Nov. 10, 1964 L. G. McGILL 3,155,987

BUCKLE AND STRAP

Filed Nov. 3, 1961

FIG. 1

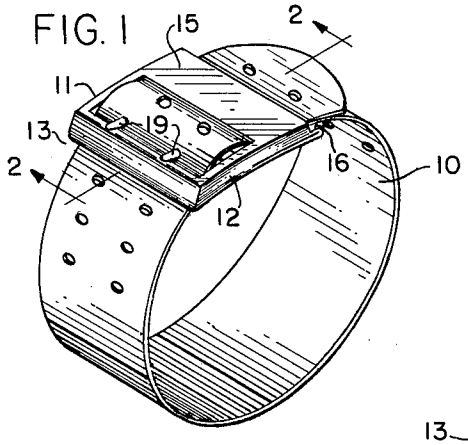


FIG. 2

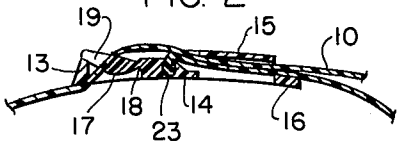


FIG. 4

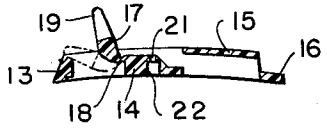


FIG. 3

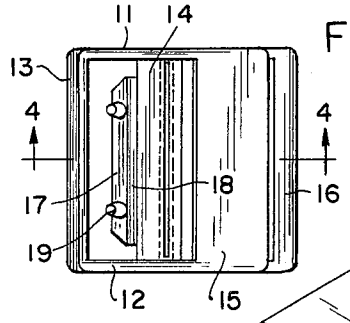


FIG. 5

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BUCKLE AND STRAP

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This invention relates to the fastening together of commodities and for securing them in such fastened relation and more particularly to binding means, one form of which may be illustrated by a strap with a fastener or buckle for fastening together opposite ends of the strap.

The invention relates specifically to a strap of plastic or other substance having the capacity to soften when subjected to heat at low temperatures and to a buckle or fastening element for securing together the ends of such strap.

Buckles and other fasteners of many kinds have been produced for use with various types of straps but the advent of straps of modern plastics which melt when subjected to heat have given rise to different types of construction due to a substantial degree to the difference in the nature of the materials of which the straps are formed.

It is an object of the invention to provide a strap and a buckle for use therewith which may be simply applied and adjusted as to length as well as one in which the characteristics of the strap can be utilized in applying and anchoring the strap relative to the buckle by the application of heat to produce an enlargement by which anchoring is facilitated and accomplished.

Another object is to provide a strap and a buckle with prongs on a bar hinged by an integral web to a crossbar of the buckle and with the free ends of the prongs out of engagement with the buckle when the tension on the strap is relieved.

Another object is to provide a strap and a buckle for use therewith which may be manufactured of plastic by a molding process and in which all of the parts of the buckle are molded as an integral unit.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the drawing, wherein:

FIG. 1 is a perspective of a strap and buckle in accordance with the present invention;

FIG. 2, a section on the line 2—2 of FIG. 1;

FIG. 3, a top plan view of the buckle per se;

FIG. 4, a detail section on the line 4—4 of FIG. 3; and

FIG. 5, a perspective of the strap per se.

Briefly stated, the strap and buckle of the present invention are constructed for the anchoring of both ends of the strap after adjustment, one end of the strap being provided with an enlargement as for example by the application of heat and the melting and hardening of the end thereof and with the other end of the strap provided with openings for receiving the prong or tongue of a buckle. A suitable buckle is composed of a pair of parallel side members, crossbars connecting the extremities and an intermediate portion of said side bars, and with one or more prongs or tongues on a bar connected by an integral web to a crossbar located between the side bars for fastening the end of the strap to the buckle. The cross rod with the integral web has a slot extending substantially from side to side of the buckle and of a thickness to receive the free end of the strap and with an enlargement on the strap to prevent its being pulled through the slot in the cross rod.

With continued reference to the drawing, a strap 10 of a modern plastic is adapted to have its ends fastened together by means of a molded buckle of a plastic

which is strong, waterproof and flexible such as "Althon" a polypropylene manufactured by Du Pont. Such buckle comprises side bars 11 and 12 connected by crossbars 13, 14, 15 and 16 with a strap retaining bar 17 attached by an integral web 18 to the crossbar 14.

If preferred, the cross rods 13, 14, 15 and 16 may be molded as an integral part of the side bars 11 and 12 with the cross bar 15 serving as a keeper.

The strap retaining bar 17 is provided with one or more prongs or tongues 19 adapted to extend through one or more prong receiving openings 20 in the strap 10. The intermediate cross rod 14 has a slot 21 with an enlarged portion 22 through which the strap 10 extends. The thickness of the slot 21 is sufficient to accommodate the strap but of a size to prevent an enlargement 23 on the end of the strap from pulling through the slot and the enlarged portion 22 is of a size to receive the enlargement 23 entirely within the buckle. The enlargement 23 on the end of the strap 10 is provided in any desired manner, as for example by subjecting the end of the strap to fusion by heat, or by doubling over the end portion.

The strap 10 may be of any appropriate material, although nylon is preferred, with an enlargement of any particular kind thereon sufficient to prevent such enlargement from being pulled through the slot 21 in the intermediate cross rod 14.

The buckle is molded in such a manner that the web 18 maintains the prongs 19 carried by the strap retaining bar 17 substantially in a vertical position and out of engagement with the cross bar 13 when such prongs are not received within the openings 20 of the strap. When the free end of the strap 10 is applied to the buckle, tension on the strap will pull the prongs 19 into engagement with the cross bar 13 as shown in phantom in FIG. 4 and prevent the withdrawal of the strap from the buckle. When it is desired to release the strap, the free end thereof is removed from the keeper 15 and upon pulling the strap to relieve the tension thereon the prongs are removed from the openings and the strap may be freely withdrawn from the buckle.

It will be apparent from the foregoing that a simple strap buckle combination is provided which can be readily assembled and the strap adjusted to the desired size and held in such adjusted position.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof, and that the invention is not limited by that which is described in the specification and shown in the drawing, but only as set forth in the accompanying claims.

What is claimed is:

1. A buckle for use with a strap having a series of longitudinally spaced prong receiving openings in one end and an enlargement on the opposite end, said buckle comprising a pair of generally parallel side members, said side members being connected by integral end members and an integral cross member intermediate the ends thereof, said cross member having a generally vertically disposed slot extending therethrough in which the strap is adapted to be disposed, an elongated retaining bar located generally parallel to said cross member, a flexible web of reduced thickness integrally connecting said cross member and said retaining bar, at least one prong mounted on said retaining bar for disposition in at least one of the openings in the strap and located in a manner to engage one of said end members so that the strap is fastened at both ends to said buckle.

2. A buckle for use with a relatively thin strap having a series of longitudinally spaced openings in one end, said buckle comprising a pair of generally parallel side members connected by a pair of integral generally par-

allel end members, an integral cross member spaced from said end members and arranged generally parallel thereto, an elongated retaining bar located generally parallel to said cross member, a flexible web of reduced thickness integrally connecting said cross member and said retaining bar, means for attaching one end of said strap to said cross member and means for connecting the opposite end of said strap to said retaining bar whereby the strap will be fastened at both ends to said buckle.

3. A combination buckle and strap comprising a relatively thin strap having multiple longitudinally spaced openings in one end portion, the opposite end of said strap terminating in an enlargement, said buckle being of one piece construction and including a pair of generally parallel side members connected by generally parallel end members and an integral cross member, said end members and said cross member being substantially normal to said side members, an elongated retaining bar located generally parallel to said cross member, a flexible web of reduced thickness integrally connecting said cross member and said retaining bar, at least one prong mounted on said retaining bar, said cross member having a generally vertically disposed slot extending therethrough, said slot having an enlarged portion in the lower portion of said cross member of a size to accommodate the major portion of said strap but preventing the passage therethrough of said enlarged end.

4. A combination buckle and strap comprising strap means having longitudinally spaced openings in one end portion, the opposite end of said strap means terminating in an enlargement, said buckle being of one piece construction and including side members connected by integral end members and an integral fixed cross member located between said end members, an elongated retaining bar located generally parallel to said cross member, a flexible web of reduced thickness integrally connecting said cross member and said retaining bar, at least one prong integrally formed on said retaining bar, said prong normally being substantially in vertical position but being movable into engagement with one of said end members when said prong is received within the openings of said strap means and tension is applied thereto, said fixed cross member having a generally vertically disposed slot for the reception of said enlargement on said strap means whereby both ends of said strap means may be secured to said buckle.

5. The structure of claim 4 in which a plurality of prongs are mounted on said retaining bar.

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