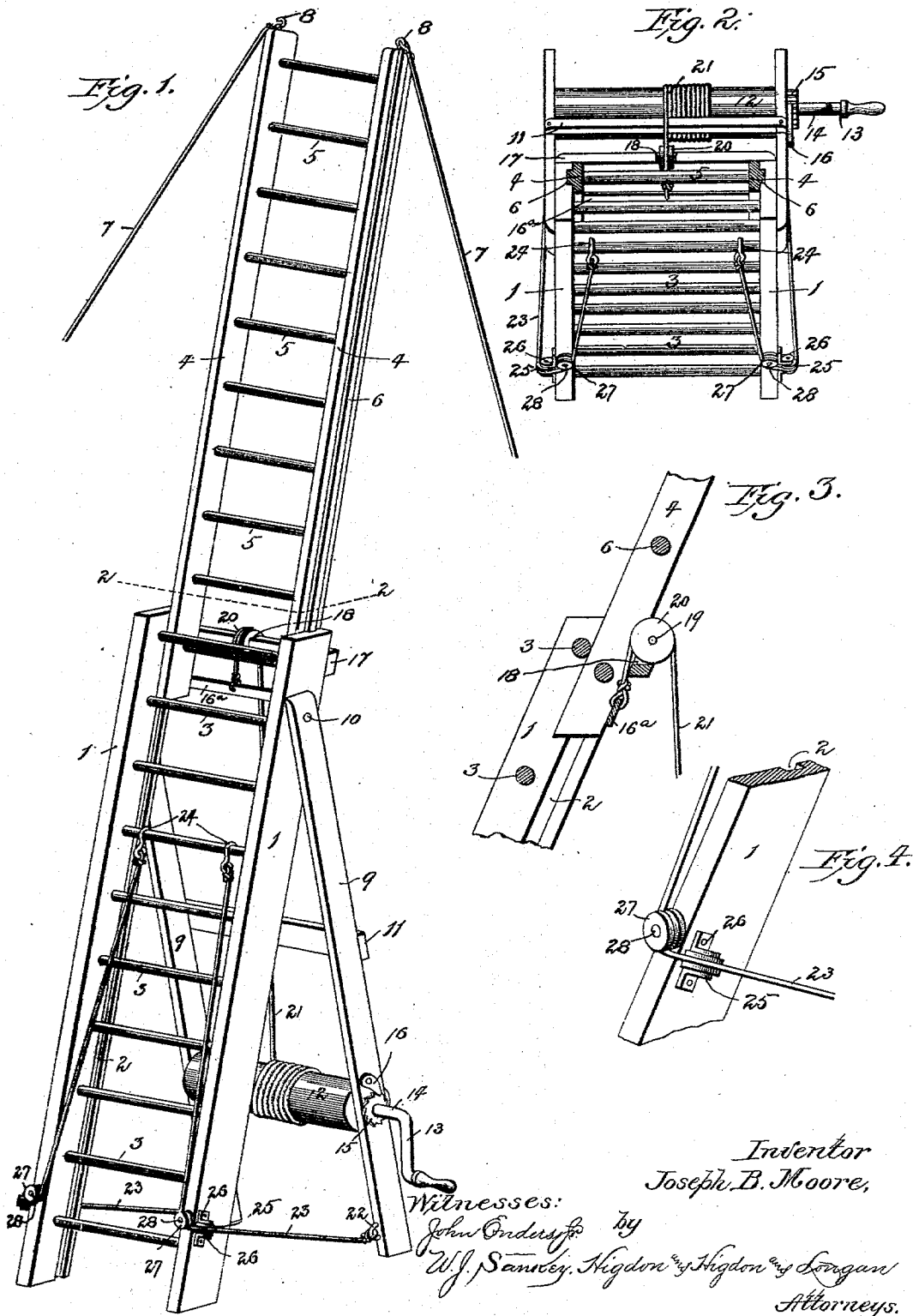


(No Model.)

J. B. MOORE.
EXTENSION LADDER.

No. 515,783.

Patented Mar. 6, 1894.



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UNITED STATES PATENT OFFICE.

JOSEPH B. MOORE, OF HEMPLE, MISSOURI.

EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 515,783, dated March 6, 1894.

Application filed May 22, 1893. Serial No. 475,119. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. MOORE, of the city of Hemple, Clinton county, State of Missouri, have invented certain new and useful Improvements in Extension-Ladders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved "extension ladder," and consists in the novel construction, combination and arrangement of parts hereinafter specified and designated in the claim.

The object of my invention is to provide an improved ladder of this class having a base which may be folded into small compass and a ladder which may be run out to increase the length of the ladder, especially adapted for the use of firemen, house-painters and carpenters, and which shall be simple in construction and efficient in operation and reasonable in cost.

In the drawings: Figure 1 is a perspective view of a ladder embodying my invention. Fig. 2 is a sectional plan view of same, the section being taken on the line 2—2 of Fig. 1. Fig. 3 is a detail sectional elevation of the upper portion of the base and the lower portion of the extension. Fig. 4 is a detail view in perspective of the lower portion of one of the front legs of the base.

My improved ladder is entirely self-supporting, and may be used without being placed in contact with the building or other structure.

1 indicates opposite side bars of the base section which are provided with opposite longitudinal grooves 2 in their inner faces. These grooves are preferably angular in cross-section as here shown. They are located closely adjacent the rear edges of said standards or side-bars.

The side bars 1 are provided with a series of rungs 3 which are located adjacent the front edge of said side bars, and are secured in place in any common manner.

4 indicates the opposite side bars of the sliding section, which carry a series of rungs or rounds 5 and have a longitudinal and continuous rib 6 projecting upon the outer surface of each. This rib is preferably rectangular in cross-section so as to correspond with the section of the grooves 2, and the said slid-

ing section is adapted to slide between the side bars 1 of the base, with the rib 6 in engagement with said grooves. The side-bars of the sliding-section are of less width than the side-bars of the base, and the rungs 3 of the base being located sufficiently close to the grooves 2 in the base, are contacted by the front edges of the side-bars 4 of the sliding section during operation, and said rungs thereby act to greatly strengthen the parts which secure said sliding section to said base.

A suitable number of stay-ropes, cords or cables 7 are attached to the upper end of the sliding-section by means of suitable eyes or other fastenings 8 located upon the upper ends of the side bars 4 of said sliding section.

9 indicates the opposite side-bars of the windlass-frame, which are pivotally secured at their upper ends upon the exterior of the side bars 1 of the base by means of suitable bolts, pins or other fastenings 10.

11 indicates a transverse-bar fixed upon the rear edges of the side-bars 9 of the windlass-frame at a point some distance below their upper ends.

12 indicates a drum or shaft which is mounted in suitable bearings and carried between the side bars 9 of the windlass-frame at a point below the bar 11. This drum or shaft is provided with a suitable hand crank 13 by means of which it may be revolved in either direction.

I prefer to mount the drum 12 upon a separate shaft 14, so that the ends of said shaft may be mounted in suitable bearings, and so that the end which carries the crank 13 may project beyond the outer surface of one of the side bars 9 and be fitted with a ratchet-wheel 15. This ratchet wheel is of course fixed on said shaft to revolve therewith, and a pawl or dog 16 is pivotally mounted upon said side bar adjacent said ratchet-wheel, so that it may engage the teeth thereof and hold the shaft and drum in the manner hereinafter mentioned.

16^a indicates a cross-bar secured to the side bars 6 of the sliding section at a point closely adjacent the lower ends thereof, and upon their rear edges.

17 indicates a cross-bar fixed upon the rear edges of the side-bars 1 of the base at a point adjacent their upper ends. This cross-bar 17

is provided at a point intermediate of its ends with a recess 18 having vertical opposite walls, and mounted in this recess to revolve upon a pin or pintle 19 is a grooved roller or sheave 20.

5 A suitable rope, chain or cable 21 has its lower end fixed to the drum 12 and wound thereon, and is extended upward and passed over the pulley or sheave 20 so as to engage the groove therein, and is then passed downward and secured to or around the cross-bar 10 16^a carried by the lower portion of the sliding-section.

22 indicates staples or other similar fastenings secured to the side bars 9 of the windlass-frame at a point closely adjacent their 15 lower ends.

23 indicates cords, ropes or chains having one end secured to the staples 22 and each carrying a hook 24 at the opposite end.

20 There is a rope 23 located upon each side of the base, and a rope at each side extends in a substantially horizontal direction from the staple 22 over to the adjacent side bar, where it is retained by means of a grooved 25 roller 25 which is mounted to revolve in or upon pivotal bearings 26 fixed upon the outer surface of said side bar at a point adjacent the lower end thereof. Another grooved roller 27 is mounted upon a pin 28 and fixed to re- 30 volve upon the front edge of said side-bar with the groove in its periphery in proper alignment with the groove in the periphery of the roller 25. The cord, rope or cable 23 is passed over the roller 25 and under the roller 27, and is then stretched tight or taut and its 35 hook 24 is hooked over one of the rungs 3 of the base, and this construction is carried out upon the opposite side of the base.

The operation is as follows: When it is de- 40 sired to lower the sliding-section, the pawl 16 is disengaged from the teeth of the ratchet-wheel 15, and the rope, chain or cable 21 is unwound from the drum 12 by means of the crank 13, and said section is slowly lowered, 45 its weight causing it to gravitate downward until its lower end occupies a position closely adjacent the lower ends of the side bars of the base, or rests upon the ground. The length of the sliding-section being about the same 50 as that of the base, the ladder will now present the appearance of one having only the length of the base. It can be used in this position if desired. The windlass-frame may now be folded with its side bars 9 closely ad-

jacent the side bars of the base and the hooks 55 24 may be made to engage the topmost rung of the base, and securely hold said windlass-frame in such position. When the ladder is in use the windlass-frame may be properly placed in position with the lower ends of its 60 side-bars separated a distance from the base, so as to form a brace or support for the base, as shown in Fig. 1, and the cords, ropes or cables 23 having their upper ends secured to the rungs of the base by means of hooks 24, act 65 as very effective stays to prevent spreading of the lower ends of the standards of the windlass-frame and the base. The amount of spread of these parts may be regulated by simply adjusting the hooks 24 upon the rungs 70 3 of the base, thereby drawing the rope, chain or cables 23 over the rollers 25 and 27.

The stays 7 may be manipulated from the ground in any desired manner, when the lad- 75 der is extended, and coiled up when the lad-

der is folded.

What I claim is—

The improved extension and folding ladder, constructed with a base having opposite side-bars 1 carrying rungs 3, a sliding-section connected to said base to be extended therefrom, a windlass-frame having opposite side-bars 9 pivotally secured at their upper ends to the side bars of the base, a windlass mounted upon the side bars of the windlass frame, a 85 rope, chain or cable 21 secured to said windlass and arranged to raise and lower and hold said sliding-section, staples or similar fastenings 22 secured to the side-bars of the windlass frame at a point adjacent their lower 90 ends, means secured upon the side bars of the base adjacent the lower ends thereof for supporting ropes, chains or cables thereat, and ropes, chains or cables 23 having one end se- 95 cured to the staples or fastenings 22 and their opposite ends carrying hooks 24, and said ropes, chains or cables 23 engaging the means located adjacent the lower ends of said side bars of the base and said hooks engaging a rung of said base, substantially as herein 100 specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH B. MOORE.

Witnesses:

W. V. GRIER,
CLINTON GRIER.