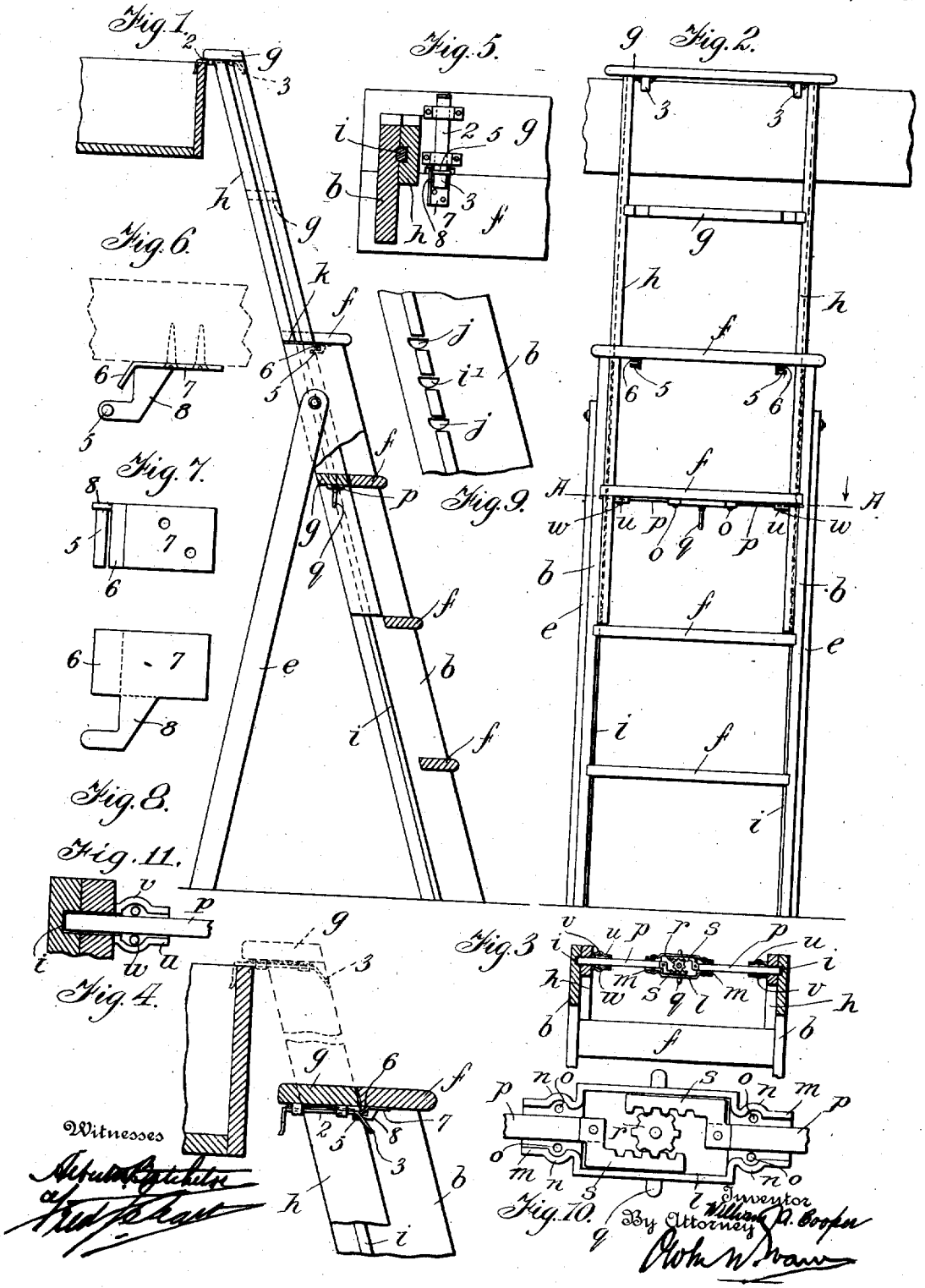
W. A. COOPER.

LADDER FOR SLEEPING CARS.

APPLICATION FILED MAR. 19, 1910.

989,570.

Patented Apr. 18, 1911.



THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM ARTHUR COOPER, OF MONTREAL, QUEBEC, CANADA.

LADDER FOR SLEEPING-CARS.

989,570. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed March 19, 1910. Serial No. 550,451.

To all whom it may concern:

Be it known that I, WILLIAM ARTHUR COOPER, a subject of the King of Great Britain, of the city of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Ladders for Sleeping-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object to provide a ladder adapted to be attached to the upper berth and extend therefrom to the floor of the car at a suitable angle for mounting and at the same time be supported independently of the means attaching it to the berth.

The invention may be said to consist of the particular construction and combination of parts hereinafter set forth. For full comprehension, however of my invention reference must be had to the accompanying drawings, forming a part of this specification, in which similar reference characters indicate the same parts and wherein—

Figure 1 illustrates the ladder in side elevation and a portion of the berth; in transverse sectional view; Fig. 2 illustrates in front elevation a ladder constructed according to my invention and attached to a berth; Fig. 3 is a horizontal sectional view of the ladder, the section being taken on line A A Fig. 2; Fig. 4 is an enlarged detail sectional view of the upper portion of the ladder and illustrating the slidable hooks and brackets in side elevation; Fig. 5 is a detail bottom plan view thereof; Fig. 6 is a side elevation of the bracket; Fig. 7 is a plan view thereof; and Fig. 8 illustrates the blank from which the bracket is made; Fig. 9 is an enlarged detail view of a portion of the side bars of the ladder proper and illustrating the sockets formed therein, and Fig. 10 is an enlarged detail view of the locking means. Fig. 11 is a detail view of one of the guides for the locking means.

My improved ladder is made up of longitudinal side bars *b*, steps therebetween and supporting legs *e* pivoted to the side bars. The steps are cut lengthwise through the middle, the front portions *f* whereof are carried by the side bars *b* and the rear portions *g* form part of an extension ladder member the side bars *h* whereof are grooved to engage ribs *i* carried by and extending from the bottom to the top of the side bars *b* thus effecting a sliding connection between the two ladder members and permitting vertical movement and preventing lateral displacement of the extension member relatively to the main supporting member.

The top step of both ladder members is of sufficient length to overlap the side bars and the portion of this step on the extension member by resting upon the top of side bars *b* acts as a stop limiting the downward movement of the extension member, the portions of the ends of the side bars *b* overlapped by the part *g* of the top step being reinforced by a metal plate *k*.

The inner sides of the side bars *b* have sockets *i'* in line with the underside of the upper steps and additional sockets *j* located a short distance above and below the first mentioned sockets and locking means carried by the extension member coact with these sockets, the object of the series of which is to enable the extension member to be supported at different heights for the purpose of accommodating different heights of berths.

The above mentioned locking means is carried upon the under side of the bottom step of the extension member and consists of a pair of bolts *p* operated by a handle *q* through a pinion *r* mounted rigidly upon the shaft of the handle and engaging a pair of racks *s* connected to the bolts, such locking means being contained within a housing constituted by a casting presenting a chamber *l*, sleeves *m* at opposite ends of the chamber and bosses *n* accommodating screws *o* for securing the housing to the step. The bolts are guided in the sleeves *m* and a pair of brackets *u*, having bosses *v* through which they are secured to the step by screws *w*.

For attaching the extension member to the berth I provide a pair of slidable hooks 2 having downwardly inclined ends 3, such hooks being carried in a pair of brackets secured to the underside of the top step of the extension member and these hooks are adapted to be shifted to have their hooked ends either protrude beyond the edge of the step or lie back of such edge, by a pair of fingers 5 and lips 6 projecting from a pair of brackets fastened to the underside of the top step of the ladder proper. Each of these brackets comprises a plate 7 having the lip 6 an integral part of one end, an angular bracket arm 8 also an integral part of the plate having a pin fixed to the end thereof and constituting the finger 5. The lips are bent

to an angle of 45° to act as guides for the tails of the hooks as they descend with the extension ladder member, while the edges of such lips, when acted upon by the tails of the hooks as they ascend, project the hooks to engaging position.

Operation: When the extension member is raised, the inclined ends of the hooks engage the edges of the lips 6 and are forced out into position to engage the edge of the upper berth and when the extension member is raised to the required height it is locked in position relatively to the ladder proper, by turning the handle *q* thus shooting the bolts into either pair of the sockets (*i'* and *j*). When the extension member is lowered the underside of the inclined ends 3 of the hooks engage the fingers 5 which has the effect of drawing the bolts in beneath the top step.

Although I have illustrated and described the detail construction of the extension ladder I do not herein claim the same as it will form the subject matter of a separate application.

What I claim is as follows:—

1. In an extension ladder for use in a sleeping car, the combination with a ladder proper and an extension member, of a movable device carried by the extension member for engaging the berth, and means for automatically shifting the said movable device to and from engaging position, including a pair of members carried by the ladder proper and adapted to engage the said device to move it in different directions upon raising or lowering of the extension member.

2. In an extension ladder for use in a sleeping car, the combination with a ladder proper and an extension member, of a pair of slidable hooks carried by the upper end of the extension member and formed with inclined ends, a pair of brackets fixed to the ladder proper and each presenting a lip and a finger adapted to accommodate the inclined end of a hook between them, and automatically shift the hooks as the extension member is raised or lowered.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLIAM ARTHUR COOPER.

Witnesses:
WILLIAM L. MCFEAT,
STANLEY C. KING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."