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RESILIENT CONNECTOR AND SUPPORT FOR FRANGIBLE BODIES

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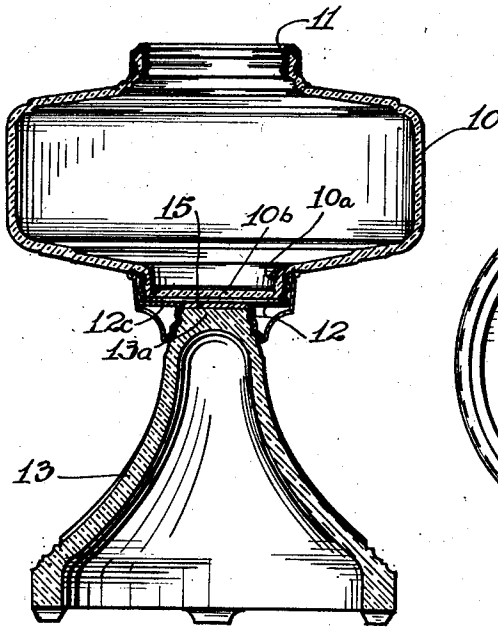


Fig. 1.

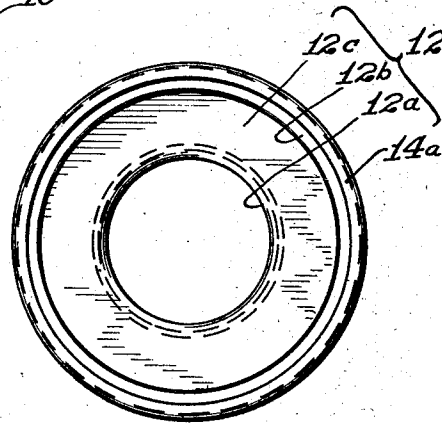


Fig. 3.

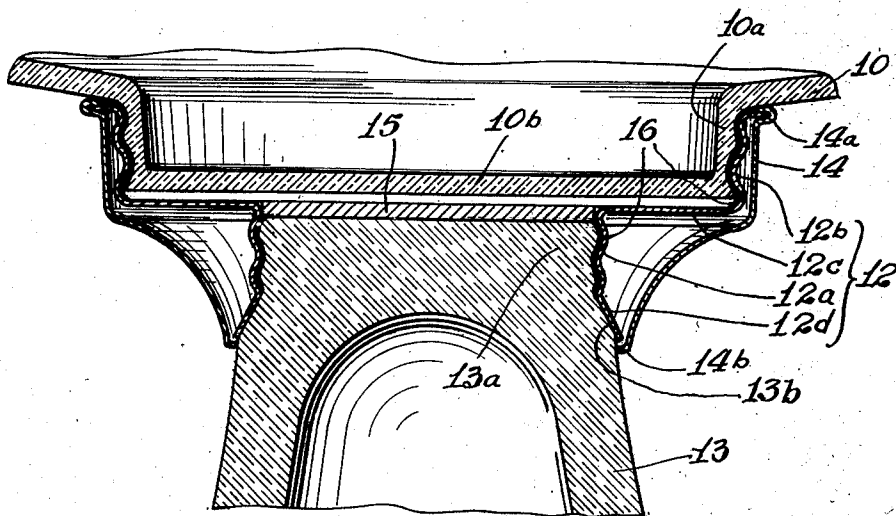


Fig. 2

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RESILIENT CONNECTOR AND SUPPORT FOR
FRANGIBLE BODIESCortland W. Davis, Alexandria, Ind., assignor to
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4 Claims. (Cl. 240—83)

My invention pertains to connectors for at-
taching bodies of frangible material, for example,
glass bowls of oil lamps, to bases, and consists of
a connector stamped and formed from thin sheet
metal, having a first and upwardly extending
flange of relatively large diameter, for attach-
ment to the oil-holding vitreous bowl of the lamp,
a second and downwardly extending flange of
relatively small diameter, for attachment to the
upper end portion of the lamp base, and a flat
annular diaphragm extending horizontally from
the lower end of said first flange to the upper
end of said second flange, said diaphragm being
of substantial width radially, and, when con-
nected for use with the lamp bowl and base,
being free from restraint by any of the parts of
the complete lamp, excepting at its outer and
inner flanged edge portions. As a result, the an-
nular diaphragm is free to flex or bend under
impacts or shocks exerted on either of its flanges
by corresponding impacts or shocks on the bowl
or base as the case may be, thus avoiding the
communicating of resultant impacts or shocks
through said diaphragm to the other of said
flanges, that might be dangerous to the part of
the lamp connected therewith.

The bowls of lamps of the kind referred to, are
usually made of glass or vitreous material by blow-
ing, and consequently are not provided with
thicker walls than required to give them sta-
bility when properly used. They are, therefore,
relatively frangible and easily broken by impacts
and shocks, which produce greater strains in
their structure than result from the proper use
of the lamps, whether said impacts and shocks
are exerted directly on the bowls, or on bases
usually rigidly secured to the bowls. Further-
more, the bases of the lamps even when made of
vitreous material, are of more rugged construc-
tion than the bowls, and where the bowls and
bases are rigidly connected, the bowls are the
parts that are damaged by dangerous impacts
and shocks, whether they are exerted on the
bowls or the bases.

By my invention the bowl of the lamp has a
cushioned connection with the lamp base, which
is sufficiently flexible and resilient to protect the
bowl from damage, thereby avoiding the dangers
of such damage or breakage, whether the im-
pacts and shocks protected against are primarily
exerted on the bowl or on the base.

My invention will be best understood by refer-
ence to the accompanying drawing illustrating a
preferred embodiment thereof, in which—

Fig. 1 illustrates in vertical, central, sectional

view an oil lamp in accordance with my inven-
tion;

Fig. 2 shows in a view similar to Fig. 1 and to
enlarged scale the connector construction I em-
ploy between the bowl and the base of the lamp,
and

Fig. 3 is a plan view of the connecting device
removed from the remaining parts of the lamp
structure, this view being to a scale larger than
that of Fig. 1 and smaller than that of Fig. 2.

Similar numerals refer to similar parts
throughout the several views.

As shown in Fig. 1, my lamp construction con-
sists of a bowl 10 of glass or other vitreous ma-
terial, having an opening in its upper portion pro-
vided with a threaded collar 11 to receive a burner
in the usual manner. The bowl 10 has an annular
extension 10a projecting downwardly from its
bottom wall and engaged by my connecting de-
vice 12 which also engages the upper end portion
13a of the lamp base 13, which may be of any
desired material, for example, glass or other
vitreous material.

As more clearly shown in Fig. 2, the connecting
device 12 consists of a unitary sheet metal stamp-
ing of thin and preferably resilient metal, for
example, sheet brass, having an inner and down-
wardly extending flange 12a, an outer and up-
wardly extending flange 12b, and a horizontally
disposed annular diaphragm 12c connecting the
upper end of the flange 12a with the lower end of
the flange 12b. Said flanges preferably have
screw threads formed in them to engage similar
screw threads on the base portion 13a and the
bowl portion 10a. The lower end portion of the
flange 12a is flared outwardly at 12d below the
screw threads in said flange, to seat tightly against
a similarly shaped surface 13b on the base 13,
when the flange 12a is screwed tightly on the
upper threaded portion 13a of the base. The up-
per edge portion of the flange 12b is flared out-
wardly below the bowl 10, and has secured to its
outer edge, the upper edge of a shell 14 of thin
sheet metal, by folding the edge of the shell
around the flared edge of the flange 12b as shown
at 14a, which shell surrounds the connecting de-
vice 12 and is for decorative purposes, having no
part in the functioning of said connecting de-
vice as a cushioning means connecting the bowl
and the base of the lamp. The lower portion of
the shell 14 is curved inwardly and downwardly
to a position closely adjacent the lower edge of
the lower flared portion 12d of the connecting de-
vice, and the lower edge of said shell has a short
flange 14b extending inwardly therefrom under

but free from the edge of said portion 12d, the inner edge of said flange 14b being a loose fit on the adjacent portion of the base 13, so that said shell may move freely vertically relatively to the edge of the portion 12d, when the annular diaphragm 12c is flexed in cushioning the bowl 10 from the effects of impacts and shocks exerted either on the bowl or on the base. When the flange 12b is screwed on the threaded bowl extension 10a, the folded portion 14a seats against the under surface of the bowl 10 just outside of its extension 10a, to limit the movement of said flange on said bowl extension when said parts are tightly screwed together. For this condition, and with the flared portion 12d tightly screwed against the seat 13b, the flange 14b has the relation to the lower edge of the portion 12d and to the base 13, above described, and the annular diaphragm 12c is preferably unstressed. Suitable cement 16 is preferably placed on the screw threads as indicated, before screwing the parts together, to compensate for any irregularities in the screw threads on the bowl and base extensions and to permanently hold or lock the parts together.

The lower wall 10b of the bowl extension 10a, preferably has a flat and horizontally disposed lower surface, which lower surface is substantially parallel with the annular diaphragm 12c and preferably sufficiently spaced from said diaphragm, so that said lower surface will not have restraining contact with said diaphragm for any flexing of said diaphragm resulting from impacts and shocks that may usually be exerted either on the bowl or on the base of the lamp. To insure that the wall 10b shall not have dangerous contact with the base at any time, the annular diaphragm 12c is located in a plane which is substantially above the upper end surface of the extension 13a of the base. This leaves an annular space in the upper portion of the flange 12a, in which, if desired, a disk 15 of resilient material, for example, paper stock of loose texture, may be disposed, supported by the extension 13a, the plane of the upper surface of said disk if used, being substantially in the plane of the upper surface of the diaphragm 12c. The disk 15 may thus constitute a resilient buffer for engagement by the wall 10b, when and if the bowl or base is subjected to extreme impacts and shocks, thus preventing even under such extreme conditions, direct and dangerous impacts against the bowl wall 10b, the clearance between the disk and the wall 10b being preferably sufficient so that these parts do not make contact with each other for any usual impacts or shocks that may be exerted either on the bowl or on the base of the lamp. The disk 15 may also serve the further purpose of carrying advertising or other reading matter on its upper surface, which may readily be read through the bowl 10, when said bowl, as is usually the case, is made of transparent glass.

It will be observed, that the diaphragm 12c of my connecting device, may flex or bend freely at any place that may be necessary to cushion or relieve impacts and shocks either on the bowl or on the base of the lamp, such, for example, as lateral or downward impacts on the bowl, setting the lamp down too violently, or tipping the lamp over. Where the bowl and the base are rigidly connected, as has heretofore been the common practice, impacts on the bowl readily produce dangerous strains in the bowl at said connection, because of the necessity of reactive movement of the base to avoid such strains, and because of

the inertia of the base preventing such reactive movement in time to avoid the development of said strains. Again, with such rigid connections, impacts or shocks on the base are immediately communicated to the connected part of the bowl, due to the inertia of the bowl and attached parts, either because in some cases, it is impossible for the bowl and attached parts to acquire the movement of the base immediately, when the base is abruptly moved by the impact or shock, or in other cases, because it is impossible for the bowl and attached parts to stop moving immediately, when the base is in motion and its movement is abruptly stopped by the impact or shock, thus in either event developing dangerous strains in the bowl connection that usually crack or break the bowl.

The disadvantages of such rigid connections are overcome by my invention, by permitting relative movement between the bowl or other supported body and the connected base, and at the same time building up a force in the connection, opposing the movement due to the impact or shock, which prevents the development in the bowl connection of dangerous strains due either to the inertia of the base, or of the bowl and its attached parts.

It will be understood that the size and construction of my connecting device depends upon a number of factors, for example, the weight of the bowl and attached parts, the relation of the diameters of the connector flanges to each other, and the thickness, material and temper of the metal of which the connecting device is made. While it is impossible to lay down any rule for constructing the connecting device that will cover all cases, a single instance of practical construction may serve as a guide. In this instance the lamp was of medium size, the bowl flange had a diameter of about 2 $\frac{3}{4}$ inches and the base flange of the connecting device had a diameter of about 1 $\frac{1}{8}$ inches, making the radial width of the diaphragm a little over half an inch. The size of the bowl and base were in proportion, substantially of the size shown in Fig. 1. The connecting device was made of sheet brass of medium temper or hardness, somewhat less than $\frac{1}{2}$ of an inch thick. With this construction, the assembled lamp structure was dropped in upright position, a distance of three feet upon a floor, and the impact of the base striking the floor did not injure the bowl in any way. Repeated tests showed the same results. On the other hand, when similar bowls and bases rigidly connected in a manner heretofore considered good practice, were similarly dropped, the result invariably was the breaking of the bowl.

In addition to its above advantages, my improved connecting device, which, if desired, may be employed to give equally effective cushioned support to other frangible bodies than lamp bowls, is inexpensive to construct.

While I have shown my invention in the particular embodiment above described, I do not limit myself to that exact construction, as I may employ equivalents known to the art at the time of the filing of this application, without departing from the scope of the appended claims.

Having thus described my invention, what I claim is:

1. In a construction of the class described, the combination of a frangible body having a support-engaging portion, a base having its upper end near and spaced from said support-engaging portion, and a single connecting device solely and

resiliently supporting said body on said base and comprising a diaphragm in a plane crossing the axes of said body and said base and spaced members extending from the plane of said diaphragm and rigidly connected respectively with said support-engaging portion and said base to support said body on said base, said diaphragm being flat and free to flex between said members and having a substantial extent between said members making said diaphragm a shock-protecting support for said frangible body.

2. In a construction of the class described, the combination of a frangible body having a support-engaging portion, a base having its upper end near and spaced from said support-engaging portion, and a single connecting device solely and resiliently supporting said body on said base and comprising a diaphragm in a plane crossing the axes of said body and said base and spaced members extending from the plane of said diaphragm and rigidly connected respectively with said support-engaging portion and said base to support said body on said base, said diaphragm being flat and free to flex between said members and having a substantial extent between said members making said diaphragm a shock-protecting support for said frangible body, said members having threaded engagement respectively with said support-engaging portion and said base.

3. In a construction of the class described, the combination of a frangible body having a support-engaging portion, a base near and spaced from said support-engaging portion, a device connecting said body to said base comprising a dia-

phragm in a plane crossing the axes of said body and said base and spaced members rigidly connecting said diaphragm with said support-engaging portion and said base to resiliently support said body on said base, said diaphragm being flat and free to flex between said members and having an extent between said members making said diaphragm a shock-protecting support for said frangible body, and a shell around said device, one end of said shell being connected with said device and its other end being free to move relatively to said connecting device.

4. In a construction of the class described, the combination of a frangible body having a support-engaging portion, a base near and spaced from said support-engaging portion, a device connecting said body to said base comprising a diaphragm in a plane crossing the axes of said body and said base and spaced members rigidly connecting said diaphragm with said support-engaging portion and said base to resiliently support said body on said base, said diaphragm being flat and free to flex between said members and having an extent between said members making said diaphragm a shock-protecting support for said frangible body, and a shell around said device, one end of said shell being connected with said device and its other end being free to move relatively to said connecting device, said members having threaded engagement respectively with said support-engaging portion and said base.

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