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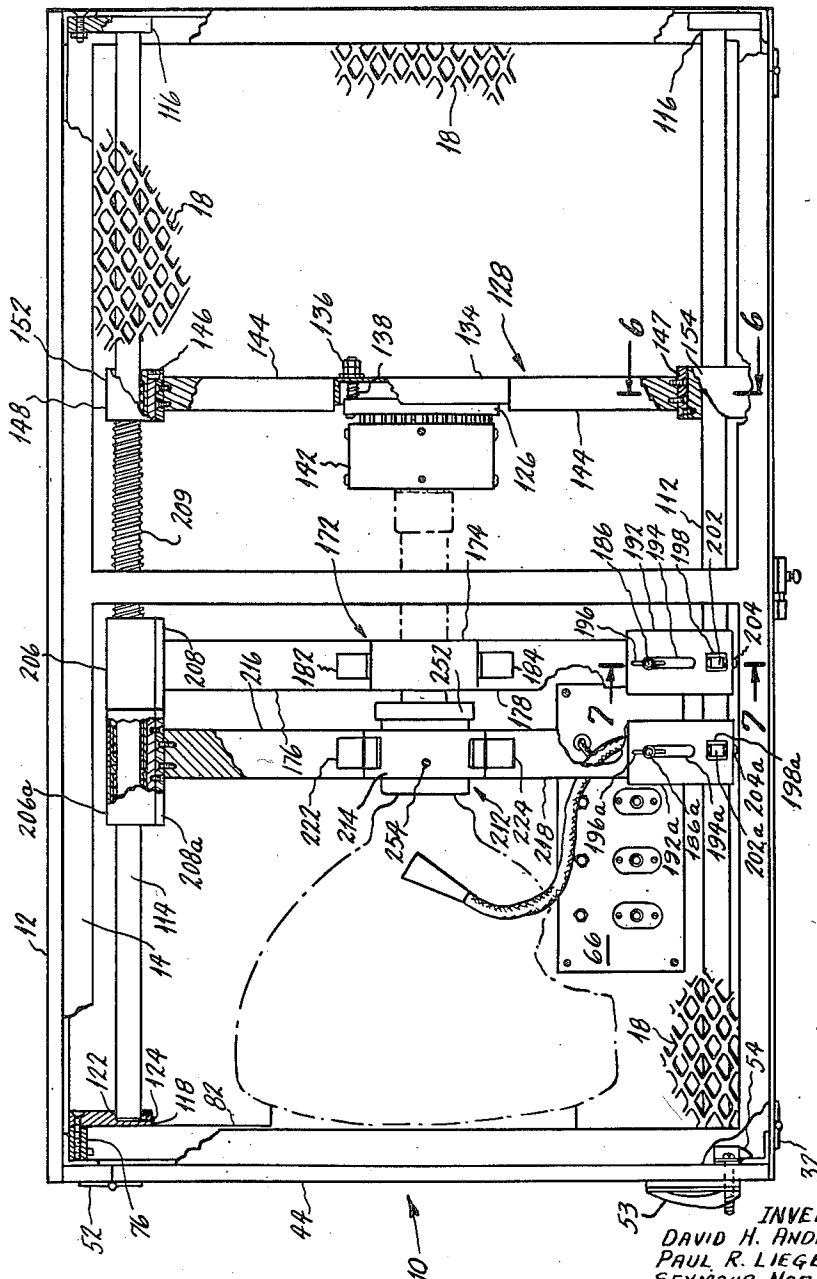
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2,780,803

CATHODE RAY TUBE MOUNT

Filed May 12, 1954

6 Sheets-Sheet 1

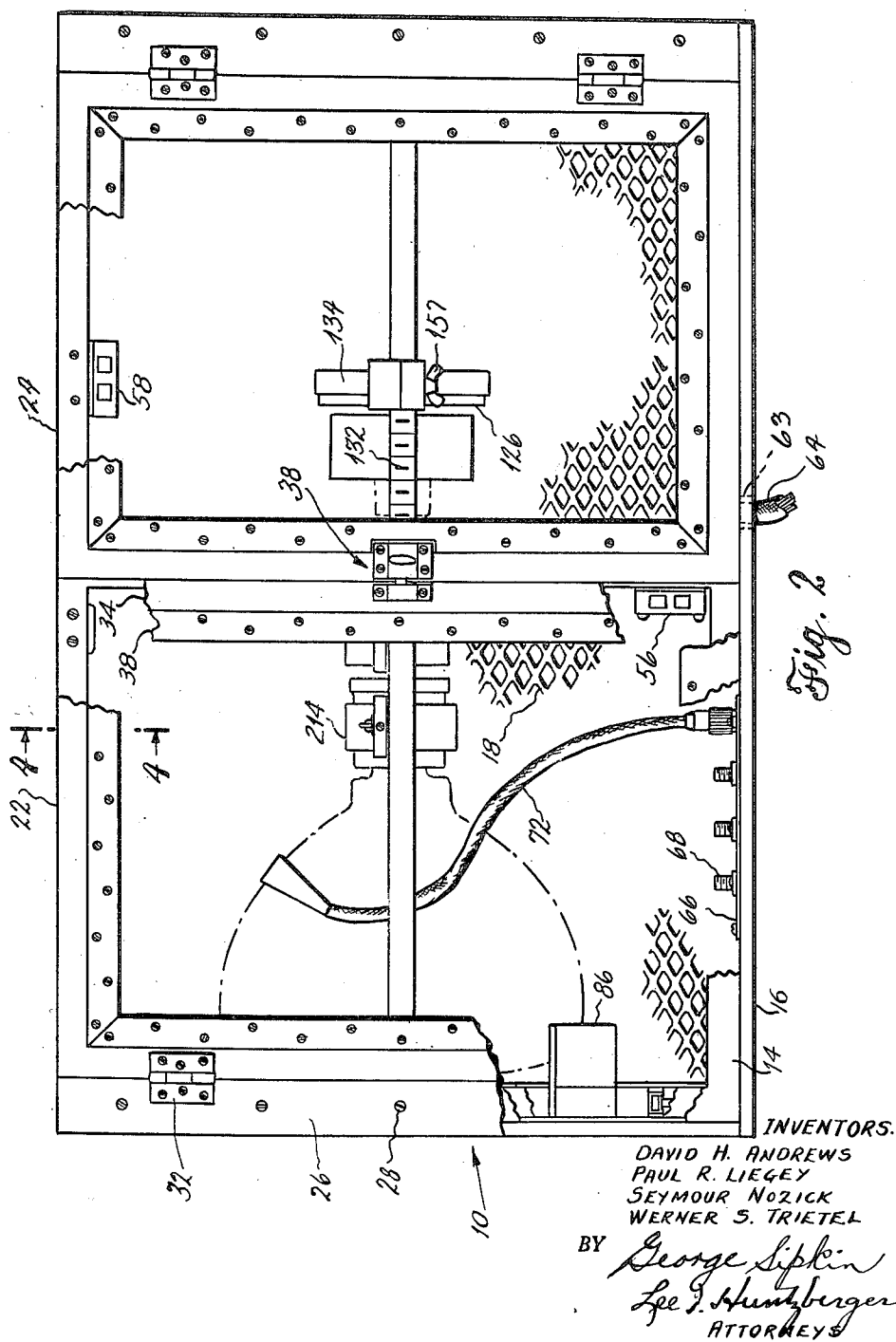


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CATHODE RAY TUBE MOUNT

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CATHODE RAY TUBE MOUNT

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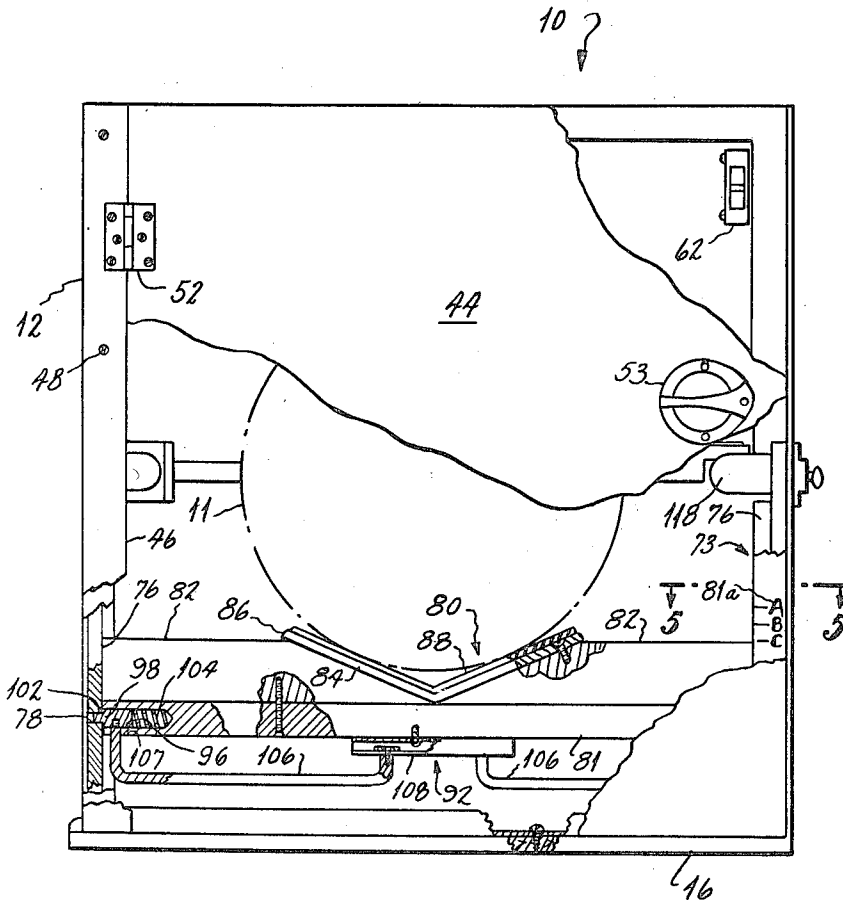


Fig. 3

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CATHODE RAY TUBE MOUNT

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6 Sheets-Sheet 4

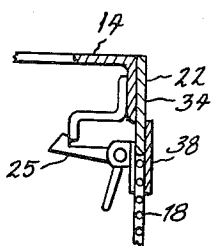


Fig. 4

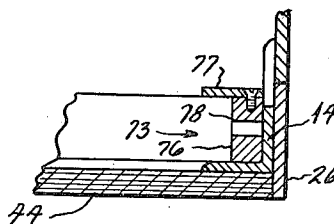


Fig. 5

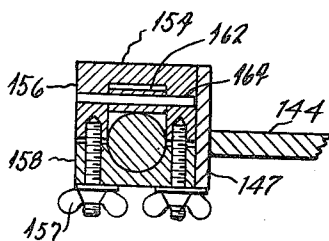


Fig. 6

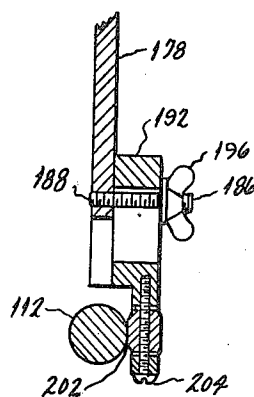


Fig. 7

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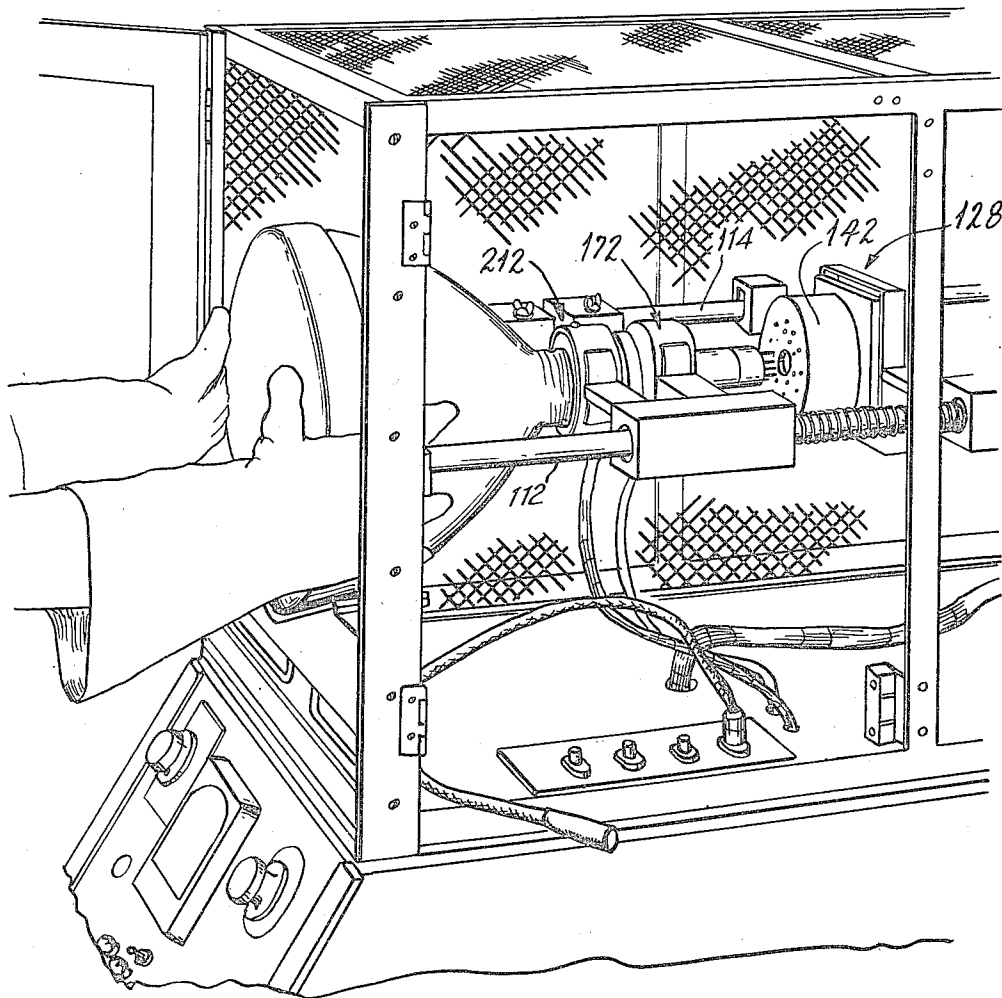


Fig. 8

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CATHODE RAY TUBE MOUNT

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6 Sheets-Sheet 6

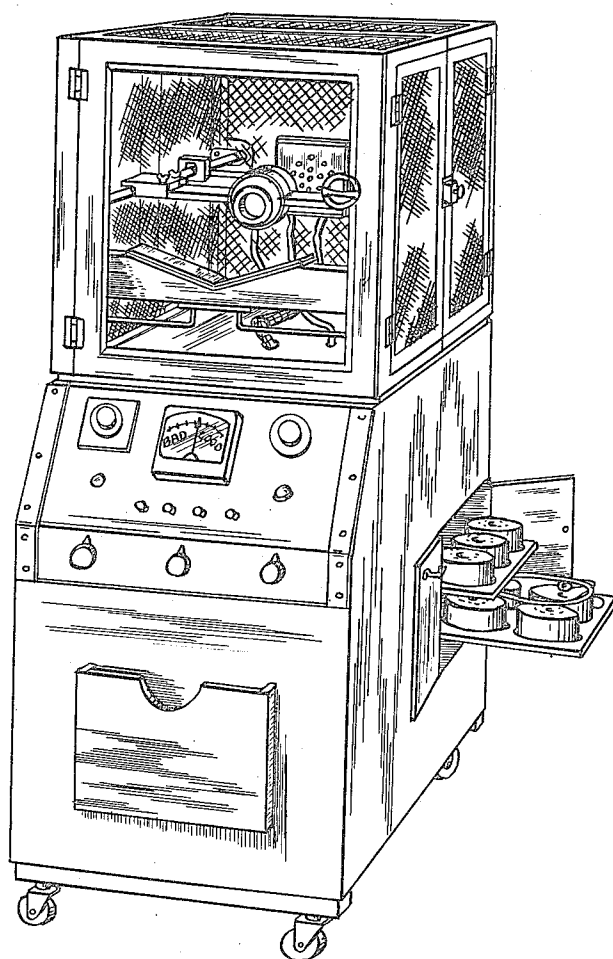


Fig. 9

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2,780,803

CATHODE RAY TUBE MOUNT

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7 Claims. (Cl. 340—367)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

This invention relates to a cathode ray tube mount and more particularly to a substantially universal cathode ray tube mount for supporting for examination any one of a large number of types, and a range of sizes within each type of cathode ray tubes. This invention can be designed to support substantially any one of the multifarious cathode ray tubes, commercial or otherwise, currently in existence.

This invention has utility in various situations. It is adapted to be used in an electronics laboratory, in a television repair shop, at the end of a cathode ray tube production line in a factory, and in a tube storage warehouse for the purposes of inspecting and testing cathode ray tubes safely, quickly, and conveniently. There is no device currently known in the art for accomplishing these purposes.

This invention provides an enclosed mount for general use in factory, laboratory, storehouse, and repair shop for accommodating a gamut of types and sizes of cathode ray tubes in conventional use, and can be designed to accommodate cathode ray tubes that are in development at the present time. This invention generally includes a cage with several hinged closures. The mount includes an adjustable front support which is adapted to be adjusted to accommodate a range of diameters of cathode ray tubes, and a length adjustment which makes it possible for the mount to accommodate any length of tube. In order to make it possible for the mount to accommodate any type of tube base there is provided a master socket and suitable adaptors for plugging into the master socket. The master socket is mounted on the length adjustment. Two supports intermediate the adjustable front support and the master socket mounted on the length adjustment are provided for a focus coil and deflection yoke, respectively. The two supports for the focus coil and the deflection yokes are mounted so as to be readily moved into and out of operable position with respect to a cathode ray tube undergoing examination. Auxiliary terminals are available within the housing for providing all the necessary anode and accelerator voltages not provided for by the adaptor terminals in the master socket. The supports for the focus coil and the deflection yoke are spring-loaded for self positioning relative to a cathode ray tube in the mount. The deflection yoke is mounted on its support through the use of a universal mount so as to permit for ease of insertion of an electromagnetic cathode ray tube through the deflection yoke into the mount. Special coating material is provided on the deflection yoke to prevent abrasion of the deflection yoke coils.

An object of this invention is to provide a cathode ray tube mount.

A further object is to provide a cathode ray tube mount which is very flexible in use and adapts itself readily to use by unskilled personnel.

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A further object is to provide a universal cathode ray tube mount permitting rapid changes of tubes during examination.

A further object is to provide a universal cathode ray tube mount adapted for production testing by unskilled personnel.

A further object is to provide a universal cathode ray tube mount which is adapted to support safely and conveniently for examination a gamut of cathode ray tube types and sizes.

A further object is to provide a universal cathode ray tube mount for safe examination of cathode ray tubes under conditions encountered in normal use and under exaggerated conditions set up in the laboratory.

A further object is to provide a universal cathode ray tube mount adapted for use by service men to demonstrate and examine cathode ray tubes under operating conditions.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Fig. 1 is a top view partially cut away of a preferred embodiment of this invention including, in phantom, an electromagnetic cathode ray tube.

Fig. 2 is a side view partially cut away on the mount of Fig. 1.

Fig. 3 is a front view partially cut away of the mount of Fig. 1.

Fig. 4 is a fractional sectional view taken along the line 4—4 of Fig. 2.

Fig. 5 is a fractional sectional view taken along the line 5—5 of Fig. 3.

Fig. 6 is a sectional view taken along the line 6—6 of Fig. 1.

Fig. 7 is a sectional view taken along the line 7—7 of Fig. 1.

Fig. 8 is a partial perspective view of the invention indicating a cathode ray tube being mounted therein, and

Fig. 9 is a perspective view of this invention shown in combination with an electrical test means including a suitable panel for indicating results of a test performed on a cathode ray tube and further including a storage space for adaptors and connecting leads for use with the invention.

The cathode ray tube mount 10 (Figs. 1—3) includes an elongated cage 12 having a rigid frame 14. The rigid frame 14 is a welded framework, in part of steel angle and in part of steel strip. A base 16 of suitable material is fixed to the bottom of the basic framework 14 and defines the floor of the cage 12. The top of the cage 12 is closed by a metal mesh or lace work 18. The left-hand side of the cage 12, as seen in Fig. 3, and also the rear of the cage 12, is enclosed by the same kind of mesh or lace-work 18. Alternate means may include clear transparent plastic or wire reinforced clear glass for absolutely precluding danger from flying glass when a tube envelope ruptures. The side of the cage 12 seen in plan in Fig. 2 is closed by a pair of hinged doors 22 and 24 including generally a peripheral frame supporting a similar mesh or lace-work 18. The latch 25 (Fig. 4) is provided for securing the door 22 in closed position. One part of the latch 25 is secured to the frame 14 and the other part of the latch 25 is secured to the door 22. To pivotally mount the door 22 on cage 12, a supporting strip 26 is fastened to the frame by screws 28, and a pair of hinges 32 is fastened to the supporting strip 26 and to the door 22. The door 22 includes a rigid rectangular frame 34. A rectangular piece of mesh material 18 is secured to the frame 34 of the door 22 by means of border strips 38 secured to the frame 34 and support-

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ing the mesh 18. The door 24 is constructed and supported in the same manner as the door 22. Affixed to adjacent portions of the doors 22 and 24 is a latch 38, one portion of which is supported by the door 22 and the other portion of which is supported by the door 24. Both portions of the latch 38 are adapted to engage when the doors 22 and 24 are in closed position relative to the cage 12 to retain the door 24 in closed position.

A front door 44 is provided for the cage 12. The front door 44 is made of a transparent material such as methyl methacrylate. The transparent door 44 is pivotally mounted on the cage 12 by means of a metallic strip 46 fastened to the left vertical member of the front part of the frame 14 (Fig. 3) by means of screws 48 and by a pair of hinges 52 fixed to the door 44 and the strip 46. Door 44 includes a handle 53 having a suitable push-button latch 54 for positive engagement with the frame 14. For safety, electrical interlock switches 56, 58, and 62, are mounted on frame 14. The interlock switches serve the purpose of deenergizing any electrical circuit elements included in the cage when any of the doors are opened. The base 16 fixed to the bottom of the frame 14 is formed with an opening 63 for permitting the passage of an electrical cable, not shown, for attachment to and for supplying the necessary currents and potentials to the base of a cathode ray tube 11 mounted in the cage 12.

Toward the front end of the cage 12 and secured to the base 16 is a small panel 66 (Figs. 1 and 2). The panel 66 mounts a series of electrical terminals 68. The electrical terminals 68 are adapted to be connected to respective sources of high voltage, not shown. A cable 72 connects between a selected terminal 68 and a terminal on the envelope of the tube 11.

An adjustable support 80 is assembled to the front of cage 12 for supporting the front end of a cathode ray tube 11 mounted in the cage 12. The adjustable support rides in a pair of opposed tracks 73 (Fig. 5). The tracks 73 extend from the bottom of the cage 12 half way up. To form each of the tracks 73, a rectangular rod 76 is fastened to the corresponding angle of the frame 14. Each of the rectangular rods 76 is formed with a series of bores 78 at predetermined intervals along the rod. The spacing between adjacent bores 78 formed in the rectangular bars 76 are determined from the diameters of the cathode ray tubes to be accommodated by the mount 10. Corresponding strips 77 are secured to the rod 76 to complete the tracks 73. The adjustable support 80 is adapted to slide vertically in track 73 between selected positions defined by the bore 78. The adjustable support 80 includes a bar 81 and a pair of beveled bars 82 fastened to the bar 81 as shown in Fig. 3 to define V-shaped cut-out 84. A supporting member 86 wider than beveled bars 82 (Fig. 2) for supporting a soft material 88 such as rubber or felt is screw fastened to the beveled bars 82.

A latching assembly 92 is screw-fastened to adjustable support 80, more specifically to the bar 81. The bar 81 is formed at each end with an accurate axial bore 96. Detents 98 are positioned for sliding movement within the bores 96. Each of the detents 98 comprises an accurately formed body portion for a sliding fit in the respective bore 96 of the bar 81, and in addition, includes an axial tongue 102. Behind each detent 98 in bore 96 is disposed a compression spring 104. The springs 104 are adapted to force the detents 98 into opposed axially aligned bores 78 formed in the rectangular rods 76 for retaining the adjustable support 80 in a particular vertical position as indicated by markings 81a on the frame. Manual finger grips 106 are reciprocally mounted on the bar 81. The finger grips 106 are adapted to be gripped between the thumb and forefinger of one hand for unlatching the adjustable support 80 preparatory to moving the support 80 to another position. The finger grips 106 are formed from brass rod or its equivalent. One end of each of the finger grips 106 is secured

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to a detent 98. Elongated slots 107 are formed in the bar 81 to permit reciprocating movement of the finger grips 106. The other end of each of the finger grips 106 reciprocates in a guide 108 of tubular material formed with a longitudinal slot. Guide 108 is secured to the central portion of the bar 81.

A pair of cylindrical tracks 112 and 114 are fastened in cage 12 and extend front to back. The tracks 112 and 114 are supported at the end of cage 12 by means of brackets 116. Each bracket 116 is formed with a recess for seating a track end. The front ends of the tracks 112 and 114 are supported in corresponding brackets 118. The brackets 118 are also formed with suitable recesses 122 for supporting the front ends of the tracks 112 and 114. Set screws 124 are threaded into the front supporting brackets 118 for precluding rotation of tracks 112 and 114. The front brackets 118 are mounted in the cage 12 but out of the path of the adjustable support 80 since the brackets 118 are secured to the inner sides of rods 76 (Fig. 1). This permits the adjustable support 80 to be raised to substantially the central horizontal plane of cage 12 without interference by the front supporting brackets 118.

A master socket 126 is supported by a slidable assembly 128 which is adapted to be positioned selectively along the tracks 112 and 114 and locked in place at a selected position. Suitable indicia are etched in the track 112 as shown at 132 for indicating the various positions for the sliding assembly 128. In each of these positions of the master socket the tube mount 10 is conditioned for supporting a particular type and size of cathode ray tube. The master socket 126 is resiliently mounted in a rectangular angle-iron frame 134. The rectangular angle-iron frame 134 is longitudinally bored at several points to receive mounting nut and bolt assemblies 136 extending through the master socket 126 for securing the master socket 126 to the rectangular angle-iron frame 134. Compression springs 138 are included in each of the nut and bolt assemblies 136 between the master socket 126 and the rectangular angle-iron frame 134. This arrangement allows for a necessary degree of yieldability. The yieldability is important during the mounting of a cathode ray tube 11. A suitable adaptor is seated in the master socket 126. Supporting rods 144 are fixed to and extend from opposite sides of the rectangular angle-iron frame 134 centrally thereof and are secured to the frame 134. Small rectangular plates 146 and 147 are screw fastened to one end of each of the supporting rods 144, respectively. A bearing 148 is screw fastened to the small rectangular plate 146. The bearing 148 includes a centrally bored outer member 152 secured to the small rectangular plate 146. A roller bushing is press-fitted into the outer member 152. An example of a roller bushing found to be suitable for this purpose is the Thomson roller bushing Model A122026. This particular type of slide bearing has been used to prevent the slidable assembly 128 from binding with respect to the track 114. Some types of bearings are not suitable because of binding.

The other end of the slidable assembly 128 is supported by the track 112 through a slidable support 154 (Fig. 6). The slidable support 154 includes an upper U-shaped block 156 and a lower block 158. A hardened roller 162 is rotatably mounted on a pin 164 extending into the sides of the U-shaped block 154. The hardened roller 162 bears against the track 112. Wing nuts and screw studs 157, the latter being fixedly secured to the U-shaped block 156 are provided for tightening the block 158 to the block 156 for clamping against the track 112. When the wing nuts are tightened, the slidable assembly 128 supporting the master socket 126 is fixed relative to the cage 12.

For use in connection with electromagnetic cathode ray tubes, a focus coil supporting assembly 172 is mounted for sliding movement along the tracks 112 and 114.

A standard commercial type focus coil 174, is secured to and positioned by means of the focus coil supporting assembly 172. Fixed to the housing of focus coil 172 are a pair of opposed supporting rods 176 and 178. The supporting rods 176 and 178 are secured to diametrically opposed sides of the focus coil by means of attaching strips 182 and 184, there being two for each of the supporting rods 176 and 178. The straps 182 and 184 are brazed to the supporting rods 176 and 178. The end of the supporting rod 178 opposite the end secured to the focus coil 174 is tapped to receive a screw stud 186 (Fig. 7). The screw stud 186, after being threaded into the supporting rod 178, is peened over at one end as shown at 188. A U-shaped slotted bearing block 192 is attached to the supporting strap 178. The slotted bearing block 192 is centrally formed with a longitudinal elongated slot 194 for registration with the screw stud 186. A wing-nut 196 is threaded onto the ends of the screw stud 186 for securing the U-shaped slotted bearing block 192 to the supporting strap 178. The slotted bearing block 192 is further formed with a substantially rectangular opening 198 in longitudinal alignment with the slot 194. The rectangular opening 198 formed in the block 192 is suitably shaped to accommodate a bearing roller 202. The bearing roller 202 is centrally formed with a longitudinal bore for registration with a fastening means such as a screw 204 extending longitudinally into the U-shaped slotted bearing block 192 for retaining the roller in assembled relationship thereto. The bearing roller 202 is adapted to bear against the track 112. The elongated slot 194 formed in the slotted bearing block 192 makes it possible to slide the bearing block 192 transversely toward the focus coil whereby the bearing block 192 will clear the track 112 whereby the focus coil supporting assembly 172 may be pivoted downward about track 114 to rest against the bottom of the enclosure 12 so as not to interfere with electrostatic cathode ray tubes supported in the tube mount 10. The focus coil supporting assembly 172 is slidably mounted for longitudinal and pivotal movement on the track 114 by roller bushing means similar to that used for the adaptor socket supporting assembly 128. The roller bushing means includes two Thomson roller bushings (not shown) press-fitted into a bushing supporting block 206. A fastening plate 208 is screw fastened to the roller bushing block 206 and to the supporting strap 176, respectively. Interposed along the track 114 between the master socket supporting assembly 128 and the focus coil supporting assembly 172 is a compression coil spring 209 designed for free-sliding movement along the rail 114. The compression coil spring 209 serves to automatically position the focus coil and deflection unit when electromagnetic cathode ray tubes are placed in the tube mount.

A deflection yoke unit supporting assembly 212 corresponding to the focus coil supporting assembly 172 is likewise mounted for sliding and pivotal movement on the tracks 112 and 114. The deflection yoke unit supporting assembly 212 includes a circularly-formed central guard 214. A pair of supporting rods 216 and 218, respectively, are secured to diametrically opposed positions of the circularly-formed guard 214. The supporting rods 216 and 218 are secured to the guard 214 by means of strips 222 and 224, there being two for each of the supporting rods 216 and 218, and brazed to both the straps and the guard 214. At the end of the supporting rod 218 opposite to that secured to the guard 214 is an arrangement similar to that secured to the supporting rod 178 of the focus coil supporting assembly 172; it includes a slotted bearing block 192a formed with an elongated slot 194a for registration with a screw stud 186a threaded into the strap 218 and peened over as shown at 188 (Fig. 7). A bearing roller 202a is mounted in opening 198a by means of a supporting screw 204a threaded into the bearing block 192a. A wing-nut 196a is provided for securing the bearing block 192a to the support-

ing rod 218. The deflection yoke unit supporting assembly 212 is pivotally and slidably mounted relative to the track 114 by means of roller bushings mounted in the bearing supporting block 206a. Supporting block 206a is fastened to the supporting bar 216 through the use of a small rectangular plate 208a secured to both the bearing block 206a and the supporting bar 216. The deflection yoke unit 252 is of a standard commercial variety except that it is especially coated with a protective rubber-like plastic compound such as elastomer; it is universally supported within the circular guard 214 by means of a single screw 254, fixedly secured to the deflection yoke unit 252 but free to pivot in all directions and rotate within the opening formed in the circular guard 214. The deflection coil unit supporting assembly 212 is likewise adapted to be pivoted out of active position by retracting the roller bearing block 192a to thereby permit the assembly 212 to pivot about the track 114 to rest against the bottom of the enclosure 12.

In operation, the three doors of the cage 12 of the cathode ray tube mount 10 are pivoted to open position to prepare for mounting a cathode ray tube in the tube mount. An auxiliary chart, not shown, is referred to initially to determine the correlation between the tube type and tube size on the one hand and the settings of the master socket support 128 along the tracks 112 and 114 and the setting of the front end adjustable support 80 with the help of the indicia markings 81a. The same chart also indicates which adaptor 142 is necessary. After referring to the chart, the proper adaptor 142 is selected from the series of adaptors (not shown) provided for the mount and is plugged into the master socket 126. If the cathode ray tube to be mounted is an electromagnetic tube, the focus coil supporting assembly 172 and the deflection yoke unit supporting assembly 212 are positioned in engagement with both tracks as indicated on the drawing. However, if the tube is electrostatic, both of these supporting assemblies are pivoted out of active position by retracting the bearing supporting blocks 192 and 192a permitting the ends of the supporting assemblies 172 and 212 to which the bearing supporting blocks are secured, to pivot into inactive position into abutment with the bottom of cage 12. The wing nuts 157 on the master socket supporting assembly 128 are loosened and the master socket supporting assembly 128 is slid along the tracks 112 and 114 to the selected position indicated by the markings 132 with the chart above referred to serving as a guide. When the master socket supporting assembly is in the selected position, the wing nuts 157 are tightened to retain the master socket supporting assembly 128 in that selected position; the position allows for the length of a particular cathode ray tube being tested. The adjustable support 80 is then moved to the desired position by gripping the members 106 between the thumb and forefinger, move them to retracted position, to disengage detents 98 from the bores 78 in the rods 76 and then sliding the assembly 80 to the selected position indicated by indicia markings 81a with the chart above referred to serving as a guide. The tube mount is then ready to receive a cathode ray tube of the type and size for which it has been adjusted. The cathode ray tube is mounted in place as indicated in Fig. 8 by first inserting the tube base through the universally mounted deflection yoke unit 252. Because the deflection yoke unit 252 is universally mounted, little difficulty is encountered in moving the tube base through the deflection coil unit. The tube continues to be moved inward into registration with the focus coil and as the tube is moved further inward, the portions thereof beyond the neck comes into abutting engagement with the deflection yoke unit 252. Continued inward movement of the tube causes the deflection coil unit supporting assembly 212 and the focus coil supporting assembly 172 to slide along the rails 112 and 114 to compress the coil spring 209 disposed on the rail 114 between the master socket supporting assembly 128 and the focus coil

supporting assembly 172. The tube is continued inward at a reasonably slow rate to prevent damage to the tube until the base alignment pin of the tube rests against the face of adaptor 142. The tube is then slowly turned while pressing gently inward at the same time, until the alignment key on the tube base centering pin lines up with a corresponding slot in the adaptor 142. The tube is then pushed further inward until its base is flush with the face of the adaptor 142. The spring mounting of the adaptor socket 126 aids in avoiding any possible breakage of the tube neck.

After the tube is mounted properly in place with its front end resting on adjustable support 80, leads, where required, between one of the terminals at the bottom of the cage 12 and any terminal or terminals of the envelope of the tube, are connected in place (Fig. 1 and Fig. 8). The doors of cage 12 are subsequently closed to define a safe cage for an operator to work with for eliminating the dangers from electric shock and from flying glass due to rupture of a cathode ray tube envelope. The doors also serve to activate the interlocks 56, 58, 62, engaged thereby to permit electrical circuits connected to the tube to supply the necessary voltages and currents thereto. If a series of the same type and size of tube are mounted and removed in sequence, little time is required per tube. The order of time required is a minute or two to mount a tube, allow the applied voltages and currents to produce the required effect and then to remove the tube from the mount so that another tube can be put into its place. The cathode ray tube mount is a safe testing support for use in the factory, warehouse, repair shop or laboratory, and in addition, due to the arrangement of its various components is particularly adapted to production line use by unskilled personnel.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

We claim:

1. A cathode ray tube mount comprising; a support; first rectilinear track means secured to said support; second rectilinear track means secured to said support and oriented normal to said first rectilinear track means and extending in one direction only from adjacent the end of said first rectilinear track means; a cradle; means on said cradle engaging said first rectilinear track means and adapted for securing said cradle in one of a plurality of positions along said first rectilinear track means; a socket defining an axis; means attached to said socket and engaging said second rectilinear track means for securing said socket thereto in one of a plurality of positions along an extension of the axis of said socket which positions are at various distances from said first rectilinear track means and cradle with the axis of said socket passing over the center of the cradle, whereby a cathode ray tube of various lengths and face diameters may be disposed in said mount.

2. A cathode ray tube mount as defined in claim 1 wherein said cradle is formed with a V-shaped cradling surface whose angular bisector is parallel to said first rectilinear track means.

3. A cathode ray tube mount as defined in claim 1 wherein said support includes a rigid substantially transparent enclosure with closure means selectively movable to open and closed positions.

4. A cathode ray tube mount as defined in claim 1 said first and second rectilinear track means is marked with indicia along the length thereof.

5. A cathode ray tube mount comprising; a support; a first pair of rectilinear parallel cylindrical track means secured to said support whereby the axes of said track means define a horizontal plane; a longitudinally slidable bearing mounted on each of said track means; clamping means mounted on one of said bearings for clamping the said one of said bearings to the respective one of said

track means; a frame secured to both said bearings; a socket having an axis; resilient means mounting said socket on the center of said frame so that the axis of said socket is parallel to said track means; a second pair of rectilinear parallel track means secured to said support and extending from adjacent one pair of the ends of said first track means perpendicularly thereto and downwardly; a support cradle slidably disposed in said second track means; cooperating detent means on said support cradle and said second track means for use in securing said support cradle in one of a plurality of positions along said second track means; said support cradle having a V-shaped cradling surface facing upwardly toward the axis of said socket and so located that the angular bisecting plane of the V-shaped cradling surface includes the axis of said socket.

6. A cathode ray tube mount comprising; a support; a first pair of rectilinear parallel cylindrical track means secured to said support whereby the axes of said track means define a horizontal plane; a longitudinally slidable bearing mounted on each of said track means; clamping means mounted on one of said bearings for clamping the said one of said bearings to the respective one of said track means; a frame secured to both said bearings; a socket having an axis; resilient means mounting said socket on the center of said frame so that the axis of said socket is parallel to said track means; a second pair of rectilinear parallel track means secured to said support and extending from adjacent one pair of the ends of said first track means perpendicularly thereto and downwardly; a support cradle slidably disposed in said second track means; cooperating detent means on said support cradle and said second track means for use in securing said support cradle in one of a plurality of positions along said second track means; said support cradle having a V-shaped cradling surface facing upwardly toward the axis of said socket and so located that the angular bisecting plane of the V-shaped cradling surface includes the axis of said socket; a rotatable and axially slidable bearing on one of said first pair of track means, focus coil and deflection yoke support means secured at one end thereof to said rotatable and axially slidable bearing; bearing means; and fastening means on the other end of said focus coil and deflection yoke support means for securing said last-mentioned bearing means in extended or retracted position relative to the end of said last-mentioned support means whereby said last-mentioned bearing means is adapted to slidably engage the other of said first pair of track means when in extended position whereby said support means is adapted to position a focus coil and deflection yoke coaxially with said socket, and whereby when said last-mentioned bearing means is in retracted position said last-mentioned support means is rotated about said one of said first pair of track means to a position where a focus coil and deflection yoke adapted to be supported thereby is in inactive position.

7. A cathode ray tube mount comprising; a substantially transparent rectangular rigid box-like enclosure defining an axis and including closure elements selectively movable to open or closed positions, said enclosure being adapted to be mounted on a supporting means so that its axis is horizontal; a first pair of rectilinear parallel cylindrical track means secured to opposite long sides of said enclosure whereby the axes of said track means define a plane parallel to the bottom side of said enclosure; at least one of said track means being marked with axially spaced indicia; a longitudinally slidable bearing mounted on each of said track means; clamping means mounted on one of said bearings for clamping the said one of said bearings to the respective one of said track means; a frame secured to both said bearings; a socket defining an axis; resilient means mounting said socket on the center of said frame so that the axis of said socket is parallel to said track means; a second pair of rectilinear parallel track means secured to said enclosure and extending from adjacent one pair of the ends of said first track means

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perpendicularly thereto to the bottom of said enclosure; at least one of said second track means being marked with indicia along the length thereof; a support cradle slidably disposed in said second track means; cooperating detent means on said support cradle and said second track means for use in securing said support cradle in one of a plurality of positions along said second track means; said support cradle having a V-shaped cradling surface facing upwardly toward the axis of said socket and so located that the angular bisecting plane of the V-shaped cradling surface includes the axis of said socket; a rotatable and axially slidable bearing on one of said first pair of track means, focus coil and deflection yoke support means secured at one end thereof to said rotatable and axially slidable bearing; bearing means; fastening means on the other end of said focus coil and deflection yoke support means for securing said last-mentioned bearing means in extended or retracted position relative to the end of said last-mentioned support means whereby said last-men-

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tioned bearing means is adapted to slidably engage the other of said first pair of track means when in extended position whereby said support means is adapted to position a focus coil and deflection yoke coaxially with said socket, and whereby when said last-mentioned bearing means is in retracted position said last-mentioned support means is rotated about said one of said first pair of track means to a position where a focus coil and deflection yoke adapted to be supported thereby is in inactive position; and a compression coil spring on said one of said first track means between said rotatable and axially slidable bearing and the other bearing on said one of said first track means.

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