

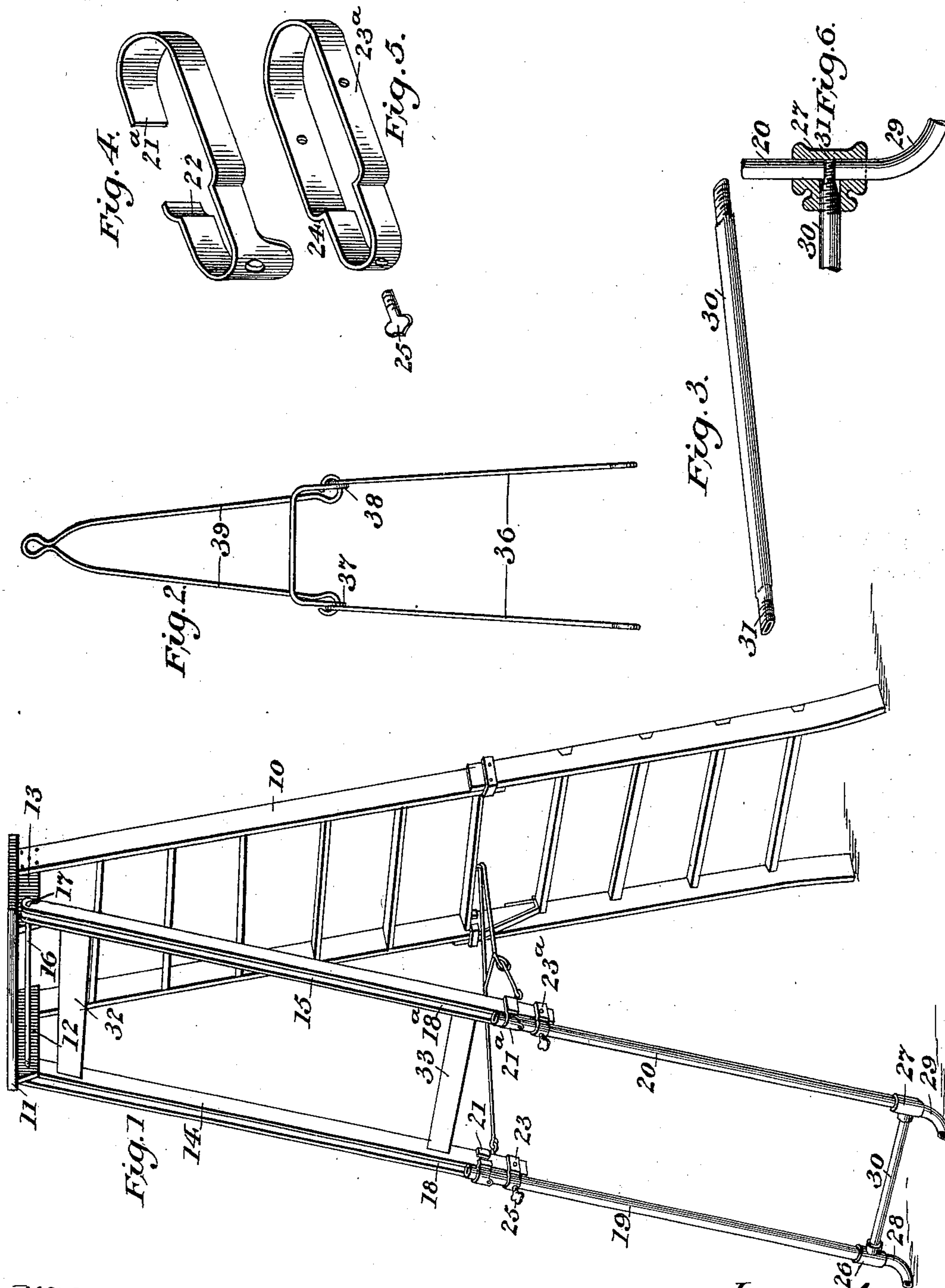
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Patented Mar. 21, 1899.

W. V. & E. L. STEPHENSON.
STEP LADDER.

(Application filed Feb. 5, 1898.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

WALTER V. STEPHENSON AND ELMER L. STEPHENSON, OF FORT DODGE,
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STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 621,479, dated March 21, 1899.

Application filed February 5, 1898. Serial No. 669,286. (No model.)

To all whom it may concern:

Be it known that we, WALTER V. STEPHENSON and ELMER L. STEPHENSON, citizens of the United States, residing at Fort Dodge, in the county of Webster and State of Iowa, have invented a new and useful Step-Ladder, of which the following is a specification.

The object of this invention is to provide improved means for simplifying the construction and adding to the durability and convenience of an extensible and adjustable step-ladder.

Our invention consists in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in our claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a perspective of the complete device. Fig. 2 is a plan of the jointed brace connection of the ladder members detached from said members. Fig. 3 is a detail view of one of the connecting-rods. Figs. 4 and 5 are detail perspectives of connecting-clamps. Fig. 6 is a detail sectional view.

In the construction of the device, as shown, the numeral 10 designates an extensible step-ladder of any desired form, provided with a platform-step 11 at its upper end and supporting-brackets 12 13, extending across and near the ends of the platform-step 11 and connecting said step to the ladder 10. The other details of construction of the ladder 10 are immaterial in this application and form no part of our present invention.

The numerals 14 15 designate leg members located adjacent to the side bars or brackets 12 13 at their upper ends and pivoted on a connecting-rod 16. The connecting-rod traverses apertures in the side bars or brackets 12 13, and the upper ends of the leg members 14 15 may be provided with an eye or cross-head 17 on one end and a nut or other desirable means of securance on its opposite end. The leg members 14 15 are formed with longitudinal grooves 18 18^a in their outer edges, which grooves are approximately semi-annular in cross-section and extend from points near the upper extremities of the leg members to the lower extremities thereof.

Leg members 19 20 are provided and formed of sections of metallic tubing or gas-pipe of an

exterior diameter approximating to the diameter of the grooves in the leg members 14 15, in which grooves they are mounted for rectilinear movements or longitudinal adjustment. Straps 21 21^a of like construction (illustrated in detail in Fig. 4) are mounted on and riveted to the upper end portions of the leg members 19 20, partially surround said leg members, and extend inwardly therefrom to and almost entirely around the leg members 14 15. The leg members 14 15 are rounded in their edges opposite to the grooved edges thereof, and the straps 21 21^a correspondingly are rounded or grooved and fitted to said leg members. In the central portions of the straps 21 21^a are formed integral offsets or shoulders 22, arranged to engage with and slide upon the outer corners of the grooved edges of the leg members 14 15 and limit and determine the torsional movements of the leg members 19 20 relative to the leg members 14 15. The straps 21 and 21^a loosely fit and embrace the leg members 14 15, thereby providing a loose connection between the upper and lower leg members and permitting longitudinal adjustment thereof. Straps 23 23^a are provided and mounted on and riveted to the lower extremities of the leg members 14 15. Straps 23 23^a are approximately oval in plan view and have their outer portions reduced in diameter somewhat, forming offsets or shoulders 24 24, arranged and so shaped as to engage and fit snugly to the corners of the grooved edges of the leg members 14 and 15. The outer extremities of the straps 23 and 23^a are thickened and screw-seats are formed therein to admit set-screws 25 25.

The set-screws 25 25 are so arranged and seated in the outer portions of the straps 23 and 23^a that they impinge at their inner ends, when desired, upon the peripheries of the leg members 19 20 and limit and determine the movements and longitudinal adjustment of the lower leg members relative to the upper leg members.

The lower extremities of the leg members 19 20 are screw-seated in the upper branches of T's 26 27, and feet 28 29, made of curved sections of metallic tubing or gas-pipe, are screw-seated at their upper ends in the lower branches of said T's. The lateral branches

of the T's 26 27 are screw-threaded to receive the extremities of a cross-bar 30, and the said extremities of said cross-bar are flattened on opposite sides to form seats 31, Fig. 3, against which the lower ends of the leg members 19 20 and the upper ends of the feet 28 29 engage.

The leg members 14 15 preferably are made of wood and connected near their upper and lower ends by wooden cross-bars 32 33, having tenons on their ends seated and secured in mortises in the leg members. Screw-eyes 34 35 are seated in and extend rearwardly from the lower end portions of the leg members 14 15 and are loosely connected to hooks formed on the extremities of a yoke 36, which yoke is made of a single piece of metallic rod and is provided with loops or eyes 37 38 near its closed end. The loops 37 38 are loosely engaged by hooks on the extremities of a yoke 39, and the closed end of said yoke is engaged by a screw hook or eye 40, seated in one of the central steps of the ladder 10. The closed portion of the yoke 36 lies at times upon the extremities of the yoke 39, thereby limiting and determining the downward flexure of the yokes relative to each other, the upward flexure of said yokes relative to each other being such as to permit the parallel positioning thereof whenever it is desirable to parallel the legs of the device with the ladder 10.

We claim as our invention—

1. The combination with a step-ladder of the supporting upper leg members and the lower leg members comprising the T's, the rod connecting said T's and flattened at its ends, the tubes 19, 20 screw-seated in the T's and resting on the flattened faces of the rod, feet formed of curved sections of tubing

screw-seated in the T's and engaging flattened surfaces of the rod, and connections between the upper and lower leg members.

2. The combination with the step-ladder of the leg members 14, 15 having grooved edges, the leg members 19, 20 arranged for adjustment in the grooved edges of the members 14, 15, the straps 21, 21^a fixed to the members 19, 20 and loosely embracing the members 14, 15, which straps are each provided with a shoulder 22 engaging the corners of the members 14, 15, the straps 23, 23^a fixed to the members 14, 15 and embracing the members 19, 20, which straps are each formed with shoulders 24, 24 engaging the corners of the members 14, 15 and provided with a screw-seat, and set-screws 25 mounted in the screw-seats of the straps 23, 23^a and arranged for impingement with the periphery of the members 19, 20.

3. The step-ladder and support hinged together and the jointed brace connection comprising the yoke 36 provided with eyes adjacent to its closed end, the yoke 39 provided with hooks engaging eyes of the yoke 36, means for connecting the extremities of the yoke 36 with the support, means for connecting the closed end of the yoke 39 with the ladder, the closed end of the yoke 36 resting on the extremities of the yoke 39 and limiting the flexure of said yokes relative to each other in one direction.

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