

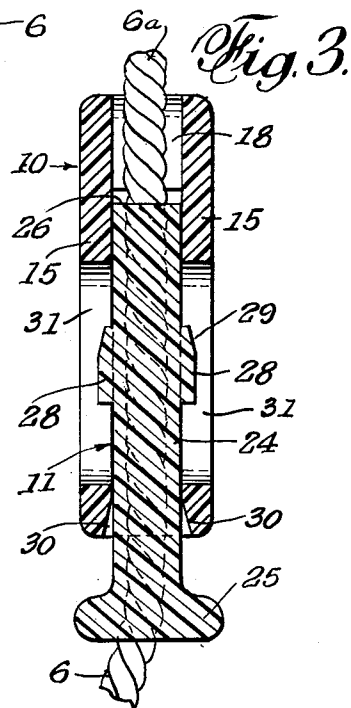
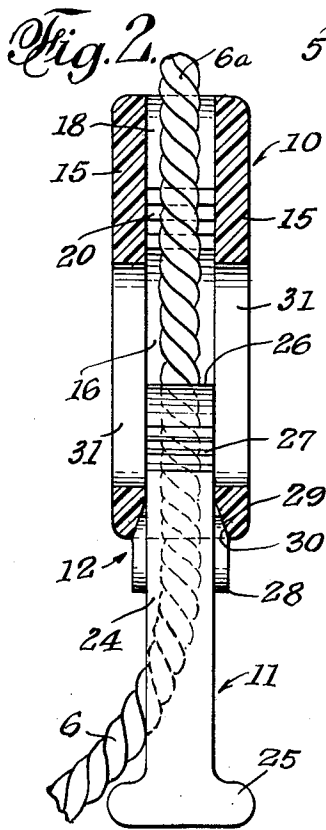
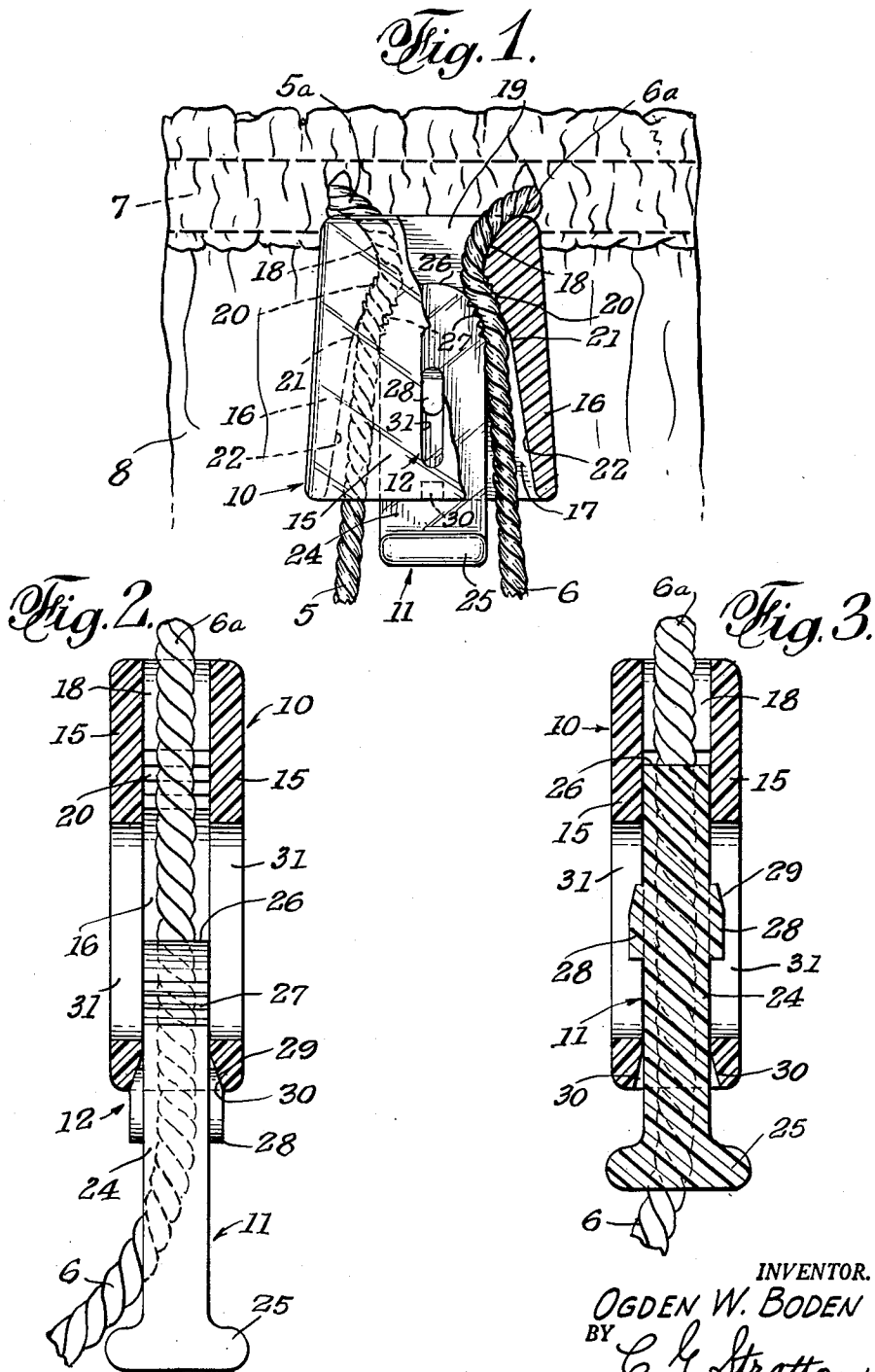
May 12, 1964

O. W. BODEN

3,132,390

SLIDE CLAMP

Filed Oct. 5, 1961



INVENTOR.
OGDEN W. BODEN
BY *C. F. Stratton*
ATTORNEY

1

3,132,390

SLIDE CLAMP

Ogden W. Boden, 1580 Gaywood Drive, Altadena, Calif.

Filed Oct. 5, 1961, Ser. No. 143,164

5 Claims. (Cl. 24-30.5)

This invention relates to a slide clamp for releasably connecting two ends of a string or cord and constituting a means to replace a knot which may become snarled or too tight to be readily released. The invention has particular utility for tying or connecting the cords or strings of bathing trunks.

An object of the present invention is to provide simple releasable cord-tying means that is easily manipulated by one hand to release regardless of a dry or wet condition of the cord ends being tied.

Another object of the invention is to provide a device of the character referred to that clamps or binds the cords and safely retains this condition until released by a simple tug on the binding element of the device.

This invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description, and which is based on the accompanying drawing. However, said drawing merely shows, and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

FIG. 1 is an elevational view, partly in section, of a slide clamp according to the present invention and shown in connection with the cord or puckering string of a pair of trunks.

FIG. 2 is an enlarged longitudinal sectional view showing the manner of assembling the clamp for operative association with the tie ends of a cord or puckering string.

FIG. 3 is a similar sectional view of the clamp in the operative position of FIG. 1.

The present slide clamp is shown as connecting the ends 5 and 6 of a cord or puckering string that is disposed in the channel 7 of the waist of a garment, such as a pair of trunks 8, here shown in fragmentary form. Normally, said cord ends 5 and 6, after the garment is donned, would be tied together with a bow knot to conform to the waist of the wearer so the same can be quickly released to facilitate removal of the garment. Often the bow knot becomes snarled and/or becomes so tightened that hand manipulation will not readily release the same. This is particularly the case when said cord ends 5 and 6 become wet, as in swimming trunks. The present slide clamp is used instead of such knot tying.

Said slide clamp comprises, generally, a housing 10 of preferably flat form, a lock element 11 slidably disposed in said housing and cooperating therewith to clamp said cord ends 5 and 6 to place tension on the cord or string of which they are the ends, and means 12 to effect snap-retention of the lock element 11 within the housing 10.

The two members 10 and 11 are preferably formed by injection molding of the plastic polypropylene, polyethylene, or other suitable light hydrocarbon polymer of high tensile strength, good elasticity, good rigidity, high-impact strength, mar-resistance, and good shape-retention. Such plastics are available in a variety of colors. Injection molding of the present clamp elements of colored polypropylene will provide an article that is attractive and

2

can be matched to the garment with which operatively associated.

The housing 10 is shown as a tubular housing having similar flat sides 15 and similar edge walls 16 connecting the sides to define a space 17 that is generally flat and open at the ends of the housing. The housing that is illustrated is tapered so as to be narrower at one end than at the other. At the narrow end, each edge wall 16 is formed to have a rounded inner face 18 between which is defined a flaring throat 19. A set of serrations or teeth 20 is provide in opposed relation in each inner face of the walls 16, said sets of serrations diverging from the narrow portion of the throat 19 toward the wider end of the housing. After being slightly concavely curved at 21, the opposite inner edges of walls 16 continue toward said wider housing end as diverging faces 22. In this manner, the distance across the narrow part of the throat is substantially smaller than the flaring space defined between the serrations 20, concavely curved edges 20 and diverging faces 22 of the edge walls 16.

It will be understood that, although the sides 15 are of substantial thickness to be rigid in the normal use of the present slide clamp, the spacing between the walls 16, particularly at the larger end of the housing, allows for limited outward bowing or flexing of said sides, due to the elasticity of the polypropylene plastic used. It will also be understood that the cord ends 5 and 6, from the throat end of the housing, may be entered into the space 17 enclosed by the sides 15 and walls 16, by way of the throat 19. In practice, said ends may each be provided with a knot or other enlarged or thickened form to prevent the cord ends from being pulled out of the housing inadvertently.

The lock element 11 comprises a slide bar 24 wider than the narrow part of the throat 19 and substantially narrower than the space 17 in the housing, of a thickness to have a sliding fit in said space between the housing sides 15, and a length greater than the distance between the throat 19 and the wider end of the housing, a handle enlargement 25 on one end of said bar, a preferably round edge surface 26 on the opposite end, and a set of serrations or teeth 27 in the side edges of said bar where said edges join the round edge surface 26.

In the operative engagement of the lock element in the housing, the serrations 20 in the housing and the serrations 27 in the lock element cooperate as opposed pairs to grip the cord ends 5 and 6 between them when the lock element is projected inwardly toward the throat 19. The greater the tension or opposed pull on the cord portions 5a and 6a, the greater the grip at the serrations and the more securely are the cord ends 5 and 6 tied together by the present slide clamp.

The means 12 has a two-fold purpose, one, to hold the sliding lock element 11 in centered position in the space 17 so the grip on the two cord ends is the same, and the other, to provide for ease of reeving the cords through space 17 without the restrictions imposed by the lock element and then slipping the latter into place in its operative position. To this end, the means 12 comprises two projections 28, one on each face of the bar 24, although only one may be provided, if desired, a bevel or cam 29 formed in the end of each projection that is directed toward the serration-provided portion of said bar 24, and bevelled cam faces 30 formed in the inner faces of the housing sides 15 at the wide end of the housing. Said cam faces 30 are centrally disposed between edge walls 16, as indicated in FIG. 1.

FIG. 2 shows how, after the cord ends 5 and 6 are threaded into the space 17, the serration-provided end of the bar 24 is introduced, from the wider end of housing 10, into the space 17 with the cord ends between the bar and the respective edge walls 16. When the bevels 29

3

encounter the cam faces 30, the projections will force the sides 15 to bulge oppositely as the bar is introduced further into said space 17. By providing said sides with elongated slots 31 in longitudinal alignment with the cam faces 30, the projections 28 will be guided to and enter the slots in a snap-retention action that renders the lock element captive in space 17 but capable of longitudinal movement therein but not lateral movement. In ordinary use of the clamp, said element 11 will not become displaced from its above-described position wherein it may slide in space 17 to grip the cord ends or be manually retracted by a pull on its handle to effect release of said cord ends. As shown, there is a non-rotational inter-engagement between the projections 28 and the walls of slots 31.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the invention, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. Therefore, it is not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described this invention, what is claimed and desired to be secured by Letters Patent is:

1. In a slide clamp comprising a generally flat housing open at both ends with flat sides connected by edge walls provided with opposed cord-gripping serrations, said serrations being disposed between an intermediate constriction separating said edge walls and one end of said housing, and said serrations being disposed at a greater divergent angle from said constriction than the remaining portions of said edge walls, said housing being injection-molded plastic material, so that said flat walls have elasticity enabling the same to bow outwardly, a locking bar having portions to cooperate with the serrations in the housing to grip cords passing through the ends of the housing, and projections on said bar having spreading engagement with said walls to outwardly bow the same during insertion of said bar into the housing from one end thereof, said walls having slots to receive said projections and effect a sliding interconnection of the housing and bar.

2. In a slide clamp according to claim 1, the cord-gripping portions of the bar being provided with serrations that are in opposed relation to the serrations in the housing.

3. In a slide clamp according to claim 1, said projections and the inner faces of the housing sides being provided with cooperating cams to initiate spreading of said sides as mentioned.

4. In a slide clamp comprising a generally flat housing open at both ends with flat sides connected by edge walls provided with opposed cord-gripping serrations, said serrations being disposed between an intermediate constriction separating said edge walls and one end of said housing, and said serrations being disposed at a greater diver-

4

gent angle from said constriction than the remaining portions of said edge walls, said housing being injection molded of polypropylene, so that said flat walls have elasticity enabling the same to bow outwardly, a locking bar of polypropylene having portions to cooperate with the serrations in the housing to grip cords passing through the ends of the housing, and projections on said bar having spreading engagement with said walls to outwardly bow the same during insertion of said bar into the housing from one end thereof, said walls having slots to receive said projections and effect a sliding interconnection of the housing and bar.

5. A slide clamp to connect the two cord ends of a single securing cord to hold said ends connected when subject to tension by a pull from either cord end, said clamp comprising a housing having a hollow passage extending therethrough and open at each end of said housing, said cord ends being adapted to extend through said passage and both ends of the housing, said passage including a first pair of side walls extending in a divergent direction toward one end of said housing from a narrow constriction intermediate said ends of the housing, a cord-gripping portion on a short section of each side wall adjacent said constriction and diverging from said constriction, said short sections of said side walls diverging at a greater angle than the remaining portions of said side walls, a lock element slidably disposed in said passage between said cord-gripping portions and extending through said one end with the cord ends between said gripping portions and the lock element to be locked thereby upon movement of said lock element toward said constriction, snap-retention means to slidably connect said housing and lock element, the housing having opposite sides that are elastic to bow outwardly, and the snap-retention means including projections on the lock element that outwardly bow said housing walls during insertion movement of said element into operative engagement with the housing.

References Cited in the file of this patent

UNITED STATES PATENTS

231,574	Heinze	Aug. 24, 1880
1,228,256	Stoll	May 29, 1917
1,333,375	Bauer et al.	Mar. 9, 1920
1,499,428	Wagner	July 1, 1924
2,592,130	Erb et al.	Apr. 8, 1952
2,854,718	Viola	Oct. 7, 1958
2,914,936	Reinold	Dec. 1, 1959
2,976,593	Exton	Mar. 28, 1961
3,002,240	Laguerre	Oct. 3, 1961
3,007,220	Hafner et al.	Nov. 7, 1961

FOREIGN PATENTS

384,260	Germany	Nov. 8, 1923
723,716	Germany	Aug. 10, 1942
891,065	Germany	Sept. 24, 1953