March 4, 1958 L. E. COOLEY, SR., ET AL 2,825,518

PORTABLE PROJECTION SCREEN STRUCTURE

Filed May 16, 1956 2 Sheets-Sheet 1

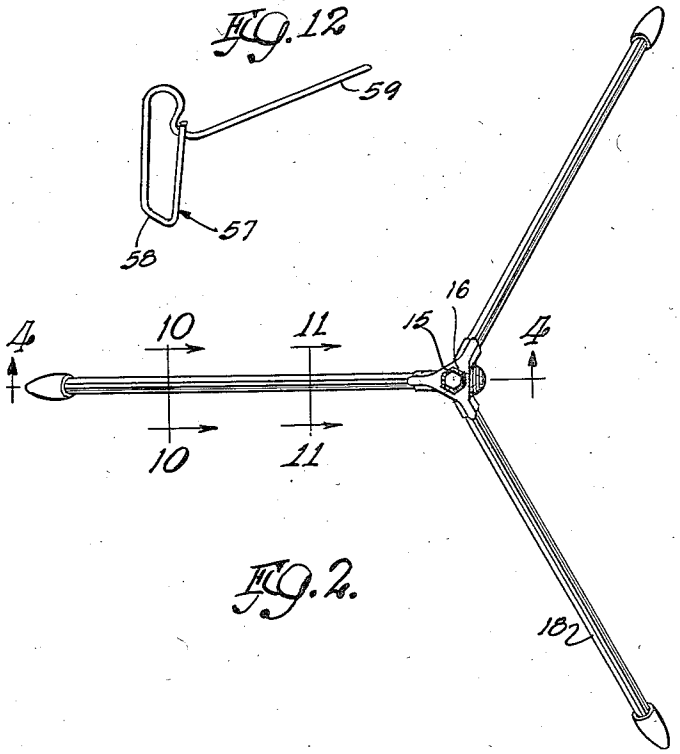


FIG. 12.

FIG. 2.

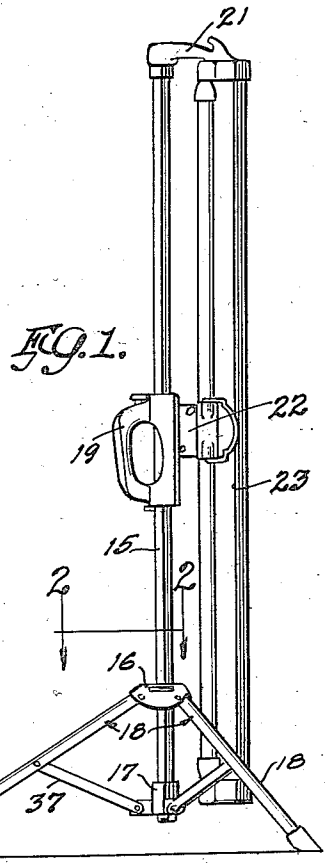


FIG. 1.

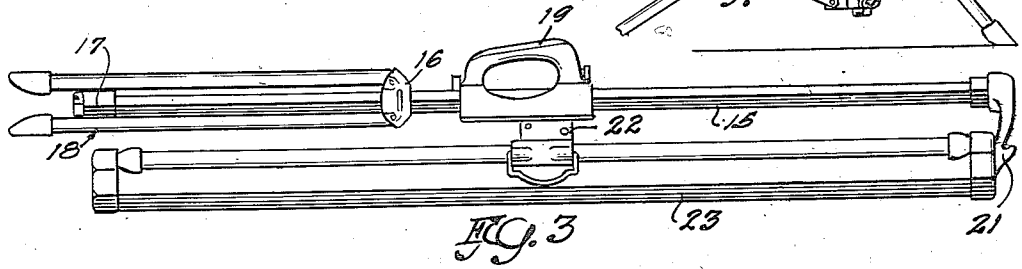


FIG. 3

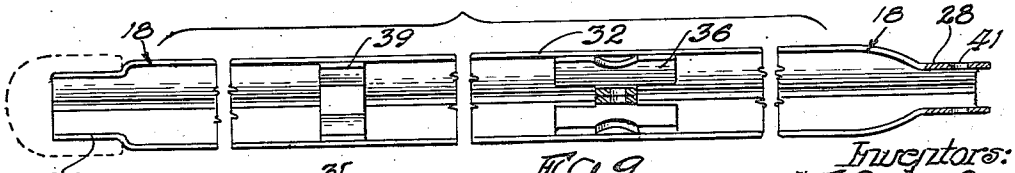


FIG. 9

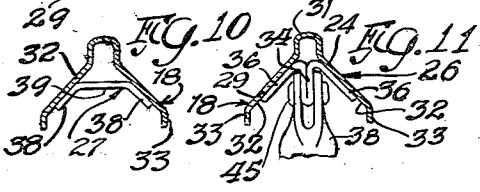


FIG. 10 FIG. 11

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PORTABLE PROJECTION SCREEN STRUCTURE

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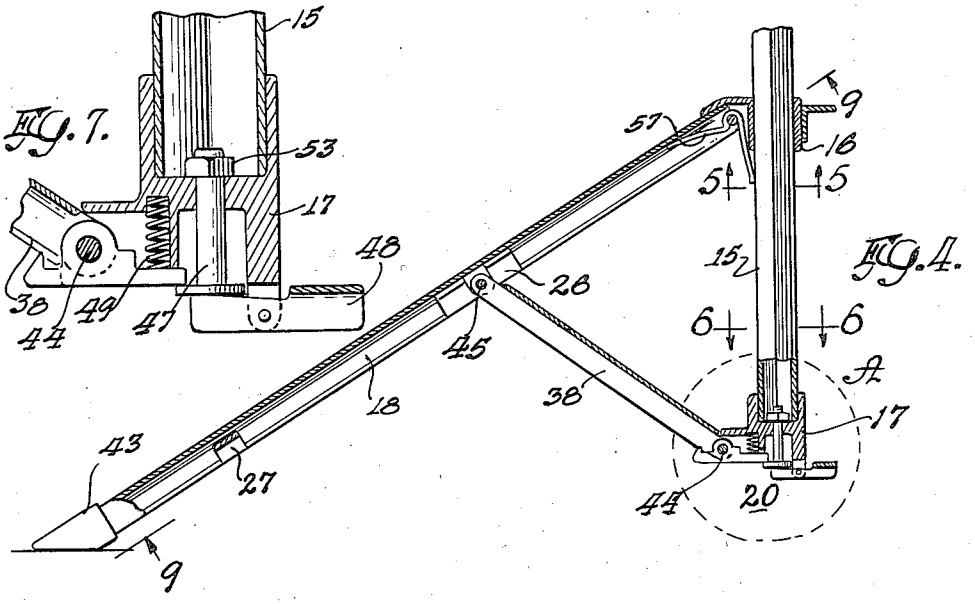


FIG. 7.

FIG. 4.

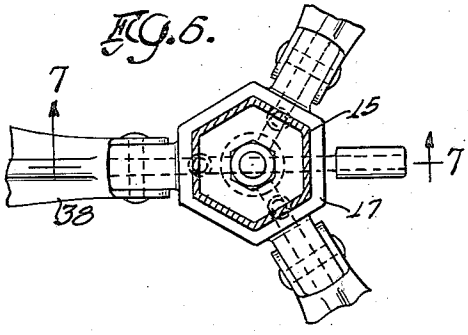


FIG. 6.

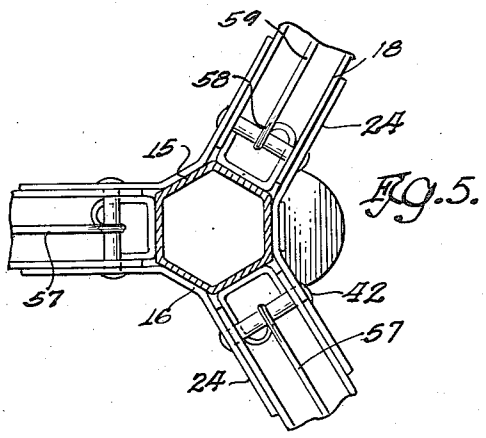


FIG. 5.

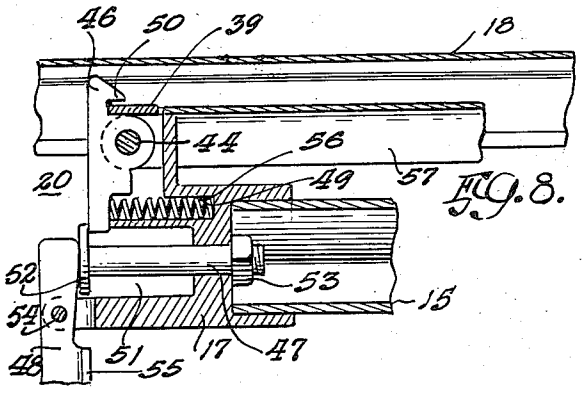


FIG. 8.

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PORTABLE PROJECTION SCREEN STRUCTURE

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Application May 16, 1956, Serial No. 585,217

5 Claims. (Cl. 248—171)

This invention relates to portable projection screen structures.

The main objects of this invention are to provide an improved form of collapsible leg structure; to provide an improved tripodal folding-leg structure formed of reinforced sheet-metal stampings; to provide an improved leg element engageable by a retractable latch means for retaining the legs in their folded position; and to provide an improved leg structure of this kind so simple in construction as to make its manufacture very economical, its support in use highly rigid, and its shifting between extended and collapsed positions most facile.

In the particular embodiment shown in the accompanying drawings;

Figure 1 is a vertical elevation of a portable projection screen structure in upright position preparatory for use;

Fig. 2 is a top plan view of the leg structure, taken on the plane of the line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 1 but showing the equipment in its folded, storage or transport relationship;

Fig. 4 is an enlarged, fragmentary, sectional detail of the leg structure, taken on the plane of the line 4—4 of Fig. 2;

Figs. 5 and 6 are transverse, sectional details taken on the planes of the lines 5—5 and 6—6, respectively, of Fig. 4;

Fig. 7 is a further enlarged, sectional detail of the leg-latch and release lever which appears in the dotted circle "A" of Fig. 4, and as viewed from the plane of the line 7—7 of Fig. 6;

Fig. 8 is a similar view of the leg-latch and release lever with the leg in folded position;

Fig. 9 is an enlarged detail of one of the legs, as viewed from the plane of the line 9—9 of Fig. 4;

Figs. 10 and 11 are cross-sectional details of the leg structure taken on the planes of the lines 10—10 and 11—11, respectively, of Fig. 4; and

Fig. 12 is an enlarged perspective view of the spring whereby the several legs are yieldingly held in their extended positions.

The essential concept of this invention involves a tripodal leg structure each of which legs is a sheet-metal stamping of Y-form internally spanned by bonded reinforcements, substantially W-shaped and C-shaped, positioned in each leg for the attachment of leg braces and engagement with the foot-pedal releasable locking latches respectively.

A portable projection screen structure embodying the foregoing concept comprises, a supporting standard 15 mounting brackets 16 and 17 whereto tripodal legs 18 are adjustably attached and locked in folded position by a foot-releasable latch means 20.

The standard 15 here is shown of hexagonal cross-section whereon is slidably supported a hand-grip 19 and wherein is housed the usual extension post mounting at its upper end a screen-bail hook 21. The hand-grip 19 mounts a fixture 22 whereto a screen housing 23 is swivelled. The details of the hand-grip 19 and the housing support fixture 22 are disclosed in copending application Serial No. 585,286, filed May 16, 1956.

The brackets 16 and 17 may be either sheet-metal stampings or castings, each having three evenly-spaced, outwardly-extending, channel-shaped wings 24 whereto parts of the leg structure are attached. The upper bracket 16 is slidable on the standard 15 whereas the lower bracket 17 is capped over the lower end of the standard 15.

Each of the legs 18 is a metal stamping of substantially Y-form and strengthened by reinforcing elements 26 and 27 and having their opposite ends constricted as at 28 and 29.

The stem part 31 of these Y-form legs 18 is U-shaped (see Figs. 10 and 11) and the outwardly-extending arms 32 have their extremities 33 bent so that they are disposed parallel to each other. To better insure the greater rigidity of these channellike legs, the reinforcing elements 26 and 27 are secured within the arms 32 of the several legs 18.

The reinforcing element 26 is a metal stamping substantially W-shape with the two middle parts 34 pressed closely together and with the two outer arms 36 disposed at the same angle as the arms 32 of the legs 18 (see Fig. 11). An element 26 is positioned in each leg 18 intermediate its ends with the arms 36 superimposed on and bonded to the leg arms 32. These reinforcing elements 26 also serve for the attachment of the outer ends of the respective leg braces 37, as more fully will appear hereinafter.

The reinforcing elements 27 are of rather open C-shape with the arms 38 angulated to the base 39 so that the element fits in superimposed position on the leg arms 32 and whereto the elements 27 are bonded. Each element 27 is positioned a short distance in from the free end of the leg and with the base part 39 of the respective element 27 intermediate the opposite lateral edges of the respective leg, that is, spaced outwardly of the crotch of the leg.

The constricted end 28 of each leg 18 has transversely-alined holes 41 drilled therein whereby those ends of the legs 18 are each hinged by pins 42 to the wings 24 on the upper bracket 16 (Fig. 4). The opposite constricted end 29 of each leg 18 is set into a composition sleeve 43 which provides a foot for friction contact with the floor to lessen the likelihood of the legs slipping on the floor.

The leg braces 37 are channel-shaped and have their opposite ends bifurcated and formed with transversely-alined holes for the reception of pins 44 and 45 for respectively hinging the braces 37 to wings 24 on the lower bracket 17 and to the compressed middle arms 34 of the W-shaped reinforcing elements 26.

The foot-releasable, leg-latching means 20 comprises latches 46, a pin 47, a foot-lever 48, and springs 49.

The latches 46 are pivoted, intermediate their ends, on the respective hinge pins 44 to dispose the hook ends 50 in position to seat over the edges of the bases 39 of the respective reinforcing elements 27 (Fig. 8). Such mounting of the latches 46 extends the inner ends into a bore 51 of the lower bracket 17 in position to be contacted by a head 52 of the pin 47.

The pin 47 is axially shiftable in the bracket 17 and has a nut 53 threaded onto the inner end to retain the pin 47 against displacement and to insure ample weight so that gravity will always hold the pin in its lowermost position on the bracket 17.

The lever 48, of which there is only one, of course, is hinged intermediate its ends on a pin 54 on the lower bracket 17 below the head 52 of the pin 47. The lever 48 is of a length to position the inner end in full and firm contact with the pin head 52 and dispose the outer end beyond the bracket 17 sufficiently to permit one's

foot to be placed on a tread 55 and depress the lever 48 to release all three latches 46 simultaneously.

The springs 49 are seated in bores 56 in the lower part of the bracket 17 outwardly of the pin bore 51. The ends of the springs 49 rest on the inner end of the several latches 46 and position them to seat the hooks 50 over the bases 39 of the respective leg-reinforcing elements 27.

As is conventional with structures of this kind, the legs 18 normally are urged and held in their extended, standard-supporting relationship by some type of spring. A form of spring 57 quite suitable for this particular leg structure, is shown in Figs. 4 and 12. As will be most apparent from the former figure, the spring loops around a hinge pin 42 with the loop 58 seated in the channel of the leg 18 and with the extension 59 pressed against the standard 15.

From the foregoing it is quite obvious that when the leg structure is folded against the standard 15, as shown in Fig. 3, the latches 46 hold the legs in such folded position. To release the legs, and permit their shifting to expanded positions, it is only necessary to depress the lever 48. This elevates the pin 47 and presses the head 52 against the inner ends of the latches 46 so as to retract the hooks 50 from engagement with the bases 39 of the respective reinforcing elements 27.

It is to be understood that details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

We claim:

1. A portable projection-screen support comprising, a standard, a bracket fixed at the lower end of the standard, a second bracket mounted on the standard for movement toward and away from the fixed bracket, supporting legs each a sheet metal stamping substantially Y-form in cross section, a pair of separately-formed leg-reinforcing elements one substantially W-shape and the other substantially C-shape internally spanning each leg and bonded thereto at longitudinally-spaced points intermediate the respective leg ends, one end of each leg being hinged to the sliding bracket, a brace hinged at opposite ends to the fixed bracket and to the W-shaped leg-reinforcing element to dispose the leg contiguously parallel to the standard when the slidable bracket is shifted away from the fixed bracket, and spring-actuated latches mounted on the fixed bracket to releasably engage the C-shaped reinforcing-elements on the respective legs to hold the legs in folded parallel position against the standard.

2. A portable projection-screen support comprising, a standard, a bracket fixed at the lower end of the standard, a second bracket slidably mounted on the standard for movement toward and away from the fixed bracket, supporting legs each a sheet metal stamping substantially Y-form in cross section, a substantially W-shaped reinforcing element positioned within each leg intermediate its ends with the two external arms thereof superimposed on and bonded to the arms of the Y-form leg, a substantially C-shaped reinforcing element positioned within each leg intermediate the W-shaped element and the lower leg end with the arms of the C-shaped element superimposed on and bonded to the arms of the respective leg, the inner end of each Y-form leg being narrower in width than the remainder of the leg and having transversely-alined apertures, pins on the shiftable bracket extending through the leg-end apertures of the respective legs to hinge the legs to the bracket, a leg brace hinged at one end to the fixed bracket and at the other end to the middle parts of the respective W-shaped leg-reinforcing element to dispose the respective legs contiguously parallel to the standard when the slidable bracket is shifted the limit of its movement away from the fixed bracket, horizontally-disposed spring-actuated latches mounted on the under side of the fixed bracket to individually releasably engage the C-shaped reinforcing elements on the respective legs to hold the legs in folded parallel position against the standard, and a lever hinged on the lower bracket in position to actuate the several latches and simultaneously retract them to release the respective legs.

3. A portable projection-screen support comprising, a standard, a bracket fixed at the lower end of the standard, a second bracket slidably mounted on the standard for movement toward and away from the fixed bracket, supporting legs each a sheet metal stamping substantially Y-form in cross section, a substantially W-shaped reinforcing element positioned within each leg intermediate its ends with the two external arms thereof superimposed on and bonded to the arms of the Y-form leg, a substantially C-shaped reinforcing element positioned within each leg intermediate the W-shaped element and the lower leg end with the arms of the C-shaped element superimposed on and bonded to the arms of the respective leg, the inner end of each Y-form leg being narrower in width than the remainder of the leg and having transversely-alined apertures, pins on the shiftable bracket extending through the leg-end apertures of the respective legs to hinge the legs to the bracket, a leg brace having one end bifurcated and hinged to the middle parts of each W-shaped leg-reinforcing element and having the other end hinged to the fixed bracket, a hooked latch for each leg pivoted intermediate its ends on the hinge connecting the respective leg brace to the fixed bracket to dispose the inner end of the latch adjacent the axis of the standard and the outer end in position to engage the C-shaped leg-reinforcing element to releasably hold the leg against the standard, resilient means interposed between the fixed bracket and each latch inwardly of its respective pivot and normally urging each latch into leg-engaging position, and a latch-retracting lever pivoted on the fixed bracket in position to actuate the several latches and simultaneously retract all the latches.

4. A portable projection-screen support comprising, a standard, a bracket fixed on the lower end of the standard, a second bracket slidably mounted on the standard for movement toward and away from the fixed bracket, supporting legs each a sheet metal stamping substantially Y-form in cross section, a substantially W-shaped reinforcing element positioned within each leg intermediate its ends with the two external arms thereof superimposed on and bonded to the arms of the Y-form leg, a substantially C-shaped reinforcing element positioned within each leg intermediate the W-shaped element and the lower leg end with the arms of the C-shaped element superimposed on and bonded to the arms of the respective leg, the inner end of each Y-form leg being narrower in width than the remainder of the leg and having transversely-alined apertures, pins on the shiftable bracket extending through the leg-end apertures to hinge the legs to the bracket, a leg brace having one end bifurcated and hinged to the middle parts of each W-shaped leg-reinforcing element and having the other end hinged to the fixed bracket, a hooked latch for each leg pivoted intermediate its ends on the hinge connecting the respective leg brace to the fixed bracket to dispose the inner end of the latch adjacent the axis of the standard and the outer end in position to engage the C-shaped leg-reinforcing element to releasably hold the leg against the standard, a headed pin axially shiftable on the under side of the fixed bracket with the head adjacently below the inner ends of the several latches, springs interposed between the inner ends of each latch and the bracket to urge the inner latch ends into contact with the pin head, and a lever hinged on the fixed bracket to dispose the inner lever end in contact with the under side of the pin head and the outer lever end in position to be engaged by a foot to simultaneously retract the several latches.

5. A portable projection-screen support comprising, a

standard, a bracket fixed on the lower end of the standard, a second bracket slidably mounted on the standard for movement toward and away from the fixed bracket, supporting legs each a sheet metal stamping substantially Y-form in cross section with the stem portion thereof channel shaped in cross section, a pair of separately-formed leg-reinforcing elements, one of the elements being substantially W-shape with the two outer parts of the W-shape having the same angular disposition as the two diverging parts of the Y-form leg and with the two middle parts of the W-shape compressed together in parallel relationship, the other elements being C-shape with the two outer parts having the same angular disposition as the two diverging parts of the Y-form leg, a pair of the elements being positioned in each leg at longitudinally-spaced points intermediate the leg ends with the angularly-disposed parts of the respective elements seated against and bonded to the respective diverging

parts of the legs, one end of each leg being hinged to the sliding bracket, a brace hinged at opposite ends to the fixed bracket and to the parallel middle parts of the W-shaped leg reinforcing element to dispose the leg contiguously parallel to the standard when the slidable bracket is shifted away from the fixed bracket, and spring-actuated latches mounted on the fixed bracket to releasably engage the C-shaped reinforcing elements on the respective legs to hold the legs folded against the standard.

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