The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to an adjustable fastener, and in particular, to the provision of new and improved clamping device for cords or ropes.

Considerable difficulty has been encountered heretofore by using clamps having pivoted cams, wherein the clamping action depended on the rotating of a toothed wheel around eccentrically located axes. Particular difficulty lies in its lack of dependability of operation when actually used.

It is an object of this invention to provide new and improved fasteners, which will be durable and fool-proof in operation.

It is a further object of this invention to provide a slide fastener by means of which a loop may be readily adjusted and firmly held to any desired size. This loop may be attached to a variety of articles of which a hooded garment worn by armed forces for protection against rain or poison gas or a mail pouch are but a few examples.

Another important object of this invention is the provision of a simple and efficient clamping element which is simple in construction, which needs no machining or expensive finishing operation, is easily assembled, is dependable and is capable of being manufactured at an extremely low cost.

This device is especially designed for use with a hood for rain or poison gas protection wherein a quick upward pull on the fastener will tighten the hood affording the necessary protection without the time consuming tying or knotting of the rope or cord.

One other object of this invention is to provide a device which can be quickly released so as to quickly open the garment or pouch without undue delay.

These and other objects and advantages of the invention will appear from the following description taken in conjunction with the accompanying drawing, which forms a part thereof, and will be pointed out in the appended claims.

In the drawings:

Fig. 1 is a front view of a device forming one of the embodiments of this invention with parts in section to expose the inner portions of the elements and the ropes.

Fig. 2 is a side elevational view of one of the two levers forming a part of the fastener shown in Fig. 1.
the upper portions of these levers are pulled apart by the cords.

Lever 2 are pivoted at the top 3 for centering the pull of the cord and to prevent twisting. In operation, the device is pulled lengthwise over the ropes in a direction parallel to the long axis of the buckle until the loop is tightened around the wearer's neck.

It will be noted that the upper portions of the ropes are pulled in a direction which is at an angle with respect to the long axis of the fastener so that the levers 2 rock on the pivot 4 and tend to spread apart from each other, while the lower portions of these members come closer to each other thus pressing into the ropes and binding them sufficiently to arrest their movement.

The levers 2 are dimensioned so that they protrude outside of the U-member 1 in a wing-like manner when the cords are in locked position. This is shown in broken line 5 (Fig. 1). The purpose of this construction is to make easier the release of the cords by pressing on the levers 2 at 5. This feature is very important when it becomes necessary to release the fastener suddenly without loss of valuable seconds in doing so.

In operation, the cord is threaded through the fastener and is looped around the opening of the article such as the lower part of the hood or the arm of the garment to be held. A simple upward motion of the device tightens and locks the ropes instantaneously, which is of utmost importance in case of a poison gas attack for example.

To release the cord from its tightened condition all that is necessary is to grasp and press the upper portions of the levers 2 at 5 between the thumb and the first forefinger and slide the fastener downward.

Another embodiment of this invention is shown in Figures 5, 6, and 7. This modification differs from the embodiment shown in Fig. 1 in respect to the location of pivots 1, which are in the form of rivets and completely encased in the lower portion of the levers 2 provided with holes 13 therefor as shown in Fig. 7. It will be noted that this construction is much simpler and lends itself to mass production much easier than the prior 4, which are tight fitting or integral with the lever 2 as shown in Figures 1 to 4.

The modified design illustrated in Fig. 5 has an additional advantage that it permits the ropes to pass without twisting.

In the modified design, one side of the lever 2 is provided with a flat cam-like surface 6, which is out of alignment with the straight side of the lever. This construction produces better gripping action and improves the tendency of both levers to open to the same extent with respect to the center line of the frame. This is due to the flat surfaces compressing the flat parallel sides of the rope.

In both of the designs illustrated in Figures 1 and 5, the pivots 4 and 1 are positioned close to each other in order to rock equal distances when tension is applied to the ropes and to produce additional friction against the sides of the rope.

The U-shaped member 1 is designed with an integral guard 14 to prevent portions of fabric or garment from becoming wedged between the rope as it passes through the fastener and thus foul the action of the fastener, and to guide the opposed end portions of cord 16 at angles divergent to the longitudinal axis of the fastener, as shown in Fig. 1.
members arranged to direct said end portions into said housing at angles divergent to the longitudinal axis of said fastener.

4. In combination, in a slide fastener for operating a closure loop; a housing arranged to slide along opposed end portions of said loop, said housing having a bottom portion and a loop-engage top portion, a pair of opposed locking members arranged in said housing to normally permit passage therebetween of said end portions, opposing face portions of said locking members being positioned to contact opposite sides of said end portions during their passage therebetween, the outside upper edge portions of said locking members being arranged to extend beyond the upper outside edge portions of said housing when in a locked position, pivot means holding said locking members in pivotal engagement with said housing, opposing cam faces positioned on said locking members below said pivot means and below said opposing face portions, said cam faces being so arranged that they will compress said end portions therebetween when in a locked position, a guard positioned in operative relationship with said top portion of said housing, said guard being provided with opposed guide members arranged to direct said end portions into said housing at angles divergent to the longitudinal axis of said fastener.

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