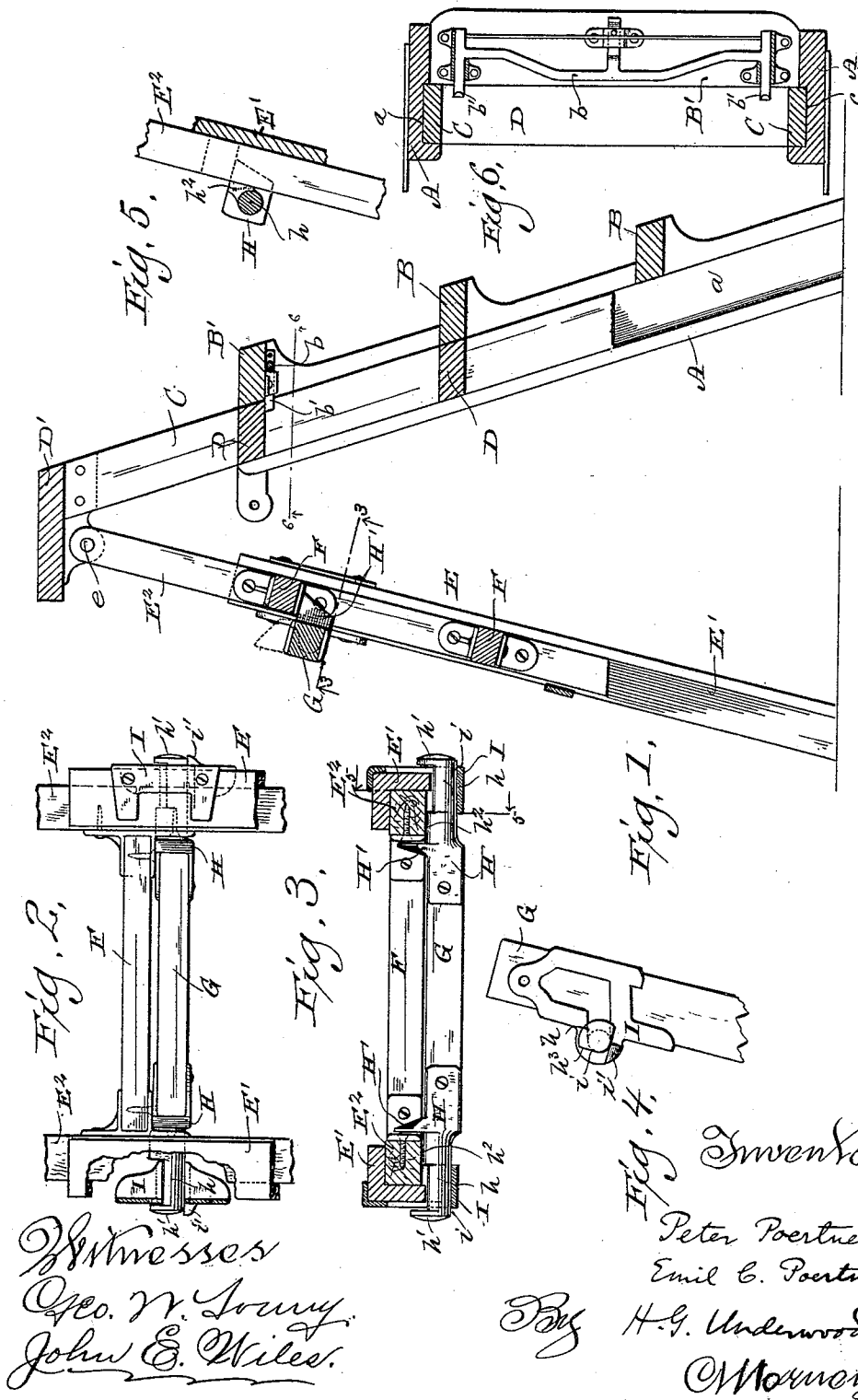


(No Model.)

P. & E. C. POERTNER.
EXTENSION STEP LADDER.

No. 499,751.

Patented June 20, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

PETER POERTNER AND EMIL C. POERTNER, OF MILWAUKEE, WISCONSIN.

EXTENSION STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 499,751, dated June 20, 1893.

Application filed October 11, 1892. Serial No. 448,511. (No model.)

To all whom it may concern:

Be it known that we, PETER POERTNER and EMIL C. POERTNER, citizens of the United States, and residents of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Extension Step-Ladders; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to new and useful improvements in the construction of extension step ladders, and consists in the matters hereinafter described and pointed out in the appended claims.

In the accompanying drawings illustrating our invention: Figure 1 is a central vertical sectional view of a step ladder embodying our improvement. Fig. 2 is a rear elevation, showing parts broken away. Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1. Fig. 4 is a detail side elevation. Fig. 5 is a detail vertical sectional view taken on the line 5—5 of Fig. 3. Fig. 6 is a detail horizontal sectional view taken on the line 6—6 Fig. 1.

In said drawings:—A A represents the side rails of the main or lower portion of the ladder provided with a series of steps B B and B', and C C the side rails of the upper section of the ladder provided with a series of steps D D and D'.

E E represent the supporting legs or braces comprising lower sections E' E' and upper sections E² E², having sliding engagement with each other and the latter being pivotally engaged with the top step D' of the upper section of the ladder, as *e e*.

As illustrated in the drawings, the lower sections A A of the side rails are provided with longitudinal grooves or channels *a a* within which the upper section C C are fitted and arranged to slide. The lower sections E' E' are similarly provided with grooves or channels within which the upper sections E² E² are arranged to slide.

Any convenient stop is provided upon the top step B' of the lower section and is arranged to engage with a step D of the upper section, this stop being preferably made in the form of a sliding bar *b* provided with projections *b' b'* adapted for engagement with

any desired one of the steps of the upper section.

Transverse arms or bars F F are secured between the sections E² E² of the legs E E, at distances apart corresponding with the distances between the steps, and a revoluble bar G is arranged transversely between the lower sections E' E' of said legs, said bar being engaged with suitable bearings upon said sections E' E' and provided with angular projections adapted for engagement with the transverse bars F F.

In the particular form of construction illustrated in the drawings, the bar G is provided at opposite ends with metallic fittings H H, having suitable trunnions *h h* which are revolvably engaged with bearings *i i* in plates I I secured to the sections E' E' of the legs. Heads *h' h'* are provided upon the outer ends of the trunnions *h h* which serve to prevent said trunnions from slipping out of engagement with said bearings. Shoulders *h² h²* are provided on the trunnions *h h* adjacent to the inner edges of the bearings *i i*, and arranged to engage with the rear surfaces of the sections E² E² of the legs when the bar G is in the position indicated in the drawings. Angular projections H' H' are provided upon the fittings H H and are arranged to extend forwardly beneath a desired one of the transverse bars F F to hold the sections of the legs in their adjusted positions. When said angular projections are brought into engagement with one of said transverse bars, as in Fig. 1, the shoulders *h² h²* on the trunnions *h h* will engage with the rear faces of the upper sections E² E² of the legs, so as to prevent rotation of the bar G, and the weight of the upper portion of the device will thus be supported by the projections H' H' and the strain exerted thereon will operate to force the shoulders *h² h²* more strongly against the upper sections of the legs and to thus render the device more rigid. Shoulder *i' i'* are provided on the plates I I adjacent to the bearings *i i* and the heads *h' h'* on the outer ends of the fittings H H are provided with angular edges *h³ h³* arranged to engage with said shoulders *i' i'* to limit the rotation of the bar G, in a rearward direction.

The operation of our device is as follows:—

The user adjusts the side rails A A and C C to the desired positions with respect to each other, the latch bars *b' b'* engaged with the desired step of the upper section, and the bar 5 G rotated so as to bring the angular projections H' H' into engagement with the corresponding transverse bar F of the upper section in the manner described, when the ladder will be firmly secured in its adjusted position. 10

Our improved ladder is very strong and simple in construction and is capable of ready adjustment to any desired height.

Having thus described our invention, what 15 we claim as new, and desire to secure by Letters Patent, is—

1. An extension step ladder comprising side rails or bars formed of upper and lower sections having sliding engagement with each other and provided with means for locking 20 said sections in their adjusted positions, and legs consisting of upper sections pivotally secured to the upper ends of the upper sections of the side rails and provided at intervals 25 with transverse bars, and lower section having sliding engagement with said upper sections and provided with external bearing plates and a revoluble bar having angular projections adapted for engagement with the said 30 transverse bars, and trunnions at each end

having heads upon their outer ends for engagement with said bearing plates, substantially as set forth.

2. An extension step ladder comprising side rails or bars each formed from upper and 35 lower sections each provided with steps and having sliding engagement with each other, suitable means for securing said sections in their adjusted positions, legs comprising upper and lower sections also slidably engaged 40 with each other, the upper sections of said legs being pivotally engaged with the upper sections of the side rails and provided at intervals with transverse bars, and a revoluble transverse bar journaled upon the lower sec- 45 tions of the legs and provided with angular projections adapted for engagement with said transverse bars on the upper sections and provided with shoulders adapted to engage with said upper sections to prevent the rotation of 50 said revoluble bar, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

PETER POERTNER.
EMIL C. POERTNER.

Witnesses:

JOHN E. WILES,
N. E. OLIPHANT.