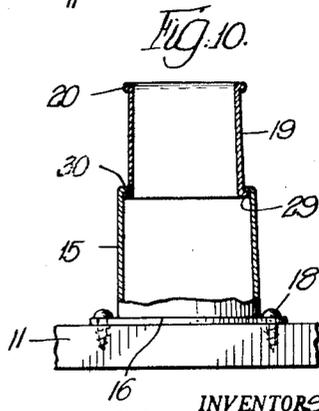
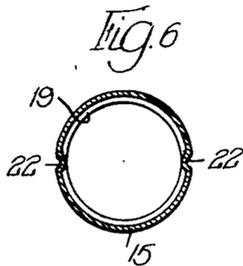
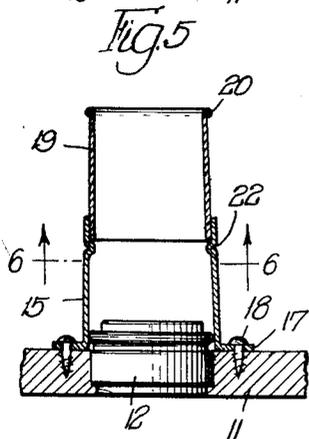
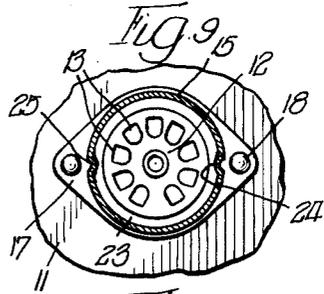
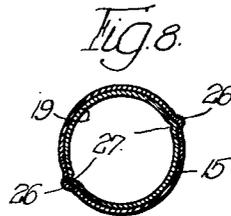
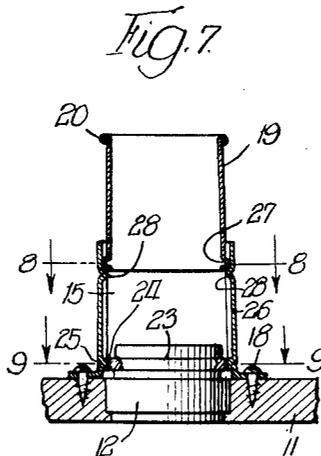
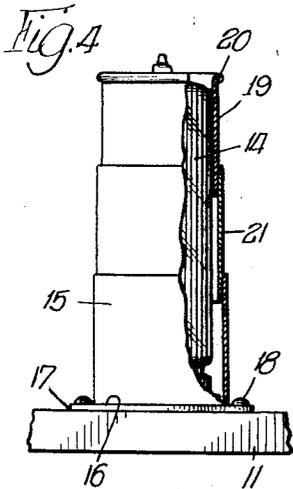
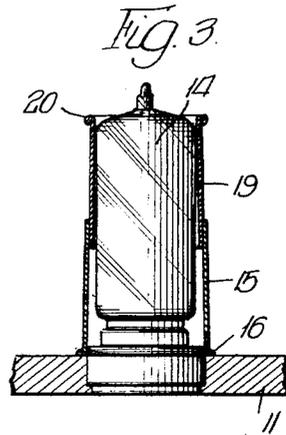
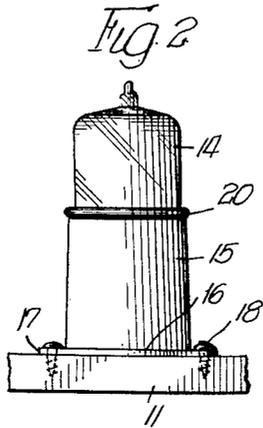
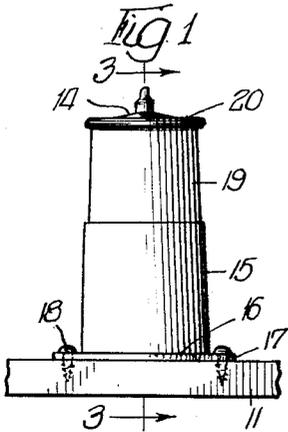


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TELESCOPING TUBE SHIELDS

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TELESCOPING TUBE SHIELDS

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The present invention relates to shields for electronic tubes.

The principal object of the present invention is the provision of a tube shield consisting of a plurality of telescopic collapsible sections, which, when extended, shield an electronic tube throughout its length, and which, when collapsed, permit access to the tube for manually removing the same from the socket in a chassis frame for removing or replacing the same therefrom.

A still further object of the present invention is the provision of a collapsible shield for electronic tubes, consisting of a plurality of sections collapsible or extensible lengthwise, and wherein one end section may be rigidly affixed to the chassis frame of an electronic device, and wherein the remaining sections may be extended or collapsed lengthwise with relation to the stationary section.

With the above general objects in view and others that will appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawing and pointed out in the appended claims.

In the drawing forming a part of this application, and in which like designating characters refer to corresponding parts throughout the several views:

Fig. 1 is a side elevational view of the shield consisting of a pair of telescopic sections in an extended position in an operative relation with an electronic tube;

Fig. 2 is a similar view with sections in a collapsed mutual relation with the upper end of an electronic tube exposed, permitting access thereto for removal or replacement thereof;

Fig. 3 is a longitudinal cross sectional view through the shield, taken on line 3—3 of Fig. 1;

Fig. 4 is a side elevational view of a shield, partly in section, consisting of three collapsible sections;

Fig. 5 is a longitudinal cross sectional view of a shield in an extended position, the lowermost stationary section being provided with indents for supporting the uppermost section thereon when the latter remains in an extended position;

Fig. 6 is a cross sectional view on line 6—6 of Fig. 5;

Fig. 7 is a longitudinal cross sectional view of a shield of a modified construction;

Fig. 8 is a cross sectional view taken on line 8—8 of Fig. 7;

Fig. 9 is a cross sectional view taken on line 9—9 of Fig. 7; and

Fig. 10 is a longitudinal cross sectional view of a shield of another modification.

Referring to the present drawing in detail there is shown a chassis frame 11 of any electronic device such as radio or television, within which socket 12 is supportable. Said socket 12 is provided with a number of apertures 13 for receiving therewithin the usual prongs of tube 14.

Referring more particularly to Figs. 1, 2 and 3 there is shown a lowermost tubular section 15 of the shield,

which is provided at its lower end with a horizontal flange 16 resting upon the face of chassis frame 11. Apertured ears 17 extending from said flange 16 are adapted to receive screws 18, which when driven through chassis frame 11 rigidly support said lowermost section 15 in a stationary relation with said frame 11 and in an encompassing relation with tube 14.

Coacting with said stationary section 15 is movable tubular section 19. It is noted that the lower end of said stationary section 15 has a diameter greater than its diameter at its upper end, so that said stationary section 15 is of a frusto-conical shape. The same holds true with said movable tubular section 19, so that when the latter is extended with relation to the said stationary section 15, as shown in Figs. 1 and 3, the lower end of said section 19 comes into a frictional contact by its outer periphery with the inner periphery of said stationary section 15, adjacent the upper end of the latter.

The upper end of said movable section 19 is provided with an outwardly flaring bead 20 which rests upon the upper end of stationary section 15 when said movable section 19 is collapsed within said stationary section 15, as is seen in Fig. 2. By manually grasping at said bead 20 said movable section 19 may be shifted out of said stationary section 15 to the operative position shown in Figs. 1 and 2. In that latter position the two sections 15 and 19 completely shield tube 14 laterally throughout its length.

When movable section 19 has been collapsed with relation to stationary section 15, as is seen in Fig. 2, the upper end of electronic tube 14 is exposed for giving access thereto in order that the same may be manually removed from its section and replaced.

The modified construction of the shield illustrated in Fig. 4, is identical with the construction shown in Figs. 1, 2 and 3, except the former is provided with an intermediate movable section 21. In that modified construction of the shield shown in Fig. 4 said intermediate section 21 shifts within said stationary section 15 while the uppermost movable section 19 shifts within said intermediate section 21.

Barring unusual jarring or vibration when section 19 is extended from stationary section 15, or when said sections 21 and 19 are extended, a sufficient frictional interengagement between the sections will be brought about to prevent their collapsing.

The modified construction illustrated in Fig. 5 contemplates providing a pair of diametrically opposed indents 22, adjacent the upper end of said stationary section 15, which indents are inwardly directed. When the movable section 19 has been fully extended the lower end thereof is shifted past said indents 22 for providing stops or rests for the lowermost end of said section 19 when the latter has been fully extended from said stationary section 15, as is clearly seen in Figs. 5 and 6. Said sections 15 and 19 are sufficiently resilient to permit the lower end of said movable section 19 to shift past said indents 22 when said section 19 is brought to its operative position shown in Fig. 5, and to shift past said indents 22 in a downward direction when sufficient manual pressure is exerted at bead 20 to collapse said section 19 with relation to said stationary section 15.

Referring more particularly to Figs. 7, 8 and 9 the upper end of socket 12 located above the plane of chassis frame 11 is provided with a horizontal laterally extending flange 23, which, at diametrically opposed points is provided with a pair of recesses 24. Adjacent its lower end said stationary section 15 is provided with diametrically opposed and inwardly directed indents 25 which enter said recesses 24 for the purpose of interlocking said socket 12 with said stationary shield section 15 for pre-

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venting rotary shifting of the former with relation to the latter. By virtue of this arrangement socket 12 will at all times remain in a stationary position relative to section 15 thereby facilitating the locating of the tube prongs with proper socket apertures 13 during operative positioning of tube 14 upon socket 12.

Made in said stationary shield section 15 upon a pair of diametrically opposed points thereof is a pair of opposed outwardly depressed longitudinal channels 26 which are coextensive with said stationary section 15 in a longitudinal relation, for reception of diametrically opposed indents 27 made at the lower end of movable section 19. Said indents 27 are adapted for sliding movement within said channels 26 when movable section 19 is shifted in either direction. Said indents 27 and channels 26 prevent rotary shifting movement of said movable section 19 with relation of said stationary section 15.

Adjacent the upper end of said stationary section 15 and in the body of said channels 26 inwardly directed crimps 28 are made for providing rests for said indents 27 when movable section 19 has been extended to its operative position with relation to said stationary section 15, as seen in Fig. 7.

It is noted that indents 25 on one hand and channels 26 and indents 27 on the other are not on coincidental points, as will be seen on reference to Figs. 8 and 9 so that the two do not interfere with each other.

In the modifications of the shield shown in Figs. 5 and 7 the stationary sections 15 and movable sections 19 need not be made of frusto-conical formation but may be made cylindrical, because in either event indents 22 and crimps 28, respectively, will be capable of supporting movable sections 19 in their extended relation with stationary sections 15. Both indents 22 and crimps 28, due to the resilient nature of the sections, will yield under manual pressure on movable sections 19 in a downward direction to permit said sections 19 to shift within said stationary sections 15.

In the modification shown in Fig. 10 movable section 19 at its lower end is provided with an outwardly flaring flange 29 which comes in a frictional contact with the inner periphery of stationary section 15 when said movable section 19 has been extended from the latter. For this purpose of course it is preferable that said stationary section 15 may be of a frusto-conical formation, wider at its lower end and narrower at its upper end. An inwardly spun over flange 30 is made at the upper end of said stationary section 15 for providing a stop for said flange 29 and preventing the withdrawal of said movable section 19 when the latter has been brought to its extended operative position, as is clearly seen in Fig. 10. In the process of manufacture movable section 19 with its flange 29 is extended within said stationary section 15 and thereupon flange 30 is made by inwardly spinning the upper end of said stationary section 15.

While there are described herein preferred embodiments of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What we claim as new is:

1. A tube shield for a tube used in an electronic device, said shield comprising a plurality of sections each of which is substantially open at both ends, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, means to prevent complete removal of the other section from the permanently secured section, and means on said sections to releasably hold the sections in extended relation.

2. A tube shield for a tube used in an electronic de-

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vice, said shield comprising a plurality of sections surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to secure one section of said shield to said electronic device, and means on said sections to releasably hold the sections in extended relation.

3. A tube shield for a tube used in an electronic device, said shield comprising a plurality of generally cylindrical sections each of which is substantially open at both ends, one section having a diameter slightly greater than the other and said sections being of such length that one section is telescopically slidable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, means to prevent complete removal of the other section from the permanently secured section, and means on said sections to releasably hold the sections in extended relation.

4. A tube shield for a tube used in an electronic device, said shield comprising a plurality of sections each of which is substantially open at both ends, one section being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, and means on said sections to releasably hold the sections in extended relation, said last-mentioned means including an inwardly directed detent adjacent an end of said larger section defining a rest for the adjacent end of the other section.

5. A tube shield for a tube used in an electronic device, said shield comprising a plurality of sections each of which is substantially open at both ends, one section being larger than and surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, and means on said sections to releasably hold the sections in extended relation, said last-mentioned means including an inwardly directed detent adjacent an end of said larger section, and the smaller of said sections being sufficiently flexible to shift by said detent to locate an end of such section in a position of rest on said detent.

6. A tube shield for a tube used in an electronic device, said shield comprising a plurality of sections each of which is substantially open at both ends, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, means to prevent complete removal of the other section from the permanently secured section, said last-mentioned means including an outwardly directed flange on an end of one section and an inwardly directed flange on the adjacent end of another section disposed in overlapping relation to the outwardly directed flange and contacting it when said sections are in extended relation, and means on said sections to releasably hold the sections in extended relation.

7. A tube shield for a tube used in an electronic device, said shield comprising a plurality of generally cylindrical sections each of which is substantially open at both ends, one section having a diameter slightly greater than the other and said sections being of such length that one sec-

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tion is telescopically slidable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, an inwardly directed flange at one end of the section having a greater diameter, and an outwardly directed flange at one end of the section having a smaller diameter, said flanges being in a mutually overlapping relation on longitudinal plane of the sections so that when the sections remain in an extended relation said flanges come in a mutual contact for preventing complete removal of one section from the other, one of said flanges frictionally engaging the periphery of the other of said sections for thereby releasably holding the sections in their extended relation.

8. A tube shield for a tube used in an electronic device, said shield comprising a plurality of frusto-conical sections each of which is substantially open at both ends, and each of which has a flared end and a constricted end, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal and an extended length which provides a shield for the tube, and means to permanently secure one section of said shield to said electronic device, the constricted end of one section frictionally engaging the flared end of an adjacent section when said sections are in extended relation so as to releasably hold the sections in extended relation and so as to prevent complete removal of the other section from the permanently secured section.

9. A tube shield for a tube used in an electronic device, said shield comprising a plurality of frusto-conical sections each of which is substantially open at both ends and each of which has a flared end and a constricted end, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, the constricted end of one section frictionally engaging the flared end of an adjacent section when said sections are in extended relation so as to releasably hold the sections in extended relation and so as to prevent complete removal of the other section from the permanently secured section, and an outwardly flaring bead formed at the free end of the endmost free section, whereby that end section may be manually pulled.

10. A tube shield for a tube used in an electronic device, said shield comprising a plurality of frusto-conical sections each of which is substantially open at both ends and each of which has a flared end and a constricted end, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, the constricted end of one section frictionally engaging the flared end of an adjacent section when said sections are in extended relation so as to releasably hold the sections in extended relation and so as to prevent complete removal of the other section from the permanently secured section, and an outwardly flaring bead formed at the free end of the endmost free section, whereby that end section may be manually pulled, said bead being adapted to rest upon the rim of the adjacent section when the sections are brought to their shortened length position.

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11. A tube shield for a tube used in an electronic device, said shield comprising a plurality of sections each of which is substantially open at both ends, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, a channel in one of said sections in longitudinal relation therewith, an indent in the other of said sections, said indent entering said channel and guiding one of said sections in its sliding movement relative to the other of said sections and for preventing relative rotary movement of said sections, and means on said sections to releasably hold the sections in extended relation.

12. A tube shield for a tube used in an electronic device, said shield comprising a plurality of sections each of which is substantially open at both ends, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, and coacting detent means on said sections to releasably hold the sections in extended relation.

13. A tube shield for a tube used in an electronic device, said shield comprising a plurality of generally cylindrical sections each of which is substantially open at both ends, one section having a diameter slightly greater than the other and said sections being of such length that one section is telescopically slidable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said electronic device, a channel in one of said sections in a longitudinal relation therewith, an indent in the other of said sections, said indent entering said channel and guiding one of said sections in its sliding movement relative to the other of said sections and for preventing relative rotary movement of said sections, and a crimp at one end of said channel providing a rest for said indent to releasably hold the sections in extended relation.

14. A tube shield and a socket for a tube used in an electronic device having a chassis frame, said shield comprising a plurality of sections each of which is substantially open at both ends, one section surrounding the other and said sections being of such length that one section is telescopically movable relative to the other to a shortened length which exposes the upper portion of the tube for seizure for removal, and an extended length which provides a shield for the tube, means to permanently secure one section of said shield to said chassis frame of said electronic device, means on said socket and said permanently secured shield section for interlocking said socket and said permanently secured shield section, and means on said sections to releasably hold the sections in extended relation.

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