DESIGN OF BEZEL SEALING FOR PRESSURE PROOF CASES

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The present invention relates to casing seals and more particularly to seals for closures, instrument bezels or the like and methods for making such seals.

Heretofore, for example, in the production of marine, aircraft instruments and the like, it has been the practice to provide a rib around the surface rim of the cover, bezel or the like adapted to compress a packing ring or interfit within a cooperating groove on the facing surface rim of the casing body. Such arrangements, see Figure 1 of the drawing for an example, are the cause of much trouble when producing seals for casings of shapes other than cylindrical, because in making tight seals between the cover rim and opposing casing rim, it is necessary to machine down the facing rim surfaces of the cover and body to obtain a tight joint. While it is not as difficult to face down a round cover rim on either side of the upstanding rib on a turning lathe or the like, it is practically impossible to accurately face down a square-rectangular or non-cylindrical body on each side of such rib by machine.

Accordingly, one object of the present invention is to eliminate the foregoing "bottleneck" in the production of fluid tight casing seals, so that other than cylindrically shaped casing parts may be produced by machine.

Another object is to provide a novel fluid tight seal for casings, whereby all opposed parts may be machined flush, so as to more efficiently cooperate with the other elements of the seal.

Another object is to provide a novel seal for pressure proof casings or the like comprising a novel packing distributor member designed from, and flush with a part of the cover or case.

Another object is to provide a novel bezel seal or the like for casings including a plurality of cooperating grooves adapted to receive a sealing medium and a cooperating sealing medium distributor counterstunk in the surface rim of the bezel defined by said grooves.

Another object is to provide a novel method for producing seals between casing closures for casings of irregular shapes and also to provide a method adapted to speed up production of cylindrical shapes as well.

The above and other objects and advantages of the present invention will appear more fully hereinafter from a consideration of the detailed description which follows, taken together with the accompanying drawing wherein two embodiments of the invention are illustrated. It is to be expressly understood, however, that the drawing is for the purpose of illustration only and is not designed as a definition of the limits of the invention. Reference for this latter purpose should be had to the appended claim.

In the drawing, wherein like reference characters refer to like parts throughout the several views,

Figure 1 is a section view, broken away, representative of the prior art.

Figure 2 is a section view, broken away, of one embodiment of the present invention.

Figure 3 is a longitudinal section view taken through one form of pressure proof casing produced according to the present invention, showing the closure fastened by bolt means.

Figure 4 is a section view, broken away, of the casing sealed together.

Figure 5 is a top plan view of another form of casing, wherein the cover is hinged to the casing body.

More specifically, with reference to the above figures, numeral 10 represents a casing body, and 12 a cover for the same.

For example, the case may be one such as is used in the aircraft accessory art in connection with altimeters, airspeed indicators or the like, wherein it is desirable to have pressure proof or fluid tight casings. The novel sealing structure for providing a fluid tight casing by the present invention, comprises a machined level surface rim 11 on cover 12, which cover may have been cast by any suitable method, so as to have formed in the said surface rim 11 a pair of spaced substantially parallel grooves 13 and 14.

In casting grooves 13 and 14 in such spaced relation, an intervening rib 15 equal in height to the depth of the grooves is provided. Rib 15, therefore, is flush with the rim surface 11, which surface may now be machined and faced down level by turning, milling or disc grinding.

The casing body 10 may also be cast by any suitable method, so as to have within its rim surface 16 a groove 17. The groove 17 is made of a relatively greater width than either groove 13 or 14, but is of less width than the overall width of grooves 13, 14 and rib 15, for the purpose hereinafter described.

Within groove 17 may be mounted a sealing medium, such as gasket 18. The gasket 18, as better shown in Figure 2, is relatively thicker than the depth of groove 17, so as to extend above the rim surface 16 of the casing body 10, which rim surface has likewise been machined level to cooperate with the opposing rim surface 11 of the cover 12.

The cover 12 may now be secured to the casing.
body 19 by any suitable means, such as hinge 19 and latch 20, shown in Figure 5, or by lugs 21 and bolts 22, as shown in Figure 3. When the cover is closed as in Figure 4, pressure is applied to the same, so that the cooperating machined rim surfaces 11 and 16 fit together, whereby rib 15 presses centrally against the top of gasket or packing 18 and distributes the same by compressing the gasket materially centrally to each side and into the grooves 13 and 14 of the cover 12.

There is thus provided a novel seal and method of forming the same for cylindrical or non-cylindrical bodies by first providing accurately machined contacting surfaces on the cover and casing body with cooperating groove means to receive a suitable sealing medium, which is flowed, compressed or otherwise distributed to effect a fusion of the medium between the several grooves for a fluid tight seal by a built in distributor rib machined off flush simultaneously with the machining of the contracting rim surfaces.

While only two embodiments of the invention have been illustrated and described, other changes and modifications which will now appear to those skilled in the art, may be made without departing from the scope of the present invention. Reference is, therefore, to be had to the appended claim for a definition of the limits of the present invention.

What is claimed is:

In an instrument casing having a flange portion with a flat outer surface, said flange defining an opening and a cover therefor having a flange with a flat mating surface and means to press the flanges together in registry, the readily manufacturable sealing means which comprise a grooved portion of generally rectangular section in one surface, a belt of sealing material shaped to fit into the groove and also of generally rectangular section with a height greater than the depth of the groove so that a portion projects therefrom, and a pair of matching grooved portions in the face of the other flange disposed with their outer edges extending beyond those of the first mentioned groove and with a rib between the matching grooves shaped to compress the sealing material without projecting beyond the surface of its flange, the sealing material having a compressed volume of less than the total combined volumes of the grooves, whereby the surfaces of the mating flanges may be forced together with the sealing means then effective.

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