

July 29, 1958

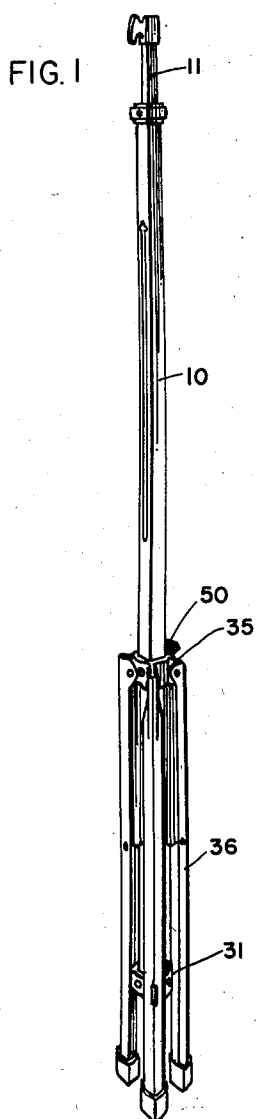
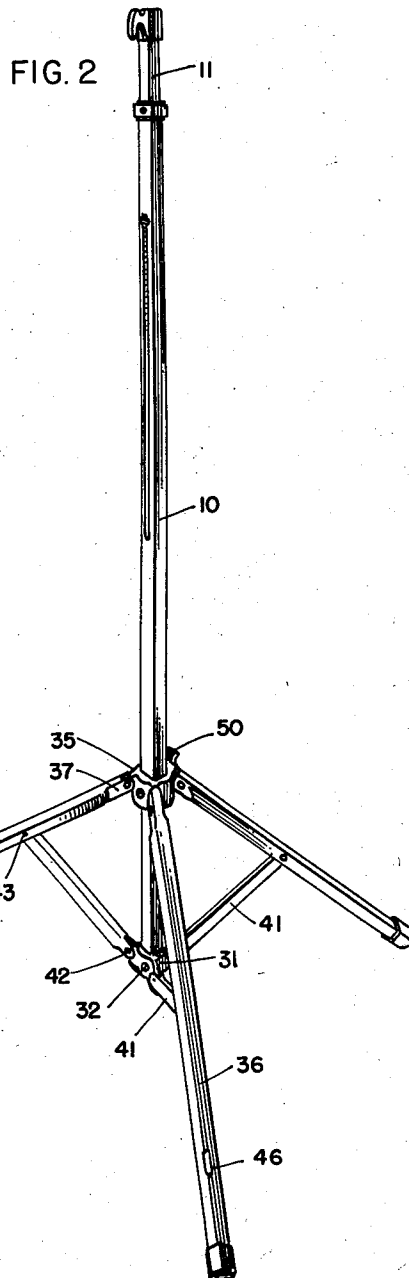
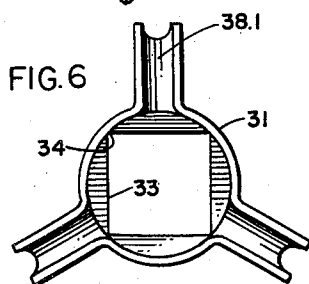
F. J. PROKOP

2,845,244

TRIPOD

Filed July 30, 1954

2 Sheets-Sheet 1



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FIG. 3

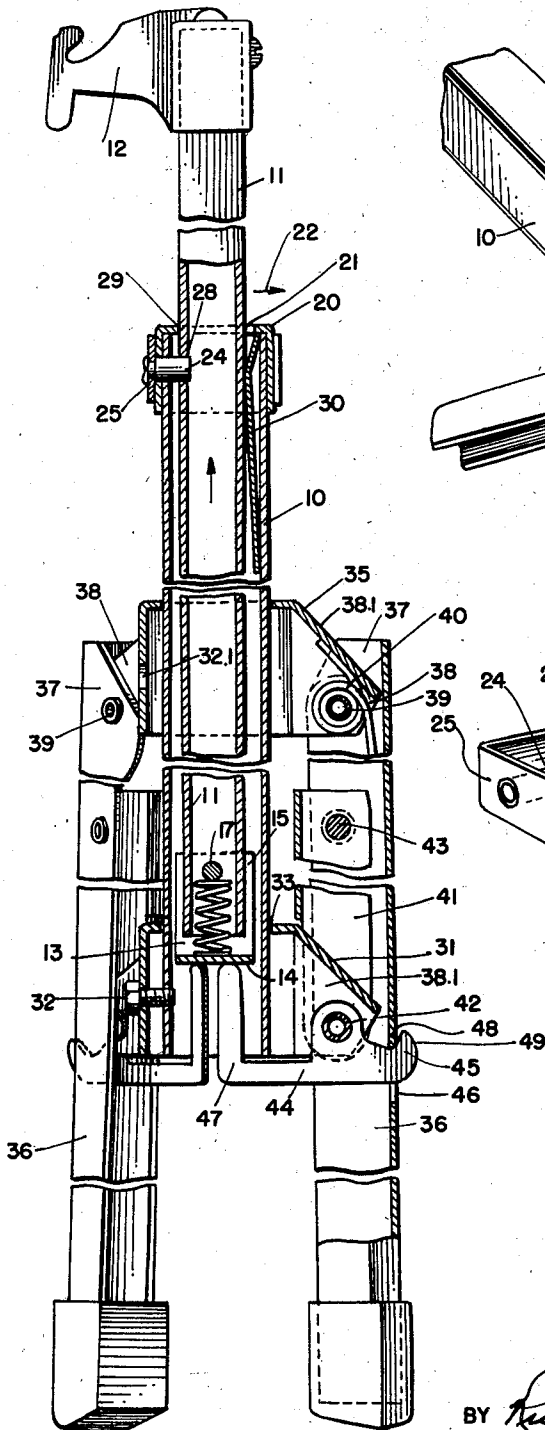


FIG. 4

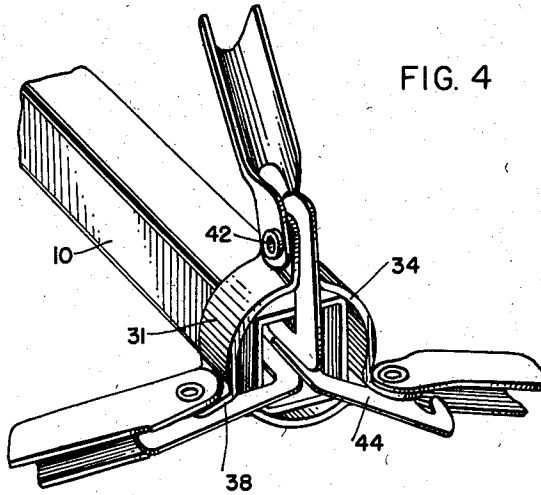
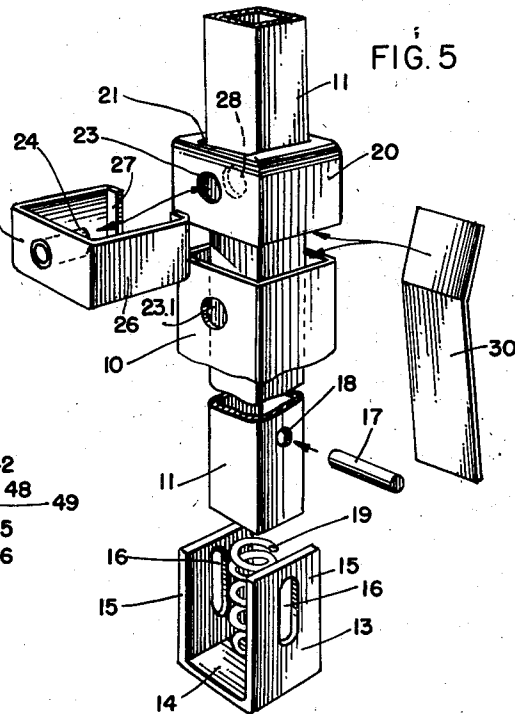


FIG. 5



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2,845,244

TRIPOD

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5 Claims. (Cl. 248—171)

This invention relates to screen stands, such as are used for picture projection, and especially to the latching mechanism whereby the parts are held in compact relation for storage and released for expansion of its tripod legs by a simple movement of the extension rod with respect to the standard.

The main objects of this invention are to provide an improved screen stand having an improved form of latching mechanism for holding the extension rod and the legs in compact retracted relation with the standard; to provide such an improved screen stand with improved latching mechanism for the individual legs of the standard; and to provide an improved form of stand construction in which the principal parts of the leg mounting and latching mechanism can be made of sheet metal stampings of such simple form as to minimize the mechanical and manual operations of constructing the same and make the same extremely inexpensive to manufacture.

A specific embodiment of this invention is shown in the accompanying drawings in which:

Figures 1 and 2 are elevations of a screen stand constructed according to this invention in its folded and open positions respectively. In these views the screen housing and the mounting means for attaching it to the standard are omitted as these features have no part in the present invention.

Fig. 3 is a longitudinal or vertical sectional elevation disclosing details of construction of the stand and its latching mechanism.

Fig. 4 is a detail in perspective showing how the latch dogs are mounted at the lower end of the standard.

Fig. 5 is a detail of the parts of the latch mechanisms in their relation to the extension rod and the standard. This view shows certain individual parts in exploded perspective.

Fig. 6 is a detail of the bracket shell stamping as seen from below.

In the form shown, the standard 10 is a metal tube of uniform rectangular cross section from end to end. The extension rod 11 is also a metal tube of rectangular uniform cross section from end to end that is of considerably smaller diameter than the standard 10, so as to be readily slidable longitudinally therein. The outer or upper end of the extension rod is provided with the usual hanger hook 12 from which a bail of the screen is hung, and which latches the screen casing when the same is in parallelism with the standard in inoperative position.

The opposite or lower end of the extension rod 11 has a U-shaped guide shoe 13 at its lower end comprising a base 14 and upstanding arms 15 which are spaced apart so as to slidably fit within opposite walls of the standard 10 and loosely embrace the lower end of the extension rod 11 to serve as a guide for it in its telescopic movement along the standard 10. The arms 15 have vertical slots 16 to receive a pin 17 which extends through apertures 18 in the extension rod 11.

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The pin 17 also serves as an abutment for a helical compression spring 19 that bears between the pin 17 and the base 14 on the shoe 13 and serves as a leg latch spring as will hereinafter appear.

The upper end of the standard 10 has a cap 20 which has a slot 21 shaped to guide the extension rod 11 in its longitudinal movement with respect to the standard 10. The guide slot 21 is elongated in the plane of Fig. 3 to allow the extension rod 11 to be tilted slightly in the direction of the arrow 22.

The cap 20 is loosely seated on the upper end of the standard tube 10 and has a perforation 23 in the side wall, which is at the left of Figs. 3 and 5, to receive a latch pin 24 fixed on a clip 25. The clip 25 has side arms 26 with inturned ends 27 which can be sprung around the sides of the cap 20, as will be understood from Figs. 3 and 5.

The pin 24 extends through the aperture 23 in the cap 20 and aperture 23.1 in the standard 10; and thus serves to lock the cap in place. The pin 24 is of sufficient length to penetrate a latching aperture 28 in the extension rod when the same bears against the shoulder 29 at the adjacent end of the slot 21 of the cap 20.

The extension rod is normally urged toward the left of Fig. 3 by the flat spring 30 which is bowed so as to bear between the extension rod and the wall of the standard.

The lower end of the standard has a bracket member 31 mounted thereon by means of a screw 32. This bracket member is a sheet metal stamping in the form of an inverted cup-shaped shell with a rectangular aperture 33 in its top wall snugly fitting about the walls of the standard 10 and having its side walls 34 of generally cylindrical form slidably bearing on the corners of the tube 10. A bracket sleeve 35 which is a stamping of the identical shape of the bracket member 31 is slidably mounted on the standard 10.

The tripod legs 36 are of channel bar form and their side flanges are pinched together to form parallel hinge members 37. The hinge members 37 embrace pairs of hinge lugs 38 formed as radial flutes 38.1 in the side wall on the sleeve 35. The hinge lugs 38 on the bracket member and the hinge plates 37 of the legs 36 are connected by hinge pins 39.

The side portions of the flutes 38.1 that form the hinge lugs 38 are spaced part to accommodate a helical torsion spring 40 between them. The spring 40 is coiled around the hinge pin 39 and its ends bear respectively against the sleeve 35 and the legs 36 so as to normally urge the legs to swing apart.

The leg bracing links 41 are pivoted at 42 to hinge lugs on bracket 31 in the same manner as the legs 36 are pivoted to the bracket 35 and are respectively pivoted at 43 to the legs. Thus the legs are forced apart by the springs 40 and limited in their outward movement by the links 41. Each leg 36 is latched in its collapsed position, parallel with the standard 10, by a dog 44 pivoted on the respective pivot 42.

Each dog comprises a latch hook 45 adapted to extend through a keeper aperture 46 in the leg and to engage the edge of such aperture to hold the leg. Each dog has a tail 47 that extends inward across the lower end of the tube 10 and upward within that tube into position to be engaged by the base 14 of the shoe 13 of the extension rod 11 when the extension rod is in its fully retracted position within the standard. When the rod is in such position, the spring 19 is partly compressed so that shoe 13 bears against the tails 47 and normally holds the latch hooks 45 in position to engage the latch keeper shoulders 48 on the legs.

The hook ends of the dogs have cam surfaces 49 so shaped that the keeper shoulders can be engaged with or

disengaged from the dogs as the legs are forced into and out of their retracted position against the yielding pressure of the spring 19. The stampings that form the leg mounting bracket members 31 and 35 are identical, as stated above. The same aperture that receives the set screw 32 in bracket 31 can serve to attach the fingerhold 50 of the sliding bracket 35.

To assemble the standard and its extension rod the cap 20 is first slipped on to the extension rod 11. The guide 13 with the spring 19 seated therein is slipped over the lower end of the extension rod 11 and then the pin 17 is passed through the apertures 16 and 18 above the spring 19.

The rod 11 is then slid into the open upper end of the tube 10. The spring 30 is inserted into the cap 20 between the rod 11 and the cap carrying the spring is slipped over the upper end of the standard tube 10 in the relation in which they are shown in Fig. 3, with the top of the cap bearing against the end of the upper end of the tube 10. Then the clip 25 with the latch pin 24 attached is sprung around the sides of the cap 20 with the latch pin 24 passing through the aperture 23 of the cap 20.

The leg assemblage, which comprises the legs and the links together with the members 31 and 35 to which these are pivoted, is then slipped over the lower end of the tube 10 and the member 31 is secured to the tube by the set screw 32.

The extension rod 11 is then pressed downward into the tube 10 to its normal retracted position where the spring 30 causes the pin 24 to fall into the aperture 28 in the extension rod. At this point the shoe 13 engages the latch dogs 44 with yielding pressure in position to lock the legs 36 in their closed position.

To set up the standard, the operator pushes the extension rod in the direction of the arrow 22 and at the same time raises the extension rod 11 away from its position for engagement with the latch pin 24. This releases the dogs 44 from the pressure of the spring 19, allowing the springs 40 to throw the legs apart, whereupon the standard can be set upright to rest on the expanded legs. The extension rod can now be raised to any desired position, for which apertures 28 in the extension rod have been provided to receive the latch pin 24.

When it is desired to restore the parts to the contracted position for storage, the extension rod is pushed in the direction of the arrow 22 with respect to the standard and then brought to rest in the position in which it is shown in Fig. 3. The legs of the stand are then swung inward to lie against the tube 10. This is done by sliding the bracket 35 upward along the tube 10 by the fingerhold 50 as is usual in such devices. An advantage of having an individual dog for each leg is the simplification of the latching structure as a whole.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that numerous details of the structure shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. In a portable screen stand, a tubular standard, an extension rod slidable longitudinally within said standard, latch means adapted to hold said extension rod in extended and retracted positions in said standard, a bracket member fixed on the lower end of said standard, a bracket member slidably mounted on said standard, each said bracket member being of inverted annular cup-shape comprising a top wall having a central opening fitting snugly about the sides of said standard and having side walls bearing longitudinally against said standard, said side walls having integral outwardly extending flutes therein, each flute forming a pair of spaced hinge lugs, hinge pins carried by said hinge lugs, legs for said standard pivoted on said hinge pins of said slidable bracket member, links each pivoted at one end to one of said legs and at the other end to a respective hinge pin on said fixed bracket

member, latch dogs mounted on the hinge pins of said lower bracket member, each dog having a latch hook portion for latching engagement with a respective said leg and each having a tail portion extending into and axially of said standard, and spring means interposed between said extension rod and said tail portions and adapted to normally urge said dogs to their latching position when the rod is fully retracted in the standard.

2. A portable screen stand according to claim 1, wherein a helical torsion spring embraces each of the respective hinge pins within the flutes of the upper bracket member and bears against the bracket member and leg to normally urge the legs into their extended positions.

3. A portable screen stand comprising, a tubular standard, an extension rod slidable longitudinally within the standard, latch means adapted to hold the extension in its extended and retracted positions in the standard, a first bracket member fixed to the lower end of the standard, a second bracket member slidably mounted on the standard, each of the bracket members having a plurality of outwardly-extending flutes, legs for the standard pivoted at their upper ends to the respective flutes on the second bracket member and swingable between a spread-apart position and a collapsible position, leg-bracing links hinged at their inner ends to the flutes on the first bracket member and at the outer ends to the respective legs intermediate their ends, spring means normally urging the legs toward their spread-apart positions, latch-keeper means on each of the legs, a plurality of latch dogs respectively hinged on the pivots of the links to the second-bracket-member flutes to swing into and out of engagement with the respective leg latch-keeper means, the latch-dogs each having a tail extending inwardly of its pivot into axial alignment with the standard for depression by the extension rod in its fully-retracted position within the standard, and compression spring means bearing between the latch-dog tails and the extension rod to normally urge the latch dogs toward engagement with the leg latch-keeper means.

4. A portable screen stand comprising, a tubular standard, an extension rod slidable longitudinally within the standard, latch means adapted to hold the extension rod in its extended and retracted positions in the standard, first and second identical annular inverted cup-shaped bracket members each with a plurality of integral outwardly-extending flutes, the first member being rigidly fixed to the end of the standard and the second member being slidably mounted on the standard, legs for the standard pivoted at their upper ends to the respective flutes on the second bracket member and swingable between a spread-apart position and a collapsible position, leg-bracing links hinged at their inner ends to the flutes on the first bracket member and at the outer ends to the respective legs intermediate their ends, spring means normally urging the legs toward their spread-apart positions, latch-keeper means on each of the legs, a plurality of latch dogs respectively hinged on the pivots of the links to the second-bracket-member flutes to swing into and out of engagement with the respective leg latch-keeper means, the latch-dogs each having a tail extending inwardly of its pivot into axial alignment with the standard for depression by the extension rod in its fully retracted position within the standard, and compression spring means bearing between the latch-dog tails and the extension rod to normally urge the latch-dogs toward engagement with the leg latch-keeper means.

5. A portable screen stand comprising, a tubular standard, an extension rod slidable longitudinally within the standard, latch means adapted to hold the extension rod in its extended and retracted positions in the standard, first and second identical annular inverted cup-shaped bracket members each with a plurality of integral outwardly-extending flutes, the first member being rigidly fixed to the end of the standard and the second member being slidably mounted on the standard, legs for the stand-

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ard pivoted at their upper ends to the respective flutes on the second bracket member and swingable between a spread-apart position and a collapsible position, leg-bracing links hinged at their inner ends to the flutes on the first bracket member and at the outer ends to the respective legs intermediate their ends, springs embracing the pivots of the respective legs to the second bracket member and normally urging the legs toward their spread-apart positions, latch-keeper means on each of the legs, a plurality of latch dogs respectively hinged on the pivots of the links to the second bracket member flutes to swing into and out of engagement with the respective leg latch-keeper means, the latch-dogs each having a tail extending inwardly of its pivot into axial alinement with the standard for depression by the extension rod in its fully retracted position within the standard, and com-

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pression spring means bearing between the latch-dog tails and the extension rod to normally urge the latch-dogs toward engagement with the leg latch-keeper means.

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