Aug. 16, 1966 D. C. SINCLAIR 3,266,563

PLASTIC SLIDE SHOE FOR FIN TUBE RADIATOR

Filed June 25, 1964

Fig. 1.

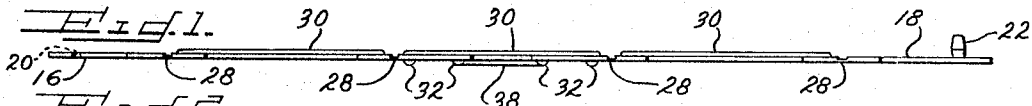


Fig. 2.

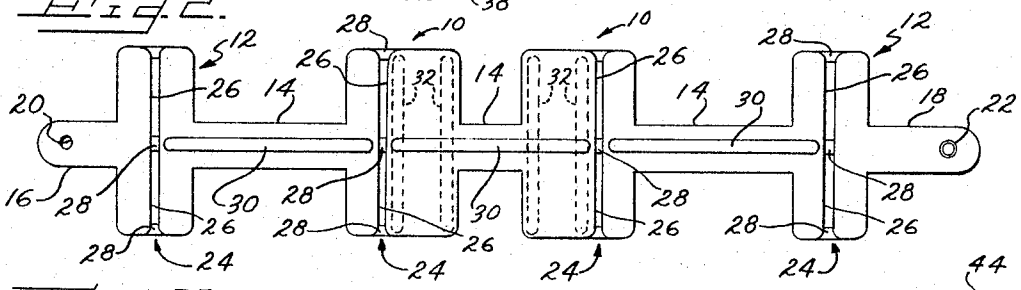


Fig. 3.

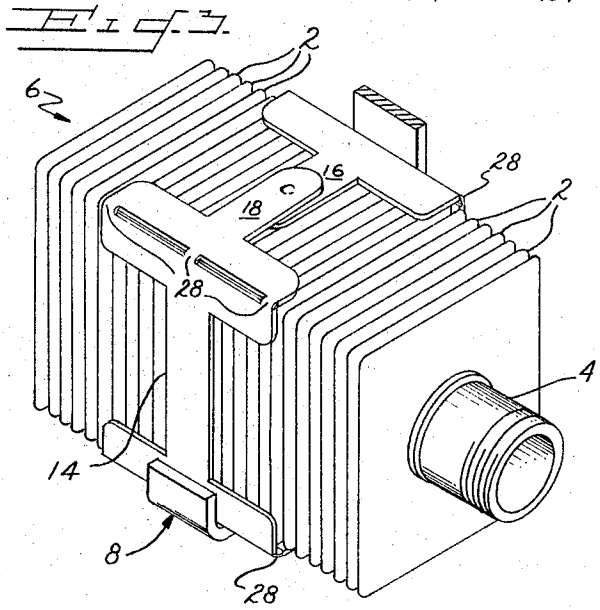


Fig. 4.

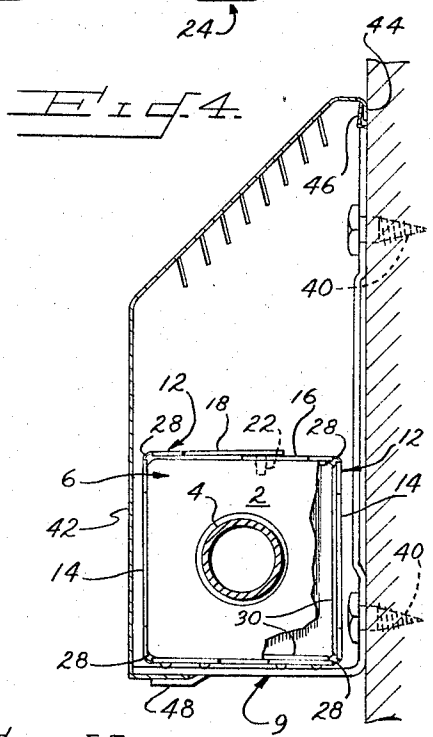


Fig. 5.

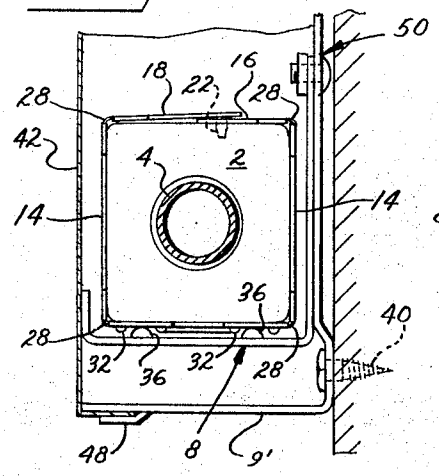
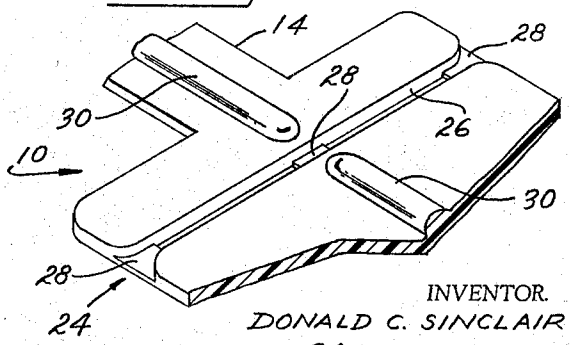


Fig. 6.



INVENTOR.
DONALD C. SINCLAIR
BY Chapin & Neal
Attorneys

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PLASTIC SLIDE SHOE FOR FIN TUBE RADIATOR

Donald C. Sinclair, Westfield, Mass., assignor to Sterling Radiator Co., Inc., Westfield, Mass., a corporation of Massachusetts

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1 Claim. (Cl. 165—82)

This invention relates to plastic shoes for fin tube radiator structures and particularly to a so-called slide shoe for use with supporting brackets or hangers on which a fin tube element may be mounted in conventional manner.

More particularly the invention relates to plastic slide shoes for shoe type hangers used either independently or with universal support brackets for mounting a fin tube radiator element having fins of rectangular outline along a wall surface.

In the art of fin tube radiator assemblies and supporting structures therefor many efforts have been made to simplify the various elements from the standpoint of structural characteristics, of manufacturing procedures, of ease in handling and installation, or neatness and compactness of appearance together with reliability and efficiency in operation, and reduction in material and labor costs.

It is the primary object of the present invention to provide an improved plastic slide shoe for use with conventional hangers of fin tube elements of the class described consistent with the above ends and effecting economies in the cost of manufacture, in shipping costs, and in costs of handling and installation, all without sacrificing reliability and efficiency in operation.

These and related objects and advantages of the invention will be apparent from the following description of an embodiment thereof as shown by the attached drawings, in which

FIG. 1 is a side elevation of a slide shoe embodying the invention in open flat condition as formed in a mold;

FIG. 2 is a plan view of the shoe shown by FIG. 1;

FIG. 3 is a perspective view of the shoe in fastened condition surrounding a finned tube element;

FIG. 4 is a sectional view of one type of wall installation of an element including a covering panel and showing the shoe in operative position;

FIG. 5 is a sectional view of another type of wall installation; and

FIG. 6 is a fragmentary perspective view to show detail of the hinge line area of a corner panel.

The plastic slide shoe of this invention as illustrated by the drawings is specifically designed for use with fin tubed radiator elements of square or rectangular outline as indicated by the plurality of plates **2** (FIG. 3). These plates or fins are mounted in longitudinally closely spaced relation on a tube **4** in conventional manner and make up a fin tube element designated generally by numeral **6**. The shoes are, furthermore, specifically designed for a type of installation in which an element **6** is mounted by supporting the fins at their lower edges at spaced intervals on shelf-like brackets or hangers, examples of which are shown at **8** in FIGS. 3 and 5 and at **9** in FIG. 4.

Referring to FIGS. 1 and 2 the shoe comprises an integrally formed unit which is preferably fabricated by conventional plastic molding processes as a flat strip. The plastic material is preferably polypropylene but may be any similar suitable plastic such as polyethylene, nylon, and the like. As best shown by FIG. 2, the shoe has four spaced rectangular corner panel members **10** and **12** connected by narrow straps **14** integrally joined centrally of the panels. The end panels **12** are provided with short strap portions **16** and **18**. The free ends of the portions **16** and **18** have interengageable snap fastener means for

attaching the two ends together. As shown strap **16** is formed with a hole **20** at its free end while strap **18** is formed with a projecting lug at **22** having a double taper so that it may be snapped into the hole **20** of strap **16**.

Disposed transversely of the connecting straps **14** and dividing each of the panel members **10** and **12** into hingedly related sections are hinge line portions at **24**. The hinge portions are formed by a pair of aligned slots **26** with connecting tab pieces **28** at the center and each end of the area **24**. The tabs are integral webs of material and as best shown by FIGS. 1 or 6 are of a reduced thickness in comparison to the material of the panel sections. The tabs thus connect the two sections adjacent the outer face of the panels for the desired hinge action.

The sections of each panel **10** and **12** are thus hingedly related so that the sections can each be swung into right angular relation so as to form a box-like unit when wrapped around a fin tube element (FIGS. 3, 4 and 5). The fastener means joins the free ends of the straps **16** and **18** at the top of the finned element. The slotted hinge portions **24**, when constructed as above described, permit a sharp right angled relation, the sections of each panel member **10** or **12** hugging each of the four corners of the finned element **6**.

As will be noted the central panel members of the unit snugly embrace the lower corners of the fins and the outer panels **12** hug the upper corners thereof. Between the hinge portions **24** of the two central panels **10** and between the hinge portions **24** of each end and central panel on the inner surface of the strip are raised ribs **30** (see FIG. 2). The three ribs **30** are in longitudinal alignment and when the unit is installed on the element **6**, the ribs are all positioned between the edges of a single pair of adjacent fins **2**. Relative sliding movement between the shoe and the element itself in either direction is thus effectively confined. Since the shoe is designed for sliding movement together with the element on a hanger or bracket support, the ribs **30** thus prevent any accidental displacement of the shoe relative to the fins or plates during contraction and expansion of the tube element.

On the outer surface of the adjacent spaced inner sections of the two central panel members **10** are provided a pair of spaced ribs **32** parallel to the hinge portions **24**. In the embodiment of the hanger **8** shown by FIG. 5, the horizontal support of the bracket is provided with a pair of spaced hemispherical protuberances or humps **36**. The ribs **32** on the bottom of each central panel section are for straddling hump **36** so that the shoe slides on a metal bearing point to further reduce friction.

A rib **38** at the outer or underside of the central strap **14** between ribs **32** is provided to add rigidity. It will also be appreciated that ribs **30** and **32** in addition to the functions above outlined also impart added rigidity.

Referring now to FIG. 4 the shoe is shown mounted on element **6** in a wall installation, the element being supported on horizontal portion of a bracket **9** fixed as by lag screws **40** to the wall. A cover member **42** is also shown, the top of the cover having a downwardly turned lip **44** caught on a hanger strip **46** fixed to the wall at the top of the bracket and the lower edge of the cover being turned inwardly for fastening attachment at **48** to the under edge of bracket **9**.

As is customary the finned element **6** is supported by a series of spaced brackets along a wall and during heating and cooling cycles the element **6** will expand and contract thus moving back and forth relative to the supports. The function of the lower corner panel members in riding on the horizontal portion of the bracket to prevent noise and injury to fins when the element expands and contracts will be readily seen. As for the upper corner panels, the showing of FIG. 4 indicates an ideal positioning thereof

and sufficient spacing between the cover and the vertical bracket portion. However, it will be seen that if element 6 is left in a tipped condition when originally installed as in a counterclockwise position from that shown, the upper edges of the fin may rub against vertical wall of the cover. If tipped in a clockwise condition the opposite upper corner may rub against the vertical bracket part. In either event an upper corner panel 12 of the shoe will engage these surfaces thus preventing injury to the fins or an objectionable noise factor. It is well known in the trade that in fitting lengths of finned elements together or in fitting inlet and outlet connections together the fin tubes themselves may not be precisely set with respect to the hanger structures. The plastic shoe thus accommodates a margin of error in this respect.

In FIG. 5 a further conventional type of wall hanging is shown in which a slide hanger 8 is hung as at 50 on a bracket 9', similar to the bracket 9 of FIG. 4. In FIG. 5 a single tier installation is indicated but as will be appreciated the bracket 9' represents a common type used for a double or triple tier installation. It will be appreciated further that humps 36 may be dispensed with in which case the shoe will rest on the planar surface comparable to that shown by FIG. 4.

The shoe unit as described being made in a substantially flat form except for projecting lug 22 lends itself to the economies previously mentioned with respect to the formation of a plastic mold for fabricating the same. Also as a flat article the units may be shipped in economical packages and with a minimum of waste shipping space. At the point of installation the plastic shoes are easily handled merely by snapping around the fin tube element with a minimum of handling. They may, of course, be easily shifted if necessary to register accurately with a hanger bracket. Being made of plastic and protecting the four corners of the element noiseless operation of a heating installation is assured without any tendency for the shoe to shift out of place.

What is claimed is:

A slide shoe of molded polypropylene material for application to radiator tube elements provided with longitudinally closely spaced rectangular fins and for engagement therewith at support positions spaced along the length of said elements, said shoe comprising a unitary molded flat strip having four spaced corner panel members connected centrally of their end edges by narrow straps and strap portions extending from each end panel provided with interengageable snap fastener means at the outer ends of said portions, each said panel being divided transversely of said strip into hingedly related corner panel sections with the hinge line area of said panels being defined by perforations and spaced integral connector tab pieces of reduced thickness joining said sections adjacent the outer face of the panel, the inner face of said strip having aligned ribs upraised from the surface thereof extending between said hinge lines of the panels along the longitudinal center line of said strip, the outer face of adjacent spaced sections of the two central panel members each having a pair of spaced upraised ribs extending transversely of said center line.

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ROBERT A. O'LEARY, *Primary Examiner.*

FREDERICK L. MATTESON, JR., *Examiner.*

T. W. STREULE, *Assistant Examiner.*