Dec. 4, 1945. T. W. KELLER 2,390,308

MOISTURE-PROOF BASE

Filed Oct. 27, 1943 2 Sheets-Sheet 1

Fig. 1.

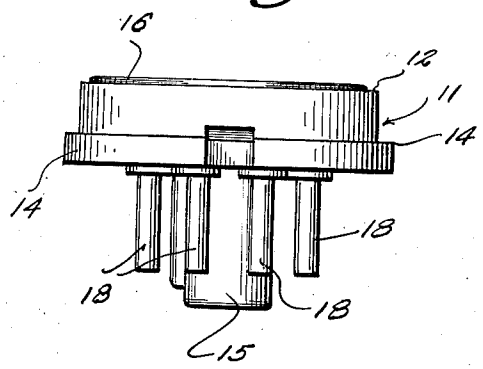


Fig. 6.

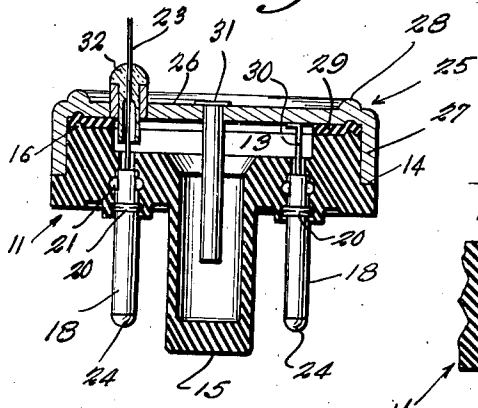


Fig. 8.

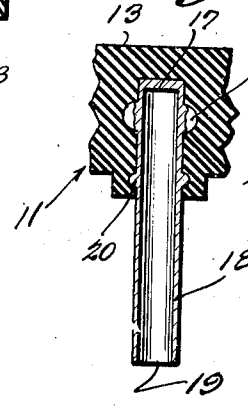


Fig. 9.

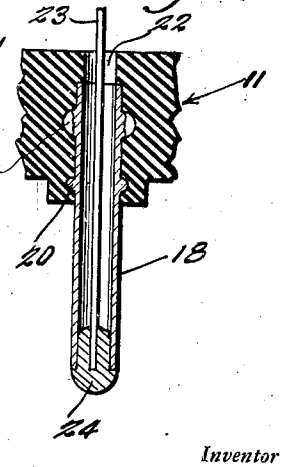
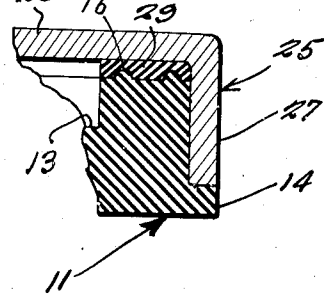


Fig. 10.



Inventor

THEODORE W. KELLER

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Dec. 4, 1945. T. W. KELLER 2,390,308

MOISTURE-PROOF BASE

Filed Oct. 27, 1943 2 Sheets-Sheet 2

Fig. 2.

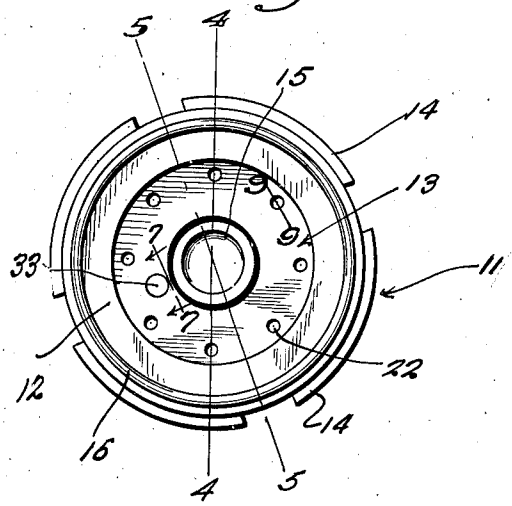


Fig. 3.

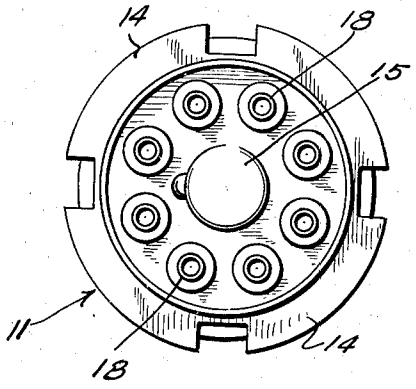


Fig. 4.

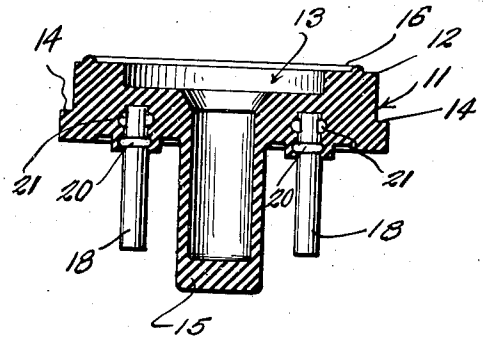


Fig. 5.

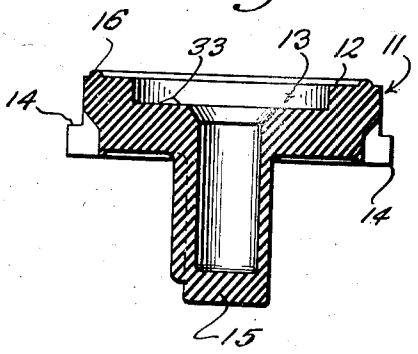
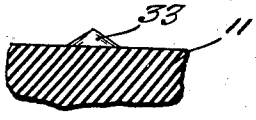


Fig. 7



Inventor

THEODORE W. KELLER

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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UNITED STATES PATENT OFFICE

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MOISTUREPROOF BASE

Theodore W. Keller, Council Bluffs, Iowa

Application October 27, 1943, Serial No. 507,878

8 Claims. (Cl. 250—27.5)

This invention relates to improvements such as are susceptible of satisfactory incorporation in a so-called octal base, and the purpose and function of the improvements decided upon is to render the base substantially moisture proof and such that foreign matter is excluded therefrom.

It is a matter of common knowledge that the accumulation of moisture or depositing of foreign matter in the cavity between the base and the base cap is traceable as the cause of premature failure attending equipment in the category under advisement. However, by sealing off the cavity by way of the improvements and refinements representing the contribution to the art herein made, these types of failures are virtually eliminated. The fact that ample and satisfactory provisions for guarding against moisture accumulation and cavity collection of foreign matter have not been introduced into conventional "octal" bases makes the adaptation and my mode of base construction superior by contrast.

One phase of the manner upon which novelty is predicated is in reference to the adoption and use of special closed end, seamless prong-forming pins, these being molded into the plastic base with the upper ends on a plane below the bottom of the recess or cavity, and said base being drilled through in alignment with the closed ends of said pins to thus make provision for insertion and properly anchored installation of the leads or wires.

Another improvement is in reference to the adoption and use of a comparatively wide top annular surface around the recess or cavity of the base, this having one or more sealing ridges molded thereon, said ridges being adapted to accommodate a flat circular gasket, the gasket being fitted between the ribbed or ridged base and embracing base cap providing an effective and efficient seal between the base and its associated cap.

Other features and advantages of the invention will become more readily apparent from the following description in the accompanying illustrative drawings.

In the drawings, wherein like reference numerals are employed to designate like parts throughout the various views—

Figure 1 is a side or marginal elevational view of the so-called "octal" base as constructed in accordance with the principles of the instant invention.

Figure 2 is a top plan view of the structure seen in Figure 1.

Figure 3 is a bottom or underside view of the same.

Figure 4 is a central section taken on the plane of the line 4—4 of Figure 2.

Figure 5 is a similar section, this being swung around to a tangent and being on the plane of the line 5—5 of Figure 2.

Figure 6 is a view partly in section and partly in elevation of the completed capped base finished and ready for use.

Figure 7 is an enlarged view, fragmentary in character, on the plane of the line 9—9 of Figure 2.

Figure 8 is an exaggerated fragmentary sectional view showing the step in which the closed end of the swedged pin has been molded into the base preparatory to the drilling operation or step.

Figure 9 is a view like Figure 8 showing the construction after the drilling operation has been completed and the closed end of the pin drilled out to form an aperture in the base and to thus accommodate the lead which is soldered or otherwise sealed in the lower end of the pins.

Figure 10 is a modification showing the cap on the base with the base having inner and outer annular ribs or ridges.

In referring to the invention as an "octal" base, it is understood that I have reference to a base construction with either eight or more or less prongs. Then, too, the assembly of parts as well as materials above the base cap which is a part of the assembly, will not be confined to radio tube elements but will have reference to any assembly that adapts itself to this type of mounting, such as, for example, condensers, coils, crystal holders and the like.

The essential parts of the "base" which includes the body proper and the rest of its adjoined accessories constitute a "body" 11 of appropriate material and dimensions. It is of general disk-like form in bottom plan view and includes an annular portion 12 and a recess or cavity 13, circumferentially spaced marginal outstanding flanges 14 serving as ledges, and a centrally arranged depending socketed extension near the top surface of the annular portion is provided with an endless ridge or bead 16. There may be a single bead or double beads, as brought out in the modification seen in Figure 10.

As before indicated, the prongs or pins are molded and thus satisfactorily embedded in the plastic base. As brought out in Figure 8, the inner or proximal end 17 is closed, the body portion 18 protruding in the distal or open end being

indicated as 19. These pins or prongs are usually provided with surrounding ribs 20 to facilitate anchorage, and in the instant case extra lugs 21 are fashioned thereon to enhance the principle of anchorage. Thus in Figure 8 we see the closed inner end of the pin embedded in the plastic at a point spaced from the bottom of the cavity or recess 13.

In the next step of the operation in Figure 9 a drill has been placed up through the distal end 19 and passed through the proximal end 17 to dislodge the plastic and form an aperture as indicated at 22. This makes provision for the downward insertion of the lead or wire 23 which has its lower end soldered or otherwise fastened to the distal end 19 as indicated at the point 24. This completes the sealing of the lead in the base.

The cap, that is, the metallic cap 25 (see Figure 6 in particular) comprises a disk-like portion 26 in the marginal rim 27 embracing the outer peripheral edge of the annular portion 12 and seating on the ledges 14. This cap also has an upstanding annular rib 28 and a suitable gasket 29 is interposed between the cap and the ribbed surface of the body part of the base. Incidentally, in the illustration in Figure 6, 30 identifies a ground lead which is grounded to the metal cap. The element 31 is an exhaust tube for removing air from the chambers defined by the socket in the central hollow prong 15 and recess 13. Finally, the numeral 32 designates one of the glass seals, this being a conventional element.

By way of summation, I desire to repeat certain outstanding points as follows:

The drawings of the moisture-proof base as shown are adapted to an octal base; however, the moisture-proof construction and design, as improved hereby, may be adapted to other types of bases or terminating plugs of similar design.

In assembling, the contact leads from the base cap are inserted through the drilled holes in the pins. With the gasket in place the base cap and base are pressed together to proper dimension and the base cap is crimped to the base, forming the gasket seal. The contact leads are then soldered at the original open end of the pins completing the contact and final seal.

The assembly of parts or materials above the "base cap" will not be confined to radio tube elements but rather to any assembly that adapts itself to this type of mounting, such as crystal holders, relays, and the like.

Further, the type or kind of material or assembly mounted above the base cap and the method of seal of the connecting leads through the base cap will vary, depending on the application, and the envelope material about the base cap may likewise vary and does not concern us.

My entire problem and likewise proposed patent is the moisture proofing or sealing off of the cavity enclosed within the underside of the "base cap" and the recess in the moisture-proof base. As previously stated, this is to be accomplished in short, by means of a compression gasket between the "base cap" with its sealing groove and the moisture-proof base top with its sealing ridge. The seal is kept intact by having swedged pins molded into the base. To facilitate connections, the closed end of the pin and the plastic are drilled through into the recess and after the connecting leads are brought through, they are soldered at the open end, thus completing the connection and the final seal.

In the drawings, the ledges 14 for the marginal rim portion 27 of the cap are circumferentially spaced but may be of any appropriate construction. A single or double bead arrangement may be employed in association with the gasket and the cap and base. This is brought out for example in Figure 10. The numeral 33 in Figure 7, which also appears in Figure 2, is merely an index for assembling purposes.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:

1. A plastic body for use in construction of a base for radio tube elements and the like comprising a disk-like body portion including a central depending hollow prong extension, a central recess forming a cavity in communication with said extension, an upstanding marginal annular portion, the top of said annular portion being provided with an endless gasket accommodating ridge, and the outer peripheral marginal portion having outstanding circumferentially spaced flanges constituting cap accommodation ledge elements.

2. A moisture-proof base of the class described comprising a plastic body, a plurality of prongs molded in said body, a cap fitted on said body, and a gasket interposed between the cap and body, said cap being provided with an upstanding annular bead, said body being provided with at least one similar bead aligned with said first bead to compress the gasket firmly and tightly against the cap to effect an efficient seal between the cap and body.

3. A moisture-proof base of the class described comprising a plastic base provided in its top with a shallow cavity, a prong in the form of a tubular pin having its inner proximal end embedded in said base at the time of molding said base, said base having a passage aligned and communicating with the bore of the pin and said cavity, a seal closing the outer distal end of said pin, a lead wire extending through the bore of said pin and embedded at its outer end in said seal, the inner end extending through the passage and up through and beyond the cavity, a cap fitted on said base and enclosing said cavity, passage and lead wire, and a gasket interposed between the cap and base, said gasket being compressed tightly against the base to effect an efficient seal between the cap and base.

4. A moisture-proof base of the class described comprising a plastic base having a central cavity in its top defining an upstanding marginal annular portion, the top surface of said annular portion being provided with an endless gasket accommodation rib, said base being further provided in its bottom with a central depending hollow plastic prong, a plurality of open ended metal prongs molded in said base at the time of the original molding step, the inner ends of said latter prongs communicating with said cavity by way of passages leading through the base and into the cavity, the outer distal ends of said prongs being closed by moisture-proof seals, lead wires arranged in the respective metal prongs and anchored at their outer ends in said seals, the inner ends of said wires passing through the passages, through the cavity, and a cap fitted on and over

said base, said cap including a central disk-like portion overlying the cavity, and a marginal rim embracing the aforementioned marginal portion of said base, and a gasket interposed between the cap and base and pressed firmly against the cap by the rib on said base.

5. A moisture-proof base of the class described comprising a plastic base having a central cavity in its top defining an upstanding marginal annular portion, the top surface of said annular portion being provided with an endless gasket accommodation rib, said base being further provided in its bottom with a central depending hollow plastic prong, a plurality of open ended metal prongs molded in said base at the time of the original molding step, the inner ends of said metal prongs communicating with said cavity by way of passages leading through the base and into the cavity, the outer distal ends of said prongs being closed by moisture-proof seals, lead wires arranged in the respective metal prongs and anchored at their outer ends in said seals, the inner ends of said wires passing through the passages, through the cavity, and a cap fitted on and over said base, said cap including a central disk-like portion overlying the cavity, and a marginal rim embracing the aforementioned marginal portion of said base, and the central disk-like portion of said cap being provided with an exhaust tube depending into said central depending prong to facilitate the exhaust of all air from the prong, cavity, and embedded metal prongs.

6. A moisture-proof base of the class described comprising a disc-like body embodying a central depending prong, formed in its upper central portion with a relatively shallow recess defining a cavity and also defining an upstanding marginal annular portion, the top surface of said annular portion being provided with an endless gasket-accommodation rib, the outer peripheral marginal portion having an outstanding perimeter ledge, a plurality of prongs molded in said body, a cap fitted on and over said body, said cap including a central disc-like portion overlying the cavity, and a marginal rim, said rim embracing the aforementioned marginal portion and being supported on said ledge, and a gasket interposed between the cap and body and pressed firmly against the cap by the rib on said body.

7. A moisture-proof base of the class described comprising a disc-like body embodying a central depending prong, formed in its upper central portion with a relatively shallow recess defining a cavity and also defining an upstanding marginal annular portion, the top surface of said annular portion being provided with an endless gasket-accommodation rib, the outer peripheral marginal portion having an outstanding perimeter ledge, a plurality of prongs molded in said body, a cap fitted on and over said body, said cap including a central disc-like portion overlying the cavity, and a marginal rim, said rim embracing the aforementioned marginal portion and being supported on said ledge, and a gasket interposed between the cap and body and pressed firmly against the cap by the rib on said body to effect an efficient seal between the cap and body, said cap being provided with an upstanding annular channel forming a bead, and said bead being in alignment with the first-named bead.

8. A moisture-proof base of the class described comprising a disc-like body embodying a central depending prong, formed in its upper central portion with a relatively shallow recess defining a cavity and also defining an upstanding marginal annular portion, the top surface of said annular portion being provided with an endless gasket-accommodation rib, the outer peripheral marginal portion having an outstanding perimeter ledge, a plurality of prongs molded in said body, a cap fitted on and over said body, said cap including a central disc-like portion overlying the cavity, and a marginal rim, said rim embracing the aforementioned marginal portion and being supported on said ledge, a gasket interposed between the cap and body and pressed firmly against the cap by the rib on said body to effect an efficient seal between the cap and body, said cap being provided with an upstanding annular channel forming a bead, and said bead being in alignment with the first-named bead, and said cap being provided centrally with an exhaust tube depending into said cavity and prong.

THEODORE W. KELLER.