

(No Model.)

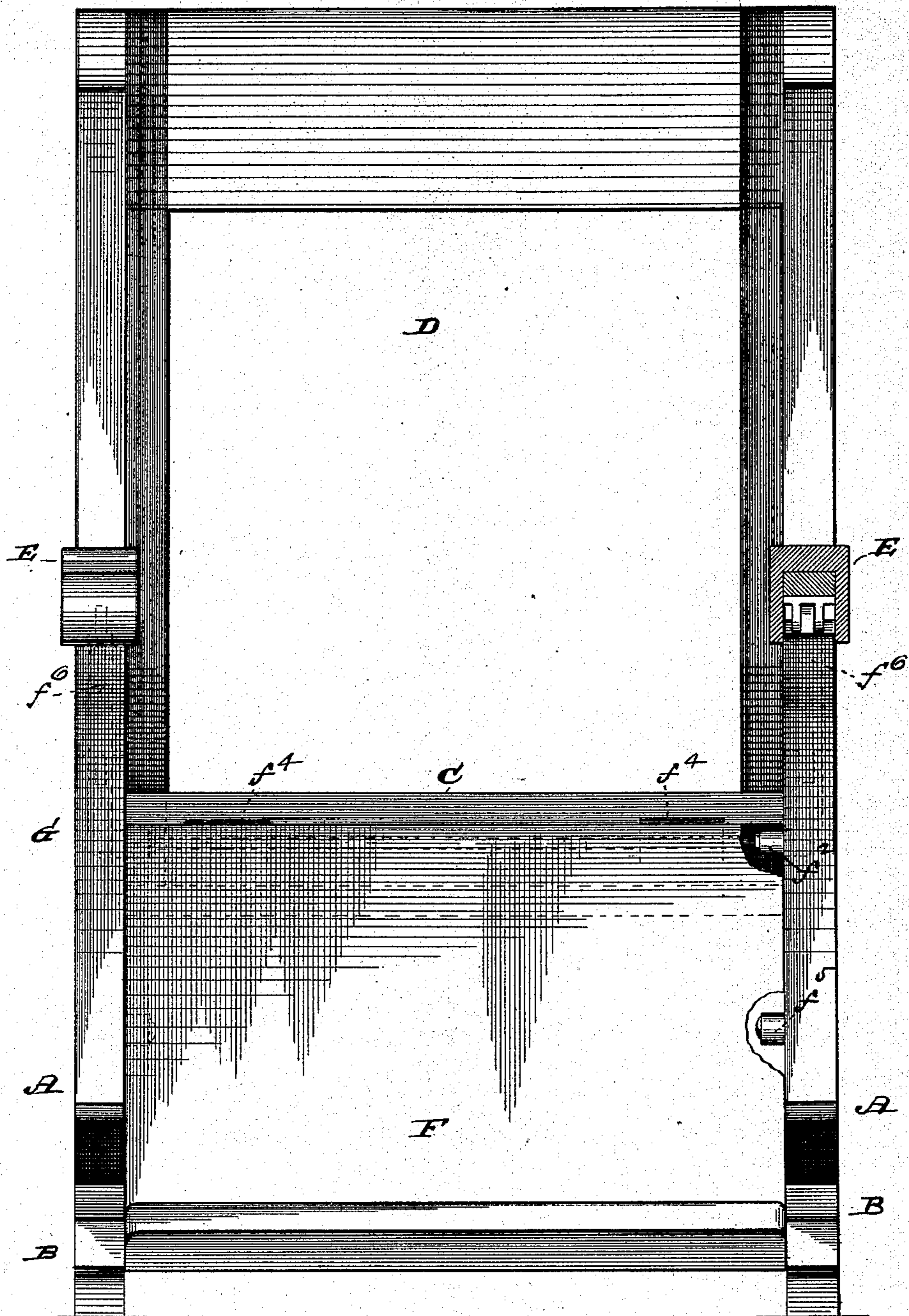
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P. FLOWERS.  
CHAIR.

No. 416,906.

Patented Dec. 10. 1889.

*Fig. I.*



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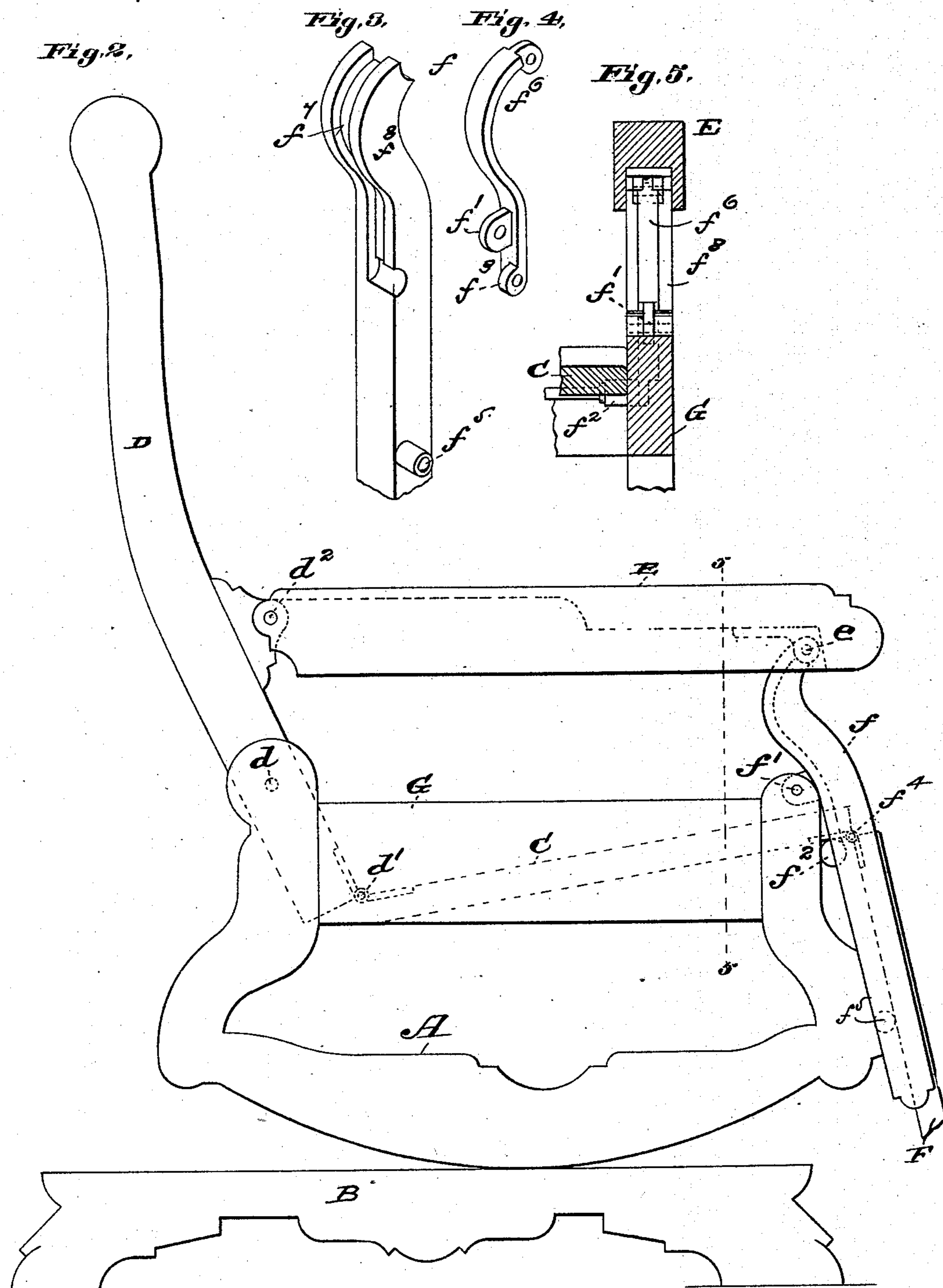
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CHAIR.

No. 416,906.

Patented Dec. 10, 1889.



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Charles Pickles.  
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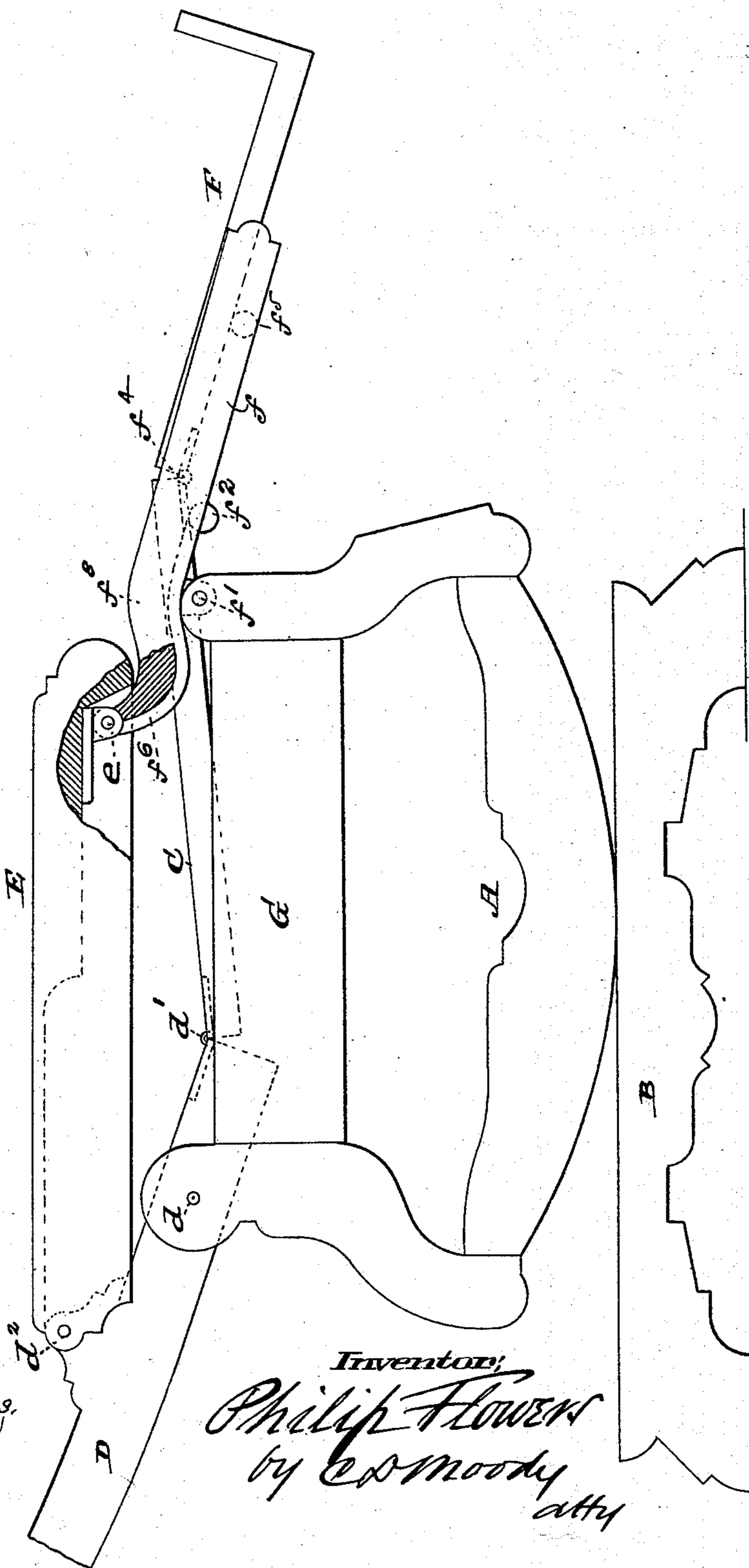
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Fig. 6.



Attest;  
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# UNITED STATES PATENT OFFICE.

PHILIP FLOWERS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO RIVERIOUS T. HIGGINS, OF SAME PLACE.

## CHAIR.

SPECIFICATION forming part of Letters Patent No. 416,906, dated December 10, 1889.

Application filed November 17, 1888. Serial No. 291,134. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP FLOWERS, of St. Louis, Missouri, have made a new and useful Improvement in Chairs, of which the following is a full, clear, and exact description.

The improvement is adaptable to several forms of chairs—to household-chairs, car-chairs, and other chairs which it is desired to have recline.

The improvement relates mainly to the means employed in effecting the reclination of the chair, substantially as is hereinafter set forth and claimed, and aided by the annexed drawings, making part of this specification, in which—

Figure 1 is a front elevation of a chair having the improvement, portions being broken away and in section; Fig. 2, a side elevation, the chair being upright; Fig. 3, a view in perspective, from the rear side thereof, of one of the leg-rest bars; Fig. 4, a view in perspective of the iron used in the leg-rest bars; Fig. 5, a vertical section on the line 5 5 of Fig. 2, and Fig. 6 a side elevation of the chair reclined.

The same letters of reference denote the same parts.

Saving as the chair may be modified or supplemented by the improvement in question, it is of the customary construction. It may have a fixed base, be made to rock directly upon the floor, or to rock upon a base. The chair illustrated is of the last-named type, the chair having rockers A, adapted to be rocked upon a base B.

The seat of the chair is shown at C; and D represents the chair-back, E the arms, and F the leg-rest. The back is jointed to the seat-frame G at  $d$ , to the seat C at  $d'$ , and to the arms E at  $d^2$ . The arms E at or toward the forward end  $e$  thereof are respectively jointed to the leg-rest bars  $f f$ . The bars  $f f$  are pivoted at  $f'$  to the seat-frame. They serve several purposes: to connect the arms E at the forward end thereof with the seat-frame; to support the leg-rest F, and to support the forward end of the seat C. The first-named purpose is the leading one, for owing to the seat-frame, back, arms, and bars being jointed together, as described, the back can be turned upward and downward, as shown. The spe-

cial manner of arranging the described joints is also a matter of importance, and will hereinafter be mentioned. The seat C is free to be moved forward and backward in the chair. The seat, as stated, is jointed to the back at  $d'$ . This point is below the pivot  $d$ , and hence as the back is turned on its pivot  $d$  from an upright position downward and backward the seat is shifted forward in the chair. The forward end of the seat rides upon supports—such as the rollers  $f^2$ —attached to bearings  $f^3$  upon the bars  $f f$ . The weight which comes upon the seat is thus supported partly at its point of connection with the back and partly by the leg-rest at a point below the pivots  $f' f'$ .

The leg-rest F is jointed at  $f^4$  to the seat C, and it is supported upon the bars  $f f$ , so that as the back is turned down it (the leg-rest) is moved outward thereon, and as the back is turned up it is moved inward thereon. To this end the bars  $f f$  are provided with rollers  $f^5 f^5$ , upon which the leg-rest rides.

The operation of the improved chair is as follows: In the upright position, Fig. 2, of the chair the weight of the occupant comes mainly upon the seat and but slightly upon the back and leg-rest. As the back is turned backward more of the weight comes upon the back and leg-rest. The forces acting upon the movable parts of the chair are then as follows: The force acting upon the back above the pivot  $d$  tends to turn the back backward and downward. The force acting upon the rear portion of the seat tends to turn the back forward and upward, and the force acting upon the leg-rest tends to turn the back upward and forward in the following manner: The leg-rest is in effect a lever having the joints  $f'$  for a fulcrum, and through the arms acting, when a weight comes upon the leg-rest, to exert a pull upon the back at a point above the back pivot  $d$ . Owing to the special manner of arranging the joints  $f'$ ,  $e$ ,  $d$ , and  $d^2$ , the leverage of the leg-rest is exerted to especial advantage. The peculiarity referred to consists in the distance of the joint  $f'$  from the joint  $e$  being less than the distance of the joint  $d$  from the joint  $d^2$ . In practice the ratio of the first-named distance to the last-named distance is four and one-

half to five and five-eighths, the distance from the joint  $f'$  to the joint  $e$  in the average chair being four and one-half inches, and from the joint  $d$  to the joint  $d^2$  being five and five-eighths inches. By reason of this described relation of the joints that portion of the leg-rest bars which extends from the joint  $e$  to the joint  $f'$  becomes a shorter lever-arm than does that portion of the back which is between the joints  $d$  and  $d^2$ ; hence a lighter weight upon the leg-rest is sufficient to balance a heavier weight upon the back. As the back is turned backward and downward the seat is shifted forward in the chair and the leg-rest is shifted farther outward in the leg-rest bars. The weight on the seat and leg-rest is therefore farther removed from the points upon which the back and the leg-rest bars respectively turn; hence the farther the back is turned down the more advantageously does the weight upon the seat and leg-rest act in counterbalancing the force acting upon the upper portion of the back. The practical result attained is the balancing of the chair, however its back, seat, and leg-rest may be adjusted. However the back, seat, and leg-rest may be arranged, whether the back is turned farther down and the leg-rest farther up, or the reverse, the occupant's weight does not disturb the equilibrium of the chair, and the chair-base can be rocked upon in the same manner substantially as can a plain rocking-chair be rocked upon an ordinary floor. The seat at its forward end rests, as

stated, upon the leg-rest bars. I consider this the best support for the forward end of the seat, as a portion of the weight upon the seat is thus transferred to the leg-rest bars and utilized in counterbalancing the force acting upon the back.

The leg-rest bars are in practice composed partly of the iron  $f^6$ , which is contained in a suitable mortise  $f^7$  in the main portion  $f^8$  of the leg-rest bars, Figs. 3 and 4.

I claim—

1. The combination of the seat-frame, the back hinged thereto at  $d$ , the leg-rest bars hinged to said frame at  $f'$  and provided with a sliding leg and foot rest, a seat hinged at the lower end of the back and to said sliding foot and leg rest, and an arm-rest hinged to the back at  $d^2$  and to the leg-rest bars at  $e$ , substantially as specified.

2. The combination of the seat-frame, the back hinged thereto at  $d$ , the leg-rest bars hinged to said frame at  $f'$  and provided with a sliding leg and foot rest, a seat hinged at the lower end of the back and to said sliding foot and leg rest, and an arm-rest hinged to the back at  $d^2$  and to the leg-rest bars at  $e$ , the distance between the pivotal points  $d^2$  and  $d$  being greater than that between the points  $e$  and  $f'$ , substantially as specified.

Witness my hand.

PHILIP FLOWERS.

Witnesses:

C. D. MOODY,

D. W. A. SANFORD.