

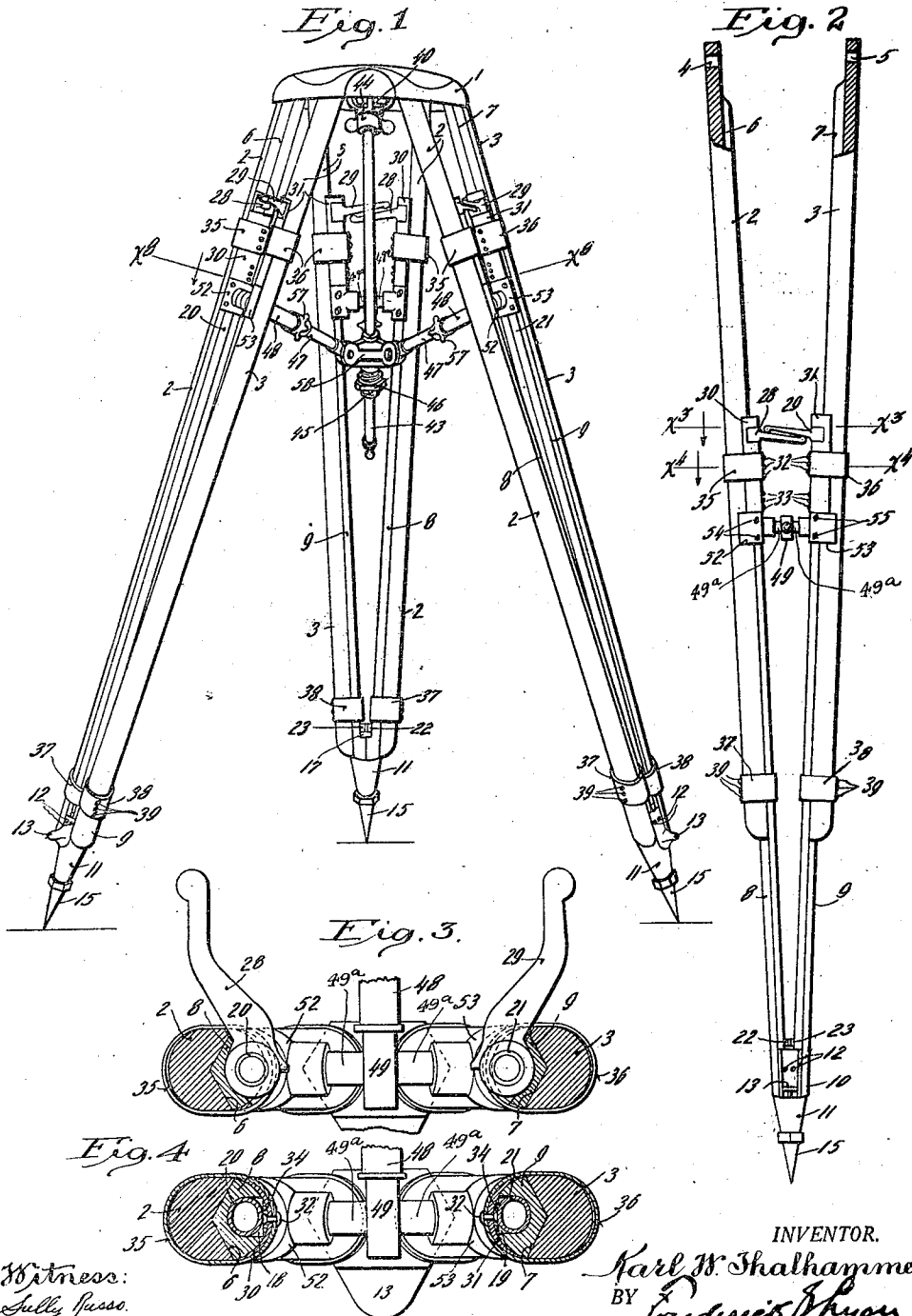
May 27, 1924.

K. W THALHAMMER

1,495,458

TRIPOD

Original Filed April 5, 1920 3 Sheets-Sheet 1



May 27, 1924.

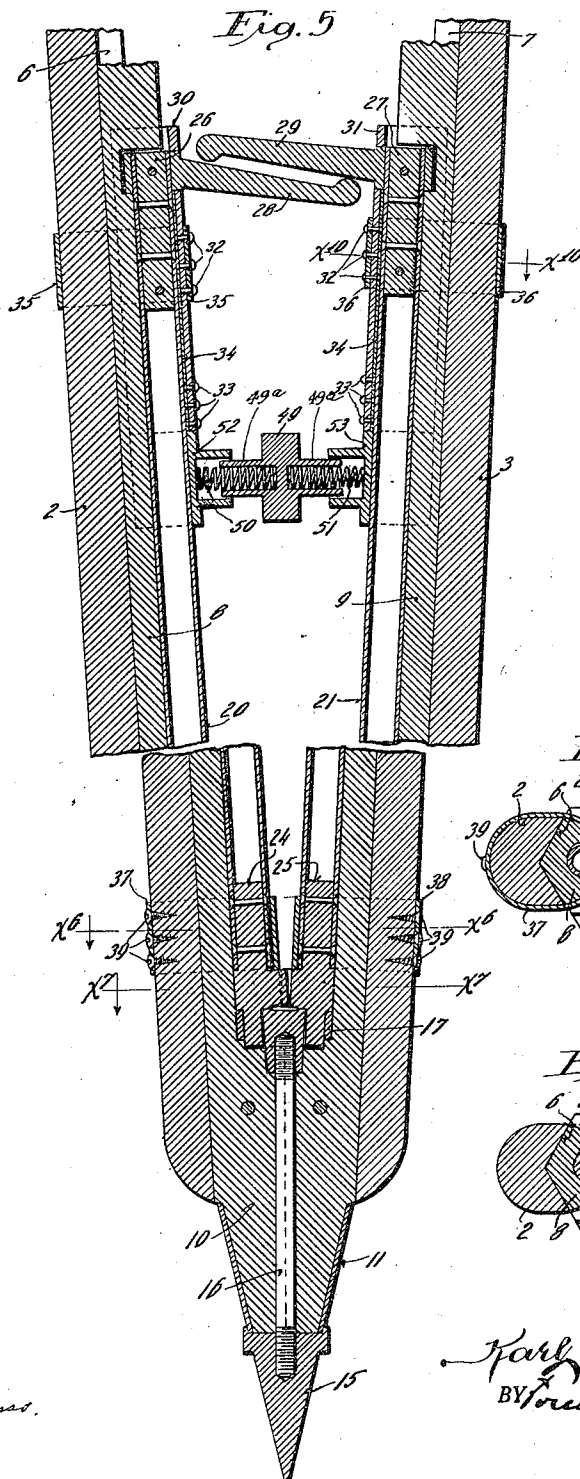
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K. W. THALHAMMER

TRIPOD

Original Filed April 5, 1920

3 Sheets-Sheet 2



Witness:
Sully, Guss.

INVENTOR.
Karl W. Thalhammer
BY Frederick J. Hyer
ATTORNEY

May 27, 1924.

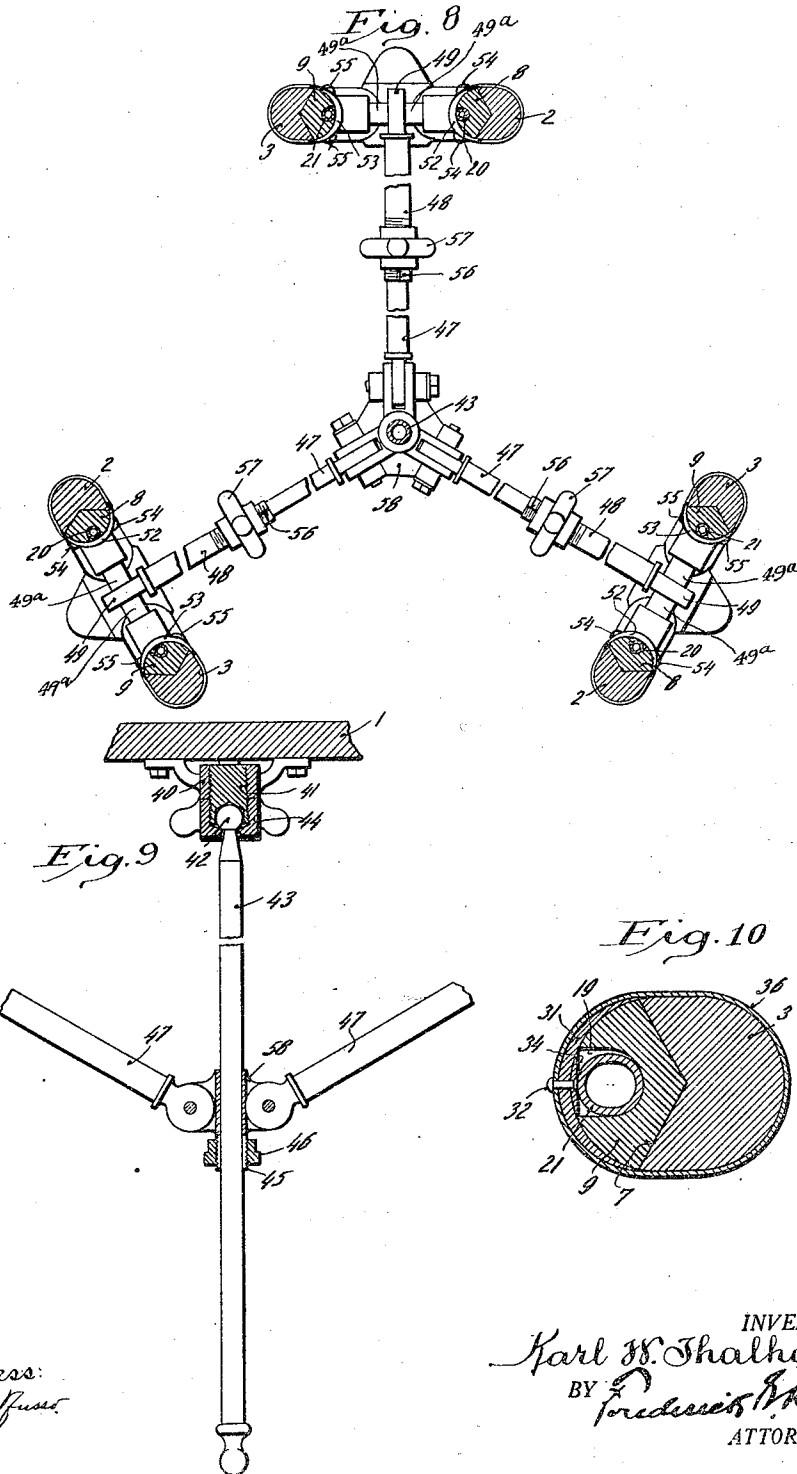
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K. W. THALHAMMER

TRIPOD

Original Filed April 5, 1920

3 Sheets-Sheet 3



Witness:
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UNITED STATES PATENT OFFICE.

KARL W. THALHAMMER, OF LOS ANGELES, CALIFORNIA.

TRIPOD.

Application filed April 5, 1920, Serial No. 371,371. Renewed September 5, 1923.

To all whom it may concern:

Be it known that I, KARL W. THALHAMMER, a citizen of Austria, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Tripod, of which the following is a specification.

My invention relates to tripods of the type generally used for supporting surveying instruments, cameras and the like and has for its object to provide a tripod having a plurality of extensible supporting legs which comprise slidably united sections, with means for clamping the sections together in adjusted position at different points throughout their length.

Another object is to provide means for bracing the legs and maintaining them in their positions of transverse adjustment. Various other objects and advantages will be more fully apparent from the following description of the accompanying drawings, which form a part of this disclosure and which illustrate a preferred form of embodiment of the invention.

Of the drawings:

Fig. 1 is a perspective view of my improved tripod.

Fig. 2 is a side elevation of one of the leg units.

Fig. 3 is an enlarged section on line x^3-x^3 of Fig. 2, showing the clamping means in released position.

Fig. 4 is an enlarged section on line x^4-x^4 of Fig. 2.

Fig. 5 is an enlarged vertical section, partly broken, of one of the leg units.

Fig. 6 is a section on line x^6-x^6 of Fig. 5 showing the clamping means in clamping position.

Fig. 7 is a section on line x^7-x^7 of Fig. 5.

Fig. 8 is a plan section on line x^8-x^8 of Fig. 1.

Fig. 9 is a partial vertical section showing the center rod and its connections.

Fig. 10 is an enlarged section on line $x^{10}-x^{10}$ of Fig. 5.

With reference to Fig. 1, the general organization comprises a table plate 1 supported by three legs, each formed of two opposed main side rails 2, 3 pivotally connected to the table plate by suitable bolts (not shown) which engage through transverse

orifices 4, 5 in the upper portions of the rails 2, 3 respectively. (See Fig. 2). This is the usual well known method of pivotally connecting tripod legs to the table plate and need not herein be illustrated or described in detail.

As the supporting legs are of duplicate construction only one thereof will be described in detail. The opposed inner surfaces of the rails 2, 3 are provided with V-shaped grooves 6, 7 respectively, adapted to be engaged by opposed furcations 8, 9 of a bifurcated extension leg 10, the furcations having coincidentally V-shaped outer surfaces registering with the grooves 6, 7 of the side rails. In constructing the extension legs I preferably make the furcations 8, 9 of separate pieces, joined by having their lower ends encased in a sleeve 11 attached thereto by screws 12, 12 and providing a foot projection 13. The lower end of the leg 10 is provided with a ground point or spike 15 which is secured on the leg by a screw rod 16, engaging with said spike and with an opposed plate 17. (See Fig. 5).

The inner faces of the furcations 8, 9 have longitudinally extending grooves 18, 19 and positioned for oscillation within said grooves are tubular cam shafts 20, 21 each being slightly flattened to oval cross-sectional contour. Pivoted in the plate 17 there are provided opposed cooperating gear segments 22, 23 which have upwardly extending shanks 24, 25 extending into their respective tubular cam shafts and secured thereto by rivets. (See Fig. 5).

The upper ends of the cam shafts are reinforced by solid plugs 26, 27 and secured to the terminal ends of said shafts are hand levers 28, 29 extended inwardly in relative overlapping relation, one above the other when in clamping positions. These hand levers extend through orifices in the sides of semi-circular plates 30, 31, each extending around the upper peripheral surface of the respective furcations 8, 9. (See Figs. 1, 2, 4, 5).

Attached to the inner surface of each of the plates 30, 31 by rivets 32, 33, is a filler strip 34 providing a flat contact surface for cooperation with the respective cam shafts 20, 21.

Secured to the plates 30, 31, by the rivets 32 in each instance, I provide clamp bands 35, 36 each encircling its respective furcation and side rail of the leg.

At the lower ends of the main side rails 2, 3 are similar clamp bands 37, 38, each attached by screws 39 to its respective side rail and encircling said rail and the co-engaging furcation of the extension leg together with its cam shaft.

Each of the clamp bands are preferably formed of relatively thin flexible metal so that they will readily conform to and closely engage the leg rails and furcations.

Describing the operation of the mechanism thus far described, it will be understood that the function of the gear segments 22, 23 is to compel a simultaneous oscillation of cam shafts 20, 21 and that when the hand levers 28, 29 are in the position shown in Fig. 3 with the shafts in the position shown in Fig. 4, there will be no clamping tension exerted on the clamp bands and the extension leg 10 may be longitudinally adjusted as desired. When the hand levers 28, 29 are moved towards each other the cam shafts 20, 21 will be moved to the positions shown in Figs. 6 and 10, the shafts acting simultaneously upon the lower bands 37, 38 directly, and upon the upper bands 34, 35, through the plates 30, 31 and filler strips 34, with a cam action, to exert a tightening influence upon each of the bands to clamp the extension leg in adjusted position on the main side rails. To maintain the legs in set position, angularly to the vertical and to brace the legs transversely, I provide the following described mechanism which comprises a universally journaled center rod and a series of extensible strut elements between the center rod and the legs.

Secured centrally to the under side of the table plate 1 is a bracket 40 having a screw-threaded bore in which engages a plug 41 providing a seat for the upper ball-end 42 of a depending center rod 43. A screw-threaded sleeve 44 engages over the ball-end of the center rod and is screwed on the plug 41 in abutting engagement with the bracket, this structure providing a universal joint for the center rod. (See Fig. 9.)

Slidable on the rod 43 is a sleeve or spider 58 having a downwardly extending barrel which is transversely split, as at 45 and externally threaded to receive a clamp nut 46 operable to clamp the spider in vertically adjusted position on the rod. Transversely pivoted to each arm of the spider 58 is a radial rod 47 telescopically engaging within a companion tubular arm 48 having a head 49. Said head is formed with opposed bosses 49^a, 49^b recessed to house compression springs 50, 51. Said springs also engage within recessed bosses of opposed plates 52—53 secured respectively on the opposed

furcations 8, 9 by screws 54, 55. It will be noted that the bosses of the head 49 telescopically engage into the recessed bosses of the plates 52, 53 forming a pivotal connection.

The inner end of each tubular arm 48 is split as at 56 and is threaded for cooperation with a clamp nut 57 functioning to clamp the two strut sections 47 and 48 together as a rigid unit.

The spring connection between the head 49 and the plates 52, 53 is for the purpose of compensating for the different separating distances between the plates as the extension leg is adjusted upon the side rails. This construction of extensible strut elements or radius arms and center rod provides for a transverse bracing of the legs in a direction substantially at right angles to their direction of radial adjustment and throughout a wide range of extensible adjustment of the separate leg units.

It will be noted that in each limb of each leg unit, the furcations 8, 9 are clamped to the side rails 2, 3 at two points, one at the upper end of the furcations by the clamp bands 34, 35, and the other at the lower ends of the side rails 2, 3 by the clamp bands 37, 38.

When adjusted as desired and clamped in adjusted positions, the mechanism herein described and illustrated, provides extensible legs which are very rigid and strong and in which the co-engaging parts will not be displaced by any strains to which the tripod will likely be subjected.

I claim:

1. A tripod combining a relatively stationary table plate, a plurality of extensible legs pivotally connected to the table plate, a center rod universally adjustable relative to said plate, and relatively transverse strut members pivotally connected to said said rod and legs.

2. A tripod combining a relatively stationary table plate, a plurality of extensible legs pivotally connected to the table plate, a center rod universally adjustable relative to said plate, a spider member adjustable on said rod, and extensible strut members having pivotal connections with the spider member and the legs.

3. A tripod combining a relatively stationary table plate, a plurality of extensible legs pivotally connected to the table plate, a depending center rod universally adjustable relative to said plate carried by the table plate, an adjustable member clamped on said rod in adjusted position, and strut members pivoted to said adjustable member and to the legs, each strut member comprising telescopically united sections.

4. A tripod combining a table plate, a plurality of extensible legs, a center rod, and relatively transverse strut members pivot-

ally connected to the rod and to the legs, the pivotal connection with the legs being transversely yielding.

5 A tripod combining a relatively stationary table plate, a plurality of extensible legs pivotally connected to the table plate, a depending center rod universally adjustable relative to said plate carried by the table plate, a spider member slidable on the center
10 rod, strut members pivotally connected to the spider member and to the legs, each strut member comprising telescopically adjustable sections, means for clamping the spider member on the center rod and means
15 for clamping the strut member sections together.

6. A tripod combining a table plate, supporting legs pivotally connected to the table plate, each leg comprising opposed side rails and a bifurcated extensible leg member
20 slidable relative to the side rails, and means for simultaneously clamping each of the furcations to the companion side rails at a plurality of points throughout their lengths.

25 7. A tripod combining a table plate, supporting legs pivotally connected to the table plate, each leg comprising opposed grooved side rails and a bifurcated extensible leg member positioned with the furcations slidable within the groove, and means for simultaneously clamping each of the furcations to
30 the companion side rails at a plurality of points throughout their lengths.

35 8. A tripod combining a table plate, supporting legs pivotally connected to the table plate, each leg comprising opposed side rails and a bifurcated extensible leg member slidable relative to the side rails, longitudinally spaced clamp members engaging each of the
40 rails and furcations, and operating mechanism for simultaneously functioning the clamp members to clamp the side rails and companion extensible leg members together in adjusted position and at different points
45 throughout their lengths.

9. A tripod combining a table plate, supporting legs attached thereto, each leg comprising opposed side rails and an extensible bifurcated leg member, longitudinally spaced
50 clamp bands embracing each rail and companion furcation, longitudinal cam shafts carried by the furcations, and operating means for each cam shaft adapted to rock said shafts causing the clamp bands to bind
55 the extensible leg member in adjusted position.

10. A tripod combining a table plate, supporting legs attached thereto, each leg comprising opposed side rails and an extensible bifurcated leg member, clamp bands embracing each rail and companion furcation,
60 cam shafts carried by the furcations, operating means for each cam shaft adapted to rock said shafts to cause the clamp bands to bind the extensible leg member in adjusted
65 position, and means compelling a simultaneous operation of both cam shafts.

position, and means compelling a simultaneous operation of both cam shafts.

11. A tripod combining a table plate, supporting legs attached thereto, each leg comprising opposed side rails and an extensible
70 bifurcated leg member positioned with its furcations slidably engaging the side rails, means for clamping the side rails and said furcations together in adjusted position, a universally adjustable center rod carried by
75 the table plate, and a strut member pivotally connected to the center rod and to the furcations of the extensible leg member.

12. A tripod combining a table plate, supporting legs connected to the table plate,
80 each leg comprising opposed side rails and a bifurcated extensible leg member slidable relative to the side rails, upper clamp members carried by the free ends of the furcations and engaging the side rails, lower
85 clamp members carried by the free ends of the side rails and engaging the furcations, operating means for simultaneously functioning the upper and lower clamp member of one side rail and companion furcation,
90 and operating means for simultaneously functioning the upper and lower clamp member of the other side rail and companion furcation.

13. A tripod leg as an article of manufacture adapted for attachment to a tripod
95 table plate and comprising, opposed side rails, an extensible bifurcated leg member slidable relative to the side rails, upper clamp members carried by the free ends of the furcations and engaging the side rails,
100 lower clamp members carried by the free ends of the side rails and engaging the furcations, operating means for simultaneously functioning the upper and lower clamp
105 members of one side rail and companion furcation, and operating means for simultaneously functioning the upper and lower clamp members of the other side rail and companion furcation.
110

14. A tripod leg as an article of manufacture adapted for attachment to a tripod table plate and comprising, opposed side rails, an extensible bifurcated leg member slidable
115 relative to the side rails, a clamp member attached to the lower end of each side rail and embracing the companion furcation, a second clamp member attached to the upper end of each furcation and embracing the companion side rail, and means simultaneously
120 functioning all the clamp members to clamp the extensible leg member to the opposed side rails.

15. A tripod leg as an article of manufacture adapted for attachment to a tripod
125 table plate and comprising a main rail and an extensible leg member longitudinally slidable relative thereto, a clamp member carried by the rail and embracing the leg member, a second clamp member carried by the
130

leg member and embracing the rail, and a single means for simultaneously functioning both clamp members to clamp the rail and leg member together at two relatively spaced
5 points.

16. A tripod leg as an article of manufacture adapted for attachment to a tripod table plate and comprising two relatively slidable leg members, and a single means for simul-

taneously clamping the leg members together at a plurality of points throughout their lengths. 10

Signed at Los Angeles, California this 30th day of March 1920.

KARL W. THALHAMMER.

Witnesses:

CLARENCE B. FOSTER,
L. BELLE WEAVER.