

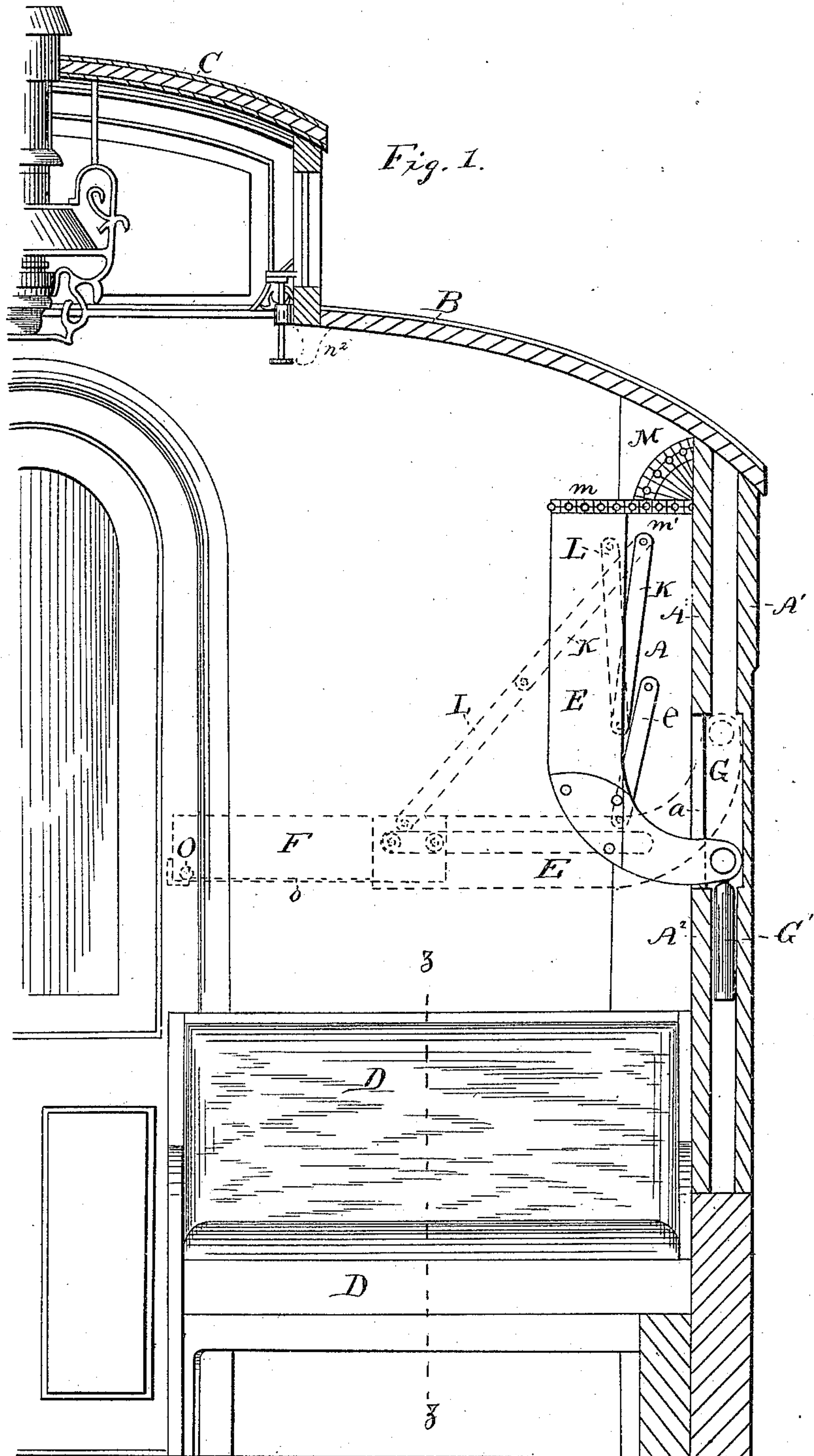
(No Model.)

4 Sheets—Sheet 1.

H. S. HALE.
SLEEPING CAR.

No. 285,890.

Patented Oct. 2, 1883.



Witnesses
Chas. R. Burr
Geo. H. Harvey

Inventor
Henry S. Hale
by *Wm. B. Blinn* & *Wm. B. Blinn*

(No Model.)

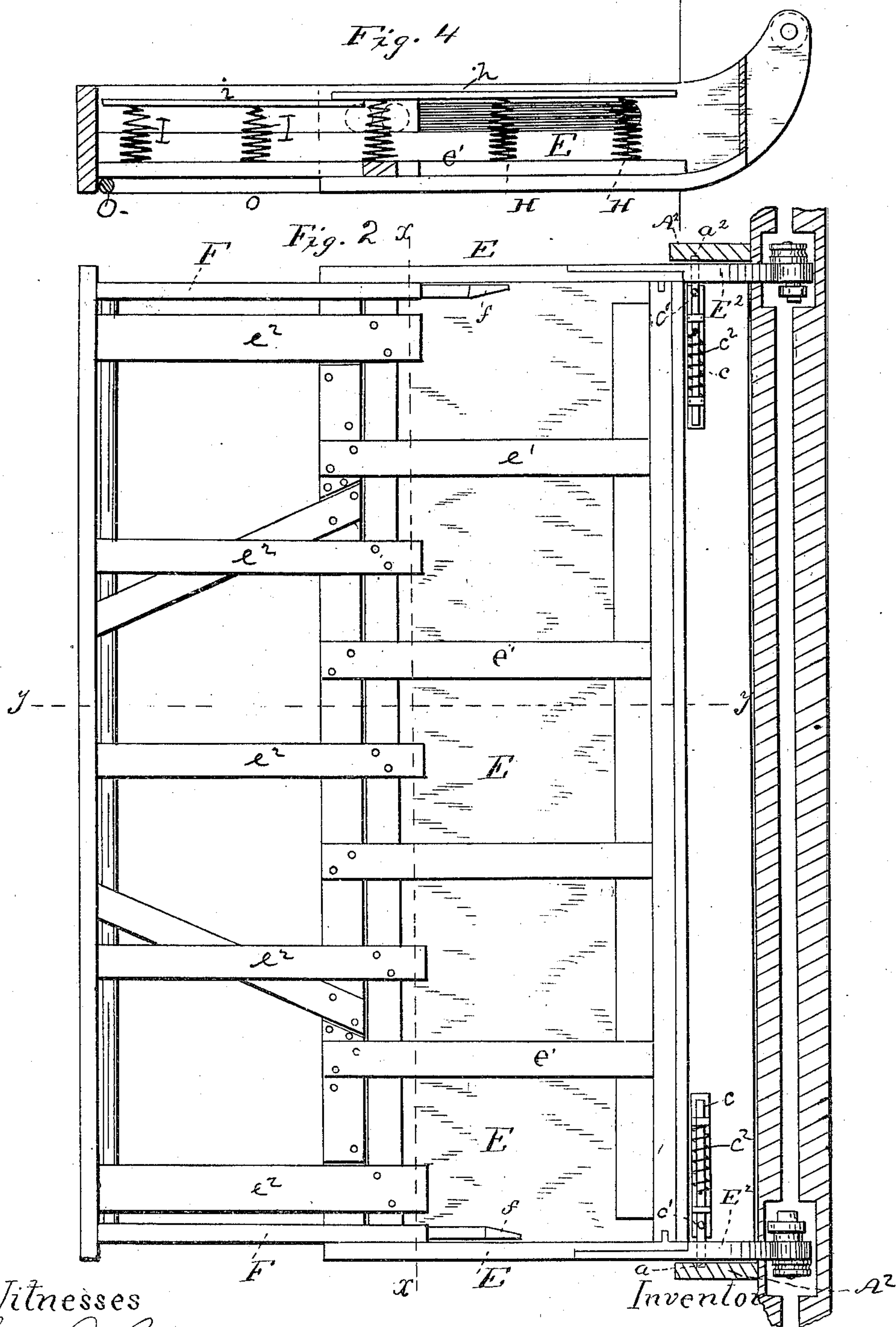
4 Sheets—Sheet 2.

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Witnesses
Chas. R. Burr
Geo. H. Harvey

Henry S. Hale
by Dumbleton & Blissatt

(No Model.)

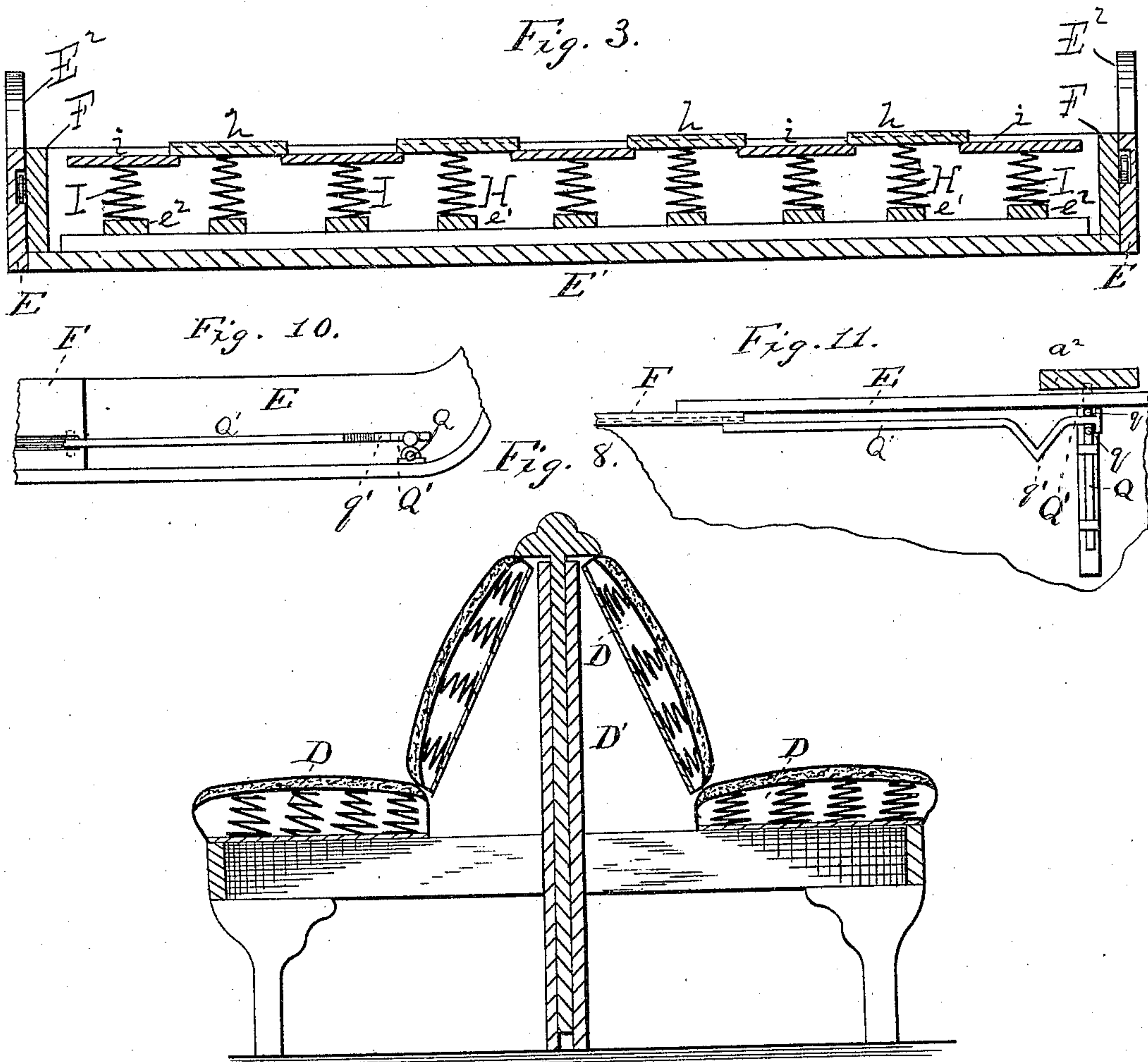
4 Sheets—Sheet 3.

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Witnesses
Chas. R. Burr
Geo. H. Harvey

Inventor
Henry S. Hale
by Bonbleday & Bliss

(No Model.)

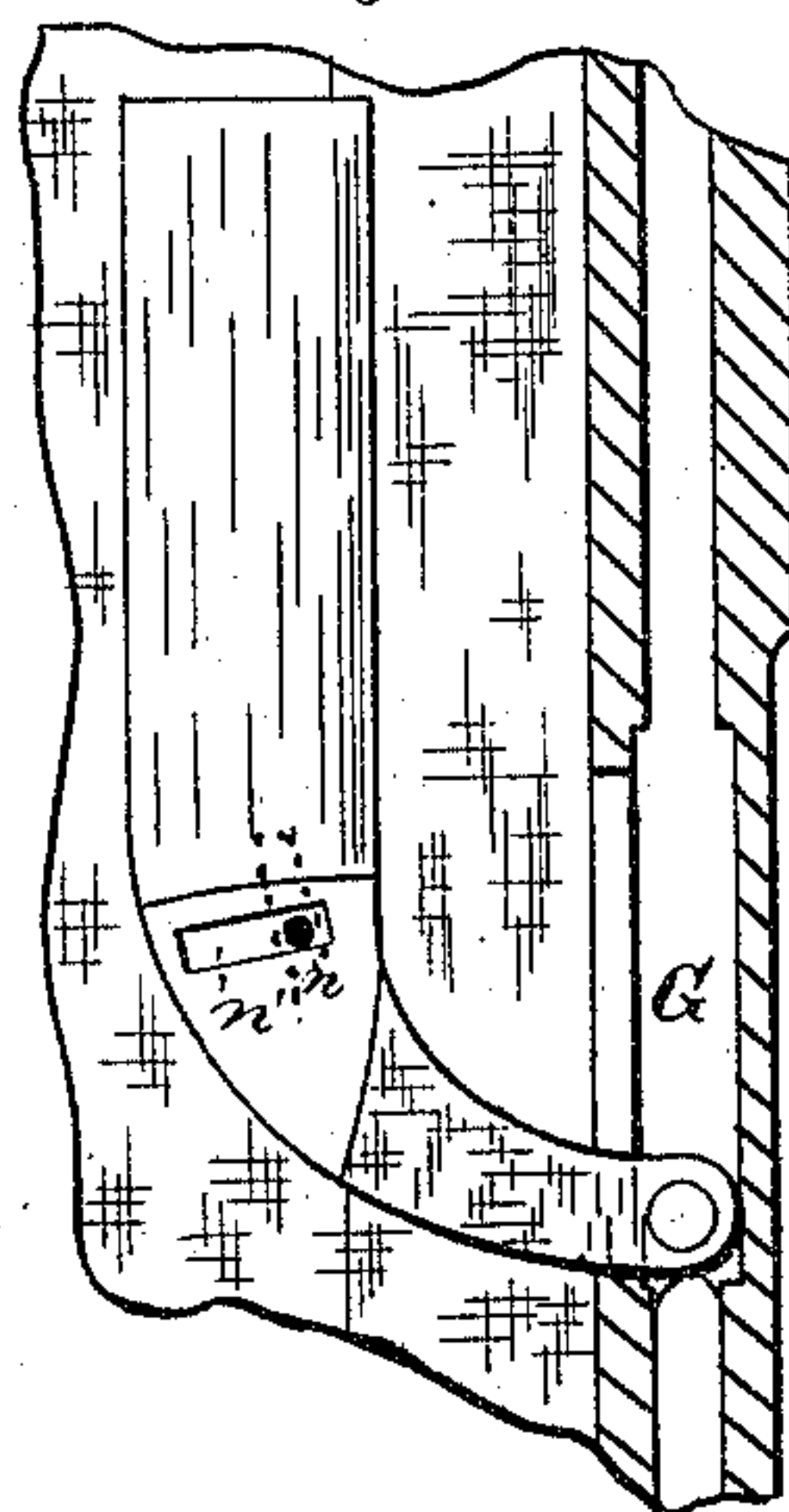
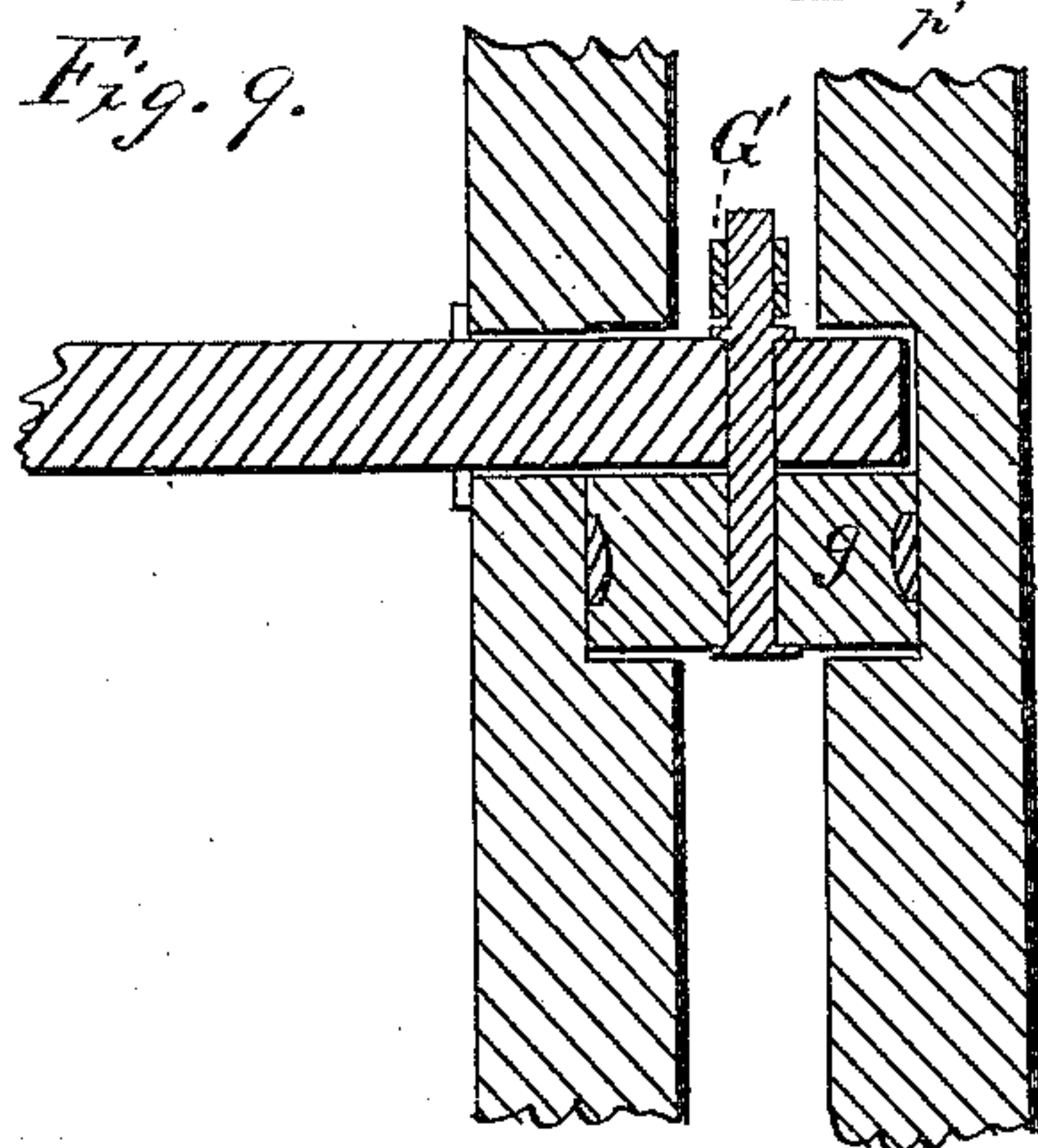
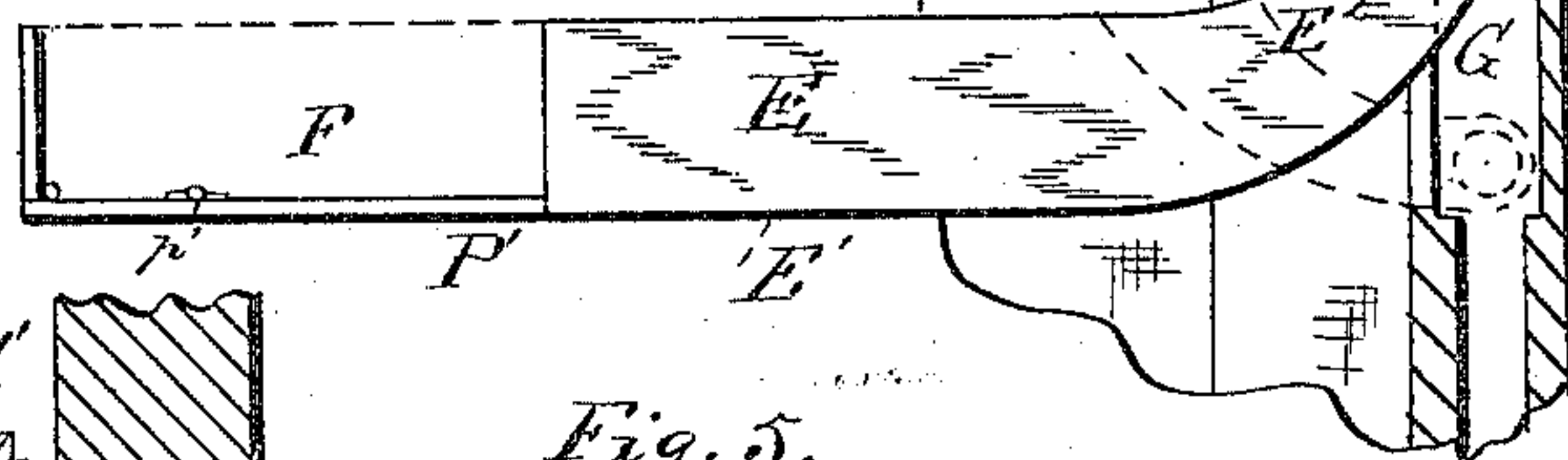
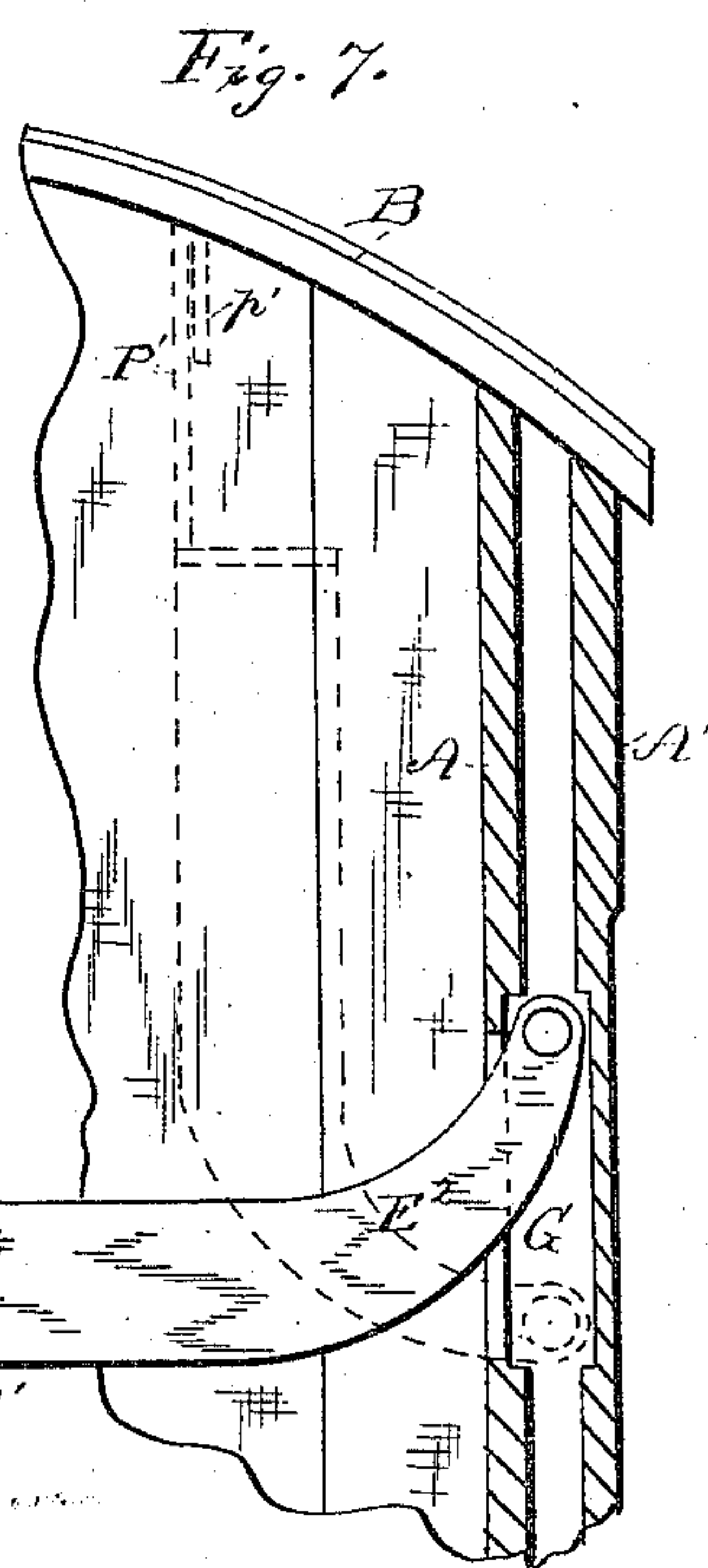
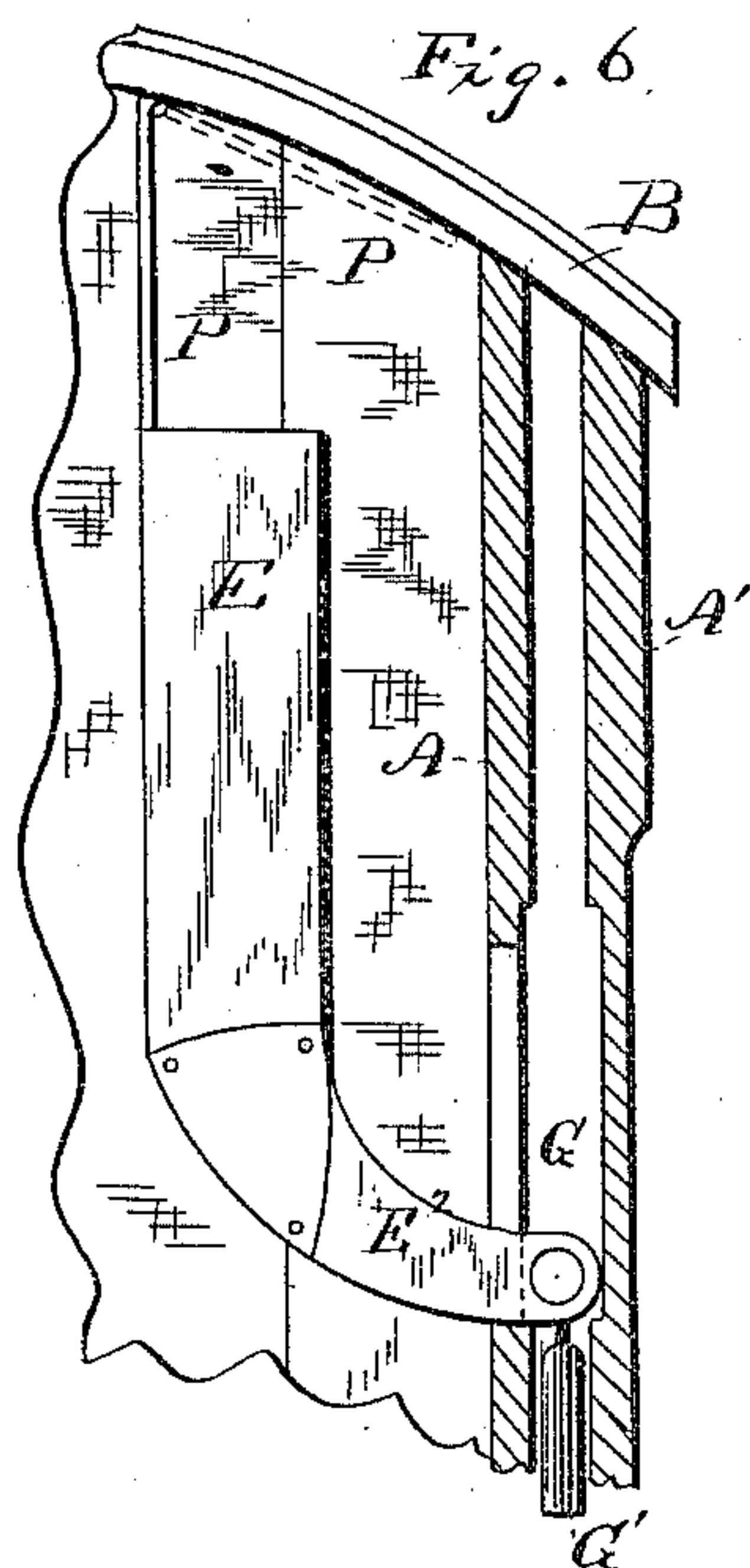
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Witnesses:
Chas. R. Burr
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UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

SLEEPING-CAR.

SPECIFICATION forming part of Letters Patent No. 285,890, dated October 2, 1887.

Application filed July 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. HALE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Sleeping-Cars, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a vertical transverse section of a portion of a sleeping-car embodying my invention. Fig. 2 is a plan view, detached, of the upper berth. Fig. 3 is a longitudinal section of the berth on line *x x*, Fig. 2. Fig. 4 is a transverse section on line *y y*, Fig. 2. Fig. 5 is an end view, showing a modification of the invention. Fig. 6 illustrates another modification of the invention. Fig. 7 shows another modification. Fig. 8 is a vertical section of the seat on line *z z*, Fig. 1. Figs. 9, 10, and 11 show enlarged detail views of the berth-locking devices.

In the drawings, *A A'* represent, respectively, the inner and outer walls of the side of a car. *B* is the lower deck, and *C* the upper deck, of the same.

D D are the cushions of the lower berth, and *D'* the partition between two seats. The upper berth is composed of two sections, one of which slides relatively to the other. In this berth *E E F F* are the end rails, and *E'* the panel or bottom. In Fig. 1 the end rails are suspended from the frame-work of the car by means of links *e e* at each end in substantially the same manner as the swinging portions of folding beds are suspended from the stationary portions in some of my earlier patents. The inner or lower portion of each end rail is provided with a heel-extension, *E²*, preferably of malleable iron, which enters a vertical slot, *a*, formed for its reception in the inner wall of the car, and carries at its inner end an anti-friction roller, *g*, mounted upon a laterally-projecting stud. These anti-friction rollers travel in slots *G*, formed in the frame-work of the car between its outer and inner walls, so that the rollers, by reason of their engagement with the walls of the slots, are compelled to move on practically vertical lines. By pref-

erence I construct these slots in the vertical portions of the frame-work of the car; but, when desired, supporting loops or brackets might be attached to either the inner or outer walls of the cars, said brackets being constructed with parallel bars, between which the rollers may travel. The upper end of each link is pivoted to the frame of the car, the lower end being pivoted to a stud projecting from the end rail of the berth. When desired, a counterbalancing-weight, *G'*, may be attached to each of the heel-extensions *E²*.

H H are a series of springs mounted upon the panel *E'*, or, when preferred, upon strips or ribs *e'*, projecting therefrom.

h h are slats secured to the upper ends of springs *H H*. *I I* are a corresponding series of springs mounted upon transverse bars, which constitute a part of the sliding member of the berth.

i i are transverse overlapping slats supported upon the upper ends of springs *I I*, and by an examination of Fig. 2 it will be readily seen that when the sliding portion of the berth is drawn out to its fullest extent, as shown in dotted lines, Fig. 1, there will be a greater number of springs in close proximity to a central line than there will be at either edge of the berth, which distribution of springs is very desirable, from the fact that the center of the berth is, under some circumstances, required to support more weight than is carried at either edge.

K L represent a jointed suspension-bar, such as is commonly used for supporting or partially supporting the outer edge of the folding berth.

M m m' represent a bundle-rack or package-rack substantially of the character ordinarily applied to the side walls of passenger-cars, and in this instance the rack is arranged high enough to permit the berth to be folded into a vertical position with its upper edge just below the rack when the sliding section of the berth is pushed inward or downward as far as possible. As shown in Fig. 1, the part *m* of the rack consists of an ornamental rail, fret-work, ledge, or cornice attached to one side and two ends of the portion *E E E'* of the berth,

so that when the berth is folded up against the side of the car it forms an extension or supplemental portion of the package-rack.

In Fig. 5 I have represented the berth as supported at each end upon stationary pivots n , which project laterally from the frame of the car, preferably from the partition, which is permanently attached to the inner wall of the car between each of two adjacent berths, and in order to facilitate the swinging of the berth I construct each end of each end rail E with a slot, n' , in which the supporting-pivot works, such slots having either straight or curved walls, as may be found most desirable to facilitate a proper swinging motion of the berth. Under some circumstances I propose to make the slot in the position relative to the side rails which is indicated in dotted lines, Fig. 5.

O is a roller mounted near the outer edge of the sliding section FF , and having a spring applied thereto in such manner as to automatically wind up the fabric o , the inner edge of which is attached to the outer edge of the non-sliding portion EE' of the berth in such manner that when the sliding portion is drawn out, as in Figs. 1, 2, and 4, the curtain will cover the slats II from view and prevent them being seen from the inside. The roller might be attached to the non-sliding portion of the berth, and the free edge of the curtain attached to the outer edge of the sliding portion; but I prefer the arrangement shown in the drawings; or, under some circumstances, other means might be employed to regulate or control the movement of the flexible curtain—as, for instance, the curtain might be made of a fabric composed of narrow slats or strips of wood glued to canvas, the ends being supported in grooves, so that when the sliding section is moved inward or downward the curtain should have a corresponding movement. When these grooves are made in the sliding section, they might be formed in the end rails FF , and curved so that the outer edge of the curtain would be moved toward the upper edges of the end rails; or substantially straight grooves might be made in the lower edges of the end rails EE , so that the lower inner edge of the panel would slide underneath the springs HH , provision being made, of course, to support the outer upper ends of the bar, strips, or ribs e' to permit the curtain to slide under them. Thus it will be seen that the curtain constitutes an extension of the panel E' or a supplemental panel.

In Fig. 6 the package-rack is dispensed with, the space between the upper edge of the berth, when folded, and the deck B being closed or filled by a swinging panel, P , hinged at its upper edge to the deck of the car, and provided with suitable fastening devices whereby it may be secured in the position shown in dotted lines when the berth is occupied at night. This panel might be hinged by its lower edge to the berth and provided with fastening de-

vices, by which it could be folded into close contact with the panel E' when the berth is let down; but in practice I prefer the construction shown; or this panel might form a rigid extension of the panel E' , and thus serve to cover up and hide from view the lower faces of the slats II and other parts of the sliding section of the berth.

In Fig. 7 I have shown a modification, in which the part P' of the panel-extension is attached rigidly by one edge to the panel or bottom board, E' , the narrower portion p' being hinged thereto, preferably by a rule-hinge joint, so that when the berth is down the panel P' p' hides the lower face of the sliding portion of the berth, and when turned up the part p' is folded against the inner face of the part P' , as indicated in full lines.

The movable head-board may be inserted in a recess or pocket formed in the partition D' , which separates the seats; or they may be stored in a closet-formed for their reception at one end of the car.

In order to lock the berth in position when swung down for occupancy, I have invented the following devices:

c c are sliding bolts, one upon each end of the berth, firmly attached to the non-sliding portion, and projecting through the end rails EE into mortises a , formed for their reception in the vertical stationary walls or partitions A^2 , which are arranged between the berths. Each of these bolts is provided with an upwardly-extending stud, c' , which projects into the path of a tripping-spur, f , attached to or formed in one piece with the inner end of each end rail F of the sliding section of the berth, the arrangement of parts being such that when the sliding section is thrust inward or downward it shall, just before reaching the limit of its movement, withdraw the locking-bolts, so that their outer ends shall not project beyond the outer faces of the end rails EE ; but when the berth is let down into a horizontal position a slight outward movement of the sliding section will release the bolts, when their actuating-springs c^2 will thrust them forward into the slots a^2 a^2 in partition A^2 , thus locking the berth firmly in position; or, when preferred, these bolts might be actuated by trippers attached to and moving with the sliding section in such manner that they (the bolts) shall be thrust outward positively and held into the slots when the sliding section is moved outward, as illustrated in Figs. 10 and 11, in which the bolt Q is provided with two upwardly-projecting spurs, q q , or a loop in the same position; and Q' q' is a bent tripper attached by bolt and slot to the sliding end rail F , so that when the sliding section is in its innermost position the inclined portion q' withdraws the bolt from the slot a^2 , but when the sliding section is moved outward the part Q' locks the bolt firmly in its slot.

Under some circumstances I propose to extend the partitions A^2 to such distance above

the upper edge or side rail of the berth, when folded, that the projecting ends of the partitions will serve as ends of the package-racks, in which case the end rails of the racks may be dispensed with, and in such case I propose to ornament these projecting ends with a design corresponding to that in which the front rail or side, m' , of the rack is formed, so as to present a neat and finished appearance; also, in practice, I propose to hinge the front rail or side, m' , of this rack to the edge of the berth, so that it can be folded into a vertical position when the berth is let down, and will not therefore project into the aisle between the berths, using, of course, suitable fastening devices to hold it in its vertical position. This hinging will also prevent the rail or side of the rack from being broken by the occupants of the car when climbing into the upper berths. Although in the drawings I have shown the guides for the anti-friction rollers arranged within the wall of the car, yet I do not wish to be limited thereby, because the heel-extensions of the end rails of the berth might be dispensed with, the rollers being mounted substantially on a line with the inner edge of the berth and made to engage with slots formed in the partitions A^2 , without departing from my invention. Nor do I wish to be limited to supporting the pivots upon links which have their upper ends attached to the car, because the position of the links might be inverted, in which case their lower ends might be either pivoted or supported by resting upon some suitable projection, shoulder, or equivalent. In either case the engagement of the rollers with the walls of the slots prevent any lateral movement of the pivots on which the rollers are mounted, and hence serve to maintain a proper relation between the inner edge of the berth and the side of the car.

When desired, a sliding plate, a' , may be mounted upon the heel-extension at each end of the berth just inside the wall, and thus cover the slot a , through which the heel-extension passes, and serve as a guard to prevent anything from accidentally passing through the slot, and thence down between the inner and outer walls of the side of the car.

Among the advantages which are due to my improvements are the following: First, the sliding of one member of the berth toward the lower ends of the links e greatly facilitates a proper balancing of the berth upon its pivotal supports, so as to increase the ease with which it can be folded up; secondly, this narrowing of the berth permits it to be folded up to a vertical position, instead of an inclined position, which is indicated by the dotted line N , which latter is the position ordinarily occupied by berths of sleeping-cars. Again, it permits the employment of racks M , which are a great convenience in cars which are to be occupied during the hours when berths are not made up for sleeping; and, again, it does away with the necessity for a downwardly-

projecting rib or ledge, (indicated by dotted lines at n^2), which rib is a great annoyance to the occupants of the upper berths, from the fact that it interferes with the free movement of the head; and, again, the use of this invention adds very much to the appearance of a car, making the upper portion of it so much more roomy.

I am aware that the space between the upper edge of the berth and the deck of the car has been closed by a swinging panel, and that weights have been employed as counter-balances for the berths; also, that berths have been made in hinged sections which could be folded together and moved into planes parallel with the side of the car; hence I do not claim any of these features, broadly. Nor do I in this case claim any invention, except such as are specifically set forth in the claims hereof, reserving to myself the right to claim in another application, No. 103,305, filed August 9, 1883, all other patentable features which are described or shown in these drawings.

What I claim is—

1. In a sleeping-car, a swinging berth having two sections, one of which is adapted to slide relatively to the other, substantially as set forth.
2. In a sleeping-car, a swinging berth having two sections, one of which is adapted to slide relatively to the other, in combination with supporting-springs arranged in rows, the alternate rows being attached, respectively, to different sections of the berth, substantially as set forth.
3. In a sleeping-car, a swinging berth having two sections, one of which is adapted to slide relatively to the other, in combination with pivotal devices connecting the end rails of the berth with the adjacent parallel walls of the car, substantially as set forth.
4. A sleeping-car berth having two sections, one of which is adapted to slide relatively to the other, in combination with a screen adapted to close the space between the outer edges of the berth-sections when the sliding member is extended, substantially as set forth.
5. A sleeping-car berth having two sections, one of which is adapted to slide relatively to the other, in combination with a lateral extension attached permanently to the non-sliding section and overlapping the sliding section, substantially as set forth.
6. In a sleeping-car, a swinging berth having a sliding section and a non-sliding section, in combination with a counterbalancing-weight, substantially as set forth.
7. In a sleeping-car, a swinging berth having a sliding member and a non-sliding member, in combination with pivotal devices connecting the end rails and the frame-work of the car, and a counterbalancing-weight, substantially as set forth.
8. In a sleeping-car, the combination of a slotted wall, a swinging berth having heel-extensions which project through the slots,

and means adapted to prevent the withdrawal of the heel-extensions from the wall, substantially as set forth.

9. In a sleeping-car, the combination of a swinging berth provided with heel-extensions projecting through the slots, and a counterbalancing-weight attached to the heel-extensions within the wall, substantially as set forth.

10. In a sleeping-car, a swinging berth adapted to be moved into a substantially vertical position, in combination with a package-rack arranged above the upper edge of the berth, substantially as set forth.

11. In a sleeping-car, a package-rack having each end piece formed in two parts, one part being permanently attached to the side of the car, the other part being attached to a swinging berth, substantially as set forth.

12. In a sleeping-car, a package-rack having a portion of its vertically-inclosing surfaces attached permanently to the wall of the car and other parts hinged to the edge of a swinging berth, substantially as set forth.

13. In a sleeping-car, a package-rack formed in two parts, one part being permanently attached to the wall of the car, another part being attached to a swinging berth, substantially as set forth.

14. In a sleeping-car berth, the combination of a sliding section, a non-sliding section, a roller attached to one section, and a flexible screen or fabric attached to the roller and to the other member of the berth, substantially as set forth.

15. In a sleeping-car, a berth having a sliding section and a non-sliding section, in combination with a flexible screen attached at one edge to one member of the berth, and adapted to cover the exposed under surface of the sliding section when the latter is drawn out for use, substantially as set forth.

16. In a sleeping-car, a berth having a sliding section and a non-sliding section, in combination with a screen rigidly attached at one edge to the non-sliding section, and adapted to cover the under surface of the sliding sec-

tion when the latter is drawn out for use, substantially as set forth.

17. In a sleeping-car, a berth having the sliding section and a non-sliding section, in combination with a screen formed in hinged sections permanently attached to the non-sliding section, and adapted to cover the under surface of the sliding section when the latter is drawn out for use, substantially as set forth.

18. In a sleeping-car, a swinging berth, in combination with locking devices attached to and carried by the berth, and adapted to engage with a partition between the berths to lock the berth in a horizontal position, substantially as set forth.

19. In a sleeping-car, a swinging berth having a sliding section and a non-sliding section, in combination with locking devices adapted to lock the berth to a partition between the berths, and means connected with the sliding section for thrusting the bolt into the partition when the sliding section is moved outward relatively to the non-sliding section, substantially as set forth.

20. In a sleeping-car, a swinging berth having a sliding section and a non-sliding section, in combination with a horizontally-sliding bolt carried by the berth, and means actuated by the sliding section for thrusting the bolt into the partition and withdrawing it therefrom, substantially as set forth.

21. In a sleeping-car, a swinging berth having a sliding section and a non-sliding section, in combination with a horizontally-sliding bolt permanently attached to the berth, and mechanism actuated by the sliding section for withdrawing the bolt from the partition when the sliding section is moved inward, substantially as set forth.

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

HENRY S. HALE.

Witnesses:

J. WARREN HALE,
J. B. KILBURN.