March 21, 1933. O. W. PINEO 1,902,373

PORTABLE SCREEN

Filed Nov. 13, 1931

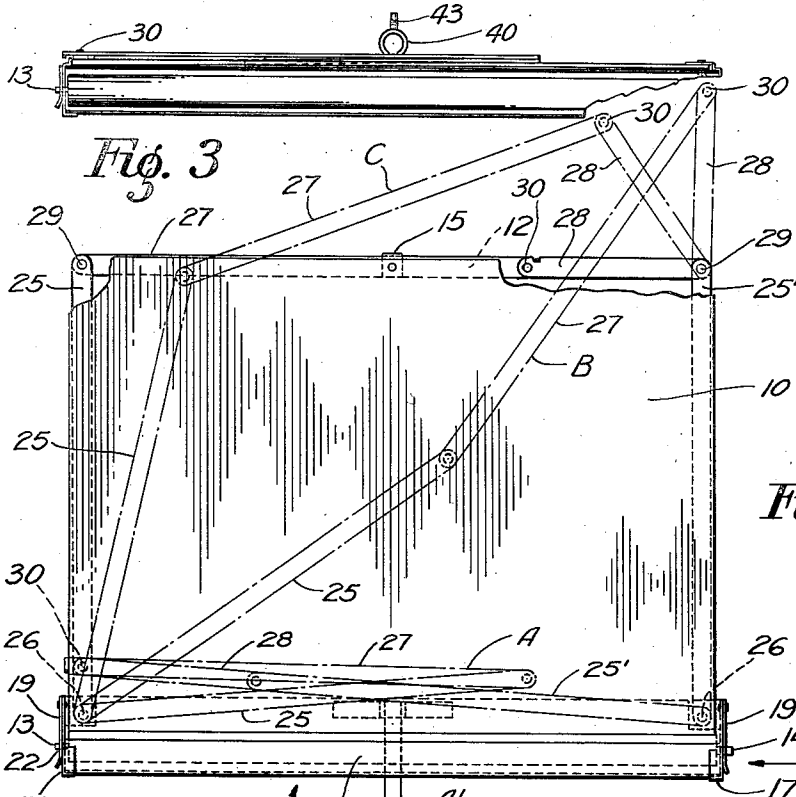


Fig. 1

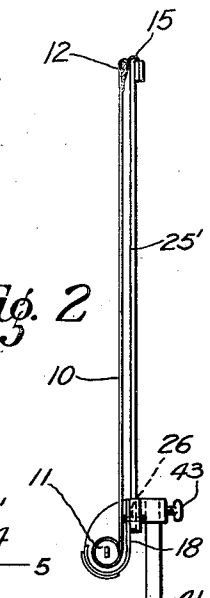


Fig. 2

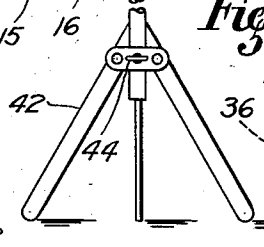


Fig. 4

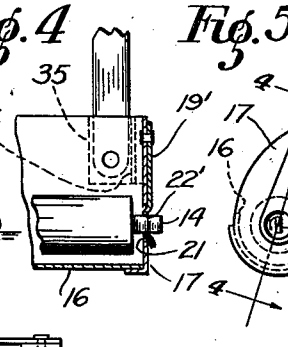


Fig. 5

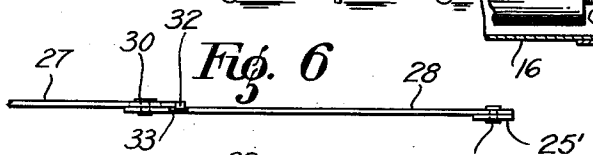


Fig. 6

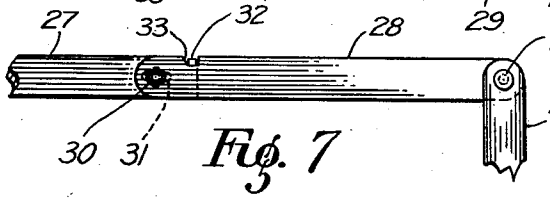


Fig. 7

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UNITED STATES PATENT OFFICE

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PORTABLE SCREEN

Application filed November 13, 1931. Serial No. 574,878.

My invention relates to screens and more particularly to portable screens as used in connection with home movies.

The object of my invention is to provide a simple and inexpensive portable screen assembly which is light in weight, easy to assemble and disassemble.

In the accompanying drawing, which illustrates my invention, Figure 1 is a front elevation, showing a screen assembly embodying my invention, in its erected position. This figure also indicates in broken lines, successive positions which the frame members assume during erection of the screen.

Figure 2 is a side view of the screen assembly shown in Fig. 1.

Fig. 3 is a plan view of the screen assembly partly broken away, showing it in the "knocked down" or disassembled position.

Figure 4 is an enlarged front sectional view taken on the lines 4—4 of Fig. 5, showing the screen casing.

Fig. 5 is an enlarged fractional end view seen from the direction of the arrow 5 of Fig. 1.

Fig. 6 is a fragmental plan view of the upper link members of the frame showing these members in their extended and locked position.

Fig. 7 is a side view of the links shown in Fig. 6.

The screen assembly comprises a screen 10, which may be of any suitable material as used for motion picture screens, and a foldable supporting frame.

The screen 10 is secured along one edge to a spring tensioned roller 11 carried in a case or housing 15. The case 15 comprises a curved cross-member 16 and end pieces 17—17 attached thereto by rivets, welding or other suitable means. The end pieces 17—17 are provided with holes 21—21 (see Fig. 4), through which extend the pivotal ends of the screen roller, one end 13 being cylindrical and the other end 14 square. The pivots 13 and 14 are retained by resilient bearings 19—19′ suitably attached to the end pieces 17—17.

The spring tensioned roller 11 is of a common construction such as is used for window shades and by the means just described is removably supported by the clips 19 and 19′, the former being provided with a circular hole 22 and the latter with a square slot 22′, which with the cooperating roller end 14 forms a stop against which the tension of the roller spring may act when the screen is unwound.

The curved portion 16 of the case terminates in an integral vertical cross-member 18 forming a base for mounting the frame members hereafter described.

A collapsible screen frame consists of four arms or links. The two arms 25 and 25′ are equal in length and pivotally mounted to the outer ends of the base 18 at 26—26, and are adapted to form the sides of the frame. The arms 27—28 are of unequal lengths and are pivoted to the arms 25 and 25′ at 29—29, respectively. The arm 27 is of the same length as the arms 25 and 25′ and the arm 28 is equal in length to the difference between the width and the height of the screen. The arms 27 and 28 are connected by means of a pivot 30 and a slot 31. An offset tongue 32 provided in the longer arm 27 cooperates with a recess 33 provided in the top edge of the shorter arm 28, to secure the frame in its extended position.

In the extended position the frame forms a rectangle as shown in Fig. 1. Angle pieces 35—35 at the ends of the base 18 form outer bearings for the pivots 26—26 and are provided with vertical edges 36—36 against which the arms 25—25 abut in their vertical or extended position.

In the collapsed position of the frame the arms fold compactly on themselves and lay against the base 18 without extending beyond the ends of the case 15.

Centrally located near the upper edge of the base 18 is a socket 40 provided with a thumb screw 43, by which means the screen assembly is adjustably fixed to a standard 41 of a tripod 42 provided for its support. The tripod is further provided with a thumb screw 44 which permits telescoping of the standard when not in use.

The setting up of the screen assembly is accomplished as follows: The tripod 42 is

placed upon the floor with legs spread and the standard 41 is raised and fixed in position by means of the thumb screw 44. The screen assembly in its folded position is indicated in Fig. 1 by the lowermost group of broken lines A, is secured to the projecting standard of the tripod by means of the socket 40 and thumb screw 43, after which the screen supporting frame is expanded as follows:

The arms 27 and 28 are grasped at their pivotal point 30 and raised upwardly and to the right until the arm 25′ connected to the shorter arm 28 has assumed a vertical position against its stop 36. The parts then assume a position shown in Fig. 1 by the intermediate group of broken lines B. The then vertical arm 25 is manually held against its stop and the longer arm 27 is raised upwardly and to the left further raising the opposite arm 25 and lowering the arm 28, whereby the parts assume the position shown by the topmost group of broken lines C.

The continued leftward and downward movement of the arm 27 brings the parts into their extended position as shown by the full lines of Fig. 1, downward movement of the arms 27 and 28 below the horizontal being prevented by the engagement of the offset tongue 32 with its cooperating recess 33, while movement of the arms 25—25 outward beyond the vertical position is prevented by the stops 36—36.

The parts thus form a light, rigid and rectangular frame well adapted to support the screen proper. The free edge of the screen is provided with a strip of wood 12 or other material reenforcing it and provided with a hook or clip 15 adapted to engage the upper cross-member of the frame and thus hold the screen 10 in position.

To disassemble the screen assembly the screen proper is first unhooked and allowed to roll under the action of the roller spring (not shown) into position in the casing, where unwinding is stopped by the wedging action of strip 12 and hook 15. The frame is folded by a reversal of the operations described in connection with its erection.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A portable screen assembly comprising a casing and a plurality of links adapted to form a frame, two of said links being of equal length and secured to the two ends of said casing to form the sides of the frame, and two links of unequal length connected to said side links, and adapted to form the top of the frame, the longer one of the top links being of equal length to the side links and the shorter one of the top links being equal in length to the difference between the width and length of the screen.

2. A portable screen assembly comprising a casing and a plurality of links adapted to form a frame, two of said links being of equal length and secured to the two ends of said casing to form the sides of the frame, and two links of unequal length connected to said side links, and adapted to form the top of the frame, and means to secure said frame in its extended position through engagement of the two top links.

3. A portable projection screen assembly comprising a screen, a casing, and a frame structure for the support of the unfolded screen, said frame structure comprising a casing to form the bottom member of the frame and to house the screen when it is folded, two links connected to the two ends of the casing and forming the sides of the frame, and a plurality of links connected to the side links to form the top of the frame, the longest of said top links being equal in length to the side links.

4. A portable projection screen assembly comprising a screen, a casing, and a frame structure for the support of the unfolded screen, said frame structure comprising a casing to form the bottom member of the frame and to house the screen when it is folded, two links connected to the two ends of the casing and forming the sides of the frame, and a plurality of links connected to the side links to form the top of the frame, said top links having cooperating means to secure the frame in its extended position, and means to stretchingly engage the screen with one of the top links.

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