

E. CHESTERMAN.  
Seat for Cars.

No. 221,907.

Patented Nov. 25, 1879.

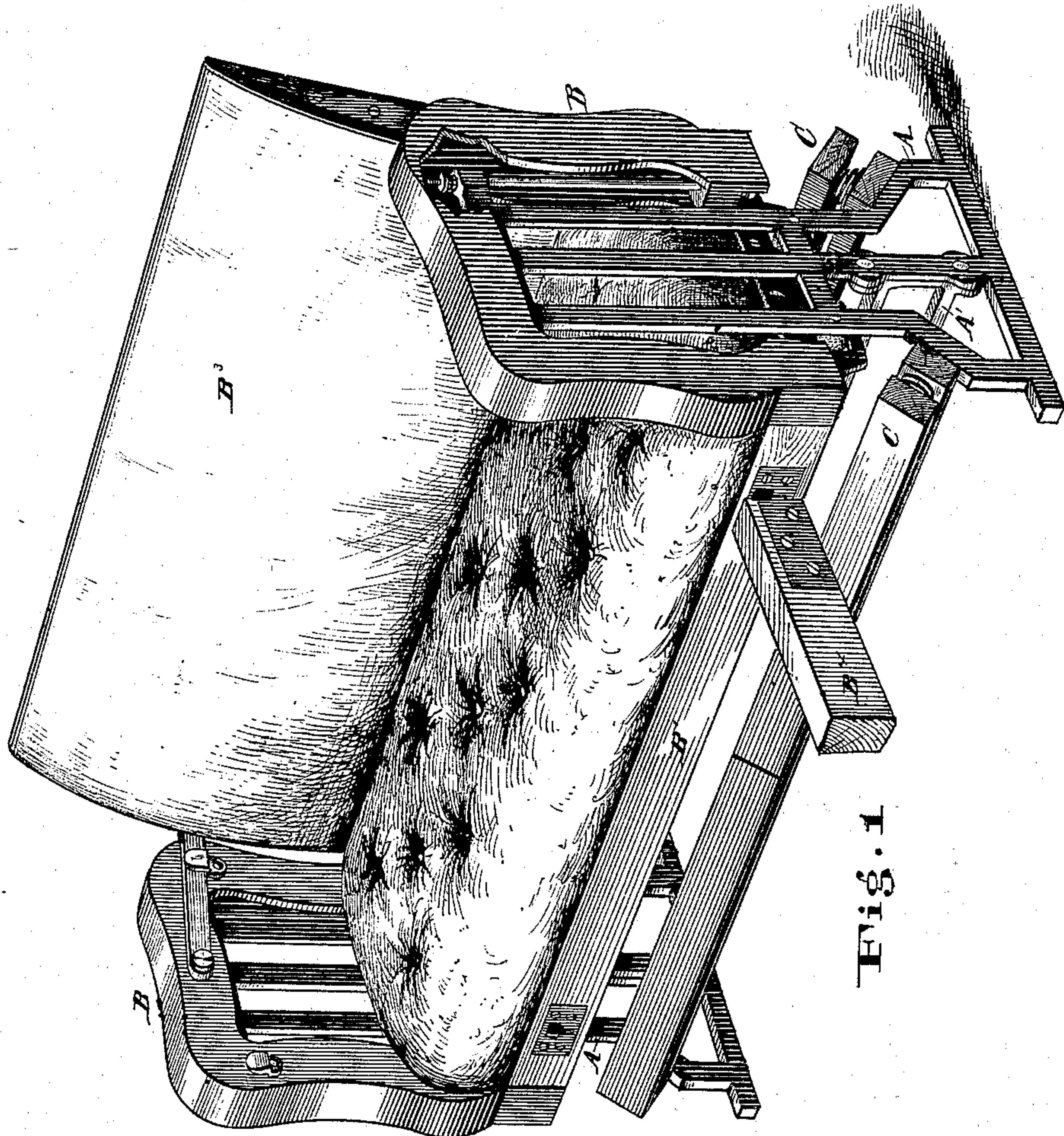


Fig. 1

Attests

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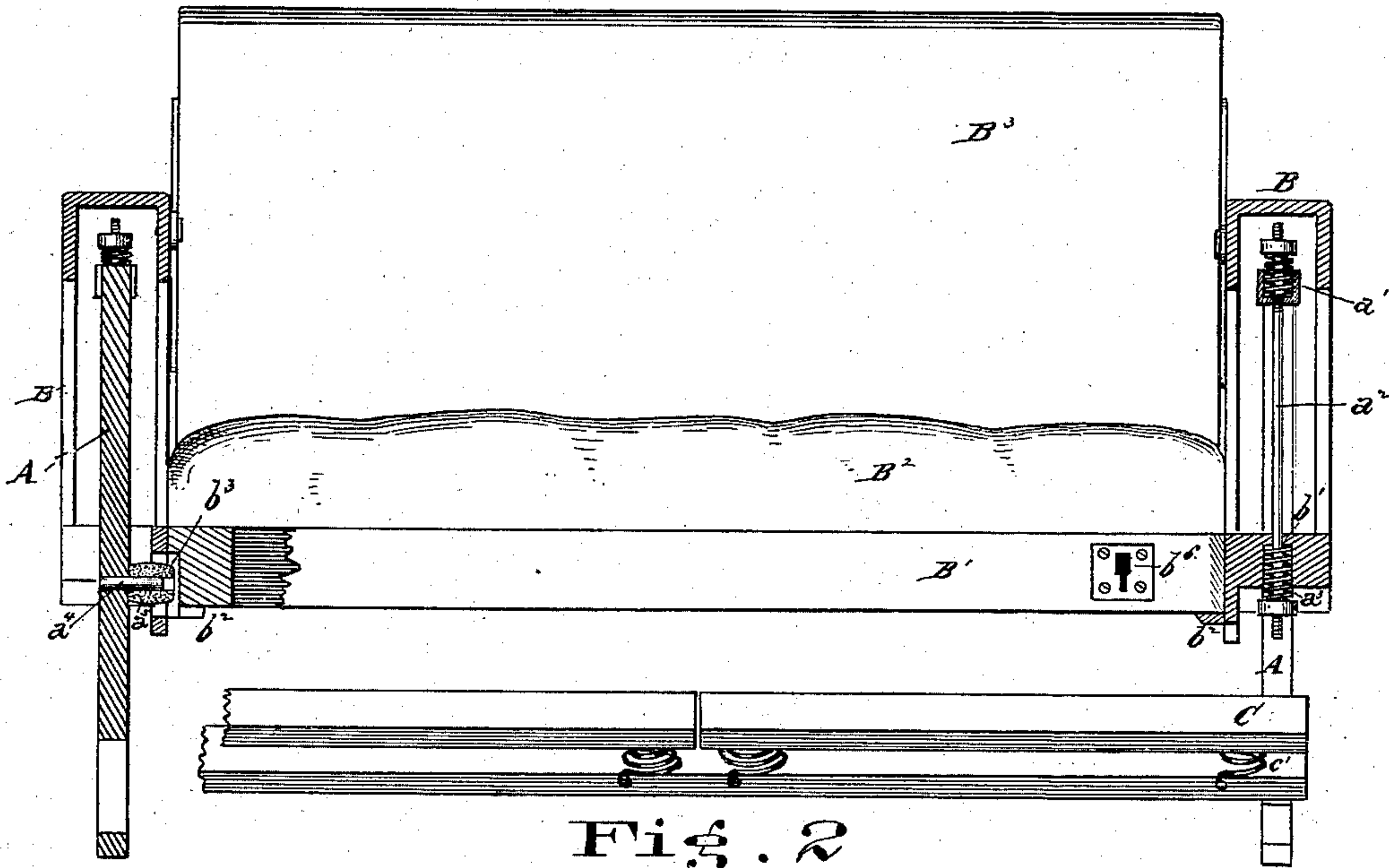


Fig. 2

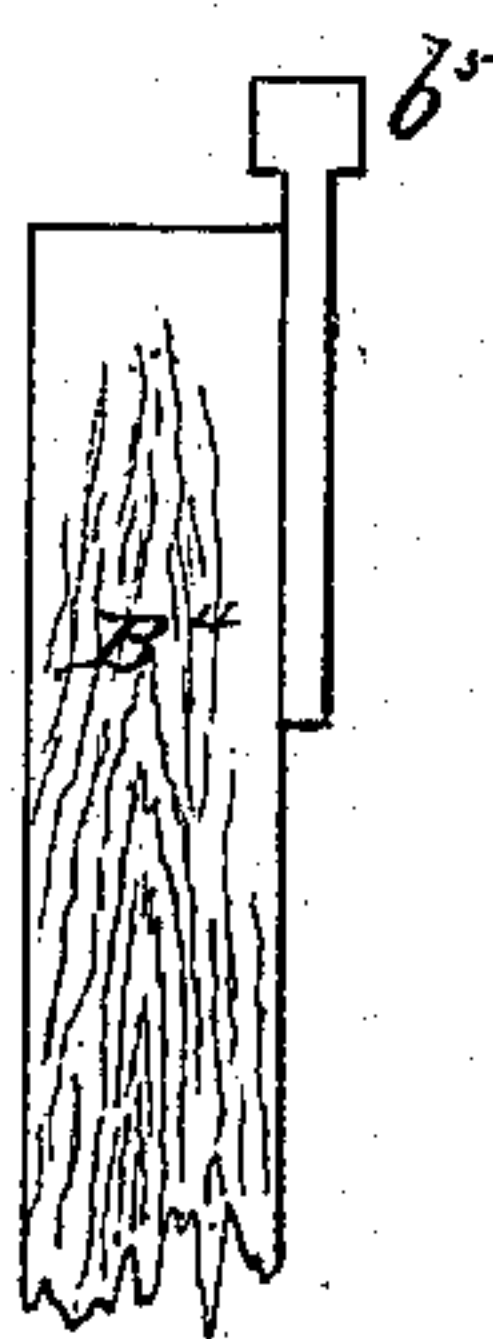


Fig. 4

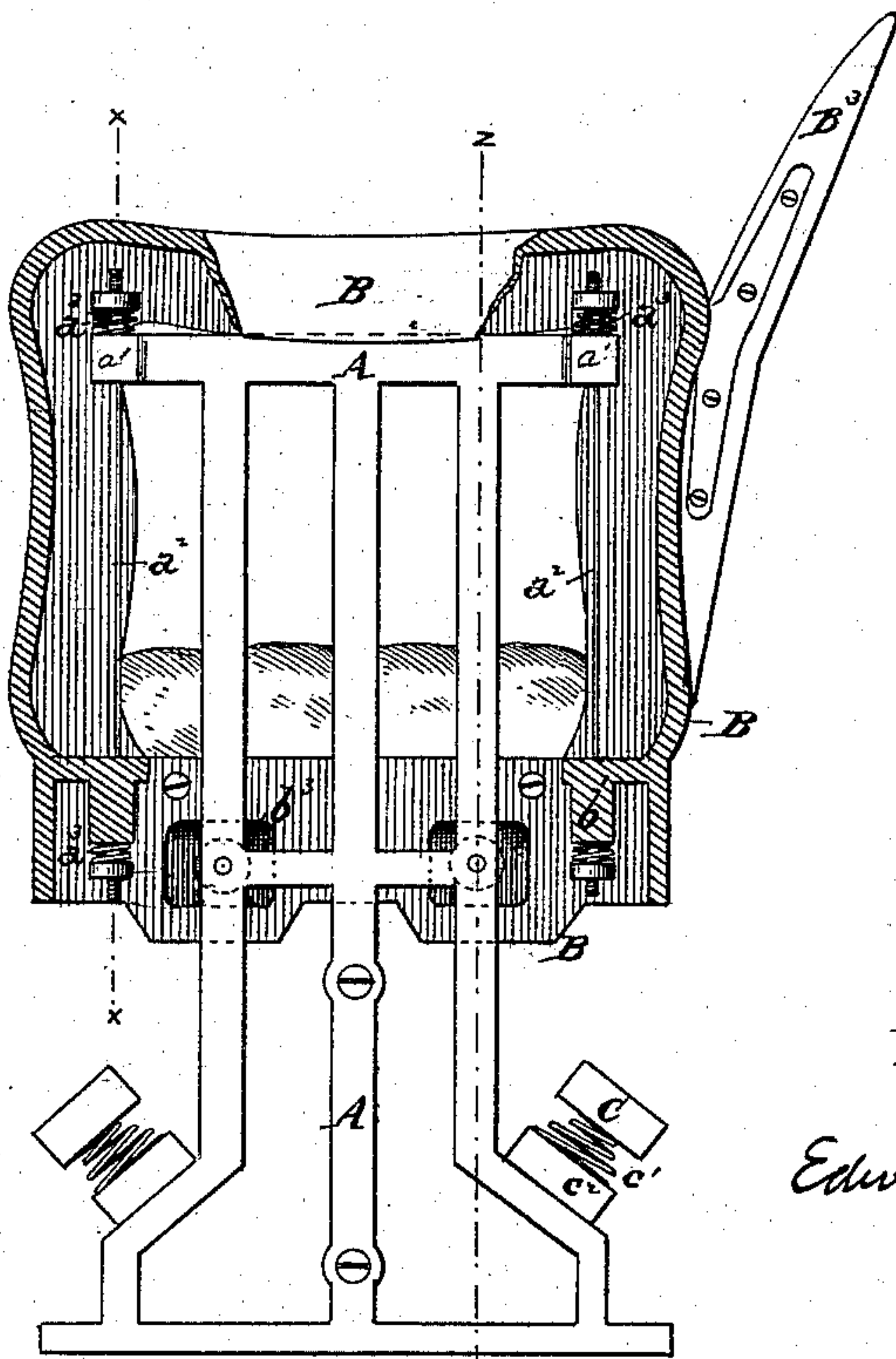


Fig. 3

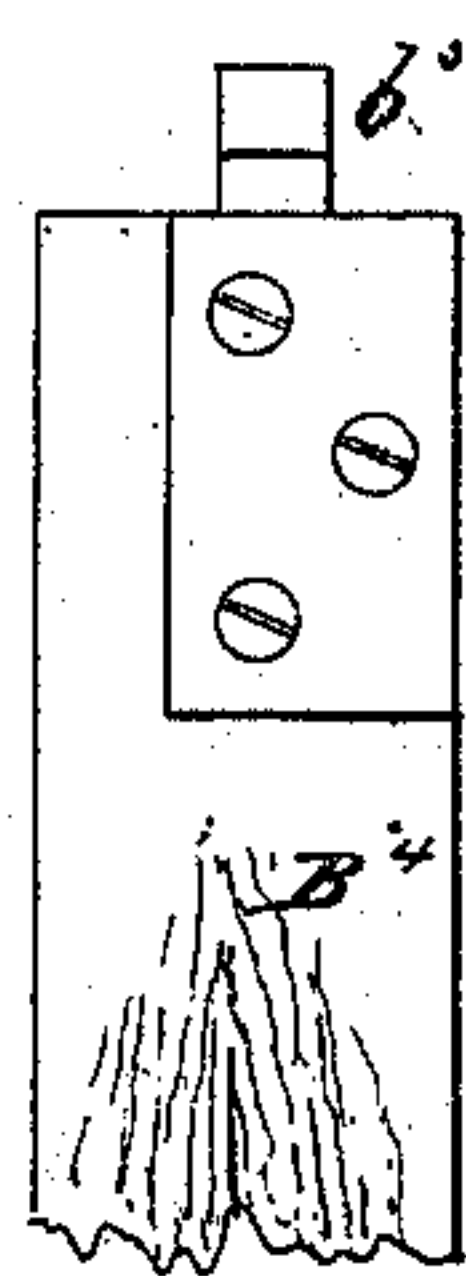


Fig. 5

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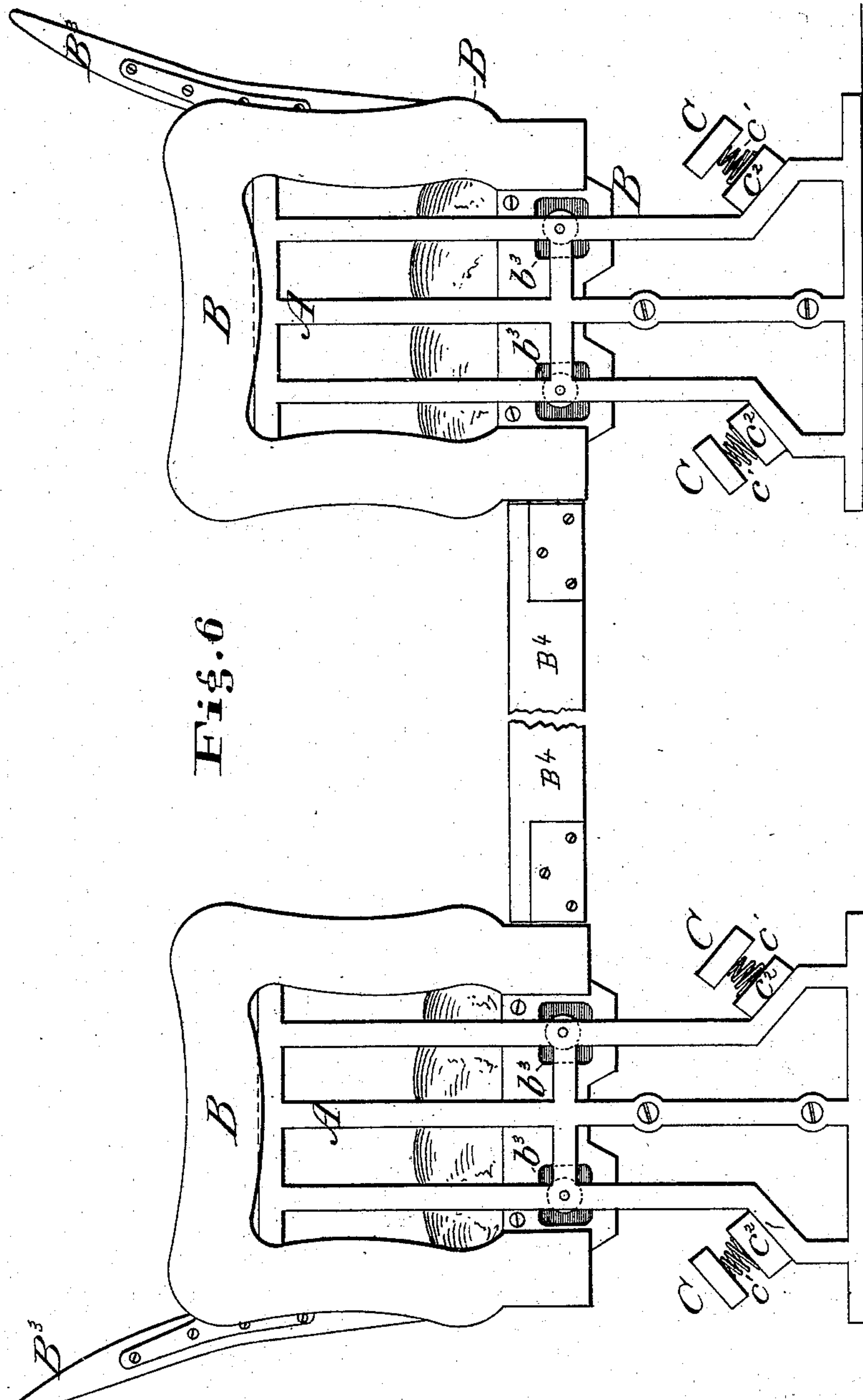


Fig. 6

Attest:  
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# UNITED STATES PATENT OFFICE.

EDWIN CHESTERMAN, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN SEATS FOR CARS.

Specification forming part of Letters Patent No. **221,907**, dated November 25, 1879; application filed March 19, 1879.

*To all whom it may concern:*

Be it known that I, EDWIN CHESTERMAN, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Seats for Cars and other purposes, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective. Fig. 2 is a longitudinal section. Fig. 3 is a transverse section. Figs. 4 and 5 show the ends of connecting-bars by which two seats are connected. Fig. 6 shows two seats connected.

The invention consists of the means hereinafter described to suspend a seat that will retain its horizontality and have a yielding bodily movement in either direction independently of the car or room in which it may be placed, and prevent the concussion caused by the sudden movement or stoppage of the car, the joltings from inequalities of the road, the tremblings from applications of the brakes, &c., being conveyed to the occupant of the seat, and which will be more particularly pointed out in the claims.

The accompanying drawings and this specification set forth the whole of the invention as applied to a car-seat; but it is obvious that some parts of the invention may be applied without the others, and to other than car-seats.

Referring to the drawings, A represents a frame consisting of two standards rigidly fastened by a cross-piece, A', and preferably screwed to the floor of the car. The projecting ends of the tops of these standards are provided with holes  $a'$ , through which pass suspension-rods  $a^2$ . These rods are "set up" at their lower ends to form a bearing for the suspended frame hereinafter described, and at their upper ends have screwed nuts or equivalent device to form a bearing upon the standards. (See Fig. 3.) Between these bearings of the rod and the standards and the suspended frame and the rods are placed springs  $a^3$ , adapted to be acted upon by each suspended frame to the same extent whether only one or all of the seats in the car are occupied. These standards are also provided with lugs or stops  $a^4$ , covered with rubber  $a^5$ , or other elastic ma-

terial, the office of which is to limit the motion of the suspended frame in each direction, and, in case of breaking the suspension-rods, to form a support to the suspended frame.

B represents a frame suspended between the standards of the before-mentioned frame A. The top part is made of the necessary form for an elbow-rest, and, together with its sides, is made hollow, and of the proper dimensions to inclose the said standards and suspension-rods, and space enough is left at all sides to admit of a limited movement of the suspended frame in each direction. (See Figs. 2 and 3.) The lower transverse cross-piece of said frame is provided with bearing-places, having holes  $b'$ , through which the suspension-rods  $a^2$  pass. These holes, as also those  $a'$  in the standards, are made of a size to loosely fit the suspension-rods, and are enlarged part of their depth to the size of springs  $a^3$  encircling said rods, and admit of a free vertical movement at points of bearing. The suspension-rods in the present case are elastic, and the holes through which they pass, being the one stationary and the other movable, will, when in a normal position, be in line with each other and the rods be straight; but when the frame is moved from such position the holes through which the rods pass will be out of line with each other and the rods bent. The retractive force of the rods will return the frame to its normal position.

The lower or cross piece is also provided with lugs  $b^2$ , on which the longitudinal cross-piece B' has its bearing, and to which it is held by screws passing through said lower cross-piece. It is also provided with spaces  $b^3$ , through which the lugs or stops  $a^4$  of the standards pass, and which, by contact with said lugs, limit the movement of the suspended frame. (See Figs. 2 and 3.)

B' is a part of the suspended frame, extending longitudinally between and rigidly fastened to the ends of frame B. This part B' may be made to form a seat; or a separate seat, B<sup>2</sup>, may be placed upon it, as shown.

B<sup>3</sup> is a back-frame, in this case reversibly attached to the elbows B, but may be fastened to any part of the suspended frame, and in any manner that will insure its identity of movement with the frame. Each end of the



frame, as shown in Figs. 2 and 3, is suspended by parallel, or nearly parallel, rods from different centers, and the points of suspension are at or near the lower part of said frame, and at or near the upper part of the standards.

The suspended frame and the seat placed thereon retain horizontality, and have a bodily movement equal in all their parts, and not a rocking nor a tilting motion, such as is due to a suspension from one center.

C is a foot-rest, supported upon springs  $c'$ , which in this case have their bearing upon a longitudinal piece,  $c^2$ , fixed to the standards, as shown in Figs. 2 and 3; but it is obvious that these springs may have their bearings directly upon the standards or upon the floor of the car. The office of these springs is to act as a take-up of the tremulous motions and jolting of the car, and prevent the same being communicated to the person whose feet may be placed upon the foot-rest.

When it is desired to form a bed or sleeping-berth two adjoining suspended frames are loosely connected together by means of bars  $B^4$ , or their equivalents. These bars have hooks  $b^5$  at each end, which fit into catch-bearings  $b^6$  provided for that purpose in frame  $B'$ , and the cushions may be drawn forward in the usual manner. These two seat-frames, now forming a bed-frame, admit of motion independently of the car, and by means of the suspension-rods and springs prevent the tremulous motions and joltings of the car being communicated to the bed-frame or its occupant.

Fig. 1 shows one seat-frame and its connecting-bar. The other seat-frame, as shown in Fig. 6, is an exact counterpart thereof, and requires no other description.

The operation is as follows: The car as it passes rapidly along obtains a tremulous motion from the rolling contact of the wheels of the car-truck upon the rails. If the car is occupied by a large number of passengers the springs between the car and the truck take up some of this tremulous motion; but if only a few passengers are in the car this occurs to a much smaller extent, and when going around curves or when the brakes are applied to the wheels the trembling of the car is much increased. A sudden movement or stoppage of the car causes a shock or concussion; but the seat-frame, being suspended, as hereinbefore set forth, does not receive the immediate force of the trembling or the concussion. The inertia of the frame holds it back, and when it does partake of them it does so gradually. This gradual motion of said frame acts upon the springs  $a^2$ , which, in turn, react upon the frame. The more violent the concussion the farther

will the frame move from the point of equilibrium until it comes in contact with stop-springs  $a^5$  on the standards, which springs limit the motion of the suspended frame in either direction by a yielding stop.

The springs  $a^3$  on the suspension-rods also act as a take-up to cut off the shaking of the car from the suspended frame.

When the seat of the suspended frame is occupied the inertia is greater, and the movement of said frame is less prompt and more gradual, and therefore acts with greater effect as a cut-off or take-up of the tremulous or jolting motions of the car.

It is obvious that the suspended seat-frame herein described and shown may be applied other than to a railway car or vehicle, and that a seat suspended in this or an equivalent manner and used as a chair is for many purposes useful and convenient, and admits of a free motion of the person without moving from the seat, and also of a swaying motion other than a tilting or rocking motion; and in situations where there is a trembling of the floor from machinery in motion or other causes this suspended seat cuts off the vibration from its occupant.

I claim as of my invention—

1. The combination of the seat-frame B, tubular bearings  $a'$ , and spring suspension-rods  $a^2$ , to admit of a back, forward, and lateral motion of the seat-frame, substantially as set forth.

2. The combination of the standards A, tubular bearings  $a'$ , spring suspension-rods  $a^2$ , springs  $a^3$ , seat-frame B, and tubular bearings  $b'$ , substantially as set forth.

3. In a car or other vehicle, the combination, substantially as hereinbefore set forth, of standards A, seat-frame B, lateral springs  $a^2$ , and vertical springs  $a^3$ , for the purpose described.

4. The combination of standards A, safety-bearing  $a^4$ , suspension-rods  $a^2$ , and seat-frame B, substantially as set forth.

5. In a car or other vehicle, the combination of rigid standards or bearings A, suspension-rods  $a^2$ , springs  $a^3$ , seat-frame B, having elbow-rests, and reversible back, constructed and operating as and for the purpose hereinbefore set forth.

6. In a car or other vehicle, the combination of rigid supports A, suspension-rods  $a^2$ , seat-frame B, foot-rest C, and springs  $c'$ , substantially as set forth.

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Witnesses:

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S. MCHENRY.