

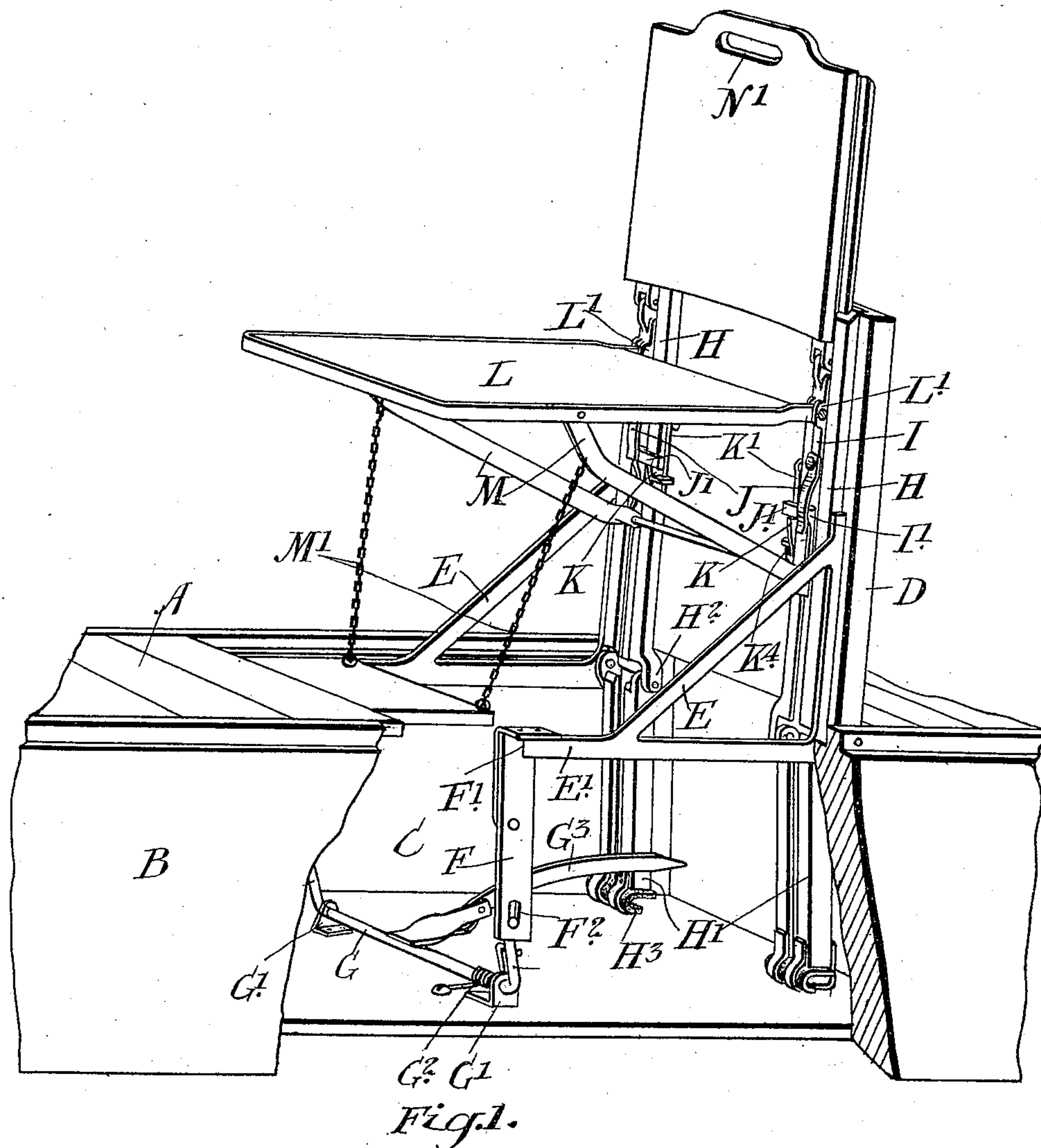
No. 841,135.

PATENTED JAN. 15, 1907.

L. G. FINCH.
AUTOMATIC DISAPPEARING CHAIR.

APPLICATION FILED DEC. 8, 1905.

2 SHEETS—SHEET 1.



Witnesses.
H. L. Young
Eugene Sheppard

Inventor:
L. G. Finch
By Fred B. Feltch
att'y

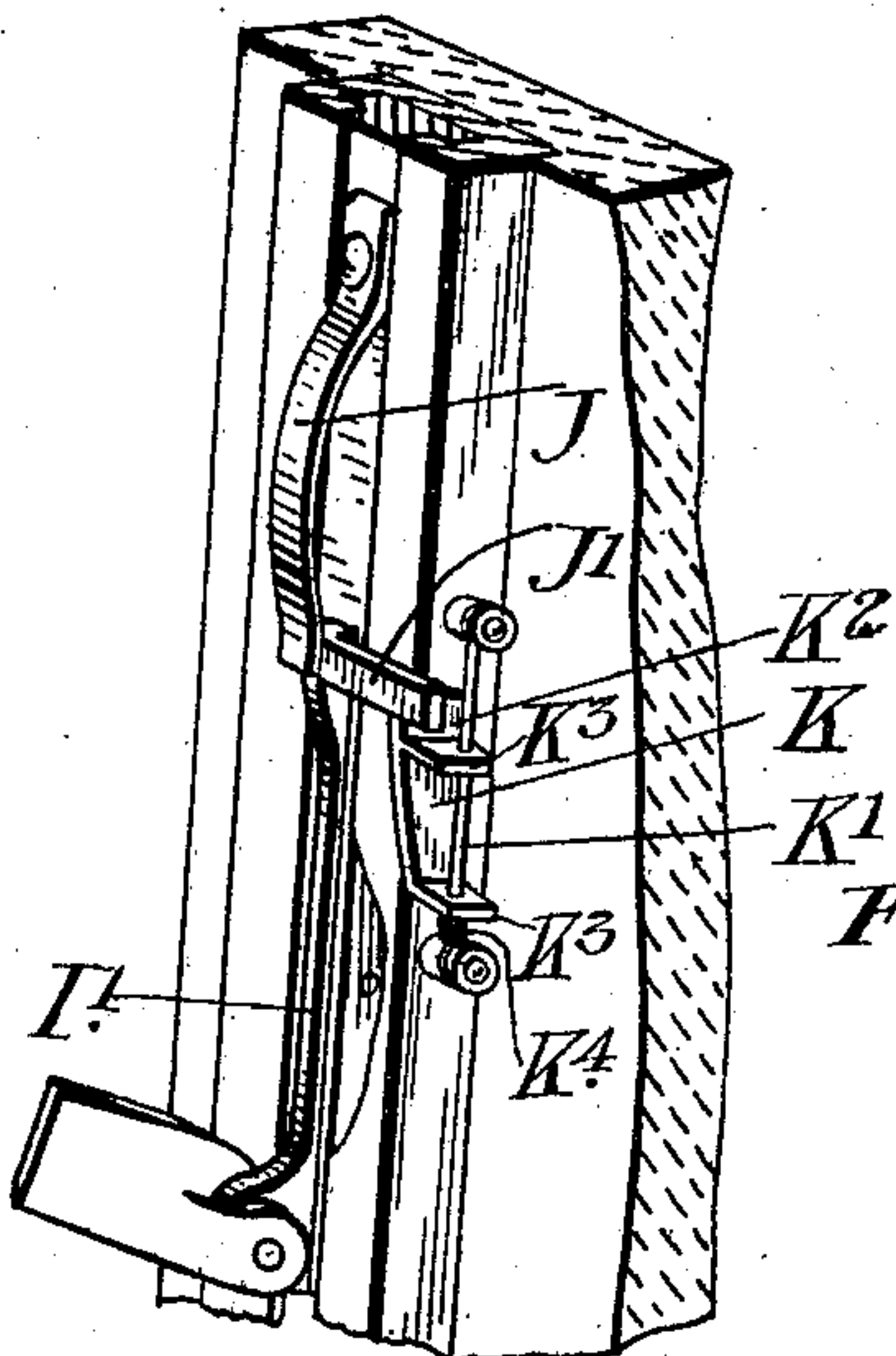
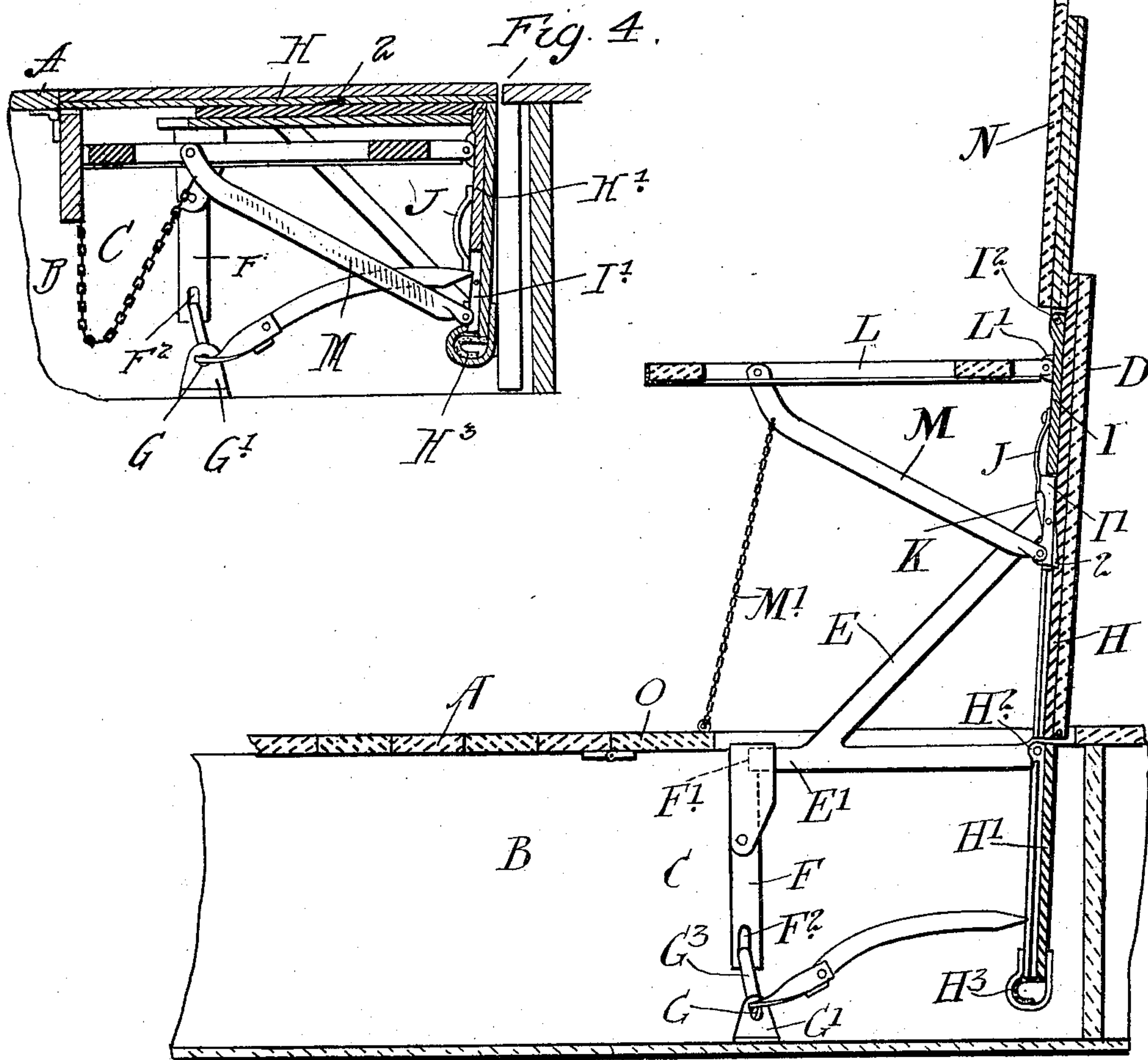
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Inventor:
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UNITED STATES PATENT OFFICE.

LESLIE GEORGE FINCH, OF BRANTFORD, ONTARIO, CANADA.

AUTOMATIC DISAPPEARING CHAIR.

No. 841,135.

Specification of Letters Patent.

Patented Jan. 15, 1907.

Application filed December 8, 1905. Serial No. 290,983.

To all whom it may concern:

Be it known that I, LESLIE GEORGE FINCH, electrician, of 28 South Market street, in the city of Brantford, in the county of Brant, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Automatic Disappearing Chairs, of which the following is the specification.

My invention relates to improvements in automatic disappearing chairs; and the object of the invention is to devise a simple form of chair which when used in large numbers in halls, theaters, and other auditoriums may be all eliminated quickly from the floor-space on ordinary occasions as the audience arise, and more especially in times of panic, such as fire, and thus render the floor clear of obstruction, and thereby facilitate the rapid exit of the audience; and a further object is to enable the floor-space to be divided at any time into any suitable width and arrangement of aisles and arrangement of chairs.

The invention is shown in the accompanying drawings, in which—

Figure 1 is a perspective view showing my improved automatic disappearing seat. Fig. 2 is a vertical longitudinal section through the seat and receptacle. Fig. 3 is an enlarged detail of the latch and rocking dog. Fig. 4 is a vertical section showing the chair in collapsed position.

In the drawings like characters of reference indicate corresponding parts in each figure.

A is the floor of the hall, B the joists, and C the receptacle located underneath the floor and designed to be covered by the trap-door D.

E represents double braces, one at each side, which are secured at the front inner side of the trap-door. The braces E are located at each side of the trap-door and have forwardly-extending portions E'.

F represents locking-levers, each formed with a recess F', as indicated, into which the forwardly-projecting portions E' extend when the door is up. The locking-levers are suitably pivoted and provided with slots F² at the lower end.

G is a rod journaled in bearings G', secured to the floor of the receptacle and having the ends extending through the slots F². The rods G have located on them spiral springs G², one end of which is fastened to the floor of the receptacle and the other to the rod,

such springs having a normal tendency to hold the arm G³ secured to the rod and projecting rearwardly from the same in the raised position, as indicated in Figs. 1 and 2.

H represents guideways comprising grooved bars having a groove of T-shape form in cross-section.

H' represents extension-guideways, which are hinged on the lugs H² at the lower ends of the bars H, such extension-guideways being provided with the same size of groove and buffers H³ at the lower ends thereof. The guideways H extend the full length of the trap-door, as indicated. The object of the buffers H³ is to form a cushion in which the end of the bars I drop when the seat is relieved by the person rising therefrom.

I represents bars which fit into the guideways H and are provided at the lower end with rocking dogs I'.

2 is a ratchet-notch in the guideways H, designed to be located opposite to the bottom of the rocking dogs I' when the bars I are in the raised position. The bars I are held in the raised position by means of the springs J and latches K. (See detail Fig. 3.) The rocking dogs I' are formed with a lateral offset J', and the latches K comprise a bar K' and a reciprocating dog K² through lugs K³, in which the bar K' extends. A light spiral spring K⁴, surrounding the bar K, serves to give a normal upward pressure to the dog K².

L is the seat, which is hinged at the back on lugs L', attached to the bar I.

M represents braces which are pivotally connected at the front to the sides of the seat and at the back to the rocking dogs I'.

N is the back of the seat, which is secured to the bar I above the hinges I². The distance from the hinge I² to the bottom of the bar I is equal to the distance from the hinge H² to the bottom of the guideway, so that when the chair drops down to the closed position the hinges H² and I² are on a line, and thereby permit of the back dropping when the seat drops. The braces M are connected by the chains M' to a hinged flap O, which, it will readily be seen, is drawn up when the seat is drawn up and drops when the seat falls, thereby allowing the trap-door to drop flush with the floor.

Having now described the principal parts involved in my invention, I shall briefly describe its operation and utility. When the chair is down, it is in the position shown in Fig. 4. To raise the chair, it is merely neces-

sary to pull up the trap, which may be provided with any suitable form of flush catch. When raised in the position shown in full lines in the drawings, the seat is then pulled
 5 up by means of the handle N' at the back thereof until the offsets J' of the dogs I' rest upon the latches K, which they pass in their upward ascent. By such latches therefore is the seat supported until a person sits there-
 10 on, when the weight of the person will force the lower end of the rocking dogs I' into the notches 2, thereby forming a secure and rigid support for the person. When the rocking dogs are forced inwardly at the bottom, their
 15 upper ends are forced outwardly, thereby forcing the springs J outwardly such a distance that the dogs K² of the latches K are forced upwardly beyond the offset J' by the spring K⁴. As the weight of the person is
 20 supported entirely upon the lower ends of the rocking dogs I', as soon as the person gets up and the weight is removed from the seat the spring J forces the upper end of the dogs I' inwardly again, so that the dog is on a line
 25 with the groove and as no latch now supports it the chair will drop into the recess and in so doing will allow the flap O to drop and will carry down with it the trap. The back of the seat when the hinge I² reaches the
 30 hinge H² will necessarily fall onto the seat, so that as soon as this point is reached the trap will be overbalanced and fall down and close the receptacle and the seat therein. When the seat reaches the bar G, the force of the
 35 impact will immediately depress the arm G³, and thereby throw the upper end of the locking-lever forward and release the braces E, thus permitting the trap to drop.

Although my device is automatic in its ac-
 40 tion as to disappearing or dropping, it will readily be understood that if the springs J and latches K are removed it will not be so, as the seat would have to be raised at the outer end, so as to draw the rocking dog out
 45 at the bottom to allow the seat and the trap to drop.

What I claim as my invention is—

1. In an automatic disappearing chair, the combination with the receptacle, of a trap
 50 hinged at one end thereof and designed to cover the receptacle when down, bracing means for supporting the trap in the upright position, a seat recedably attached to the trap and means for releasing the bracing
 55 means operated by the dropping of the seat as and for the purpose specified.

2. In an automatic disappearing chair, the combination with the receptacle, of a trap
 60 hinged at one end thereof and designed to cover the receptacle when down, bracing means for supporting the trap in the upright position, a seat recedably attached to the trap, means for releasing the bracing means
 65 hinged to the floor in front of the chair and

chains connecting such flap to the bottom of the seat as and for the purpose specified.

3. In an automatic disappearing chair, the combination with the receptacle underneath the floor, of a trap hinged at one end thereof
 70 and designed to cover the receptacle when down and lie flush with the floor, braces attached to each side of the trap, a lock designed to receive the front end of the braces and means operated by the concussion of the
 75 seat when it drops thereon for releasing the lock as and for the purpose specified.

4. In an automatic disappearing chair, the combination with the receptacle underneath the floor, of a trap hinged at one end thereof
 80 and designed to cover the receptacle when down and lie flush with the floor, braces attached to each side of the trap, locking-levers provided with a notch designed to receive the front end of the braces and having the lower
 85 end slotted, a rod journaled in suitable bearings in the receptacle and having the end extending through the slots, an arm extending rearwardly from the rod and a spring opera-
 90 tively connected to the rod and designed to normally hold the arm up as specified.

5. The combination with the receptacle and trap and the guideways secured on the side of the trap and means for supporting the trap in the substantially vertical position,
 95 extension-guideways hinged on the ends of the guideways on the trap, of bars located in the guideways and hinged intermediate of their length, the back secured to the upper portion of the bars above the hinge, the seat
 100 secured to the lower portion of the bars beneath the hinge, means for holding the bars and seat in the raised position and means operated by the removal of the weight of the person occupying the seat for disengaging
 105 the aforesaid means to allow of the seat to drop as and for the purpose specified.

6. The combination with the receptacle and trap and the guideways secured on the side of the trap and means for supporting the
 110 trap in a substantially vertical position, extension-guideways hinged on the ends of the guideways on the trap, of bars located in the guideways and hinged intermediate of their length, the back secured to the upper portion
 115 of the bars above the hinge, rocking dogs pivoted at the lower ends of the bars and designed to engage with notches in the guideways and braces connected to the seat and to the lower ends of the rocking dogs as and
 120 for the purpose specified.

7. The combination with the receptacle and trap and the guideways secured on the side of the trap and means for supporting the trap in a substantially vertical position, and
 125 extension-guideways hinged on the ends of the guideways on the trap, of bars located in the guideways and hinged intermediate of their length, the back secured to the upper portion of the bars above the hinge, rocking
 130

dogs pivoted at the lower ends of the bars and designed to engage with notches in the guideways and braces connected to the seat and to the lower ends of the rocking dogs and springs pressing on the upper ends of the rocking dogs as and for the purpose specified.

8. The combination with the receptacle and trap and the guideways secured on the side of the trap and means for supporting the trap in the substantially vertical position, extension-guideways hinged on the ends of the guideways on the trap, of bars located in the guideways and hinged intermediate of their length, the back secured to the upper portion of the bars above the hinge, rocking dogs pivoted at the lower ends of the bars and designed to engage with notches in the guideways and braces connected to the seat and to the lower ends of the rocking dogs and spring-actuated catches designed to engage the end of the dogs and hold the bars up prior to the rocking dogs being tilted to engage the notches in the guideways as and for the purpose specified.

9. The combination with the trap-door having secured thereon two guideways, one toward each edge and extending longitudinally of the trap and having hinged depending extensions, a chair-holding receptacle designed to receive the chair when down, braces attached to the side of the trap, latches at the side of the receptacle with which the braces engage to hold the trap-door vertical, a spring-held arm and bar controlling the latches, bars extending into the guideways and having longitudinal movement therein and provided with intermediate hinges, a seat hinged at the back to the bars, braces pivotally connected at the front to the sides of the seat and at the back to rocking dogs in the bar, controlling-latches for the rocking dogs, a seat-back connected to the upper portions of the bars, a front hinged flap for the receptacle and chains connecting said flap to the braces of the seat.

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Witnesses:

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