2 Sheets--Sheet 1.

E. SAVORAL.

Spring-Bottoms for Chairs.

No. 155,979. Patented Oct. 13, 1874.

Fig: 2

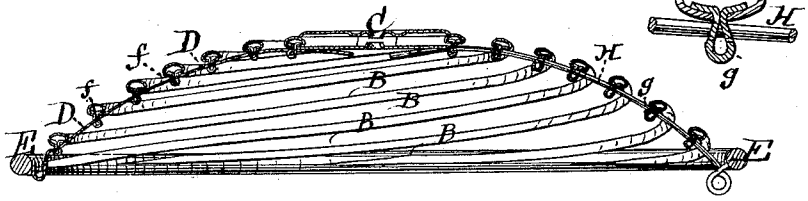
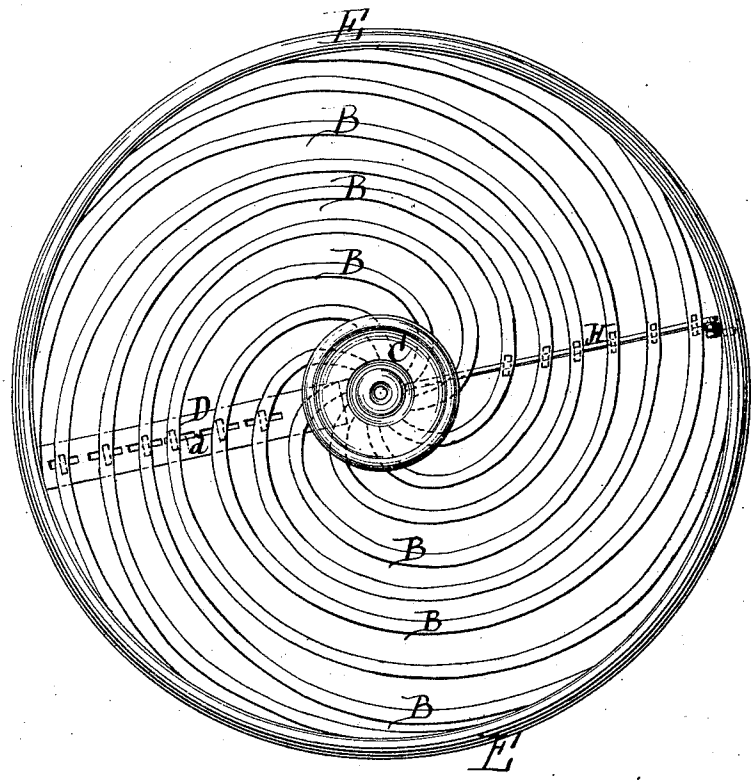


Fig: 3.

Fig: 1.



Witnesses:

Henry Eichling

Fred: Haynes

Edward Savoral

by his Attorneys

Brown & Allen

2 Sheets--Sheet 2.

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Spring-Bottoms for Chairs.

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Fig: 5.

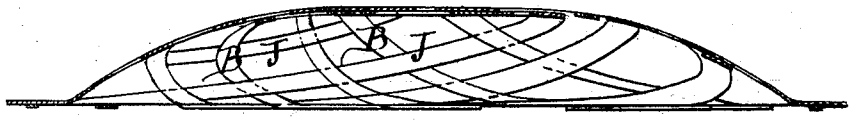
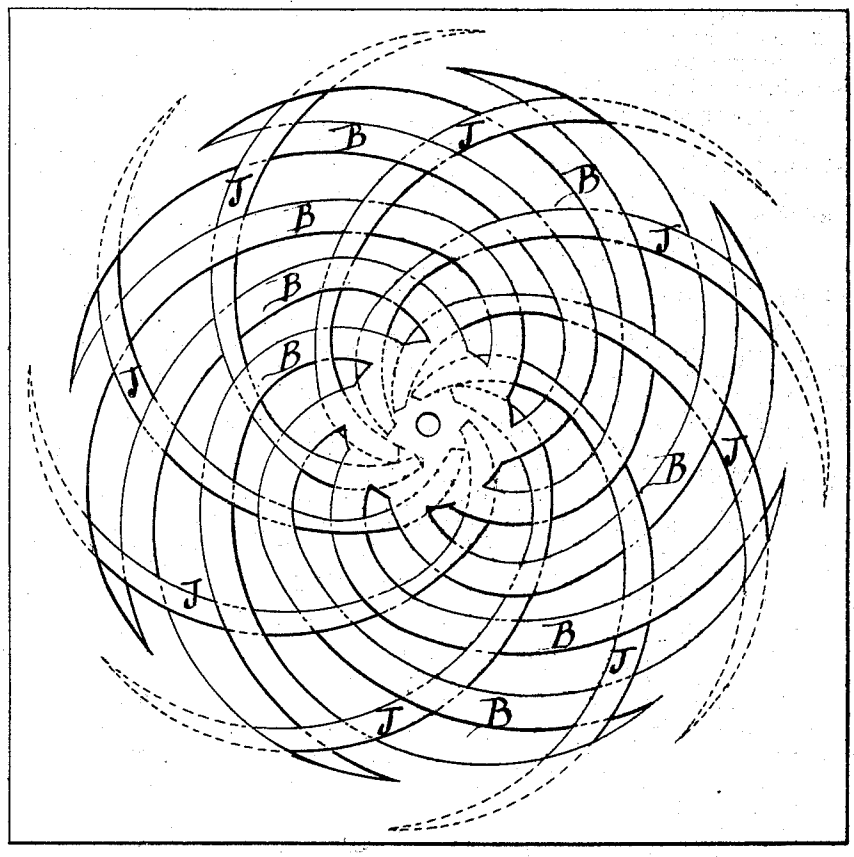


Fig: 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDUARD SAVORAL, OF NEW YORK, N. Y.

IMPROVEMENT IN SPRING-BOTTOMS FOR CHAIRS.

Specification forming part of Letters Patent No. **155,979**, dated October 13, 1874; application filed March 17, 1874.

To all whom it may concern:

Be it known that I, EDUARD SAVORAL, of New York, in the county and State of New York, have invented certain Improvements in Bottoms for Chairs and other Seats, of which the following is a specification:

My invention relates to certain improvements whereby a simple, cheap, and durable seat is obtained.

The invention consists in a bottom for chairs and other seats, composed of a series of convolute springs supported by intersecting transverse sliding braces.

In the accompanying drawing, Figure 1 is a top view of a chair-seat composed of tubular convolute springs provided with transverse braces arranged radially. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a transverse vertical section of one of the springs. Fig. 4 is a top view of a chair-seat composed of flat convolute springs with transverse braces arranged spirally. Fig. 5 is a transverse vertical section of the same.

The bottom may be made of metal or other elastic material. The outline may be circular, as shown in Fig. 1, or may be angular, as in Fig. 4, or of any other form. The convolute springs may be either tubular or solid, and in their cross-section they may be either cylindrical, elliptical, or flat. The springs may be made of separate and independent pieces, or they may be made in one piece with the seat.

When made of separate and independent pieces the springs B are curved in a spiral direction, with their inner ends attached to a central plate, C, and their outer ends to a ring or band, E, which may be attached to the chair-frame in any suitable manner. The transverse brace may be a flat bar, D, with its outer end attached to the ring or band E, and the remaining portion extending toward the center under the springs, and connected therewith by buttons *f* on the springs, passing through slots *d* in the bar; or the brace may consist of a round bar, H, attached to the ring or band, and passing through perforated lugs *g* on the inner side of the springs.

When made in one piece with the seat the springs B are formed by stamping spiral strips from a sheet of metal, leaving the remaining portions in the form of convolute springs, as shown in Figs. 4 and 5, the concavo-convex form being given to the seat by stamping. When made in this form the transverse braces consist of spiral strips or bars J, interlacing the springs B, and having their inner ends free and their outer ends attached to the under side of the seat.

A seat-bottom made in this way may be used without upholstery, or may be upholstered in the usual way. The same structure is applicable to the backs as well as to the bottoms of seats.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the series of convolute springs B, running spirally from the center C to the circumference, with the transverse strengthening-brace intersecting and connected to the convolute springs, substantially as and for the purpose described.

EDUARD SAVORAL.

Witnesses:

HENRY T. BROWN,

MICHAEL RYAN.