

June 25, 1940.

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2,205,869

EXTENSION LEG

Filed June 29, 1939

2 Sheets-Sheet 1

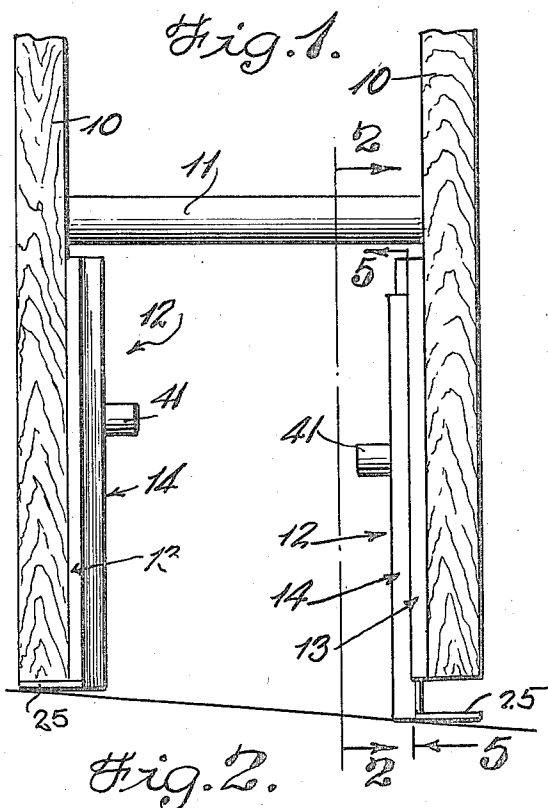


Fig. 2.

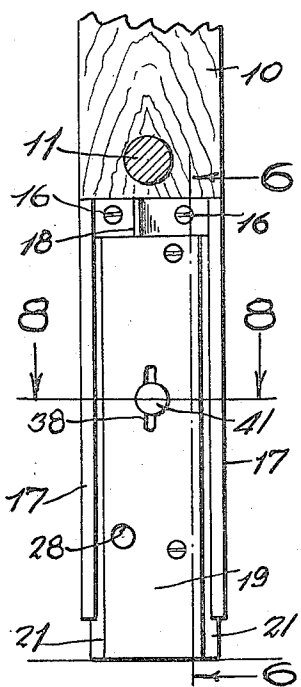
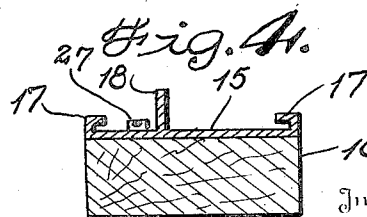
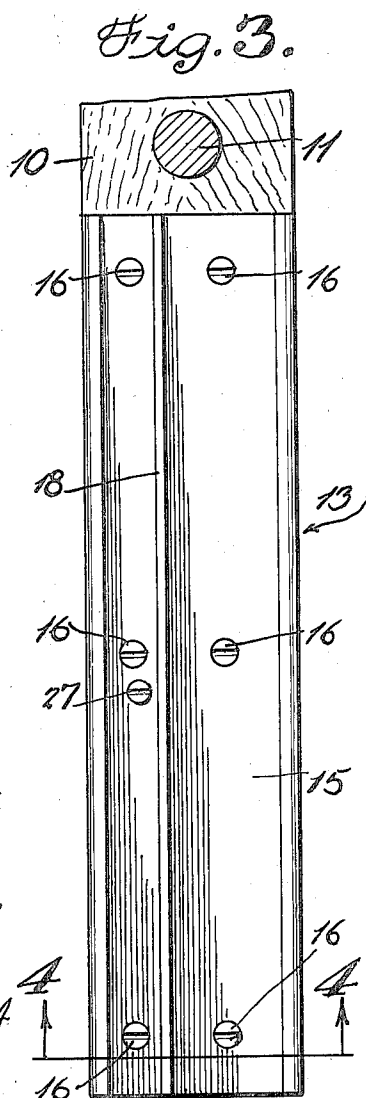
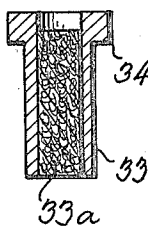


Fig. 9.



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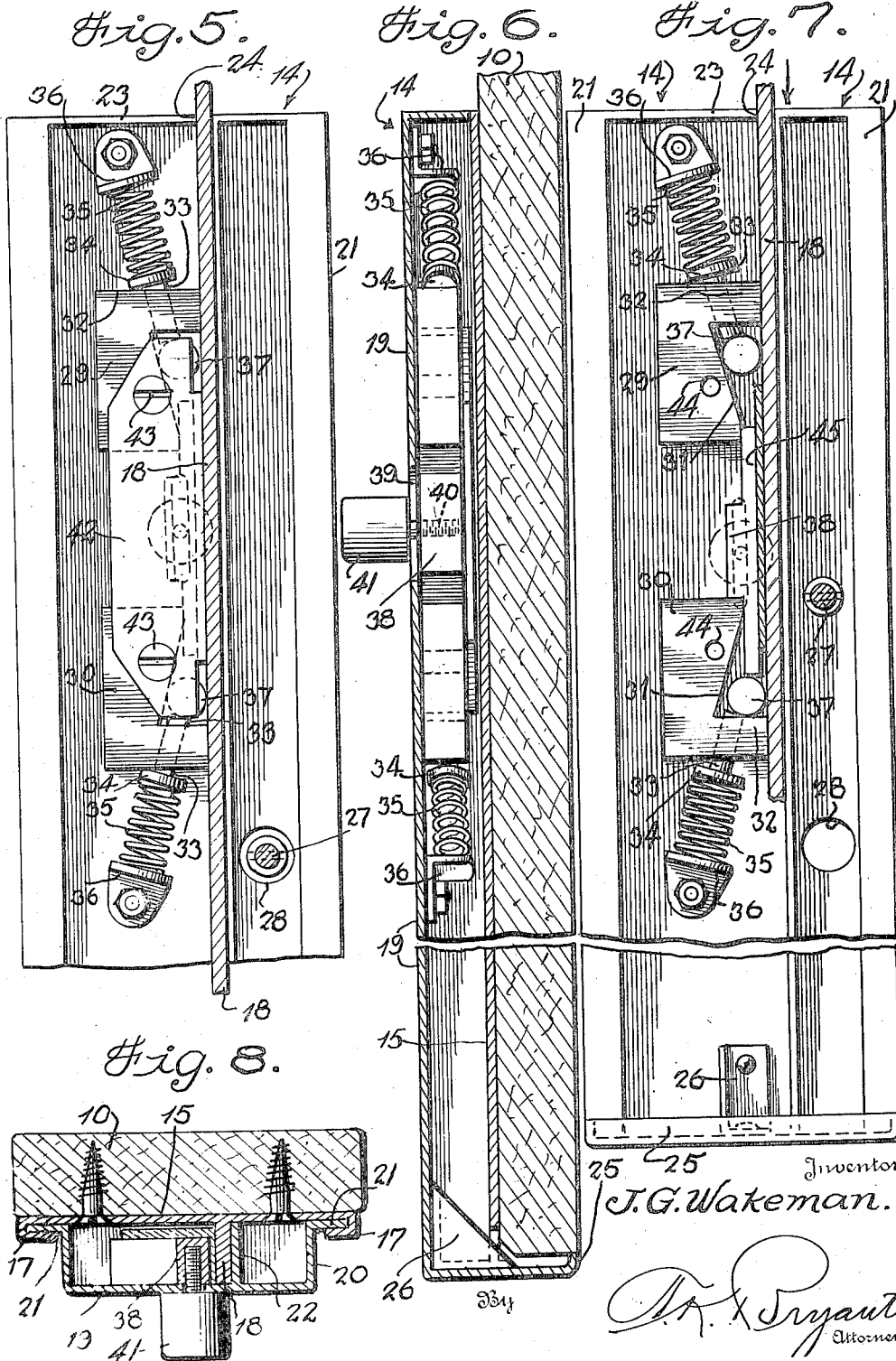
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,205,869

EXTENSION LEG

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Application June 29, 1939, Serial No. 281,955

7 Claims. (Cl. 228-63)

This invention relates to certain new and useful improvements in extension legs.

The primary object of the invention is to provide an extension leg or leveling device especially designed for use with or attachment to ladders, the construction thereof being such that the same is capable of use with articles of furniture of different types, such as tables and tripods or other supporting elements.

A further object of the invention is to provide an extension attachment for the legs of a ladder that are easily and quickly adjustable for changing the relative length of the side rails or legs of a ladder so that the same may be positioned in a true upright position irrespective of the unevenness of the ground or other support upon which the ladder is placed.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combinations and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings:

Figure 1 is a fragmentary front view of a ladder equipped with the extension legs, one of said legs being lowered for the support of the ladder in a vertical position;

Figure 2 is a fragmentary vertical cross-sectional view taken on line 2-2 of Figure 1, showing the extension legs secured to the inner side of the side rail of the ladder;

Figure 3 is an enlarged inner side view of the side rail of the ladder showing a part of the extension leg rigidly secured to the side rail of the ladder;

Figure 4 is a cross-sectional view taken on line 4-4 of Figure 3;

Figure 5 is a vertical longitudinal sectional view taken on line 5-5 of Figure 1, showing the movable part of the extension leg wedgingly engaged with the stationary part of the extension leg that is secured to the side rail of the ladder;

Figure 6 is a fragmentary longitudinal sectional view taken on line 6-6 of Figure 2;

Figure 7 is a longitudinal sectional view, similar to Figure 5 with the cover plate of the wedge devices removed and with the latter positioned to permit extensible movement of the extension legs;

Figure 8 is a cross-sectional view taken on line 8-8 of Figure 2; and

Figure 9 is a longitudinal sectional view of the tensioned roller operating pin equipped with a lubricating wick.

Referring more in detail to the accompanying drawings, the reference character 10 designates the side rails of a ladder connected in the usual manner by the cross steps or rungs 11, an extension leg designated in general by the reference character 12 being attached to the inner face or side of the lower end of each side rail 10.

Each extension leg is formed of two parts designated in general by the reference characters 13 and 14 respectively, the part 13 being rigidly secured to a rail 10 of the ladder while the part 14 is slidably associated with the part 13. The part 13 of the extension leg as shown more clearly in Figures 3, 4 and 8, comprises an elongated plate 15 of the same width as the rail 10 of the ladder and is secured to the inner face of the rail by means of screws 16 having their heads flush with the upper face of the plate 15, each longitudinal side edge of the plate 15 is turned inwardly as shown in Figures 4 and 8 to provide a guide channel 17 with which the slidable part 14 of the extension leg is associated in a manner presently to be described. A longitudinally extending rib 18 perpendicularly rises from the base plate 15 for purposes presently to appear.

The movable part 14 of the extension leg 12 cooperates with the plate 15 to form a casing or housing and includes an elongated outer wall 19 having longitudinal side walls 20 extending at right angles thereto, the free edge of each side wall 20 being bent outwardly at right angles to provide side edge flanges 21 slidable in the guide channels 17 as shown in Figure 8. A longitudinally extending rib 22 is carried by the inner face of the outer wall 19 and constitutes a brace or support for the rib 18 carried by the stationary plate 15. The cross wall 23 is carried by the upper end of the wall 19 between the side walls 20 and has an opening 24 therein for the passage of the rib 18 as shown in Figures 5 and 7. A laterally directed foot 25 is carried by the lower end of the extension leg part 14 and underlies the side rail 10 of the ladder, the same being reinforced by the angle brace 26 shown in Figures 6 and 7. For limiting extensible movement of the leg part 14 relative to the leg part 13, a headed screw 27 is driven through the plate 15 of the stationary leg part into the side rail 10 of the ladder with the head thereof projecting above the surface of the plate 15, said screw 27 being located in proximity of the transverse median line of the plate 15, or elsewhere if desired and disposed for engagement by the cross wall 23 of the slidable part 14 of the extension leg to limit extensible movement of the latter relative to the

stationary part 13. An opening 28 is provided in the outer wall 19 of the slidable part 14 of the extensible leg to facilitate the positioning of the top screw 27 after the two parts 13 and 14 are assembled.

Spring pressed wedge devices cooperating with the rib 18 of the stationary plate together with a manually operated release therefor are carried by the slidable section 14 of the extension leg and as shown more clearly in Figures 5 to 7 there is provided a pair of longitudinally spaced wedge blocks 29 and 30, each having an inclined wedge face 31 respectively inclining upwardly and downwardly away from the rib 22 carried by the wall 19. A laterally directed arm 32 is carried by the upper and lower ends respectively of the wedge blocks 29 and 30 and is directed toward and terminates in spaced relation to the rib 22. A pin 33 slidably extends through each arm 32 into the angle area of the wedge block afforded by the wedge face 31 and the adjacent side of the arm 32, each pin 33 carrying a disk head 34 outwardly of the arm 32 that is normally held in engagement with said arm by means of an associated coil spring 35 engaged at one end with said disk head while the other end of the coil spring is engaged with an abutment 36 anchored to the inner face of the outer wall 19. A cylinder or roller 37 is freely mounted in each triangular area bordered by the inclined face 31 of the wedge block and the adjacent wall of the arm 32 and being engaged by the inner end of the tensioned pin 33 is influenced in a direction toward the rib 22. It will be observed that the rollers 37 engaged by the tensioned pins 33 and movable over the inclined faces 31 of the wedge blocks 29 and 30 act in opposite directions and each of said wedge rollers 37 is rendered inoperable by a manually operated device.

As shown more clearly in Figures 6 and 7, a slide rod 38 is mounted within the wall 19 in proximity of the rib 22 and the opposite ends thereof are disposed for reception in the triangular areas that house the wedge cylinders 37, the rod 38 being slidable to cause the ends thereof to selectively engage the wedge cylinders for rendering them inoperative. As shown in Figure 6, the outer wall 19 of the extensible leg section 14 is provided with a longitudinal slot 39 for the passage of the threaded shank 40 that is engaged with the slide rod, the threaded shank 40 being carried by a slide rod operating button 41 positioned at the outer side of the wall 19. A cover plate 42 overlies the slide rod 38 and is anchored to the wedge blocks 29 and 30 by means of screws 43 that thread into openings 44 in the wedge blocks 29 and 30. A longitudinally extending flange 45 is carried by one edge of the cover plate 42 and cooperates with portions of the wedge blocks 29 and 30 for guiding the slide rod 38 in its movements.

When the two parts of the extensible leg are assembled as shown in Figures 1 and 2 and fragmentarily assembled as shown in Figures 5 and 7, and it being desired to lower the extension leg part 14 relative to the stationary leg part 13 as shown in Figure 1, the operating button for the slide rod 38 is lowered in the slot 39 which causes the lower end of the rod 38 to engage the wedge roller 37 associated with the lower wedge block 30 against the tension of the spring 35 associated therewith, the lower wedge roller 37 being freed of frictional binding engagement with the rib 18 carried by the stationary plate 15 while the wedge roller 37 associated with

the upper wedge block 29 will roll upwardly on the outwardly directed inclined wedge face 31 of the upper wedge block 29 to permit the extensible parts 14 of the leg to be lowered. When pressure on the operating button is released, the spring pressed pins 33 then move both wedge rollers 37 along the inclined wedge faces 31 of the wedge blocks 29 and 30 into binding engagement with the stationary rib 18 so that the extensible leg section or part 14 is then rigidly held against movement in either direction. When it is desired to retract the extensible leg part 14 to the position shown at the left hand side of Figure 1, the operating operator button 14 is moved upwardly in the casing slot 39 to position the wedge roller 37 associated with the upper wedge block 29 at the upper end of the inclined wedge face 31 and upward movement of the extensible leg section 14 will cause the wedge roller 39 associated with the lower wedge block 30 to move downwardly over the inclined wedge face 31 for disengagement from the stationary rib 18.

The pin 33 as shown in detail in Figure 9 is of tubular construction and houses a lubricated wick 33a that supplies oil to the rollers 37 to prevent rust and wear on the rollers and to facilitate easy operation of the parts.

From the above detailed description of the device, it is believed that the construction and operation thereof will at once be apparent and while there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:

1. In combination with a ladder having side rails and cross rungs, an extension leg formed of two members, one of said members being fixed to a side rail and the other member slidable on the fixed member, the fixed member having a longitudinally extending rib, a pair of controlled oppositely operating wedge devices carried by the slidable member engageable with said rib for holding the slidable member against movement on said fixed member.

2. In combination with a ladder having side rails and cross rungs, an extension leg formed of two members, one of said members being fixed to a side rail and the other member slidable on the fixed member, the fixed member having a longitudinally extending rib, a pair of controlled oppositely operating wedge devices carried by the slidable member engageable with said rib for holding the slidable member against movement on said fixed member, and manually operated means for selectively rendering one of the wedge devices inoperative whereby the slidable member may be moved in one direction.

3. In combination with a ladder having side rails and cross rungs, an extension leg formed of two members, one of said members being fixed to a side rail and the other member slidable on the fixed member, the fixed member having a longitudinally extending rib, a pair of controlled oppositely operating wedge devices carried by the slidable member engageable with said rib for holding the slidable member against movement on said fixed member, the wedge devices including a pair of vertically spaced wedge blocks, a tensioned wedge roller associated with each block for wedging engagement between the blocks and fixed rib and manually operated means including a slide rod for shifting a wedge roller out of

wedging position relative to a wedge block and the rib.

4. In combination with a ladder having side rails and cross rungs, an extension leg formed of two members, one of said members being fixed to a side rail and the other member slidable on the fixed member, the fixed member having a longitudinally extending rib, a pair of controlled oppositely operating wedge devices carried by the slidable member engageable with said rib for holding the slidable member against movement on said fixed member, and manually operated means for selectively rendering one of the wedge devices inoperative whereby the slidable member may be moved in one direction, the wedge devices including a pair of vertically spaced wedge blocks, a tensioned wedge roller associated with each block for wedging engagement between the blocks and fixed rib and said manually operated means including a slide rod for shifting a wedge roller out of wedging position relative to a wedge block and the rib.

5. In combination with a ladder having side rails and cross rungs, an extension leg formed of two members, one of said members being fixed to a side rail and the other member slidable on the fixed member, the fixed member having a longitudinally extending rib, a pair of controlled oppositely operating wedge devices carried by the slidable member engageable with said rib for holding the slidable member against movement on said fixed member, the wedge devices including a pair of vertically spaced wedge blocks, a tensioned wedge roller associated with each block for wedging engagement between the blocks and fixed rib and said manually operated means including a slide rod for shifting a wedge roller out of wedging position relative to a wedge block and the rib, and cooperating means carried by the two members for limiting extensible movement of the slidable member relative to the fixed member.

6. In combination with a ladder having side

rails and cross rungs, an extension leg formed of two members, one of said members being fixed to a side rail and the other member slidable on the fixed member, the fixed member having a longitudinally extending rib, a pair of controlled oppositely operating wedge devices carried by the slidable member engageable with said rib for holding the slidable member against movement on said fixed member, and manually operated means for selectively rendering one of the wedge devices inoperative whereby the slidable member may be moved in one direction, the wedge devices including a pair of vertically spaced wedge blocks, a tensioned wedge roller associated with each block for wedging engagement between the blocks and fixed rib and said manually operated means including a slide rod for shifting a wedge roller out of wedging position relative to a wedge block and the rib, and cooperating means carried by the two members for limiting extensible movement of the slidable member relative to the fixed member.

7. In combination with a ladder having side rails and cross rungs, an extension leg formed of two members, one of said members being fixed to a side rail and the other member slidable on the fixed member, the fixed member having a longitudinally extending rib, a pair of controlled oppositely operating wedge devices carried by the slidable member engageable with said rib for holding the slidable member against movement on said fixed member, the wedge devices including a pair of vertically spaced wedge blocks, a roller associated with each block, a spring pressed pin engaged with each roller for moving the roller into wedging engagement with the block and rib, said pin being of tubular formation and carrying an oil saturated wick for oiling the roller, and manually operated means including a slide rod for shifting a wedge roller out of wedging position relative to a wedge block and the rib.

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