

Feb. 22, 1966

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3,235,997

BIPOD GUN MOUNT

Filed Dec. 16, 1964

4 Sheets-Sheet 1

FIG. 1.

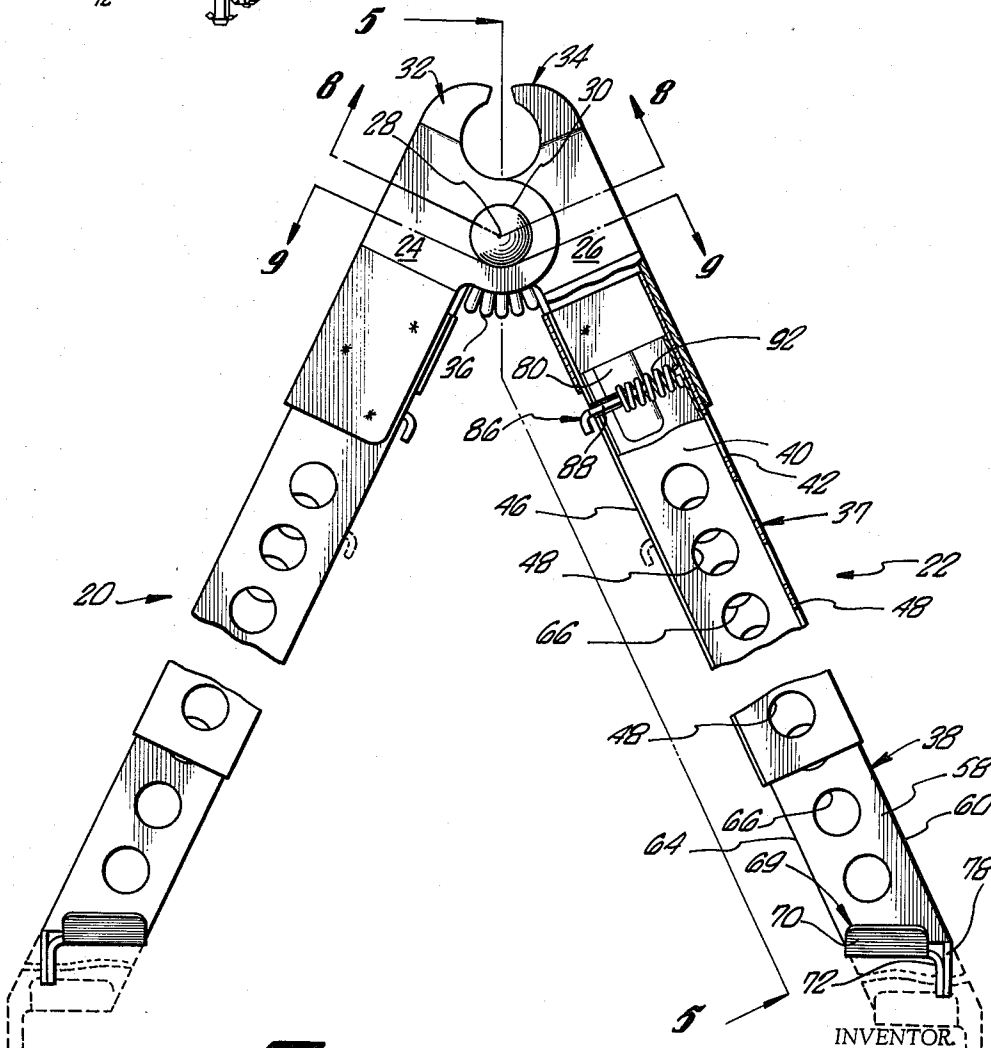
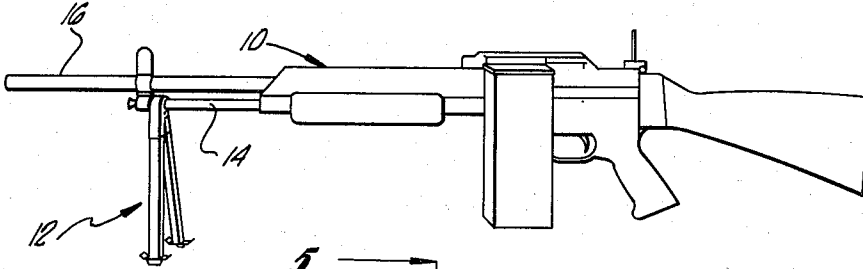


FIG. 2.

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4 Sheets-Sheet 2

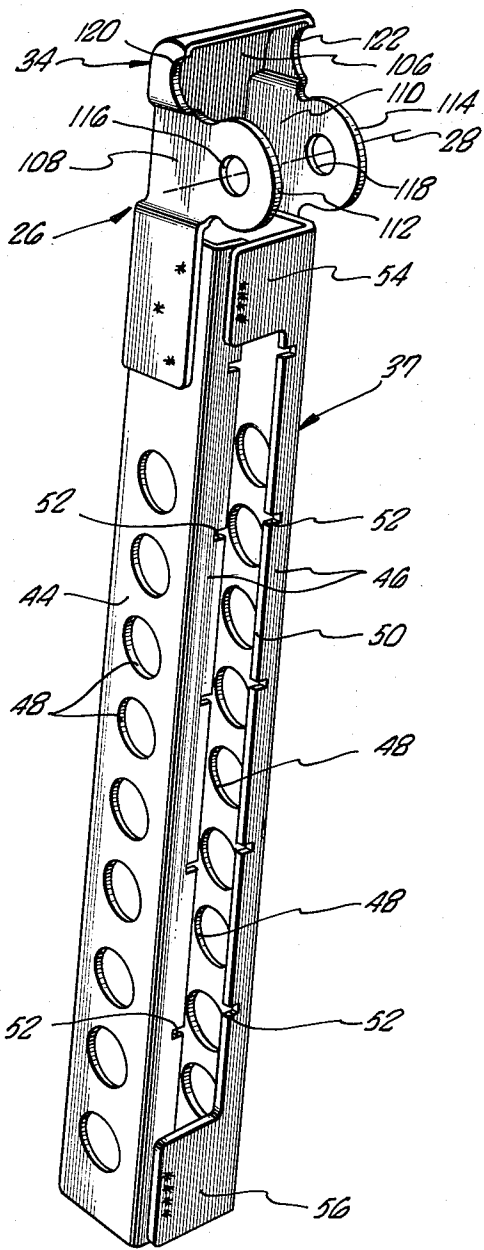
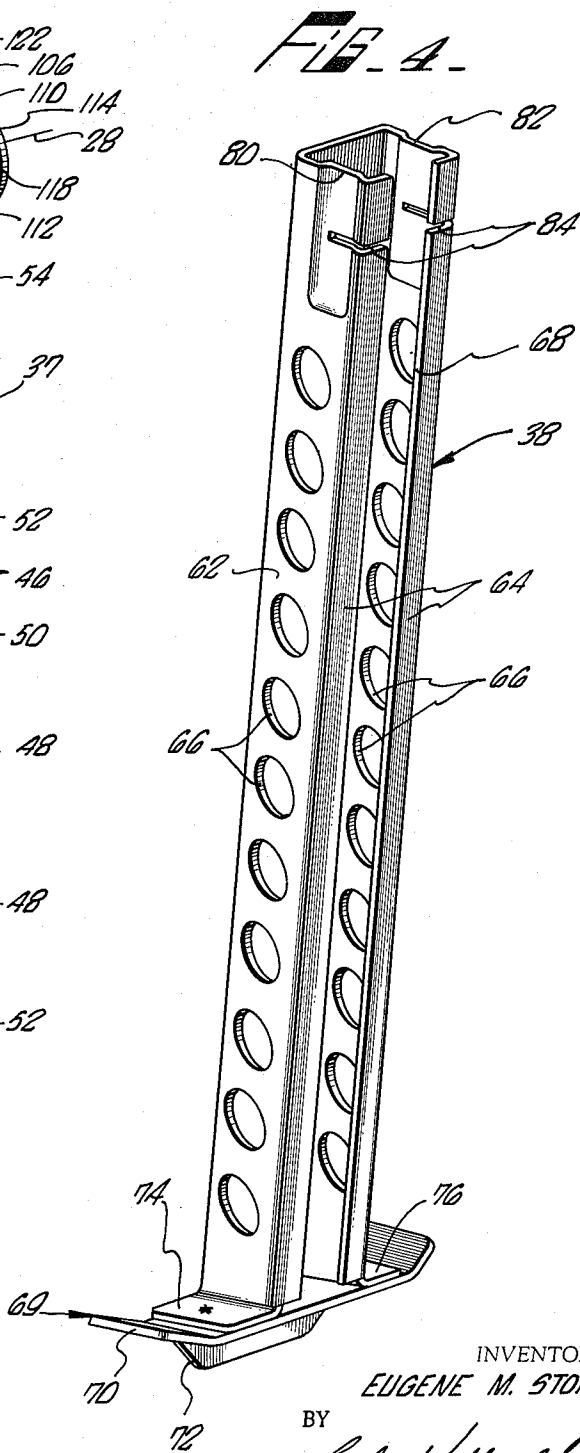


FIG. 3.



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4 Sheets-Sheet 3

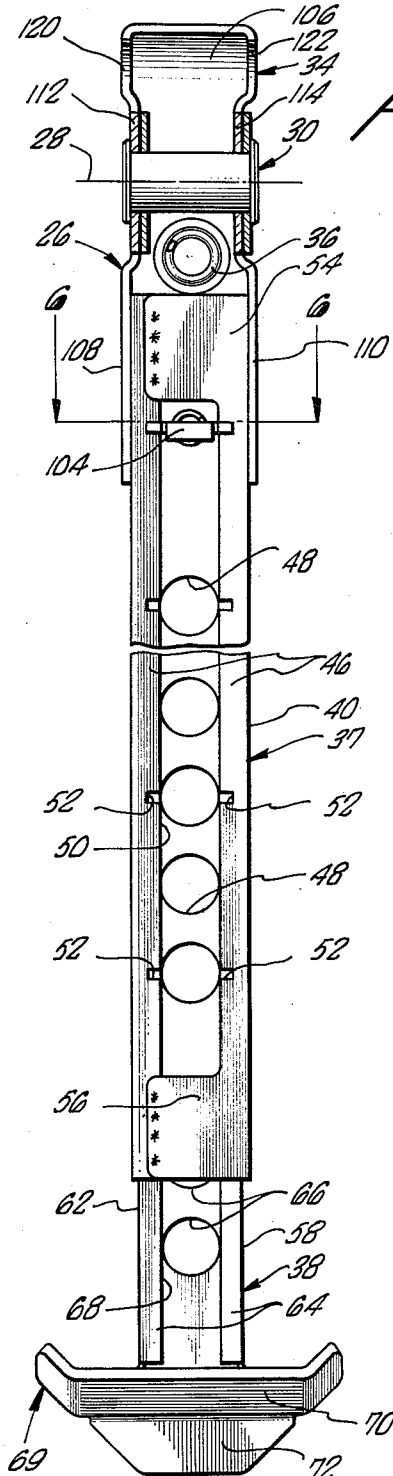


FIG. 5.

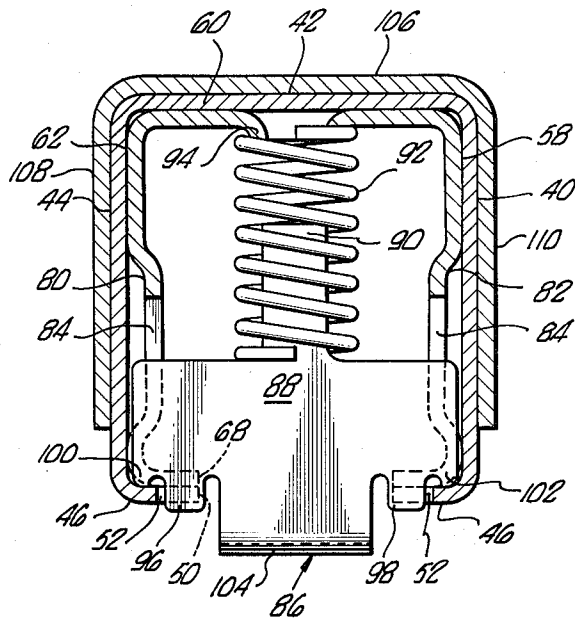
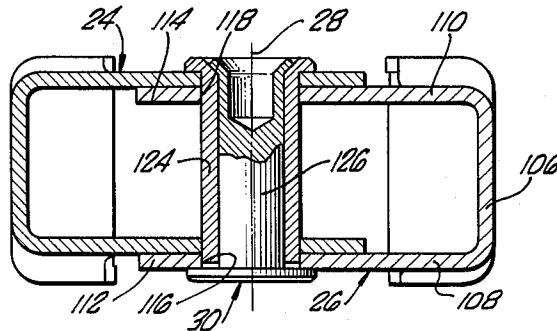


FIG. 6.



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4 Sheets-Sheet 4

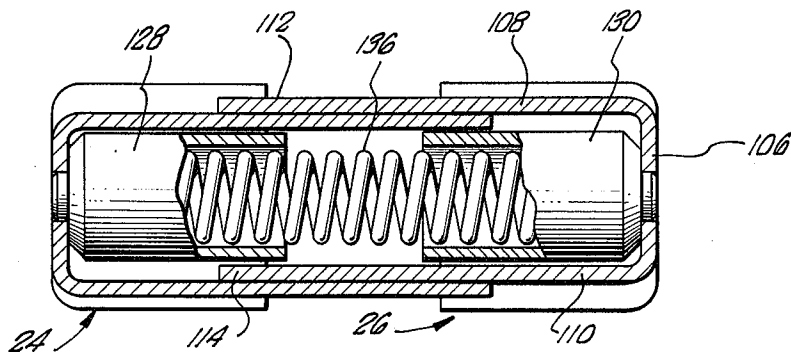


FIG. 9.

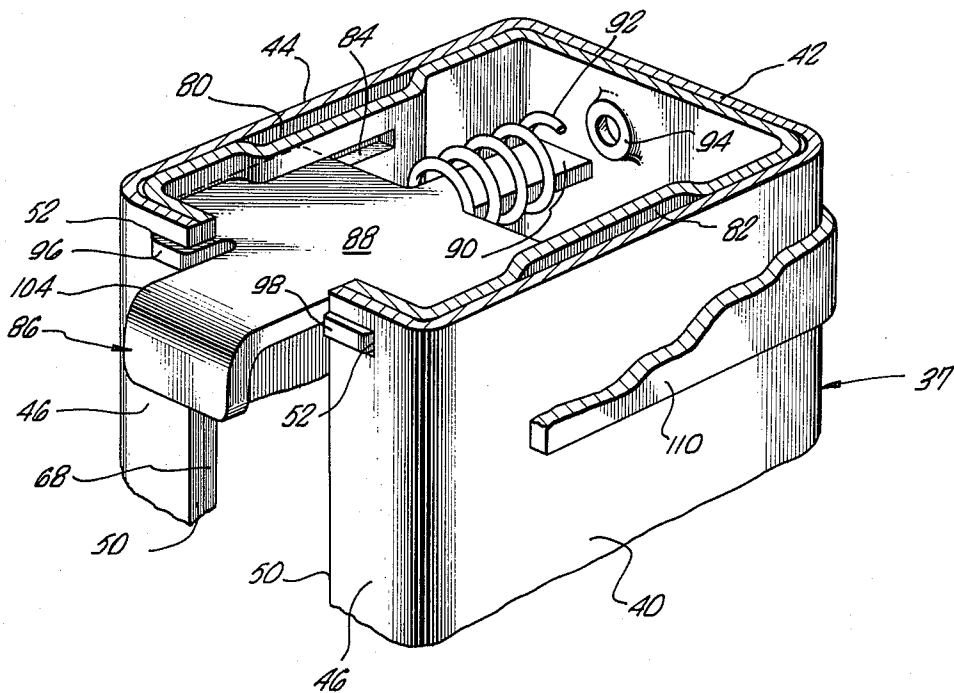


FIG. 1.

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1

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BIPOD GUN MOUNT

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This invention relates to gun mounts, especially bipods, adapted for providing grounded support for small arms weapons during firing.

Gun mounts are used for automatic weapons fired from the sitting or prone position, where it is desirable to provide a grounded support to assist the gunner in holding the weapon and in maintaining a steady aim in spite of the rapid succession of intermittent recoils. A two-legged support, or bipod, is commonly used for automatic rifles and light machine guns; whereas heavier gun mounts such as tripods customarily are used for the heavier weapons.

The bipods most commonly used fall into two categories, (1) those which are especially designed for and are affixed to a particular weapon in a more or less permanent fashion, and (2) the snap-on type which are designed to be carried as a separate item and detachably clamped to a weapon when desired. This invention is directed primarily to the snap-on type of bipod, but many of its features are usable in either type of bipod and in gun mounts generally.

The perfect bipod would have legs quickly and reliably adjustable in length, and in the case of the snap-on type bipod, would include a clamp which is reliably secure and easily operated. The bipod would be simple and inexpensive. In conditions, mud and dirt would not interfere with the ease and reliability of leg adjustment and clamping action. In order to withstand severe abuse under field conditions, the bipod would be a very substantial, rugged structure. Yet it would neither be cumbersome nor too heavy to carry comfortably for long periods.

Such a bipod is not presently and probably never will be perfectly realized, because the desirable design characteristics are competing and the solution to one problem tends to defeat the solution to another. Furthermore, a common problem encountered in gun mounts generally is the tendency of the legs to lose their adjustment when the weapon is fired. That is, the vibration transmitted to the legs during firing causes the device which locks the legs at selected lengths to loosen, thereby permitting the legs to shorten or lengthen during firing.

The snap-on bipod of my invention affords a simple but unique compromise in competing design characteristics. It is easy to clamp and release, light weight, yet rugged enough to withstand combat conditions. The legs are easily and quickly adjustable in length, and include a positive lock to prevent loss of adjustment during firing. Yet, this bipod is inexpensive to manufacture, and, in its preferred embodiment, may be made almost totally from simple sheet metal stampings.

Generally, in accordance with my invention, a gun mount has at least two adjustable legs. Each adjustable leg includes first and second elongated hollow members, the second being received in the first and adapted for longitudinal sliding movement therein to form an adjustable extension of the first. One of the members has a plurality of notches spaced along its length, and means are mounted on the other member for selective releasable engagement in said notches to lock the members against extension and retraction.

In one embodiment of my invention, the first and second elongated hollow members of each leg are made from sheet metal stampings. Both members have a substantially rectangular cross-sectional configuration and have

2

four corresponding sides, three of which are substantially flat and have a plurality of holes spaced along them to lighten the member. In this embodiment, an elongated opening is formed along the fourth side of one member and the notches are spaced alongside this opening. The other member has a transverse slot in its corresponding fourth side which registers with the locus of the notches, and has mounted thereon a spring loaded latch releasably engageable through said transverse slot with the notches for locking the members in selected extended positions. A thumb tab extends from the latch and through the elongated opening for manually releasing the latch.

To form a snap-on bipod, a pair of brackets are connected to the upper ends of the legs. The brackets are pivotally connected for rotation about an axis perpendicular to the legs, and have opposed jaws above said axis for engaging a small arms weapon. Spring means urge the brackets about the axis in the direction which moves the jaws toward each other.

These brackets also may be made of simple sheet metal stampings, each bracket having a back and two sides extending forward from opposite edges of the back. In this embodiment, the two sides of each bracket have a circular opening therein and a concave front perimeter disposed above the opening. The brackets are arranged in front-to-front relationship with all four of the circular openings aligned on an axis perpendicular to the legs. Pin means extend through the four circular openings to pivotally connect the brackets for rotation about said axis.

My invention will be better understood by reference to the following detailed description of a preferred embodiment thereof and by reference to the accompanying drawings, in which:

FIG. 1 is a perspective view showing the preferred embodiment of the snap-on bipod of my invention connected to an automatic rifle which is in firing position;

FIG. 2 is a fragmented elevation of the bipod, with portions broken away to show the lock mechanism and with dotted portions to illustrate extension of the legs;

FIG. 3 is a perspective view of the upper member of one leg and its associated bracket;

FIG. 4 is a perspective view of the lower member of the leg;

FIG. 5 is an elevation of a leg, partly in section, taken along line 5—5 of FIG. 2;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 5 and shows the locking mechanism;

FIG. 7 is a fragmentary perspective view showing the locking mechanism;

FIG. 8 is a sectional view through the brackets of the bipod taken along line 8—8 of FIG. 2, with the pin arrangement connecting the brackets partly broken away; and,

FIG. 9 is a sectional view taken through the brackets along line 9—9 of FIG. 2, and illustrating the spring arrangement for loading the brackets.

Referring now to FIG. 1, an automatic rifle 10 is shown in firing position. A snap-on bipod 12 is connected to the gas cylinder 14 of the rifle and rests on the ground to support and steady the rifle during firing. Alternatively, the bipod 12 could be connected to the barrel 16 of the rifle.

The general construction of the bipod may be seen from FIG. 2 wherein the bipod is shown removed from the rifle. The bipod includes two identical legs 20, 22 which are extensible and retractable in length. Identical brackets 24, 26 are connected to the top of the legs 20, 22 respectively. The brackets are disposed in front-to-front relationship, and are connected together for rotation about an axis 28 perpendicular to the legs by means of a pivot pin structure 30. Near their upper ends, and above the pivot axis 28, the brackets 24, 26 include opposed jaws 32, 34 respec-

tively, for detachably clamping the bipod to the rifle. The jaws are urged toward one another and the legs away from one another by a compression spring 36.

The legs 20, 22 are identical, hence only one of them will be described. Typically, this leg 22 of the bipod includes an upper elongated hollow member 37, and a lower elongated hollow member 38 received in the upper member and adapted for longitudinal sliding movement therein to form an adjustable extension thereof.

As can be seen from FIGS. 2, 3, 5, and 7, the upper hollow member 37 has a substantially rectangular cross-sectional configuration defined by four sides 40, 42, 44, 46. Three of these sides 40, 42, 44 are substantially flat and have a plurality of holes 48 spaced along them to lighten the member.

A central elongated opening 50 extends along the length of the fourth side 46 of the upper member, and a plurality of notches 52 are formed in pairs on opposite edges of said elongated opening at spaced locations along the length thereof. The upper and lower extremities of the elongated opening 50 are defined by an upper tab 54 and a lower tab 56, which extend across the opening and are spot welded at their free ends to the wall 46 on the opposite side of the opening. Thus, the upper member 37 may be easily stamped from a single piece of sheet metal, formed to its rectangular configuration, and stabilized by spot welding the upper and lower tabs 54, 56.

The lower leg member 38 is similarly designed to be stamped and formed from a single piece of sheet metal. The lower member has a rectangular cross-sectional configuration defined by four sides 58, 60, 62, 64, which correspond respectively to the four sides of the upper member 37. As is the case with the upper member, the first three sides 58, 60, 62 of the lower member are substantially flat and have a plurality of openings shown typically at 66 spaced along their length for the purpose of lightening the member. Also to lighten the lower member and to facilitate its manufacture, an elongated opening 68 extends along the length of its fourth side 64.

A stamped sheet metal foot 69 having a curved horizontal flange 70 and a vertical flange 72 is spot welded to three out turned tabs 74, 76, 78 extending from the lower end of the lower member 38, so as to provide a suitable surface for engaging the ground.

Referring now to FIGS. 4, 6 and 7, a pair of depressions 80, 82 are formed in the first and third opposite sides 58, 62 of the lower member adjacent the upper end thereof. A transverse slot 84 intersects these depressions in the opposite first and third sides of the member and as well extends through the adjacent fourth side 64 of the member.

As can be seen in the drawings, the transverse slot 84 at the upper end of the lower member 38 is positioned to register with the locus of the notches 52 along the corresponding fourth side 46 of the upper member 37 as the lower member 38 is slid within the upper member 37. The upper and lower members 37, 38 are fixed against rotation relative to one another about their longitudinal axis by their corresponding rectangular cross sections. This stabilizes the orientation of the foot 69 and maintains the registry of the transverse slot 84 with the loci of the notches 52.

As indicated generally in FIG. 2, a spring loaded latch 86 is mounted in the lower member 38 and is releasably engageable with the notches 52 in the upper member 37 for locking the members in selected extended positions.

The details of the spring loaded latch are best shown in FIGS. 6 and 7. A latch blade 88 is slidably mounted within the transverse slot 84 at the upper end of the lower member 38. The latch blade is a simple sheet metal stamping. It has a narrow rear extension 90, and a helical compression spring 92 is caught on this rear extension at one end and at its other end on a pronounced dimple 94 formed on the second side 60 of the lower

member. The spring 92 urges the latch blade 88 forward toward the corresponding fourth sides of the upper and lower members. The latch blade 88 has opposite forward shoulders 96, 98 which protrude through the slot 84 in the fourth wall 64 of the lower member 38 and extend into an aligned pair of the notches 52 in the corresponding fourth wall 46 of the upper member 37, thereby locking the upper and lower members against extension or retraction at a selected position. Forward movement of the latch blade 88 is restricted by outer forward shoulder portions 100, 102 on opposite sides thereof abutting with the inner surface of the fourth wall 46 of the upper member 37.

A central thumb tab 104 extends forward from the latch blade and through the elongated opening 50 in the upper member 37, and serves as a means for manual operation to disengage the latch blade 88 with an aligned pair of the notches 52 in order to extend or retract the lower member 38 relative to the upper member 37. It will be noted that the longitudinal opening 68 in the lower member 38 is not necessary for this purpose, although the transverse slot 84 in the lower member and the longitudinal opening 50 in the upper member is necessary to permit the protrusion of the thumb tab 104 and to permit sliding of the lower member relative to the upper member. Inadvertent removal of the lower member from the upper member is prevented by engagement of the thumb tab 104 with the lower tab 56 formed at the bottom end of the upper member.

The pair of brackets 24, 26 for clamping the legs to the rifle are identical, and only one of the brackets 26 will be described in detail. The bracket 26 is a sheet metal stamping having a back 106 and two sides 108, 110 extending forward from opposite edges of the back. The back and two sides of the bracket correspond to the three substantially flat sides 40, 42, 44 of the upper member 37 of the leg 22, and are spot welded to these flat sides. Extending forward from the respective sides 108, 110 of the bracket are a pair of ears 112, 114 having circular openings 116, 118 therein respectively aligned on a common axis, which is the same axis 28 about which the brackets will pivot. The jaw 34 of the bracket is located immediately above the ears, and its clamping surfaces are formed by concave front perimeters 120, 122 of the respective sides 108, 110.

As best seen in FIGS. 5, 8 and 9, the ears 112, 114 of the bracket 26 are offset laterally different distances, so that when disposed face-to-face with the other bracket 24, the ears from both brackets will overlap with the circular openings aligned on the axis 28 perpendicular to the legs. The pin structure 30 extends through the aligned four circular openings to pivotally connect the brackets for rotation about the axis 28. This pin structure comprises a first sleeve pin 124 inserted from one end, and a center pin 126 inserted from the opposite end into the sleeve pin. The center pin is counter-bored and beveled over at its forward end to secure the two pins together.

Referring now primarily to FIGS. 2 and 9, the compression spring 36 acts below the pivot pin structure 30 to urge the legs 20, 22 apart, and therefore to urge the jaws 32, 34 of the opposite brackets together. This spring 36 is retained in place by a pair of simple retaining cups 128, 130 disposed within the brackets and connected to their back walls in any conventional manner.

From the above, it may be seen that the entire bipod is easily constructed from two each of five pieces stamped from sheet metal: the upper leg members, the lower leg members, the feet, the brackets, and the latch blades. In addition, three simple springs and four simple machine parts, the cups and connector pins, are all that is required. Yet, the bipod is extremely rugged, light weight, and easy to operate.

When the bipod is to be carried or stored, it is removed from the weapon by moving the legs toward one another

to release the jaws, the lower leg members are retracted into the upper leg members, and the bipod is inserted in a sheath or holder (not shown). To attach the bipod to a weapon, the legs are moved together to open the jaws, the jaws are inserted over the barrel or gas cylinder of the weapon and the legs are released so that the jaws close under the urging of the compression spring 36, thereby clamping the bipod to the weapon. The exposed thumb tab of the latch mechanism on each leg is depressed and the lower member of each leg is extended to a selected position in accordance with the location of the notches on the upper leg member whereupon the latch blade is permitted to engage the aligned notches.

It is obvious that the above described preferred embodiment may be modified in many respects within the scope of this invention; hence, it should be considered exemplary rather than limiting.

I claim:

1. A bipod adapted to be detachably connected to a small arms weapon for supporting the weapon in firing position, comprising a pair of extensible and retractable legs, a pair of brackets connected to the upper ends of said legs, means pivotally connecting said brackets and said legs for rotation about an axis perpendicular to said legs, the brackets having opposed jaws above said axis for engaging a small arms weapon, and spring means urging said brackets and said legs about said axis in the direction which moves said opposed jaws toward each other and said legs away from one another, each of said legs including first and second elongated hollow members, the second being received in the first and adapted for longitudinal sliding movement therein to form an adjustable extension of the first, one of said members having a plurality of notches spaced along its length, and means mounted on the other of said members for selective releasable engagement in said notches to lock said members against extension and retraction.

2. In a bipod having a pair of extensible and retractable legs for supporting a small arms weapon in firing position, means for detachably connecting the legs of the bipod to the weapon, comprising a pair of brackets connected to the upper ends of said legs, each bracket having a back and two sides extending forward from opposite edges of the back and substantially perpendicular thereto, each of said sides having a circular opening therein and a concave front perimeter portion disposed above said opening, said brackets being arranged in front-to-front relationship with said concave front perimeter portions opposite each other and with all four of said circular openings aligned on an axis perpendicular to said legs, pin means extending through said four circular openings to pivotally connect the brackets for rotation about said axis, and spring means urging said brackets about said axis in the direction which moves said concave front perimeter portions of the two brackets toward one another to grip the weapon therebetween.

3. A gun mount adapted to support a small arms weapon in firing position, the gun mount having at least two adjustable legs, each adjustable leg comprising first and second elongated hollow members, the second being received in the first and adapted for longitudinal sliding movement therein to form an adjustable extension of the first, both of said members having a substantially rectangular cross-sectional configuration and having four corresponding sides, three of said corresponding sides being substantially flat and having a plurality of holes spaced along them to lighten the member, one of said members having a plurality of notches spaced along the length of its fourth side, the other of said members having a slot in its corresponding fourth side which registers with the locus of the notches in the fourth side of the one member, and a spring loaded latch mounted on said other member, said latch being releasably engageable through said slot with said notches for locking the members in selected extended positions.

4. A gun mount having at least two adjustable legs, each adjustable leg comprising a first elongated hollow member having an elongated opening extending along the length of one side thereof and having a plurality of notches formed in pairs on opposite sides of said opening at spaced locations along the length thereof, a second elongated hollow member received in the first member and adapted for longitudinal sliding movement therein to form an adjustable extension of the first member, both the first and second members having a substantially rectangular cross-sectional configuration, the second member having a transverse slot therein which registers with the locus of said notches in the first member, and means for releasably locking the second member to the first member, said releasable locking means comprising a latch blade slideable within said transverse slot in the second member between a protruding position which engages the blade in any aligned pair of the notches and a retracted position which disengages the blade, a thumb tab extending from the latch blade and through the elongated opening in the first member, and spring means urging the latch blade toward its protruding position.

5. A bipod adapted to be detachably connected to a small arms weapon for supporting the weapon in firing position, comprising a pair of extensible and retractable legs, each leg comprising first and second elongated hollow sheet metal members, the second being received in the first and adapted for longitudinal sliding movement therein to form an adjustable extension of the first, both of said members having a substantially rectangular cross-sectional configuration and having four corresponding sides, three of said corresponding sides being substantially flat and having a plurality of holes spaced along them to lighten the member, the first member having a central elongated opening extending along the length of its fourth side and having a plurality of notches formed in pairs on opposite edges of said elongated opening at spaced locations along the length thereof, the second member having a transverse slot formed in its fourth and two adjacent sides at a position near the upper end of the member and which registers with the loci of the notches in the corresponding fourth side of the first member, a latch blade slideable within said transverse slot in the second member between a protruding position which engages the blade in any aligned pair of the notches and a retracted position which disengages the blade, a thumb tab extending from the latch blade and through the elongated opening in the first member, and spring means urging the latch blade toward its protruding position; and, means for detachably connecting the legs of the bipod to the weapon, comprising a pair of sheet metal brackets connected to the upper ends of the first members of said legs respectively, each bracket having a back and two sides extending forward from opposite edges of the back, the back and two sides of each bracket corresponding to the three substantially flat sides of the first members of each leg, the two sides of each bracket having aligned circular openings therein and aligned concave front perimeters disposed above said openings, said brackets being arranged in front-to-front relationship with all four of said circular openings aligned on an axis perpendicular to said legs, pin means extending through said four circular openings to pivotally connect the brackets for rotation about said axis, and spring means urging said brackets about said axis in the direction which moves said concave front perimeters of the two brackets toward one another and said legs apart.

6. A gun mount adapted to support a small arms weapon in firing position, the gun mount having at least two adjustable legs, each adjustable leg comprising first and second elongated hollow members, the second being received in the first and adapted for longitudinal sliding movement therein to form an adjustable extension of the first, and means for releasably locking the second member to the first member, said releasable means comprising a

7

plurality of notches spaced along the length of one of said members, transverse guide means associated with the other of said members, which guide means registers with the locus of notches in said one member, a latch plate slideable within said transverse guide means between a position in which a face of the latch plate engages in any aligned one of the notches and a disengaged position, spring means urging the latch toward its engaged position, and means extending from the latch for manual operation to disengage the latch.

7. A gun mount having at least two adjustable legs, each adjustable leg comprising a first elongated hollow member having an elongated opening extending along the length of a side thereof and a plurality of notches formed in a side thereof at spaced locations along its length, a second elongated hollow member received in the first member and adapted for longitudinal sliding movement therein to form an adjustable extension of the first member, the second member having a transverse slot therein which registers with the locus of said notches in the first member, and means for releasably locking the second member to the first member, said releasable locking means comprising a latch blade slideably within said transverse slot in the second member between a protruding position which engages the blade in any aligned notch and a retracted position which disengages the blade, means extending from the latch through the elongated opening in the first member for manual operation to disengage the latch, and spring means urging the latch blade toward its protruding position.

8

8. A bipod adapted to be detachably connected to a small arms weapon for supporting the weapon in firing position, comprising a pair of extensible and retractable legs, a pair of brackets connected to the upper ends of said legs, means pivotally connecting said brackets and said legs for rotation about an axis perpendicular to said legs, the brackets having opposed jaws above said axis for engaging a small arms weapon, and spring means urging said brackets and said legs about said axis in the direction which moves said opposed jaws toward each other and said legs away from one another, each of said legs including first and second elongated members, the second being slideably attached to the first to form an adjustable extension of the first, and means associated with said members for selective releasable engagement to lock said members against extension and retraction.

References Cited by the Examiner

UNITED STATES PATENTS

1,890,423	12/1932	Teagarden	42—94
2,368,792	2/1945	Willman	42—94
2,807,904	10/1957	Kreske	42—94

FOREIGN PATENTS

25,122	7/1906	Austria.
31,385	11/1926	France.
720,365	5/1942	Germany.
274,106	3/1928	Great Britain.

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