(No Model.)

H. S. HALE.

SPRING SEAT.

No. 371,448. Patented Oct. 11, 1887.

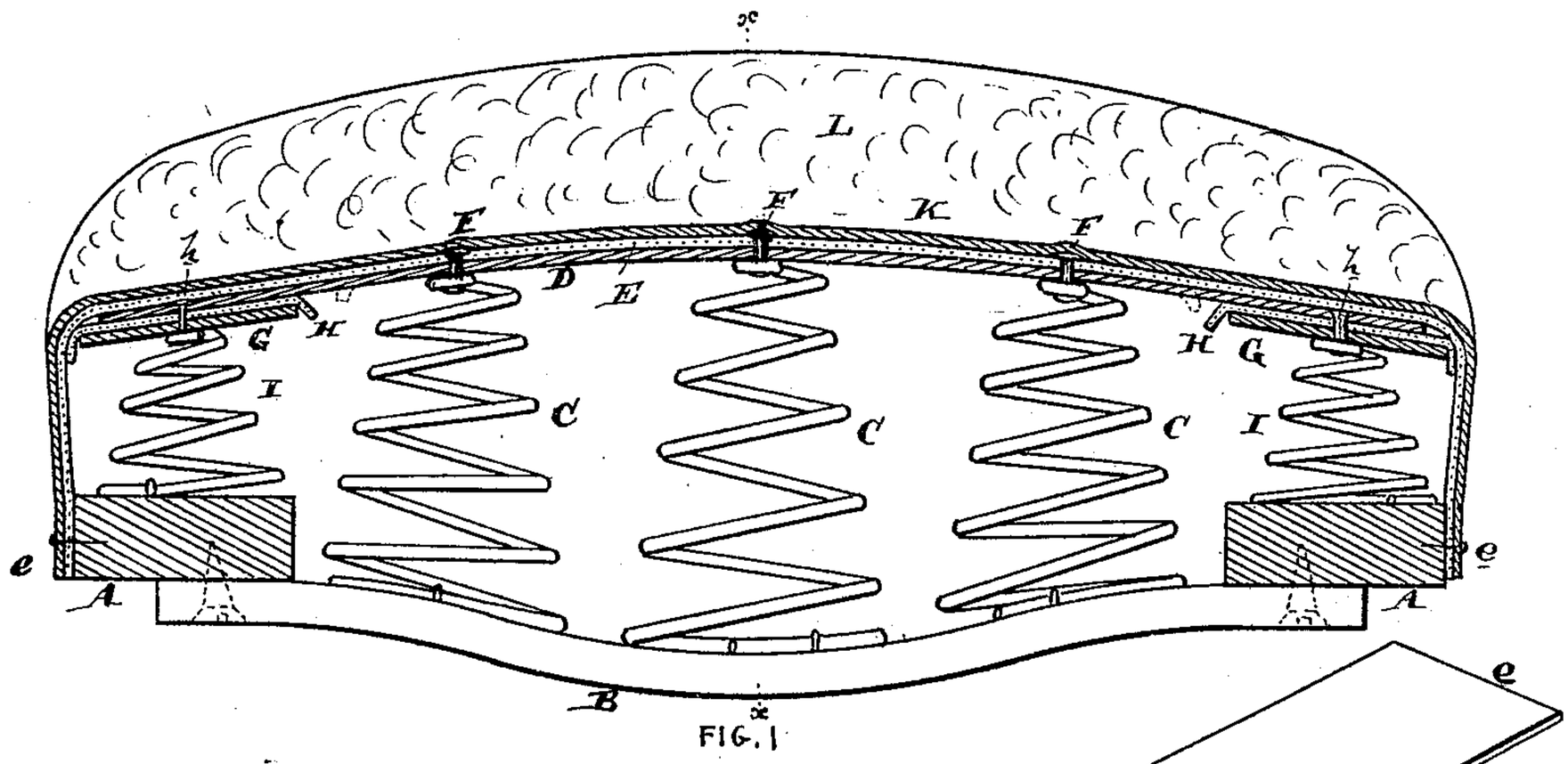

FIG. 1

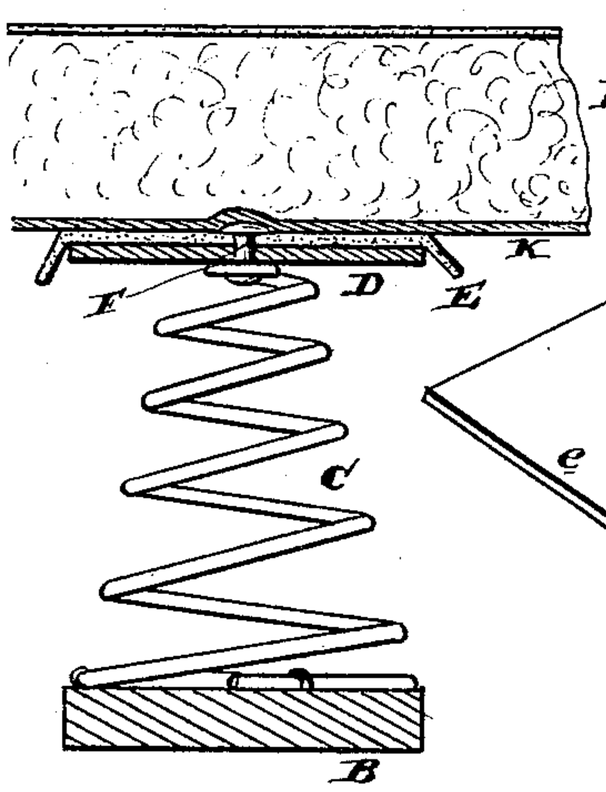

FIG. 2.

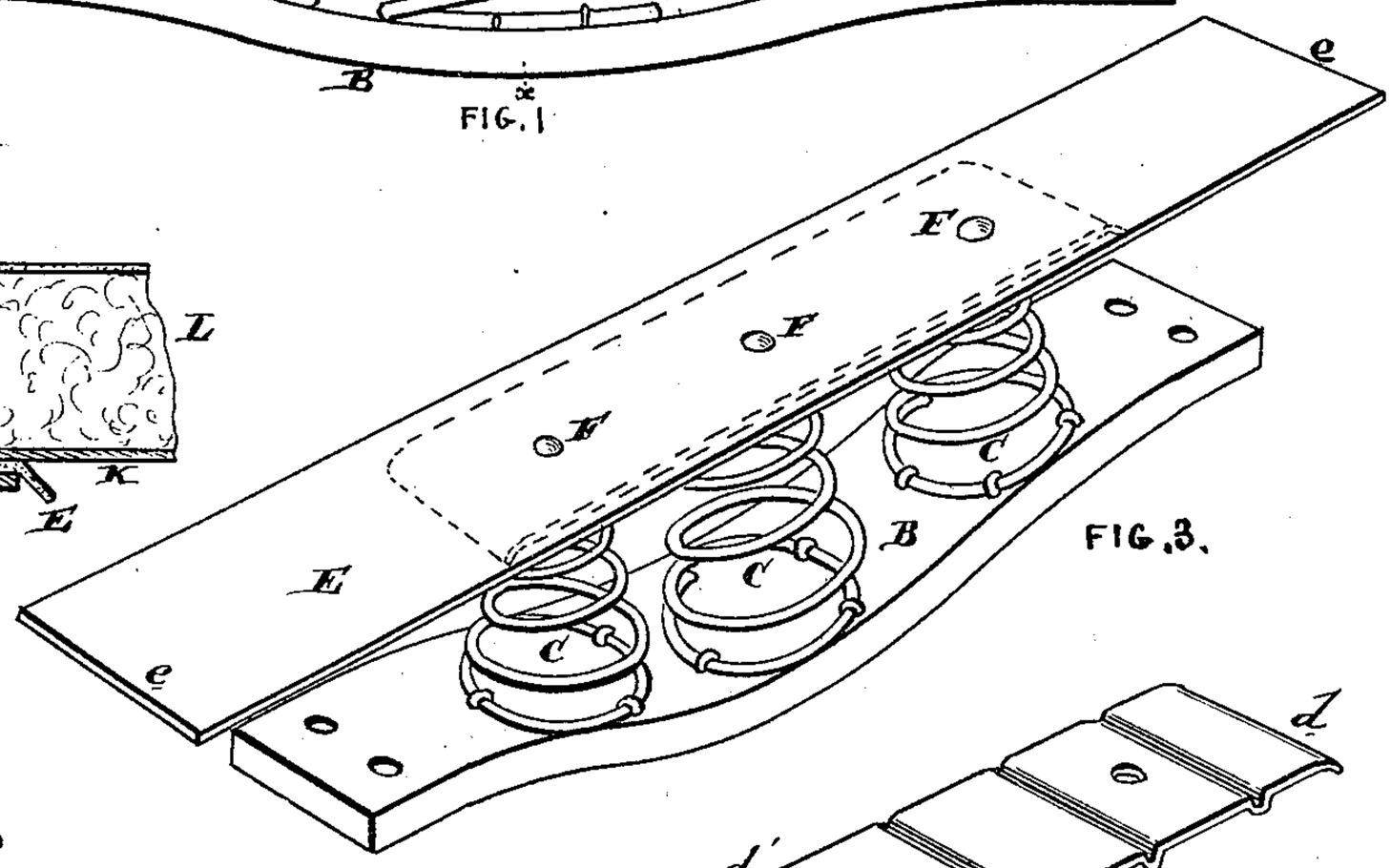

FIG. 3.

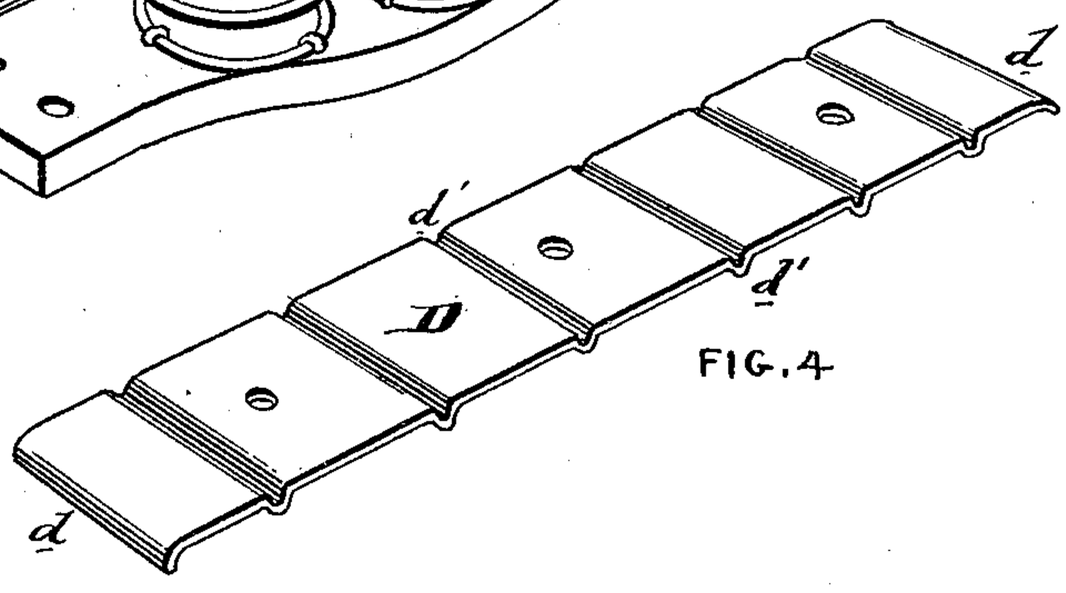

FIG. 4

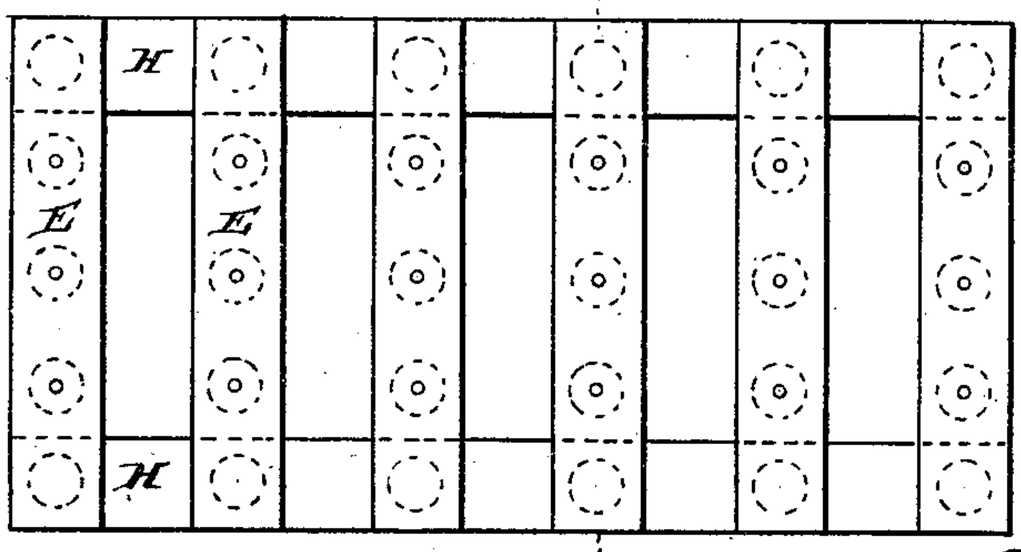

FIG. 5.

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HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

SPRING-SEAT.

SPECIFICATION forming part of Letters Patent No. 371,448, dated October 11, 1887.

Application filed May 14, 1887. Serial No. 238,211. (No model.)

To all whom it may concern.

Be it known that I, HENRY S. HALE, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Spring-Seats, of which the following is a specification.

My invention has reference to spring-seats, &c.; and it consists in certain improvements, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

Heretofore, in the manufacture of spring-seats and similar articles, it has been customary to secure to the top of the springs short narrow metallic connecting-bars, upon which flexible wooden slats, usually combined with textile bands, were secured, the metallic bar acting as a connection between the springs and also as a support for the flexible wooden or compound slats, as set out in my Patents Nos. 259,533 and 256,676, of 1882. This construction is expensive and unsatisfactory, and lacks durability and simplicity.

The object of my present invention is to overcome the above objections by providing the tops of the springs with a wide thin flexible metal plate capable of bending readily under the pressure of the person occupying the seat. The wide flexible plates are preferably covered with still wider bands of textile material, which extend over the lateral edges, and also project over the ends sufficiently to be secured to the box-frame, these bands thereby protecting the edges of the spring-plate. The spring-seat or other frame made up of a number of such elements is covered with a sheet of fabric which rests upon the textile bands and is thereby protected from being cut by the metal plates, and upon this sheet the upholstering is placed. This construction of spring-frame may be used with or without the edge springs, but when the latter are used I have a spring-edge seat of very superior construction. The invention is equally applicable to lounges, chairs, beds, &c.

In the drawings, Figure 1 is a cross-section through a car-seat, on line *y y* of Fig. 5, embodying my invention. Fig. 2 is a cross-section of part of same on line *x x*. Fig. 3 is a perspective view of one of the spring elements removed. Fig. 4 is a perspective view of one of the steel plates removed, and Fig. 5 is a plan view of the spring-seat with the upholstering removed.

A is the box or rectangular frame to which are secured the parallel wooden cross-bars B. Upon each of these cross-bars are springs C. Secured to the top of these springs on each bar is a wide flexible plate, D, of thin steel, the same being capable of bending in all conceivable manners to suit the pressure put upon it. The extreme ends of these plates may be curved down, as at *d*, to prevent possibility of cutting the bands above the plate. Arranged above these plates D are textile bands E, in length made much longer than the plates D, and in width slightly wider than said plates, so that these bands may extend slightly over the lateral edges of said steel plates to prevent them from cutting the sheet of textile material placed above them. The tops of the springs C, the plates D, and the bands E are preferably secured together by rivets F, as shown. The wide bands of steel form good positive supports, combined with every degree of flexibility, and embody cheapness and durability. If the seat is not to have spring-edges the ends of the bands *e* are secured to the box or rectangular frame. A large sheet of textile material, K, is then spread over the bands and spring-plates and united by its edges to the rectangular frame, and the upholstery L is placed upon said sheet.

If desired, the flat steel plates D may be corrugated, as at *d'*, transversely to their length, so as to strengthen them laterally and enable the use of extremely thin plates of steel, which is advantageous as to operativeness as well as to cheapness.

When the seat is to be provided with spring-edges, I place upon the front and back portions of the box or rectangular frame A a series of springs, I, and to these I secure longitudinal plates of steel, G, and bands H, of widths substantially the same as in the case of plates D and bands E. These longitudinal plates G and bands H are secured in any suitable manner (riveting, as at *h*, being preferred) to the transverse plates D, as shown in Figs. 1 and 5, and the free ends *e* of the bands E are brought over and secured to the box or rectangular frame, as indicated in Fig. 1, and the upholstering is put on as before described.

The strength of a spring-seat of this con-

struction is very great, and yet its elasticity is all that could be desired, and the durability is self-evident. There are no glued slats or complications to produce objectionable effects, and the cost of manufacture is greatly reduced over that required to produce a car-seat having the same characteristics when employing the old constructions.

The element shown in Fig. 3 is a complete spring element, and may be made and sold as an article of manufacture. Other manufacturers may use these elements to make up seats of any desired lengths required. In place of bars B the springs may rest on cross textile bands.

The essential feature of the invention is the wide thin flexible metal plates (preferably steel) supported on springs. The covering-bands of textile material may be made of any width, but preferably still wider, so that the lateral edges of the bands will project slightly over the lateral edges of the steel plates to protect the edges thereof against cutting the sheet of textile material placed above the last-mentioned bands and designed to support the upholstering. The bands above the plates are also made long to cover the ends of the plates as well as their corners, forming a complete shield, and yet not interfering with the flexibility of the seat. If desired, the upholstery may rest directly upon the wide metal plates.

I do not limit myself to the exact details, as they may be modified without departing from my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A seat consisting of the combination of a box or equivalent frame having cross-bars at the bottom, springs supported upon said cross-bars, wide thin flexible plates of metal covering a large area of the seat and directly supporting the upholstery and secured to the upper part of the springs on each cross-bar, and wider bands of textile material secured above said steel plates and having their lateral edges extending over the lateral edges of the steel plates and having their ends pulled down and secured to the box-frame, substantially as and for the purpose specified.

2. A seat consisting of the combination of a box or equivalent frame having cross-bars at the bottom, springs supported upon said cross-bars, wide thin flexible plates of steel covering a large area of the seat and directly supporting the upholstery and having their ends curved downward and secured to the upper part of the springs on each cross-bar, and wider bands of textile material secured to said steel plates and having their lateral edges extending over the lateral edges of the steel plates and having their ends pulled down and secured to the box-frame, substantially as and for the purpose specified.

3. A seat consisting of the combination of a box or equivalent frame having cross-bars at the bottom, springs supported upon said cross-bars, wide thin flexible plates of steel covering a large area of the seat and directly supporting the upholstery and secured to the upper part of the springs on each cross-bar, wide bands of textile material secured to said steel plates, extending over their lateral edges, and having their ends pulled down and secured to the box-frame, a large sheet of textile webbing supported upon a series of said supporting plates and bands and secured to the box-frame, and upholstering upon said sheet of webbing.

4. A complete spring element for a spring-seat, consisting of a wooden cross-bar, two or more springs secured thereto, a wide flexible steel plate covering a large area of the seat and directly supporting the upholstery and secured to the top of said springs, and a still wider band of textile material secured to said wide plate of steel, extending slightly over the lateral edges of the same and for a considerable distance over the ends thereof, substantially as and for the purpose specified.

5. A spring-seat consisting of the combination of a box or rectangular frame, a series of cross-bars secured thereto, a series of springs on each cross-bar, a series of transverse wide flexible steel plates covering a large area of the seat and directly supporting the upholstery and arranged one above each of said bars and secured to the springs thereof, a series of springs secured to the front and rear portions of the box or rectangular frame, similar longitudinal wide flexible metal plates arranged above each of said last-mentioned sets of springs and united to the ends of the first-mentioned transverse steel plates, wide bands of textile material covering each of said longitudinal steel plates, and transverse wide bands of textile material secured to the first-mentioned or transverse steel plates, extending over their lateral edges, and projecting over the longitudinal plates and united to the box or rectangular frame, and upholstering having a lower sheet layer resting upon the textile bands, substantially as and for the purpose specified.

6. In a spring-seat, the combination of the frame, springs supported by the frame, a wide thin steel plate covering a large area of the seat and directly supporting the upholstery and secured to the springs at their upper parts and having transverse corrugations, and textile bands extending over said corrugated steel plate and secured on its ends to frame of the seat, substantially as and for the purpose specified.

7. In a seat, the combination of the seat-frame, cross-bars secured thereon, springs supported by said cross-bars, wide, thin, and flexible metal plates covering a large area of the seat and directly supporting the upholstery and supported by said springs, and the upholstery supported upon said wide metal plates and secured to the seat-frame.

8. The combination of a series of coil-springs with a wide thin flexible metallic plate cov-

ering a large area of the seat and directly supporting the upholstery and secured to the tops of said springs, the said parts being adapted to fit between the support on the bottom of the seat, and the upholstering on top, the wide plate offering an extended surface for support of said upholstering.

In testimony of which invention I hereunto set my hand.

HENRY S. HALE.

Witnesses:
R. M. HUNTER,
J. WARREN HALE.