The present invention relates to improvements in supports for firearms and relates more particularly to improvements in supports designed to support the muzzle-end of rifles and other shoulder firearms to enable the marksman to more readily keep the firearm on target especially during rapid or automatic fire.

One of the objects of the present invention is to provide a superior support for the character referred to which is simple to manufacture and is strong, reliable and convenient in use.

Another object of the present invention is to provide a superior support for rifles and the like and having one or more pivotal legs which may be rapidly and conveniently shifted from a retracted position substantially paralleling the barrel of the firearm into an active position in which the legs extend substantially perpendicular to the barrel, and vice versa, combined with readily releasable locking means for holding the leg in either of the two positions referred to.

A further object of the present invention is to provide a firearm-support having one or more pivotal legs movable into either an active or retracted position and in which is embodied a superior construction and arrangement of parts whereby such legs may be locked in the chosen position without danger of the unintentional unlocking thereof by reason of recoil and vibrations incident to the discharge of the firearm.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a perspective view of a bipod firearm-support embodying the present invention and shown as attached to the muzzle-end of a rifle and with its two legs locked in their vertical or active positions;

Fig. 2 is a broken perspective view of the upper portion of the bipod firearm-support shown as detached from the rifle;

Fig. 3 is a view similar to Fig. 1 but showing the two legs as locked in their retracted position;

Fig. 4 is a broken view in vertical central-longitudinal section taken on the line 4—4 of Fig. 5 but including the forward-portion of the rifle;

Fig. 5 is a broken view in front elevation of the upper portion of the bipod firearm-support, detached from the rifle;

Fig. 6 is a transverse sectional view taken on the line 6—6 of Fig. 5 but omitting the rifle;

Fig. 7 is a view partly in front elevation and partly in section corresponding to the line 6—6 of Fig. 4 but omitting both the flash-guard and rifle, and showing both legs pulled axially downwardly into their unlocked position;

Fig. 8 is a perspective view of the frame detached;

Fig. 9 is a perspective view of one of the locking heads, together with a portion of its complementary legs; and

Fig. 10 is a top or plan view of one of the locking heads.

The particular firearm-support herein chosen for purposes of making clear one form of the present invention, is of a general type commonly referred to in the art as a bipod, inasmuch as it is provided with two legs.

The bipod firearm-support illustrated in the accompanying drawings includes a frame generally designated by the reference character 10 and formed with two corresponding downwardly-directed but diverging bifurcated arms 11—11. The said frame may be conveniently formed of a strong aluminum alloy and each of its bifurcated arms 11—11 includes two downwardly-extending and laterally-spaced-apart fingers 12—12 spaced from each other by a recess 13, which latter opens 30 through the bottom of the arm 11 in which it is formed, as well as through the respective front and rear faces thereof.

The frame 10 above referred to is formed centrally in its upper portion with a cylindrically-contoured socket 14 which extends therethrough from front to rear and receives with freedom for relative rotary movement, a shank 15 which is cylindrically-contoured exteriorly. The said shank 15 forms a feature of a flash-guard generally designated by the reference character 16 and which is preferably formed of a high-strength aluminum alloy. The said flash-guard 16 also includes a rear-wall 17 located at the rear of the shank 15 and provided with an axial barrel-receiving passage 18, for purposes as will hereinafter appear. The said barrel-receiving passage 18 extends through the rear-wall 17 from the front face to the rear face thereof, and at its forward end communicates with a forwardly-and-outwardly-flaring conical passage 19 which opens through the relatively-large-diameter forward end of the flash-guard 16.

The flash-guard 16 is formed at the forward end of its hollow shank 15 with an annular radially-projecting collar 20 adapted to have its
rear face engaged by the forward face of the upper-portion of the frame 10 to limit the forward displacement of the latter. The said shank 15 projects beyond the rear face of the frame 10 and this projecting部份 is external threaded and tightly fitted into a threaded opening formed in the vertical arm 21 of an L-shaped attaching-bracket generally designated by the reference character 22 and including also a rearwardly-extending horizontal arm 23. The forward face of the vertical arm 21 of the attaching-bracket 22 extends in position to be engaged by the rear face of the central-upper-portion of the frame 10 so as to hold the latter against relative rearward displacement with respect to the flash-guard 16.

The horizontal arm 23 of the attaching-bracket 22 is adapted to extend beneath the cylinder-tube 24 of a Garand-type military rifle which also includes a barrel 25. The said cylinder-tube 24 is formed a short distance back of its front end, with a depending bayonet-lug 26 having the usual horizontal groove 27 therein. As shown particularly well in Fig. 4, the rear end of the horizontal arm 23 of the attaching-bracket 22 extends into the forward portion of the groove 27 in the bayonet-lug 26, and is adapted to be locked therein against forward displacement by a pivotal latch 28. The said latch is pivoted adjacent its forward end, upon a transverse pivot-pin 29 carried by and extending transversely through the said arm 23. The rear portion of the latch 28 is adapted to engage with the rear face of the bayonet-lug 26 to hold the rear of the arm 23 in the groove 21, against forward displacement relative to the cylinder-tube 24 and the remainder of the rifle.

As will be apparent from Fig. 4, the forward end of the barrel 23 projects forwardly beyond the forward end of the cylinder-tube 24 and is adapted to fit within the barrel-receiving passage 18 in the rear wall 17 of the flash-guard 16 to thus hold the firearm-support against lateral displacement relative to the said barrel. When the bipod firearm-support is mounted on the firearm structure as shown in Figs. 1, 3 and 4, the attaching-bracket 22 and its rigidly-connected flash-guard 16 will, as before noted, be held in place against turning movement and against displacement longitudinally with respect to the frame. The frame 10, however, while held against displacement to either the front or rear, will be free to turn on the shank 15 of the flash-guard 16, for purposes as will more fully hereinafter appear.

Pivoting into the respective recesses 13 of each of the arms 11—11 of the frame 10, is the tongue-portion 30 of one of two corresponding locking-heads 31—31. It will thus be apparent that two similar locking-heads 31 are provided, one of which is associated in the manner described, with each of the two said arms 11—11. Inasmuch as the detail features of each arm 11 correspond to the other, as does also the features carried thereby, a description of one of the said arms together with the leg and other parts carried thereby, will serve for both.

The said portion 31 above referred to is generally speaking, of cylindrical form save where it is cut away on its respective opposite sides of its upper-portion to produce the flat-sided tongue-portion 33, as is especially well shown in Figs. 9 and 10. Extending upwardly from the tongue-portion 33 is an integral cylindrically-contoured locking-lug 32 which is adapted to be entered into a cylindrically-contoured locking-socket 33 leading upwardly from the upper end of the recess 13 in the complementary arm 11 of the frame 10. The locking-head 31 is also formed on each of the respective opposite flat side-faces of its tongue-portion 30 with one of two locking-lugs 34—34 respectively adapted to enter either downwardly-opening locking-notches 35—35 or rearwardly-opening locking-notches 36—36 respectively formed in the edges of the fingers 12—12 of a given arm 11 of the frame 10, as is especially well shown in Fig. 5. Thus, it will be seen that each arm 11 is provided with two locking-notches 35—35 respectively located in its complementary fingers 12—12 in transverse alignment with each other. It will also be seen that each arm 11 is also formed with the two locking-notches 36—36 also respectively formed in its complementary fingers 12—12 in alignment with each other transversely of the structure but extending at substantially 90° with respect to the first-mentioned locking-notches 35—35.

Extending transversely through each of the lower-portions of the two complementary fingers 12—12 is one or two corresponding aligned passages 37—37 which extends through a pivot-pin 38. The central-portion of the pivot-pin 33 extends across the recess 13 in the arm 11 in which it is located. The said pivot-pin 33 extends through a transverse slot 39 formed in the tongue-portion 30 of the locking-head 31. The said slot 39 has its major dimension extending vertically so as to permit the locking-head 31 to be moved to a limited degree and in an axial direction with respect to the arm 11 in which it is mounted, and for purposes as will more fully hereinafter appear.

Threaded into the lower end of the locking-head 31 is the upper end of a tubular leg 40 having a foot or pad 41 rigidly attached to its lower end. Encircling the upper-portion of the leg 40 is the aperture 42 of a U-shaped stirrup generally designated by the reference character 43. The said stirrup may be conveniently folded up from sheet metal and also includes two laterally-spaced-appear side-arms 44—44 respectively extending upwardly along each of the respective opposite sides of the locking-head 31, as well as on the respective inner and outer faces of the lower-portion of the arm 11 with which it is associated. At its free or upper end, each of the side-arms 44—44 is formed with an opening 45 having a diameter slightly larger than the diameter of the adjacent projecting end of the pivot-pin 38 before referred to. Normally, the material of a given side-arm 44 forming the upper boundary of its opening 45, is adapted to fit in the adjacent one of two annular retaining-grooves 42—42 formed in the pivot-pin 38. The said retaining-grooves 42—45 are respectively formed in the pivot-pin 38 adjacent the opposite ends thereof, as is especially well shown in Figs. 6 and 7.

The engagement of the complementary side-arms 44—44 respectively with the retaining-grooves 42—45 of the pivot-pin 38, serves to hold the said side-arms against outward flexure and to hold the stirrup 43 against bodily displacement toward the foot or pad 41, but also serves to hold the pivot-pin 38 against axial displacement. By registering the aligned openings 42—45 of a given pair of side-arms 44—44 with the aligned passages 37—37 in the arms 11—12 with which the said side-arms are associated, the
pivot-pin 33 may be readily installed or removed.

Interposed between the lower face of the locking-head 31 and the upper face of the cross-reach 42 of the stirrup 43, is a helical latch-spring 47. The said helical latch-spring is accommodated between the respective lower-portions of the side-arms 44—44 and encircles the upper portion of the leg 40.

As thus constructed and arranged, the latch-spring 47 exerts a constant-but-yielding effort to move the locking-head 31 (and hence, also, the complementary leg 40) toward the pivot-pin 33. Thus, when the given leg 40 and its complementary locking-head 31 are swung into a position wherein they extend substantially perpendicularly with respect to the longitudinal axis of the firearm, the said latch-spring serves to yieldingly hold the end locking-lug 22 in the locking-socket 33 of the adjacent arm 11, as well as to hold the respective opposite side locking-lugs 34—34, in the respective downwardly-opening locking-notches 35—35 in the respective fingers 12—12.

Considering a given leg 40 as being locked in its perpendicular position, as just above described, the marksman may, by drawing downwardly on the said leg, withdraw the upper locking-lug 32 from its respective locking-socket 33 and coincidently withdraw the lower side locking-lug 34 from the locking-notches 35—35 against the tension of the latch-spring 47, so that the parts will assume the positions in which they are shown in Fig. 7. When held in the position just referred to, the leg, together with its locking-head 31, stirrup 40, and associated features, may be swung rearwardly into substantial parallelism with the firearm-structure. Upon releasing outward draft upon the leg 40, the latch-spring 47 will assert itself and cause the side locking-lugs 34—34 of the locking-head to respectively enter the rearwardly-opening locking-notches 35—35 in the respective fingers 12—12, as is shown in Fig. 3. In this manner, the given leg and its associated features will be locked in this retired or inoperative position. When it is desired to again swing a given leg 40 into its active position, the said leg may be pulled axially away from the frame 10, to thereby again unlock it and permit it to be swung into a perpendicular position and again locked therein as is illustrated in Figs. 1, 2, 4, 5 and 6. When both legs 40—43 are in their active positions as particularly well shown in Figs. 1 and 2, the weight of the firearm will not oppose the tension of the respective latch-springs 47—47 of the said legs but, on the other hand, will assist the said legs in such assistance as is required. Under the circumstances just described, the riflemen may readily turn the firearm about the longitudinal axis of its barrel 25, to correct for tilting conditions which would arise when the foot or pad 41 of one leg sinks into the ground to a greater extent than the foot or pad of the other leg. The turning movement of the firearm is, of course, permitted by the fact that the shank 15 of the flash-guard 16 is free to turn in the socket 14 of the frame 10.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and also changes in, and equivalencies of, the meanings and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A firearm-support, including in combination: a frame-unit constructed and arranged for attachment to the muzzle-end of a shoulder firearm and having an arm provided with locking-means; a pivot-pin extending crosswise of the arm of the said frame-unit; a U-shaped stirrup having an apertured cross-reach and two side-arms respectively connected at their free ends to the said pivot-pin; a leg-unit having locking-means engageable with and disengageable from the said locking-means of the frame-unit by a lengthwise axial movement of the said leg-unit; and a latch-spring engaged at one end with the said stirrup and at its opposite end with the said leg-unit and yieldingly urging the said leg-unit axially toward the arm of the said frame-unit to engage the locking-means of the leg-unit with the locking-means of the said arm.

2. A firearm-support, including in combination: a frame-unit constructed and arranged for attachment to the muzzle-end of a shoulder firearm and having an arm provided with locking-means; a pivot-pin extending crosswise of the arm of the said frame-unit; a U-shaped stirrup having an apertured cross-reach and two side-arms respectively connected at their free ends to the said pivot-pin, the said cross-reach being located outwardly with respect to the lower end of the arm of the said frame-unit; a leg-unit having locking-means engageable with and disengageable from the said locking-means of the frame-unit by a lengthwise axial movement of the said leg-unit, a portion of the said leg-unit extending through the apertured cross-reach of the said stirrup with capacity for sliding movement therein; and a latch-spring interposed between a portion of the said leg-unit and the cross-reach of the said stirrup and engaging a portion of the said leg-unit, the said latch-spring yieldingly urging the said leg-unit axially toward the arm of the said frame-unit to engage the locking-means of the leg-unit with the locking-means of the said arm.

3. A firearm-support, including in combination: a frame-unit constructed and arranged for attachment to the muzzle-end of a shoulder firearm and having a bifurcated arm provided with locking-means; a pivot-pin extending crosswise of the bifurcated arm of the said frame-unit; a U-shaped stirrup having an apertured cross-reach and two side-arms respectively extending along the opposite faces of the said bifurcated arm into pivotal engagement with the respective opposite ends of the said pivot-pin; the said cross-reach being located outwardly with respect to the lower end of the bifurcated arm of the said frame-unit; a leg-unit having a portion extending into the opening in the bifurcated arm and having a transverse passage receiving the said pivot-pin and larger in size than the same to permit the leg-unit to be moved axially with respect to the said bifurcated arm, the said leg-unit also having a portion extending through the cross-reach of the said stirrup, the said leg-unit also having locking-means engageable with and disengageable from the locking-means of the said bifurcated arm by a lengthwise axial movement of the said leg-unit; and a latch-spring having a portion extending along the cross-reach of the said stirrup and engaging a portion of the said leg-unit and the cross-reach of the said stirrup and urging the said leg-unit axially toward the bifurcated arm of the said frame-unit to engage the locking-means of the leg-unit with the locking-means of the said bifurcated arm.
4. A firearm-support, including in combination: a frame-unit constructed and arranged for attachment to the muzzle-end of a shoulder firearm and having an arm provided with locking-means; a pivot-pin extending crosswise of the arm of the said frame-unit and provided with a retaining-groove; a spring-holding member having an apertured upper-portion entered into the retaining-groove of the said pivot-pin; a leg-unit associated with the arm of the said frame-unit and having a transverse passage receiving the said pivot-pin but larger in diameter than the same to permit the leg-unit to be moved axially with respect to the said pivot-pin; and a latch-spring engaged at one end with the said spring-holding means and engaged at its opposite end with a portion of the said leg-unit and constructed and arranged to yieldingly urge the said leg-unit axially toward the arm of the said frame-unit to engage the locking-means of the leg-unit with the locking-means of the said arm.

5. A firearm-support, including in combination: a frame-unit constructed and arranged for attachment to the muzzle-end of a shoulder firearm and having a bifurcated arm provided with locking-means; a pivot-pin extending crosswise of the bifurcated arm of the said frame-unit and projecting beyond the respective opposite sides of the said bifurcated arm, the said pivot-pin being formed in each of its projecting opposite ends with a retaining-groove; a U-shaped stirrup having an apertured cross-reach and two side-arms respectively extending along opposite faces of the said bifurcated arm, the said side-arms each being provided with an apertured end fitting over the adjacent end of the said pivot-pin and fitting in the retaining-groove therein, the cross-reach of the said stirrup being located outwardly with respect to the lower end of the bifurcated arm of the said frame-unit; a leg-unit having a portion extending into the opening in the bifurcated arm and having a transverse passage receiving the said pivot-pin and larger in size than the same to permit the leg-unit to be moved axially with respect to the said bifurcated arm, the said leg-unit also having a portion slidably extending through the cross-reach of the said stirrup, the said leg-unit also having locking-means engageable with and disengageable from the locking-means of the said bifurcated arm by a lengthwise axial movement of the said leg-unit; and a latch-spring interposed between a portion of the said leg-unit and the cross-reach of the said stirrup and encircling a portion of the said leg-unit, the said latch-spring yieldingly urging the said leg-unit axially toward the bifurcated arm of the said frame-unit to engage the locking-means of the said leg-unit with the locking-means of the said bifurcated arm.

HARRY H. SEIFRIED, II.

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