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3,367,701

SELF-LOCKING PLASTIC SEAL

Filed Jan. 14, 1966

FIG. 1

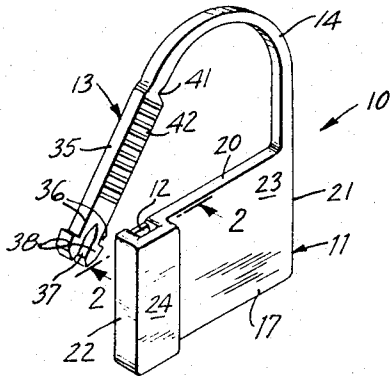


FIG. 2

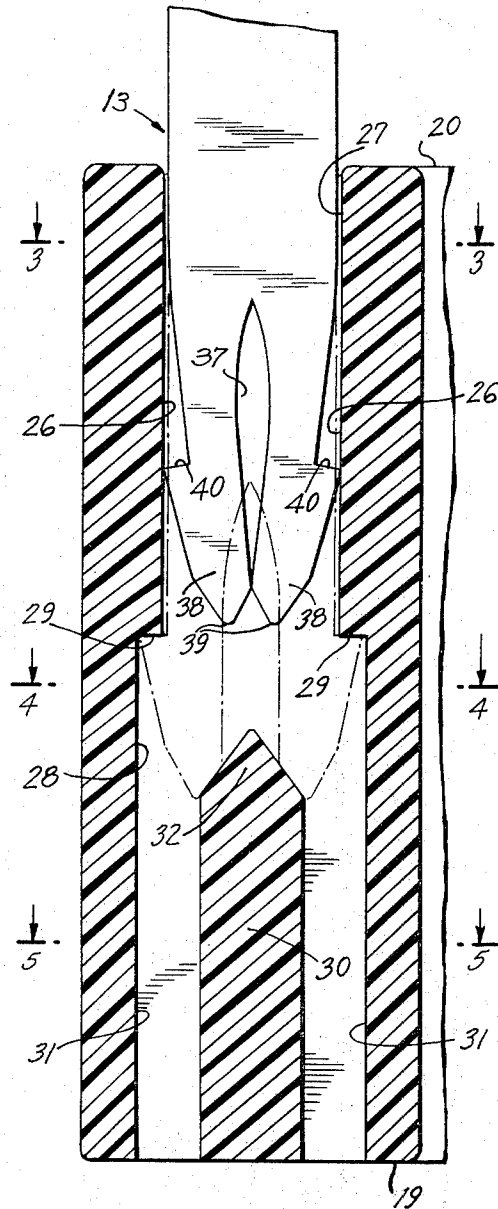


FIG. 3

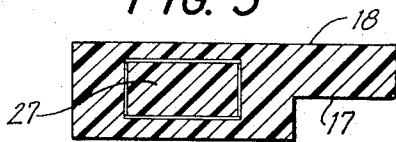


FIG. 4

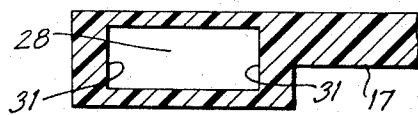
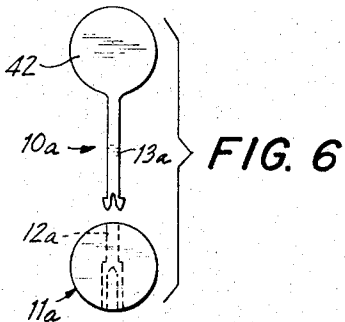
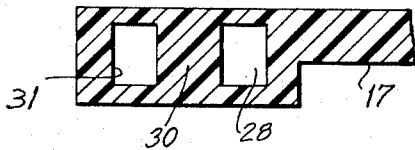


FIG. 5



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SELF-LOCKING PLASTIC SEAL

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 2 Claims. (Cl. 292—321)

ABSTRACT OF THE DISCLOSURE

This disclosure relates to self-locking seals wherein the entire seal is made as one integral casting of plastics material and consists of a wafer-like body having a thickened portion along one side thereof, said portion having a socket extending longitudinally therethrough, with a reduced entry portion which opens into an enlarged inner chamber defining a pair of laterally spaced shoulders for reception of and engagement with a pair of resilient tines which extend in laterally spaced relation longitudinally from a shank of a tie member which flexibly extends from the side edge of the wafer-like structure opposite the side having the thickened edge, in combination with an abutment in the inner chamber which engages between said tines upon said insertion to positively space the tines and resist removal thereof.

This invention relates generally to seals, and is especially concerned with a unique construction of self-locking seal.

It is an important object of the present invention to provide a self-locking seal which positively and automatically effects sealing action upon mere engagement of one part into another, and which cannot be opened or unlocked without destruction or defacement, so as to clearly indicate at a glance the results of any tampering.

It is another object of the present invention to provide an extremely simple seal construction having the advantageous characteristics mentioned in the preceding paragraph, which may be economically mass-produced, say of plastic material, to effectively reduce costs in the removal and replacement of seals.

It is still a further object of the present invention to provide a seal construction of the type described which is durable and reliable throughout a long useful life, and which is foolproof in operation, requiring only a single motion to effect the sealing action.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described and of which the scope will be indicated by the appended claims.

In the drawings:

FIGURE 1 is a top perspective view showing a seal of the present invention prior to being closed or sealed.

FIGURE 2 is a sectional view taken generally along the line 2—2 of FIGURE 1, but illustrating the seal in an intermediate stage of being sealed, and showing the seal in its fully closed or sealed condition in phantom outline.

FIGURES 3, 4, and 5 are transverse sectional views taken generally along the lines 3, 4, and 5, respectively, of FIGURE 2, illustrating the interior construction of the seal.

FIGURE 6 is a plan view showing a slightly modified embodiment of the seal.

Referring now more particularly to the drawings, and

especially to FIGURE 1 thereof, a seal is there generally designated 10, including a body 11 having a socket or receiver 12. An engaging member 13 is constructed for engagement in the socket 12, as will appear presently, and is connected to the body 11 by a flexible tie member or strap 14.

The entire seal 10 may be integrally fabricated of suitable material, such as polyethylene plastic, or other material having suitable characteristics. The body 11 may be of generally rectangular outline configuration, including generally rectangular front and rear sides 17 and 18. The body is bounded by a lower edge 19 and an upper edge 20, generally parallel to the lower edge 19. Extending in parallelism, generally vertically between opposite ends of the lower and upper edges 19 and 20 are side edges 21 and 22. Adjacent to the side edge 21, the body 11 is of relatively thin, generally flat configuration over a major portion 23, while the body portion 24 extending along and adjacent to the side edge 22 is of thickened or increased dimension to project forwardly beyond the adjacent portion 23.

The socket 12 is formed in the thickened or enlarged portion 24, including an entry portion or passageway 27 extending downwardly or inwardly through the upper edge 20. The entry portion 27 may be of generally rectangular cross-sectional configuration, best seen in FIGURES 1, 3, 4 and 5, and of substantially constant cross-sectional area terminating medially between the lower and upper edges 19 and 20. Viewed otherwise, the entry portion 27 is of a relatively reduced lateral dimension between side walls 26 and opens at its lower or inner end into a laterally increased or enlarged inner chamber 28.

More specifically, the inner chamber 28 of the socket 12 extends upwardly or inwardly through the lower body edge 19 in substantial longitudinal alignment with the entry portion 27, and opens at its inner end into the entry portion. By the laterally increased dimension of inner chamber 28, best seen in FIGURE 2, the inner end of the inner chamber defines a pair of laterally spaced internal shoulders 29 facing away from the entry portion 27 and toward the lower edge 19. The inner chamber 28 may be of substantially constant-outline cross-sectional configuration between the lower edge 19 and shoulders 29, if desired. Provided in the inner chamber 28 may be an abutment 30 extending from the lower edge 19, spaced medially between the side walls 31 of the inner chamber and terminating in a generally wedge-like or tapered inner end or nose 32 adjacent to and short of the shoulders 29. The abutment 30 may extend forwardly and rearwardly between the forward and rearward internal walls of the inner chamber 28, defining a partition wall or web therein, as best seen in FIGURE 5.

The engaging member 13 may include a shank 35 of generally rectangular cross-sectional configuration, substantially similar to the cross-sectional configuration of entry portion 27 for conforming engagement therein. Provided on the distal end of the shank 35 may be a pair of longitudinally extending, laterally spaced tines 36. The tines 36, extending longitudinally of the shank 35, may be defined by a cutout or slot 37 extending longitudinally inward from the distal end of the shank, subdividing the distal portion thereof into the tines 36. The character of the material of shank 35 and tines 36 is such that the tines are resiliently deflectable laterally toward and away from each other, being normally or unstressed in their illustrated condition of FIGURE 1 away from each other. On the distal ends of the tines 36, advantageously formed integral therewith, are laterally outstanding enlargements or lugs 38 having their outer or forward ends tapering outwardly, as at 39, and having their inner ends defining inwardly facing external shoulders 40.

The inner end of the shank 35 is connected in end-to-end relation with the tie member or strap 14, advantageously integrally therewith, and there may be provided at any desired location, a weakened area, as by notch 41, for a purpose appearing presently. Also, the shank 35 may be provided, say on one face thereof, with surface formations or ridges 42, also for a purpose appearing presently.

When the seal 10 is employed in its sealing relation, as in a utility meter, or otherwise, the engaging member 13 is inserted in socket 12 by entry of enlargements 38 and tines 36 into entry portion 27 of the socket. This condition is illustrated in solid lines in FIGURE 2, the tines 36 being resiliently deflected toward each other and the combined lateral extent of the enlargements 38 being just less than the lateral extent of the entry portion 27 for passage of the enlargements into the entry portion. The tapering ends 39 of the enlargements facilitate this resilient tine deflection and passage into the entry portion.

Upon continued insertion of the engaging member 13, the enlargements 38 snap past the shoulders 29 into the enlarged inner chamber 28, the abutment 30 engaging between and positively spacing the tines 36. This condition is illustrated in phantom in FIGURE 2. It will there be seen that the inner ends 40 of the enlargements 38 are in facing abutting enlargement with respective shoulders 29 of the chamber 28, and that the tines 36 and their respective enlargements 38 are forcibly held apart by interposition therebetween of the abutment 30, to positively resist withdrawal of the engaging member 13 from the socket 12. While the engaging shoulders 29 and 40 are illustrated as lying in planes generally normal to the movement of engaging member 13, it is appreciated that the orientation of such shoulders may be varied, if desired, say providing undercut configuration, if required.

Obviously, the engaging member 13 may not be withdrawn from the socket 12 without considerable mutilation of the engaging member. Further, the reduced portion 41 is adapted to be severed or ruptured prior to any withdrawal of the engaging member. Also, the surface conformations 42 are adapted to be mutilated by any tool impinging thereon, all of which effectively indicates any tampering.

In the embodiment of FIGURE 6, there is illustrated a seal generally designated 10a, wherein a body part 11a includes a socket 12a, which socket may be substantially identical to the socket 12 of the first-described embodiment. An entirely separate engaging part 13a may be substantially similar to the engaging part 13 of the first-described embodiment, but unconnected to the body part 11a prior to sealing insertion therewith. The engaging member 13a may be provided with an enlarged head, as at 42, on its end remote from entry into the socket 12a for effective retention of the interfitting engaging member 13a and body 11a through a selected aperture or part to be sealed.

From the foregoing it is seen that the present invention provides a unique and highly improved sealed construction which fully accomplishes its intended objects and is well adapted to meet practical conditions of manufacture and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. A seal construction comprising a one-piece molded body portion having a socket extending longitudinally into and through said portion and having a reduced entry portion, said entry portion, opening at its lower end into a laterally enlarged inner chamber and defining a pair of laterally spaced internal shoulders, a tie member integral with and extending from said body and terminating in an engaging member, a shank on said engaging member of a cross-sectional configuration for conforming engagement in said entry portion, a pair of resilient tines extending in laterally spaced relation longitudinally from said shank and resiliently deflectable toward each other, laterally outstanding enlargements on the distal ends of said tines, said enlargements being resiliently movable toward each other and having a combined dimension in their position of movement toward each other for conforming engagement in said entry portion, said tines in their deflected condition being insertable into said entry portion to carry said enlargements into said inner chamber for release of said tines and spreading of said enlargements in said inner chamber, an abutment in the inner chamber extending from the lower edge and spaced medially between the side walls and terminating in a generally wedge-like inner end extending forwardly and rearwardly as a partition between the forward and rearward internal walls, said abutment being located for engagement between the tines upon insertion positively to space said tines and resist deflection thereof, said enlargements being relatively elongated in the general direction of said shank, the distance between said shoulders and corresponding wedge surface of said inner end being greater than the transverse dimension of the respective enlargement for reception of said enlargement when flexed against said wedge surface, the distance between each shoulder edge and corresponding wedge surface being less than the distance between the enlargement portions of the respective enlargements with the shoulders and wedge surfaces, said wedge surfaces being oriented so that the free ends of the enlargements tighten thereagainst upon separation forces tending to release said tines.

2. A seal construction comprising a body having a socket defined by an entry portion and an enlarged inner chamber which forms, with said entry portion, opposite shoulders; a centrally disposed abutment wedge in said chamber, axially spaced and directed toward said entry portion; and a tie member connected at one end to said body and having at its free end a shank which carries a pair of resilient tines each having a generally axially elongated enlargement engageable, when said shank is inserted in said socket, at opposite portions thereof, corresponding shoulders and surfaces of said wedge; said shoulders, wedge, and enlargements being arranged so that each enlargement may be deflected by said wedge and freely received between a corresponding shoulder and wedge surface, and so that a force tending to release the enlargements from engagement with a respective shoulder causes the free end portions of the enlargements to wedgingly engage said wedge surfaces.

References Cited

UNITED STATES PATENTS

345,764	7/1886	Brooks	292—320
2,062,057	11/1936	Hobby	24—107 X
2,969,570	1/1961	Petri et al.	292—322
3,146,012	8/1964	King	292—320

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