

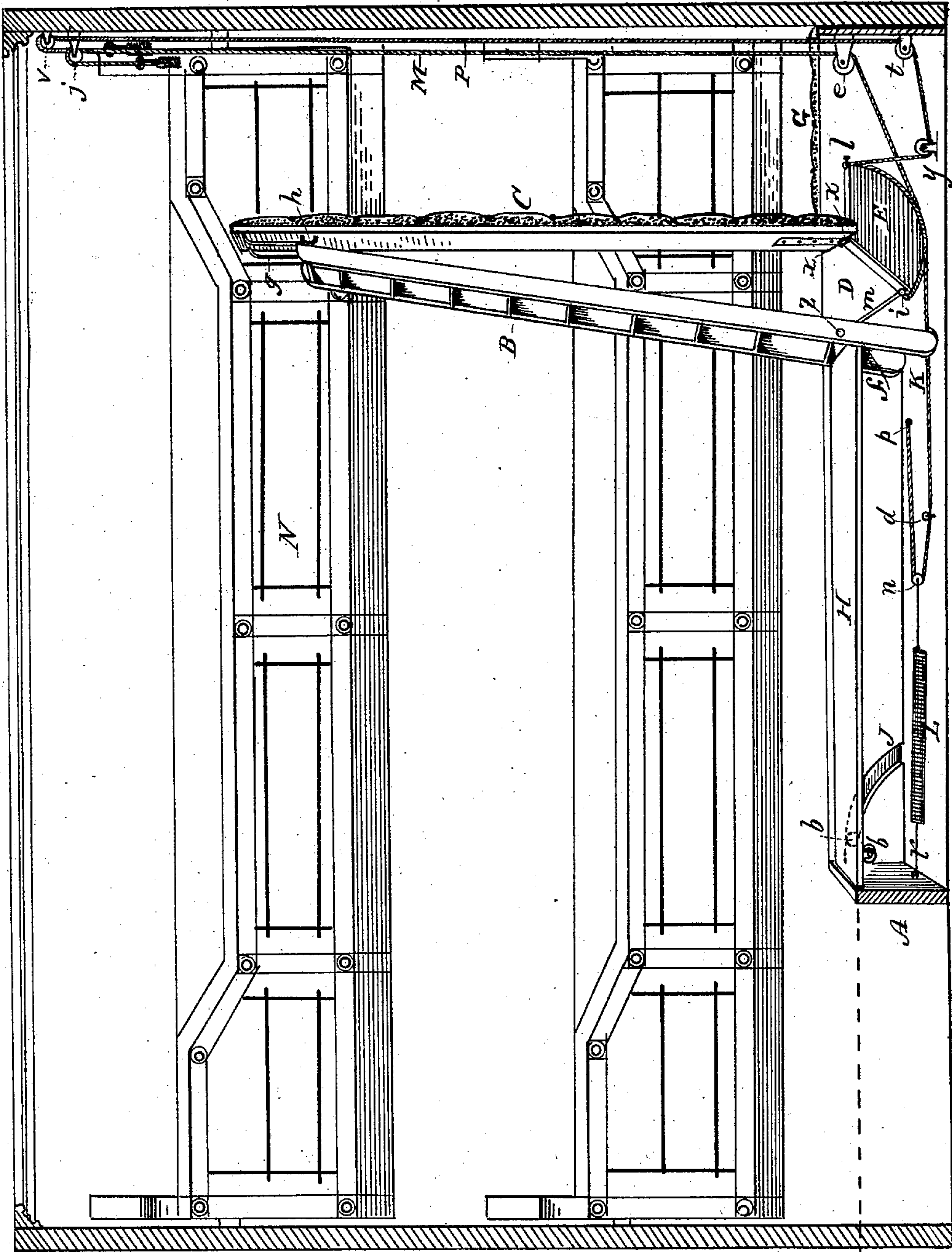
(No Model.)

C. A. MILLIGAN & M. J. KILLION.

LADDER.

No. 298,013.

Patented May 6, 1884.



Witnesses:

W. E. Remick,
L. J. White,

Inventor,
Charles A. Milligan,
Michael J. Killion,
per C. A. Shaw,
att'y.

UNITED STATES PATENT OFFICE.

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LADDER.

SPECIFICATION forming part of Letters Patent No. 298,013, dated May 6, 1884.

Application filed February 7, 1884. (No model.)

To all whom it may concern.

Be it known that we, CHARLES A. MILLIGAN and MICHAEL J. KILLION, respectively of Somerville, in the county of Middlesex, State of Massachusetts, and Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Ladders, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawing, forming a part of this specification, which represents an isometrical perspective view, showing our improved ladder in use, one side of the box being represented as removed.

Our invention relates to that class of ladders which are adapted to be folded into a case or box for storage or transportation; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a simpler, cheaper, and more effective device of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawing, A represents the box or case, and B the ladder.

The case is of uniform depth for about three-fourths of its length, this section having an upholstered cover, C, which is pivoted at *x* to the sides D, and being provided at its lower end with a quadricircular part, E, which acts as a counter-balance to the cover, and also performs another important function hereinafter described. The other section of the box is considerably higher than that covered by C, and is provided with a permanent upholstered cover, G, this section serving to house a portion of the machinery used in operating the ladder, and also as a seat; but the covers may be carpeted instead of upholstered, or may be left plain.

The ladder is provided at its upper end with two eyes, *h*, which slide on rods or loops *g* on the cover C, and at its lower end with a

bar or lever, *m*, which is jointed thereto at *z*, and to the lower side of the part E at *i*.

An auxiliary cover, H, which is slightly narrower than the box A, has one of its ends jointed to the lower end of the ladder at *f*, and the other provided with two trucks, *b*.

The sides D are provided on their inner faces, at the end of the case or box which is opposite the cover G, with two curved tracks, J, on which the trucks *b* run as the cover H is raised or lowered.

A cord, K, which is attached to the part E at *l*, passes under the guide-pulley *d*, thence through the sheave *n*, and is secured to the bottom of the box at *p*, the sheave being provided with a coiled spring, L, attached to the end of the box at *r*, which acts contractively to help elevate the ladder, and also to retard its movements as it falls.

A cord, M, passes under a pulley, *e*, and has its lower end secured to the part E at *i*, its upper end being passed over a pulley, *j*, above the top berth, N. Another cord, P, passes under the pulley *t* and guide-pulley *y*, and has its lower end secured to the part E at *l*, its upper end being passed over a pulley, *v*, near the pulley *j*.

In the use of our improvement, the ladder being in the position shown, if it is desired to fold it into its box or case, the cord M is pulled, causing the part E to turn on its pivot *x* and the lever or bar *m* to draw the foot of the ladder and auxiliary cover H toward the cover G. As the lower end of the ladder is drawn backward, as described, its center of motion, which is at the bottom of its rails, will pass under its center of gravity, permitting the cover C to fall and close the box in a manner which will be readily obvious without a more explicit description. To open the case and erect the ladder, the cord P is pulled, causing the lever *m* to force the lower end of the ladder outwardly into the position shown, and the rollers *b* to ride or pass upwardly over the tracks J until the cover H is in a horizontal position.

The cover H, in addition to serving as a cover to the box when the ladder is erected, also serves as a seat and as a step to assist in ascending the ladder, being sufficiently narrow

to be housed in the box when the ladder is depressed.

If desired, the case A may be made of uniform depth its entire length; and we do not
5 therefore confine ourselves to constructing the section which is closed by the cover G higher than that which is closed by the cover C.

In the drawings the ladder is represented as in use in the state-room of a steamer or ship,
10 being well adapted for gaining access to the berths. It is also well adapted for use in sleeping-cars, stores, dwelling-houses, libraries, &c.; and we do not therefore confine ourselves to its use for any special purpose.
15 Neither do we confine ourselves to the use of the trucks *b* or the tracks J, as these may be omitted, if desired, and other means employed to perform substantially the same functions.

When the ladder is used in a sleeping-car,
20 it may, if desired, be disposed in a compartment specially designed for it in the bottom of the car, and so arranged that when the cover C is closed it will be flush with the floor of the car, thus furnishing no impediment to the passengers. It may also be similarly arranged in libraries, &c., if preferred, a carpet being used on the covers C G, instead of upholstery, or they may be left plain, as preferred.
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We are aware that a ladder adapted to be
folded into a case, and also to automatically cover the case, is not new, and therefore do not herein claim the same, broadly; but,

Having thus explained our invention, what we claim is—

1. In a ladder substantially such as described, the cover H, hinged at one end to the ladder B, in combination with the case A, provided with the tracks J, and means for raising and lowering the ladder, substantially
35 as specified. 40

2. In a ladder substantially such as described, the cover H, in combination with the ladder B, cover C, case A, and means for raising and lowering the ladder, substantially as
45 set forth.

3. In a ladder substantially such as described, the cover H, in combination with the ladder B, cover C, case A, means for raising and lowering the ladder, and means for elevating and supporting the outer end of the cover H when the ladder is erected, substantially as specified.
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