W. S. HOW.

Dental-Chair.

No. 207,741. Patented Sept. 3, 1878.

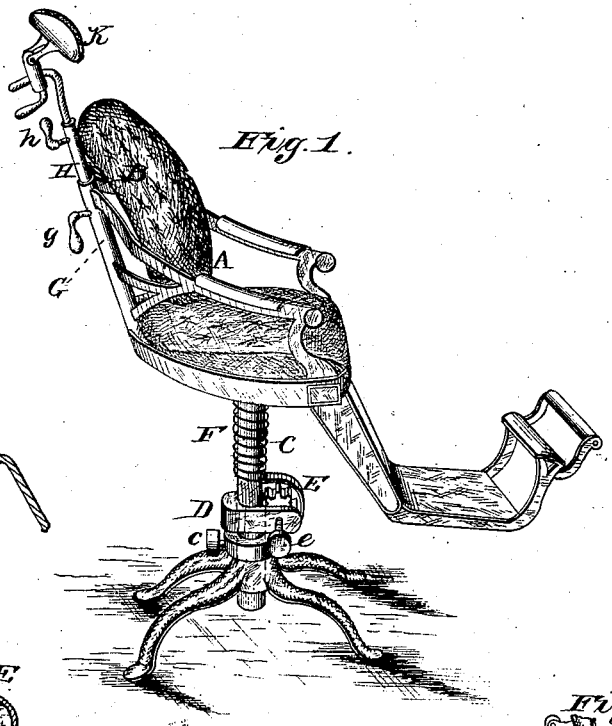

Fig. 1.

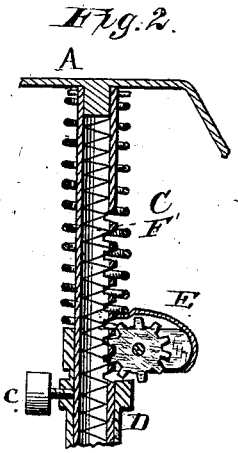

Fig. 2.

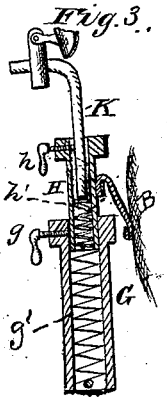

Fig. 3.

WITNESSES

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WOODBURY STOWE HOW, OF CINCINNATI, OHIO.

IMPROVEMENT IN DENTAL CHAIRS.

Specification forming part of Letters Patent No. **207,741**, dated September 3, 1878; application filed April 1, 1878.

To all whom it may concern:

Be it known that I, WOODBURY STOWE HOW, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Elevating-Chairs and Chair-Seats, of which the following is a specification:

Figure 1 shows a vertically-telescoping stop-chair, operated by a rack and pinion, and combined with an expanding spiral-spring counterpoise to the weight of the chair and its average load at its medium elevation. Fig. 2 is a vertical sectional view to show one position of such a spring relative to the seat-shaft and its mechanism. Fig. 3 is a vertical central section, showing the chair-back, spring, and head-rest, and their means of independent adjustment.

In the accompanying drawings, A represents the seat-frame and appurtenances of a chair, that may be elevated or depressed by the operation of a cranked pinion, E, upon the rack-shaft C, sliding in its socket D, and capable of being fixed at any elevation by the set-screw stop *c*.

In this instance an expanding spiral spring, F, is placed loosely around the shaft between its base and the chair-bottom, which is thus constantly lifted by the spring with a force, when near its limited height, of, say, one hundred pounds more than the added weight of the parts sustained on the base. Thus a sitter weighing one hundred and twenty-five pounds may, upon release of the stop, be easily lowered or elevated by a slight expenditure of muscular power upon the pinion-crank, and, practically, the lighter persons—as children, for instance—are to be maintained in the higher and heavy persons in the lower positions, so that there is a relative accommodation of load to the varying resilience of the support, which is formed and adapted for such automatic action.

The shaft C may be tubular and serve as a recess for the spring, which can rest in the bottom of the socket D; or such spring may be suspended from near the top of the tube, or rest on the bottom, and, on partially lowering the chair, come into action as supplemental to F.

An illustration of a socket-spring is seen at F′, Fig. 2, the shaft C of which may be preferably tubular and contain the spring in conjunction with the socket.

In every case the resilience of the spring is to be carefully proportioned to the seat and its appendages, or to such seat and its probable load, since the object of the present invention is to reduce the expenditure of the muscular power hitherto necessary to practically operate the mechanism of elevating-chairs.

In the use of coiled, torsional, or spiral springs, their tension may be regulated in any of the well-known ways to provide for weakening wear, or for great variations of load, or for convenience of operation, and such combinations to this end, described and shown in the present instance in a typical form, come within the design and scope of this invention.

The chair-back B is supported by the tubular column H, which telescopes in G, and in this it is stopped at will by set-screw *g*, and is counterpoised by the spiral spring *g′*, (surrounding H and resting on G.) The head-rest standard K likewise telescopes in H, being stopped at any point therein by set-screw *h*; and to counterpoise K there is placed a spiral spring, *h′*, in the socket H.

The several resilient counterpoises herein described and shown may in many cases find nearly equivalent expression in weighted levers, or weight, cord, and pulley; but the aim and scope of all such are now clearly indicated, and I have used the present method of illustrating this invention because it very well embodies and represents the idea in question.

I am aware that neither the rack nor the spring is, independently, new for the general purposes now set forth, and I do not claim either separately.

Having thus described my invention, what I consider new, and desire to secure by Letters Patent, is—

1. In combination with a chair or like seat

capable of being elevated or depressed by rack and pinion, or by equivalent means, and of being stopped or fixed at various points of its reciprocating range, a spring-counterpoise, substantially as and for the purposes set forth.

2. In a dental chair, the back B, secured to the shaft H by an elastic connection, and combined therewith and with the shaft G, having set-screw *g* and spring *g'*, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WOODBURY STOWE HOW.

Witnesses:
F. C. MILLER,
J. L. WARTMANN.