket of claim **1** in which said metal contacts are movable in a direction generally parallel to the plane of the conducting plate, each of said conducting pins being generally cylindrical and having an outwardly flared end electrically engaging the associated metal contact to maintain electrical engagement with the contact as the contact moves.

5. The socket of claim **1** in which the conducting plate is provided with a plurality of locating stud openings and the back plate includes a plurality of locating studs, each locating stud extending toward the socket body and being snugly received relatively by a locator stud opening in the conducting plate whereby the conducting plate is positioned relative to the conducting pins.

6. The socket of claim **5** in which each of said locator studs includes a base portion and an end portion, the end portion being received by a locator stud opening in the conducting plate and the base portion engaging said conducting plate and spacing the conducting plate from the back plate.

7. The socket of claim **1** in which said socket body includes a plurality of support studs extending toward the back plate and engageable with the conducting plate to space the conducting plate away from the metal contacts.

8. The socket of claim **1** in which the conducting plate is provided with a plurality of locating stud openings and the socket body includes a plurality of locating studs, each locating stud extending toward the back plate and being received relatively snugly by a locator stud opening in the conducting plate whereby said conducting plate is positioned relative to the conducting pins.

9. A picture tube socket comprising

(a) a socket body formed of insulating material, said socket body having a generally planar base portion and a socket portion extending from the base portion and provided with a plurality of terminal pin-receiving openings,

(b) a generally L-shaped metal contact within said socket body for each of the terminal pin-receiving openings, one end of each of said metal contacts adapted to receive a terminal pin of a picture tube,

(c) a back plate formed of insulating material secured to the socket body,

(d) a metal conducting plate interposed between the socket body and the back plate and being provided with a plurality of openings generally aligned with the metal contacts,

(e) support means on the socket body engageable with the conducting plate for spacing the conducting plate away from the metal contacts,

(f) a plurality of elongated metal conducting pins, each conducting pin being relatively snugly received by an opening in the back plate and extending longitudinally through an opening in the conducting plate to a metal contact, each conducting pin being in electrical engagement with a metal contact and the periphery of each conducting pin being spaced from the periphery of the associated conducting plate opening to provide a spark gap,

(g) and locating means on the back plate for positioning the conducting plate relative to the conducting pins whereby the spark gaps between the conducting pins and the associated conducting plate openings are maintained relatively constant.

10. The socket of claim **9** in which said locating means includes a plurality of locating studs extending from the back plate, each locating stud being received relatively snugly by a locating stud opening in the conducting plate.

11. The socket of claim **9** including support means on the back plate engageable with the conducting plate for spacing the conducting plate away from the back plate.

12. The socket of claim **9** in which said locating means includes a plurality of locator studs extending from the back plate, each locating stud including a base portion and an end portion, the end portion being received relatively snugly by a locator stud opening in the conducting plate and the base portion being engageable with the conducting plate for spacing the conducting plate from the back plate.

13. The socket of claim **9** in which the socket body includes a plurality of locator studs extending through openings in the conducting plate and through openings in the

back plate whereby said conducting plate and back plate are positioned relative to the socket body.

14. A kinescope tube socket comprising

(a) a socket body formed of insulating material and provided with a plurality of terminal pin-receiving openings,

(b) a metal contact within said socket body for each of the terminal pin-receiving openings, one end of each of said metal contacts adapted to receive a terminal pin of a kinescope tube,

(c) a layer of insulating material secured to the socket body,

(d) a metal conducting plate interposed between the socket body and the insulating layer and spaced from the metal contacts,

(e) a plurality of elongated metal conducting pins, each pin being in electrical engagement with a metal contact and extending adjacent to but spaced from the conducting plate to provide a spark gap, and

(f) connecting means on the insulating layer for maintaining the conducting plate and each conducting pin substantially fixed relative to each other whereby each conducting pin substantially fixed relative to each other whereby each spark gap spacing is maintained substantially constant.

15. A kinescope tube socket comprising

(a) a socket body formed of insulating material and provided with a plurality of terminal pin-receiving openings,

(b) a metal contact within said socket body for each of the terminal pin-receiving openings, one end of each of said metal contacts adapted to receive a terminal pin of a kinescope tube,

(c) a lead wire electrically connected to each of the metal contacts,

(d) a layer of insulating material secured to the socket body,

(e) a metal conducting plate interposed between the socket body and the insulating layer and spaced from the metal contacts,

(f) a plurality of elongated metal conducting pins, each pin being electrically connected to a metal contact and extending adjacent to but spaced from the conducting plate to provide a spark gap, and

(g) means on the insulating layer engaging the conducting plate and conducting pins for maintaining each conducting pin and the conducting plate fixed relative to each other and for supporting the adjacent spark gap-providing portions of each conducting pin and the conducting plate in air away from the insulating layer and the socket body whereby each spark gap spacing is maintained constant and arcing between each conducting pin and the conducting plate occurs in air.

No references cited.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,553,727 Dated January 5, 1971

Inventor(s) Bruno J. Leimontas and Edson M. Paradise

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In claim 14, column 9, lines 23-24, omit "each conducting pin substantially fixed relative to each other whereby".

Signed and sealed this 23rd day of March 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents