

(No Model.)

2 Sheets—Sheet 1.

H. S. HALE.  
WARDROBE BED.

No. 277,566.

Patented May 15, 1883.

Fig. 2.

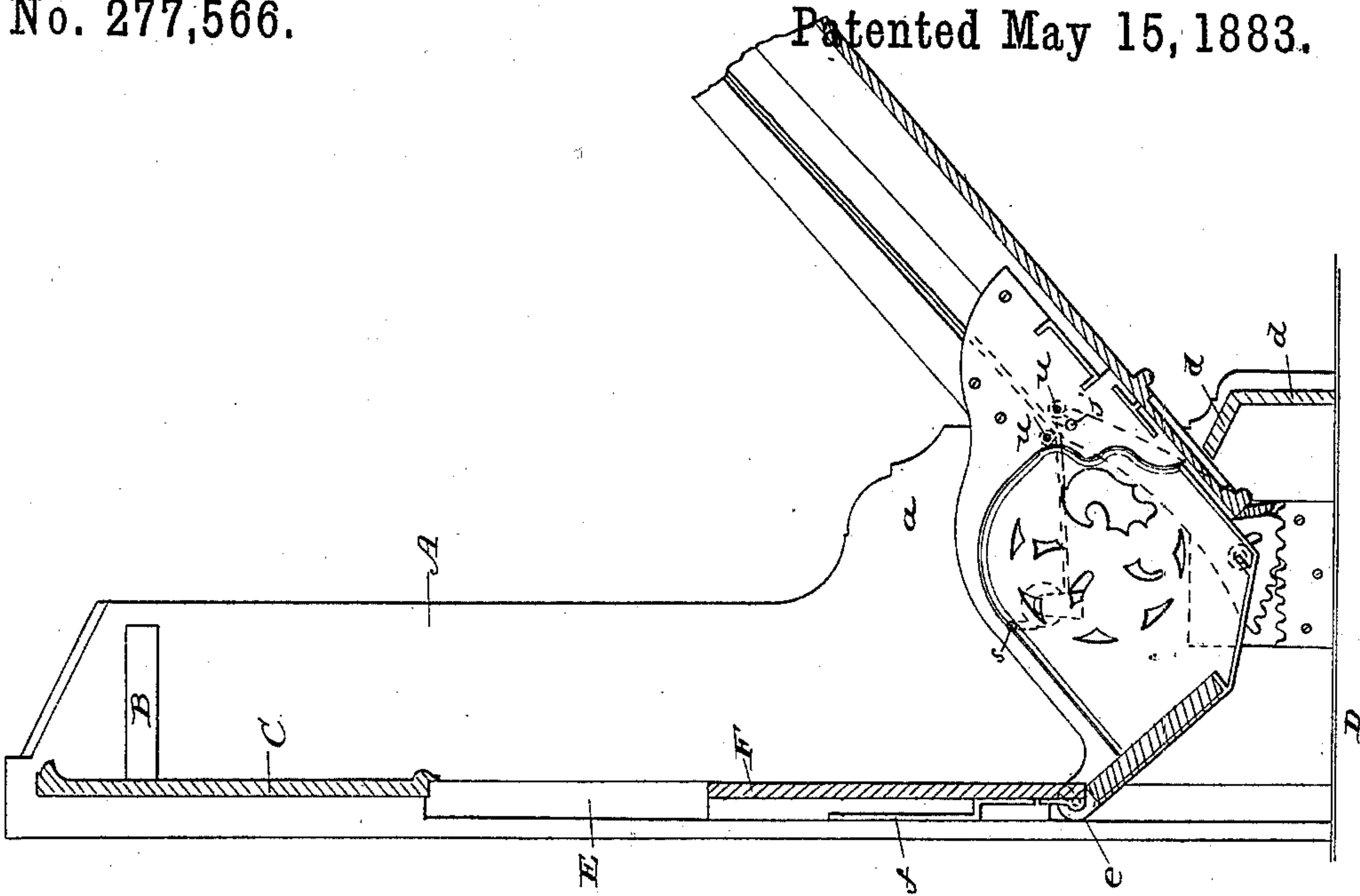
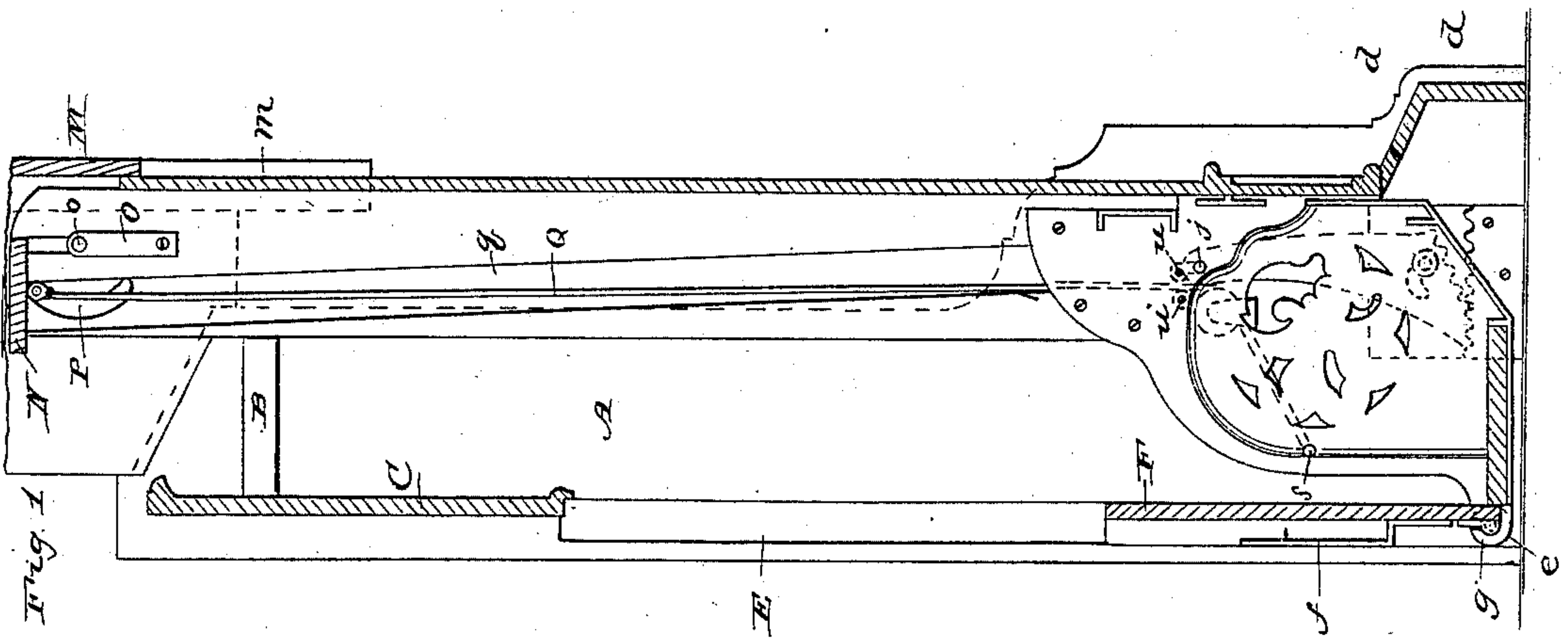


Fig. 1.



Witnesses.

A. N. Low

L. H. Marshall.

Inventor

Henry S. Hale

by Doubleday & Bliss

attys

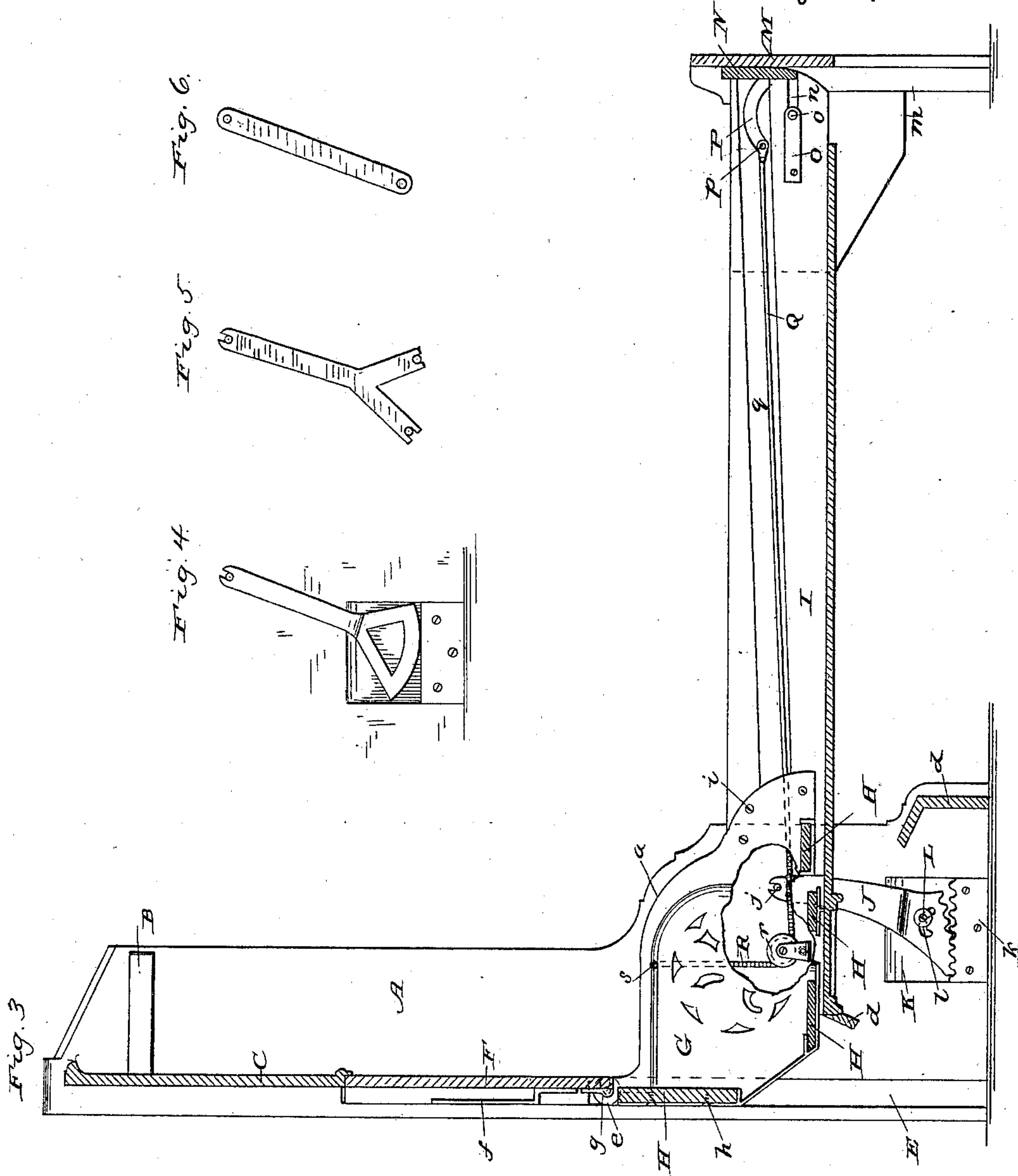
(No Model.)

2 Sheets—Sheet 2.

H. S. HALE.  
WARDROBE BED.

No. 277,566.

Patented May 15, 1883.



Witnesses:

*H. N. Low*  
*L. D. Marshall*

Inventor:

*Henry S. Hale*  
*by Doubleday & Bliss*  
*attys.*



# UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

## WARDROBE-BED.

SPECIFICATION forming part of Letters Patent No. 277,566, dated May 15, 1883.

Application filed February 16, 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 Wardrobe-Beds, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a vertical section of my improved bed when folded. Fig. 2 is a similar view, showing the position of the supporting and counterbalancing mechanism when the bed is let half-way down. Fig. 3 is a similar section with a bed lowered into position for use; and Figs. 4, 5, and 6 are detached views, showing modified forms of the pivot-lever.

In the drawings, A represents one of the end pieces of the permanently-upright portion, which is connected with an opposing end piece by means of a horizontal girt, B, and a back piece, C, and, when preferred, a bottom or base piece, D. The lower part of each end piece is expanded, as at *a*, such expansion being connected with the corresponding part at the opposite side of the bed by means of parts *d d*. Each end piece is slotted, as at E, to receive the sliding portion F of the back or head board F, which is provided at each end with a bracket-piece, *f*, adapted to support the counterbalancing-weights, which consist of bars provided at their ends with slots to fit over the brackets *f*, but which need not be shown or further described. The sliding portion *f* of the back or head board is pivoted at its lower edge to a metal plate, G, each pivot being by preference seated in a bearing, *g*, which is screwed to the rear of the sliding head-board F.

H H are girts seated in suitable sockets, or between flanges cast upon the inner face of each metal piece G, and secured firmly by means of screws *h*, thus serving as frame-pieces to firmly support the working parts of the bed. Each of the side boards or rails, I, is firmly attached at its lower inner end to one of the metal plates G by means of screws *i i*, or in other equivalent manner. The inner end of each side piece and metal plate G is pivoted at J upon a substantially-vertical link, J, the pivot *j* being cast, by preference, upon the outer face of the metal plate. In Figs. 1, 2, and 3

the link J is expanded at its lower end, and has formed in it teeth which take into corresponding teeth, *k*, which project from the vertical face of a metal plate, K, which is secured to the lower portion of the end piece, A, by screws or otherwise. In order to assist in retaining the link in suitable working relation to the other parts, it is slotted, as at *l*, which slot is traversed by a button-headed pivot, L, which projects from the adjacent face of plate K, the slot being of such form and dimensions as will permit the desired vibration of said pivot, to be hereinafter explained.

M *m* is the foot-board, the legs (one, *m*, at each end) being of suitable length to rest upon the floor when the bed is let down; and thus support the mattress in a substantially-horizontal position.

N is a girt connecting the outer upper ends of the side pieces, I. Each side piece is slotted, as at *n*, to receive a pivot, *o*, of the foot-board, which pivot is retained in close contact with the wall at the inner end of the slot by means of an elastic tongue, O, which, at its inner lower end, is secured to the inner face of the side rail, I, and is provided at its outer end with a hole to receive the pivot *o*. Each side rail is also provided at its upper outer end with a curved slot, P, which is concentric to the pivot *o*. *p* is a stud projecting from the foot-board through the slot, where it connects with a link, Q, which is arranged in a groove, *q*, formed for its reception in the inner face of side rail, I.

R is a chain or cord, connected at one end to the rear lower end of rod Q, passing thence around a grooved pulley, *r*, which is attached to the lower end of the end board, and thence in an angular direction to a point, *s*, where it is attached to the metal plate G.

*u u* are guiding-pulleys attached to the outer face of metal plate G, upon opposite sides of the chain R, these pulleys being shown in Figs. 1 and 2, but are not shown in Fig. 3, because that portion of the metal plate to which they are attached is broken away to show the construction and relative position of other parts of the mechanism.

*e* is an anti-friction roller applied to the pivot, which at *g* connects the lower edge of the sliding portion F of the head-board with



the metallic plate G, said pulley traversing the slot E in the end piece, A, there being, of course, one such pulley at each end of the sliding head-board.

5 From an examination of the drawings it will be readily understood that when the bed is being moved from the vertical position shown in Fig. 1 to the horizontal position shown in Fig. 3 the engagement of the anti-friction rollers  
10 e and the relation of the other parts of the supporting and counterbalancing mechanism operate to shift the pivotal points j backward and forward, the result of such operation being that the weight of the upper outer end of the bed is  
15 practically counterbalanced in all of the different positions which it assumes when moving from a vertical to a horizontal position, and vice versa; and it will also be understood that not only are the pivotal points j continually  
20 shifting during this swinging movement of the bed, but the relation of these pivotal points to the lower ends of the links which form their bases of support are also constantly shifting, because these links are constantly changing  
25 their positions relative to perpendicular lines, this relation of parts assisting also in counterbalancing the weight of the upper outer end of the bed, whereby any sudden jar or concussion as the bed assumes either a vertical or  
30 horizontal position is effectually prevented.

In Fig. 4 I have shown a modified form of supporting-link, in which its expanded lower end is circular in outline and rests upon a suitable base. In Fig. 5 I have shown the link as  
35 being forked at its lower end, the extreme ends of the forks being notched to engage alternately with pivots, which project from the face of the end board, A. In Fig. 6 I have shown a link consisting of a flat bar of metal with  
40 parallel sides, adapted to be pivoted at its lower end to the end board A and at its upper end to the metal plate G.

In practice I prefer, instead of using a metal plate, K, with a notched ledge or shoulder, k,  
45 to form a recess in the face of the end board and secure a notched plate in the bottom of the recess, in which latter case the bar J should be constructed with an offset near its lower end in such manner that while the upper  
50 part may move in close contact with the inner face of the end board its lower end shall extend into the recess, so as to ride upon the upper edge of the notched plate.

By an examination of the drawings it will  
55 be readily understood that as the bed is swung downward from the position shown in Fig. 1 to that shown in Fig. 3 the cord or chain R is slackened in such manner as to permit the outer upper end of link Q to be drawn to the  
60 upper end of slot P, and thus permit the foot-board to swing into the position shown in Fig. 1, and when the bed is being swung down the link is drawn inward, so as to insure that the foot-board shall be thrust out into the position shown in Fig. 1.

While I prefer the construction and arrangement of parts shown in Figs. 1, 2, and 3 as

producing the best and most effective counterbalancing, yet I do not wish to be limited thereby, because the forms of link shown in  
70 Figs. 4, 5, and 6 may be used without departing materially from the spirit of that part of my invention which relates to supporting the swinging bed upon a movable pivot.

I am aware that folding beds have been  
75 made with movable pivots permanently attached to the swinging portion and moving toward and from the vertical plane of the stationary portion of the head-board; but I am not aware of any prior construction in which there  
80 has been used a counterbalancing head-board, rising and falling in a common vertical plane, in combination with movable pivots, each of which is permanently attached to the swinging  
85 portion, which I regard as being a very desirable feature of my invention, as it will be readily understood by an examination of the drawings that when the bed is being lowered from the position shown in Fig. 1, and the effective force of the counterbalancing head-  
90 board is being increased, the pivots j j move outwardly—that is, away from the vertical plane of the head-board—as indicated in Fig. 2, and that when the bed is swinging from the position shown in Fig. 2 to that shown in  
95 Fig. 3 the pivots are drawn toward the vertical plane of the head-board, so that when the operator swings the bed up the pivot shall move outward, and thus reduce the amount of power that is required to close the bed. So,  
100 also, as the bed approaches the vertical position shown in Fig. 1 the pivots approach their innermost positions, while at the same time the counterbalancing effect of the weight is reduced, thus avoiding all danger of throwing  
105 the bed against the stationary portion with undue violence.

What I claim is—

1. In a folding bed, the combination of the stationary portion, the swinging portion pro-  
110 vided with two permanently-attached pivots, vibrating links, each supported at one end upon the stationary portion and pivotally connected at the other end to one of the permanently-attached pivots, substantially as set  
115 forth.

2. In a folding bed, a vibrating link pivoted at its upper end to the swinging portion of the bed, and having its lower end expanded so as to engage with different portions of its support  
120 on the stationary portion, substantially as set forth.

3. In a folding bed, the combination of the stationary portion, the swinging portion, the counterbalancing-weight, and vibrating links  
125 for supporting the swinging portion, substantially as set forth.

4. In a folding bed, the combination of the stationary portion, the swinging portion, the counterbalancing-weight, the vibrating links,  
130 and means for swinging the upper ends of the vibrating links backward and forward, substantially as set forth.

5. In a folding bed, the combination of the



stationary portion, the swinging portion, the rising and falling portion of the head-board pivoted to the inner lower end of the swinging portion, the vibrating links and devices connecting the head-board and the inner lower end of the vibrating portion with the end bars of the stationary portion in such manner as to cause the upper ends of the supporting-links to move backward and forward, substantially as set forth.

6. In a folding bed, the combination of the stationary portion, the rising and falling head-board, the swinging portion mounted upon movable pivots, and the cord and link attachment for operating the foot-board, substantially as set forth.

7. In a folding bed, metal plates G, attached to the end of the side rail, and provided with pivots upon which the folding portion swings, substantially as set forth.

8. In a folding bed, a metal plate, G, attached to the end of a side rail, and provided with a pivot upon which said side rail swings, and

having one end of the chain R attached thereto, in combination with a pulley, r, mounted upon the stationary portion of the bed, substantially as set forth.

9. In a folding bed, a metal plate, G, attached to the end of a side rail, and provided with a pivot upon which said rail swings, in combination with means for the attachment of the chain, and with a guiding-pulley for said chain, substantially as set forth.

10. In a folding bed, a stationary portion, a swinging portion vibrating about a moving fulcrum, in combination with a chain attached at one end to the swinging portion, passing thence around a pulley attached to the stationary portion of the bed and connected to the swinging foot-board.

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

HENRY S. HALE.

Witnesses:

CHAS. H. OTTERSON,  
J. WARREN HALE.