

Jan. 9, 1945.

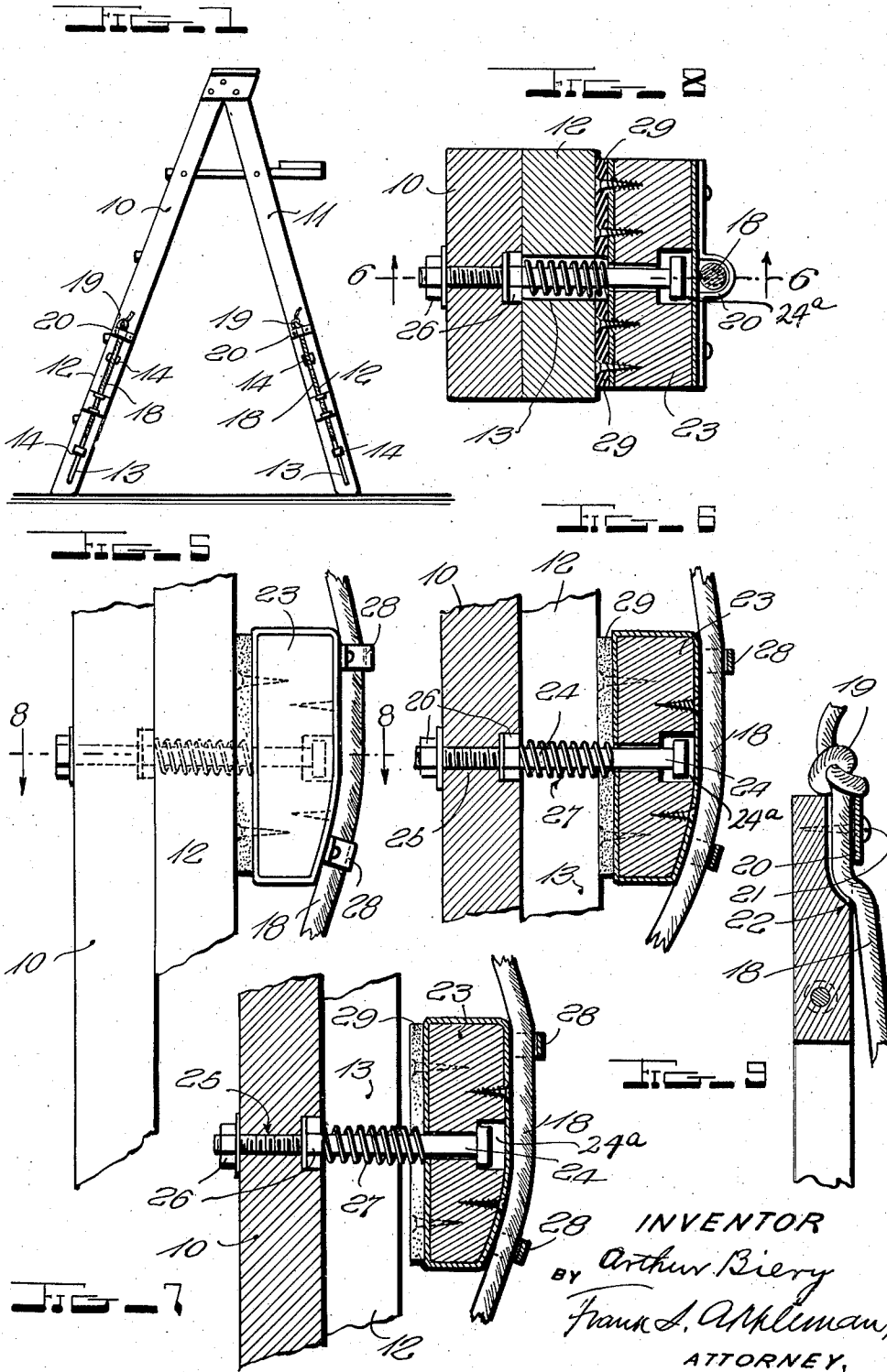
A. BIERY

2,366,829

ADJUSTABLE LADDER LEG

Filed July 11, 1944

2 Sheets-Sheet 1



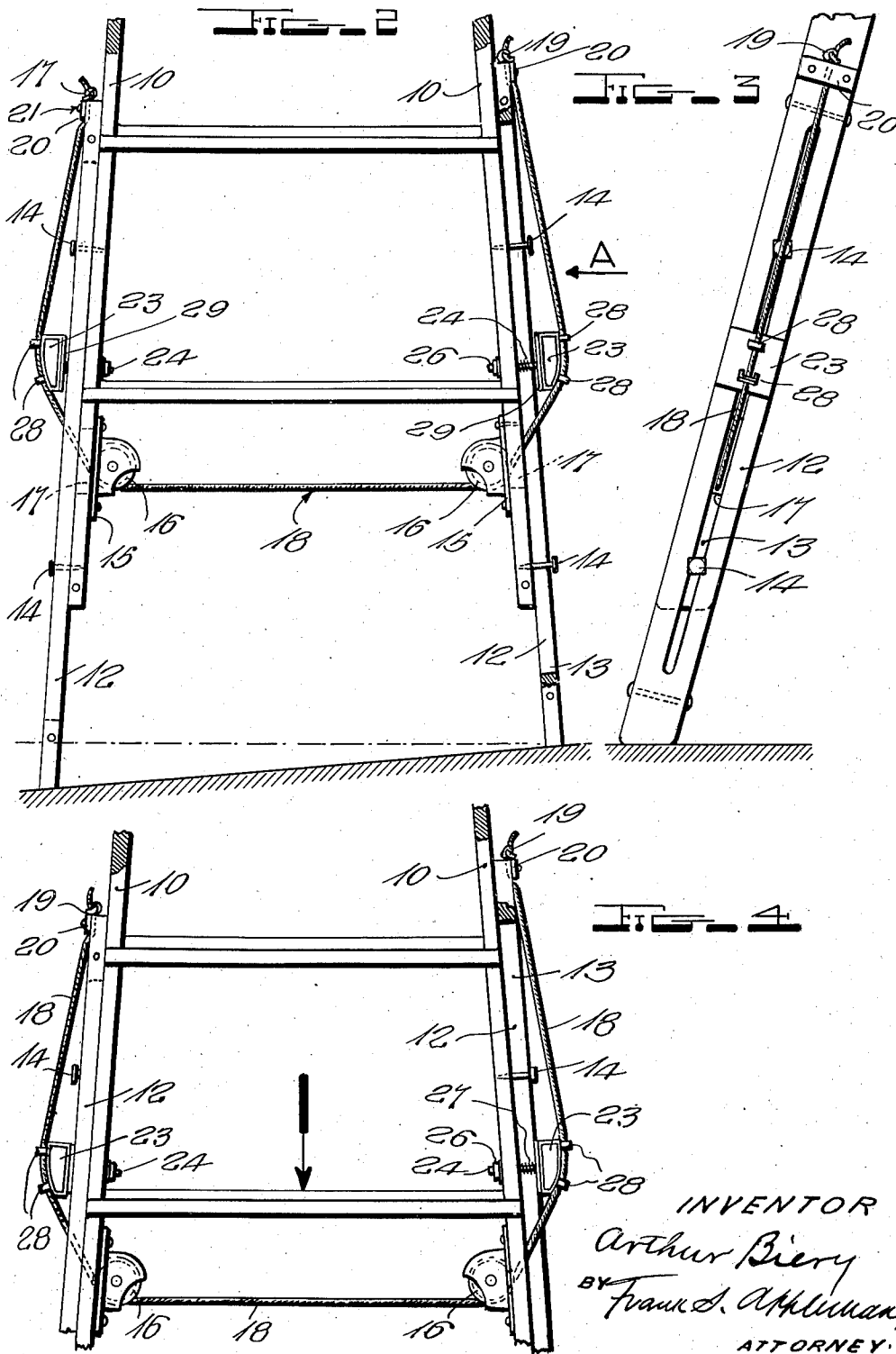
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UNITED STATES PATENT OFFICE

2,366,829

ADJUSTABLE LADDER LEG

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Application July 11, 1944, Serial No. 544,386

2 Claims. (Cl. 228—63)

This invention relates to ladders, and more particularly to extension legs or supports therefor which are provided for equalizing the position of the ladder on uneven terrain or bases on which the ladder is mounted for use, and it is an object of the invention to provide extensions which are projectable beyond the normal ends of the rails or legs of the ladder, including novel means for affording speedy adjustment of the extensions and for retaining the extensions in their adjusted positions when weight is applied to the ladder.

It is furthermore an object of the invention to provide slidable extensions, one on each side of a pair of rails, the said extensions being connected together by a flexible element such as a rope or cable, operating over guides or pulleys, whereby the flexible element is moved proportional to the movement of the extensions; and it is furthermore an object to provide shoes for engaging the extensible members whereby they are held at different positions of adjustment when the flexible element becomes taut, due to the upward pressure or force occasioned by the weight of the occupant of the ladder.

It is a further object of the invention to provide shoes which are forced into engagement with the extensible member whereby it is pressed into contact with the rail with which it is associated so that the extensible member is frictionally held against movement, it being understood that the action of the shoe depends upon the weight sustained by the ladder in its adjusted position.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which:

Figure 1 illustrates a view in side elevation, showing a step ladder to which the extension is applied;

Figure 2 illustrates an enlarged detail view, partly in section, of the lower part of the ladder and the extensions;

Figure 3 illustrates an enlarged side elevation of the lower part of one of the rails, with the extension thereon;

Figure 4 illustrates a view similar to Fig. 2, with the shoes in different positions of adjustment;

Figure 5 illustrates an enlarged detail view,

showing the shoe in engagement with the extension;

Figure 6 illustrates a sectional view of the parts on the line 6—6 of Fig. 8;

5 Figure 7 illustrates a similar sectional view, with the shoe disengaging the extension;

Figure 8 illustrates a sectional view on the line 8—8 of Fig. 5; and

10 Figure 9 illustrates a sectional view of a fragment of a rail of a ladder showing the means for attaching the flexible member thereto.

In these drawings 10 denotes the side rail of a ladder and 11 the legs of a step ladder. As the extensions on the rails and legs are the same, a description of the assembly for the extensions and holding means for the rails will suffice for an understanding of the installations on both parts of the ladder.

The extensions 12 are slidable parallel with 20 and on the outer surfaces of the rails, and each extension has a slot 13, through which guiding members 14 extend, the said guiding members having their inner ends anchored in the rail on which the extension is slidable. In practice, the 25 guiding members may be bolts or screws, although it is shown that the inner end of the member 14 is screwed into the leg.

A bracket 15 is secured to the inner surface of each of the rails near the bottom thereof, and a grooved pulley or wheel 16 is rotatably mounted in the bracket. Each rail has an opening 17 30 through which a flexible element 18 such as a rope or cable extends, it being shown that the flexible element operates over the wheels and it has its ends secured to the upper ends of the extensions in suitable manner and, as here shown, each end of the cable is formed into a knot 19 35 which is located at the upper end of the extension. The flexible member is clamped in place by a plate 20 having a fastening member 21 anchored in the extension, this arrangement of parts being well shown in Fig. 9 where it is also shown that the surface of the extension is recessed, as at 22, to form a clearance for the flexible member. 45

As a means associated with the flexible member for frictionally retaining the extensions in different positions of adjustment, a shoe 23 50 coacts with the flexible member and the extension on each rail, and the shoe has an inwardly extending threaded bolt 24 which projects through an aperture 25 in the adjacent rail, and it is held in place by nuts 26. A spring 27 embraces the bolt between the shoe and the rail, 55 and it is effective to force the shoe outwardly

when tension is released on the flexible member, as will presently appear. The outer surface of the shoe has guides 28 secured to it, and the flexible member moves therethrough and binds against the outer surface of the shoe to force it inwardly against the action of the spring into position to clamp against the outer surface of the extension so that the parts are frictionally held in different positions of adjustment, although when weight is removed from the ladder the springs 27 operate to force the shoe outwardly in order that the extensions may be readily adjusted by rocking the ladder laterally. For instance, if the top of the ladder is leaned to the left so that the rails on one side are free of the support, the extensions can be projected beyond the ends of the rail and when weight is applied to the ladder, the flexible member exerts force on the outer surface of the shoe and forces it against the extension, binding the extension against the rail to retain the parts in the adjusted position.

The shoe has a facing 29 to produce friction when engaging the extension and the extension is thereby held in said adjusted position. The shoe also has a recess 24a in which the head of the bolt 24 is located, the recess being of sufficient size to permit movement of the shoe with relation to the bolt and its head.

I claim:

1. In a leveling equalizer for ladders, ladder rails each having an aperture near its lower end, a wheel mounted for rotation inside of the rail opposite the opening, supporting extensions slidably mounted on the outer surface of the rails at the lower ends thereof, said extensions having slots, guiding members extending through the slots and anchored in the rails, a member anchored to each rail and extending outwardly through the slot of the adjacent extension, a shoe mounted on each member externally of the

extension, a spring on the member bearing against the shoe for exerting pressure thereon to force it out of engagement with the extension, a flexible member threaded around the wheels and through the apertures of the rails and embracing the outer surfaces of the shoes, the said flexible member having its ends anchored to the upper ends of the extensions whereby gravity forces the ladder downwardly and exerts a pull on the flexible member to bind the shoes against the extension for frictionally retaining the parts adjusted when the ends of the extensions are below the ends of the rails.

2. In a leveling equalizer for ladders, ladder rails each having an aperture near its lower end, a wheel mounted for rotation inside of the rail opposite the opening, supporting extensions slidably mounted on the outer surface of the rails at the lower ends thereof, said extensions having slots, guiding members extending through the slots and anchored in the rails, a member anchored to each rail and extending outwardly through the slot of the adjacent extension, said member having a head thereon, a shoe slidable on the member and having a recess in which the head of the member is loosely located so that the shoe can move longitudinally of the member, a spring on the member between the rail and the shoe for normally forcing the shoe outwardly, a flexible member engaging the wheels and extending through the rails and the slots of the extensions and embracing the outer surfaces of the shoes, means for anchoring the ends of the flexible member to the opposed extensions on the rails whereby gravity moves the rails with relation to the extensions and exerts a pull on the flexible member to force the shoes into engagement with the extensions for holding the parts in adjusted positions.

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