(No Model.)

2 Sheets—Sheet 1.

J. WARNER.

TRIPOD.

No. 413,118. Patented Oct. 15, 1889.

Fig. 1.

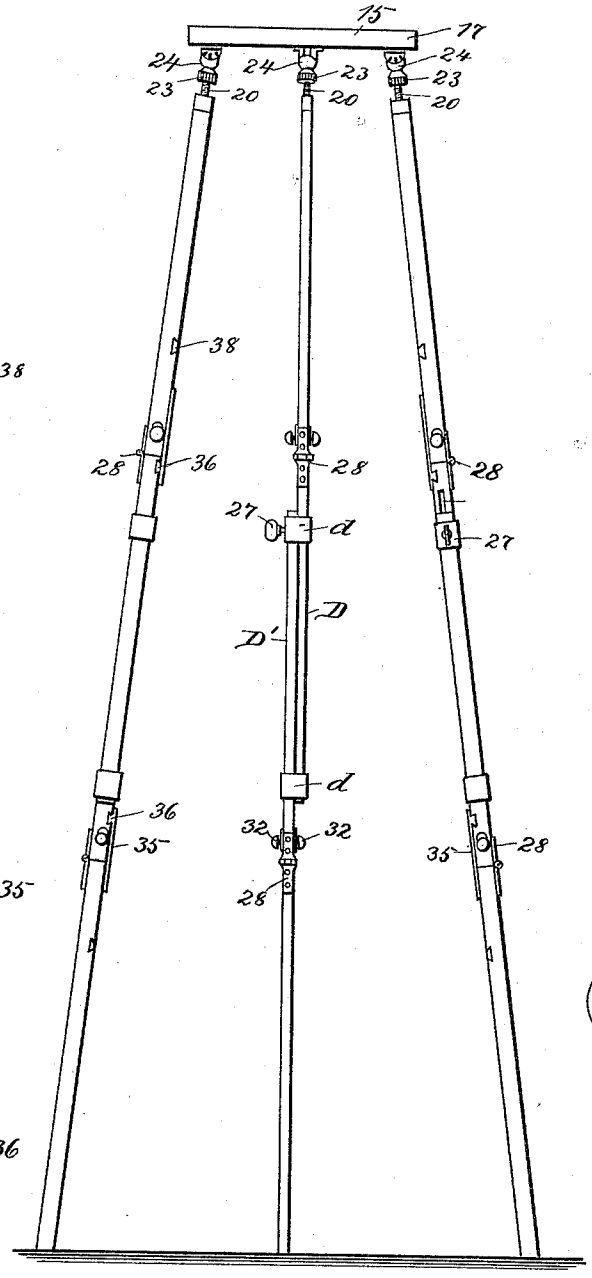


Fig. 2.

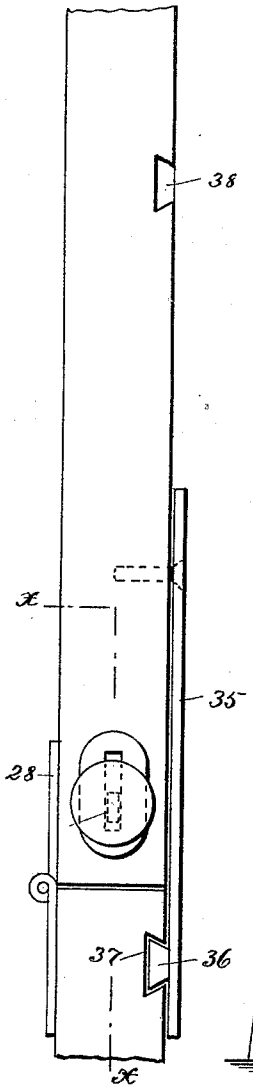
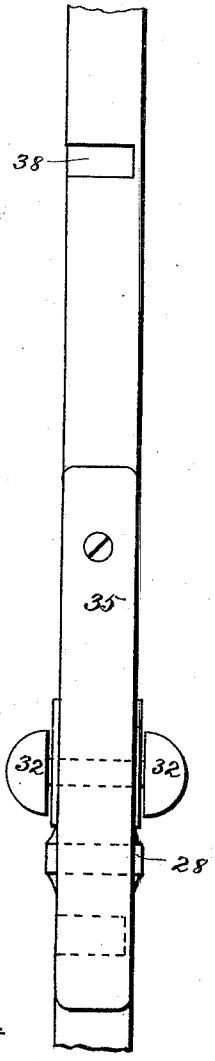


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

J. WARNER.

TRIPOD.

No. 413,118. Patented Oct. 15, 1889.

Fig. 9.

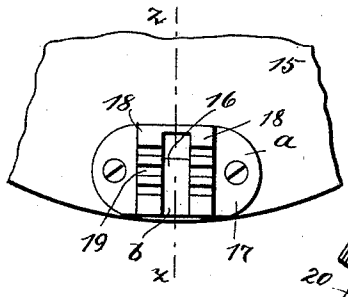


Fig. 11.

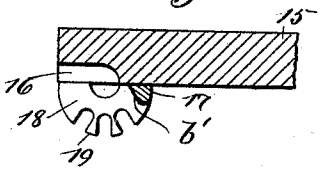


Fig. 10.

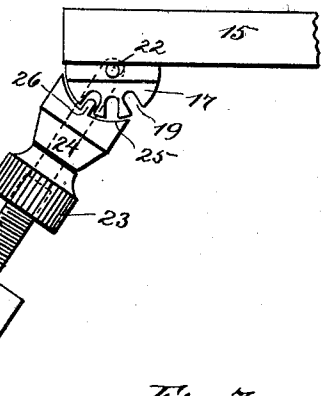


Fig. 4.

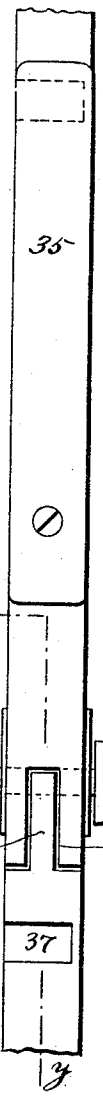


Fig. 8.

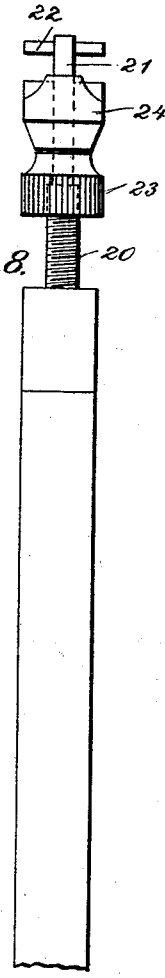


Fig. 7.

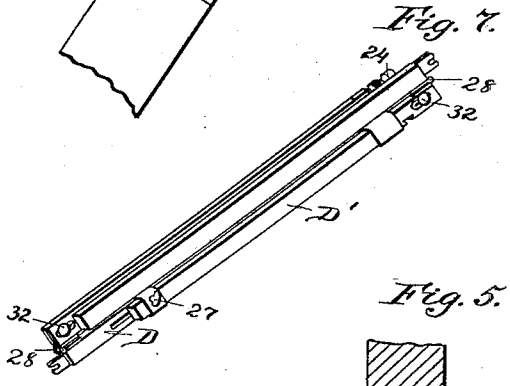


Fig. 6.

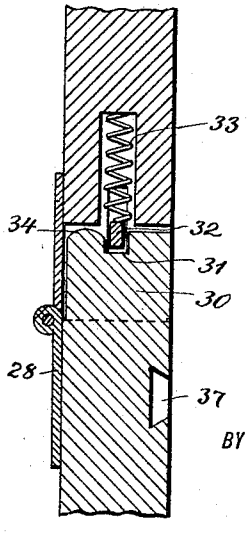
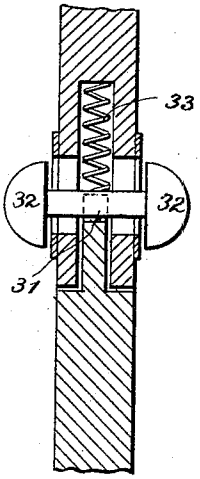


Fig. 5.



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UNITED STATES PATENT OFFICE.

JONATHAN WARNER, OF SAG HARBOR, NEW YORK.

TRIPOD.

SPECIFICATION forming part of Letters Patent No. 413,118, dated October 15, 1889.

Application filed May 16, 1889. Serial No. 311,052. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN WARNER, of Sag Harbor, in the county of Suffolk and State of New York, have invented a new and useful Improvement in Tripods, of which the following is a full, clear, and exact description.

My invention relates to an improvement in tripods especially adapted for use in connection with photographic cameras, and has for its object to provide a tripod the legs of which may be folded up into a small space to facilitate transportation; and the invention also consists in the peculiar construction of the joints of the legs, whereby the said legs will be as strong at the joints when unfolded as at any point intermediate of the joints.

A further object of the invention is to provide a means whereby the legs may be readily adjusted laterally upon the head of the tripod and readily attached thereto, and also to provide a means whereby, when the legs have been suitably adjusted upon the head of the tripod, they may be expeditiously, conveniently, and firmly locked in such adjusted position.

The invention consists of the novel construction and combination of the several parts, as will be hereinafter more fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the tripod in position for use. Fig. 2 is a side elevation of a joint in one of the legs. Fig. 3 is a front elevation of Fig. 2. Fig. 4 is a similar view to Fig. 3, illustrating the locking-plate as not carried over the joint. Fig. 5 is a section on line $x\ x$ of Fig. 2. Fig. 6 is a section on line $y\ y$ of Fig. 4. Fig. 7 is a perspective view of one leg in the folded position. Fig. 8 is a side elevation of the upper section of one of the legs, illustrating the device employed for connecting the leg with the head. Fig. 9 is a partial bottom plan view of the head, illustrating one socket adapted to receive the upper portion of a leg. Fig. 10 is a partial side elevation of the head and of a leg, illustrating the two connected; and Fig. 11 is a section on line $z\ z$ of Fig. 9.

I will first describe the construction of the head 15 of the tripod, which is provided upon its under face near its periphery or outer edge with a series of spaced recesses 16. Over each of the recesses 16 a socket 17 is located, as best shown in Figs. 9, 10, and 11, comprising a plate a, having a slot b produced therein at the center, extending from the front nearly through to the back, the rear wall of which slot is beveled downward, as illustrated at b' in Fig. 11. At each side of the slot b in the socket-plate a a lug 18 is formed, the under face or outer edge of which is circular, as illustrated in Figs. 10 and 11, and provided with a series of teeth 19. The sockets 17 are so attached to the head 15 of the tripod that the slot b in the several sockets will be in vertical alignment with the center of the recess 16, formed in the head. By reason of the above construction it will be observed that the slot b in the socket-plate a and the recess 16 in the head together represent a T-slot.

The upper section of each leg has rigidly secured in its upper end a screw 20, square or polygonal in its upper extremity, as illustrated at 21, and through the said square upper end of the screw a stud or pin 22 is horizontally passed. Upon the threaded portion of the screw 20 a lock or jam nut 23 is located, and upon the square portion of the said screw a clamp 24 is held to slide, provided with a concave upper surface 25 and a tooth 26, extending from side to side and formed upon the center of the said concave face, as best illustrated in Fig. 10. By screwing the jam-nut 23 upward the clamp 24 is also forced upward.

In making the attachment of the legs to the head the stud or pin 22 is made to enter a recess 16 of the head and the upper square portion of the screw the slot b of the corresponding socket-plate. When the legs and head are thus combined, the legs may be carried inward or outward until the desired angle is obtained, whereupon the jam-nut 23 is screwed up to contact with the circular toothed surfaces of the lugs 18, formed upon the socket-plate, as illustrated in Fig. 10; and as the said clamp is thus forced upward the tooth

26 thereof will enter between the teeth of the said lugs and effectually prevent the legs from shifting from position.

To remove the head of the tripod or to readjust the legs, the jam-nut is screwed down a sufficient distance to permit the clamp to disengage from the lugs of the socket, whereupon the head and the legs may be moved into any desired position.

The legs of the tripod are preferably made in four sections, as illustrated in Fig. 1, the intermediate sections D and D′ being made to slide one upon the other. To that end the section D is provided with attached sleeves *d*, through which the section D′ passes, and in the inner surface of the section D, for instance, a longitudinal groove is formed adapted to receive the inner end of a set-screw 27, passed through one of the sleeves. Thus, when the set-screw 27 is loosened the two sections D and D′ may freely slide one upon the other, and when desired the two sections may be rigidly bound together by tightening the said set-screw. The opposed ends of each of the sections are united upon the outer face, for instance, by a suitable form of hinge 28, and the end of one section is provided with a longitudinal slot 29 at or near its center, adapted to receive a metal tongue 30, projected from the end of the opposed section, as illustrated in Fig. 4, the said tongue being preferably provided with a recess 31 in the inner edge, as illustrated in Fig. 6. The leg-section provided with the recess 29 is preferably also provided with a thumb-bolt 32, passing through from side to side, as illustrated in Fig. 5, and provided at each outer end with a head. This bolt is held to move a predetermined distance longitudinally of the leg-section, and is normally projected in the direction of the tongue-section by a spring 33, as is also illustrated in Fig. 5. When the thumb-bolt 32 is employed, the tongue 30 is preferably rounded off at one corner, as shown at 34 in Fig. 6. When the two hinged sections are to be straightened out, the cylindrical portion 34 of the tongue contacts with the bolt 32 and presses the said bolt inward, and as soon as the tongue 30 has entirely entered the slot 29 the spring 33 forces the bolt into the recess 31 of the tongue, thus providing a quick and effective lock. In order to further strengthen the joint, I pivot to one section—for instance, that carrying the thumb-bolt 32—a locking-plate 35. This locking-plate is pivoted at one end to the side of the leg immediately opposite to that upon which a hinge 28 is secured. Near the free end of the locking-plate, upon its under side, an essentially dovetail-shaped stud 36 is formed, as shown in Fig. 2, and when the locking-plate is carried over the joint parallel with the longitudinal axis of the leg the stud 36 is made to enter a dovetail recess 37, formed in the face of the leg carrying the tongue 30, as is also illustrated in Fig. 2 and likewise in Fig. 3. When this locking-plate 35 is not used, it is folded back upon the section of the leg to which it is pivoted, and the stud 36 is made to enter an aperture 38, suitably located, as shown in Figs. 2, 3, and 4. I desire it, however, to be distinctly understood that if in practice it is found desirable the thumb-bolt may be omitted, and that the tongue 30 may be differently formed than illustrated, and the recess 34 receiving the said tongue may also be varied in shape.

In Fig. 7 I have illustrated the manner in which the legs are folded up, in which it will be observed that the lower section folds upon one of the intermediate sections parallel therewith, and the upper section upon the other intermediate section.

I further desire it to be understood that, while specific construction has been shown and described, other equivalent construction may be employed without departing from the spirit of the invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a tripod, the combination, with a head provided with a series of recesses and a clamp-plate having toothed lugs covering each of the said recesses, of a leg provided with a threaded extension, a jam-nut traveling upon said extension, and a toothed clamp sliding upon the extension and manipulated by a jam-nut, substantially as shown and described.

2. In a tripod, the combination, with a head provided with a series of recesses, and a clamp-plate partially covering each recess provided with spaced toothed lugs, of legs having an upper threaded extension provided with a head, a jam-nut adapted to travel on the screw-extension, and a toothed clamp held to slide upon the said screw-extension above the jam-nut, all combined for operation substantially as shown and described.

3. The combination, with the head of a tripod and toothed lugs or projections secured thereto, of a leg having an upper threaded extension, a jam-nut held to travel upon the said threaded extension, and a toothed clamp provided with a concave upper face held to slide upon the screw-extension above the jam-nut, substantially as shown and described.

4. The combination, with a tripod-head having a series of recesses produced in its under face, and a clamp-plate secured over each recess provided with a central slot and a toothed lug at each side of the said slot, of a leg having a screw-extension at the upper end provided with a head, a jam-nut held to travel upon the screw-extension, and a clamp held to slide above the jam-nut provided with a concave upper face and a tooth in said face, all combined for operation substantially as shown and described.

5. In a tripod, the combination, with hinged sectional legs, one leg-section being provided with a tongue and the opposed section with a groove to receive said tongue, of a locking-plate pivoted to one section adapted to cross

the joint of the sections and unite with the opposed leg-section, substantially as shown and described.

6. In a tripod, the combination, with hinged leg-sections, one leg-section being provided with a tongue and the opposed section with a groove to receive said tongue, of a locking-plate pivoted to one of the leg-sections adapted to cross the joint of the sections, and a stud formed upon the free end of the said plate capable of engaging a slot in the leg-sections, substantially as and for the purpose specified.

7. The combination, with the hinged sectional leg of a tripod, one section being provided with a tongue having a recess therein and the opposed leg-section with a recess to receive the said tongue, of a spring-actuated thumb-bolt held to slide in the recessed section capable of entering the recess in the tongue when the sections are extended, substantially as shown and described.

8. The combination, with the hinged sectional leg of a tripod, one section being provided with a tongue having a recess therein and the opposed leg-section with a recess to receive the said tongue, of a spring-actuated thumb-bolt having longitudinal movement in the recessed leg-section capable of contact with the slot in the said tongue, and a locking-plate pivoted upon one section having a stud upon its free end capable of entering a depression in the face of one leg-section, substantially as shown and described.

JONATHAN WARNER.

Witnesses:
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WM. C. GREENE.