

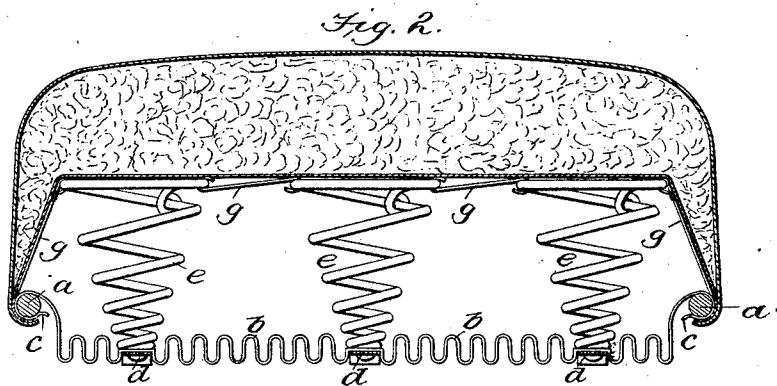
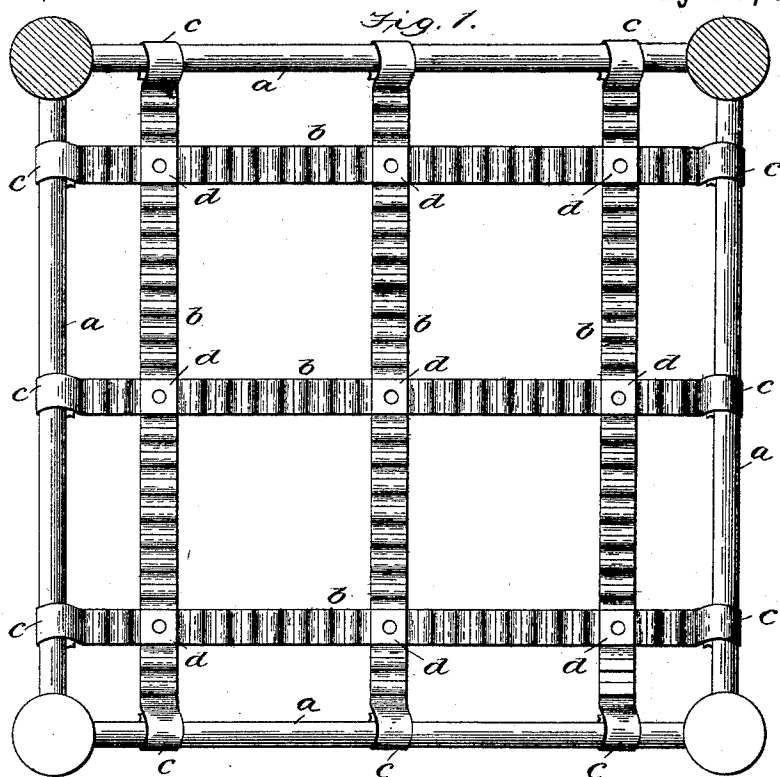
(No Model.)

2 Sheets—Sheet 1.

F. H. HOMAN.  
SPRING SEAT.

No. 519,792.

Patented May 15, 1894



Witnesses  
O. H. Johnson  
Edwin L. Bradford

Inventor  
Frank H. Homan  
By Johnson & Johnson  
His Attorneys.

F. H. HOMAN.  
SPRING SEAT.

No. 519,792.

Patented May 15, 1894.

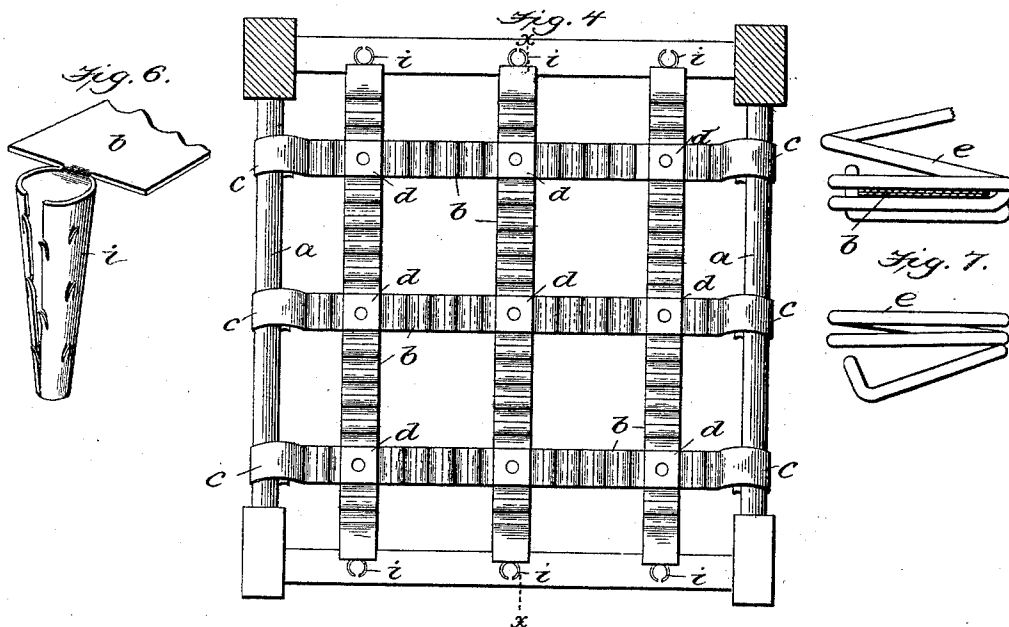
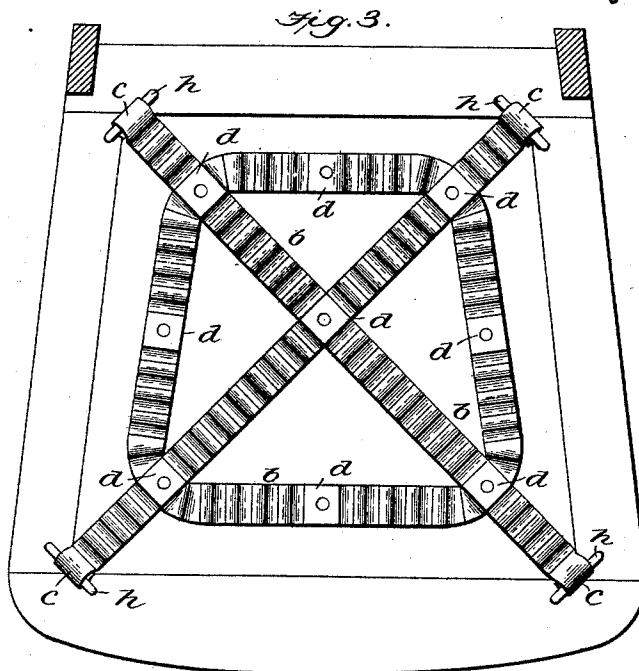
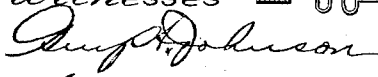
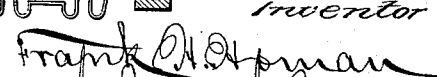


Fig. 5

witnesses   Inventor   
By  His Attorneys

# UNITED STATES PATENT OFFICE.

FRANK H. HOMAN, OF PATCHOGUE, NEW YORK.

## SPRING-SEAT.

SPECIFICATION forming part of Letters Patent No. 519,792, dated May 15, 1894.

Application filed December 21, 1893. Serial No. 494,337. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK H. HOMAN, a citizen of the United States, residing at Patchogue, in the county of Suffolk and State of New York, have invented a new and useful Improvement in Spring-Seats, of which the following is a specification.

For upholstered chairs I have produced an improved spring support, wherein the construction is such as to give the desired elastic capacity and durability. In the construction I use corrugated band springs connected and secured to the seat-frame in a novel manner, as illustrated in the accompanying drawings and in connection with which I will specifically point out in the claims concluding this specification the parts and combination of parts constituting my invention.

Referring to the drawings: Figure 1 represents a top view of a chair seat-frame having my improved spring seat-support applied thereto. Fig. 2 is a vertical section of the same. Fig. 3 shows a modification of seat-frame and spring-support applied thereto. Fig. 4 is another modification of seat-frame and spring connections. Fig. 5 is a cross section on the line  $x-x$  of Fig. 4. Fig. 6 is a detail of the spring fastening  $i$  shown in Fig. 4, and Fig. 7 shows the manner of clipping the coil-springs to the band-springs.

I make the frame of the chair-seat of a construction to suit the fastening which I have provided for the spring seat-supports.

In Fig. 1 of the drawings the seat-frame is constructed of rundles  $a$  like the steps of a ladder, mortised into the legs and upon these rundles the spring seat-supports are hung in a way which I will now describe. I make the seat-supports of tempered steel bands  $b$  formed with deep corrugations transversely of the width of the band as seen in Fig. 2, and I form the ends of these steel-bands with lapping hook shaped terminations  $c$  adapted to be sprung over the rundles and thereby to be hung thereon. As the rundles form the four sides of the seat-frame I hang the tempered steel bands on each rundle, so that they cross each other at right angles and when thus arranged I use, say three bands crossing three bands. At such crossing the bands are made with flat seats  $d$  upon which coil-springs  $e$  are secured in a

way which secures the bands to each other and by such connection the spring bands are prevented from moving upon each other or upon their supporting rundles, but in fact constitute a spring platform hanging from the rundles, and providing an elastic connection not only upon the rundles, but at every point within the space bounded by the rundles. Upon the seats at the intersections of the spring bands, are secured coil-springs  $e$ , either of conical or helical form, so that they rise above the level of the rundles and are connected at their upper ends and to the rundles by wire ties  $g$ , to hold them in position. Upon these coiled springs the seat is upholstered so as to cover the rundles.

In Fig. 3 the seat-frame is constructed of flat bars in the usual manner and the spring-bands are arranged to connect with the corners of the frame and cross each other and are connected in the middle of the seat. In this arrangement I provide barbed staples  $h$  driven into the frame at the corners and over which the lapping hooked ends of the bands are sprung and confined in the same manner as by the rundles.

In Fig. 4 the seat-frame has rundles at the sides only mortised into the legs which are secured at the front and back by bars. In this construction the springs are arranged as in Fig. 1, but are fastened to the front and back-bars by tubular barbed pins  $i$  which are formed integral with the spring-bands as seen in Fig. 6. These barbed tubular pins are formed by cutting the ends of the spring-bands crosswise and bending the cut edges so as to form tubular tapering pins which can be driven into the bores in the tops of the bars. The barbs can be made on the ends of the band at the time the ends are cut. This construction gives a solid and secure fastening to the spring platform to the front and back bars; while at the sides the spring platform hangs freely on the rundles, and thus provides for different styles of frames and immovable connections therewith of two sides of the spring-platform, leaving the other two sides to hang upon the rundles with freedom of spring action.

In Figs. 1, 2 and 4 the construction permits the spring-platform to hang below the seat-

frame; while in Fig. 3 the construction places the spring-platform on a level with the seat-frame.

The important matter is the construction and hanging of the spring-platform so as to obtain the advantage of an easy and durable elastic base for the coiled springs and thereby render the latter more durable and prevent them from breaking down, which results from the use of webbing and from wire supports which are more or less stiff so that the elastic action is borne by the coiled springs.

In the employment of steel tempered bands I provide a uniform elastic webbing or support for the coiled springs so that pressure upon the latter is not all borne by them to produce undue compression, but the web supporting bands, by reason of being deeply corrugated are caused to yield under the pressure of the coiled springs and thus relieve the latter and form as it were a part of them. The employment of the corrugated bands about an inch wide gives to each corrugation a spring function so that at the seating of each coiled spring the band has a direct yielding action and this is the important advantage due to the corrugations of a band formed of tempered steel with flat seats between the corrugations on which the coiled springs are mounted. The elasticity of the steel plates also gives the important advantage of relieving the seat-frame from undue strain, which in the use of stiff or unyielding webbing, is suddenly put upon the frame under the weight of the occupant. It is important also to notice that as an advantageous result of my improvement the supporting structure for the upholstered seat, is adapted by the spring lapping hook-shaped ends of the bands to be made self fastening to the seat-frame, since the spring lapping hook-shaped ends of the bands being engaged with the seat-frame parts by being sprung over said parts will extend under them with a self grasping hold thereon, and thereby dispense with nails or screws as fastenings for the seat. The coiled springs may be riveted upon the seats which are raised upon the bands, but such fastening may be made by clipping the end of the coiled springs to said seat as seen in Fig. 7. This is done by turning the lower end of the spring under the flat seat part *d* and then upsetting the end within the lower coil at the edges of the seat so as to lock the coiled end of the spring with the spring-band and render the connec-

tion secure. This coil-lock can be made with the single and the crossed bands and when thus secured to the crossed-bands, the coiled springs serve to secure the bands together at their crossing. To give the steel-bands their utmost elastic capacity the corrugations may extend to the rundles. These corrugated steel-bands are easily and cheaply produced by machinery to suit different styles and sizes of seats, and they can be applied to the under side as well as to the top of the seat-frame. When applied for use they do not lose their shape or spring capacity, but the connected bands act together yielding alike at every point under the pressure of the coiled springs over and upon which the upholstering is done.

It is obvious that the spring-platform constructed of the connected steel-bands may be used as a spring seat-support without the superimposed coiled springs wherever it may be desired to so use my invention.

When the corrugated bands are connected at the corners of the frame as in Fig. 3, they may be connected by intermediate bands at the flat seats so as to brace the bands within the seat opening.

I claim as my improvement—

1. The combination of a seat-frame formed with rundles at two of its opposite sides, and coiled springs supporting the upholstering, with a support for said springs constructed of steel-bands corrugated transversely, connected together in crossing relation, the bands crossing the seat-frame from side to side terminating in integral spring lapping hooks adapted to be sprung over said rundles, and the bands of the seat from front to rear terminating in integral tubular barbed-pins adapted to be driven into the front and back bars, substantially as described.

2. The combination of a seat-frame, with steel-bands corrugated transversely, connected in crossing relation and hung upon fixed parts of said frame, and formed with flat seats between the corrugations, and coiled springs supporting the upholstering, clipped and locked upon said band-seats by interlocking the lower coil with said seat part and engaging the upset end of said coil with the edge of said seat band substantially as described.

FRANK H. HOMAN.

Witnesses:

W. S. JOHNSON,  
D. D. DENTON.