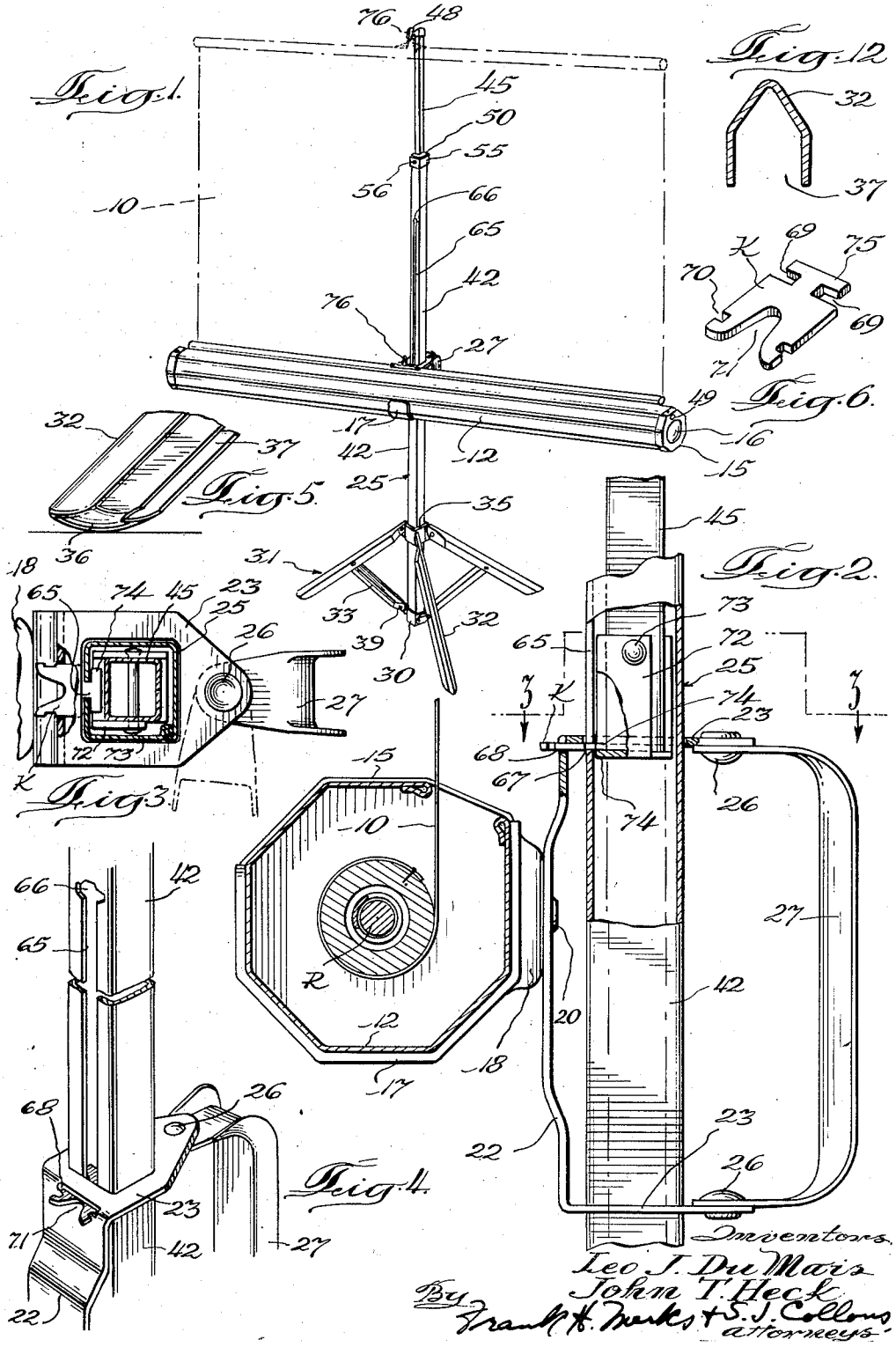
March 27, 1951 L. J. DU MAIS ET AL 2,546,299

PORTABLE PROJECTION SCREEN

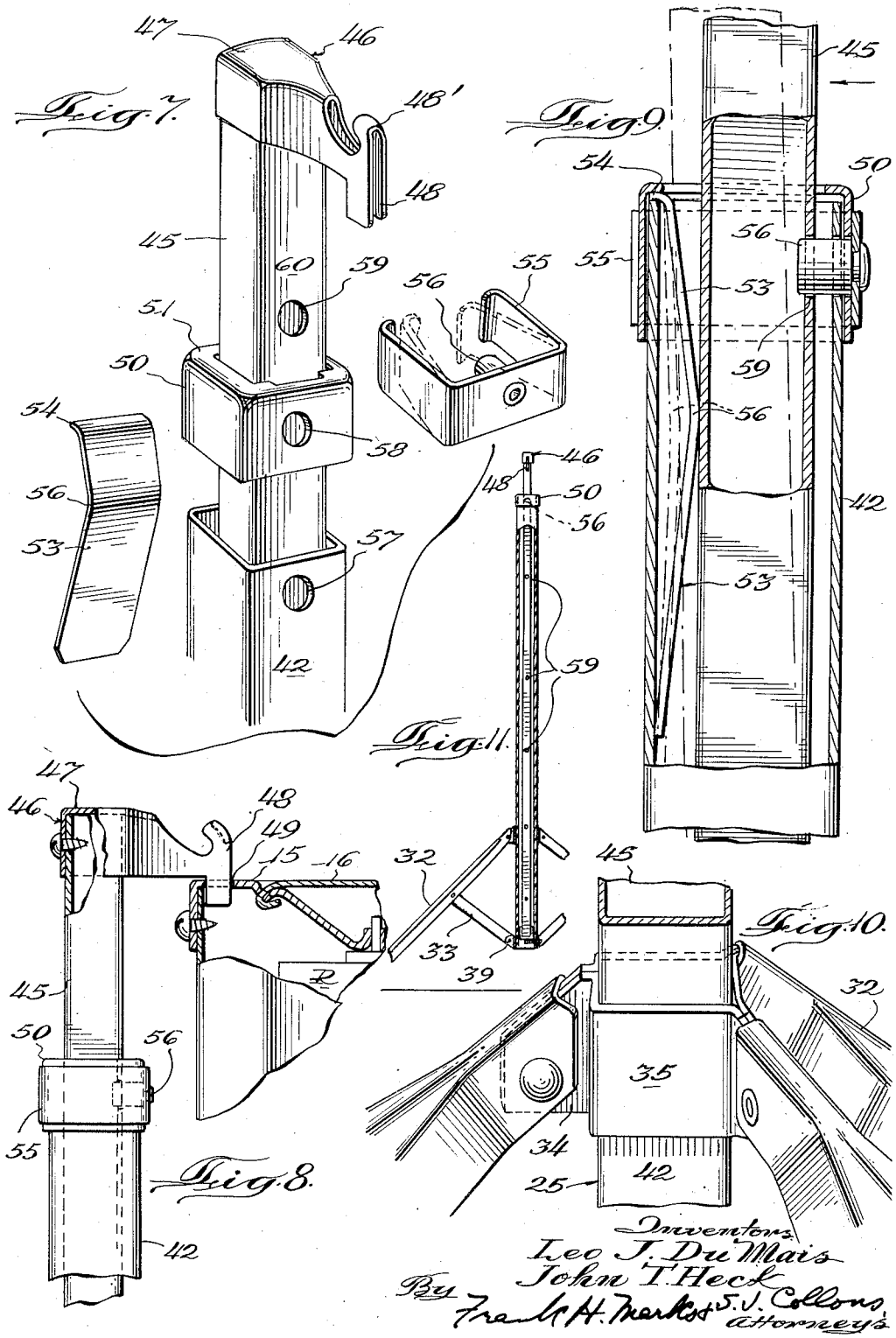
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PORTABLE PROJECTION SCREEN

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PORTABLE PROJECTION SCREEN

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6 Claims. (Cl. 160—24)

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Our invention relates to portable screens, especially designed for projection of moving pictures or other transparencies.

A particular object of our invention is to provide a portable stand or support for a screen in combination with a screen and its housing, all of which are capable of folding into a compact unit for convenience in storage and portability.

Another object is to provide a device of the type referred to which may be inexpensively fabricated out of a relatively small number of simple parts, which may be largely of sheet metal, to produce a strong, rigid and attractive unit, which will be simple in operation and of light weight.

Still another object is to provide such a device which may be quickly and easily assembled and demounted without tools.

Various other objects and advantages will probably suggest themselves to those skilled in the art, as the description proceeds.

Referring now to the drawings forming part of this specification and illustrating a preferred embodiment of our invention,

Fig. 1 is a perspective view of a screen and stand combination embodying our invention, the device being set up in position for use, the screen being shown extended in dot dash lines;

Fig. 2 is a fragmentary vertical sectional view through a mid portion of the support or stand;

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a perspective view showing details of parts shown in Fig. 2;

Fig. 5 is a fragmentary perspective view of the end of a supporting leg forming an element of our invention;

Fig. 6 is a perspective view of a locking or retaining member forming another element of our invention;

Fig. 7 is an exploded perspective view showing details of a telescopic support forming a feature of our invention;

Fig. 8 is a fragmentary vertical elevation with parts broken away, showing retention of the screen by the pedestal when the parts are collapsed as for carrying;

Fig. 9 is a fragmentary vertical sectional view of a portion of the telescopic support;

Fig. 10 is a fragmentary vertical view, partly in elevation and partly in section, showing attachment of the legs to the telescopic support;

Fig. 11 is a partial sectional view of the device, and

Fig. 12 is a transverse sectional view of one

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of the pedestal legs forming part of our invention.

The screen 10, which may be of any suitable or known type is housed within a casing 12, which may be of circular or polygonal cross section, octagonal in the form shown. The casing is provided with end caps 15, which are preferably dished in the central portion thereof. Surrounding the dished portion is a bevelled seat with a pair of opposite punctures for retaining a suitable disc 16 for imparting an attractive finish to the end of the casing 12 and concealing the end of the reel R journaled in the end caps.

Intermediate the ends of the casing 12 is a center strap 17 having a boss 18 through which extends a retaining member 20 such as a rivet, screw or the like for swivelly mounting the screen and its casing on a U-shaped bracket 22, the leg portion 23 of said bracket being perforated whereby it is slideably mounted on a pedestal or stand indicated generally by the numeral 25. Swivelly attached to the free ends of the leg portion 23 of the bracket 22 as by rivets 26 is a handle 27. By such an arrangement the handle may, when the device is stored or shipped, be swung into a position conserving space, as shown dotted in Fig. 3. This handle is so positioned that the device will be substantially balanced when carried by the handle. Pivoting the handle enables the weight of the screen to adjust itself in carrying; it also facilitates setting up the screen, when the handle may be grasped to steady the support.

Secured to the bottom end of pedestal 25 as by a screw or the like is a collar 30 for retaining a tripod 31. The tripod consists of legs 32, which are connected to the collar 30 by means of arms 33 and at their upper extremities are fastened as by rivets or the like to ears 34 formed on a bracket 35 which is slideable on the pedestal 25. The ears 34 are preferably formed at an angle of 45 degrees at their upper edges to provide maximum rigidity. The arms are so pivoted to the legs that the weight is directly carried on the arms and transferred to the legs, which causes the overlying upper portion of the legs to rest snugly on the 45 degree angle of the ears.

As seen best in Figs. 5 and 12 the legs 32 are hollow sheet metal members which form four sides of a hexagon in cross section, the ends of said sides being wiped over to form a rounded closed surface engaging foot 36. It will thus be seen that we provide hollow legs, open on the inside thereof as at 37, which combines lightness

of weight with extremely high rigidity. The arms 33 are preferably formed of similar cross-sectional contour to the legs 32, the ends of said links being pinched as at 39, where they are attached as by rivets to ears extending from the collar 30.

The screen casing 12 and its supporting bracket 22 are so disposed on the pedestal 25 with reference to the legs 31 that when the casing 12 is arranged parallel to the pedestal, as for carrying, it will lie between a pair of legs 32. Thus, when set up, the legs may be extended and the reel casing may be moved freely from vertical to horizontal position.

The pedestal 25 comprises a tube 42 which is preferably rectangular in cross section and a similarly shaped tube 45 telescopically arranged therein. The tube 45 carries adjacent its upper extremity a securing member 46 which also may be formed out of sheet metal and comprises a cap portion 47 closing the end of the tube 45 and a double hook portion 48, 48' the lower prong of which engages in a cavity 49 in one of the end caps 15 of the screen housing 12 for securing said housing in position parallel to the pedestal.

A collar 50, seen best in Fig. 7, which has its upper edges 51 rolled over to form a neat juncture between the tubes 42 and 45, retains a resilient plate or spring 53 the upper edge of which is bent as at 54, so as to be easily retained between the upper edge of the tube 42 and the underside of ledge 51 of the collar 50. The spring 53 is bowed as at 56 so as to press resiliently against the inner tube 45, as seen best in Fig. 9.

A stirrup-like resilient clip 55 embraces the collar 50, said clip having a pin 56 which extends through registered apertures 57 and 58 in the outer tube 42 and in the collar 50, respectively. This pin, 56, locks the collar or cap 50 in place and by cooperating with apertures 59 disposed at intervals along the front face 60 of the inner tube 45, also serves to lock said tube at any desired height, while the spring 53 urges the inner tube forwardly, keeping it in locked relation with the pin 56.

The outer tube 42 (see Figs. 2, 3, 4 and 6) is provided with a longitudinal slot 65, which terminates at the top in a transverse slot 66. The bracket 22 is also provided with a slot 68. A key K passing through the bracket 22 and the outer tube 42 serves to lock the screen housing and the stand in assembled relation. As seen best in Fig. 6, the key K is notched as at 69 to receive the edges of the slot 65 and ride therein. This key is also notched as at 70 to enable it to be easily grasped by the finger nails and preferably has a U-shaped cut out at its forward end, as at 71. Thus, the major weight of the dog is toward the rear thereof, a feature which facilitates its assembly. The key or dog K limits the downward movement of the case by resting at the lower end of slot 65. This assures the center or pivotal position of the case. The extension or slidable tube 45 carries the stirrup 72 quite a distance below the key and disengaged therefrom. The stirrup engages the key on upward movement after the tube 45 has been freely raised to extend the screen fabric to its full open position. Then the stirrup 72 engages key K and any further upward movement of tube 45 will carry the key and case upwardly therewith. This construction makes possible the automatic raising and lowering of the case during the adjusting movements of the tube 45. The inner tube 45 carries at its lower extremity a stirrup-like member 72 (Fig. 2) secured as by a rivet 73, said stirrup extending forwardly as at 74 to underlie T-shaped portion 75 of key K. This portion is narrower than the body of the key, so that it will pass through slot 66 while the body part will be stopped from entering the slot.

Assembly of the screen housing with the stand is simple and convenient. The bracket 22, carrying the screen housing, is passed over the outer tube 42 and arranged with its slot 68 in registry with slot 66 of the outer tube 42. The key K is then inserted through both slots until it reaches the position shown in Fig. 2, for example. It should be understood that when this assembly is accomplished the inner tube 45 may be at any position relative to the outer tube, provided stirrup 72 is below slot 66, but the inner tube is preferably fully retracted. The stirrup is inoperative in this position. In any event, the key K with the bracket and screen case will be passed down through the longitudinal slot 65 until the key comes to a position of rest at the bottom of slot 65. The cap 50 is then arranged on the end of tube 42 with spring 53 in place and locked with the spring clamp 55. This completes the assembly.

Further operation of the device will be obvious. When the screen is set up, the folding legs 31 are, of course, extended and the hook 48 disengaged from the screen casing and tube 42 raised to a desired height. The screen housing is then rotated from its position parallel to the stand to its horizontal position. The screen is then raised by means of its loop 76, and the latter is secured over the hook 48'. If desired to give the screen further elevation after the inner tube has been raised until stirrup 72 engages key K, then tube 45 may be further extended nearly the full length of slot 65 or until the stirrup 72 meets the lower end of spring 53, carrying the screen housing with it bodily, by means of the interlock of stirrup 72 and key K. The tube 45 may be fixed at any point along its length by means of apertures 59, engaging stud 56. Said apertures may be placed as close together as desired. Demounting may be accomplished by the reversal of these steps just described.

The key K is capable of slight rocking movement, whereby it dips downwardly biting into the adjacent tube when the screen is raised, by reason of the tension exerted by the casing. Thus, the case is locked against any tendency to ride upwardly on the tube. Thus, it will be seen that this key K performs several important functions.

It will be seen that we have provided a portable screen and stand which is extremely compact, formed of a minimum number of simple parts and is extremely light, while at the same time rugged and highly serviceable.

While we have disclosed the inner telescopic member as a tube for preference, because of light weight and economy of metal, it could obviously be a solid rod of light metal, plastic, etc.

Various other changes coming within the spirit of our invention may suggest themselves. Hence, we do not wish to be limited to the specific forms shown, but claim a full range of equivalents.

We claim:

1. A combination screen and stand comprising a screen reel and housing therefor, a stand comprising inner and outer telescopic members, a bracket carrying the screen housing slidably mounted on the outer telescopic member, and in-

terlocking means retaining the bracket on the stand, a member on the inner telescopic member engaging with said interlocking means after said inner telescopic member has been partially raised, after which said bracket and housing may be elevated as a unit with said inner telescopic member.

2. A device as defined in claim 1, wherein the interlocking member is removable and extends through the bracket and outer telescopic member, the latter being longitudinally slotted to provide a passage for movement of said interlocking member therealong and said slot being enlarged at one portion thereof to facilitate removal or insertion of said interlocking member.

3. A combination as described in claim 1, wherein said interlocking means comprises a key member removably disposed between the bracket and the outer telescopic member, said bracket and outer telescopic member being slotted to receive said key and the latter being tiltable in said slots to produce a clamping effect against the outer telescopic member as a result of tension produced by raising the screen, thus preventing undesirable following of the housing when the screen is raised.

4. A device as defined in claim 1 wherein the outer telescopic member has an axially elongated slot in which said interlocking member rides when the stand is extended and collapsed, said slot having an enlarged transverse portion for insertion and removal of said interlocking member when assembling and demounting the device, said inner telescopic member having means carried at the lower portion thereof engageable

with said interlocking means when said inner telescopic member has been raised substantially its full length whereby further raising of said inner telescopic member will also lift the screen housing.

5. A device as defined in claim 1 wherein the outer telescopic member has an axially elongated slot and the interlocking means comprises a relatively flat plate having a pair of opposed lateral notches serving as trackways for the side walls of said slot, said plate for its major extent being substantially wider than said slot.

6. A combination as defined in claim 5 wherein said notches are substantially wider than the thickness of metal of the walls of said slot whereby the interlocking means is capable of limited rocking movement relative to the walls of the slot.

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