(No Model.)

G. W. MURRAY.

SPRING SEAT.

No. 324,335. Patented Aug. 11, 1885.

Fig. 1

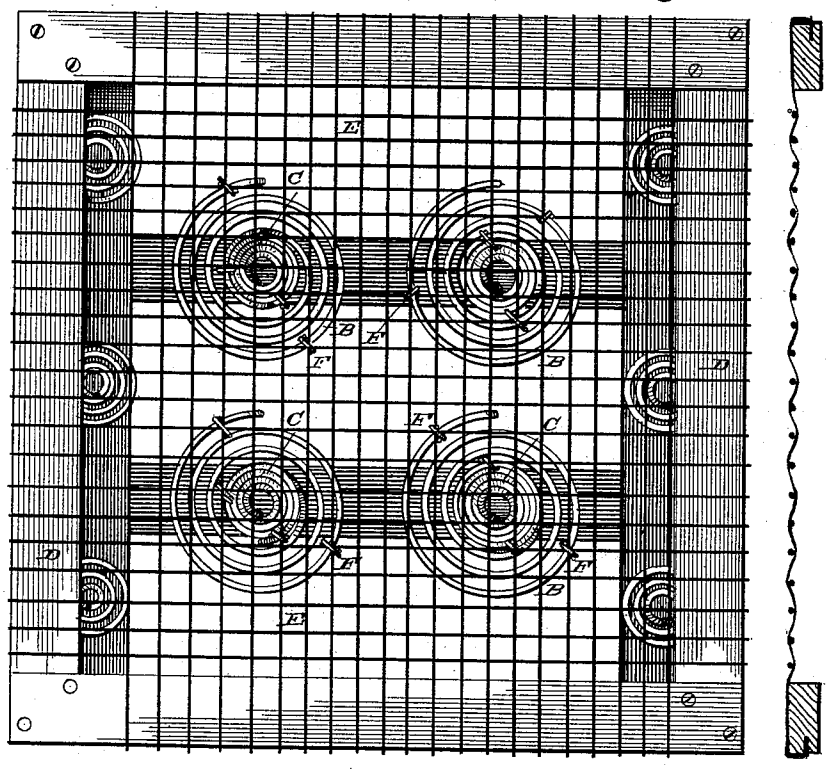


Fig. 2

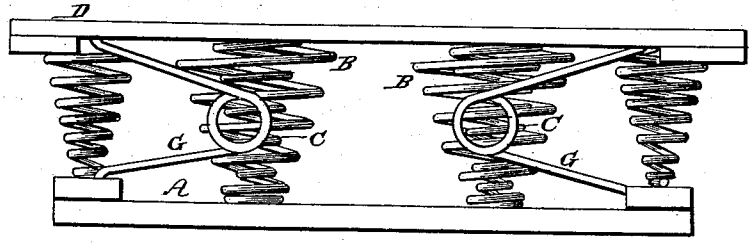


Fig. 3

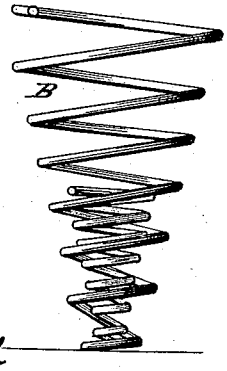
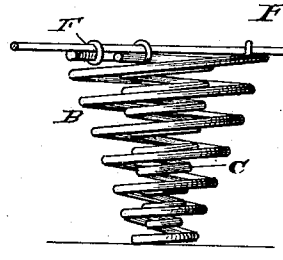


Fig. 4



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UNITED STATES PATENT OFFICE.

GEORGE W. MURRAY, OF BLUFFTON, OHIO.

SPRING-SEAT.

SPECIFICATION forming part of Letters Patent No. 324,335, dated August 11, 1885.

Application filed March 27, 1885. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MURRAY, a citizen of the United States, residing at Bluffton, in the county of Allen and State of Ohio, have invented certain new and useful Improvements in Spring-Seats, of which the following is a description.

This invention relates to that class of seats which are especially adapted for use in carriages; and its object is to control the action of a series of spiral springs, so that they shall form a level cushion or seat on their united tops, and so that their action shall be proportioned to the weight to be supported.

To this end my invention consists in the construction and combination of parts hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a seat according to my invention. Fig. 2 is a front elevation thereof. Fig. 3 is a detail view of a pair of springs in their normal form, and Fig. 4 is a detail view of the same pair of springs united.

A represents a frame serving as a bed, on which a series of pairs of springs, B C, rest, being secured at their lower ends thereon.

D is the upper frame, which may be of wood, as here represented, secured together at the corners; or it may be of metal, such as light bar-iron or heavy wire.

E is a piece of wire-cloth, secured at its edges upon the frame D and secured upon the springs by means of short wires F, wound around the meshes or single wires of the cloth and around the springs. This cloth forms the seat proper, which may be used without covering to sit upon; or it may form the foundation for a cushion or for upholstering in any manner.

The main characteristic of my invention is the relation that the two springs B and C bear to each other. The spring B is the largest and strongest, and when both springs are in their normal condition the spring B stands nearly twice as high as spring C. All loosely-wound spiral springs will act to some extent either as contractile springs when extended beyond the normal form, or as expansible springs when compressed within the normal form. In arranging these high and low springs in the same seat I prefer to associate them in pairs—the small one within the large one—and I connect the tops of the two springs B C, forming a pair, together by one or more cross-bars sufficiently rigid to maintain the tops of the two at the same level. This is the especial service of the wire-cloth, as any fibrous cloth would be too flexible, and would be strained into objectionable protuberances; and cords would be equally objectionable. When a pair of springs B C are thus connected, the lifting force of the spring B will strain the spring C above its normal form, and the resistance of the spring C to such strain will hold the spring B below its normal form. Thus a series of pairs of springs joined by a cover such as the wire-cloth E, capable to hold the two springs of each pair level, will form a level and slightly-flexible seat, lower than the springs B and higher than the springs C.

This association of springs has a peculiar effect, as follows: When pressure is brought to bear on such a seat, the small springs at first assist it to depress the large springs until the small springs reach their normal form. Then if the pressure be sufficient to continue descending, the small spring resists compression and assists the large one to carry the load. By this means the large springs may be very much stiffer than usual, so that the whole descent of a heavy load will be limited to a short movement, but very little exceeding the descent of a light load. This is a great object gained, because springs which bounce the rider far up and down are uncomfortable and endanger throwing him; and springs thus opposed carry a light load more easily than other styles of springs whose final supporting ability is equal to them. It is not necessary that one spring should be located within the other, nor that there should be just as many short springs as there are tall ones, provided that the united force of the short ones so resists the united force of the tall ones as to produce a level seat intermediate between the normal heights of the two. The seat may be stayed or braced against sidewise lurching by accessory springs G, of suitable form, acting between the frames A and D. It is necessary to this combination of springs that the cross-bars joining their tops should be to some extent flexible where a series of springs are formed into a single seat, and the wire-cloth E is only a series of such bars spread over the required area.

I am aware that two springs have before

been placed one within the other, and that a short spring has been associated with a long one to re-enforce the latter when pressed back to the plane of the former; but heretofore short and long springs have not been connected at both ends to the same resistance, so as to counteract and balance each other at a certain point and to assist each other at another point in their path of motion, as mine do.

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

1. The combination of two series of springs, one normally shorter than the other, a plane base for both series to rest on, and two series of slightly-flexible bars interwoven with each other in the form of wire-cloth connecting and secured to the tops of both series of springs, substantially as shown and described.

2. The combination of two springs, one normally shorter than the other, a plane base secured to both, and a connection securing the tops of both springs together in a plane variable above their base, substantially as shown and described, whereby the two springs at first oppose each other and then assist each other, as set forth.

The above specification of my invention signed by me in the presence of two subscribing witnesses.

GEORGE W. MURRAY.

Witnesses:
SOLON C. KEMON,
CHAS. A. PETTIT.