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SCREEN FRAME FIXTURE

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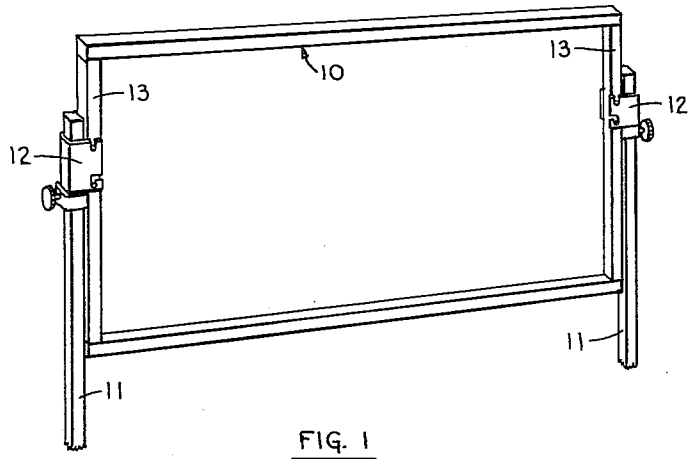


FIG. 1

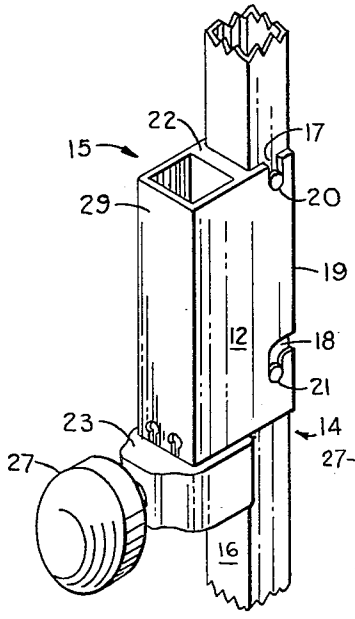


FIG. 2

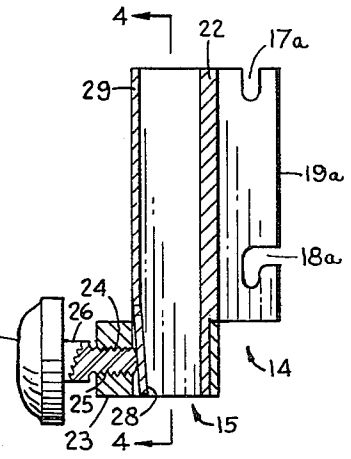


FIG. 3

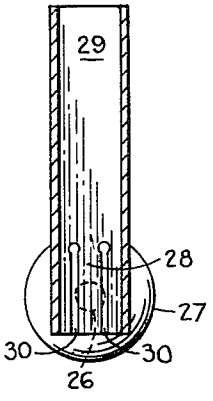


FIG. 4

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SCREEN FRAME FIXTURE

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The present invention relates to an improved frame supporting fixture for a picture projection screen.

In order to adjust the height of portable motion picture screens to accommodate the screen to the environment in which it may find use, it has been customary to provide means for adjustably interconnecting the uprights supporting the screen and the screen frame. Although fixtures employing a friction locking device which permit infinite variation in the adjusted height of the screen, within the practical limits of the uprights, are most desirable, the fixtures of this type known in the past have not been satisfactory. The friction lock has either failed to support the weight of the screen frame and screen, or if designed to overcome this limitation, the set or lock screws used to develop the friction between screen frame and upright have imposed localized stresses on the uprights damaging the uprights. Consequently, resort has been made to other means for supporting the larger sized portable screens. One common means includes studs which are fixed to the ends of the frame and which are engageable with apertures cut into the uprights at regularly spaced intervals. This type of arrangement limits the height adjustment to the predetermined positions at which the apertures are provided on the uprights. Also, cutting a plurality of slots in the upright tends to weaken the upright as well as increase its cost of manufacture.

It is an object of the present invention to provide an improved fixture of the friction lock type which overcomes the limitations of prior known devices of this general type.

The improved fixture may be described generally as having a first bracket portion for engaging the screen frame and a second bracket portion for receiving the upright. The second bracket portion is equipped with an improved friction lock by means of which the fixture may be firmly fixed relative to the uprights supporting the screen frame at any height desired.

In the single sheet of drawings accompanying the specification:

FIG. 1 is a perspective view of a screen frame, a pair of screen uprights and the improved fixture showing the interrelation of the three;

FIG. 2 is a perspective view of the improved fixture and a segment of the screen frame illustrating a preferred means of removably attaching the fixture to the screen frame;

FIG. 3 is a plan view in section of the fixture; and

FIG. 4 is taken along the line 4—4 of FIG. 3.

Referring to the drawings and first to FIG. 1, a screen frame **10** is shown supported upon a pair of uprights partially shown at **11, 11** by the improved fixtures **12, 12**. The fixtures **12, 12** are not adjustable with respect to the screen frame **10**. They are attached to the sides of the frame **10** at or above the mid-point of the side members **13, 13** of the frame **10** and are each positioned an equal distance from the top of the frame.

The screen frame **10** and the uprights **11, 11** are fabricated of extruded aluminum so as to be strong yet light in weight. The frame and uprights illustrated are square in cross-section. This configuration readily lends itself to the structures herein described. However, the cross-sectional configuration is not controlling, and the geometry of the fixture may be varied to accommodate uprights and screen frames having other cross-sectional shapes.

The improved fixture is shown in detail in FIGS. 2, 3, and 4. Turning now to these figures, it will be noted that the fixture **12** is relatively high so as to engage both screen frame **10** and upright **11** firmly and securely along a substantially long portion of each. As best seen in FIG. 2, the fixture **12** is made up of two bracket portions designated generally by the reference numerals **14** and **15**. The bracket **14** is U-shaped in horizontal cross-section and fits about three sides of the screen frame segment **16**. The bracket **14** may be permanently affixed to the screen frame, but, preferably, the two are removably joined. As shown in FIG. 2, this is accomplished by providing, in the side of the U-shaped bracket **14**, an upper slot **17** and a lower slot **18**. The upper slot **17** is positioned vertically and opens to the top of bracket portion **14**. The lower slot **18** is a compound slot having a horizontal section opening to the inner face **19** of the bracket **14** and merging at its opposite end with a vertical section. The upper slot **17** and the vertical section of the lower slot **18** are aligned one with the other and are each parallel to the inner face **19** of the bracket **14**. Each of the slots **17** and **18** are engageable with identical upper and lower pins **20** and **21**, respectively, extending through the frame segment **16** so as to engage identical slots **17ª** and **18ª** cut in the opposite wall of bracket **14** (FIG. 3).

The frame segment **16** and fixture **12** may be disengaged by lifting the frame segment **16** relative to the fixture **12**, which movement frees the pin **20** from the slots **17** and **17ª** and positions the pin **21** at the junction of the vertical and horizontal sections of slots **18** and **18ª**, and then by moving the fixture **12** laterally away from the frame segment **16**. The latter movement frees the pin **21** from the horizontal section of the slots **18** and **18ª**.

The bracket portion **15** of fixture **12** has a horizontal cross-sectional configuration identical to that of the upright **11** on which it will be received. The inner dimensions of the bracket **15** are such that the fixture **12** slips over and around the upright **11** with a slack or relaxed fit so as to permit the fixture **12** to be freely slidable axially of the upright **11** when the friction lock, to be discussed subsequently, is not engaging the upright. As here illustrated, the two bracket portions **14** and **15** have a common wall **22**. This structural arrangement is not essential to the fixture, however, and indeed is not practical if the two brackets have other cross-sectional configurations than those shown, for example, semi-circular and circular, respectively. In such case the two brackets **14** and **15** may be joined by any convenient means. A friction lock is fitted to the bracket **15** at its lower end. The friction lock includes a set or lock screw plate **23** fixed to the exterior of the bracket **15**. The plate **23** has a drilled and tapped opening **24** therethrough for receiving the threaded end **25** of a lock screw **26**. A suitably shaped, knurled knob **27** is attached to the opposite end of the lock screw **26** to facilitate manipulation of the lock screw. The face of the threaded end **25** moves into abutting engagement with a friction plate **28** as the lock screw **26** is screwed into the tapped opening **24**.

The friction plate **28** is a part of the wall **29** of bracket **15**. It is formed by the parallel cuts **30, 30** (FIG. 4), of equal length, extending vertically upwardly from the bottom to a region medial of the wall **29**. The friction plate **28** is thus freed on three of its sides from the wall **29**, and, under the influence of the lock screw **26**, it may be biased inwardly at its lower end as most easily seen in FIG. 3. As the free end of the cantilevered friction plate **28** is urged inwardly it bridges the small space resulting from the relaxed fit between bracket **15** and an upright **11** receivable within bracket **15** and comes into engagement with one wall of the upright **11**. Ultimately, the lock screw **26**, through the friction plate **28**, may be made to force the opposite wall of the upright **11** into frictional

engagement with the entire surface area of bracket wall **22** establishing a strong lock between the upright **11** and the fixture **12**.

As the friction plate **28** has an area many times greater than the area of the face of the threaded end **25** of lock screw **26** in contact with the upright **11**, the force exerted by lock screw **26** on the upright **11** per unit of area is greatly reduced. The lock screw **26** may be vigorously tightened so as to exert a force of sufficient magnitude to establish a strong locking engagement for supporting the screen frame **10** at the desired height on the uprights **11** without fear or danger of indenting the walls of the upright **11**, damaging them, and limiting future utility of the upright.

We claim:

1. The combination with a picture projection screen frame and a screen frame supporting upright, of a bracket by which the screen frame is detachably supportable at selectable elevations on the upright, the bracket having an elongated opening therethrough providing a slideway through which the upright extends telescopically for adjustment of the bracket therealong, said opening being defined by bracket walls one of which has a pair of laterally spaced slits providing an elongated bendable wall portion therebetween and the bracket having a threaded member thereon which is operable to clamp said bendable wall portion against the upright to lock the bracket in selectable positions of adjustment along the upright, and the bracket having means by which a portion of the projection screen frame is detachably securable thereto in general parallelism with the upright in said opening of the bracket.

2. The combination as defined in claim 1 wherein the elongated bendable wall portion is a tongue at one end of the elongated opening and the threaded member is carried by a stirrup which has an opening through which an end portion of the bracket extends.

3. The combination with a picture projection screen frame and a screen frame supporting upright, of a bracket

by which the screen frame is detachably supportable at selectable elevations on the upright, the screen frame having an elongated rectilinear portion which is cooperable with the bracket for detachable interengagement thereof and the bracket being provided with a pair of elongated parallel slideways which are open at their opposite ends to accommodate and hold the said elongated rectilinear portion of the screen frame and the upright respectively therein in generally parallel relation to one another, one said slideway forming a generally tubular enclosure through which the upright extends telescopically for adjustability of the bracket lengthwise of the upright and the other slideway being open at one side for reception of said elongated rectilinear portion of the screen frame sidewise therein to a confined position of longitudinal slideability therein, said bracket having parallel opposite side walls integral with and interconnected in laterally spaced apart relation by laterally spaced intervening walls which are disposed at one side of the open sided slideway and at the opposite sides respectively of the other slideway, one of said walls being slitted to provide a tongue which is straddled by a yoke having an adjusting screw extending therethrough by which the tongue is adjustable to clamp the supporting upright in the slideway which forms a generally tubular enclosure.

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