

J. M. WATERS.  
Tilting-Chair.

No. 163,705.

Patented May 25, 1875.

Fig. 1.

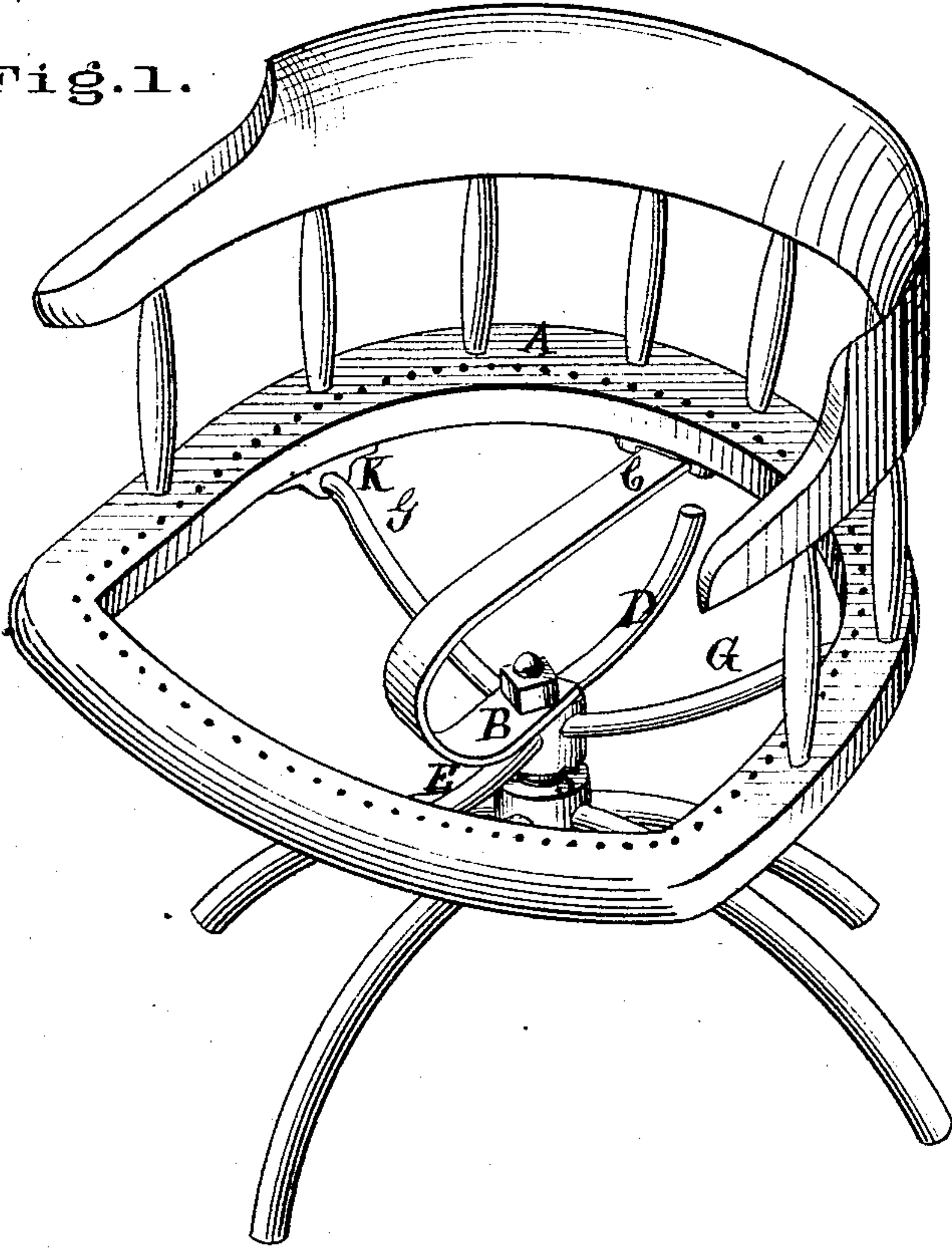


Fig. 3.

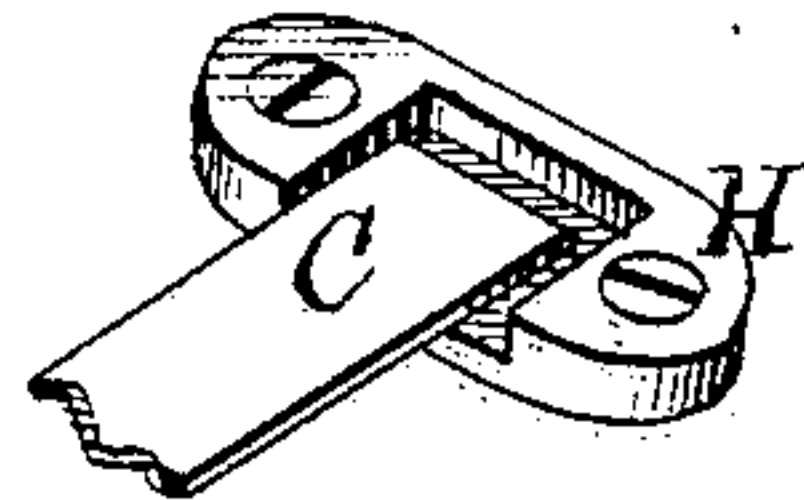
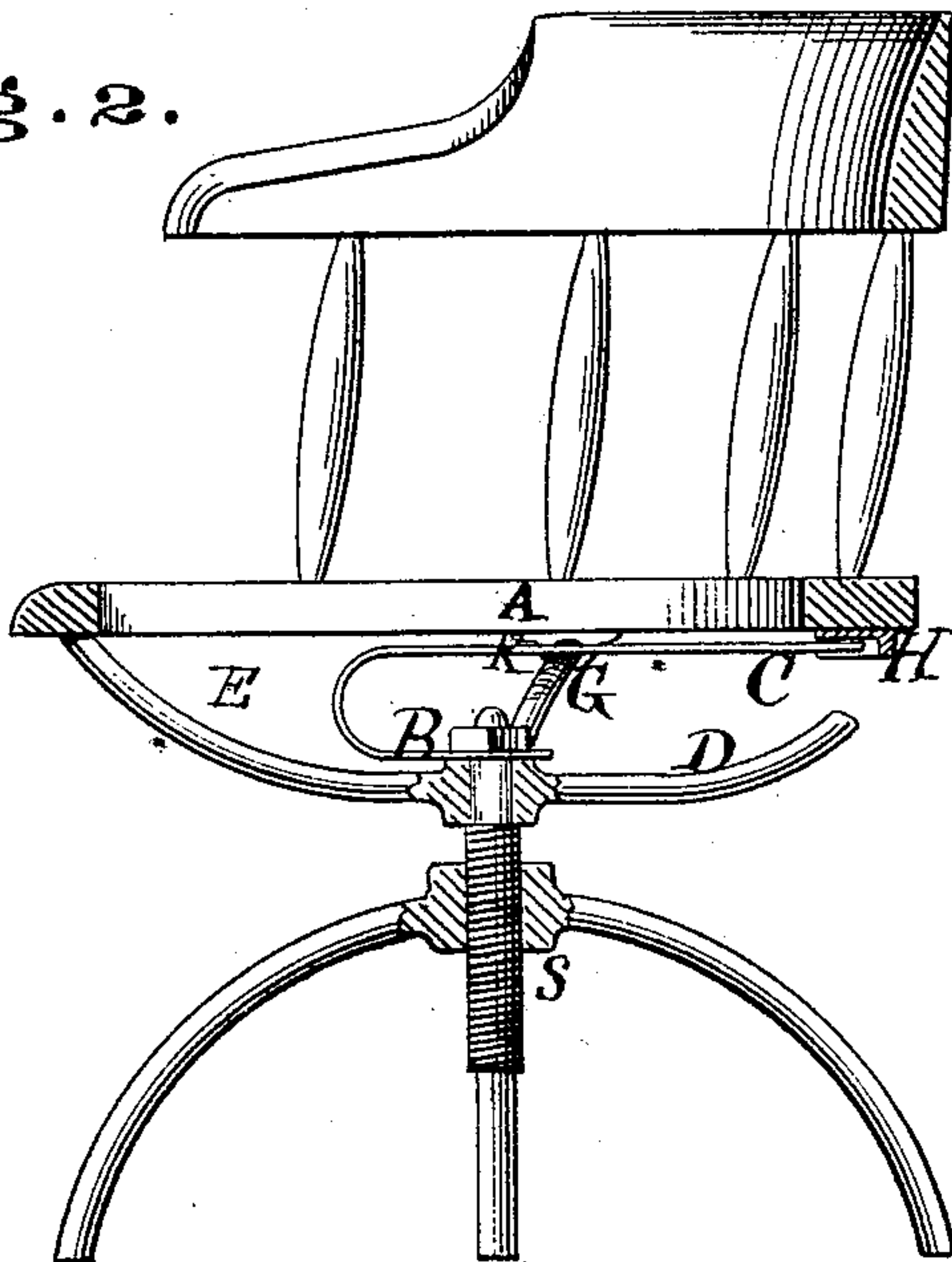


Fig. 2.



Attest.

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# UNITED STATES PATENT OFFICE.

JABEZ M. WATERS, OF CINCINNATI, OHIO.

## IMPROVEMENT IN TILTING CHAIRS.

Specification forming part of Letters Patent No. **163,705**, dated May 25, 1875; application filed September 9, 1874.

*To all whom it may concern:*

Be it known that I, JABEZ M. WATERS, of Cincinnati, county of Hamilton and State of Ohio, have invented an Improvement in Chairs, of which the following is a specification:

My invention relates to chairs; and consists in the adaptation and arrangement of a semi-elliptical metallic spring beneath the seat of the chair, enabling it to be tipped back to a partially-reclining position with perfect ease, and without danger of upsetting, thus permitting a rocking motion to the chair.

In the accompanying drawing, Figure 1 represents a chair containing my improvement, as seen in perspective; Fig. 2, a cross-section of the same, taken through the middle from front to back; Fig. 3, a clamp or abutment which I place at the rear end of the spring, as seen from beneath.

B C, as seen in Figs. 1 and 2, represent my semi-elliptical spring, which is attached by a screw or other suitable means, at B, to the frame-work which supports the chair, and, extending first forward from the place of its support, is then bent up and backward, and extended to the rear edge of the seat of the chair, where it enters the clamp or abutment H. (Best seen in Fig. 3.) E is an arm of the frame upon which the seat is supported, extending forward from B, and curving upward until it reaches the front end of the seat of the chair, and supports said seat when in its ordinary horizontal position. D is a similar rod or support, extending backward from B, but cut off some distance beneath the rear end of the seat of the chair. G G are arms or supports, extending from B in a similar manner toward the sides of the seat, and secured in lugs attached to said sides, as seen at K, or in such other manner as to allow the seat to turn freely backward and forward upon these supports. S is a screw, which may be used to raise and lower the seat of the chair; but this is not a material part of my invention, and the chair may be constructed without it. H is a clamp or abutment attached to the rear of the seat of the chair, and receiving the rear end of the spring C.

The spring B C may be made of steel or

other metal or material possessing the requisite elastic properties.

The arms G G D E and clamp H may be made of cast-iron or other suitable material.

The operation is as follows, viz: When the occupant of the chair wishes to recline, he leans back in his seat. The pressure thus brought to bear upon the rear end of the spring C causes it to yield gradually, until the rear of the seat of the chair is brought against the support D, and thus arrested, and held firmly in place. The support D may be cut off at a greater or less distance below the seat of the chair, according as it is desired to allow greater or less inclination to the chair. The clamp H arrests the backward movement of the spring, and thus secures the full elasticity of the spring.

As the chair-seat is tipped back, it is evident that the end of the spring C has a tendency to slip along the bottom of the chair-seat. Now, by the use of a clamp or abutment, H, I prevent this slipping, and thus produce a compressive strain in the spring, which renders it much more effective—that is, much stiffer.

A screw or other means of securing the end of the spring may be substituted for H; but I prefer the clamp for this purpose.

The precise arrangement of the legs and other portions of the lower frame-work of the chair shown in the drawing is not material to the invention, but may be varied in design to suit the fancy of the manufacturer; nor is it essential that the spring be attached and supported at the center of the chair.

If it is desired to increase the tension of the springs, it may be done by inserting under the lower end, at B, a small piece of metal, or washer, which may be of greater or less thickness, as required.

I am aware that a plate-spring fastened to the frame of the chair, and having its end playing loosely in a metallic seat formed upon the under rear edge of the chair-bottom, is old. I do not claim this as my invention. My improvement consists in the method by which, through the semi-elliptical curve in the spring, in front of its place of support, when acted upon by the abutment at the end of the spring, the tilting of the chair is made to compress

the spring upon itself in its forward curve, and thus secure a much greater degree of elasticity than is possible in chairs constructed with the spring extending directly, or nearly directly, to the rear edge of the seat.

What I claim as my invention, and ask to have secured to me by Letters Patent, is—

In a tilting chair provided with a suitable frame, E G G, and stop-arm D, the spring B, attached rigidly at one end, at or near the

swivel-bolt, projecting thence forward toward the front of the chair, then bent back upon itself, and having its other end so secured by the seat or abutment H upon the rear of the chair-seat A as to secure the compression of the spring when the chair is tilted back.

JABEZ M. WATERS.

Witnesses:

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JEREMIAH F. TWOHIG.