

(No Model.)

H. C. STANLEY.  
FOLDING STEP FOR CAR BERTHS.

No. 482,391.

Patented Sept. 13, 1892.

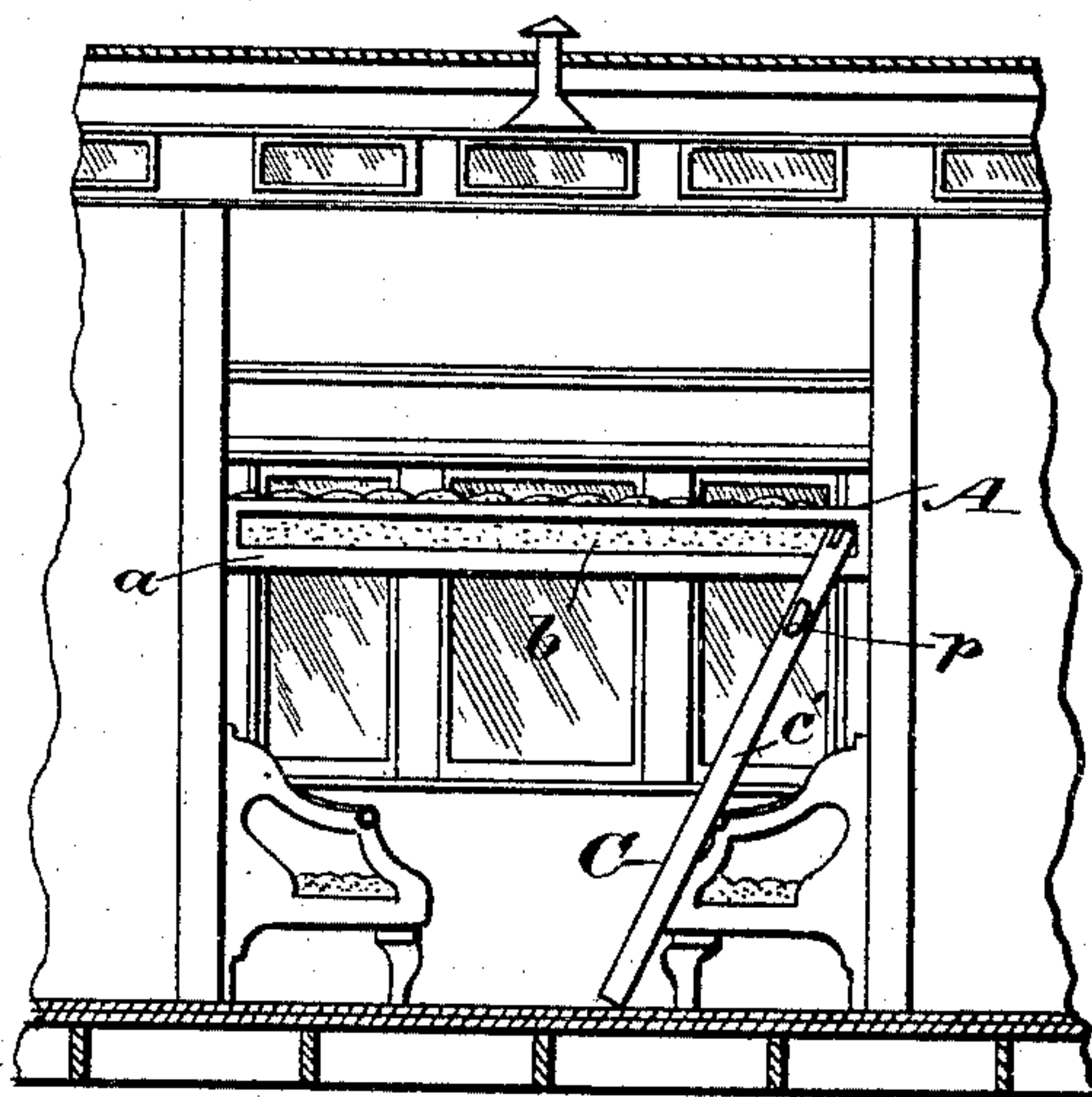


Fig 1

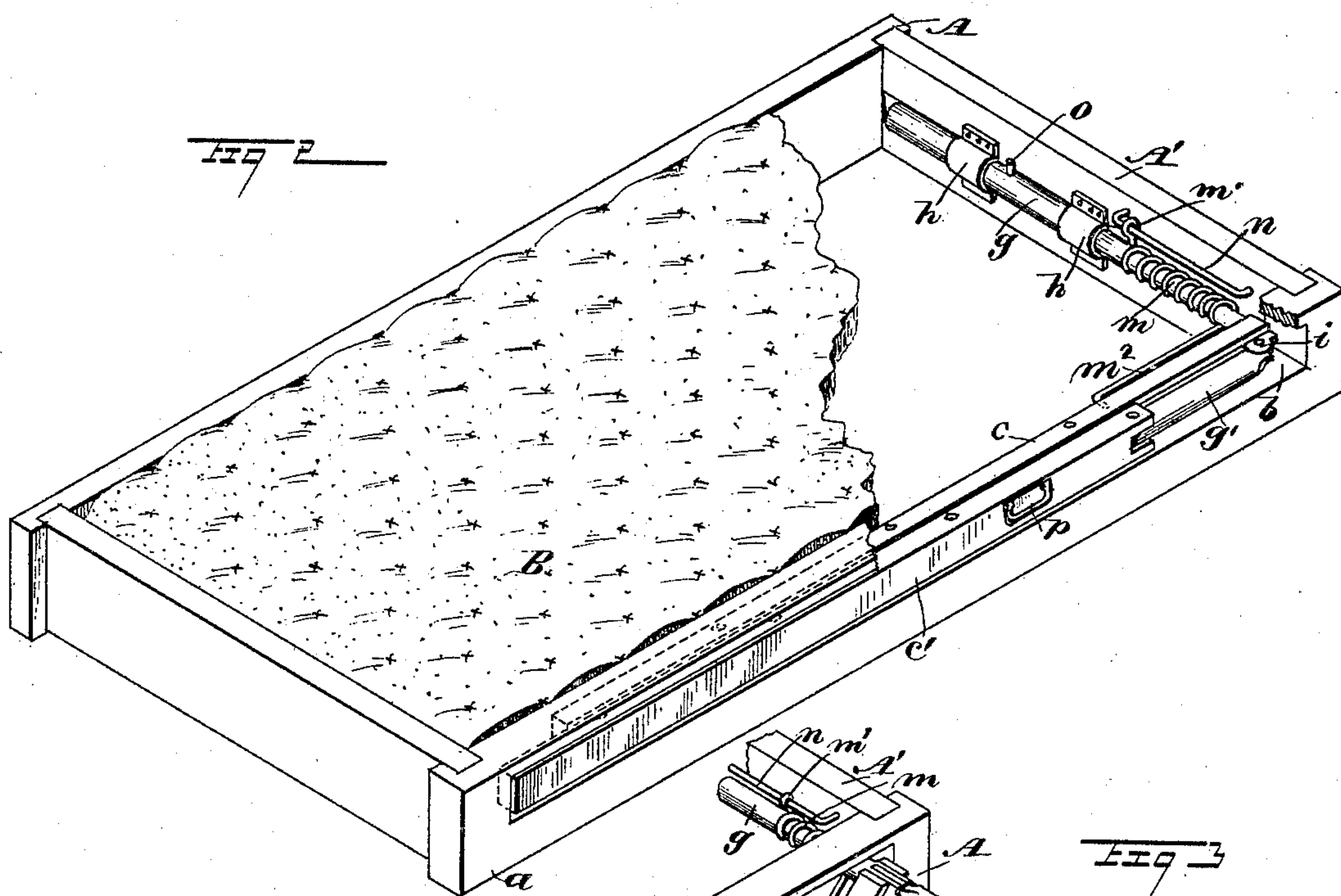


Fig 2

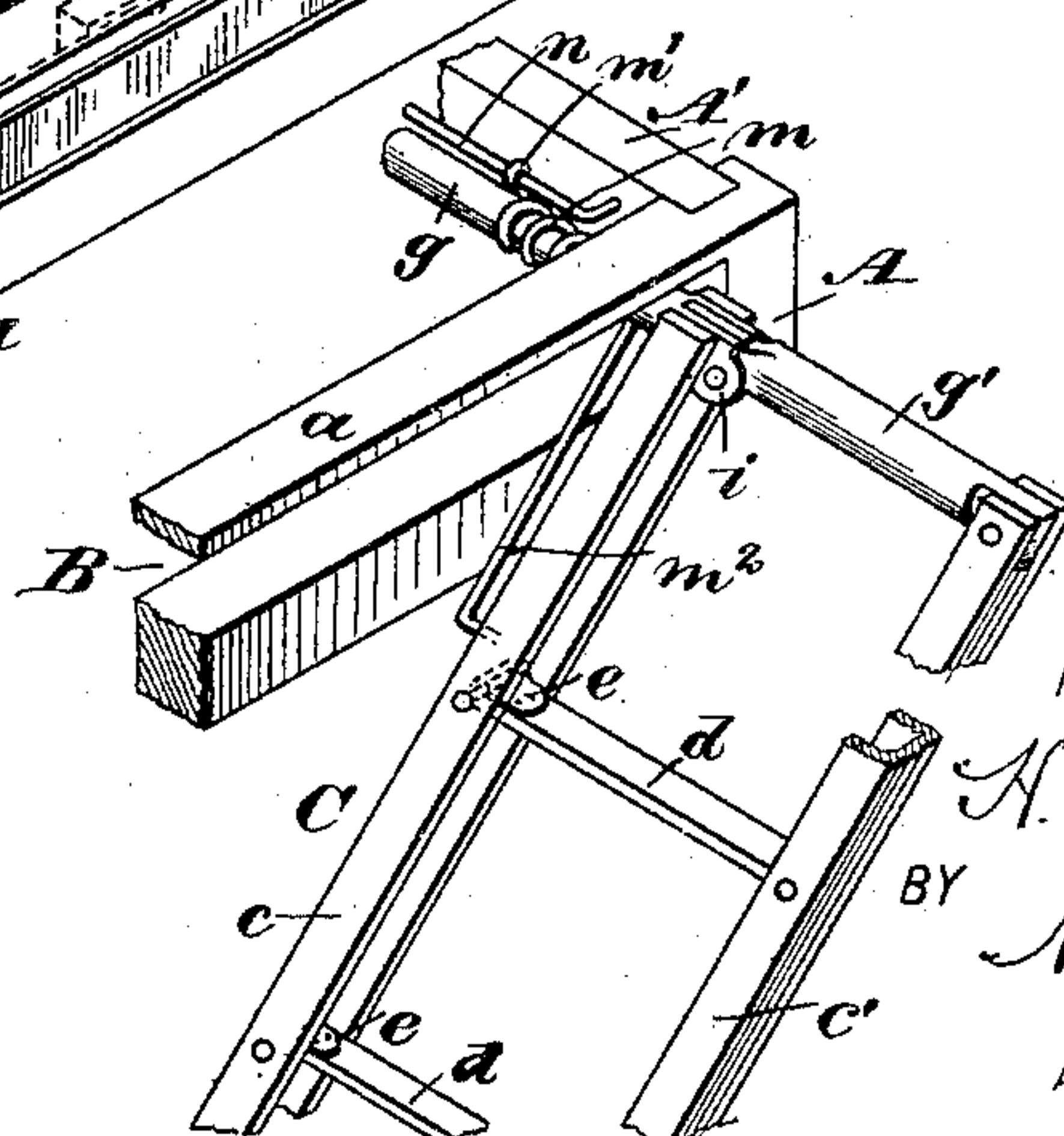


Fig 3

WITNESSES:

H. Walker  
C. Sedgwick

INVENTOR:

H. C. Stanley  
BY Munn & Co  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

HARRY C. STANLEY, OF NEW YORK, N. Y.

## FOLDING STEP FOR CAR-BERTHS.

SPECIFICATION forming part of Letters Patent No. 482,391, dated September 13, 1892.

Application filed November 21, 1891. Serial No. 412,640. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY C. STANLEY, of New York city, in the county and State of New York, have invented new and useful  
5 Folding Steps for Berths in Cars and Vessels, of which the following is a full, clear, and exact description.

The object of this invention is to provide  
10 steps to be located along the front rail of an upper berth in a sleeping-car or steamboat and furnish convenient means for entrance to and exit from the berth by an occupant.

To this end my invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate  
20 corresponding parts in all the views.

Figure 1 is a longitudinal section of a sleeping-car in part, an upper berth therein, and the improvement shown connected to the berth and lowered for use. Fig. 2 is a detached and enlarged view of a berth with a mattress thereon, broken away to expose details of construction of the folding steps shown in folded condition; and Fig. 3 is an enlarged, detached, and broken view of a part of the  
30 berth-frame and part of the steps, the latter being in opened adjustment.

The essential features of the invention consist in the provision of a light strong ladder, which is made to fold into the form of an elongated bar that is loosely secured to an upper  
35 berth of a car or steamer and is adapted for location within a slot in the front rail of the berth, and also that when projected laterally from the berth-rail will be caused to assume the form of a step-ladder that may be given a suitable inclination to engage the floor with its lower end, and thus provide a convenient and safe means for ascent to or descent from the upper berth to which it is attached. As  
45 usual, the frame A of the upper berth is made rectangular of a proper length and width to receive a mattress B, which is sustained in position by any preferred means. The front rail *a* of the berth is, by preference, laterally  
50 and longitudinally slotted, as at *b*, to receive the folded step-ladder C, the proportionate

length of which latter permits it to enter the slot, as shown in Fig. 2.

The construction of the folding step-ladder C is shown clearly in Fig. 3, and, as represented, consists of two side bars *c c'*, that are  
55 channeled to receive the end portions of the series of step-pieces *d*, which are provided with clip-plates *e* or equivalent devices to afford a jointed connection of the steps with  
60 the bars, wherein they lie when the ladder is folded so as to permit it to occupy the slot *b* or lie adjacent to the front rail *a*, if said rail is not slotted.

As a preferred mechanism for connecting  
65 the folding ladder C with the frame end piece A', the cylindrical slide-bar *g* is provided, which is loosely held in a plane parallel with the frame-top surface by the cap-boxes *h* or their equivalents, so as to allow said bar to be  
70 slid therein toward or from the slot *b*. The end of the slide-bar *g* that is nearest to the front rail *a* of the berth-frame is connected with a preferably cylindrical bar-piece *g'* by a rule-joint *i*, which adapts the latter to fold  
75 in one direction, as shown in Fig. 2. The bar-piece *g'* is pivoted to the upper end of the outer side bar *c'* of the ladder C, and the end of the slide-bar *g* is firmly affixed to the inner side bar *c* of said ladder near to the rule-joint  
80 *i*, so that the bar-piece *g'* becomes a top cross-bar for the ladder, having such a jointed connection as will allow the side bars of the latter to fold toward each other until their edges will impinge and produce a hollow rectangular  
85 bar.

Upon the portion of the slide-bar *g* between the rule-joint *i* and one cap-box *h* a spiral spring *m* is mounted, which spring has one end *m'* interlocked loosely with a guide-  
90 bar *n* and its opposite end portion *m''* projected as a limb along the inner side of the side bar *c* and thereto secured at its outer terminal, whereby the torsional force of the spring will be exerted to lift the ladder C into a horizontal  
95 position when the latter is unrestrained, and to insure the arrest of the ladder at a point where its rails *c c'* will align with the slot *b* a stud *o* is projected from the slide-bar *g*, so as to strike against the inner side of the  
100 top cross-bar A' of the berth-frame when the rails *c c'* are in the position mentioned. As



shown, the guide-bar *n* is formed as an elongated staple, having its main portion projected sufficiently from the side of the frame-piece *A'* to receive the looped end *m'* of the spring *m*, while its ends are bent at right angles from said main portion to be driven into the frame-piece mentioned. Upon the outer side of the ladder side bar *c'*, at any preferred point, a handle-piece *p* is secured, this being preferably given the form of a swinging bail, as shown in Fig. 2, and located in a recess that will avoid its projection beyond the general surface of the bar.

When the ladder is not in use, the folded side bars *c c'* of the same will lie within the slot *b* and the slide-bar extension *g'* also, and to put the device in service the handle *p* is grasped and pulled upon, which will unfold the ladder. Pressure is now applied to depress the free end of the ladder until it is in contact with the floor of the car or state-room, when the person desiring to enter the top berth is thus enabled to do so with ease and safety, the steps being folded and the ladder returned to a normal position within the berth front rail *a* when the traveler is within the berth.

To descend from the top berth of a car or stateroom of a vessel which is furnished with the improvement, it is only necessary to reach from the berth and manipulate the handle-piece *p* so as to draw the outer side bar *c'* outwardly far enough to unfold the ladder *C*, which may then be pushed upon so as to depress it into an inclined position, as indicated in Fig. 1, when the berth occupant may descend and then replace the device, as before explained, so as to remove it from obstructing the floor-space in front of the berth, that may also be folded upwardly in the ordinary way when the car is to be converted for daylight service into a seated apartment.

It is evident that the spring connection may be slightly changed without departure from the spirit and scope of my invention and that the slotting of the front berth-rail *a* may be dispensed with, if desired. Hence I do not wish to limit the construction to such precise forms as the drawings exhibit with regard to these features.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a car or state-room

berth, of a ladder pivoted by one end to rock into a plane parallel with the rails of the berth and adapted to fold toward the berth's front rail when elevated, substantially as described.

2. The combination, with a berth-frame, of a folding ladder secured by its upper end to the upper end of the berth and means to elevate the ladder and retain it parallel with the front rail of said berth-frame, substantially as described.

3. The combination, with a berth-frame, of a ladder composed of two channeled side bars and jointed step-pieces adapted to lie in the channels of the bars and a device which elevates and normally retains the ladder in a plane parallel with the front rail of the berth-frame, substantially as described.

4. The combination, with a berth-frame having its front rail slotted, of a folding ladder which incloses its steps when folded and is loosely held in connection with the frame near one end and adapted to occupy the slot of the frame-rail when in a folded condition, substantially as described.

5. The combination, with a rectangular berth-frame, a slide-bar loosely secured on the top bar of the frame, and a torsional spring thereon, of a folding ladder having its top cross-bar rule-jointed to the end of the slide-bar and a side bar thereof engaged by one end of the torsion-spring, substantially as described.

6. The combination, with a rectangular berth-frame having its front cross-bar longitudinally and laterally slotted, a slide-bar loosely secured on the inner side of the top cross-piece of the berth-frame, so as to be adapted to slide longitudinally, an extension-piece rule-jointed on one end of the slide-bar, a torsion-spring on said bar, and a guide-bar loosely engaged by one end of the torsion-spring, of a ladder comprising two channeled side bars and a series of step-pieces jointed at their ends within the channels of the side bars, the extension-piece of the slide-bar being joined at one end to the outer side bar of the ladder and the inner side bar thereof connected with the remaining end of the torsion-spring, substantially as described.

HARRY C. STANLEY.

Witnesses:

HOMER A. MAXWELL,  
ISAAC J. DANZQES.